

**GOVERNMENT OF PUERTO RICO
PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU**

NEPR

Received:

Jan 28, 2022

7:14 PM

IN RE: REVIEW OF THE PUERTO RICO
ELECTRIC POWER AUTHORITY'S 10-
YEAR INFRASTRUCTURE PLAN –
DECEMBER 2020

CASE NO.: NEPR-MI-2021-0002

SUBJECT: Second Motion to Submit
Additional Generation Projects SOWs

SECOND MOTION TO SUBMIT ADDITIONAL GENERATION PROJECTS SOWS

COMES NOW the Authority¹, through its counsel of record, and respectfully submits and requests as follows:

I. RELEVANT BACKGROUND

On November 15, 2021, PREPA filed a *Motion to Submit Fourth Group of Generation Projects* (the “November 15 Motion”), with a comprehensive list of Generation Projects which consist of repair work projects of generation assets and for which PREPA will seek reimbursement under several FEMA programs. November 15 Motion at Attachment A.

After several procedural events, PREPA was served with the January 4 Order, by which the Energy Bureau conditionally approved the projects described in Attachments A to H of the referenced order (“Conditionally Approved Projects”), pending the submittal by PREPA of the SOW of each project and deferred the approval of projects are listed in Attachment I of the January 4 Order (the “Deferred Projects”) until further evaluation. The January 4 Order additionally provides directives regarding both set of projects for which PREPA was ordered to submit on January 14, 2022, the SOW for both the Conditionally Approved Projects and also the Deferred Projects for the Energy Bureau’s evaluation. January 4 Order, page. 3, Sec. III. Additionally, the

¹ Capitalized terms not defined herein shall be considered with the meaning provided to them in the January 13, 18 and 25 motions.

Energy Bureau directed PREPA to answer, on or before January 19, 2022, a set RFIs listed in the order.

On January 13, 2022, PREPA submitted a motion titled *Partial Compliance with the January 4 Order and Request for Extension of Time* (the “January 13 Motion”) together with a total of 25 “Generation Projects SOWs” for the review and approval of the Energy Bureau. January 13 Motion at Attachment A. Further, PREPA requested an extension of time until February 14, 2022, to submit the Outstanding SOWs. PREPA asserted that, even though it was asking until February 14, 2022 to complete the submittal of the Outstanding SOWs, it was going to submit them on a rolling basis as they were completed and approved by PREPA.

Thereafter, on January 18, 2022, PREPA filed *Request for Extension of Time to Submit Responses to RFI Included in the January 4 Order* (the “January 18 Motion”) asking the Energy Bureau to grant until February 14, 2022, to submit the responses to the RFI.

On January 22, 2022, the Energy Bureau entered an order granting, *inter alia*, the requests for extension made by PREPA in the January 13 and January 18 motions. Therefore, the operative deadline to file the Outstanding SOWs and responses to the RFI is February 14, 2022.

On January 25, 2022, PREPA submitted to the Energy Bureau the *Motion to Submit Additional Generation Projects SOWs* (the “January 25 Motion”) with 10 additional Generation Projects SOWs.

II. SUBMITTAL OF ADDITIONAL GENERATION PROJECTS SOWS

In compliance with the January 4 and January 18 orders, PREPA completed a total of 20 additional Generation Projects SOWs which are submitted herein for the review and approval of the Energy Bureau. Attachment A. Out of these Generation SOWs, 19 pertain to the Conditionally Approved Projects, while 1 pertains to the Deferred Projects.

To facilitate the evaluation of the Generation Projects SOWs submitted, PREPA hereby includes a table that details and breakdowns the SOWs as follows: project number assigned by the Energy Bureau to each Generation Project SOW (first column), the SOW number assigned by PREPA (second column), project name (third column) and a summary of the proposed scope of work (fourth column). *See*, Attachment B.

With this submittal, PREPA has tendered a total of 55 Generation Projects SOWs to the Energy Bureau.

III. REQUEST FOR APPROVAL OF THE GENERATION PROJECTS SOWS

PREPA respectfully request the Energy Bureau to approve the Generation Projects SOWs as submitted herein. As stated in several submittals, PREPA's goal to move in a direction that leads to lower costs and cleaner energy requires maintaining its system's reliability and stability during such transition. Consequently, the Generation Projects SOWs submitted for the review and approval of the Energy Bureau consist of repair works *necessary* to increase the current dependable available generation and provide the People of Puerto Rico a safe and reliable electrical service – while the integration of reliable new resources is completed– and thus prevent future major outages in compliance with the SOP and POR reliability criteria. In conclusion, the proposed Generation Projects are *crucial* for PREPA to maintain the reliability of the generation system during the process of integrating new resources and therefore, PREPA requests the Energy Bureau to approve the Generation Projects SOWs submitted herein.

Should the Energy Bureau have any concerns or questions regarding the Generation Projects SOWs herein submitted, PREPA respectfully request that a technical conference through which PREPA representatives can discuss the Generation Projects SOWs be scheduled. During

the proposed conference, PREPA's personnel shall address any concerns or questions the Energy Bureau may have, so these projects are approved and PREPA can move forward and make the relevant funding requests to COR3 and FEMA.

IV. REQUEST FOR CONFIDENTIAL DESIGNATION AND TREATMENT

The Generation Projects SOWs presented herein contain global positioning system ("GPS") coordinates of PREPA's power plants, which is critical energy infrastructure information ("CEII") that cannot be disclosed to the public (*i.e.*, Attachment A, p. 4, 9 at sects. 2.1 and 10.3, respectively). To protect such confidentiality, PREPA has redacted the GPS information from the Generation Projects SOWs herein submitted (Attachment A) and requests the Energy Bureau to determine that the GPS information is CEII and thus, confidential, and to maintain the public files with the redaction already provided.

The following is a detailed list of the information that PREPA asserts is confidential and must be kept under seal:

SOW NO.	PROJECT DESCRIPTION	CONFIDENTIAL INFORMATION	LEGAL BASIS
1002	Units 5 & 6 New High-Pressure Pumps	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
1007	Unit 7 Air Preheater Maintenance and Replacement	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
1008	Repairs to Nautilus Water Treatment System	GPS Location Page 4, Sec. 2.1 Page 10, Sec. 10.3	CEII
1010	Replacement of Two Uninterruptible Power Supply Systems for Units 7 and 8	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII

SOW NO.	PROJECT DESCRIPTION	CONFIDENTIAL INFORMATION	LEGAL BASIS
1011	Units 7-10 New Raw Water Tank	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
1014	Units 5-10 Heavy Equipment Rental Services	GPS Location Page 4, Sec. 2.1 Page 11, Sec. 10.3	CEII
1015	Water Treatment and Technical Assistance Cooling Water System	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
1023	Unit 6 - Major Overhaul (CT Repairs)	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
1026	Unit 6 - Major Overhaul (Steam Turbine)	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
2029	Unit 1 South Wall Boiler Tubing Replacement and Boilers Repairs	GPS Location Page 4, Sec. 2.1 Page 12, Sec. 10.3	CEII
2036	Procurement of Stages 1, 2, 3 Turbine Rotor Bucket Set, Aguirre Combined Cycle	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
2037	New Water Condensate Tank for the Aguirre Combined Cycle	GPS Location Page 4, Sec. 2.1 Page 10, Sec. 10.3	CEII
2038	Major inspection Unit 1-3	GPS Location Page 4, Sec. 2.1 Page 17, Sec. 10.3	CEII
2044	Purchase and Installation Breakers 480 V	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
3046	Travelling Screens Replacement Costa Sur Power Plan – Unit 5 & 6	GPS Location Page 4, Sec. 2.1 Page 10, Sec. 10.3	CEII

SOW NO.	PROJECT DESCRIPTION	CONFIDENTIAL INFORMATION	LEGAL BASIS
3047	Procurement and Replacement of Regulator Valves for Boiler Feed Water Units 5 & 6	GPS Location Page 4, Sec. 2.1 Page 11, Sec. 10.3	CEII
3048	Low Pressure Water Heater 3 Repair Work Costa Sur Power Plant – Unit 6	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
3059	CS 5 Major Outage Unit 5 - Boiler Sections Replacement and Repairs & Auxiliary Equipment Repairs	GPS Location Page 4, Sec. 2.1 Page 10, Sec. 10.3	CEII
3060	Water Heater 6 Replacement Work	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII
4079	Upgrade to Mark VI, Palo Seco Power Plant – Units 3 & 4	GPS Location Page 4, Sec. 2.1 Page 9, Sec. 10.3	CEII

Article 6.15 of the *Puerto Rico Energy Transformation and RELIEF Act*, Act no. 57 of 2014, as amended (“Act 57”)², provides that “any person who is required to submit information to the Energy [Bureau] believes that the information to be submitted has any confidentiality privilege, such person may request the [Bureau] to treat such information as such[.]” *Id.* at Sec. 6.15. “If the Energy [Bureau], after the appropriate evaluation, believes such information should be protected, it shall grant such protection in a manner that least affects the public interest, transparency, and the rights of the parties involved in the administrative procedure in which the allegedly confidential document is submitted.” *Id.* at Sec. 6.15(a). If the Energy Bureau determines that the information is confidential, “the information shall be duly safeguarded and delivered exclusively to the

² *Puerto Rico Energy Transformation and RELIEF Act*, Act no. 57 of May 27, 2014, 22 L.P.R.A. §§ 1051-1056.

personnel of the Energy [Bureau] who needs to know such information under nondisclosure agreements.” *Id.* at Sec. 6.15(b). “The Energy [Bureau] shall swiftly act on any privilege and confidentiality claim made by a person subject to its jurisdiction by means of a resolution to such purposes before any allegedly confidential information is disclosed.” *Id.* at Sec. 6.15(c).

Pursuant to its vested powers, the Energy Bureau approved the *Regulation on Adjudicative, Notices of Compliance, Rate Review and Investigations Proceedings* (“Regulation 8543”).³ Regarding the safeguards that the Energy Bureau gives to confidential information, Regulation 8543 provides that:

[i]f in compliance with the provisions of [Regulation 8543] or any of the Energy Bureau’s orders, a person has the duty to disclose to the Energy Bureau information considered to be privileged pursuant to the Rules of Evidence, said person shall identify the allegedly privileged information, request the Energy Bureau the protection of said information, and provide supportive arguments, in writing, for a claim of information of privileged nature. The Energy Bureau shall evaluate the petition and, if it understands the material merits protection, proceed according to what is set forth in Article 6.15 of Act No. 57-2014, as amended.

Regulation 8543 at Sec. 1.15.

Federal and Puerto Rico law protect the confidentiality of CEII, the public disclosure of which may pose a security threat in that the information could be useful to a person or group in planning an attack on critical infrastructure. *See, e.g.*, 18 C.F.R. § 388.113, as amended by Federal Energy Regulatory Commission (“FERC”) Order No. 683, *Critical Energy Infrastructure Information* (issued September 21, 2006); *USA Patriot Act of 2001*, § 1016, creating the *Critical Infrastructures Protection Act of 2001*, including 42 U.S.C. § 5195c(e) (defining Critical Infrastructure). FERC regulations subject such information to limitations on use and disclosure to “ensure that information deemed CEII stays out of the possession of terrorists.” 18 C.F.R. §

³ Energy Bureau, *Regulation on Adjudicative, Notices of Compliance, Rate Review and Investigations Proceedings*, No. 8543 (December 16, 2015).

388.113(d)(4). *Off. of People's Counsel v. Pub. Serv. Commn.*, 21 A.3d 985, 991, Util. L. Rep. P 27157, 2011 WL 2473405 (D.C. App. 2011).

Under the Critical Infrastructures Protection Act of 2001, the term “critical infrastructure” means “systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters.” 42 U.S.C. § 5195c(e). In 2006, FERC Order no. 683 amended the regulations for gaining access to CEII and simplified procedures for obtaining access to CEII without increasing vulnerability of the energy infrastructure and ensuring that access to CEII does not facilitate acts of terrorism.

A utility is not required to obtain FERC or other federal government approval to designate information as CEII. For example, information required by FERC’s Annual Transmission Planning and Evaluation Report, Form No. 715 (“FERC No. 715”), is *de facto* considered CEII and is automatically afforded the heightened protections. FERC No. 715 requires that any transmitting utility that operates integrated (non-radial) transmission facilities at or above 100 kV must annually submit information including but not limited to: Power Flow Base Cases, Transmitting Utility Maps and Diagrams, Transmission Planning Reliability Criteria, Transmission Planning Assessment Practices, and Evaluation of Transmission System Performance. Any utility that submits the required transmission information pursuant to FERC No. 715 does so with the knowledge that, as stated in the Form’s Instructions, FERC “considers the information collected by this report to be CEII and will treat it as such.” *See also* 18 C.F.R. § 141.300(d) relating to the Form and CEII.

Mainland regulators typically do not require a utility that designates material as CEII to follow any process before the federal government to make or support such a designation, and,

further, that the regulator, in its informed discretion, can establish limits on how information that it considers CEII can be accessed.

Furthermore, and regarding the foregoing argument, FERC has ruled on several occasions that GPS coordinates of any project features “qualify as CEII because it provides more than just location.” *See e.g.* Final Rule, Docket Nos. RM02-4-000, PL02-1-000; Order No. 630, Note 31, entered on February 21, 2003 (ruling that FERC considered the global positioning system coordinates of any project features (precise surveyed or GPS coordinates at or above two decimal points of accuracy of equipment and structures) gas information to qualify as CEII because it provides more than just location).⁴

The aforementioned request for relief has been granted in other matters and dockets, and also for requests made under the captioned case, in which PREPA has had to produce information that included CEII, more specifically GPS. For example, two weeks ago PREPA submitted January 13 Motion, which included several statements of works like the Generation Projects SOWs tendered with this motion. The January 13 Motion Generation Projects SOWs included GPS information that PREPA redacted from the public filing and asserted that should remain under seal and declared confidential because, pursuant to federal and local law, it qualified as CEII. After evaluating PREPA’s arguments, on January 21, 2022, the Energy Bureau granted confidential designation and treatment to the GPS information that had been redacted from the public versions of the filing. January 21 Order at pp. 3-5, Sec. III.

Is its respectfully submitted that the redacted GPS information qualifies as CEII and thus, should remain redacted. Furthermore, it is asserted that the redactions made are the manner that least affect the public interest, transparency, and the rights of the parties involved in this

⁴ Federal Register: March 3, 2003 (Volume 68, Number 41); Rules and Regulations, pp. 9857-9873.

administrative procedure. *See*, Act 57-2014 at Sec. 6.15(a). Accordingly, and pursuant to the above, it is respectfully requested that the Honorable Energy Bureau find that the information identified by PREPA as CEII is confidential and that the Secretary of the Energy Bureau be directed to keep the confidential CEII under seal.

V. CONCLUSION

WHEREFORE, PREPA respectfully requests the Honorable Energy Bureau to determine that PREPA has partially complied with the January 4 and January 21 orders; to schedule a technical conference to discuss the submitted Generation Projects SOWs, if the Energy Bureau deems it necessary; to determine that the GPS information redacted from the public filing is CEII and thus, confidential information; and to order enter an order directing the Secretary of the Energy Bureau to keep the confidential CEII under seal.

RESPECTFULLY SUBMITTED.

In San Juan Puerto Rico, this 28th day of January 2022.

s/ Maralíz Vázquez-Marrero
Maralíz Vázquez-Marrero
mvazquez@diazvaz.law
TSPR No. 16,187

s/ Katiuska Bolaños-Lugo
Katiuska Bolaños-Lugo
kbolanos@diazvaz.law
TSPR No. 18,888

DÍAZ & VÁZQUEZ LAW FIRM, P.S.C.
290 Jesús T. Piñero Ave.
Oriental Tower, Suite 803
San Juan, PR 00918
Tel. (787) 395-7133
Fax. (787) 497-9664

CERTIFICATE OF SERVICE

It is hereby certified that I have filed the foregoing with the Clerk of the Energy Bureau using the electronic filing system using <https://radicacion.energia.pr.gov/login> and also, that I have served a copy on LUMA Energy, LLC and LUMA Energy ServCo, LLC through their counsel of record at laura.rozas@us.dlapiper.com and margarita.mercado@us.dlapiper.com.

In San Juan Puerto Rico, this 28th day of January 2022.

s/ Katuska Bolaños-Lugo
Katuska Bolaños-Lugo

Attachment A

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



San Juan Power Plant
Units 5 & 6 New High-Pressure Pumps
Permanent Repairs

12/6/2021



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Units 5 & 6 – New High Pressure Pumps
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Central Plant Unit 5 & 6 High-Pressure Pumps	<div></div> <div></div>

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

This project related to the procurement of High-Pressure Pumps for Units 5 & 6 is necessary because the Central Plant in San Juan requires replacement of the existing high pressure boiler feed water pumping system in order to assure the efficient and reliable operation of both units, 5 and 6.

Section 3. Scope of Work

3.1. Scope of Work Description



This project will mainly consist of the procurement and delivery of two high pressure water centrifugal pumps for Units 5 and 6 of the San Juan Central Plant.

I. General

- A. To engineer as required, and supply two new high pressure feed water pumps, including technical services as required by PREPA for their installation and commissioning.
- B. The pump required will be used for heat recovery steam generator high pressure feed water process.
- C. The pump shall be new and accompanied by its test certificate.
- D. The pump shall include non-metallic wear rings to improve galling resistance during start up and shut down of pump.
- E. The existing pump concrete base, existing motor, existing oil lubrication shaft pump and skid and existing recirculation valve will be used by the new required pump. Critical installation measures should be the same as existing ones. The pump shall be able to replace any of the existing pumps without modification to connection points. In other words, the pump shall be drop in or direct fit.
- F. The pump must be manufactured by a manufacturer specialized in boiler feed water pumps, with at least 15 years in the manufacture and repair of these and shall submit literature in their proposal along with the offer.
- G. PREPA will only consider pumps manufactured in the United States of America.
- H. The delivery time once the order is awarded will be no more than 40 weeks, including evidence attested and the delivery at the plant.
- I. The supplier must provide an authorized factory technician to supervise the installation of the pump and the start-up. The factory technician shall consider not less than seven (7) days in the plant for such services.
- J. The supplier, together with the manufactures, must offer a warranty of 18 months from its receipt by PREPA shipment or 12 months from its start-up, whichever comes first.
- K. By PREPA:
 - a. Lubrication skid
 - b. Motor (210.4 AMPS, 1750 HP, 4160 VOLTS, 3 PHASE, 3585 RPM, FRAME WP11, ANSALDO, TYPE W 500 Y2, S/N 67846).
 - c. Installation
 - d. Oil Pump/Coupling
 - e. Driver Coupling

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint



3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. **Preliminary Architectural and Engineering (A&E)**

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. **Codes, Specifications, and Standards**

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. **Industry Standards**


Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$M)
Procurement & Delivery of 2 High Pressure Water Pumps (Unit 5/Unit 6)	\$1,600,000.00
Total Project Estimated Cost	\$1,600,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.



Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

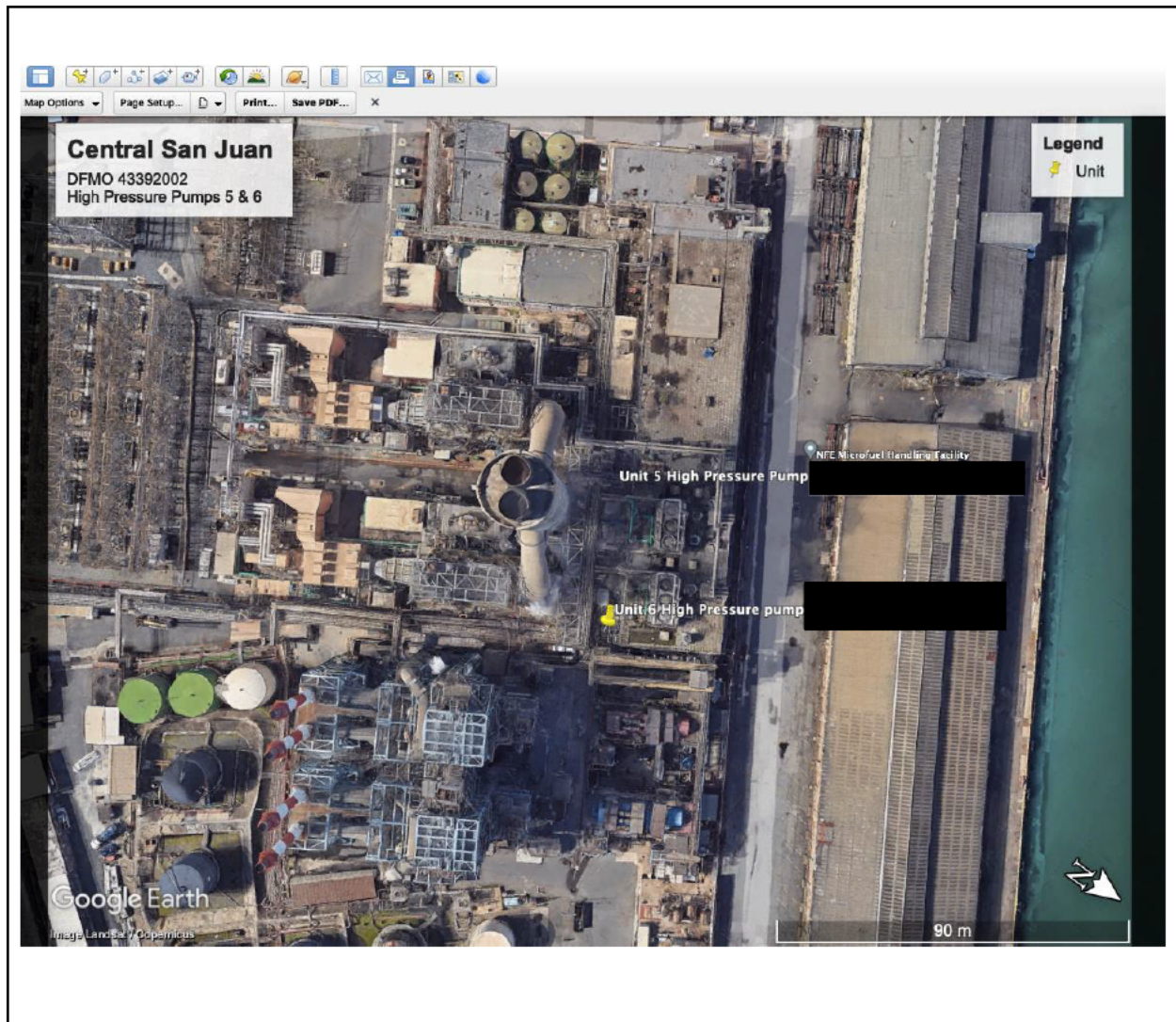
10.1. Project Detailed Cost Estimates

- Please see attached supporting documentation:
- Units 5 New High Pressure Pumps- CR 184284 (Equipment description)
- Project 2 - work description and scope

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)



N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

PROJECT NUMBER: 2

Work Name: Units 5 and 6 New High-Pressure Pumps

Work Description:

Procurement and delivery of two high pressure water centrifugal pumps with a capacity of 276.6 cubic meter per hour and technical assistance to PREPA for the installation.

Scope of Work:

To engineer as required, and supply two new high pressure feed water pumps, including technical services as required by PREPA for their installation and commissioning. The pump required will be used for heat recovery steam generator high pressure feed water process. The pump shall be new and accompanied by its test certificate. The pump shall include non-metallic wear rings to improve galling resistance during start up and shut down of pump. The existing pump concrete base, existing motor, existing oil lubrication shaft pump and skid and existing recirculation valve will be used by the new required pump. Critical installation measures should be the same as existing ones. The pump shall be able to replace any of the existing pumps without modification to connection points. In other words, the pump shall be drop –in/direct fit. The bidder must submit dimensional drawings of the pump, including but not limited to: top view, lateral views, inboard view and outboard view. These drawings must be originated and certified by the original manufacturer of the pump by means of which prepa will evaluate and certify that the pump is drop-in/direct-fit. This requirement is compulsory and must be submitted with the proposal. The bidder that breaches this requirement will be considered not respondent to the technical specifications of the requisition. The pump must be manufactured by a manufacturer specialized in boiler feed water pumps, with at least 15 years in the manufacture and repair of these and shall submit literature in their proposal along with the offer. PREPA will only consider pumps manufactured in the United States of America.

The delivery time once the order is awarded will be no more than 40 weeks, including the evidence attested and the delivery at the plant. The supplier must provide an authorized factory technician to supervise the installation of the pump and the start-up. The factory technician shall consider not less than seven (7) days in the plant for such services.

The supplier, together with the manufacturer, must offer a warranty of 18 months from its receipt by PREPA shipment or 12 months from its start-up, whichever comes first.



Benefits:

The boiler feedwater high pressure pumps are Italian original manufacturer Thermomechanics and their functionality is not reliable. Also, their spare parts are highly cost and the time to acquire is longer than other equipment's. Buying other pumps with American OEM specified will bring more reliability, less equipment downtime, cheaper and faster spare parts procurement.

I. GENERAL

- A. TO ENGINEER AS REQUIRED, AND SUPPLY TWO NEW HIGH PRESSURE FEED WATER PUMPS, INCLUDING TECHNICAL SERVICES AS REQUIRED BY PREPA FOR THEIR INSTALLATION AND COMMISSIONING.
- B. THE PUMP REQUIRED WILL BE USED FOR HEAT RECOVERY STEAM GENERATOR HIGH PRESSURE FEED WATER PROCESS.
- C. THE PUMP SHALL BE NEW AND ACCOMPANIED BY ITS TEST CERTIFICATE.
- D. THE PUMP SHALL INCLUDE NON-METALLIC WEAR RINGS TO IMPROVE GALLING RESISTANCE DURING START UP AND SHUT DOWN OF PUMP.
- E. THE EXISTING PUMP CONCRETE BASE, EXISTING MOTOR, EXISTING OIL LUBRICATION SHAFT PUMP AND SKID AND EXISTING RECIRCULATION VALVE WILL BE USED BY THE NEW REQUIRED PUMP. CRITICAL INSTALLATION MEASURES SHOULD BE THE SAME AS EXISTING ONES. THE PUMP SHALL BE ABLE TO REPLACE ANY OF THE EXISTING PUMPS WITHOUT MODIFICATION TO CONNECTION POINTS. IN OTHER WORDS, THE PUMP SHALL BE DROP IN OR DIRECT FIT.
- F. THE PUMP MUST BE MANUFACTURED BY A MANUFACTURER SPECIALIZED IN BOILER FEED WATER PUMPS, WITH AT LEAST 15 YEARS IN THE MANUFACTURE AND REPAIR OF THESE AND SHALL SUBMIT LITERATURE IN THEIR PROPOSAL ALONG WITH THE OFFER.
- G. PREPA WILL ONLY CONSIDER PUMPS MANUFACTURED IN THE UNITED STATES OF AMERICA.
- H. THE DELIVERY TIME ONCE THE ORDER IS AWARDED WILL BE NO MORE THAN 40 WEEKS, INCLUDING THE EVIDENCE ATTESTED AND THE DELIVERY AT THE PLANT.
- I. THE SUPPLIER MUST PROVIDE AN AUTHORIZED FACTORY TECHNICIAN TO SUPERVISE THE INSTALLATION OF THE PUMP AND THE START-UP. THE FACTORY TECHNICIAN SHALL CONSIDER NOT LESS THAN SEVEN (7) DAYS IN THE PLANT FOR SUCH SERVICES.
- J. THE SUPPLIER, TOGETHER WITH THE MANUFACTURER, MUST OFFER A WARRANTY OF 18 MONTHS FROM ITS RECEIPT BY PREPA SHIPMENT OR 12 MONTHS FROM ITS START-UP, WHICHEVER COMES FIRST.
- K. BY PREPA
 - 1. LUBRICATION SKID
 - 2. MOTOR (210.4 AMPS, 1750 HP, 4160 VOLTS, 3 PHASE, 3585 RPM, FRAME WP11, ANSALDO, TYPE W 500 Y2, S/N 67846)
 - 3. INSTALLATION
 - 4. OIL PUMP/COUPLING
 - 5. DRIVER COUPLING

II. EXISTING OPERATIONAL DATA

- A. LIQUID HANDLED
 - 1. DEMINERALIZED WATER
 - 2. SPECIFIC WEIGHT: 0.935 KG/DM³
 - 3. TEMPERATURE: 268 DEG F
- B. CAPACITY: 276.6 M³/H
- C. TOTAL HEAD: 1338 M
- D. EFFICIENCY: ≥ 81.8 %
- E. NHPS AVAILABLE: 8.92 M
- F. ROTATION SPEED: 3585 RPM
- G. PUMP POWER INPUT: 1161 KW
- H. ELECTRIC MOTOR POWER: 1300 KW
- I. ROTATION (SEEN FROM MOTOR SIDE): CLOCKWISE

III. PUMP TECHNICAL SPECIFICATION MINIMUM REQUIREMENTS DATA

- A. PUMP TYPE
 - 1. CENTRIFIUGAL MULTISTAGE PUMP
- B. SERVICE
 - 1. BOILER FEED
- C. SUCTION CASING (ASTM A216 WCB)
 - 1. FURNISH NEW SUCTION HEAD
 - 2. FURNISH AND INSTALL THE HEAD WEAR RING (NONMETALLIC VESPEL).
- D. DELIVERY (DISCHARGE) CASING (ASTM A216 WCB)
 - 1. FURNISH NEW DISCHARGE HEAD
 - 2. FURNISH AND INSTALL THE HEAD WEAR RING (NONMETALLIC VESPEL).
- E. BALANCE DRUM LINER (ASTM A473 TYPE 420)
 - 1. FURNISH A NEW BALANCE BUSHING (INSERT WITH NONMETALLIC VESPEL), WITH HARDWARE/TENSION RING (ASTM A276 TYPE 420)
- F. INTERSTAGE CASINGS (ASTM A105)
 - 1. FURNISH NEW INTERSTAGE CASINGS
 - 2. FURNISH AND INSTALL STATIONARY WEAR RINGS. (NONMETALLIC VESPEL)
 - 3. SETUP AND FINAL MACHINE ID'S FOR PROPER CLEARANCE TO IMPELLER EYE RINGS.
- G. DIFFUSERS (ASTM A743 CA6NM)
 - 1. FURNISH NEW DIFFUSERS
 - 2. FURNISH AND INSTALL STATIONARY WEAR RINGS (NONMETALLIC VESPEL)
 - 3. SETUP AND FINAL MACHINE ID'S FOR PROPER CLEARANCE TO IMPELLER HUB RINGS.

- H. HYDRO TESTING
 - 1. COMPONENT HYDRO TEST PUMPAGE PRESSURE CONTAINING COMPONENTS 3000 PSI FOR 30 MINUTES
- I. SHAFT (ASTM A473 TYPE 420)
 - 1. FURNISH A NEW SHAFT.
- J. MEASURE AND RECORD TIR.
- K. IMPELLERS (ASTM A743 CA6NM)
 - 1. FURNISH NEW IMPELLERS
 - 2. INDIVIDUALLY BALANCE AT 4W/N FOR 3600 RPM SERVICE.
- L. BALANCE DRUM (ASTM A473 TYPE 420)
 - 1. FURNISH A NEW BALANCE DRUM WITH SPLIT RINGS, TENSION RING, SPACER RING & HARDWARE)
- M. ROTOR ASSEMBLY
 - 1. BUILD ROTOR ASSEMBLY COMPLETE.
 - 2. CHECK AND RECORD RUN OUTS.
 - 3. BALANCE AT 4W/N FOR 3600 RPM SERVICE.
- N. STUFFING BOX (ASTM A216 WCB)
 - 1. FURNISH A NEW THRUST END STUFFING BOX.
- O. COOLING JACKET COVERS (ASTM A216 WCB)
 - 1. FURNISH NEW THRUST END AND COUPLING COOLING JACKET COVERS.
- P. SPACER SLEEVES (ASTM A276 TYPE 420)
 - 1. FURNISH SPACER SLEEVES (THROTTLE SLEEVES).
- Q. MECHANICAL SEALS
 - 1. SEALS SHALL BE HOMOGENEOUS; SHALL NOT USE EXTERNAL COOLER TO AVOID TO MIX PROCESS WITH COOLING WATER (JOHN CRANE FLEX SEAL – API PLAN 2/61)
- R. BEARING HOUSINGS (ASTM A536 GR65-45-12)
 - 1. FURNISH UPPER/LOWER HALVES FOR CE & TE HOUSINGS.
 - 2. FURNISH LABYRINTH SEALS FOR BOTH INBOARD AND CE OUTBOARD PENETRATIONS.
 - 3. FURNISH OUTBOARD SEALING RINGS AND END COVER FOR T/E
 - 4. COMMERCIALLY AVAILABLE LEAD FREE BRONZE TO BE SUBSTITUTED AS WELL AS COMMERCIALLY AVAILABLE ALUMINUM ALLOY
- S. RADIAL BEARINGS
 - 1. FURNISH CE AND TE SLEEVE BEARINGS.
- T. THRUST BEARING
 - 1. FURNISH THRUST BEARING PADS AND THRUST DISC AS WELL AS LOCATING SPACERS AND NUT.
- U. COUPLING

1. CUSTOMER TO SUPPLY AND INSTALL COUPLING ASSEMBLY
 2. COUPLING DATA NEEDED FOR VERIFICATION OF DRIVE END SHAFT DETAIL.
- V. TIE RODS/NUTS
1. FURNISH TIE RODS ROLLED THREAD (ASTM A193 GRADE B7)
 2. FURNISH CENTERING BUSHINGS (WASHERS) (42 CRNIMO4 UNI7845)
 3. FURNISH HEX NUTS (42 CRNIMO4 UNI7845)
- W. BOLTING
1. FURNISH NEW BOLTING/DOWEL PINS FOR ASSEMBLY
- X. ASSEMBLY
1. ASSEMBLE PUMP COMPLETE WITH NEW BEARINGS, SEALS, GASKETS, EPDM O-RINGS, ETC.
 2. TORQUE TIE ROD BOLTS APPROPRIATE VALUE (TO BE DETERMINED FROM IOM)
 3. PRESSURE TEST WATER JACKET WITH 29 PSI SHOP AIR FOR 10 MINUTES.
 4. ALIGN AND DOWEL BEARING HOUSINGS.
 5. INSTALL MECHANICAL SEALS AND PRESSURE TEST PUMP WITH 29PSI SHOP AIR FOR 10 MIN.
 6. TAG WITH JOB NUMBER AND ROTATION.
 7. PAINT PUMP WITH HIGH TEMP ALUMINUM AND BEARING HOUSINGS.
 8. MANUFACTURE ROBUST SHIPPING SKID AND PREP FOR SHIPMENT.
 9. PERFORM WITNESSED PERFORMANCE TEST.
- Y. STARTUP
1. T/A STARTUP SUPPORT
- Z. PUMP PERFORMANCE
1. THE PUMP DUTY POINT SHALL BE OPTIMIZED TO ACHIEVE PUMP BEP AT PREPA SJ PROCESS CONDITIONS.
 2. NON-GALLING VESPEL NONMETALLIC WEAR RINGS.
- AA. FAT
1. INCLUDES, WITNESSED PERFORMANCE TEST AT TESTING FACILITIES

IV. INSTALLATION AND STARTUP ASSISTANCE SERVICE

A. PROVIDE A MINIMUM OF ONE (1) FACTORY TECHNICIAN, ALSO KNOWN AS A TECHNICAL ADVISOR (TA) TO FULLY ASSIST AND PROVIDE GUIDANCE TO PREPA PERSONNEL ON INSTALLATION, START-UP AND COMMISSIONING. SUPPLIER SHALL PROVIDE TECHNICAL SUPPORT PERSONNEL TO GUIDE PREPA ON THE INSTALLATION AND START-UP, AND OEM ENGINEERING TECHNICAL PUMP PERFORMANCE EVALUATION THAT INCLUDE OEM PUMP AND LEVEL IV VIBRATION ANALYST THAT SHALL OVERSEE, BUT NOT LIMITED TO: VIBRATIONS, ACOUSTICS AND OPERATION POINT ON THE PUMP CHARACTERISTIC CURVE AND SYSTEM CURVE. TA SHALL BE AVAILABLE FOR A MINIMUM OF SEVEN (7) CONSECUTIVE DAYS UPON REQUEST BY PREPA. IF THE TA IS REQUIRED AT THE SITE FOR MORE DAYS DUE TO A NON-CONFORMANCE OF THE SUPPLIER'S OBLIGATIONS, THE SUPPLIER SHALL BE FULLY RESPONSIBLE FOR THE TA'S EXTENDED COSTS. PROPOSAL SHALL INCLUDE ALL TA'S COSTS AND EXPENSES INCLUDING, BUT NOT LIMITED TO: TRAVEL COSTS, PERDIEM, LODGING, INSURANCES, (STATE INSURANCE FUND – CFSE), WEEKEND TRAVEL AND RATES, ETC.

NOTES:

1. THE PUMP MUST BE MANUFACTURED AND SUPPLIED IN THE UNITED STATES OF AMERICA (USA), INCLUDING THE SERVICE OF ADVICE AND TECHNICAL ASSISTANCE, AS WELL AS AVAILABILITY OF SPARE PARTS.
2. ALL CASTED AND CRITICAL FABRICATED OR MACHINED COMPONENTS MANUFACTURED IN USA
3. MTR CERTIFICATE FOR CASTED PARTS AND SHAFT
4. ASSEMBLED AND TESTED IN USA
5. ISO 9001 CERTIFIED SHOP
6. WITNESSED PERFORMANCE TESTED
7. FULLY LOCAL SUPPORT ON PARTS AND SERVICES

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



Air Preheater Maintenance and Replacement
San Juan Power Plant, U.7

1/20/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Power Plant, U.7 – Air Preheater Maintenance and Replacement
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Power Plant, Unit 7	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Unit 7 of San Juan Power Plant needs an Air Preheater Maintenance and Replacement. Work consists of the removal and replacement of existing air-preheaters cold and hot section's baskets, sector plates, adjusters, static seal, axial plates, among other components, and repair air heater out casing. This work is important to remove 30 MW limitation on generation due to high temperatures on the exhaust gases.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Air Preheater Maintenance and Replacement of unit 7 at the San Juan Power Plant will consist of the following:



- A. Replacement of air pre-heater components:
 - Hot Baskets Replacement
 - Remove the old intermedia baskets.
 - Remove and relocate the intermedia baskets located in the hot baskets area to the intermedia basket area, per original design.
 - Complete Set of Seals Replacement including calibration.
- B. Repair and maintenance of the following air heater components:
 - T-bar and Curve Angle inspection and maintenance.
 - Radial and Axial Sector Plates inspection and maintenance.
 - Inspection and repair of the Radial and Axial Statics Seals.
 - Inspection and maintenance of the Radial and Axial Sector Plates Adjusters.
 - Inspection and maintenance of the Rotor Pin Rack. Including liquid penetrant test to welds.
 - Rotor diaphragms and baskets holder's inspection and maintenance. Including liquid penetrant test to welds.
 - Cold Bearing internal inspection, clearance between outer race and roller verification, inspection and replacement (if necessary) of packing, oil change.
 - Hot Bearing internal inspection, clearance between outer race and roller verification, inspection and replacement (if necessary) of packing, oil change, replace oil and filters, inspection and maintenance to bearing rockers.
 - Rotor Drive unit's visual inspection. Multi point lubrication, coupling grid member inspection and lubrication, oil replacement.
 - Air heater sootblowers lance inspection. Repair lance cracks and wear nozzles. Reconditioning of lance support structure and rollers.
 - Washing device piping and nozzles maintenance.
 - Repair the gas and air hot end stainless steel 304 expansion joints, if necessary.
 - Repair the gas and air cold end stainless steel 304 expansion joints, if necessary.
 - Diaphragms end plates inspection and repair.
 - Air Heaters Outer Casing inspection and repairs. • Structural elements and stiffeners inspection and maintenance.
 - Hot and cold connecting plate assembly inspection and repair.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)


Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Inspection, Maintenance and Replacement	\$600,000.00
Total Project Estimated Cost	\$600,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification



Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

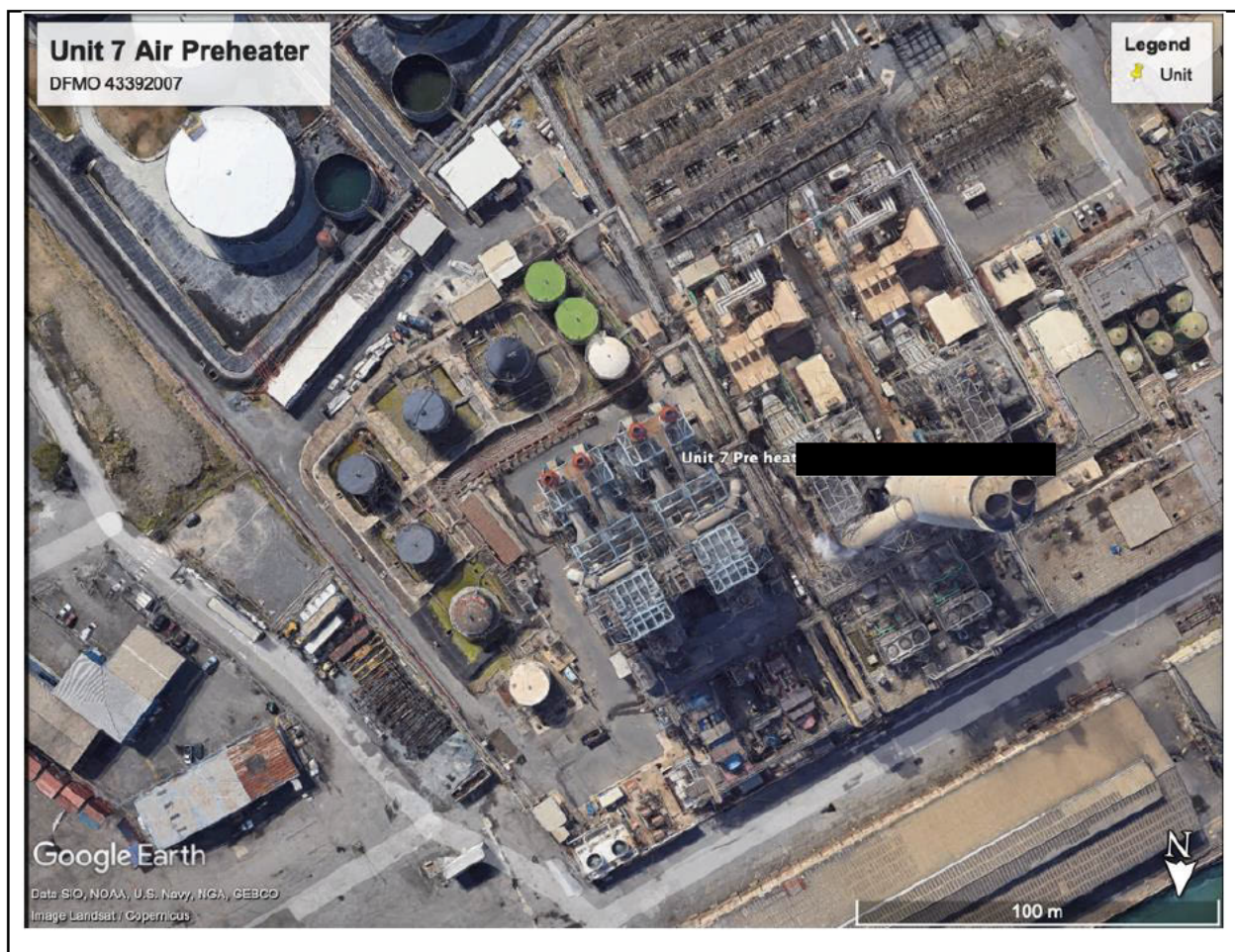
10.1. Project Detailed Cost Estimates

<p>Please see attached the following:</p> <ul style="list-style-type: none">• Scope of Work and Benefits
--

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)



N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

PROJECT NUMBER: 7

Work Name: Unit 7 Air Preheater Maintenance and Replacement

Work Description:

Removal and replacement of the existing air-preheaters cold and hot section's baskets, sector plates, adjusters, static seal, axial plates among other components and repair air heater out casing.

Scope of Work:

A. Replacement of air pre-heater components:

- Hot Baskets Replacement
- Remove the old intermedia baskets.
- Remove and relocate the intermedia baskets located in the hot baskets area to the intermedia basket area, per original design.
- Complete Set of Seals Replacement including calibration.

B. Repair and maintenance of the following air heater components:

- T-bar and Curve Angle inspection and maintenance.
- Radial and Axial Sector Plates inspection and maintenance.
- Inspection and repair of the Radial and Axial Statics Seals.
- Inspection and maintenance of the Radial and Axial Sector Plates Adjusters.
- Inspection and maintenance of the Rotor Pin Rack. Including liquid penetrant test to welds.
- Rotor diaphragms and baskets holder's inspection and maintenance. Including liquid penetrant test to welds.
- Cold Bearing internal inspection, clearance between outer race and roller verification, inspection and replacement (if necessary) of packing, oil change.
- Hot Bearing internal inspection, clearance between outer race and roller verification, inspection and replacement (if necessary) of packing, oil change, replace oil and filters, inspection and maintenance to bearing rockers.



- Rotor Drive unit's visual inspection. Multi point lubrication, coupling grid member inspection and lubrication, oil replacement.

PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

- Air heater sootblowers lance inspection. Repair lance cracks and wear nozzles. Reconditioning of lance support structure and rollers.
- Washing device piping and nozzles maintenance.
- Repair the gas and air hot end stainless steel 304 expansion joints, if necessary.
- Repair the gas and air cold end stainless steel 304 expansion joints, if necessary.
- Diaphragms end plates inspection and repair.
- Air Heaters Outer Casing inspection and repairs.
- Structural elements and stiffeners inspection and maintenance.
- Hot and cold connecting plate assembly inspection and repair.

Benefits:

Remove 30 MW limitation on generation due to high temperatures on the exhaust gases.

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



Repairs to Nautilus Water Treatment System
San Juan Power Plant

1/20/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Power Plant – Repairs to Nautilus Water Treatment System
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Power Plant	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

The San Juan Power Plant needs to realize some repairs to its Nautilus Water Treatment System. Work consists of structural repairs to steel floor and walls, and application of interior and exterior anti-corrosive coating. This work is important for the reliability and continuity capacity of the process water treatment in the San Juan Power Plant generating units, in order to be able to keep them in service.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the repairs to the Nautilus Water Treatment System of the San Juan Power Plant will consist of the following:

**A. Mechanical**

1. Furnish and install a new transmission for the trolley.
2. Install a new transmission for the flocculators supplied by PREPA.
3. Installation of existing FRP divider panels.
4. Restoration and install a metal bridge above the flocculators.
5. Installation of both mixers including: impellers, motors and transmissions supplied by PREPA.
6. Paint carbon steel structural members, galvanized grating, and galvanized handrails.
7. Restoration and put into service the metal trolley and their components. Includes sand blasting of metal surfaces, recoat the FRP piping with a compatible OEM resin and painting of metal surfaces with the Sherwin Williams three steps as specified in the existing tank shell. (Primer Epoxy Mastic Aluminum primer, Macropoxy HS Primer and Polixiloxane XLE80 final coat).
8. Restoration and installation of the flocculators:
 - a. Wood components supplied by: Front (20) and Rear (16) flocculator paddles supplied by PREPA.
 - b. Ball wheels supplied by: Pillow block bearings (3) supplied by PREPA.
 - c. Division panels supplied by: Flocculator baffle planks (10) supplied by contractor and following Drwg. P5243-59 specifications.
9. Installation of existing fill films.
10. Touch up and repair interior coating in some areas with Sherwin Williams Duroplate 325 coating or PREPA approved.
11. Furnish and Install four (4) each 6" butterfly valves at tank bottom. Valve body and discs shall be on CPVC material, Teflon gaskets and stainless- steel bolts and nuts.

B. Electrical

1. Install two (2) new DC electrical motors:
 - a. Flocculator motor supplied by PREPA.
 - b. Trolley motor supplied by contractor.
2. Replace all electrical conduit with PVC coated rigid pipe.
3. Furnish and replace all electrical limit switches.
4. Replace all electrical switches, push buttons, VFD and components in the control panel for Nautilus # 1 and put into service. The existing stainless-steel junction box will be reused.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)


Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Mechanical installation and restoration, and Electrical installation and replacement	\$250,000.00
Total Project Estimated Cost	\$250,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.



Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments



10.1. Project Detailed Cost Estimates

Please see attached the following:

- Scope of Work and Benefits

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

PROJECT NUMBER: 8

Work Name: Repairs to Nautilus Water Treatment System

Work Description:

Structural repair of steel floor, walls, application of interior and exterior anti-corrosive coating.

Scope of Work:

A. Mechanical

1. Furnish and install a new transmission for the trolley.
2. Install a new transmission for the flocculators supplied by PREPA.
3. Installation of existing FRP divider panels.
4. Restoration and install a metal bridge above de flocculators.
5. Installation of both mixers including: impellers, motors and transmissions supplied by PREPA.
6. Paint carbon steel structural members, galvanized grating, and galvanized handrails.
7. Restoration and put into service the metal trolley and their components. Includes sand blasting of metal surfaces, recoat the FRP piping with a compatible OEM resin and painting of metal surfaces with the Sherwin Williams three steps as specified in the existing tank shell. (Primer Epoxy Mastic Aluminum primer, Macropoxy HS Primer and Polixiloxane XLE80 final coat)
8. Restoration and installation of the flocculators:
 - a. Wood components supplied by: Front (20) and Rear (16) flocculator paddles supplied by PREPA
 - b. Ball wheels supplied by: Pillow block bearings (3) supplied by PREPA
 - c. Division panels supplied by: Flocculator baffle planks (10) supplied by contractor and following Drwg. P5243-59 specifications.
9. Installation of existing fill films
10. Touch up and repair interior coating in some areas with Sherwin Williams Duroplate 325 coating or PREPA approved.
11. Furnish and Install four (4) each 6" butterfly valves at tank bottom. Valve body and discs shall be on CPVC material, Teflon gaskets and stainless- steel bolts and nuts.



B. Electrical

PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

1. Install two (2) new DC electrical motors
 - a. Flocculator motor supplied by PREPA
 - b. Trolley motor supplied by contractor
2. Replace all electrical conduit with PVC coated rigid pipe.
3. Furnish and replace all electrical limit switches
4. Replace all electrical switches, push buttons, VFD and components in the control panel for Nautilus # 1 and put into service. The existing stainless-steel junction box will be reused.

Benefits:

Reliability and continuity capacity in the process water treatment of the generating Units to be able to keep the Units in service.

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



**Replacement of Two Uninterruptible Power Supply
Systems for Units 7 and 8**

1/20/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Power Plant, Unit 7 & 8
PREPA Project Number	1010

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>


PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Power Plant, Unit 7 & 8 Control Room	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Unit 7 & 8 of the San Juan Power plant are in operation to maintain the regulation and stability of the electrical system. Control rooms for Unit 7 & 8 need the replacement of two Uninterruptible Power Supply Systems in order to provide backup power in case of any voltage fluctuation or fault in the system. The current UPS are obsolete, and are not operating at their maximum capacity, which has caused some shutdowns on the system which affects the operation of both units.

Section 3. Scope of Work

3.1. Scope of Work Description



The scope of work for the Replacement of Two UPS Systems for Unit 7 & 8 of the San Juan Power Plant will consist of the following:

This is a Turnkey Project where the Contractor shall be responsible for the purchase, delivery, installation, testing and placing in successful service two new Uninterruptible Power Supply Systems (UPS) for San Juan Steam Plant Units 7 and 8.

- Proposed UPS systems shall be designed for use with existing San Juan Steam Plant three phase 480 Vac bus supply, 120 Vac alternate supply line and 130 Vdc battery bank supply. Proposals offering UPS systems with internal batteries shall not be accepted and shall be rejected.
- UPS shall be designed for power plant applications, complying with these specifications and shall have a 15-20 years design life. UPS designed for use on data network centers, telecommunications and/or office applications shall not be considered and shall be rejected.
- General data of UPS systems with operating parameters different from the required on this specification shall be rejected. Data from European systems shall not be allowed, unless data is in compliance with the required US systems parameters.
- The Contractor shall furnish all labor and technical advisory services, tools, materials, equipment, facilities, supervision, job administration, and superintendence required, as requested by PREPA and shall perform removal and installation works expeditiously and to the entire satisfaction of PREPA's representative.
- Bidders shall visit the site to inspect the area with the aid of PREPA representative, to learn about all the details of the scope of work, particularly those concerning about space available for UPS cabinets, location of existing equipment, actual layout of cable trays, electrical conduits, power cables run and circuit breakers.
- UPS systems shall be delivered within 180 consecutive days after order award.
- The removal, installation, start-up and placing in successful service of each UPS system shall be completed within sixty consecutive days from the commencement date. Installation works includes :
 - Replacement of 480 Vac Cables from emergency UPS
 - Replacement of 130 Vac Cables from emergency UPS
 - Installation of external electrical piping for UPS Cables
 - Training on UPS operation

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)


Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Replacement, installation and training	\$450,000.00
Total Project Estimated Cost	\$450,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.



Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

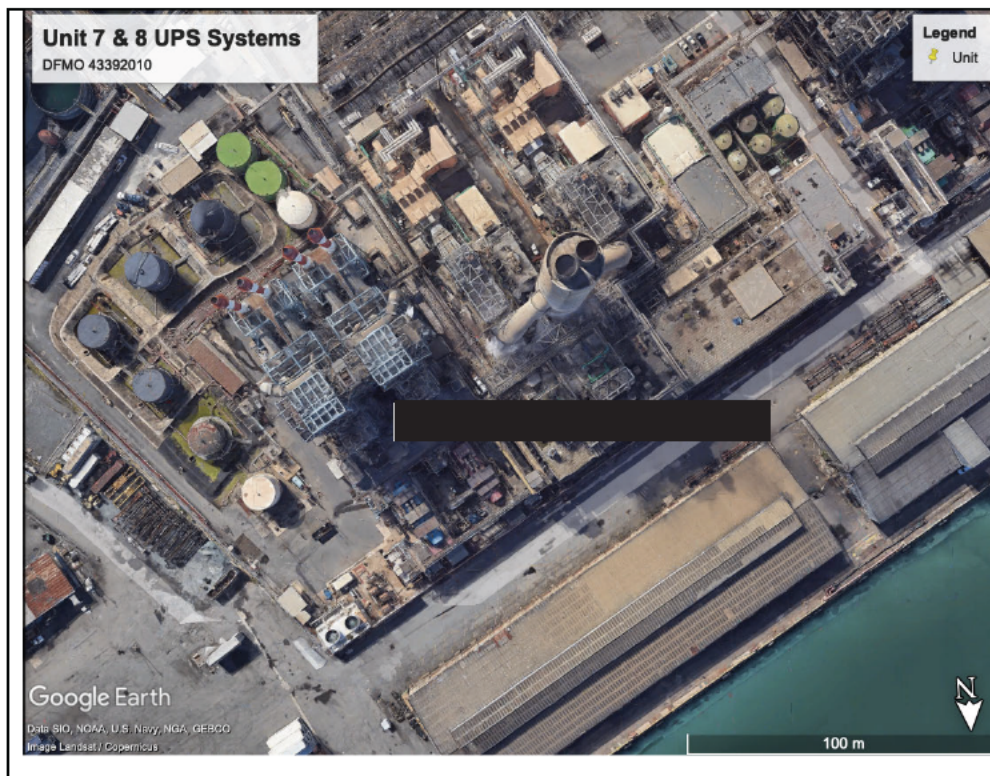
Please see attached the following:

- Memo Justificacion PREB 1010
- Memo solicitud de compra
- Technical Specs- PREB 1010

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures





10.4. Other: (Please Describe)

N/A

ESTADO LIBRE ASOCIADO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA DE PUERTO RICO

DIRECTOR DE GENERACIÓN SAN JUAN, PUERTO RICO

2016 DEC 19 PM 1:29

www.aeepr.com



AEE-RECIBIDO

JEFE DIV INGENIERIA Y
SERVICIOS TECNICOS

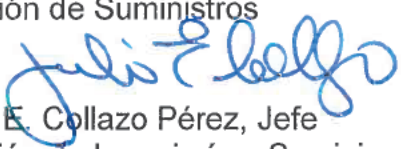
2016 DEC 15 PM 2:13

APARTADO 364267
CORREO GENERAL
SAN JUAN, PR 00936-4267

JT-02386
DG-206045

14 de diciembre de 2016

Ramón O. Caldas Pagán, Jefe
División de Suministros


Julio E. Collazo Pérez, Jefe
División de Ingeniería y Servicios Técnicos

JUSTIFICACIÓN PARA LA COMPRA, INSTALACIÓN Y PUESTA EN SERVICIO
DE DOS *UNINTERRUPTIBLE POWER SUPPLY SYSTEMS (UPS)* PARA LAS
UNIDADES 7 Y 8 DE LA CENTRAL SAN JUAN, PROYECTO TS-E30-16,
REQUISICIÓN 174762

Los sistemas de UPS de las Unidades 7 y 8 de la Central Generatriz San Juan tienen más de quince años de servicio continuo. La mayoría de sus componentes están obsoletos, por lo que resulta difícil y onerosa la adquisición de piezas de reemplazo para su reparación. Estos equipos estaban coordinados para reemplazarse en el 2013, pero su compra se detuvo porque no se justificaba la adquisición de equipos para unidades generatrices declaradas por la Autoridad como *Limited Use* bajo la reglamentación de la EPA que regula el Estándar de Mercurio y Gases Tóxicos (MATS). Sin embargo, al día de hoy, las Unidades 7 y 8 continúan en servicio para mantener la regulación y estabilidad del sistema eléctrico y los UPS continúan averiados y sin piezas de reemplazo.

En los últimos meses han ocurrido varios disparos debido a que los UPS están operando por la fuente alterna, sin ofrecer ninguna protección de resguardo de emergencia, por lo que cualquier fluctuación de voltaje o avería externa afecta directamente la estabilidad y operación de ambas Unidades. Por esta razón, la Central Generatriz San Juan solicitó al Departamento de Eléctrica e Instrumentación que procediera con la compra e instalación de dos UPS nuevos.

Por lo expuesto anteriormente, solicitamos que se autorice la compra de dos sistemas de UPS de 15KVA para las Unidades 7 y 8, así como la opción de compra de un UPS de 20KVA para reemplazar el UPS de emergencia 7 y 8. Esta opción se incluyó en el alcance del proyecto por si se decide añadir

posteriormente la compra e instalación del equipo durante el proceso de evaluación de solicitud de precios.

El costo estimado del proyecto es de \$450,000 y se utilizará la cuenta de operación de la Central Generatriz San Juan para generar la requisición en lo que se coordinan los fondos necesarios para el proyecto.

De necesitar información adicional, favor de comunicarse con Roberto J. Colón, Ingeniero Gerencial Sénior al 5184.

^{RCM}
MSV/RCM/mes

Aprobado

UH
ag

pn. Val
Martín Pérez García
Director de Generación

Recomendado

14/Dic/2016
Antonio J. Kalil Carrión
Jefe Central Generatriz San Juan

ESTADO LIBRE ASOCIADO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA DE PUERTO RICO
SAN JUAN, PUERTO RICO

www.aeepr.com



APARTADO 364267
CORREO GENERAL
SAN JUAN, PR 00936-4267

7 de noviembre de 2016

Julio E. Collazo Pérez
Jefe, División de Ingeniería y Servicios Técnicos


Antonio J. Kalil Carrión
Jefe Central Generatriz San Juan

**Adquisición e Instalación de *Uninterruptible Power Supply* (UPS)
y Servicio de Instalación para las Unidades 7 y 8**

RECIBIDO
JEFE DIV INGENIERIA Y
SERVICIOS TECNICOS
2016 NOV 14 PM 2:31

Las Unidades 7 y 8 de la Central Generatriz San Juan cuentan con unos suplidores de potencia ininterrumpible (UPS) los cuales se encuentran averiados. Cada vez que un disturbio afecta la barra de emergencia de las Unidades 7 y 8 de forma tal que se quedan sin potencia, se apaga el Sistema de Control Distribuido *Foxboro* (DCS) por sus siglas en inglés. Ese control incluye el *Burner Management System* (BMS) y el secuencial de eventos. También se queda sin potencia el sistema de control de turbina *Mark VI*. En ocasiones ha causado disparo de las unidades y en esos casos, se pierde la información del secuencial de eventos que se reporta al DCS.

Las Unidades 7 y 8 la Autoridad las declaró *Limited Use* bajo la reglamentación de EPA que regula el Estándar de Mercurio y Gases Tóxicos (MATS). Sin embargo, por la necesidad del Sistema Eléctrico se han dejado en operación ambas Unidades.

Por lo anterior, solicitamos que se trabajen las especificaciones, compra e instalación de dos sistemas de UPS (uno para cada unidad) para las Unidades 7 y 8.

AKC/nmr

c Ing. Víctor Ortiz Pérez
Ing. Héctor Cañón Abuchar
Ing. Miguel Ríos López

TECHNICAL SPECIFICATIONS FOR THE PURCHASE OF TWO UPS SYSTEMS
FOR SAN JUAN STEAM PLANT UNITS 7 AND 8
TS-E30-16

CR-174762 / RFP-_____

Rev. 12/5/16

1.0 Requirements

This is a Turnkey Project where the Contractor shall be responsible for the purchase, delivery, installation, testing and placing in successful service two new Uninterruptible Power Supply Systems (UPS) for San Juan Steam Plant Units 7 and 8.

- 1.1 Proposed UPS systems shall be designed for use with existing San Juan Steam Plant three phase 480 Vac bus supply, 120 Vac alternate supply line and 130 Vdc battery bank supply. Proposals offering UPS systems with internal batteries shall not be accepted and shall be rejected.
- 1.2 UPS shall be designed for power plant applications, complying with these specifications and shall have a 15-20 years design life. UPS designed for use on data network centers, telecommunications and/or office applications shall not be considered and shall be rejected.
- 1.3 General data of UPS systems with operating parameters different from the required on this specification shall be rejected. Data from European systems shall not be allowed, unless data is in compliance with the required US systems parameters.
- 1.4 The Contractor shall furnish all labor and technical advisory services, tools, materials, equipment, facilities, supervision, job administration, and superintendence required, as requested by PREPA and shall perform removal and installation works expeditiously and to the entire satisfaction of PREPA's representative.
- 1.5 Bidders shall visit the site to inspect the area with the aid of PREPA representative, to learn about all the details of the scope of work, particularly those concerning about space available for UPS cabinets, location of existing equipment, actual layout of cable trays, electrical conduits, power cables run and circuit breakers.
- 1.6 UPS systems shall be delivered within 180 consecutive days after order award.
- 1.7 The removal, installation, start-up and placing in successful service of each UPS system shall be completed within sixty consecutive days from the commencement date. Installation works includes the 480 Vac, 120 Vac and 130 Vdc cable replacements. A letter of mobilization will be issued for each UPS installation.

- 1.8 No matter the information provided by PREPA, Bidders are sole responsible to check and verify in place existing electrical conduit and cable run length, equipment dimensions, available space and access thru control room doors, windows and halls, in order that the new UPS systems can be transported and installed without major modifications to the existing facilities.
- 1.9 During pre-bid meeting visit to the site, Bidders shall thoroughly inspect the area to determine the necessity to perform any repair or reconstruction works during the removal and installation of the UPS systems. Bidders are responsible to expressly notify PREPA on its bid proposal of any and all identified work required or recommended to be performed on site before new proposed equipment installation.

1.10 Optional Works

Bidders shall include in their proposals the cost for the following equipment, works or services. They shall be included as optional works. PREPA reserves the right to include or exclude any of the optional works:

A. 20 KVA Emergency UPS for Units 7 & 8

Bidders shall include the cost to furnish, install and setup in successful service one 20 KVA UPS, to be used as the emergency UPS for Units 7 & 8. Check Article 4.1.B for equipment specifications.

B. 480 Vac and 130 Vdc Cable Replacement

Bidders shall include itemized cost to furnish and install new 480 Vac and 130 Vdc cables for two 15 KVA and one 20 KVA UPS. Cost shall include cable run, electrical conduits, cable trays and other electrical accessories or equipment required to make a direct connection from the switchgear area to the UPS location in the control room. Check Article 12 for cable specifications.

C. UPS Start Up Kits

Bidders shall include the cost to furnish two Start Up Kits including miscellaneous spare parts required for UPS equipment operation. One kit for the 15 KVA UPS and another kit for the 20 KVA UPS. Bidders shall include itemized cost of each Start Up Kits.

D. Training

Bidders shall include in their proposals, as an optional work, a one day training for up to six persons. Training shall be offered on site and shall include a general description of the following: equipment operation, power source, breakers, power drawings, troubleshooting using wiring diagrams, terminal blocks, wiring scheme and replacement of cards and components.

- E. Optional works will be evaluated as part of the main bid. Proposals not including this information shall be declared non responsive and shall be rejected. Proposals will be evaluated as a lump sum price and purchase order will be awarded to one Bidder only.

2.0 General Scope

- 2.1 The Contractor shall perform the removal of existing UPS systems and installation of the new ones, in San Juan Steam Plant Control Room 7 & 8 as per PREPA's authorized representative instructions and following the installation procedures and best practices recommended by the UPS manufacturer and the applicable Electrical Codes and Standards.
- 2.2 All works performed under this specification shall be done in a safe and workmanlike manner and in strict conformance with all local rules, regulations and ordinances of government agencies having jurisdiction over the class of work involved. In addition to any other standards and technical requirements stated elsewhere in this document and unless otherwise specified herein, the equipment shall be designed, manufactured, tested and installed in accordance with the latest standards from the Institute of Electrical and Electronics Engineers (IEEE), Instrument Society of America (ISA), American National Standards Institute (ANSI), National Electrical Manufacturers Association (NEMA), Underwriters Laboratories (UL), National Electric Safety Code (ANSI C2), National Fire Protection Association (NFPA), Environmental Protection Agency (EPA), Occupational Safety and Health Office (OSHO), American Society of Civil Engineers (ASCE), American Society for Testing Materials (ASTM), International Conference Building Officials (ICBO), National Electrical Code (NEC), Puerto Rico Electric Code and to the best practice followed in the electrical and electronics industry. If there is any discrepancy between the requirements of these specifications and the standards mentioned above or of any applicable statute, ordinance or code, then the most stringent requirements shall apply.

3. Qualifications

- 3.1 Bidders shall include with the proposal evidence of the following requirements for PREPA evaluation:

- A. Technical information confirming that the proposed UPS system complies with all the required technical specifications. Submitted information shall be specifically for the proposed equipment and shall include the following, but not limited to:
 - 1. Instruction or operating manual
 - 2. System description
 - 3. Technical data and operation parameters in US English system (60 Hz)
 - 4. Single line diagram showing electrical components and AC/DC power connections
 - 5. Diagrams and pictures showing the monitoring and communication interfaces, control panel, location of electrical components, cooling system and optional equipment
 - 6. Cabinet dimensions
- B. Successful UPS manufacturing experience of ten years or more. Accepted evidence may be one of the following: certification letter from the UPS manufacturer, UPS brochure, technical white paper or other proof stating the requested manufacturer experience.
- C. Contractor Experience for UPS Removal and Installation Works
 - 1. The Contractor or Subcontractor shall perform the installation works under direct supervision of an engineer with a minimum of two years of successful experience installing UPS systems. The Contractor or Subcontractor team shall have at least one expert electrician licensed by the Puerto Rico State Department. Bidders shall include in the proposal, previous experience of recent installation works performed in Puerto Rico or the United States in the last ten to fifteen years.
 - 2. In lieu of the Contractor installation experience, the Contractor may perform the installation works under direct supervision of a Manufacturer's technical advisor or certified representative, using the Contractor or Subcontractor installation team, which shall include at least one expert electrician licensed by the Puerto Rico State Department. In this case, information shall be submitted with Bidder's proposal, showing the experience of the qualified representative. Bidders shall include in the proposal Subcontractor's company name and Manufacturer's technical advisor name that will be in charge of the installation works. The Manufacturer's representative shall be responsible to supervise on site the start-up and set up in successful service of the UPS systems.

4. Equipment to be Furnished

4.1 The Contractor shall supply the equipments and quantities specified below. All UPS systems shall be manufactured by the same company:

A. Two 15 KVA static, continuously energized, on-line, double conversion, pulse wide modulation (PWM) uninterruptible power systems (UPS):

1. 480 VAC, 60 Hz, three phase input to rectifier
2. 130 VDC, input from the station supply bus
3. 120 VAC, 60 Hz, single phase input from alternate supply
4. 120 VAC 60 Hz, single phase output

B. One 20 KVA static, continuously energized, on-line, double conversion, pulse wide modulation (PWM) uninterruptible power systems (UPS):

1. 480 VAC, 60 Hz, three phase input to rectifier
2. 130 VDC, input from the station supply bus
3. 120 VAC, 60 Hz, single phase input from alternate supply
4. 120 VAC 60 Hz, single phase output

Note: Article 4.1.B applies only if optional work for the purchase and installation of the 20 KVA emergency UPS is awarded.

C. Each UPS cabinet shall have the following individual breakers for:

1. Preferred source
2. Bypass input
3. System output
4. Battery disconnect

5. System Configuration

5.1 UPS for San Juan Steam Plant Units shall have the following characteristics:

A. Nominal rating for San Juan 7 and 8 UPS shall be 15 KVA. These UPS's shall consist of an input tracking rectifier fed by the three phase 480 VAC supply, a blocking rectifier to the DC panel, a single phase PWM inverter and an output static switch. The rectifier from the UPS shall maintain its DC output just above the DC amplitude of the 130 VDC station bus, so that the flow of current from this DC station bus is normally blocked. The blocking rectifier shall also be used to insure that the UPS rectifier does not feedback the DC station bus. The PWM inverter of each UPS shall be synchronized to the 120 AC alternate line.

- B. Nominal rating for San Juan 7 & 8 Emergency UPS system shall be 20 KVA. This UPS shall consist of an input tracking rectifier fed by the three phase 480 VAC supply, a blocking rectifier to the DC panel, a single phase PWM inverter and an output static switch. The rectifier from the UPS shall maintain its DC output just above the DC amplitude of the 130 VDC station bus, so that the flow of current from this DC station bus is normally blocked. The blocking rectifier shall also be used to insure that the UPS rectifier does not feedback the DC station bus. The PWM inverter of the UPS shall be synchronized to the 120 VAC alternate line.
- C. Each UPS shall have a third input fed from the 130 VDC battery bank of each unit, herein after called: 130 VDC Station Battery Unit 7, 130 VDC Station Battery Unit 8, respectively. Proposals offering UPS systems designed for use with internal batteries shall not be accepted and proposals shall be rejected.

6. Operation of UPS

- 6.1 UPS arrangement of each unit shall be designed in such way that a 130 VDC external battery bank source shall actuate as a first response in case of failure of the main AC source. However, DC source active time shall be adjustable with a time delay feature in order to provide a transfer to an AC Alternate Source (AC₂) after the system detects its availability. Check San Juan 7 & 8 UPS One Line Diagram for existing power connections.
- 6.2 PREPA prefers a system design in which the DC power source is connected in parallel with the output of rectifier equipment which is fed by a primary 480 VAC three phase source called the preferred source.
- 6.3 Both signals, DC and rectifier outputs, shall be connected to the inverters equipment inputs.
- 6.4 San Juan 7 & 8 Emergency UPS 120 VAC output shall be connected to the alternate inputs of San Juan 7 UPS and San Juan 8 UPS. Check San Juan 7 & 8 UPS One Line Diagram for existing power connections.
- 6.5 The system shall provide smooth bumpless transfer when a transfer from emergency bus to primary AC source occurs, in such a way that there is no possibility of synchronization problems (both voltage shall have the same magnitude and shall be phased before the transfer action).

7.0 Environmental Conditions

- 7.1 The equipment shall be indoor type and capable to operate over a temperature range of 0°C to 40°C, 80% relative humidity, non-condensing.

8.0 Cooling

- 8.1 Forced-air cooling of the UPS cabinets is required. Loss of the cooling fan shall not derate the equipment capacity. PREPA prefer UPS with redundant forced-air cooling systems with air entering the cabinets through the front door with air filters.

9.0 Construction Standards

- 9.1 Existing power cable conduits entry to San Juan UPS cabinets varies in each UPS system. New cabinet design shall allow cable entry from top side area.
- 9.2 Maximum cabinet dimensions of any given cabinet shall not exceed 80" high, 35" deep, or 40" wide.
- 9.3 All cabinets shall be accessed from the front side for service. Cabinets will be placed between existing equipment in the control room area and against a back wall. UPS cabinets with external connections, switches, controls on the back side, or designed for maintenance from the back side shall be rejected.
- 9.4 All cabinets shall be floor mounted, NEMA 1, for indoor use, with steel enclosures suitable for fork lift handling. Doors shall be hinged with locks. All meters and normal controls shall be accessible from the front without having to open the doors, unless specifically stated otherwise.
- 9.5 The enclosure shall be free-standing, floor mount design, with removable side & back panels to provide flexibility of installation configuration.
- 9.6 Cabinet paint shall be ANSI 61 light gray on all cabinet exteriors and interiors. Other color types may be considered at PREPA discretion provided that Bidder's submits complete details and technical data of proposed cabinet paint.
- 9.7 Fungus treatment shall be applied to UPS internal electrical components.
- 9.8 Cabinet power wiring and low level logic wiring shall be as follows:
 - A. Power wiring shall use XHHW insulation or approved equal which can withstand a vertical flame test.
 - B. All power wires shall be terminated with pressure crimped, ring type terminals.

- C. All communications and/or control wiring shall use ribbon type cable, fiber optic or other high level type cable with noise immunity and EMI/RFI protection. Crimped ring terminals shall be used on individual conductors. All customer connections shall be to terminal blocks or equivalent and shall be clearly and permanently marked.
- D. Printed circuit control boards shall be conformably coated to withstand moisture. Each printed circuit board shall have silk screened reference designations for all components and connectors, which are visible and which correspond to the Manufacturer's schematics and assembly drawings.

10.0 Equipment

10.1 Uninterruptible Power System (UPS)

A. UPS Electrical Characteristics:

- 1. 480 VAC, 3 phase normal input power
 - a. Nominal Voltage: 480 VAC, 60 Hz, 3 phase, 3 wire + ground.
 - b. Voltage Range: $\pm 10\%$ for tracking capability. +10% to -20% for operation without the station DC source
 - c. Frequency: 60 Hz $\pm 5\%$
 - d. Response to current changes: Current ramp up to full load in 15 seconds.
 - e. Current Limit: Not to exceed 125% of full load nominal current
 - f. Power Factor: 0.75 lagging at nominal input voltage or better.
- 2. 130 VDC Input from San Juan Steam Plant Station Bus
 - a. Nominal Voltage: 130 VDC from San Juan battery banks
 - b. Voltage Range: 105 VDC to 140 VDC for tracking capability of rectifier. Rectifier shall change its output voltage to be 2 VDC greater than station bus in normal operation. There

shall be no DC current input from station bus to the UPS in normal operation.

- c. The system shall use blocking diodes and DC breaker disconnect to connect to, and disconnect from the DC station bus.
 - d. No DC current feedback to DC station bus shall be allowed at any time.
3. AC alternate input source
- a. Nominal Voltage: 120 VAC, 60 Hz, single phase, 2-wire
 - b. Voltage Range: $\pm 10\%$ of nominal
4. Output power characteristic
- a. Voltage: 120 VAC, 60 Hz, single phase, 2-wire
 - b. Frequency: 60 Hz $\pm 0.1\%$
 - c. Power Rating: 20 KVA at 0.75 power factor for the instrument bus or better.
 - d. Voltage Regulation: $\pm 2\%$ nominal
 - e. Voltage Adjustability: $\pm 5\%$
 - f. Voltage Total Harmonic Distortion: 5% THD maximum on the output voltage waveform for any connected load

B. Rectifier Portion of UPS

1. Power Requirements:
- a. Input Voltage: 120 VAC, 60 Hz, single phase, 2-wire
 - b. Input Voltage Range: +10%, -20%
 - c. Nominal Output Voltage: 130 VDC blocking capability to keep it 2 VDC maximum above the DC station bus
 - d. Regulation: $\pm 1\%$ from 10% load 100% load

2. The rectifier shall consist of an input circuit breaker, an isolation transformer, surge suppressor, and a solid-state phase-controlled rectifier with control circuitry to provide constant voltage and constant current regulation and a circuit to control the start up current based on a ramp.

3. Overcurrent Protection

The input of the rectifier shall be protected by an automatic circuit breaker with breaker position indicator and fast acting current limiting fuses.

4. Rectifier Input Isolation Transformer

- a. Transformer shall be a three phase isolation type with copper windings. UPS with transformerless designs shall be rejected.
- b. The transformer windings shall be designed with extra leakage reactance to minimize the distortion of the line input power due to thyristors (SCR) commutations.

5. Surge Suppressors

The rectifier shall be furnished with surge suppressors on the secondary side of the input transformer to assure proper operation of the UPS module.

6. Control Circuitry

Whenever AC power is applied to the rectifier, the control circuitry shall gradually ramp up the output current over a period of approximately 15 seconds to allow gradual loading of the normal input AC power source.

7. The rectifier shall be a full wave, power rectifier which converts the incoming AC power to DC power for complete isolation of the incoming power and reconversion to fully isolated AC power. Line interactive systems shall not be allowed.

- C. Inverter Portion of the UPS

1. Nominal Input Voltage: 130 VDC
2. Input Voltage Range: 105 VDC to 143 VDC

3. Output: 120 VAC, 60 Hz
4. Rating: 15 KVA at 0.8 power factor for normal UPS and 20 KVA at 0.8 power factor for emergency UPS.
5. The inverter shall consist of DC filter capacitors, DC surge protection, a solid-state, transistorized, pulse width modulated (PWM) inverter, an output isolation transformer, an output filter, and control circuitry to provide precise AC voltage regulation and electronically controlled current limiting. The inverter shall use a single phase, 4-way bridge to produce a single phase, high quality sine wave, 120 VAC, 60 Hz \pm 0.1% output voltage.
6. Ferroresonant techniques of DC-AC power conversion shall not be allowed due to poor efficiency and poor transient response characteristics.
7. The inverter shall deliver full power to the load at normal operation by conversion of the DC power to high quality AC power. Stand-by inverter systems where the power is not delivered continuously by the inverter shall not be allowed.
8. Overcurrent Protection

The inverter output shall be protected by electronic current limiter.
9. DC Filter Capacitors

The input of the inverter shall include banks of filter capacitors
10. DC Surge Protection

The inverter input shall have DC surge protection to assure proper operation in the event of surges or spikes on the inverter input.
11. Inverter Output Transformer

The inverter shall be furnished with an isolation type output transformer with copper windings. UPS with transformerless designs shall be rejected.
12. Output Filter

The inverter shall have an output filter to keep the total harmonic distortion (THD) of the output voltage to 5% or less.

13. Control Circuitry

- a. The inverter shall be provided with control circuitry to provide constant AC voltage regulation.
- b. The control circuitry shall electronically limit the output current of the inverter by dropping the output voltage when the output current exceeds a preset limit.
- c. The circuitry shall provide a low voltage initial start-up of the inverter and then ramp up to full output voltage in less than 5 seconds.
- d. The control circuitry shall automatically synchronize and phase-lock the inverter output to the alternate power source as long as the source is within $60 \text{ Hz} \pm 0.5 \text{ Hz}$. If the alternate power source is not within these limits, then the control circuitry shall break synchronization and shall lock to an internal oscillator.
- e. The control circuitry shall interface with a DC low voltage sensor and shall take the inverter out of service at 104 VDC.
- f. Test points shall be provided to facilitate adjustments and diagnosis.
- g. Provisions shall be made for easily testing logic circuitry without operating the power circuits.
- h. PREPA prefer systems with Light Emitting Diodes (LED's) on the circuit boards for verification of proper operation or equipment status.

D. Internal Static Transfer Switch

1. Electrical Characteristics

- a. Inputs: Two 120 VAC, 60 Hz, single phase, 2-wire
- b. Inputs to be synchronized in phase and frequency

- c. Output: 120 VAC, 60 Hz, single phase, 2-wire
 - d. Rating: 15 KVA for normal UPS and 20 KVA for emergency UPS
- 2. The static transfer switch shall consist of two pairs of Silicon Controlled Rectifiers (SCR's) per phase with each pair connected in inverse parallel (back to back). One set of SCR's is connected to the inverter while the other set of SCR's is connected to the alternate, or bypass, power source. The outputs of the two sets of SCR's shall be connected to a common output point to assure power flow to the critical loads.
 - 3. Inverter Failure - If the inverter reaches an operating condition that puts it out of its normal limits due to fast or slow undervoltages, the static transfer switch shall transfer the load to the alternate power source. If the alternate power source is not within normal voltage limits, then the transfer can be inhibited by the operator.
 - 4. Retransfer to Inverter - The static transfer switch shall be capable of automatically transfer the load back to the inverter after the inverter has reestablished its output voltage and has stabilized for a determined time period. Transfer of the load back to the inverter shall be avoided, either if it is initiated manually or automatically, if the two voltage sources are not in phase.
 - 5. Overload - If an overload is detected, the static transfer switch shall operate as described above.
 - 6. Over Current Protection - The inverter and the static transfer switch alternate sources shall be protected by electronic current limiter.
 - 7. Surge Protection - The static transfer switch shall has surge protection on the alternate source side.
 - 8. Transfer Conditions
 - a. The static transfer switch shall transfer from the inverter to the alternate power source on the following conditions:
 - 1. Inverter under voltage of 90% of nominal or less
 - 2. Inverter over voltage of 110% of nominal or more
 - 3. Inverter overload

4. On a manual command

- b. The static transfer switch shall inhibit transfer to the alternate source under voltage of 80% of nominal or less.

9. Automatic Retransfer Conditions

The system shall automatically retransfer the load to the inverter provided all of the following conditions are met:

- a. The inverter and the alternate source voltages are in phase
 - b. Inverter voltage is within +10% of nominal for more than five seconds on all phases
10. Detection Time for Transfer: Maximum detection time for loss of inverter voltage is 1/4 cycle maximum.
11. Transfer Sensing Time: Maximum transfer time for loss of inverter voltage is 100 microseconds.
12. Maintenance Bypass Switch

A manually operated, maintenance bypass switch shall be provided which permits bypassing the critical loads to the alternate AC power source without interruption of power to those loads, and at the same time, electrically isolates the static transfer switch and inverter from the alternate power source for maintenance purposes.

E. UPS Instrumentation Display

- 1. The UPS cabinet shall be provided with a microprocessor based LCD digital display and control panel. A system power flow diagram (Mimic) or screens shall be provided on the LCD panel showing system and control parameters, fusing and accessories.
- 2. Control panel shall be menu driven to select and display status of sub-modules of the system or the complete system. Metering and display shall be real time. Operator controls and monitoring shall be accessible through the display located on the front door cabinet, which can display the following parameters:
 - a. AC input voltage to rectifier in VAC
 - b. AC input amps to rectifier in AAC

- c. DC volts at rectifier output in VDC
- d. AC current at rectifier output in AAC
- e. DC volts at inverter input in VDC
- f. DC amps at inverter input in ADC
- g. AC volts at inverter output in VAC
- h. AC amps at inverter output in AAC
- i. AC volts from alternate source in VAC
- j. AC volts at UPS output in VAC
- k. AC amps at UPS output in AAC
- l. DC volts from battery bank in VDC
- m. AC current from battery bank in ADC
- n. Watts real power output
- o. Frequency

3. Additional features of the monitoring system shall include, but not limited to, the following:

- a. Battery backed up real time clock (time and date stamp)
- b. Alarm History with time and date stamp
- c. Battery backed up, non-volatile memory
- d. Metering of multiple points in the UPS system
- e. Set-points and thresholds set/monitored digitally
- f. Configuration and hardware setup
- g. System Access Security via passwords
- h. Online Help text
- i. MODBUS Communication capability

F. UPS Alarms and Status Indicators

- 1. Loss of AC input to rectifier
- 2. DC bus power
- 3. DC bus power failure
- 4. DC bus low voltage with adjustable set point
- 5. DC bus high voltage with adjustable set point
- 6. AC alternate source failure
- 7. Static Switch on alternate source
- 8. High internal temperature
- 9. Fan failure

G. UPS Controls

The following controls shall be included in the UPS cabinet:

- 1. Rectifier
 - a. Input source automatic circuit breaker

- b. DC station bus disconnect switch
- 2. Inverter
 - a. Inverter Start Push-button
 - b. Inverter Stop push-button
 - c. DC input under voltage shutoff circuit adjustment
 - d. AC output voltage control circuit adjustment.
- 3. Static Transfer Switch
 - a. Transfer Test Switch
 - b. Transfer settings adjustment
 - c. Maintenance Bypass Switch
- 4. Control Panel
 - a. PREPA prefers UPS systems with full color LCD touch screen panels with large digital display (8" x 11"), Mimic flow diagrams and controls.
 - b. The control panel shall incorporate a Self-Diagnostic during start up and shall allow adjustment of the alarm set points.
 - c. The digital panel shall have a real time clock with date/time stamp for all the historical events.
 - d. The digital panel or UPS control system shall provide an RS-232/RS485 serial communications port for downloading all metering, alarm and status information with time stamps for external logging and backup. The equipment shall be provided with the handshaking protocol and all necessary EEPROM based software and MODBUS communication capability for data transfer.
 - e. An optional RS232/RS485 Ethernet converter (RJ45) shall be provided for each UPS for communication via TCP/IP to an external computer, DCS system or Historian using PI software. This equipment will be installed and configured by PREPA.
 - f. MODBUS communication equipment will be installed and configured by PREPA. Ethernet switch is not required to be supplied with the equipment. Contractor is required to supply only UPS MODBUS TCP communication port and serial adapter/converter if applicable.

11.0 Existing UPS Removal Requirements

The extent and general character of the work to be performed in order to remove the existing UPS systems shall be as follows:

- 11.1 The removal of the existing UPS systems and the installation of the new ones shall be included in the base bid price.
- 11.2 The Contractor shall be responsible for the temporary removal and/or modifications of existing doors, walls and window openings in the control room or adjacent areas, to allow proper removal of existing equipment and installation of the new UPS systems and associated equipment. Contractor shall be responsible to furnish and install all the materials and equipment required for these works.
- 11.3 The Contractor shall include all the necessary supervision and labor force to remove and/or relocate all electrical components that may interfere with his work, including the removal of existing UPS external transformers (480/120 Vac), associated breakers, electrical conduits and cables in control room area.
- 11.4 Access to Units 7 & 8 control room area is space limited for the removal and installation of the new UPS systems. For this reason, the Contractor shall be responsible to temporarily remove and re-install the rear access door and galvanized platform balcony in the control room area near Unit 8. Forklift or other equipment may be required for this work.
- 11.5 The Contractor shall be responsible for the removal and disposal within plant premises of all electrical cable, domestic garbage and waste resulting from the removal and installation works. Disposal of existing equipment, accessories and metal scrap will be done by PREPA. The Contractor shall be responsible for the handling and transportation, within the San Juan Steam Plant area, of all the removed equipment to the storage area or container designated by PREPA representative.

12. UPS Installation Requirements

- 12.1 The Contractor shall provide all the necessary engineering design, field engineering, installation and supervision services as required for the installation of the new UPS systems.
- 12.2 The Contractor shall unload the new UPS systems and transport them to the control room area, install the equipment and provide adequate technical supervision during the installation, pre-operational check out and field acceptance testing.

- 12.3 Bidders will have the opportunity to measure and calculate the approximate cable length during pre-bid meeting. No matter the information given by PREPA representative, it's the Contractor responsibility to verify on site actual cable run length and the space available for UPS installation.
- 12.4 The Contractor shall be responsible to relocate Unit 7 UPS system inside the control room area. New UPS cabinet shall be relocated about 15 feet apart and installed near the Foxboro cabinet BC01-BCS. The Contractor shall be responsible to furnish and install new three phase 480Vac, 120Vac and 130Vdc cables for Unit 7 and 8 UPS systems. Bidders will have the opportunity to measure and calculate the approximate cable length during pre-bid meeting. No matter the information given by PREPA, the Contractor is responsible to verify actual cable run length on site.
- 12.5 The Contractor shall be responsible to build and install a new metal housing roof cover for Unit 7&8 Emergency UPS, to protect it against existing water condensation drips in the control room roof area. This housing shall be built using galvanized steel frame members supports and aluminum, galvalume or any other anti-corrosive material rooftop covers. Ceiling area shall be larger than the UPS cabinet. Proposed material and housing design shall be submitted to PREPA representative before installation mobilization for evaluation and approval.
- 12.6 The Contractor shall be responsible to furnish and install new three phase 480 Vac cables for the UPS systems. Three cables per UPS shall be supplied. Existing cables are AWG #4 THHN/THWN/MTW (with Nylon Jacket or Equivalent, 90°C). Bidders shall be responsible to size all electrical cables for the new UPS systems and determine the cable length from the 480 Vac breakers to the existing control rooms UPS cabinet locations.
- 12.7 New 130 Vdc cables shall be furnished and installed for each UPS system. Two cables per UPS shall be supplied. Existing cables are AWG #4/0 THHN/THWN/MTW (with Nylon Jacket or Equivalent, 90°C).
- 12.8 Alternate 120 Vac supply cable for each UPS system shall be furnished and installed by the Contractor. The Contractor shall be responsible to size the electrical cable and determine the length of cable required between the Emergency UPS and each unit UPS. 120 Vac supply cable shall be furnished and installed from the UPS cabinet to the 120 Vac Instrumentation Breaker Panel.
- 12.9 Units 7 & 8 20 KVA Emergency UPS 120 Vac source is located in Units 9 & 10 480 Vac Switchgears area. Existing cables shall be reused and Contractor are not be responsible to replace it.
- 12.10 The Contractor shall be responsible for the installation and routing of the new three phase 480 Vac cables coming from Units 7 and 8 switchgear

breakers via existing cable trays and/or rigid electrical conduits supplied by the Contractor (as required).

- 12.11 Concrete surface cleaning, preparation, reconditioning and cement/mortar bed application works (if applicable) shall be done by the Contractor following PREPA's representative recommendations. This includes also the materials needed to repair and prepare the concrete floor surface for the installation of the new UPS systems.
- 12.12 The Contractor shall provide all the necessary equipment to provide adequate ventilation and dust containment, filtration or extraction during the installation works in the control room area.
- 12.13 Electrical conduits, cabinets, breakers, junction boxes and instrumentation equipment shall be properly installed in order to provide accessibility and facilitate maintenance work.
- 12.14 The Contractor shall select, furnish and install all hangers, anchors, guides, and supports necessary for UPS cabinets, electrical conduits, cable trays, junction boxes and cables. All field hangers shall be designed to avoid interference with other piping hangers, electrical conduits, cable trays or similar objects.
- 12.15 The Contractor shall provide all interconnecting wiring, power and control cables. Multi conductor cables shall be provided where possible. Electrical conduits, flexible conduits fittings and conduits terminals shall be provided as required. All electrical installations shall be made in accordance to the National Electrical Safety Code.
- 12.16 Hot-Dip Rigid Galvanized Conduit (RGC) shall be used according to the cable size and the amount of cables in the run. All fittings, boxes, covers, pull and junction boxes, etc., used with RGC shall be approved for such use. All field cut threads in RGC shall be coated with an electrically conductive and anti-seize compound. Installation shall be done according to PREPA's representative instructions.
- 12.17 The Contractor may re-use existing cable trays and electrical conduits in the switchgear area. New electrical conduits shall be supplied and installed in the control room area to interconnect electrical cables to the new UPS systems. If cable trays or RGC are not available in some areas (indoor or outdoor), the Contractor shall be responsible to furnish and install them. Bidder shall be responsible to determine the cable trays and cable length. New cable trays material and construction shall be similar to the existing ones.
- 12.18 The Contractor shall submit to PREPA representative a drawing of the electrical cables and trays proposed route before the installation mobilization.

- 12.19 It's the Contractor responsibility to perform all engineering calculation for circuit breakers rating, conduit size, connectors and panels associated to this project. Final drawing with proposed design shall be submitted to PREPA for final approval.
- 12.20 The Contractor shall supply all the necessary wires between the existing instrumentation bus and the new one of each unit.
- 12.21 The Contractor shall identify all wires, cabinets, and circuit breakers in accordance with the drawings submitted.
- 12.22 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to all employees of the work, property, material and equipment on or off the site, under the care, custody, or control of the Contractor or any of his subcontractors.

13.0 Tests

- 13.1 After the UPS systems are installed, they shall be tested to verify that they comply with the guaranteed performance.
- 13.2 Prior to performing the system tests, the Contractor shall submit for PREPA's approval, a procedure indicating the tests to be performed.

14.0 Manufacturer Experience

Successful UPS manufacturing experience of ten years or more is required for this project. Accepted evidence may be one of the following: certification letter from the UPS manufacturer, UPS equipment sales brochure, technical white paper or other proof certifying requested manufacturer's experience. Document shall be submitted with Bidder's proposal.

15.0 Technical Advisor Services

The Contractor shall be responsible of the initial test and start up. A Technical Advisor (TA) or certified manufacturer representative shall be present to perform any necessary test after equipment installation and system start up. Bidders shall include in their proposals the cost of these services for each UPS initial tests and equipment start up.

16.0 To be furnished by PREPA

- 16.1 AC/DC power for the equipment and the electric services in the purchaser's station.
- 16.2 Drums or containers for disposal of garbage, waste, construction debris and chemical or hazard residues resulting from the removal and installation works.

17.0 Instruction Manuals, Drawings and Software

- 17.1 Two sets (hard copies) of instruction manuals including all the technical information needed for the installation, tests, operation and repair of the equipment shall be submitted to PREPA when the equipment is delivered. This information shall also include the technical manufacturing design information of the equipment with electrical characteristics and mechanical dimensions. Two digital copies of these manuals shall be provided in CD-ROM format compatible with Adobe Acrobat Reader latest version.

18.0 Warranty

- 18.1 The Contractor shall warrant that the UPS systems will be free from defects in material or workmanship. Minimum guarantee shall be one year after installation and acceptance by PREPA.
- 18.2 During the first year full warranty period the Supplier will, upon written notices by PREPA, fully remedy, free of expense to PREPA, such defects as may develop on said materials, parts or equipment, provided that it has been properly stored, installed, maintained, and operated within the specified parameters. If the equipment is not installed or set in service within the first six months, PREPA requires that the warranty period be extended for eighteen months.
- 18.3 The Contractor shall be responsible to perform any guarantee works (at his own expense) to correct any problem due to the malfunction of the equipment.
- 18.4 Bidders shall guarantee at least ten years availability of spare parts replacements.

19.0 Technical Requirements Fulfillment

The Contractor shall furnish all the equipment and accessories required by this specification and all the requirements, accessories and details to comply with this specification. Any item not specifically mentioned but obviously necessary for proper operation are implied in this specification.

The Contractor shall not take advantage in any way of omissions in the specifications or of minor details not shown on the drawings, which may have been overlooked, but which evidently are essential requisite for the satisfactory performance and completion of the work as intended by this specification.

Government of Puerto Rico
Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339
PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



New Raw Water Rank
San Juan Power Plant, U. 7-10

1/20/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Power Plant, U. 7-10 – New Raw Water Tank
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Power Plant, U. 7-10	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

The San Juan Power Plant needs to acquire a new Raw Water Tank for units 7 to 10. Work consists of removal of the existing steel raw water storage tank, the design and build of a new 173,000 gallons steel raw water storage tank (including interior and exterior coating application), instrumentation system for reading water levels, and improvements to the existing tank's concrete base. This work is important since PREPA will have a brand-new tank whose average useful life will be 20 years, the Power Plant will increase its water reservoirs for energy production by 15 percent, the risk of accidents due to structural failures in the existing tank will be eliminated, and the contamination by metal deposits around the water tanks will be reduced.

Section 3. Scope of Work

3.1. Scope of Work Description



The scope of work for the New Raw Water Tank of Units 7-10 at the San Juan Power Plant will consist of the following:

- Demolition of the existing tank.
- Design and build of a new tank. The dimension of the new tank shall be like the existing (D=35 ft. H=24 ft.). The new tank shall be fitted with a spiral stairway, self-supported umbrella roof, top platform (10 ft. x 6 ft.), level indication, level transmitter, grounding, tank identification, fill control valve arrangement, Units 7&8 water supply isolation valve, Units 9&10 water supply isolation valve, tank drain isolation valve, etc.
- Tank design shall be based on the latest revision of API-650 and ASCE 7-16 code.
- A complete internal and external coating system shall be applied as per specifications.
- Contractor shall be responsible for all required rigging, safety, permits and the appropriate store of the coatings, grit blast material, and equipment.
- The project completion period shall be one hundred fifty (150) calendar days.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)
<i>If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.</i>
Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards



Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$M)
Design and Build of New City Water Tank #1	\$1,000,000.00
Total Project Estimated Cost	\$1,000,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments



Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

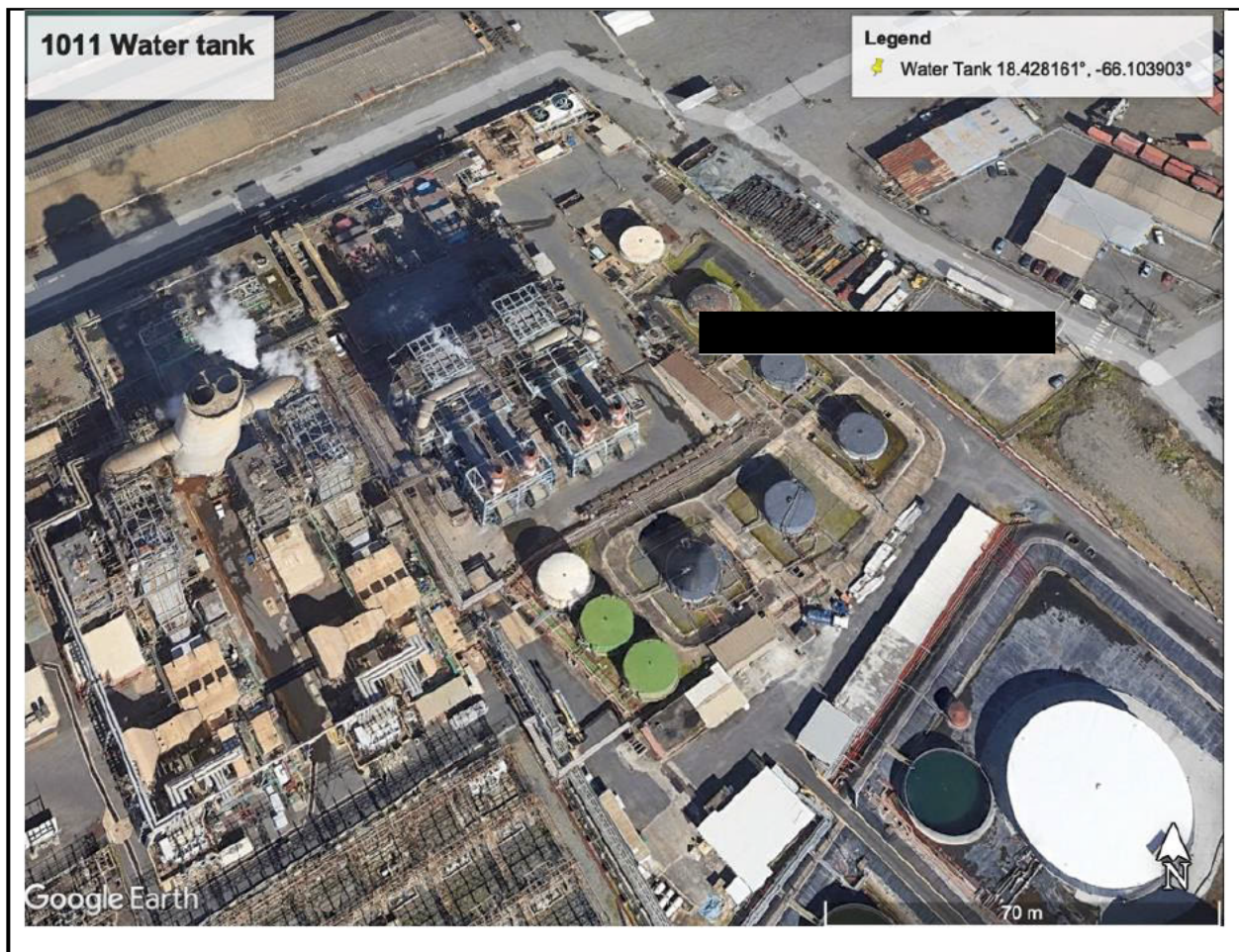
10.1. Project Detailed Cost Estimates

<p>Please see attached the following:</p> <ul style="list-style-type: none">• Scope of Work and Benefits
--

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

PROJECT NUMBER: 11

Work Name: Units 7-10 New Raw Water Tank

Work Description:

Removal of existing steel raw water storage tank. Design and Build of a new 173,000 gallons steel raw water storage tanks, including interior and exterior coating application, instrumentation system for reading water levels and improvements to the existing tank's concrete base.

Scope of Work:

Work shall include all labor, materials, equipment, tools, supervision, and services for the design and build of the New City Water Tank #1 at San Juan Steam Plant. The scope includes, but is not limited to, the demolition of the existing tank, design and build of a new tank. The dimension of the new tank shall be like the existing (D=35 ft. H=24 ft.). The new tank shall be fitted with a spiral stairway, self-supported umbrella roof, top platform (10 ft. x 6 ft.), level indication, level transmitter, grounding, tank identification, fill control valve arrangement, Units 7&8 water supply isolation valve, Units 9&10 water supply isolation valve, tank drain isolation valve, etc. Tank design shall be based on the latest revision of API-650 and ASCE 7-16 code. A complete internal and external coating system shall be applied as per specifications. Contractor shall be responsible for all required rigging, safety, permits and the appropriate store of the coatings, grit blast material, and equipment. The project completion period shall be one hundred fifty (150) calendar days.

Benefits:

Prepa will have a brand-new tank whose average useful life will be 20 years.
The Power Plant will increase its water reservoirs for energy production by 15 percent.
The risk of accidents due to structural failures in the existing tank will be eliminated.
Contamination by metal deposits around the water tanks will be reduced.



Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Heavy Equipment Services San Juan
Power Plant (Units 5 through 10)***

1/26/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes
v.1	1/25/2022	



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Heavy Equipment Services - San Juan Power Plant (Units 5 through 10)
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
<i>San Juan Power Plant</i> Heavy Equipment Services (Units 5 through 10)	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Multiple work performed at the generation plant requires heavy lifting. Heavy loads are found in different parts of the plant at which available overhead cranes cannot reach. Some examples are the work in the bucket for air preheaters replacement in the boilers of unit 7 through 10 and units 5 & 6. For the jobs to be performed, the rental of mobile cranes are necessary for the completion of maintenance work.



Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the San Juan Power Plant rental of heavy equipment services will consist of the following:

- Rental services of heavy equipment for the San Juan Power Plant.
- Maintenance of the thermoelectric facility for San Juan.
- The service includes the described equipment, maintenance, insurances, inspections up to date, authorized and trained personnel for operation, operator's salary, assistant's salary, daily meals, and fuel.
- **Rental of 50 Ton hydraulic crane "Rough Terrain" with a minimum of 94 feet strut + 43 feet of jib arm.**
 1. Monthly rent (176 hours) for 30 Ton crane. All inclusive. \$2,318.00
 2. Weekly rent (40 hours) for 30 Ton crane. All inclusive. \$936.67
 3. Daily rent (8 hours) for 30 Ton crane. All inclusive. \$376.22
 4. Extra hour of 30 Ton crane when 40 hours weekly excess or 8 daily hours. \$35.42
 5. 30 Ton crane mobilization from contractor's facility to the San Juan Power Plant. \$200.00
 6. 30 Ton crane demobilization from the San Juan Power Plant to the contractor's facility. \$200.00
 - Operator - \$96.00 per day, \$480 weekly, \$2,112.00 monthly. Extra hours: \$18.75
- **Rental of 50 Ton hydraulic crane "Rough Terrain" with a minimum of 110 feet strut + 51 feet of jib arm. Including operators, fuel, maintenance, lubricants, etc.**
 1. Monthly rent (176 hours) for 50 Ton crane. All inclusive. \$3,575.00
 2. Weekly rent (40 hours) for 50 Ton crane. All inclusive. \$1,425.00
 3. Daily rent (8 hours) for 50 Ton crane. All inclusive. \$541.67
 4. Extra hour of 50 Ton crane when 40 hours weekly excess or 8 daily hours. \$48.13
 5. 50 Ton crane mobilization from contractor's facility to the San Juan Power Plant. \$200.00
 6. 50 Ton crane demobilization from the San Juan Power Plant to the contractor's facility. \$200.00



- Operator - \$100.00 per day, \$500 weekly, \$2,200.00 monthly. Extra hours: \$18.00

 - **Rental of 70 Ton hydraulic crane “Rough Terrain” with a minimum of 138 feet strut + 56 feet of jib arm. Including operators, fuel, maintenance, lubricants, etc.**
 1. Monthly rent (176 hours) for 70 Ton crane. All inclusive. \$5,300.00
 2. Weekly rent (40 hours) for 70 Ton crane. All inclusive. \$2,000.00
 3. Daily rent (8 hours) for 70 Ton crane. All inclusive. \$733.33
 4. Extra hour of 70 Ton crane when 40 hours weekly excess or 8 daily hours. \$62.50
 5. 70 Ton crane mobilization from contractor’s facility to the San Juan Power Plant. \$200.00
 6. 70 Ton crane demobilization from the San Juan Power Plant to the contractor’s facility. \$200.00
 - Operator - \$100.00 per day, \$500 weekly, \$2,200.00 monthly. Extra hours: \$18.75

 - **Rental of 100 Ton traditional crane with a minimum of 200 feet strut + 60 feet of jib arm. Including operators, fuel, maintenance, lubricants, etc.**
 1. Monthly rent (176 hours) for 100 Ton crane. All inclusive. \$14,212.00
 2. Weekly rent (40 hours) for 100 Ton crane. All inclusive. \$4,980.00
 3. Daily rent (8 hours) for 100 Ton crane. All inclusive. \$1,729.33
 4. Extra hour of 100 Ton crane when 40 hours weekly excess or 8 daily hours. \$137.50
 5. 100 Ton crane mobilization from contractor’s facility to the San Juan Power Plant and assembly. \$312.50
 6. 100 Ton crane demobilization from the San Juan Power Plant to the contractor’s facility. \$312.50
 - Operator - \$104.00 per day, \$520 weekly, \$2,288.00 monthly. Extra hours: \$19.50

 - **Rental of 150 Ton traditional crane with a minimum of 280 feet strut + 70 feet of jib arm. Including operators, fuel, maintenance, lubricants, etc.**
 1. Monthly rent (176 hours) for 150 Ton crane. All inclusive. \$16,036.00
 2. Weekly rent (40 hours) for 150 Ton crane. All inclusive. \$4,373.00
 3. Daily rent (8 hours) for 150 Ton crane. All inclusive. \$1,943.56
 4. Extra hour of 150 Ton crane when 40 hours weekly excess or 8 daily hours. \$123.33
-



5. 150 Ton crane mobilization from contractor's facility to the San Juan Power Plant and assembly. \$375.00
 6. 150 Ton crane demobilization from the San Juan Power Plant to the contractor's facility. \$375.00
 - Operator - \$112.00 per day, \$560 weekly, \$2,464.00 monthly. Extra hours: \$21.00
- **Rental of 350 Ton Hydraulic crane with a minimum of 197 feet strut + 98 feet of jib arm. Including operators, fuel, maintenance, lubricants, etc.**
1. Monthly rent (176 hours) for 350 Ton crane. All inclusive. \$29,772.00
 2. Weekly rent (40 hours) for 350 Ton crane. All inclusive. \$8,046.00
 3. Daily rent (8 hours) for 350 Ton crane. All inclusive. \$3,487.11
 4. Extra hour of 350 Ton crane when 40 hours weekly excess or 8 daily hours. \$216.67
 5. 350 Ton crane mobilization from contractor's facility to the San Juan Power Plant and assembly. \$400.00
 6. 350 Ton crane demobilization from the San Juan Power Plant to the contractor's facility. \$400.00
 - Operator - \$124.00 per day, \$620 weekly, \$2,768.00 monthly. Extra hours: \$23.25

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.



3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)



Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$M)
Equipment Rental	\$850,000.00
Total Project Estimated Cost	\$850,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments



<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Please see attached to executed contracts 92063, Justification Memo, CR #245179 and Technical specifications included in RFP 00003079 and PREPAs Fund certifications

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

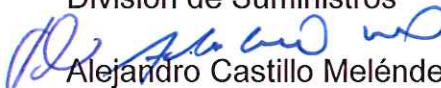


GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

DS-01650

14 de enero de 2021

Neftalí Gonzalez Cruz, Jefe
División de Suministros


Alejandro Castillo Meléndez, Jefe
Central Generatriz San Juan

REQUISICIÓN DE CONTRATO 245179 PARA ALQUILER DE EQUIPO PESADO
CENTRAL GENERATRIZ SAN JUAN

En una central generatriz se realizan múltiples trabajos que requieren el levantamiento de cargas pesadas. Estas cargas se encuentran en diferentes sitios donde las grúas *overhead* disponibles en la Central no tienen alcance. Ejemplos de estos, los trabajos de reemplazo en los canastos de los pre-calentadores de aire de las calderas en las unidades 7 a la 10 y los trabajos en las unidades 5 y 6. Para estos trabajos son necesarios los servicios de alquiler de grúas móviles para poder realizar los trabajos de mantenimiento de estas unidades.

Por lo expuesto, solicitamos se procese la requisición de contrato 245179 para generar contrato de servicio de alquiler de equipo pesado y poder responder a las necesidades de mantenimiento de la Central donde sea necesario el levantamiento de cargas pesadas.

Para más información, favor de comunicarse con el Ing. Víctor L. Ortiz Pérez, Jefe de Conservación, por el 7415.

21-VOP-03



Apartado 364267 San Juan, Puerto Rico 00936-4267

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

**PUERTO RICO ELECTRIC
POWER AUTHORITY**

Contract

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-
8253

Vendor:

QUALITY EQUIPMENT INC
PO BOX 10455
SAN JUAN PR 00922-0455

Please Direct Inquiries To:

ANGELICA ROSARIO DAVILA
AROSARIO16128@AEEPR.COM
Title PROCUREMENT SUPV G3
Phone/Alternate Phone:
787-521-3034
Fax

Work Location:

JEFE CONSERVACION CENTRAL SJ
CENTRAL SAN JUAN
AVE MERCADO CENTRAL CARR. PR 2
ZONA PORTUARIA
PUERTO NUEVO PR 00920

Title

SERVICIO DE ALQUILER DE EQUIPO PESADO CENTRAL SAN JUAN

Contract Value

Total Value	\$ 850,000.00 USD	** NOT TO EXCEED **
Pricing Method	TIME AND MATERIAL	
Contract Type	SERVICES	Start Date 1/21/22
Project		End Date 1/20/23

Contract ID 00092063

Contract Release

Execution Date 1/21/22

Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Signatures

<u>Isabel S. Forteza</u> Vendor Authorized Signature Isabel S. Forteza Printed Name/Title 01/21/2022 787-798-1717 Date Signed Phone		<u>MARIO MIRANDA SANCHEZ</u> Supervisor de Compras Principal Authorized Signature Printed Name/Title 1-21-2022 787-521-4905 Date Signed Phone	
--	--	--	--

Terms and Conditions - Text at End

Facility	Standard	Revision	S/P	Text	Title
	PH000001	004	S	Y	EQUAL OPPORTUNITY
	PH000003	001	S	Y	PACKAGING, SHIPPING AND INVOICING INSTR
	PH000007	004	S	Y	APPLICABLE LAW
	PH000009	019	S	Y	INSTRUCCIONES PARA SUBASTAS FORMALES

Insurance Requirements

Coverage	Start Date	End Date	Insurance Description
1000000.0	8/8/14	8/8/21	AUTOMOBILE LIABILITY INSURANCE
1000000.0	8/8/14	8/8/21	COMMERCIAL GENERAL LIABILITY INSURANCE
1000000.0	8/8/14	8/8/21	EMPLOYER'S LIABILITY INSURANCE
20000.0	7/1/15	10/20/20	WORKMEN'S COMPENSATION INSURANCE OF COMMONWEALTH PUERTO RICO

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

CONTRATO 92063

CONTRACT REQUISITION 245179

SERVICIO DE ALQUILER DE EQUIPO PESADO
CENTRAL SAN JUAN

SE ADJUDICA CONTRATO SEGÚN TÉRMINOS Y CONDICIONES SOLICITADOS Y ACEPTADOS
POR SU COMPANIA EN LA SUBASTA FORMAL RFP 0003325.

ALCANCE DEL TRABAJO
SERVICIO DE ALQUILER DE EQUIPO PESADO CENTRAL SAN JUAN

SERVICIO DE ALQUILER DE EQUIPO PESADO PARA REALIZAR LABORES DE REPARACION
Y MANTENIMIENTO EN LAS FACILIDADES DE LA CENTRAL TERMoeLECTRICA DE SAN
JUAN.

EL SERVICIO INCLUYE LOS EQUIPOS DESCRITOS A CONTINUACION, INCLUYENDO
MANTENIMIENTO, LOS SEGUROS REQUERIDOS, INSPECCIÓN DE LOS EQUIPOS AL DÍA,
EL PERSONAL AUTORIZADO Y ADIESTRADO PARA OPERAR LOS MISMOS, SALARIO DEL
OPERADOR, SALARIO DEL AYUDANTE, DIETAS DIARIAS Y COMBUSTIBLE.

ALQUILER GRUA DE 30 TON HIDRÁULICA ROUGH TERRAIN, CON UN MÍNIMO DE 94 PIES
DE PUNTAL + 43 PIES DE JIBA:

1-RENTA MENSUAL (176 HORAS) GRUA DE 30 TON. TODO INCLUIDO:

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

\$2,138.00

2-RENTA SEMANAL (40 HORAS) GRUA DE 30 TON., TODO INCLUIDO:

\$936.67

3-RENTA DIARIA (8 HORAS) GRUA DE 30 TON., TODO INCLUIDO: \$376.22

4-HORA EXTRA GRUA 30 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó DE 8 HORAS

DIARIAS: \$35.42

5-MOVILIZACIÓN DE GRUA DE 30 TON DE LAS FACILIDADES DEL CONTRATISTA A LA CENTRAL SAN JUAN: \$200.00

6-DESMOVILIZACIÓN DE GRUA DE 30 TON DESDE LA CENTRAL SAN JUAN A LAS FACILIDADES DEL CONTRATISTA: \$200.00

-OPERADOR: \$96.00 POR DÍA, \$480.00 SEMANAL, \$2,112.00 AL MES,
HORAS EXTRAS: \$18.75

ALQUILER DE GRUA DE 50 TONELADAS HIDRÁULICA ROUGH TERRAIN CON UN MÍNIMO DE 110 PIES DE PUNTAL Y 51 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE, MANTENIMIENTO, LUBRICANTES, ETC:

1-RENTA MENSUAL (176 HORAS) GRUA DE 50 TON. TODO INCLUIDO: \$3,575.

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

00

.
2-RENTA SEMANAL (40 HORAS) GRUA DE 50 TON., TODO INCLUIDO:

\$1,425.00

.
3-RENTA DIARIA (8 HORAS) GRUA DE 50 TON., TODO INCLUIDO: \$541.67

.
4-HORA EXTRA GRUA 50 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó
DE 8 HORAS DIARIAS: \$48.13

.
5-MOVILIZACIÓN DE GRUA DE 50 TON DE LAS FACILIDADES DEL CONTRATISTA A LA
CENTRAL SAN JUAN: \$200.00

.
6- DESMOVILIZACIÓN TRANSPORTACIÓN DE GRUA DE 50 TON DESDE LA CENTRAL SAN
JUAN A LAS FACILIDADES DEL CONTRATISTA: \$200.00

.
-OPERADOR: \$100.00 POR DÍA, \$500.00 SEMANAL, \$2,200.00 AL MES,
HORAS EXTRAS: \$18.00

.
-ALQUILER DE GRUA DE 70 TONELADAS HIDRÁULICA ROUGH TERRAIN CON UN MÍNIMO
DE 138 PIES DE PUNTAL Y 56 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE,
MANTENIMIENTO, LUBRICANTES, ETC.

.
1-RENTA MENSUAL (176 HORAS) GRUA DE 70 TON. TODO INCLUIDO: \$5,300.

00

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

- .
2-RENTA SEMANAL (40 HORAS) GRUA DE 70 TON., TODO INCLUIDO:
\$2,000.00
- .
3-RENTA DIARIA (8 HORAS) GRUA DE 70 TON., TODO INCLUIDO: \$733.33
- .
4-HORA EXTRA GRUA 70 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó
DE 8 HORAS DIARIAS: \$62.50
- .
5-MOVILIZACIÓN DE GRUA DE 70 TON DE LAS FACILIDADES DEL CONTRATISTA A LA
CENTRAL SAN JUAN: \$200.00
- .
6-DESMOVILIZACIÓN DE GRUA DE 70 TON DESDE LA CENTRAL SAN JUAN A LAS
FACILIDADES DEL CONTRATISTA: \$200.00
- .
-OPERADOR: \$100.00 POR DÍA, \$500.00 SEMANAL, \$2,200.00 AL MES
HORAS EXTRAS: \$18.75
- .
-ALQUILER DE GRUA DE 100 TONELADAS TRADICIONAL CON UN MÍNIMO DE 200 PIES
DE PUNTAL Y 60 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE,
MANTENIMIENTO, LUBRICANTES, ETC.
- .
1-RENTA MENSUAL (176 HORAS) GRUA DE 100 TON. TODO INCLUIDO:
\$14,212.00
- .

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

2-RENTA SEMANAL (40 HORAS) GRUA DE 100 TON., TODO INCLUIDO: \$4,980.

00

3-RENTA DIARIA (8 HORAS) GRUA DE 100 TON., TODO INCLUIDO:
\$1,729.33

4-HORA EXTRA GRUA 100 TON, EXCESO DE 40 HORAS A LA SEMANA,
Ó DE 8 HORAS DIARIAS: \$137.50

5-MOVILIZACIÓN DE GRUA DE 100 TON DE LAS FACILIDADES DEL CONTRATISTA A LA
CENTRAL SAN JUAN Y ENSAMBLAJE: \$312.50

6-DESMOVILIZACIÓN DE GRUA DE 100 TON DESDE LA CENTRAL SAN JUAN A LAS
FACILIDADES DEL CONTRATISTA: \$312.50

-OPERADOR: \$104.00 POR DÍA, \$520.00 SEMANAL, \$2,288.00 AL MES
HORAS EXTRAS: \$19.50

-ALQUILER DE GRUA DE 150 TONELADAS TRADICIONAL CON UN MÍNIMO DE 280 PIES
DE PUNTAL Y 70 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE,
MANTENIMIENTO, LUBRICANTES, ETC.

1-RENTA MENSUAL (176 HORAS) GRUA DE 150 TON. TODO INCLUIDO:
\$16,036.00

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

2-RENTA SEMANAL (40 HORAS) GRUA DE 150 TON., TODO INCLUIDO: \$4,373.

34

3-RENTA DIARIA (8 HORAS) GRUA DE 150 TON., TODO INCLUIDO:
\$1,943.56

4-HORA EXTRA GRUA 150 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó
DE 8 HORAS DIARIAS: \$123.33

5-MOVILIZACIÓN DE GRUA DE 150 TON DE LAS FACILIDADES DEL CONTRATISTA
A LA CENTRAL SAN JUAN Y ENSAMBLAJE: \$375.00

6-DESMOVILIZACIÓN DE GRUA DE 150 TON DESDE LA CENTRAL SAN JUAN A LAS
FACILIDADES DEL CONTRATISTA: \$375.00

-OPERADOR: \$112.00 POR DÍA, \$560.00 SEMANAL, \$2,464.00.00 AL MES,
HORAS EXTRAS: \$21.00

-ALQUILER DE GRUA DE 350 TONELADAS HIDRÁULICA CON UN MÍNIMO DE 197 PIES DE
PUNTAL Y 98 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE, MANTENIMIENTO,
LUBRICANTES, ETC.

1-RENTA MENSUAL (176 HORAS) GRUA DE 350 TON. TODO INCLUIDO:
\$29,772.00

2-RENTA SEMANAL (40 HORAS) GRUA DE 350 TON., TODO INCLUIDO: \$8,046.

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

66

3-RENTA DIARIA (8 HORAS) GRUA DE 350 TON., TODO INCLUIDO:

\$3,487.11

4-HORA EXTRA GRUA 350 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó DE 8 HORAS
DIARIAS: \$216.67

5- MOVILIZACIÓN DE GRUA DE 350 TON DE LAS FACILIDADES DEL CONTRATISTA A LA
CENTRAL SAN JUAN Y ENSAMBLAJE: \$400.00

6-DESMOVILIZACIÓN DE GRUA DE 350 TON DESDE LA CENTRAL SAN JUAN A LAS
FACILIDADES DEL CONTRATISTA: \$400.00

-OPERADOR: \$124.00 POR DÍA, \$620.00 SEMANAL, \$2,728.00.00 AL MES;
HORAS EXTRAS: \$23.25

CUENTA CONTABLE: 01-4011-50600-550-348

NOTAS:

I. SE ANEJA TABLA DE CUMPLIMIENTO COMO EVIDENCIA DE TARIFAS QUE INCLUYE LO
SIGUIENTE:

a. PRECIO POR MOVILIZACIÓN Y ENSAMBLAJE DE LA GRUA.

b. PRECIO POR DESMONTAR Y DESMOVILIZAR LA GRUA.

Contract ID	00092063
Contract Release	
Execution Date	1/21/22
Printed	1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

c. PRECIO MENSUAL DE LA GRUA. EN ESTE RENGLÓN SE INCLUIRÁ EL COSTO DE LA GRUA Y EL OPERADOR EN HORARIO REGULAR DE 40 HORAS SEMANALES.

d. PRECIO POR SEMANA DE LA GRUA. EN ESTE RENGLÓN SE INCLUIRÁ EL COSTO DE LA GRUA Y EL OPERADOR EN HORARIO REGULAR DE 40 HORAS A LA SEMANA.

e. PRECIO POR DÍA.

f. HORAS EXTRAS. SE PAGARÁ COMO HORAS EXTRAS, EL EXCESO DE 8 HORAS DIARIAS Y/O EL EXCESO DE 40 HORAS SEMANALES.

II. LOS SIGUIENTES DÍAS ÚNICAMENTE SE CONSIDERARÁN DÍAS FERIADOS PARA EFECTOS DE ESTA ORDEN:

- a. AÑO NUEVO
- b. DÍA DE REYES
- c. PRESIDENTS DAY
- d. MARTIN LUTHER KING
- e. VIERNES SANTOS
- f. 4 DE JULIO
- g. 25 DE JULIO
- h. DÍA DEL TRABAJO
- i. ACCIÓN DE GRACIAS
- j. DÍA DE NAVIDAD

Contract ID 00092063

Contract Release

Execution Date 1/21/22

Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

III. EL MANTENIMIENTO PREVENTIVO Y LLENADO DE COMBUSTIBLE DE LA GRUA SE REALIZARÁ FUERA DE HORAS LABORABLES. EN CASO DE UNA AVERÍA DE LA GRUA, LA MISMA SE REPARARÁ EN SITIO, SIGUIENDO LAS MEJORES PRÁCTICAS PARA EVITAR DERRAMES DE COMBUSTIBLE O ACEITE. DE NO PODER REPARAR LA GRUA EN UN PERIODO DE 24 HORAS, EL CONTRATISTA SE VERÁ OBLIGADO A RETIRAR LA GRUA AVERIADA DE SITIO Y REPONERLA POR OTRA DE SIMILAR Ó DE MÁS CAPACIDAD SIN COSTO ADICIONAL PARA LA AUTORIDAD. LAS HORAS QUE LA GRUA NO ESTÉ DISPONIBLE PARA TRABAJO, NO SE CONSIDERARÁN HORAS TRABAJADAS DE LA MISMA. COORDINACIONES DE LA GRUA: PARA MOVILIZACIONES DE LAS GRUAS DE MENOR CAPACIDAD (30, 50 Y 70 TON), EL CONTRATISTA SE VERÁ OBLIGADO A MOVILIZARSE A LA CENTRAL CUANDO ASÍ SE LE REQUIERA EN NO MÁS DE 12 HORAS UNA VEZ SE REALICE LA COORDINACIÓN. PARA LAS GRUAS DE 100 Y 150 TON, EL CONTRATISTA SE MOVILIZARÁ EN UN PLAZO NO MAYOR DE 48 HORAS CUANDO ASÍ SE REQUIERA. PARA LA MOVILIZACIÓN DE LA GRUA DE 350 TON SE COORDINARÁ CON EL CONTRATISTA CON UNA SEMANA DE ANTICIPACIÓN.

IV. INCLUYE OPERADOR CON LAS DEBIDAS LICENCIAS Y ENTRENAMIENTOS PARA OPERAR EL EQUIPO. LA AEE NO SERÁ RESPONSABLE POR LAS LICENCIAS REQUERIDAS PARA EL OPERADOR. EL SUPLIDOR MANTENDRÁ LAS LICENCIAS VIGENTES CUMPLIENDO CON TODAS LAS REGLAMENTACIONES Y LEYES QUE APLIQUEN A ESTE SERVICIO.

V. EL EQUIPO COTIZADO TIENE QUE CUMPLIR CON TODOS LOS REQUIRIMIENTOS DE SEGURIDAD Y AMBIENTALES REQUERIDOS POR O.S.H.A. Y ASME.

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

VI. EL SUPLIDOR TIENE QUE INCLUIR TODOS LOS SEGUROS NECESARIOS PARA EL ACARREO DEL EQUIPO.

VII. EL CONTRATISTA PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO

B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL ¿ CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00

C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 ¿ LIMITE SENCILLO COMBINADO

D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 ¿ LIMITE SENCILLO COMBINADO

TÉRMINOS Y CONDICIONES:

EL CONTRATISTA OBTENDRÁ Y MANTENDRÁ VIGENTE DURANTE LA DURACIÓN DEL CONTRATO LOS PERMISOS APROPIADOS DE TODAS LAS AUTORIDADES REGULADORAS MUNICIPALES, ESTATALES Y FEDERALES, RESPECTO A LOS SERVICIOS OFRECIDOS.

EN CASO DE INCUMPLIMIENTO DE SERVICIO O DE NO SER SATISFACTORIO, LA

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

AUTORIDAD SE RESERVA EL DERECHO DE CANCELAR ESTE CONTRATO EN CUALQUIER MOMENTO SIN NECESIDAD DE NOTIFICACIÓN PREVIA.

EL CONTRATISTA DISPONDRÁ DE TODO MATERIAL, EQUIPOS Y DEMÁS OBJETOS REMOVIDOS DURANTE EL SERVICIO, CUMPLIENDO CON LAS REGULACIONES Y LEYES AMBIENTALES VIGENTES. EL CONTRATISTA DISPONDRÁ ADECUADAMENTE DE LOS DESPERDICIOS GENERADOS DURANTE LA REALIZACIÓN DE LOS TRABAJOS DESCRITOS EN ESTE DOCUMENTO.

LOS CONTRATISTAS QUE VAYAN A SUBCONTRATAR ALGUNO DE LOS TRABAJOS O SERVICIOS OBJETO DE ESTA PUBLICACIÓN, TENDRÁ QUE ASEGURARSE DE QUE DICHOS SUBCONTRATISTAS NO SEAN COMPAÑÍAS QUE ESTÉN SUSPENDIDAS DEL REGISTRO DE SUPLIDORES DE LA AUTORIDAD. LA AUTORIDAD NO ACEPTARÁ PROPUESTAS EN LAS QUE SE UTILICEN COMO SUBCONTRATISTAS COMPAÑÍAS QUE ESTÉN SUSPENDIDAS DEL REGISTRO DE SUPLIDORES DE LA AUTORIDAD.

EL CONTRATISTA SERA RESPONSABLE POR TODOS LOS DAÑOS QUE SE OCASIONE A PERSONAS O LA PROPIEDAD, COMO RESULTADO DE SU FALTA O NEGLIGENCIA EN RELACION CON EL TRABAJO QUE SE LLEVA A CABO.

TERMINO DE PAGOS: NETO 60 DIAS

EL SUPLIDOR DEBE QUE DESGLOSAR SU PRECIO ENTRE LO QUE ES LABOR Y MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 % BAJO LA LEY NÚM. 48-2013. DE NO DESGLOSAR EL PRECIO SE APLICARÁ LA APORTACIÓN A

Contract ID	00092063
Contract Release	
Execution Date	1/21/22
Printed	1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

LA TOTALIDAD COTIZADA.

CLAUSULA DE SERVICIOS INTERAGENCIALES: AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARIA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARAN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO ¿ENTIDAD DE LA RAMA EJECUTIVA¿ INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASI COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

LEY 2-2018 CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO

1. EL CONTRATISTA SE COMPROMETE A CUMPLIR CON LAS DISPOSICIONES DE LA LEY NÚM. 2-2018, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO.

2. EL CONTRATISTA SOMETERÁ UNA DECLARACIÓN JURADA, ANTE NOTARIO PÚBLICO, EN LA QUE INFORMARÁ SI LA PERSONA NATURAL O JURÍDICA O CUALQUIER PRESIDENTE, VICEPRESIDENTE, DIRECTOR, DIRECTOR EJECUTIVO, O MIEMBRO DE UNA JUNTA DE OFICIALES O JUNTA DE DIRECTORES, O PERSONAS QUE DESEMPEÑEN FUNCIONES EQUIVALENTES PARA LA PERSONA JURÍDICA, HA SIDO CONVICTA O SE HA DECLARADO CULPABLE DE CUALQUIERA DE LOS DELITOS ENUMERADOS EN LA SECCIÓN 6.

Contract ID	00092063
Contract Release	
Execution Date	1/21/22
Printed	1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO ¿LEY PARA LA ADMINISTRACIÓN Y TRANSFORMACIÓN DE LOS RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO¿, O POR CUALQUIERA DE LOS DELITOS CONTENIDOS EN ESTE O CUALQUIERA DE LOS DELITOS INCLUIDOS EN LA LEY 2-2018.

3. EL CONTRATISTA CERTIFICA QUE NO HA SIDO CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO, CUALQUIER DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA LEY 2-2018, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL MAL USO DE LOS FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE, A LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

4. LA AUTORIDAD DARÁ POR TERMINADO EL CONTRATO EN CASO DE QUE EL CONTRATISTA RESULTE CONVICTO EN PUERTO RICO O EN LOS ESTADOS UNIDOS POR INFRACCIÓN A LOS ARTÍCULOS 4.2, 4.3 O 5.7 DE LA LEY 1-2012, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY ORGÁNICA DE LA OFICINA DE ÉTICA GUBERNAMENTAL DE PUERTO RICO; CUALQUIERA DE LOS DELITOS ENUMERADOS EN LOS ARTÍCULOS 250 A 266 DE LA LEY 146-2012, SEGÚN ENMENDADA, CONOCIDA COMO EL CÓDIGO PENAL DE PUERTO RICO, CUALQUIERA DE LOS DELITOS TIPIFICADOS EN LA

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Scope of Work

LEY 2-2018, CONOCIDA COMO CÓDIGO ANTICORRUPCIÓN PARA EL NUEVO PUERTO RICO O CUALQUIER OTRO DELITO QUE IMPLIQUE EL USO INDEBIDO DE FONDOS O PROPIEDAD PÚBLICA, INCLUYENDO, PERO SIN LIMITARSE A, LOS DELITOS MENCIONADOS EN LA SECCIÓN 6.8 DE LA LEY 8-2017, SEGÚN ENMENDADA, CONOCIDA COMO LA LEY DE ADMINISTRACIÓN Y TRANSFORMACIÓN DE RECURSOS HUMANOS EN EL GOBIERNO DE PUERTO RICO.

Terms and Conditions - Text

Facility	Standard	PH000001
Revision 004	Description	EQUAL OPPORTUNITY

EQUAL OPPORTUNITY.

By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer against any claims arising from such unlawful discrimination by Seller.

Facility	Standard	PH000003
Revision 001	Description	PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

1. Receiving Documentation must be included with all Purchase Order deliverables.

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

**PUERTO RICO ELECTRIC
POWER AUTHORITY**

Contract

Terms and Conditions - Text

Facility	Standard	PH000003
Revision 001	Description	PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

2. All Receiving Documentation and shipping notices must include reference to the Purchase Order number and any applicable item number(s).

3. Each invoice must include the Purchase Order number and any applicable item number, receipted expense bill, and description shown on this Purchase Order. Delays in receiving invoices and errors or omissions on invoices shall be just cause for Buyer's withholding of payment, without loss of cash discount privilege.

Facility	Standard	PH000007
Revision 004	Description	APPLICABLE LAW

APPLICABLE LAW.

This Order will be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico without regard to its principles regarding conflicts of laws. Exclusive jurisdiction and venue for any action arising hereunder will be in Puerto Rico, whether in Federal or Commonwealth Court.

Facility	Standard	PH000009
Revision 019	Description	INSTRUCCIONES PARA SUBASTAS FORMALES

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACI2N A SUBASTA

Contract ID 00092063
Contract Release
Execution Date 1/21/22
Printed 1/21/22

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract

Terms and Conditions - Text

Facility	Standard	PH000009
Revision 019	Description	INSTRUCCIONES PARA SUBASTAS FORMALES

FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.

2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.

3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.

4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACÉSIMIL O MEDIOS ELECTRÓNICOS.

5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

* * * End of Contract * * *

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00003079
Due Date: 03/31/2021
Due Time: 09:00 AST
Printed : 03/17/2021
Page : 1

Return RFP to:

ANGELICA ROSARIO DAVILA

Vendor:

BULLETIN BOARD
DIVISION DE SUMINISTROS
SAN JUAN PR 00936

Quality Equipment, Inc.
PO Box 10455
San Juan, PR 00922



AROSARIO16128@AEEPR.COM

Phone: 787-521-3034

Fax :

Start Date: 05/01/2021

End Date :

Work Location:

CENTRAL SAN JUAN

AVE MERCADO CENTRAL CARR. PR 2

ZONA PORTUARIA

PUERTO NUEVO PR 00920

Title: SERVICIO DE ALQUILER DE EQUIPO PESADO CENTRAL SAN JUAN

*** DRAFT COPY ***

Bid Value:

Currency: USD

Not to Exceed?

Bid Pricing Method:

TIME AND MATERIAL

Bid Expiration Date:

Vendor Authorized Signature

Isabel S. Forteza/ Comptroller

Printed Name/Title

03/29/2021 787-598-6240

Date Signed

Phone

Authorized Signature

Angélica Rosario Dávila- Supervisora de Compras

Printed Name/Title

17 marzo 2021 787-521-3034

Date Signed

Phone

Terms and Conditions - Text at End

Fac	Standard	Rev	S/P	Text	Title
	PH000001	004	S	Y	EQUAL OPPORTUNITY
	PH000003	001	S	Y	PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS
	PH000007	004	S	Y	APPLICABLE LAW
	PH000009	019	S	Y	INSTRUCCIONES PARA SUBASTAS FORMALES

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00003079
Due Date: 03/31/2021
Due Time: 09:00 AST
Printed : 03/17/2021
Page : 3

TERMoelectrica de San Juan.

EL SERVICIO INCLUYE LOS EQUIPOS DESCRITOS A CONTINUACION, INCLUYENDO MANTENIMIENTO, LOS SEGUROS REQUERIDOS, INSPECCIÓN DE LOS EQUIPOS AL DÍA, EL PERSONAL AUTORIZADO Y ADIESTRADO PARA OPERAR LOS MISMOS, SALARIO DEL OPERADOR, SALARIO DEL AYUDANTE, DIETAS DIARIAS Y COMBUSTIBLE.

EL SERVICIO INCLUYE LOS EQUIPOS DESCRITOS A CONTINUACION, INCLUYENDO MANTENIMIENTO, LOS SEGUROS REQUERIDOS, INSPECCIÓN DE LOS EQUIPOS AL DÍA, EL PERSONAL AUTORIZADO Y ADIESTRADO PARA OPERAR LOS MISMOS, SALARIO DEL OPERADOR, SALARIO DEL AYUDANTE, DIETAS DIARIAS Y COMBUSTIBLE:

ALQUILER GRUA DE 30 TON HIDRÁULICA ROUGH TERRAIN, CON UN MÍNIMO DE 94 PIES DE PUNTAL + 43 PIES DE JIBA:

1-RENTA MENSUAL (176 HORAS) GRUA DE 30 TON. TODO INCLUIDO: \$

2-RENTA SEMANAL (40 HORAS) GRUA DE 30 TON., TODO INCLUIDO: \$

3-RENTA DIARIA (8 HORAS) GRUA DE 30 TON., TODO INCLUIDO: \$

4-HORA EXTRA GRUA 30 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó DE 8 HORAS
DIARIAS: \$

5-MOVILIZACIÓN DE GRUA DE 30 TON DE LAS FACILIDADES DEL CONTRATISTA A LA CENTRAL SAN JUAN: \$

6-DESMOVILIZACIÓN DE GRUA DE 30 TON DESDE LA CENTRAL SAN JUAN A LAS FACILIDADES DEL CONTRATISTA: \$

ALQUILER DE GRUA DE 50 TONELADAS HIDRÁULICA ROUGH TERRAIN CON UN MÍNIMO DE 110 PIES DE PUNTAL Y 51 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE, MANTENIMIENTO, LUBRICANTES, ETC:

1-RENTA MENSUAL (176 HORAS) GRUA DE 50 TON. TODO INCLUIDO:
\$

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00003079
Due Date: 03/31/2021
Due Time: 09:00 AST
Printed : 03/17/2021
Page : 5

\$

3-RENTA DIARIA (8 HORAS) GRUA DE 100 TON., TODO INCLUIDO: \$

4-HORA EXTRA GRUA 100 TON, EXCESO DE 40 HORAS A LA SEMANA,
Ó DE 8 HORAS DIARIAS: \$5-MOVILIZACIÓN DE GRUA DE 100 TON DE LAS FACILIDADES DEL CONTRATISTA
A LA CENTRAL SAN JUAN Y ENSAMBLAJE: \$6-DESMOVILIZACIÓN DE GRUA DE 100 TON DESDE LA CENTRAL SAN JUAN A LAS
FACILIDADES DEL CONTRATISTA: \$

-ALQUILER DE GRUA DE 150 TONELADAS TRADICIONAL CON UN MÍNIMO DE 280
PIES DE PUNTAL Y 70 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE,
MANTENIMIENTO, LUBRICANTES, ETC.

1-RENTA MENSUAL (176 HORAS) GRUA DE 150 TON. TODO INCLUIDO:
\$2-RENTA SEMANAL (40 HORAS) GRUA DE 150 TON., TODO INCLUIDO:
\$

3-RENTA DIARIA (8 HORAS) GRUA DE 150 TON., TODO INCLUIDO: \$

4-HORA EXTRA GRUA 150 TON, EXCESO DE 40 HORAS A LA SEMANA, Ó
DE 8 HORAS DIARIAS: \$5-MOVILIZACIÓN DE GRUA DE 150 TON DE LAS FACILIDADES DEL CONTRATISTA
A LA CENTRAL SAN JUAN Y ENSAMBLAJE: \$6-DESMOVILIZACIÓN DE GRUA DE 150 TON DESDE LA CENTRAL SAN JUAN A LAS
FACILIDADES DEL CONTRATISTA: \$

-ALQUILER DE GRUA DE 350 TONELADAS HIDRÁULICA CON UN MÍNIMO DE 197
PIES DE PUNTAL Y 98 PIES DE JIBA. INCLUYE OPERADOR, COMBUSTIBLE,
MANTENIMIENTO, LUBRICANTES, ETC.

1-RENTA MENSUAL (176 HORAS) GRUA DE 350 TON. TODO INCLUIDO:
\$2-RENTA SEMANAL (40 HORAS) GRUA DE 350 TON., TODO INCLUIDO:
\$

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00003079
Due Date: 03/31/2021
Due Time: 09:00 AST
Printed : 03/17/2021
Page : 7

- g. 25 DE JULIO
- h. DÍA DEL TRABAJO
- i. ACCIÓN DE GRACIAS
- j. DÍA DE NAVIDAD

III. EL MANTENIMIENTO PREVENTIVO Y LLENADO DE COMBUSTIBLE DE LA GRUA SE REALIZARÁ FUERA DE HORAS LABORABLES. EN CASO DE UNA AVERÍA DE LA GRUA, LA MISMA SE REPARARÁ EN SITIO, SIGUIENDO LAS MEJORES PRÁCTICAS PARA EVITAR DERRAMES DE COMBUSTIBLE O ACEITE. DE NO PODER REPARAR LA GRUA EN UN PERIODO DE 24 HORAS, EL CONTRATISTA SE VERÁ OBLIGADO A RETIRAR LA GRUA AVERIADA DE SITIO Y REPONERLA POR OTRA DE SIMILAR Ó DE MÁS CAPACIDAD SIN COSTO ADICIONAL PARA LA AUTORIDAD. LAS HORAS QUE LA GRUA NO ESTÉ DISPONIBLE PARA TRABAJO, NO SE CONSIDERARÁN HORAS TRABAJADAS DE LA MISMA. COORDINACIONES DE LA GRUA: PARA MOVILIZACIONES DE LAS GRUAS DE MENOR CAPACIDAD (30, 50 Y 70 TON), EL CONTRATISTA SE VERÁ OBLIGADO A MOVILIZARSE A LA CENTRAL CUANDO ASÍ SE LE REQUIERA EN NO MÁS DE 12 HORAS UNA VEZ SE REALICE LA COORDINACIÓN. PARA LAS GRUAS DE 100 Y 150 TON, EL CONTRATISTA SE MOVILIZARÁ EN UN PLAZO NO MAYOR DE 48 HORAS CUANDO ASÍ SE REQUIERA. PARA LA MOVILIZACIÓN DE LA GRUA DE 350 TON SE COORDINARÁ CON EL CONTRATISTA CON UNA SEMANA DE ANTICIPACIÓN.

IV. INCLUYE OPERADOR CON LAS DEBIDAS LICENCIAS Y ENTRENAMIENTOS PARA OPERAR EL EQUIPO. LA AEE NO SERÁ RESPONSABLE POR LAS LICENCIAS REQUERIDAS PARA EL OPERADOR. EL SUPLIDOR MANTENDRÁ LAS LICENCIAS VIGENTES CUMPLIENDO CON TODAS LAS REGLAMENTACIONES Y LEYES QUE APLIQUEN A ESTE SERVICIO.

V. EL EQUIPO COTIZADO TIENE QUE CUMPLIR CON TODOS LOS REQUIRIMIENTOS DE SEGURIDAD Y AMBIENTALES REQUERIDOS POR O.S.H.A. Y ASME.

VI. EL SUPLIDOR TIENE QUE INCLUIR TODOS LOS SEGUROS NECESARIOS PARA EL ACARREO DEL EQUIPO.

VII. EL CONTRATISTA AGRACIADO PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO

B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00

C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00003079
Due Date: 03/31/2021
Due Time: 09:00 AST
Printed : 03/17/2021
Page : 9

REPRESENTANTES Y OTRAS PARTES NO PUEDEN COMUNICARSE EN FORMA ALGUNA CON EMPLEADOS DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA PARA ASUNTOS RELACIONADOS CON LAS PROPUESTAS BAJO ESTUDIO, SALVO LO DISPUESTO POR LEY NÚM. 170, DEL 12 DE AGOSTO DE 1988, SEGÚN ENMENDADA Y LA REGLAMENTACIÓN PROMULGADA A SU AMPARO. REGLAMENTO DE SUBASTAS, CAPÍTULO IV, SECCIÓN VI, ARTÍCULO C, INCISO 2.

EQUAL OPPORTUNITY.

By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer against any claims arising from such unlawful discrimination by Seller.

PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

1. Receiving Documentation must be included with all Purchase Order deliverables.
2. All Receiving Documentation and shipping notices must include reference to the Purchase Order number and any applicable item number(s).
3. Each invoice must include the Purchase Order number and any applicable item number, receipted expense bill, and description shown on this Purchase Order. Delays in receiving invoices and errors or omissions on invoices shall be just cause for Buyer's withholding of payment, without loss of cash discount privilege.

APPLICABLE LAW.

This Order will be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico without regard to its principles regarding conflicts of laws. Exclusive jurisdiction and venue for any action arising hereunder will be in Puerto Rico, whether in Federal or Commonwealth Court.

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y

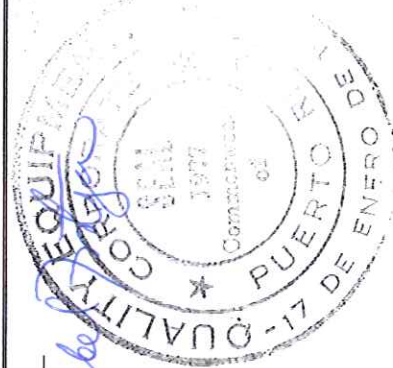
Tabla de Cumplimiento

Solicitud de Precios Núm.: RFP 0003079

[illegible][illegible]

Validoz de Oferta:

Fecha: 29 de marzo de 2021





CODIGO TAM: QUALI-3
NOMBRE: QUALITY EQUIPMENT, INC.
NUMERO: 08125976
TIPO: COAB
EFFECTIVIDAD: 08/11/20
EXPIRACION: 08/11/21
EMISION: 7/13/2020
USO INTERNO:

CONTINUATION CERTIFICATE

United Surety & Indemnity Company hereby continues in force its

Bond No. 08125976

on Behalf of QUALITY EQUIPMENT, INC., as Principal,

obligee/sum of ELA/AUTORIDAD DE ENERGIA ELECTRICA \$500,000.00

beginning 08/11/20 and ending 08/11/21

subject to all the terms and conditions of said bond; PROVIDED that the liability of United Surety & Indemnity Company shall not exceed in the aggregate the amount above written, whether the loss shall have occurred during the term of said bond or during any continuation or continuations thereof.

Signed and Sealed July 13, 2020

United Surety & Indemnity Company

Attorney-in-Fact



This bond is subject to Rule XXIX of the Puerto Rico Insurance Code. In order for it to be valid it should have been paid at its inception or renewal date as applicable. If you are a beneficiary under it, be sure to receive evidence that it has been paid.



CODIGO TAM: QUALI-3
NOMBRE: QUALITY EQUIPMENT, INC.
NUMERO: 08125976
TIPO: COAB
EFFECTIVIDAD: 08/11/20
EXPIRACION: 08/11/21
EMISION: 7/13/2020
USO INTERNO:

Bond no. 08125976
Rider #4

ELECTRONICALLY EXECUTED BOND ENDORSEMENT

This bond has been signed and sealed electronically for operational purposes in order to comply with the Executive Order #OE-2020-023 issued by the government of Puerto Rico related to Covid-19(Corona Virus). If this bond requires an acknowledgement of surety affidavit, such document will not be included for the reasons stated above.

We hereby certify that this bond is valid as if originally signed and sealed by hand.

Consequently, if the obligee requires an originally executed bond, and acknowledgement of surety affidavit, if applicable, we will issue such documents at a later date, in substitution of the original electronic bond.


Authorized Representative
UNITED SURETY & INDEMNITY COMPANY



This bond is subject to Rule XXIX of the Puerto Rico Insurance Code. In order for it to be valid it should have been paid at its inception or renewal date as applicable. If you are a beneficiary under it, be sure to receive evidence that it has been paid.



UNITED SURETY & INDEMNITY COMPANY

A Commitment to Excellence and Integrity

CERTIFICATE OF APPOINTMENT OF ATTORNEY-IN-FACT

Know All Men by these Presents, that UNITED SURETY & INDEMNITY COMPANY, a corporation duly organized and existing under the laws of the Commonwealth of Puerto Rico, and having its principal office in the City of Guaynabo, Puerto Rico, does hereby certify that it has made, constituted and appointed DUHAMEL ALBERTO IGLESIAS CACHO, of Trujillo Alto, Puerto Rico, its true and lawful Attorney-in-Fact with full power and authority conferred to sign, seal and execute in its behalf bonds, undertakings and other obligatory instruments of similar nature as follows:

WITHOUT LIMITATION

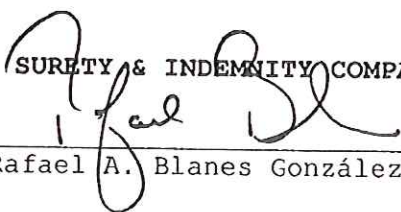
and to bind UNITED SURETY & INDEMNITY COMPANY thereby as fully and to the same extent as if such instruments were signed by an officer of UNITED SURETY & INDEMNITY COMPANY and all the acts of said Attorney, pursuant to the authority given by virtue of Deed Number 20, executed on the (20th) day of October, 1994; before Notary Public Beatriz M. Ramírez Abarca, are hereby ratified and confirmed.

The Power of Attorney granted by the above mentioned deed, was made and executed pursuant to and by authority of the By-Laws duly adopted by the Stockholders of the Company. Certified copy of the above mentioned Deed shall be filed at the Office of the Commissioner of Insurance of Puerto Rico.

In Witness Whereof, UNITED SURETY & INDEMNITY COMPANY has, pursuant to its By-Laws, caused the present certificate to be signed by the Secretary and its corporate seal to be hereto affixed this 31ST of March, 2011.

UNITED SURETY & INDEMNITY COMPANY

By:

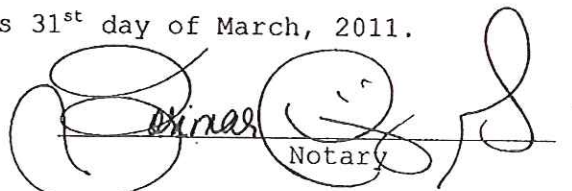

Rafael A. Blanes González, Secretary



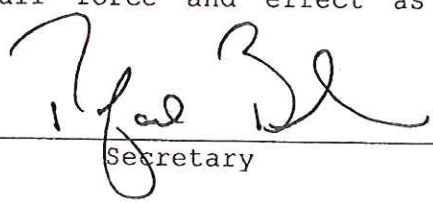
Affidavit Number: 0179

I have sworn and subscribed before me by Rafael A. Blanes González, of legal age, married, executive and resident of Guaynabo, Puerto Rico, to me personally known.

In Guaynabo, Puerto Rico, this 31st day of March, 2011.


Notary

The present certificate is in full force and effect as of this
13TH day of JULY, 2020.


Secretary

ENDOSO OBLIGATORIO DE PRIMAS Y CONDICIONES DE CUBIERTA – PUERTO RICO

Por la presente se entiende y se conviene que de conformidad con las reglas aprobadas por el Comisionado de Seguros de Puerto Rico, la presente fianza queda enmendada según las condiciones y estipulaciones vertidas a continuación:

1. **Primas de fianzas pagadas en su totalidad por usted:** Si las primas de esta fianza han de ser pagadas en su totalidad por usted, la cubierta de la fianza será concedida siempre y cuando se haya pagado la prima total a, y ésta se haya recibido por, nosotros o nuestro representante autorizado en o antes de la fecha de efectividad indicada en la fianza. De lo contrario, la fianza entrará en vigor en la fecha en que se haya pagado la prima total a, y se haya recibido por, nosotros o nuestro representante autorizado, y procederemos según indica la Sección 4 de este Endoso.
2. **Prima de Endoso:** Los endosos emitidos después de la fecha de inceptión de esta fianza concediendo cubierta adicional y los cuales resultan en alguna prima adicional, no entrarán en vigor hasta tanto la prima total adicional de los mismos se haya pagado en su totalidad a, y se haya recibido por, nosotros o nuestro representante autorizado.
3. **Corrección de primas:** Cualesquiera primas adicionales que se adeuden como resultado de cambios en tarifas, clasificaciones, bases de primas o cualesquiera otros ajustes (según determinado por nosotros o por la correspondiente organización tarifadora) serán pagadas en su totalidad dentro de los (30) días de la fecha de facturación del endoso correctivo.
4. **Pagos atrasados:** De recibirse el pago después de la fecha de vencimiento indicado, procederemos de la siguiente manera:
 - a. Para fianzas nuevas (Sección 1 antes indicada) emitiremos un Aviso de Cambio de Fecha de Efectividad de Cubierta, indicando:
 - (1) que la cubierta que se conceda bajo la fianza entrará en vigor a partir de la fecha en que se recibe el pago de la prima aplicable,
 - (2) las fechas enmendadas de inceptión y de vencimiento de la fianza que resulten, las cuales serán aplazadas por el mismo número de días en que no se concedió cubierta debido al recibo tardío del pago de la prima, y
 - (3) el correspondiente período durante el cual no se concede cubierta bajo la fianza.
 - b. Para endosos de corrección de primas (Sección 3 antes indicada), emitiremos, sujeto a la reglamentación aplicable, un Aviso de Reinstalación limitada, indicando:
 - (1) que la cubierta que se ofrece bajo la fianza será reinstalada a partir de la fecha en que se recibe el pago aplicable de la prima adicional,
 - (2) el período durante el cual no se concede cubierta, y
 - (3) el monto de la devolución de prima, si alguna, que se le adeude a usted.
5. **Cancelación de fianza:** Con relación a la renovación de una fianza, dicha fianza no entrará en vigor si la prima adeudada no ha sido recibida por nosotros o por nuestro representante autorizado en la fecha establecida en el Aviso de Cancelación, el cual será emitido conforme a los términos establecidos en la fianza.
6. **Definición de Representante Autorizado:** Para fines de este endoso, representante autorizado significa un Agente General, Apoderado, o una persona debidamente autorizada por nosotros, por escrito, para efectos del cobro de primas.
7. Este endoso obligatorio reemplaza cualesquiera otras condiciones que existan a estos efectos en la fianza al que se aneja el presente.

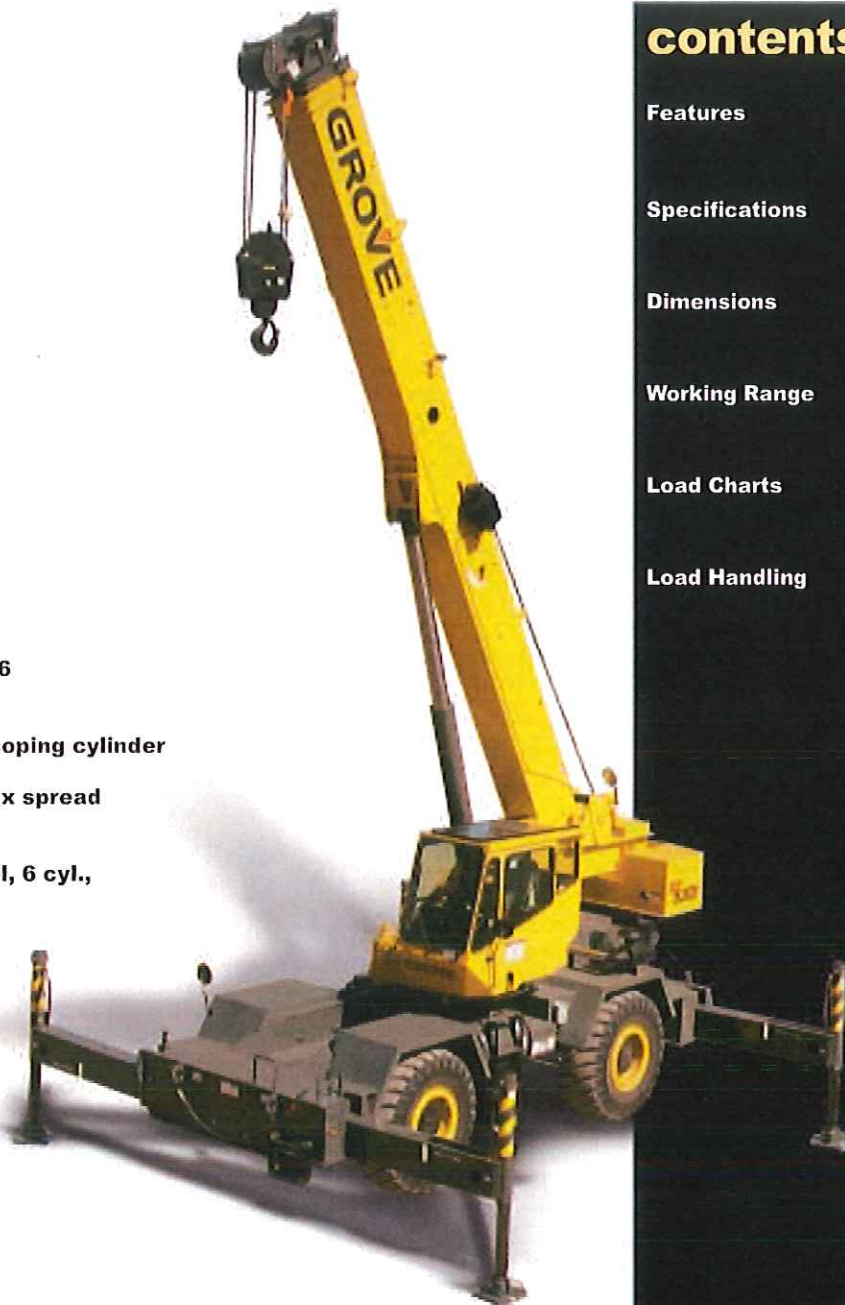
GROVE[®]

RT530E

product guide

features

- 30 ton (30 mt) capacity
- 29-95 ft. (8.8-29 m)
4-section full power
boom
- 26-45 ft. (7.9-13.7 m)
telescopic swingaway
extension
- Max main boom tip
height of 102.5 ft.
(31.2 m)
- "E" Series cab
- Max overall tip height 146
ft. (44.5 m)
- One double-acting telescoping cylinder
- 3 position outriggers, max spread
20 ft. (6.1 m)
- Cummins QSB 5.9L diesel, 6 cyl.,
turbocharged engine



contents

Features

2

Specifications

3

Dimensions

5

Working Range

6

Load Charts

7

Load Handling

11

specifications

Superstructure



Boom

29 ft. - 95 ft. (8.8 m - 29 m) four-section, full power boom. Maximum tip height: 102.5 ft. (31.2 m).



— *Optional Fixed Swingaway Extension

26 ft. (7.92 m) offsettable swingaway extension. Offsettable at 0° and 30°. Stows alongside base boom section. Maximum tip height: 127.6 ft. (38.9 m).



— *Optional Telescopic Swingaway Extension

26 ft. - 45 ft. (7.92 m - 13.7 m) telescoping offsettable swingaway extension. Offsettable at 0° and 30°. Stows alongside base boom section. Maximum tip height: 146 ft. (44.5 m).



Boom Nose

Three metallic sheaves mounted on heavy duty tapered roller bearings with removable pin-type rope guards. Quick reeve type boom nose. *Optional removable auxiliary boom nose with removable pin type rope guard.



Boom Elevation

One double-acting hydraulic cylinder with integral holding valve provides elevation from -3° to +76°.



Load Moment & Anti-Two Block System

Standard "Graphic Display" load moment and anti-two block system with audio-visual warning and control lever lockout. These systems provide electronic display of boom angle, length, radius, tip height, relative load moment, maximum permissible load, load indication and warning of impending two-block condition. The standard Work Area Definition System allows the operator to pre-select and define safe working areas. If the crane approaches the pre-set limits, audio-visual warnings aid the operator in avoiding job-site obstructions.



Cab

Full vision, all steel fabricated with acoustical lining and tinted safety glass throughout. Deluxe seat incorporates armrest mounted hydraulic single-axis controllers. Dash panel incorporates gauges for all engine functions. Other standard features include: hot water heater, cab circulating air fan, sliding side and rear windows, sliding skylight with electric wiper, electric windshield wash/wipe, fire extinguisher, seat belt, and sunscreen.



Swing

Planetary swing with foot applied multi-disc brake. Spring applied, hydraulically released swing brake and plunger-type, one position, mechanical house lock operated from cab. *Optional 360° mechanical swing lock. Maximum speed: 2.8 RPM.



Counterweight

8,400 lbs. (3 810 kg) pinned to superstructure.



Hydraulic System

Three main gear pumps with a combined capacity of 100 GPM (381 L/min).

Maximum operating pressure: 3,500 PSI (26.2 MPa).

Two individual valve banks.

Return line type filter with full flow by-pass protection and service indicator. Replaceable cartridge with micron filtration rating of 5/12/16.

90 gallon (341 L) reservoir.

Integral oil cooler.

System pressure test ports.

HOIST SPECIFICATIONS Main and Auxiliary Hoist Model HP15B-17G

Planetary reduction with automatic spring applied multi-disc brake. Grooved drum. Electronic hoist drum rotation indicator and hoist drum cable followers.

Maximum Single Line Pull:	11,640 lbs. (5 280 kg)
Maximum Single Line Speed:	445 FPM (136 m/min)
Maximum Permissible Line Pull:	
w/standard 6 x 37 class rope:	11,640 lbs. (5 280 kg)
w/optional 35 x 7 class rope:	11,640 lbs. (5 280 kg)
Rope Diameter:	5/8 in. (16 mm)
Rope Length:	450 ft. (137 m)
Rope Type:	6 x 37 class EIPS IWRC
	*Optional 35 x 7 class rotation resistant
Maximum Rope Stowage:	750 ft. (228 m)

*Denotes optional equipment

3

RT530E

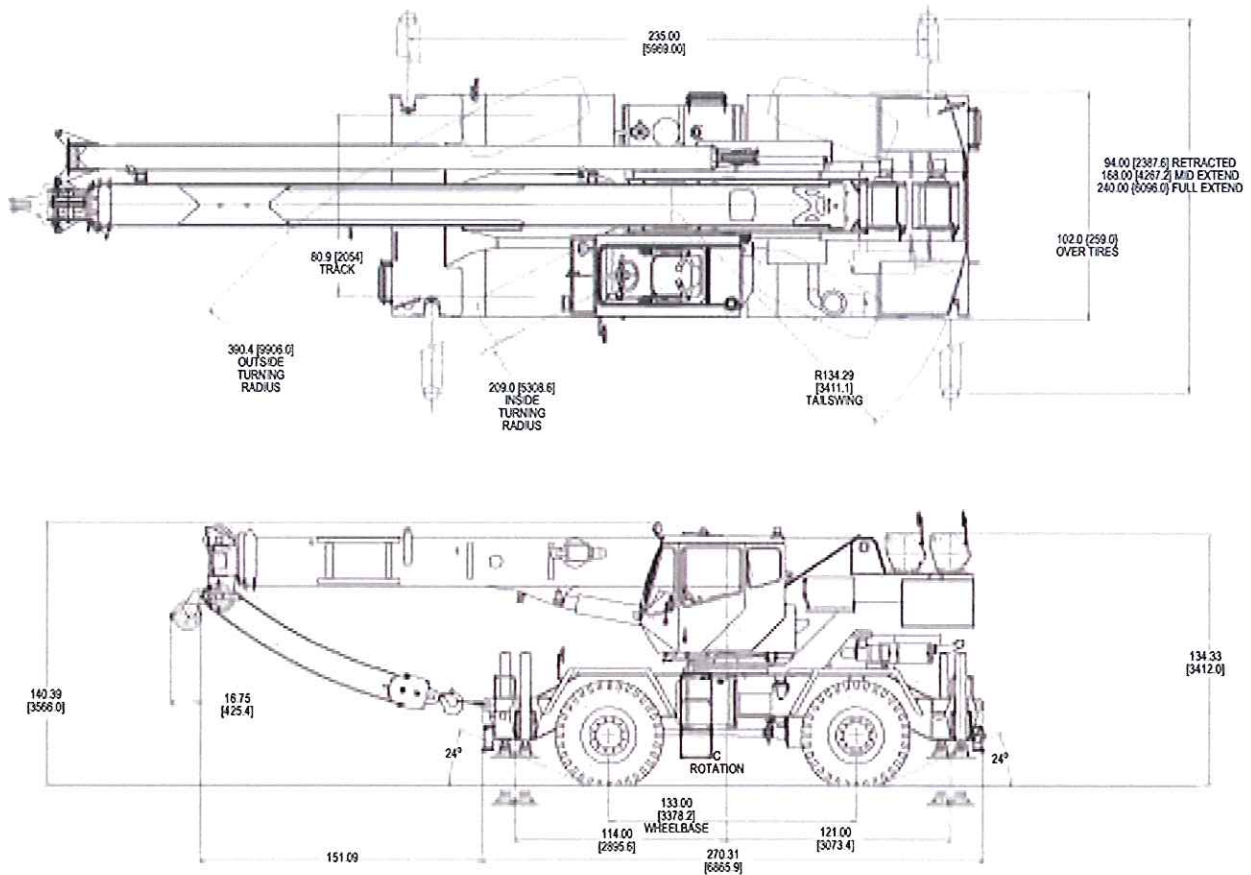
GROVE.

dimensions

NOTES

1. ALL DIMENSIONS ARE FOR REFERENCE ONLY
 2. BOOM ELEVATION IS -3° TO +76°
- ▷ DIMS SHOWN BASED ON 20.5 X 25 TIRES
ADD 1.36 [34.5] FOR 16.0 X 25 TIRES

5



NOTE: [] Reference dimensions in mm

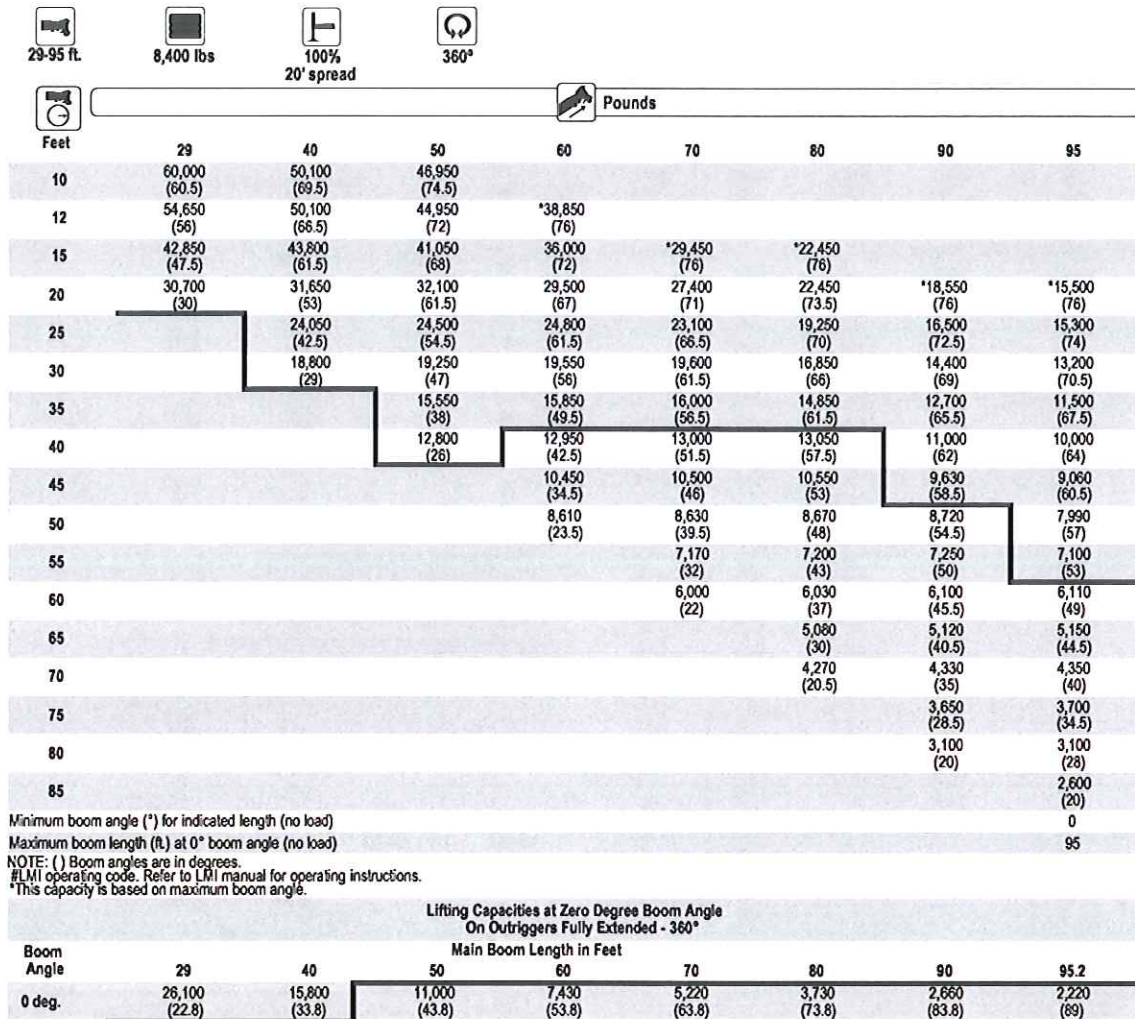
Weights

	GVW		Front		Rear	
	lb.	kg	lb.	kg	lb.	kg
RT530E Basic Machine	54,483	24,713	25,090	11,381	29,393	13,333
ADD: 26 - 45 ft Tele swingaway	1,790	812	2,853	1,294	-1,063	-482
ADD: 26 ft swingaway	1,300	590	2,111	958	-811	-368
ADD: Auxiliary Hoist cable	339	154	-127	-58	466	211
ADD: Auxiliary boom nose	142	64	283	128	-141	-64
ADD: 30 ton (28mt) 3-sheave hook-block (stowed)	580	263	611	277	-31	-14
ADD: 7.5 ton (6.8mt) headache ball (stowed)	369	167	388	176	-19	-9
Remove: counterweight	-8,400	-3,810	2,668	1,210	-11,068	-5,020

RT530E

GROVE.

RT530E load chart



NOTE: () Reference radii in feet.

AS-829-101755

RT530E

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

GROVE.

RT530E load charts

29-60 ft. 8,400 lbs. Pick & Carry (Max. 2.5 MPH) 20.5 x 25 Tires Boom Centered Over Front

#9006

Feet	Main Boom Length in Feet			
	29	40	50	60
10	25,900 (60.5)	25,900 (70)	18,250 (74.5)	
12	22,350 (56)	22,350 (66.5)	18,250 (72)	
15	18,250 (47.5)	18,250 (62)	18,250 (68)	13,350 (72.5)
20	13,350 (30)	13,350 (53)	13,350 (61.5)	13,350 (67)
25		10,350 (42.5)	10,350 (54.5)	10,350 (61.5)
30		8,060 (29)	8,060 (47)	8,060 (56)
35			4,810 (38)	4,810 (49.5)
40			3,770 (26)	3,770 (42.5)
45				2,930 (34.5)
50				2,240 (23.5)
Min. boom angle for indicated length (no load)				0°
Max. boom length at 0° boom angle (no load)				60 ft.

NOTE: () Boom angles are in degrees.
#LMI operating code. Refer to LMI manual for instructions.

Lifting Capacity at Zero Degree On Rubber Pick & Carry - Boom Centered Over Front

Boom Angle	Main Boom Length in Feet			
	29	40	50	60
0°	11,400 (22.8)	5,090 (33.8)	3,110 (43.8)	1,800 (53.8)

NOTE: Reference radii in feet. A6-829-100276B

29-95 ft. 8,400 lbs. 14 ft. spread 50% 360°

#4001

Feet	Main Boom Length in Feet							
	29	40	50	60	70	80	90	95
10	60,000 (60.5)	48,000 (69.5)	45,000 (74.5)					
12	53,300 (56)	48,000 (66.5)	44,950 (72)	*37,000 (76)				
15	42,100 (47.5)	40,500 (61.5)	38,350 (68)	36,000 (72)	*27,400 (76)	*21,000 (76)		
20	23,950 (30)	23,850 (53)	23,900 (61.5)	24,050 (67)	23,200 (71)	21,000 (73.5)	*17,000 (76)	*15,500 (76)
25		15,850 (42.5)	15,950 (54.5)	16,150 (61.5)	16,350 (66.5)	16,400 (70)	15,950 (72.5)	15,300 (74)
30		11,350 (29)	11,500 (47)	11,650 (56)	11,800 (61.5)	12,000 (66)	12,150 (69)	12,100 (70.5)
35			8,620 (38)	8,820 (49.5)	8,930 (56.5)	9,050 (61.5)	9,190 (66.5)	9,260 (67.5)
40			6,610 (26)	6,820 (42.5)	6,900 (51.5)	6,990 (57.5)	7,100 (62)	7,150 (64)
45				5,350 (34.5)	5,400 (46)	5,470 (53)	5,550 (58.5)	5,600 (60.5)
50				4,220 (23.5)	4,260 (39.5)	4,310 (48)	4,370 (54.5)	4,410 (57)
55					3,350 (32)	3,390 (43)	3,430 (50)	3,460 (53)
60					2,600 (22)	2,640 (37)	2,670 (45.5)	2,700 (49)
65						2,020 (30)	2,050 (40.5)	2,080 (44.5)
70						1,490 (20.5)	1,520 (35)	1,530 (40)
75							1,070 (28.5)	1,080 (34.5)
0.1A (lb.)	660	610	580	560	550	540	540	530
Minimum boom angle (°) for indicated length (no load)							15	20
Maximum boom length (ft.) at 0° boom angle (no load)							80	

NOTE: () Boom angles are in degrees.
#LMI operating code. Refer to LMI manual for operating instructions.
*This capacity is based on maximum boom angle.

Lifting Capacities at Zero Degree Boom Angle On Outriggers 50% Extended - 360°

Boom Angle	Main Boom Length in Feet					
	29	40	50	60	70	80
0 deg.	18,800 (22.8)	9,000 (33.8)	5,400 (43.8)	3,480 (53.8)	2,100 (63.8)	1,130 (73.8)

NOTE: () Reference radii in feet. A6-829-100270A

NOTES TO ALL RUBBER CAPACITY CHARTS:

- Capacities are in pounds and do not exceed 75% of tipping loads as determined by test in accordance with SAE J765.
- Capacities are applicable to machines equipped with 20.5x25 (24 ply) tires at 75 psi cold inflation pressure, and 16.00x25 (28 ply) tires at 100 psi cold inflation pressure.
- Defined Arc - Over front includes 6° on either side of longitudinal centerline of machine (ref. drawing C6-829-003529).
- Capacities appearing above the bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.
- Capacities are applicable only with machine on firm level surface.
- On rubber lifting with boom extensions not permitted.
- For pick and carry operation, boom must be centered over front of machine, mechanical swing lock engaged and load restrained from swinging. When handling loads in the structural range with capacities close to maximum ratings, travel should be reduced to creep speeds.
- Axle lockouts must be functioning when lifting on rubber.
- All lifting depends on proper tire inflation, capacity and condition. Capacities must be reduced for lower tire inflation pressures. See lifting capacity chart for tire used. Damaged tires are hazardous to safe operation of crane.
- Creep - Not over 200 ft. of movement in any 30 minute period and not exceeding 1mph.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

load handling

Weight Reductions for Load Handling Devices

26 ft. Offsettable Boom Extension	Pounds
*Erected -	2,960
26 ft.-45 ft. Tele. Boom Extension	Pounds
*Erected (Retracted) -	4,220
*Erected (Extended) -	5,780

*Reduction of main boom capacities

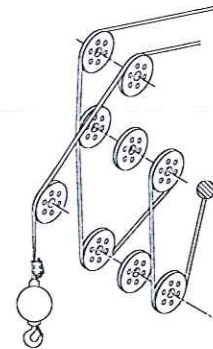
Auxiliary Boom Nose	Pounds
	142

Hookblocks and Headache Balls	Pounds
30 Ton, 3 Sheave	580 +
15 Ton, 2 Sheave	425 +
7.5 Ton Overhaul Ball	354 +
7.5 Ton Headache Ball	338 +

*Refer to rating plate for actual weight.

When lifting over swingaway and/or jib combinations, deduct total weight of all load handling devices reeved over main boom nose directly from swingaway or jib capacity.

NOTE: All load handling devices and boom attachments are considered part of the load and suitable allowances MUST BE MADE for their combined weights. Weights are for Grove furnished equipment.



Line Pulls and Reeving Information

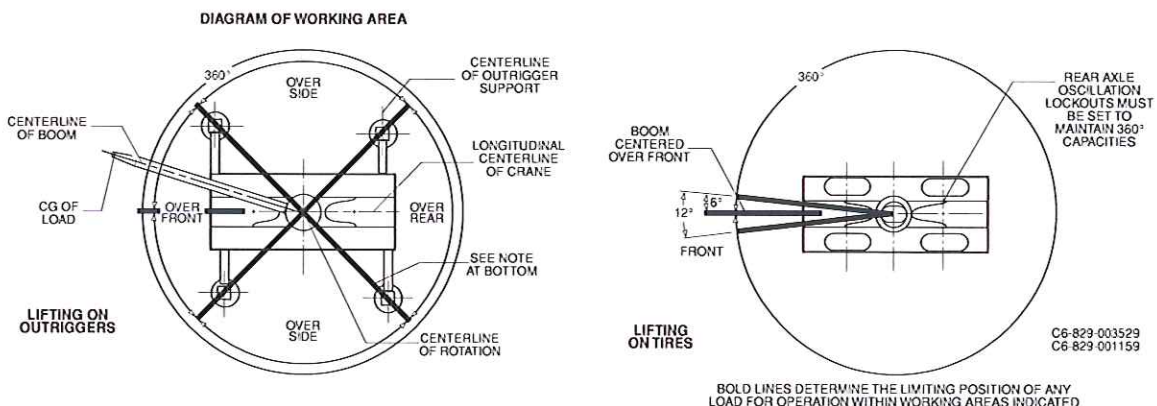
Hoists	Cable Specs	Permissible Line Pulls	Nominal Cable Length
Main & Aux.	5/8" (16 mm) Flex-X35 (35x7) Rotation Resistant (non-rotating) Min. Breaking Str. 61,200 lb.	11,640 lb.	450 ft.
Main	5/8" (16 mm) 6x37 Class EIPS, IWRC Special Flexible Min. Breaking Str. 41,200 lb.	11,640 lb.	450 ft.

Hoist Performance

Wire Rope Layer	Hoist Line Pulls Available lb.*	Drum Rope Capacity (ft.) Layer	Total
1	11,640	77	77
2	10,480	85	162
3	9,530	94	256
4	8,730	102	358
5	8,060	111	469
6	7,490	119	588

*Max. lifting capacity: 6x37 class = 11,640 lb.
35x7 class = 11,640 lb.

Working Area Diagram



Bold lines determine the limiting position of any load for operation within working areas indicated.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

GROVE.

RT530E

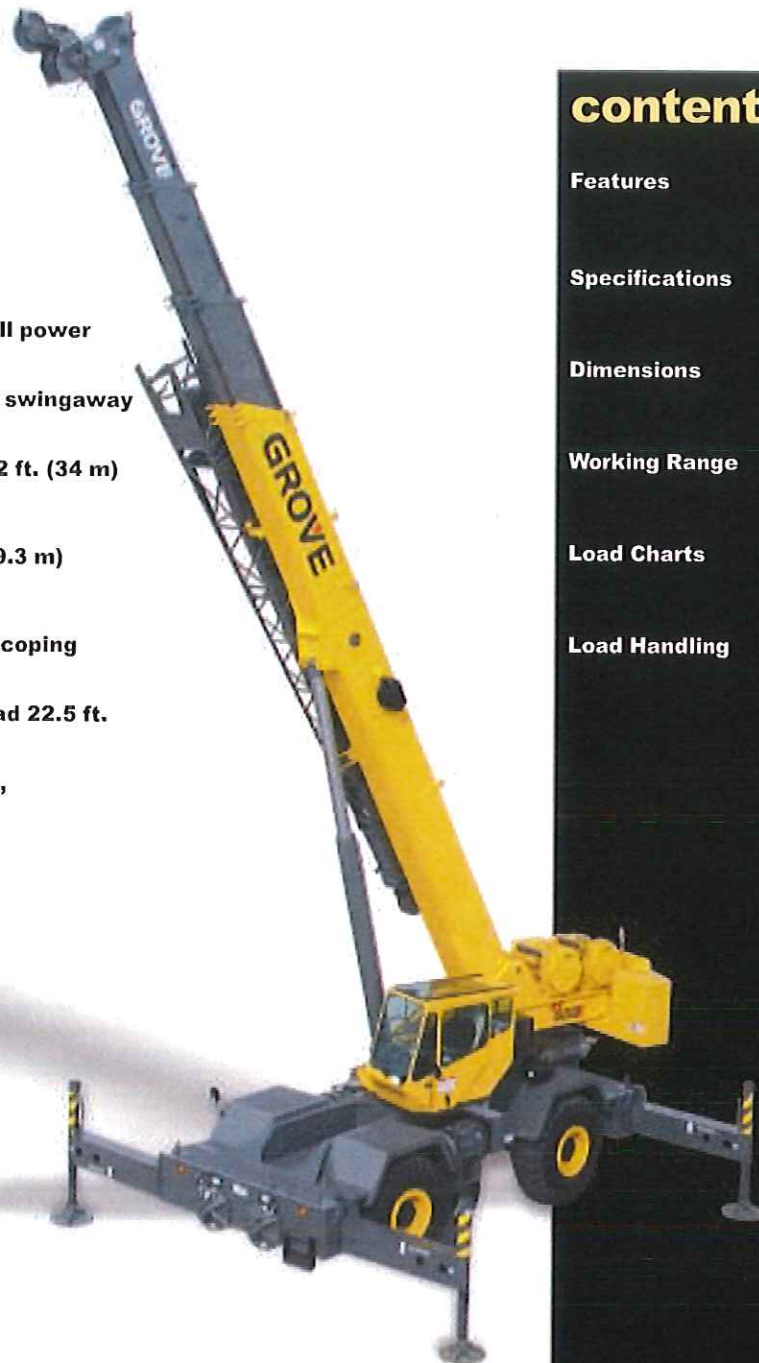
GROVE[®]

RT600E

product guide

features

- 33-105 ft. (10-32 m) 4-section full power boom
- 29-51 ft. (8.8-15.5 m) telescopic swingaway extension
- Max main boom tip height of 112 ft. (34 m)
- "E" Series cab
- Max overall tip height 162 ft. (49.3 m)
- 40/50 ton (40/45 mt) capacity
- One 2-stage double-acting telescoping cylinder
- 3 position outriggers, max spread 22.5 ft. (6.9 m)
- Cummins 6BT 5.9L diesel, 6 cyl., turbocharged engine



contents

Features	2
Specifications	3
Dimensions	5
Working Range	6
Load Charts	7
Load Handling	11

specifications

Superstructure

Boom

33 ft. - 105 ft. (10.1 m - 32 m) four-section, full-power synchronized boom.
Maximum tip height: 112 ft. (34.1 m).

*Optional Fixed Swingaway Extension

29 ft. (8.8 m) offsettable lattice swingaway extension. Offsettable at 0°, 25° and 45°. Stows alongside base boom section. Maximum tip height: 141.5 ft. (43.1 m).

*Optional Telescopic Swingaway Extension

29 ft. - 51 ft. (8.8 m - 15.5 m) telescoping lattice swingaway extension. Offsettable at 0°, 25° and 45°. Stows alongside base boom section. Maximum tip height: 162 ft. (49.3 m).

Boom Nose

Three nylatron sheaves mounted on heavy-duty tapered roller bearings with removable pin-type rope guards. *(Four sheaves with optional 35 x 7 wire rope.) Quick-reeve type boom nose. *Optional removable auxiliary boom nose with removable pin type rope guard.

Boom Elevation

One double-acting hydraulic cylinder with integral holding valve provides elevation from -2° to 78°.

Load Moment & Anti-Two Block System

Standard "Graphic Display" load moment and anti-two block system with audio-visual warning and control lever lockout. These systems provide electronic display of boom angle, length, radius, tip height, relative load moment, maximum permissible load, load indication and warning of impending two-block condition. The system defaults to 360° on rubber chart. The standard Work Area Definition System allows the operator to pre-select and define working areas. If the crane approaches the pre-set limits, audio-visual warnings aid the operator in avoiding job-site obstructions.

Cab

Full vision, all steel fabricated with acoustical lining and tinted safety glass throughout. Deluxe seat incorporates armrest-mounted hydraulic single-axis controllers. Dash panel incorporates gauges for all engine functions. Other standard features include: hot water heater/defroster, cab circulating air fan, sliding side and rear windows, sliding skylight with electric wiper and sunscreen, electric windshield wash/wipe, fire extinguisher, seat belt and circuit breakers.

Swing

Planetary swing with foot-applied multi-disc brake. Spring applied, hydraulically-released swing brake and plunger-type, one position, mechanical house lock operated from cab. *Optional 360° mechanical swing lock. Maximum speed: 2.5 RPM.

Counterweight

11,250 lbs. (5 103 kg) pinned to superstructure.

Hydraulic System

Three main gear pumps with combined capacity of 103 GPM (391 L/min), 135 GPM (511 L/min) with optional air conditioning. Maximum operating pressure: 3500 psi (26.2 MPa)

Return line type filter with full flow by-pass protection and service indicator. Replaceable cartridge with micron filtration rating of 5/12/16. 134 gallon (509 L) reservoir. Hydraulic oil cooler. System pressure test ports.

Hoist Specifications Main and Auxiliary Hoist: Grove Model HO30G-16G

Planetary reduction with automatic spring applied multi-disc brake. Grooved drum. Electronic hoist drum rotation indicator and hoist drum cable followers.

Maximum Single Line Pull: 18,180 lbs
(8 246 kg)

Maximum Single Line Speed: 588 FPM
(179 m/min)

Maximum Permissible Line Pull:
16,800 lbs. (7 620 kg) w/standard 6 x 37 class rope
16,800 lbs. (7 620 kg) w/optional 35 x 7 class rope

Rope Diameter: 3/4 in. (19 mm)

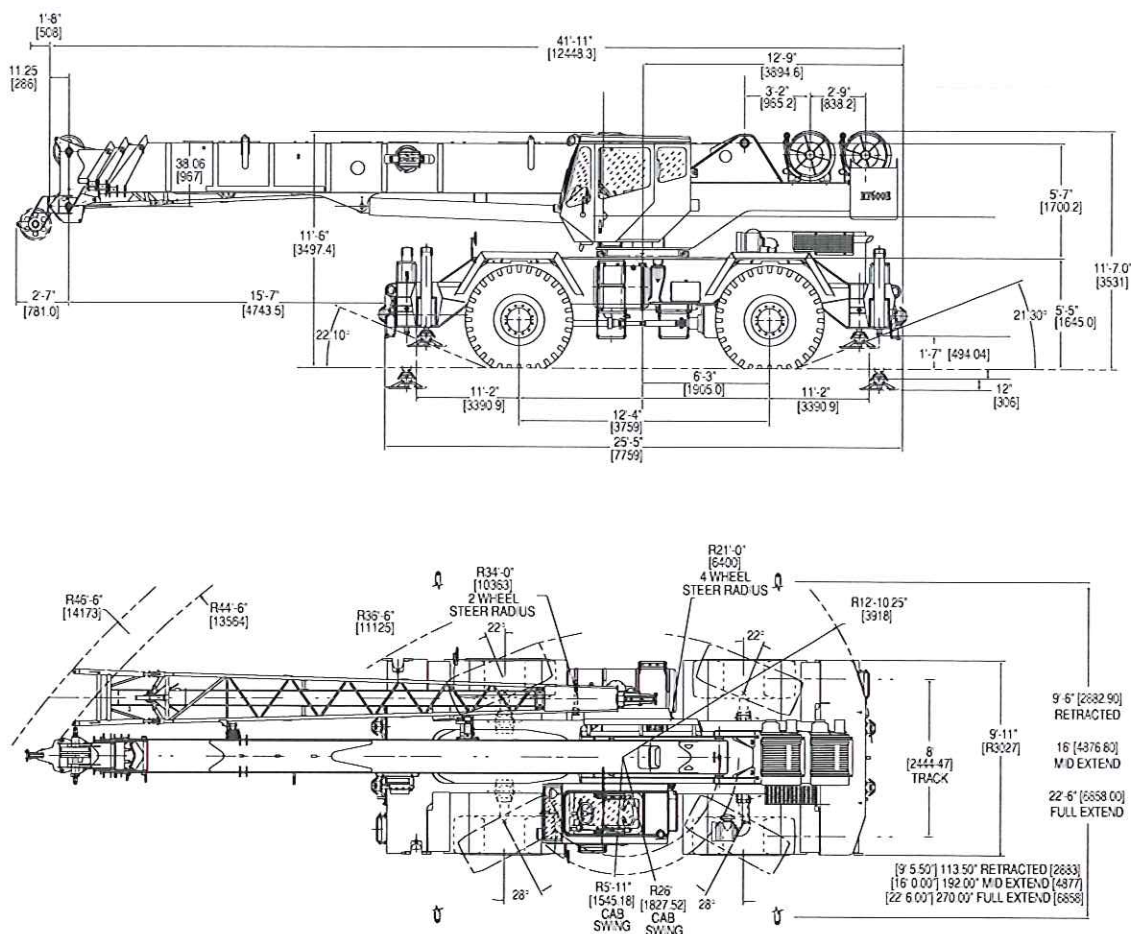
Rope Length: 450 ft. (137 m)

Rope Type: 6 x 37 Class EIPS IWRC
Optional: 35 x 7 class rotation resistant

Maximum Rope Stowage: 694 ft. (211 m)

RT600E

dimensions



Note: [] Reference dimensions in mm

Weights

	GVW		Front		Rear	
	lb.	kg	lb.	kg	lb.	kg
RT600E Basic Machine	71,691	32,519	32,934	14,939	38,757	17,580
ADD: 29 - 51 ft. tele swingaway	2,109	957	3,456	1,568	-1,347	-611
ADD: 29 ft. swingaway	1,493	677	2,506	1,137	-1,013	-459
ADD: Auxiliary hoist cable	563	255	-213	-97	775	352
ADD: Auxiliary boom nose	131	59	358	162	-227	-103
ADD: 40 ton (35 mt) 3 sheave hookblock (stowed in trough)	800	363	822	373	-22	-10
ADD: 50 ton (45 mt) 3 sheave hookblock (stowed in trough)	1,000	454	1,027	466	-27	-12
ADD: 8.3 ton (7.5 mt) headache ball (hanging from aux. nose)	370	168	643	292	-273	-124
Remove: Counterweight	-11,250	-5,103	4,570	2,073	-15,820	-7,176

RT600E

GROVE.

RT600E load charts

33-105 ft. 29 - 51 ft. 11,250 lbs 100% 22' 6" spread 360

Feet	Pounds					
	29 ft. LENGTH			51 ft. LENGTH		
	#0021 0° OFFSET	#0022 25° OFFSET	#0023 45° OFFSET	#0041 0° OFFSET	#0042 25° OFFSET	#0043 45° OFFSET
30	9,000 (78)			6,000 (78)		
35	9,000 (77)			6,000 (77)		
40	9,000 (74.5)	8,000 (77.5)		6,000 (77)		
45	9,000 (72.5)	7,500 (76)	5,500 (78)	6,000 (76)		
50	8,700 (70)	7,170 (74)	5,600 (76)	6,000 (74)		
55	8,030 (67.5)	6,820 (71.5)	5,500 (73.5)	6,000 (72)	4,120 (78)	
60	7,380 (65)	6,500 (69)	5,300 (71)	6,000 (70)	3,900 (77)	
65	6,770 (62.5)	6,210 (68.5)	5,180 (68.5)	6,000 (68)	3,710 (75)	2,740 (78)
70	6,210 (60)	5,950 (64)	4,800 (66)	5,620 (66)	3,530 (72.5)	2,660 (76.5)
75	5,710 (57.5)	5,710 (61.5)	4,620 (63)	5,210 (64)	3,370 (70.5)	2,580 (74)
80	5,250 (55)	5,500 (58.5)	4,370 (60.5)	4,860 (61.5)	3,220 (68.5)	2,520 (72)
85	4,790 (52)	5,300 (56)	4,100 (57.5)	4,540 (59.5)	3,080 (66)	2,460 (69.5)
90	4,090 (49)	4,690 (53)	3,820 (54)	4,260 (57)	2,960 (63.5)	2,410 (67)
95	3,480 (46)	3,960 (49.5)		4,000 (55)	2,850 (61.5)	2,360 (64.5)
100	2,930 (42.5)	3,350 (46)		3,770 (52.5)	2,750 (59)	2,330 (62)
105	2,440 (39)	2,810 (42.5)		3,380 (50)	2,660 (56)	2,300 (59)
110	2,000 (35)	2,320 (38.5)		2,910 (47.5)	2,570 (53.5)	2,280 (56)
115	1,610 (30.5)			2,500 (44.5)	2,500 (50.5)	
120	1,250 (25.5)			2,120 (41.5)	2,430 (47.5)	
125				1,780 (38.5)	2,250 (44.5)	
130				1,470 (35)	1,820 (40.5)	
135				1,180 (31)	1,420 (36.5)	
Min. boom angle for indicated length (no load)	24°	32°	45°	25°	35°	45°
Max. boom length at 0° boom angle (no load)	90 ft.			90 ft.		

NOTE: () Boom angles are in degrees. A6-829-100845A
 #LMI operating code. Refer to LMI manual for instructions.
 *This capacity based on maximum boom angle.
 **29 ft. capacities are also applicable to fixed offsettable ext. However, the LMI codes will change to #0051, #0052 and #0053 for 0°, 25° and 45° offset, respectively

33-105 ft. 11,250 lbs Stationary 360

Feet	Pounds				
	#9005				
	Main Boom Length in Feet				
	33	40	50	60	70
10	38,550 (69.5)	38,550 (73.5)			
12	32,550 (65.5)	32,550 (70.5)	32,550 (75)		
15	23,700 (59.5)	23,700 (65.5)	23,700 (71)	23,700 (75)	
20	14,450 (47.5)	14,450 (57)	14,450 (64.5)	14,450 (69.5)	14,450 (73)
25	9,640 (32)	9,640 (47)	9,640 (58)	9,640 (64.5)	9,640 (68.5)
30		6,840 (34.5)	6,840 (50.5)	6,840 (58.5)	6,840 (64)
35			4,850 (41.5)	4,850 (52.5)	4,850 (59)
40			3,450 (30.5)	3,450 (46)	3,450 (54)
45				2,410 (38)	2,410 (48.5)
50				1,610 (28)	1,610 (42.5)

Min. boom angle (°) for indicated length (no load) 30
 Max. boom length (ft.) at 0° boom angle (no load) 60
 NOTE: () Boom angles are in degrees.
 #LMI operating code. Refer to LMI manual for operating instructions.

Lifting Capacities at Zero Degree Boom Angle On Rubber - 360°				
Boom Angle	Main Boom Length in Feet			
	33	40	50	
0°	7,580 (28.2)	4,850 (35)	2,410 (45)	

NOTE: () Reference radii in feet. A6-829-1008368

- NOTES:
- All capacities above the bold line are based on structural strength of boom extension.
 - 29 ft. and 51 ft. boom extension lengths may be used for single line lifting service.
 - Radii listed are for a fully extended boom with the boom extension erected. For main boom lengths less than fully extended, the rated loads are determined by boom angle. Use only the column which corresponds to the boom extension length and offset for which the machine is configured. For boom angles not shown, use the rating of the next lower boom angle.
WARNING: Operation of this machine with heavier loads than the capacities listed is strictly prohibited. Machine tipping with boom extension occurs rapidly and without advance warning.
 - Boom angle is the angle above or below horizontal of the longitudinal axis of the boom base section after lifting rated load.
 - Capacities listed are with outriggers fully extended and vertical jacks set.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

GROVE.

RT600E

load handling

11

Weight Reductions for Load Handling Devices

29 Ft. Offsettable Boom Extension	Pounds
*Erected -	4,412

29 Ft. 51 ft. Tele. Boom Extension	Pounds
*Erected (Retracted) -	6,611
*Erected (Extended) -	9,332

*Reduction of main boom capacities

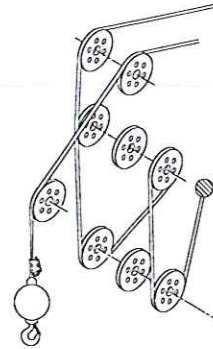
Auxiliary Boom Nose	Pounds
	137

Hookblocks and Headache Balls	Pounds
50 Ton, 4 Sheave	1075
50 Ton, 3 Sheave	1000
40 Ton, 3 Sheave	800
8.3 Ton Headache Ball (non-swivel)	350
8.3 Ton Headache Ball (swivel)*	370

*Refer to rating plate for actual weight.

When lifting over swingaway and/or jib combinations, deduct total weight of all load handling devices reeved over main boom nose directly from swingaway or jib capacity.

NOTE: All load handling devices and boom attachments are considered part of the load and suitable allowances MUST BE MADE for their combined weights. Weights are for Grove furnished equipment.



Line Pulls and Reeving Information

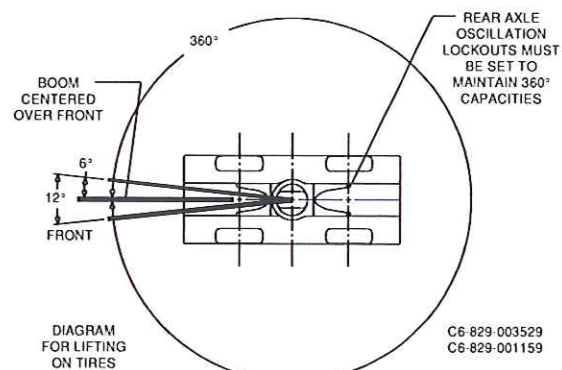
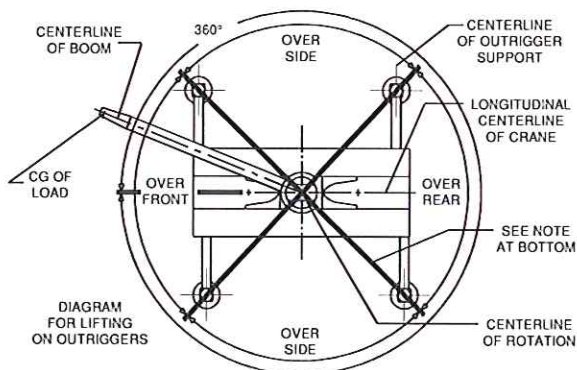
Hoists	Cable Specs	Permissible Line Pulls	Nominal Cable Length
Main	3/4" (19 mm) 6x37 Class EIPS, IWRC Special Flexible Min. Breaking Str. 58,800 lb.	16,800 lb.	450 ft.
Main & Aux.	3/4" (19 mm) Flex - X 35 Rotation Resistance (non-rotating) Min. Breaking Strength 85,500 lb.	16,800 lb.	450 ft.

Hoist Performance

Wire Rope Layer	Hoist Line Pulls Low Available lb.*	Two Speed Hoist High Available lb.*	Drum Rope Capacity (ft.) Layer	Total
1	18,134	9,067	78	78
2	16,668	8,334	85	164
3	15,420	7,710	92	256
4	14,347	7,174	99	356
5	13,413	6,707	106	462
6	12,594	6,297	113	575

*Max. lifting capacity: 6x37 or 35x7 class = 16,800 lb.

Working Area Diagram



Bold lines determine the limiting position of any load for operation within working areas indicated.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

GROVE.

RT600E

GMK3060L-1

Product Guide

A5ME B30.5
Imperial 85%



Features

- 60 t (65 USt) capacity
- 9,6 m-48 m (31.3 ft-157.5 ft) seven-section boom
- Patented TWIN-LOCK™ boom pinning system
- 8,7 m –15 m (28.5 ft – 49.2 ft) bi-fold swingaway, hydraulic or manual offset
- 13,5 t (29,760 lb) counterweight with hydraulic removal system
- Cummins QSL9-C350 Tier 4 Final six-cylinder turbo-charged diesel engine. ZF-AS TRONIC transmission
- MEGATRAK™ independent hydro-pneumatic suspension
- Manitowoc Crane Control System (CCS)
- MAXbase variable outrigger positioning system

Jobsite benefits

- Higher and stronger. With a maximum boom and extension length of 63 m (206.7 ft) the crane can still lift 2,4 t (2.7 USt).
- Increased flexibility with multiple counterweight configurations that provide optimal Taxi arrangements.
- Three outrigger positions provide ultimate flexibility for job sites with the ability to position the crane in tighter spaces.
- MEGATRAK™ independent suspension, all-wheel steering system and steer by wire technology provides increased ground clearance, adjustable suspension and reduces tire-wear to provide maximum maneuverability in all-terrains.
- Compact length and a minimum width of 2,55 m (8.4 ft) allow access to even the most narrow of jobsites, while optimizing crane set up and lifting position.
- The new Boom Configurator mode thru the Crane Control System (CCS) simplifies the telescoping process and allows for quick on-board lift planning.

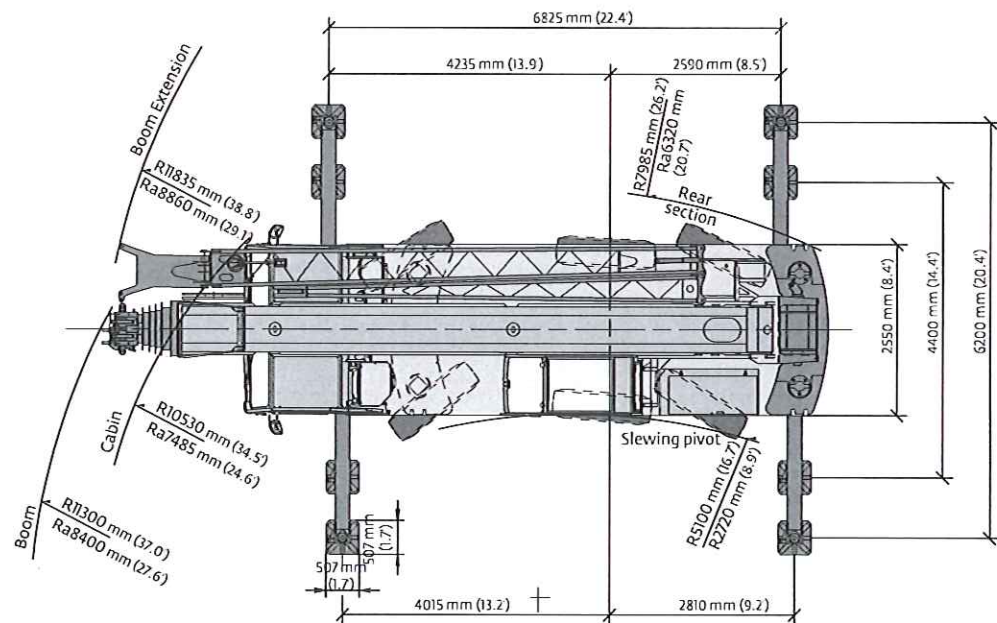


The assurance of the world's most advanced crane service and support to get you back to work fast.



Financial tools that help you capitalize on opportunity with solutions that fit your needs.

Dimensions

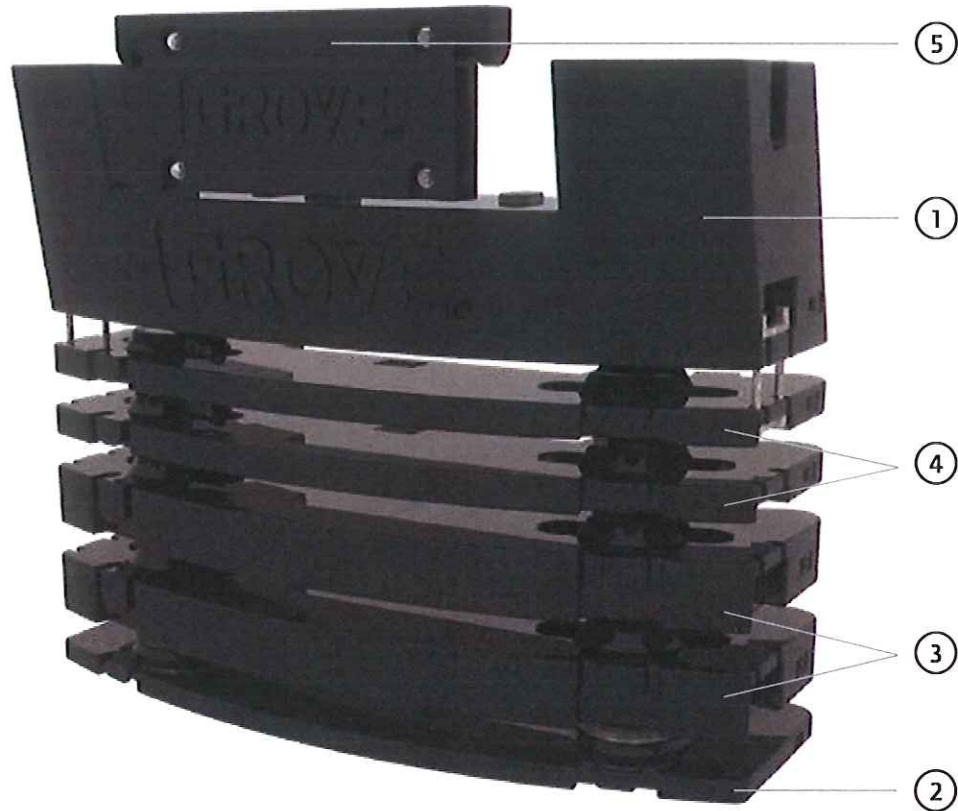



R_a = Radius all wheels steered

* lowered

Counterweight

Counterweight



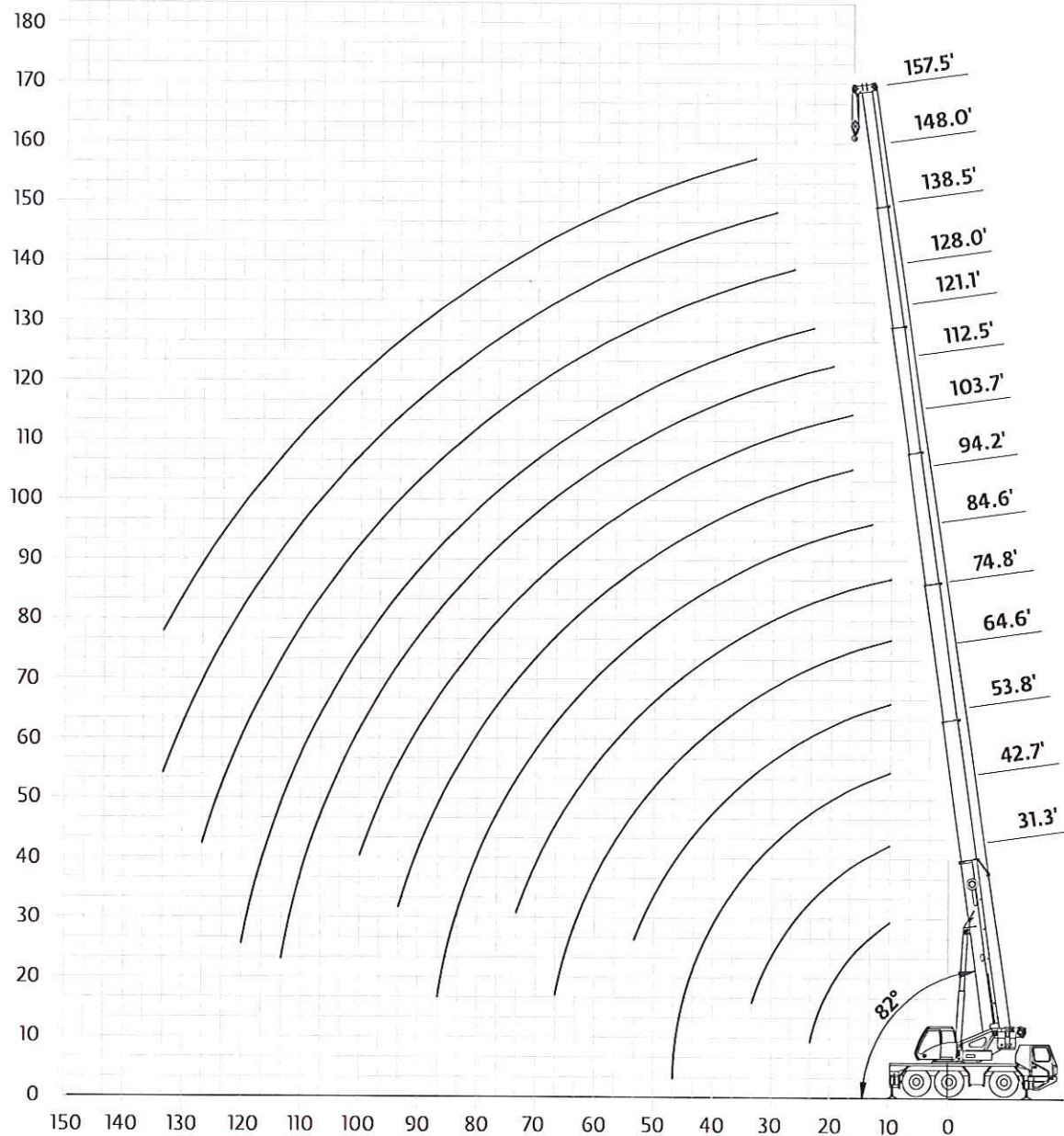
	①* 6,0 t (6.6 USt)	② 1,0 t (1.1 USt)	③ 2,0 t (2.2 USt)	④ 1,0 t (1.1 USt)	⑤ 0,5 t (0.6 USt)
6,5 t (7.2 USt)	X				X
7,5 t (8.3 USt)	X	X			X
8,5 t (9.4 USt)	X	X		X	X
9,5 t (10.5 USt)	X	X	X		X
10,5 t (11.6 USt)	X	X	X	X	X
11,5 t (12.7 USt)	X	X	X	2X	X
12,5 t (13.8 USt)	X	X	2X	X	X
13,5 t (14.9 USt)	X	X	2X	2X	X

*Fixed at turntable

Working range

Main boom

9,6 m - 48 m (31.3 ft - 157.5 ft) main boom



Hook block	H
69 USt, 5-sheave quick-reaving	3300 mm (10.8 ft)
44 USt, 3-sheave quick-reaving	3200 mm (10.5 ft)
18 USt, 1-sheave quick-reaving	3100 mm (10.2 ft)
9 USt single overhaul ball	2700 mm (8.9 ft)

Tip heights shown in the working range diagram do not consider loaded boom deflection.

Load charts

Main boom

			
9,6 m – 48,0 m (31.3 ft – 157.5 ft)	12 500 kg (27,560 lb)	6,8 m x 6,2 m (22.4 ft x 20.4 ft) 100%	360°



Pounds x 1000

Feet	31.3	40.8- 42.8	50.3- 54.0	61-64.7	70.1- 75.0	83- 94.4	101.4- 105.8	110- 113.8	117.1- 124.1	127.8- 138.1	141.3- 148.0	155.2- 157.5
10	98.0	98.0	97.0	86.0								
15	75.0	75.0	74.0	75.0	67.0	54.0						
20	59.0	60.0	59.0	59.0	57.0	48.0	37.0	31.8				
25		47.0	46.0	44.0	43.4	41.8	32.6	28.6	27.2	23.2		
30		37.4	36.8	36.0	33.6	33.4	28.4	25.4	24.8	22.0	18.0	
35		8.8	29.6	29.0	29.0	27.2	24.8	23.0	22.0	20.4	16.6	14.6
40			25.0	24.0	24.2	23.6	21.6	21.0	19.6	18.4	15.2	13.6
45			17.6	20.6	20.4	20.6	18.4	17.6	17.4	16.6	14.0	12.6
50				18.4	17.2	17.8	16.8	15.0	14.8	14.4	12.8	11.8
55				12.4	15.6	15.4	14.6	13.0	12.8	12.6	11.8	10.8
60					13.6	13.2	12.8	11.8	11.0	10.8	10.8	10.0
65					9.4	11.6	11.2	10.8	9.6	9.4	10.0	9.2
70						10.2	10.0	10.2	8.6	8.6	8.8	8.6
75						8.2	8.8	9.0	8.0	8.0	7.6	7.6
80						7.0	7.6	8.0	7.6	7.6	7.2	6.8
85						6.2	6.6	7.2	7.0	7.0	6.6	6.0
90							5.8	6.2	6.4	6.4	6.0	5.4
95							5.2	5.6	5.8	5.8	5.2	4.8
100								4.8	5.0	5.0	4.8	4.2
105								4.2	4.4	4.6	4.2	3.6
110									4.0	4.0	3.6	3.2
115									3.4	3.6	3.2	2.6
120										3.2	2.6	2.2
125											2.2	1.8
130											2.0	1.4
135											1.6	

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane

Load charts

Main boom






9,6 m – 48,0 m
 (31.3 ft – 157.5 ft)

10 500 kg
 (23,140 lb)

6,8 m x 6,2 m
 (22.4 ft x 20.4 ft)
 100%

360°



Pounds x 1000

Feet	31.3	40.8- 42.8	50.3- 54.0	61-64.7	70.1- 75.0	83- 94.4	101.4- 105.8	110- 113.8	117.1- 124.1	127.8- 138.1	141.3- 148.0	155.2- 157.5
10	97.0	97.0	97.0	86.0								
15	74.0	75.0	74.0	74.0	67.0	54.0						
20	57.0	58.0	58.0	56.0	54.0	48.0	37.0	31.8				
25		45.0	44.0	43.0	39.8	39.4	32.6	28.6	27.2	23.2		
30		35.4	33.8	33.0	32.8	30.6	28.4	25.4	24.8	22.0	18.0	
35		8.8	28.8	26.6	26.6	26.4	23.6	22.8	22.0	20.4	16.6	14.6
40			23.0	23.0	22.0	22.2	19.8	19.0	18.6	18.2	15.2	13.6
45			15.6	20.0	18.8	18.8	17.6	16.0	15.6	15.2	14.0	12.6
50				16.8	16.8	16.2	15.2	13.6	13.4	13.0	12.8	11.8
55				10.8	14.4	14.0	13.2	12.6	11.4	11.2	11.6	10.8
60					12.4	12.0	11.4	11.6	10.0	9.6	10.0	10.0
65					9.2	10.4	10.0	10.2	9.4	8.4	8.8	8.6
70						9.0	8.8	9.0	8.6	7.8	8.2	7.6
75						7.0	7.6	8.0	8.0	7.4	7.4	6.8
80						6.2	6.6	7.0	7.0	6.8	6.4	5.8
85						5.2	5.8	6.2	6.4	6.2	5.6	5.2
90							5.2	5.4	5.6	5.6	5.0	4.4
95							4.2	4.6	5.0	5.0	4.4	3.8
100								4.0	4.6	4.4	3.8	3.4
105								3.4	4.2	3.8	3.4	2.8
110									3.6	3.2	2.8	2.4
115									3.2	2.8	2.4	2.0
120										2.4	2.0	1.6
125											1.6	
130											1.2	

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
 The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane

Load charts

Main boom



9,6 m – 48,0 m
(31.3 ft – 157.5 ft)



8500 kg
(18,800 lb)



6,8 m x 6,2 m
(22.4 ft x 20.4 ft)
100%



360°



Pounds x 1000

Feet	31.3	40.8- 42.8	50.3- 54.0	61-64.7	70.1- 75.0	83- 94.4	101.4- 105.8	110- 113.8	117.1- 124.1	127.8- 138.1	141.3- 148.0	155.2- 157.5
10	97.0	97.0	96.0	86.0								
15	74.0	74.0	73.0	74.0	67.0	54.0						
20	56.0	56.0	56.0	51.0	49.0	48.0	37.0	31.8				
25		43.8	40.0	37.0	38.2	35.8	32.6	28.6	27.2	23.2		
30		32.8	33.0	30.0	29.8	29.6	26.2	25.4	24.8	22.0	18.0	
35		8.8	26.2	25.6	24.0	24.2	21.8	20.6	20.2	19.6	16.6	14.6
40			20.8	22.0	20.8	20.0	18.8	17.0	16.6	16.2	15.2	13.6
45			13.4	18.0	18.0	17.0	15.8	14.8	13.8	13.4	14.0	12.6
50				15.2	15.2	14.4	13.6	13.6	12.0	11.2	11.8	11.8
55				9.2	12.8	12.4	11.6	11.8	11.0	10.0	10.4	10.2
60					11.0	10.6	10.0	10.2	10.0	9.2	9.4	8.8
65					8.2	9.0	8.6	8.8	8.8	8.4	8.2	7.6
70						7.6	7.4	7.8	7.8	7.6	7.0	6.4
75						6.8	6.4	6.8	6.8	6.8	6.2	5.6
80						6.2	5.6	6.0	6.0	6.0	5.4	4.8
85						4.2	4.8	5.2	5.6	5.4	4.6	4.2
90							4.0	4.6	5.2	4.6	4.0	3.6
95							3.4	4.4	4.4	4.2	3.4	3.0
100								4.0	4.0	3.6	3.0	2.4
105									3.4	3.0	2.6	2.0
110									3.0	2.6	2.2	1.6
115									2.6	2.2	1.8	
120										1.8	1.4	

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane

Load charts

Main boom



9,6 m – 48,0 m
(31.3 ft – 157.5 ft)



6500 kg
(14,400 lb)



6,8 m x 6,2 m
(22.4 ft x 20.4 ft)
100%



360°



Pounds x 1000


Feet	31.3	40.8- 42.8	50.3- 54.0	61-64.7	70.1- 75.0	83- 94.4	101.4- 105.8	110- 113.8	117.1- 124.1	127.8- 138.1	141.3- 148.0	155.2- 157.5
10	97.0	96.0	96.0	86.0								
15	74.0	74.0	73.0	72.0	67.0	54.0						
20	54.0	55.0	50.0	49.0	45.0	43.6	37.0	31.8				
25		40.4	38.2	35.4	35.0	34.0	30.2	28.6	27.2	23.2		
30		29.4	30.0	28.6	27.0	27.0	23.6	22.8	22.2	21.6	18.0	
35		8.8	23.6	24.2	23.2	21.8	20.4	18.4	17.8	17.4	16.6	14.6
40			19.4	19.8	19.2	18.0	16.8	16.0	14.6	14.2	14.6	13.6
45			11.6	16.2	16.0	15.0	14.0	14.0	13.2	12.2	12.4	12.0
50				13.4	13.4	12.6	11.8	12.0	11.8	11.0	11.0	10.2
55				8.8	11.2	10.8	10.0	10.2	10.2	10.0	9.4	8.6
60					9.6	9.0	8.6	8.8	8.8	8.8	8.0	7.4
65					6.8	7.8	7.6	7.6	7.6	7.6	6.8	6.2
70						7.2	7.0	6.6	7.0	6.6	6.0	5.4
75						6.8	6.6	6.0	6.2	5.8	5.0	4.4
80						6.2	6.0	5.6	5.4	5.0	4.4	3.8
85						3.2	5.4	5.2	4.8	4.4	3.6	3.2
90							4.6	4.4	4.2	3.8	3.2	2.6
95							4.4	3.8	3.6	3.2	2.6	2.0
100								3.4	3.0	2.8	2.2	1.6
105									2.6	2.2	1.8	
110									2.2	1.8	1.4	
115									1.8	1.4		


THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane

Load charts

Hydraulic offsettable swingaway







9,6 m – 48,0 m
(31.3 ft – 157.5 ft)

8,7 m
(28.5 ft)

13,500 kg
(29,760 lb)

6,8 m x 6,2 m
(22.4 ft x 20.4 ft)
100%

360°



Pounds x 1000

Feet	121.1 ft 28.5 ft			132.7 -138.1 ft 28.5 ft			157.5 ft 28.5 ft		
	0°	20°	40°	0°	20°	40°	0°	20°	40°
30	15.4								
35	15.2			12.4					
40	14.6	10.8		12.2	10.6		8.4		
45	13.6	10.4	8.2	11.4	10.2		8.4		
50	12.4	10.0	8.2	10.6	9.8	8.0	8.4	7.2	
55	11.4	9.6	8.0	9.8	9.4	8.0	8.2	7.2	7.2
60	10.4	9.2	7.8	9.2	8.8	7.8	7.6	7.2	7.2
65	9.6	9.0	7.6	8.4	8.2	7.6	7.2	7.0	7.0
70	8.8	8.6	7.6	7.8	7.6	7.4	6.8	6.6	6.4
75	7.8	7.8	7.4	7.4	7.0	7.0	6.2	6.2	6.0
80	6.8	6.8	7.4	6.4	6.4	6.6	5.8	5.8	5.6
85	6.0	6.0	6.4	5.6	5.6	6.2	5.4	5.4	5.4
90	5.2	5.2	5.6	5.0	5.0	5.4	5	5.0	5.0
95	4.6	4.6	5.0	4.4	4.4	4.6	4.4	4.4	4.8
100	4.0	4.0	4.4	4.0	4.0	4.0	4	4.0	4.4
105	3.4	3.4	3.8	3.8	3.8	3.8	3.4	3.4	3.8
110	3.2	3.2	3.2	3.4	3.4	3.4	3	3.0	3.2
115	3.0	3.0	2.6	3.2	3.2	3.2	2.4	2.4	2.8
120	2.6	2.6		3.0	3.0	3.0	2.2	2.2	2.4
125	2.6	2.6		2.8	2.8	2.8	1.8	1.8	2.0
130	2.4	2.4		2.4	2.4		1.4	1.4	1.6
135	2.2			2.0	2.0				1.4
140	2.0			1.6	1.6				
145				1.4					

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
 The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Specifications

Superstructure



Boom

9,6 m to 48,0 m (31.3 ft - 157.5 ft) seven section TWIN-LOCK™ boom. Maximum tip height 51 m (167.3 ft).



Boom elevation

1 cylinder with safety valve, boom angle from -2,7° to +82°.



Load moment & independent anti-two block system

Load moment and independent anti-two block system with audio visual warning and control lever lock-out. These systems provide graphic display of boom angle, length, radius, tip height, relative load moment, maximum permissible load, load indication and warning of impending two-block condition with lock-out hoist function.



Cab

Aluminium, tilting (approx. 20°), full vision, safety glass, adjustable operator's seat with suspension, engine-independent heater. Armrest-integrated crane controls. Ergonomically arranged instrumentation and crane operating controls. Drive/steer controls.



Slewing

Axial piston fixed displacement motor, planetary gear, service brake and holding brake.



Counterweight

13.5t (29,760 lb) consisting of various sections. Hydraulic removal system from crane cab.



Hydraulic system

2 separate pump circuits operating in an open circuit with 1 axial piston variable displacement pump (load sensing) and 1 geared constant delivery pump for slewing. Thermostatically controlled oil cooler. Tank capacity: 600 l (159 gal).



Control system

Full electronic control of all crane movements using electrical control levers with automatic reset to zero. Integrated with the LMI and engine management system by CAN-BUS. Crane Control System (CCS) with graphic display.



Hoist

Axial piston motor with planetary gear and brake. Drum rotation indicator.

* Optional equipment

- Bi-fold swingaway, 8,7 m-15 m (28.5 ft - 49.2 ft) with hydraulically offset and luffing under load (0°-40°), controlled from the cab.
- Bi-fold swingaway, 8,7 m-15 m (28.5 ft - 49.2 ft) (manual offset 0°, 20°, 40°).
- Auxiliary hoist
- Auxiliary boom nose
- Automatic centralized lubrication for superstructure
- Boom position indicator light- flashing or constant
- Windspeed indicator
- Turntable pin lock
- Two additional strobe lights- carrier and superstructure mounted
- Retractable cab footwalk
- Turntable mounted tool box
- Heavy lift jib options

Carrier



Chassis

Special 3-axle chassis, all-welded torsion-resistant box type construction in high strength steel.



Outriggers

4 hydraulically telescoping beams with vertical cylinders and outrigger pads. Independent horizontal and vertical movement control on each side of carrier and from the crane operator's cab. Electronic level indicator with automatic levelling system. Includes outrigger monitoring system.



Engine

Cummins QSL9 - C 350, diesel, 6-cylinder in-line, water cooled turbocharged and intercooled, 254 kW (340 HP) at 2100 rpm, max torque 1526 Nm (1126 ft lb) at 1400 rpm. Fuel tank capacity: 400 l (106 gal).

Engine emission: Euromot Stage 5 / EPA / CARB Tier 4 Final (non road).



Transmission

ZF Traxon automatic, 12 forward and 2 reverse speeds. Single speed transfer case with inter-axle differential lock.



Drive/Steer

6 x 4 x 6.



Axle lines

3 axle lines. Axle lines 1, 2 and 3 steered, 2 and 3 driven.



Suspension

MEGATRAK™. All wheels with independent hydropneumatic suspension and hydraulic lockout. Longitudinal and transverse level control with automatic on-highway levelling system.

Range +170 mm/-130 mm (+6.7 in / -5.1 in).



Tires

6 tires, 385/95 R25 (14.00 R25).



Steering

Dual circuit, Servocom power steering with emergency steering pump. Separate steering of the 3rd axle line for all-wheel steering and crabbing.



Brakes

Service brake: pneumatic dual circuit, acting on all wheels, air dryer. Anti-lock braking system (ABS). Permanent brake: exhaust brake and constant throttle brake. Parking brake: pneumatically operated spring-loaded brake, acting on 1st and 3rd axle lines.



Cab

Aluminium, 2-man-design, safety glass, driver seat with pneumatic suspension, engine-dependent hot water heater. Complete instrumentation and driving controls. 60° tilt forward for engine access. Additional engine independent diesel cab heater, also serves as engine preheater incl. 24h timer



Electrical system

Three-phase alternator 28 V/100A, 2 batteries 12 V/170 Ah. Lighting system and signals 24 V.

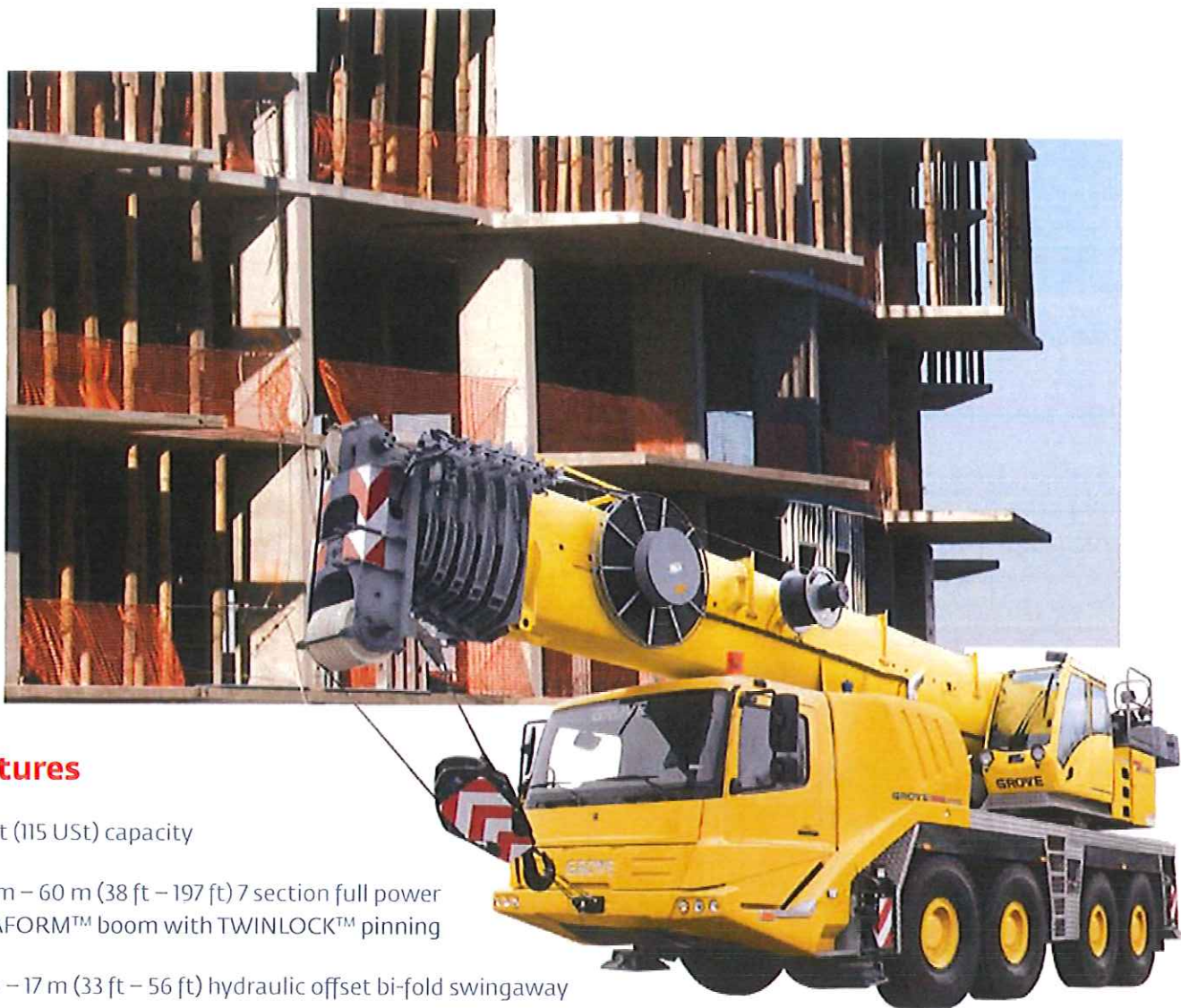
* Optional equipment

- MAXbase variable outrigger positioning
- 6 x 6 x 6
- Electric driveline retarder
- 6 tires, 445/95 R25 (16.00 R25) - Vehicle width 2,75 m
- 6 tires, 525/80 R25 (20.5 R25) - Vehicle width 2,85 m
- Reversing camera system
- Spare tire and wheel with carry bracket
- Trailer hitch
- Air conditioning- combined system for both carrier and superstructure

Notes

Grove GMK4115L

Product Guide



Features

- 100 t (115 USt) capacity
- 11,7 m – 60 m (38 ft – 197 ft) 7 section full power MEGAFORM™ boom with TWINLOCK™ pinning
- 10 m – 17 m (33 ft – 56 ft) hydraulic offset bi-fold swingaway
- 26,1 t (57,500 lb) counterweight with hydraulic removal system
- Chassis engine: Mercedes-Benz OM 460 LA, 295 kW (396 bhp), torque 1900 Nm (1401 ft-lb)
- Superstructure engine: Mercedes-Benz OM 904 LA, 110 kW (148 bhp), torque 580 Nm (428 ft-lb)

Contents

Specifications	4
Dimensions	7
Weight proposals	8
Counterweight dimensions	9
Working range (main boom)	10
Load charts (main boom)	11
Working range (swingaway and extensions)	14
Load charts (swingaway and extensions)	15
Working range (integrated heavy duty jib)	18
Load charts (integrated heavy duty jib)	19

Specifications

Superstructure - continued



Hydraulic system

2 separate circuits, 1 axial piston variable displacement pump (load sensing) with electronic power limiting control and 1 gear pump for swing.

Thermostatically controlled oil coolers keep oil at optimum operating temperature.

Tank capacity: 600 L (158 gal)



Hoist

Main and auxiliary hoist are powered by axial piston motor with planetary gear and multiple disc brake. "Thumb-thumper" hoist drum rotation indicator alerts operator of hoist movement.

	Main	Auxiliary
Line length:	255 m (837 ft)	255 m (837 ft)
Rope diameter:	17 mm	17 mm
Line speed:	120 m/min (394 fpm)	120 m/min (394 fpm)
Line pull:	56 kN (12,589 lb)	56 kN (12,589 lb)



Electrical system

24V system with three phase alternator, 28V/80A.
2 batteries 12V/170 Ah.

*Optional equipment

- ▶ Base boom mounted work lights
- ▶ Boom mounted aircraft warning light
- ▶ Stainless steel exhaust system with spark arrestor
- ▶ Diesel heater, also serves as engine preheater includes 24 hour timer for preheater
- ▶ Engine independent propane gas cab heater
- ▶ Additional worklight for superstructure cab
- ▶ Stereo radio/CD player
- ▶ Air conditioning
- ▶ Drive and steer control for superstructure
- ▶ EKS 5 with full graphic display
- ▶ 3,3 m (10.8 ft) side-stowed 3-sheave heavy duty jib integrated in swingaway
- ▶ Additional fuel tank for superstructure 185 L (49 gal)

Carrier



Chassis

Box type, torsion resistant frame is fabricated from high strength steel.



Outrigger system

Four hydraulic single stage outrigger beams with vertical cylinders and outrigger pads, 500 mm (19.7 in) square. Outrigger can be set in 5 positions:

Full	- 7 m (23 ft)
Partial	- 6 m (19.6 ft)
Partial	- 5 m (16.4 ft)
Partial	- 4 m (13.2 ft)
Retracted	- 2,6 m (8.4 ft)

Independent horizontal and vertical movement controlled from each side of carrier and the superstructure cab. Electronic crane level indicators.



Engine

Mercedes-Benz OM 460 LA direct injected with 295 kW (396 bhp) @ 1800 rpm.

Max torque: 1900 Nm (1401 ft-lb) @ 1300 rpm.

Engine emission: EUROMOT/EPA/CARB (non road)



Fuel tank capacity

400 L (106 gal). Supplies superstructure and carrier engines.



Transmission

Daimler Chrysler, G240-16

16 forward and 2 reverse speeds

2 speed transfer case

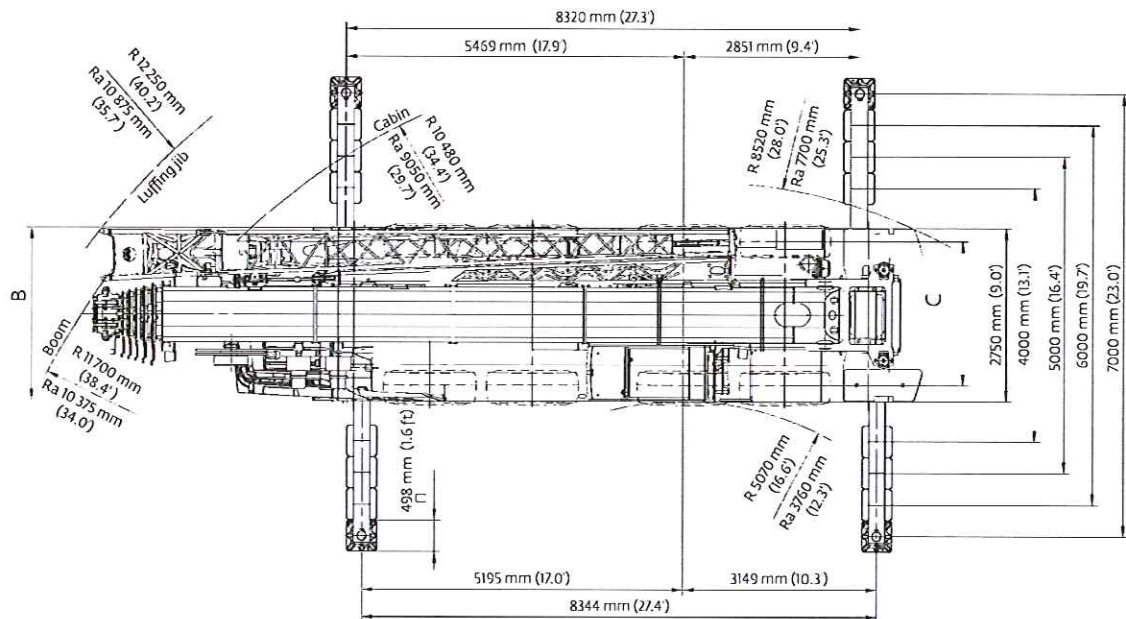
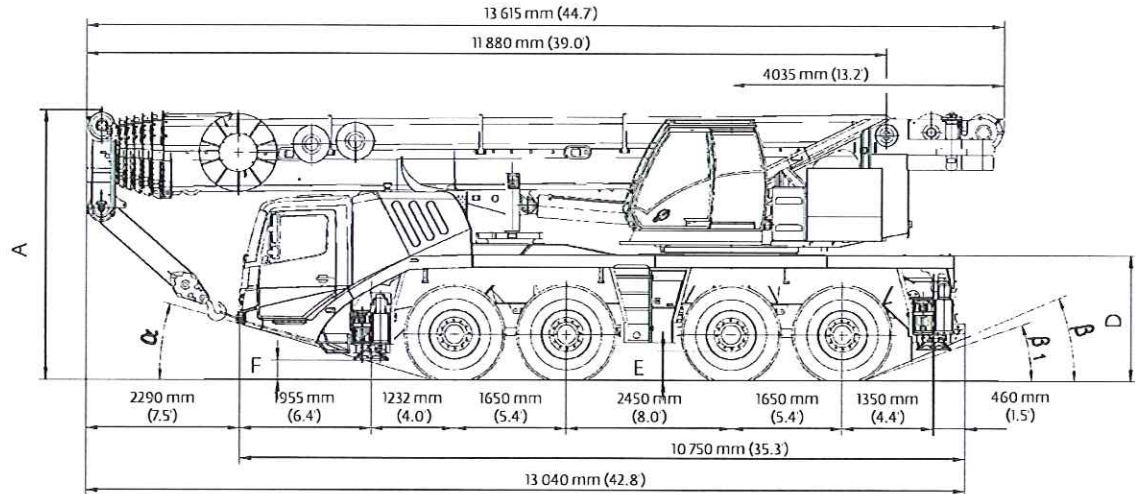


Drive/steer

8x6x8

Dimensions

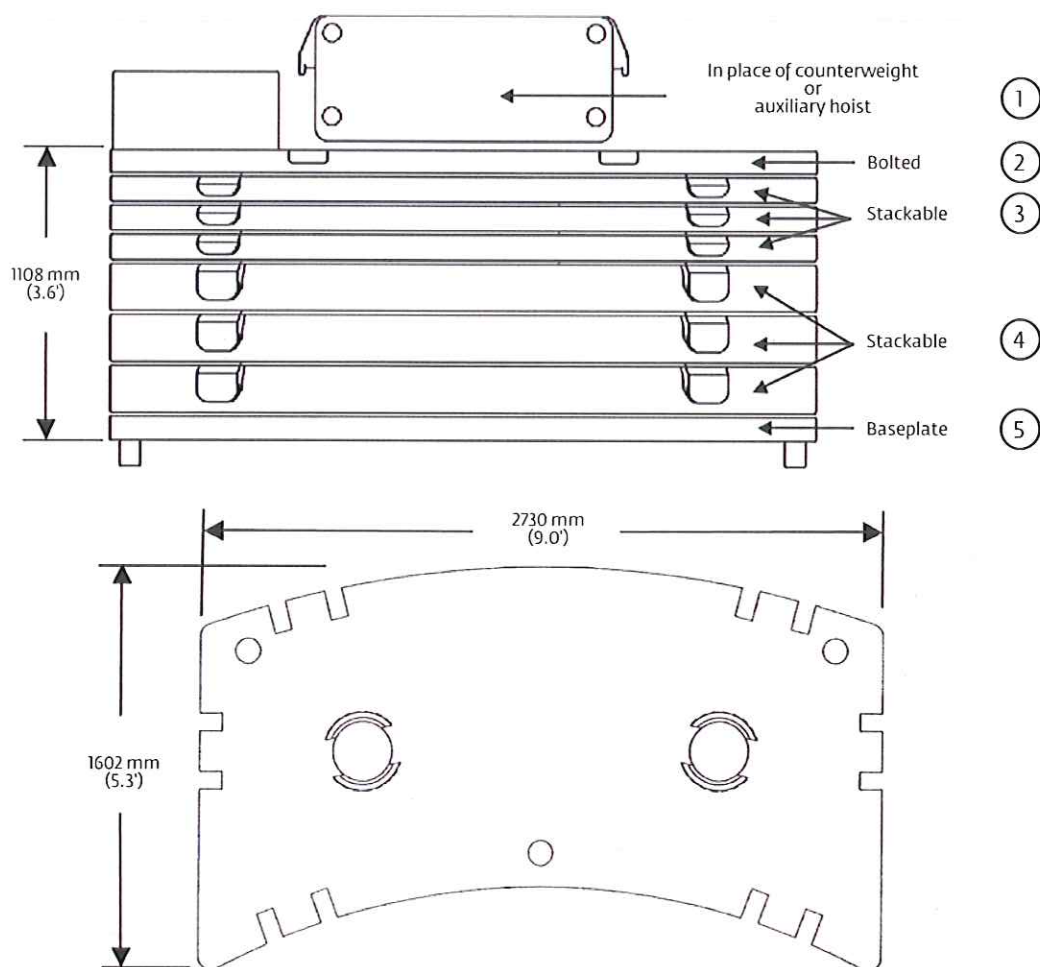
Dimensions



	A	A ¹	B	C	D	E	F	α	β	β_1
14.00 R25	3940 mm (12.9)	3810 mm (12.5)	2750 mm (9.0)	2320 mm (7.6)	1750 mm (5.7)	435 mm (1.4)	262 mm (0.9)	14°	21°	17°
16.00 R25	3990 mm (13.1)	3860 mm (12.7)	2750 mm (9.0)	2280 mm (7.5)	1863 mm (6.1)	485 mm (1.6)	292 mm (1.0)	16°	23°	19°
20.5 R25	3990 mm (13.1)	3860 mm (12.7)	2880 mm (9.4)	2320 mm (7.6)	1863 mm (6.1)	485 mm (1.6)	292 mm (1.0)	16°	23°	19°

Ra = Radius all wheels steered
 * Lowered







Counterweight dimensions



	600 (1300)	3500 (7700)	2200 (4850)	4400 (9700)	2200 (4850)
Counterweight configuration kg (lb)					
4100 (9000)	X	X			
6300 (13,800)	X	X			X
8500 (18,700)	X	X	X		X
10 700 (23,500)	X	X		X	X
12 900 (28,400)	X	X	X	X	X
15 100 (33,200)	X	X		2X	X
17 300 (38,100)	X	X	X	2X	X
19 500 (42,900)	X	X	2X	2X	X
21 700 (47,800)	X	X	X	3X	X
23 900 (52,600)	X	X	2X	3X	X
26 100 (57,500)	X	X	3X	3X	X







Load charts


Main boom

													
11,7 m – 60 m (38.2 ft – 196.9 ft)	26 100 kg (57,500 lb)	27.3 ft x 23.0 ft 100%	360°										
	 Pounds x 1000												
Feet	38.2	52.2	66.0	79.6	92.7	105.4	117.6	131.5	145.3	158.9	172.0	184.7	196.9
8.0	≈230.0	–	–	–	–	–	–	–	–	–	–	–	–
10.0	160.0	–	–	–	–	–	–	–	–	–	–	–	–
15.0	124.0	146.0	136.0	130.0	–	–	–	–	–	–	–	–	–
20.0	99.0	100.0	95.0	93.0	102.0	–	–	–	–	–	–	–	–
25.0	82.0	84.0	81.0	79.0	77.0	84.0	69.0	53.0	–	–	–	–	–
30.0	–	71.0	71.0	69.0	68.0	74.0	69.0	53.0	41.6	–	–	–	–
35.0	–	61.0	62.0	60.0	59.0	65.0	64.0	52.0	41.6	33.2	26.8	–	–
40.0	–	52.0	53.0	50.0	49.0	55.0	55.0	48.0	41.2	33.2	26.8	22.0	–
45.0	–	–	43.8	43.2	42.2	42.6	39.8	37.2	35.8	32.6	26.8	22.0	18.6
50.0	–	–	38.0	38.4	36.4	37.0	34.4	32.2	31.0	30.4	26.6	22.0	18.6
55.0	–	–	–	33.0	32.8	32.6	30.2	30.2	27.0	26.6	25.6	22.0	18.6
60.0	–	–	–	28.8	30.0	28.8	26.6	27.2	23.6	23.4	23.2	21.8	18.6
65.0	–	–	–	25.2	26.6	25.6	24.2	24.2	20.8	20.6	20.6	20.8	18.6
70.0	–	–	–	–	23.6	22.8	23.0	21.6	18.4	18.4	18.2	18.6	18.2
75.0	–	–	–	–	21.0	20.2	21.4	19.4	16.4	17.2	16.8	17.2	17.0
80.0	–	–	–	–	–	18.6	19.0	17.6	15.0	16.2	15.8	16.2	15.2
85.0	–	–	–	–	–	17.8	17.0	15.8	13.8	15.4	14.6	15.0	13.8
90.0	–	–	–	–	–	16.2	15.4	14.2	12.8	14.6	13.4	13.6	12.4
95.0	–	–	–	–	–	–	13.8	12.6	12.0	13.4	12.6	12.4	11.2
100.0	–	–	–	–	–	–	12.6	11.2	11.4	12.2	11.8	11.2	10.2
105.0	–	–	–	–	–	–	–	10.0	10.8	11.0	11.0	10.2	9.2
110.0	–	–	–	–	–	–	–	9.2	10.2	10.0	10.0	9.4	8.2
115.0	–	–	–	–	–	–	–	8.0	9.8	9.2	9.2	8.4	7.4
120.0	–	–	–	–	–	–	–	–	9.2	8.8	8.4	7.6	6.6
125.0	–	–	–	–	–	–	–	–	8.4	8.2	7.4	6.8	5.8
130.0	–	–	–	–	–	–	–	–	7.6	7.4	6.8	6.0	5.2
135.0	–	–	–	–	–	–	–	–	–	6.6	6.0	5.4	4.4
140.0	–	–	–	–	–	–	–	–	–	6.0	5.4	4.6	3.8
145.0	–	–	–	–	–	–	–	–	–	–	4.8	4.2	3.2
150.0	–	–	–	–	–	–	–	–	–	–	4.2	3.6	2.6
155.0	–	–	–	–	–	–	–	–	–	–	3.8	3.0	2.2
160.0	–	–	–	–	–	–	–	–	–	–	–	2.6	–
165.0	–	–	–	–	–	–	–	–	–	–	–	2.2	–


Load charts

Main boom


													
11,7 m – 60 m (38.2 ft – 196.9 ft)	8500 kg (18,700 lb)	27.3 ft x 23.0 ft 100%	360°										
	 Pounds x 1000												
Feet	38.2	52.2	66.0	79.6	92.7	105.4	117.6	131.5	145.3	158.9	172.0	184.7	196.9
10.0	157.0	146.0	136.0	130.0	—	—	—	—	—	—	—	—	—
15.0	121.0	120.0	114.0	108.0	102.0	—	—	—	—	—	—	—	—
20.0	97.0	93.0	87.0	81.0	76.0	74.0	68.0	53.0	—	—	—	—	—
25.0	66.0	68.0	65.0	61.0	60.0	56.0	51.0	47.0	41.6	—	—	—	—
30.0	—	50.0	50.0	49.0	47.0	43.8	41.8	40.0	34.6	33.2	26.8	—	—
35.0	—	38.2	39.6	40.0	37.8	35.6	35.2	32.2	29.4	28.2	26.4	22.0	—
40.0	—	29.0	32.2	32.6	31.0	31.4	29.2	26.4	26.6	25.8	24.2	21.6	18.6
45.0	—	—	26.0	26.8	26.6	26.4	24.4	23.4	23.8	22.8	21.4	19.8	18.2
50.0	—	—	21.4	22.2	23.8	22.6	20.8	21.6	20.8	19.6	18.4	16.8	15.4
55.0	—	—	—	19.8	20.0	19.4	18.0	19.0	18.0	16.8	15.8	14.4	13.0
60.0	—	—	—	16.8	17.2	17.4	16.6	16.6	15.6	14.6	13.6	12.4	11.0
65.0	—	—	—	14.4	14.8	15.4	15.2	14.6	13.6	12.8	11.8	10.6	9.2
70.0	—	—	—	—	12.6	13.4	13.4	13.0	12.0	11.2	10.2	9.0	7.8
75.0	—	—	—	—	11.2	11.6	11.6	11.4	10.6	9.8	8.8	7.8	6.6
80.0	—	—	—	—	—	10.2	10.2	10.0	9.2	8.6	7.6	6.6	5.4
85.0	—	—	—	—	—	8.8	8.8	8.6	8.2	7.4	6.6	5.6	4.4
90.0	—	—	—	—	—	7.8	7.6	7.6	7.0	6.4	5.6	4.6	3.6
95.0	—	—	—	—	—	—	6.6	6.6	6.0	5.6	4.8	3.8	2.8
100.0	—	—	—	—	—	—	4.2	5.6	5.2	4.8	4.0	3.2	2.0
105.0	—	—	—	—	—	—	—	5.0	4.4	4.0	3.4	2.4	—
110.0	—	—	—	—	—	—	—	4.2	3.8	3.2	2.6	—	—
115.0	—	—	—	—	—	—	—	—	3.0	2.6	2.0	—	—
120.0	—	—	—	—	—	—	—	—	2.6	2.0	—	—	—
125.0	—	—	—	—	—	—	—	—	2.0	—	—	—	—




11,7 m – 60 m
(38.2 ft – 196.9 ft)




4100 kg
(9000 lb)




27.3 ft x 23.0 ft
100%



360°






Pounds x 1000

Feet	38.2	52.2	66.0	79.6	92.7	105.4	117.6	131.5	145.3	158.9	172.0	184.7	196.9
10.0	156.0	146.0	136.0	130.0	—	—	—	—	—	—	—	—	—
15.0	121.0	121.0	114.0	105.0	98.0	—	—	—	—	—	—	—	—
20.0	85.0	81.0	77.0	71.0	69.0	63.0	57.0	52.0	—	—	—	—	—
25.0	54.0	57.0	55.0	55.0	51.0	47.0	46.0	42.0	36.0	—	—	—	—
30.0	—	41.2	43.0	41.4	38.8	38.8	35.8	32.4	31.2	28.2	25.8	—	—
35.0	—	30.6	33.2	32.6	32.8	31.2	28.6	28.4	28.0	25.8	24.0	20.8	—
40.0	—	22.6	25.8	26.4	27.0	25.4	24.0	24.6	23.0	21.6	20.2	18.6	16.8
45.0	—	—	20.8	22.6	22.6	22.2	21.6	20.6	19.4	18.2	16.8	15.4	13.8
50.0	—	—	16.8	18.6	19.0	19.0	18.4	17.6	16.4	15.4	14.2	12.8	11.4
55.0	—	—	—	15.4	16.0	16.4	15.8	15.0	14.0	13.0	12.0	10.6	9.4
60.0	—	—	—	13.0	13.4	14.0	13.6	13.0	12.0	11.0	10.0	9.0	7.6
65.0	—	—	—	10.8	11.4	11.8	11.8	11.2	10.4	9.4	8.6	7.4	6.2
70.0	—	—	—	—	9.6	10.2	10.2	9.8	8.8	8.0	7.2	6.2	5.0
75.0	—	—	—	—	8.2	8.6	8.6	8.4	7.6	6.8	6.0	5.0	3.8
80.0	—	—	—	—	—	7.4	7.4	7.2	6.6	5.8	5.0	4.0	2.8
85.0	—	—	—	—	—	6.2	6.2	6.2	5.6	4.8	4.0	3.2	2.0
90.0	—	—	—	—	—	5.4	5.2	5.2	4.6	4.0	3.2	2.4	—
95.0	—	—	—	—	—	—	4.4	4.2	3.8	3.4	2.6	—	—
100.0	—	—	—	—	—	—	2.0	3.6	3.0	2.6	2.0	—	—
105.0	—	—	—	—	—	—	—	2.8	2.4	1.8	—	—	—
110.0	—	—	—	—	—	—	—	2.2	—	—	—	—	—


Load charts

Hydraulic offsettable swingaway


Intermediate angle




60 m
(197 ft)




10-17-22 m
(33-56-72 ft)




26 100 kg
(57,500 lb)




27.3 ft x 23.0 ft
100%



360°







Pounds x 1000

Feet	0°	197 + 33 0° - 20°	20° - 40°	0°	197 + 56 0° - 20°	20° - 40°	0°	197 + 72 0° - 20°	20° - 40°
30	—	—	—	—	—	—	—	—	—
35	9.8	—	—	—	—	—	—	—	—
40	9.8	—	—	6.8	—	—	—	—	—
45	9.8	—	—	6.8	—	—	4.6	—	—
50	9.8	—	—	6.8	—	—	4.6	—	—
55	9.8	9.2	—	6.8	—	—	4.6	—	—
60	9.8	9.2	8.8	6.8	—	—	4.6	—	—
65	9.8	9.2	8.8	6.8	—	—	4.6	—	—
70	9.8	9.2	8.8	6.8	6.2	—	4.6	—	—
75	9.8	9.2	8.8	6.8	6.2	—	4.6	4.6	—
80	9.8	9.2	8.8	6.8	6.2	5.4	4.6	4.6	4.6
85	9.8	9.2	8.8	6.8	6.2	5.4	4.6	4.6	4.6
90	9.8	9.2	8.8	6.8	6.2	5.4	4.6	4.6	4.6
95	9.8	9.2	8.8	6.8	6.2	5.4	4.6	4.6	4.6
100	9.0	9.0	8.8	6.8	6.2	5.4	4.6	4.6	4.6
105	8.0	8.0	8.8	6.8	6.2	5.4	4.6	4.6	4.6
110	7.2	7.2	7.8	6.8	6.2	5.4	4.6	4.6	4.6
115	6.4	6.4	7.0	6.6	6.2	5.4	4.6	4.6	4.6
120	5.6	5.6	6.2	6.0	6.0	5.4	4.6	4.6	4.6
125	5.0	5.0	5.6	5.2	5.2	5.4	4.6	4.6	4.6
130	4.4	4.4	4.8	4.6	4.6	5.4	4.4	4.4	4.6
135	3.8	3.8	4.2	4.0	4.0	5.0	3.8	3.8	4.6
140	3.2	3.2	3.6	3.6	3.6	4.4	3.2	3.2	4.2
145	2.6	2.6	3.2	3.0	3.0	4.0	2.8	2.8	3.6
150	2.2	2.2	2.6	2.6	2.6	3.4	2.2	2.2	3.2
155	1.6	1.6	2.0	2.2	2.2	3.0	1.8	1.8	2.6
160	—	—	1.6	1.8	1.8	2.4	—	—	2.2
165	—	—	—	—	—	2.0	—	—	1.8
170	—	—	—	—	—	1.6	—	—	—


Loads for luffing




60 m
(197 ft)




10-17-22 m
(33-56-72 ft)




26 100 kg
(57,500 lb)




27.3 ft x 23.0 ft
100%



360°





Pounds x 1000








Feet	197 + 33		197 + 56		197 + 72	
	0° - 20°	20° - 40°	0° - 20°	20° - 40°	0° - 20°	20° - 40°
50	—	—	—	—	—	—
55	8.8	—	—	—	—	—
60	8.8	8.4	—	—	—	—
65	8.8	8.4	—	—	—	—
70	8.8	8.4	6.0	—	—	—
75	8.8	8.4	6.0	—	4.4	—
80	8.8	8.4	6.0	5.2	4.4	4.4
85	8.8	8.4	6.0	5.2	4.4	4.4
90	8.8	8.4	6.0	5.2	4.4	4.4
95	8.8	8.4	6.0	5.2	4.4	4.4
100	8.8	8.4	6.0	5.2	4.4	4.4
105	8.0	8.4	6.0	5.2	4.4	4.4
110	7.2	7.8	6.0	5.2	4.4	4.4
115	6.4	7.0	6.0	5.2	4.4	4.4
120	5.6	6.2	6.0	5.2	4.4	4.4
125	5.0	5.6	5.2	5.2	4.4	4.4
130	4.4	4.8	4.6	5.2	4.4	4.4
135	3.8	4.2	4.0	5.0	3.8	4.4
140	3.2	3.6	3.6	4.4	3.2	4.2
145	2.6	3.2	3.0	4.0	2.8	3.6
150	2.2	2.6	2.6	3.4	2.2	3.2
155	1.6	2.0	2.2	3.0	1.8	2.6
160	—	1.6	1.8	2.4	—	2.2
165	—	—	—	2.0	—	1.8
170	—	—	—	1.6	—	—

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.








Load charts

Manual offsettable swingaway

Fixed angle

									
60 m (197 ft)	10-17-22 m (33-56-72 ft)	26 100 kg (57,500 lb)	27.3 ft x 23.0 ft 100%	360°					
						Pounds x 1000			
Feet	0°	197 + 33 20°	40°	0°	197 + 56 20°	40°	0°	197 + 72 20°	40°
30	—	—	—	—	—	—	—	—	—
35	9.8	—	—	—	—	—	—	—	—
40	9.8	—	—	6.8	—	—	—	—	—
45	9.8	—	—	6.8	—	—	4.6	—	—
50	9.8	9.8	—	6.8	—	—	4.6	—	—
55	9.8	9.8	8.8	6.8	—	—	4.6	—	—
60	9.8	9.8	8.8	6.8	6.8	—	4.6	4.6	—
65	9.8	9.8	8.8	6.8	6.8	—	4.6	4.6	—
70	9.8	9.8	8.8	6.8	6.8	—	4.6	4.6	—
75	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
80	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
85	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
90	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
95	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
100	9.0	9.6	8.8	6.8	6.8	5.4	4.6	4.6	4.6
105	8.0	8.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
110	7.2	7.8	8.4	6.8	6.8	5.4	4.6	4.6	4.6
115	6.4	7.0	7.6	6.6	6.8	5.4	4.6	4.6	4.6
120	5.6	6.2	6.8	6.0	6.6	5.4	4.6	4.6	4.6
125	5.0	5.6	6.0	5.2	6.4	5.4	4.6	4.6	4.6
130	4.4	4.8	5.2	4.6	5.8	5.4	4.4	4.6	4.6
135	3.8	4.2	4.6	4.0	5.0	5.4	3.8	4.6	4.6
140	3.2	3.6	4.0	3.6	4.4	5.2	3.2	4.2	4.6
145	2.6	3.2	3.4	3.0	4.0	4.6	2.8	3.6	4.4
150	2.2	2.6	2.8	2.6	3.4	4.0	2.2	3.2	3.8
155	1.6	2.0	2.2	2.2	3.0	3.4	1.8	2.6	3.2
160	—	1.6	1.8	1.8	2.4	3.0	—	2.2	2.8
165	—	—	—	—	2.0	2.4	—	1.8	2.2
170	—	—	—	—	1.6	2.0	—	—	1.8
175	—	—	—	—	—	1.6	—	—	—

Fixed angle

									
60 m (197 ft)	10-17-22 m (33-56-72 ft)	23 900 kg (52,600 lb)	27.3 ft x 23.0 ft 100%	360°					
						Pounds x 1000			
Feet	0°	197 + 33 20°	40°	0°	197 + 56 20°	40°	0°	197 + 72 20°	40°
30	—	—	—	—	—	—	—	—	—
35	9.8	—	—	—	—	—	—	—	—
40	9.8	—	—	6.8	—	—	—	—	—
45	9.8	—	—	6.8	—	—	4.6	—	—
50	9.8	9.8	—	6.8	—	—	4.6	—	—
55	9.8	9.8	8.8	6.8	—	—	4.6	—	—
60	9.8	9.8	8.8	6.8	6.8	—	4.6	4.6	—
65	9.8	9.8	8.8	6.8	6.8	—	4.6	4.6	—
70	9.8	9.8	8.8	6.8	6.8	—	4.6	4.6	—
75	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
80	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
85	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
90	9.8	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
95	9.0	9.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
100	8.0	8.8	8.8	6.8	6.8	5.4	4.6	4.6	4.6
105	7.2	8.0	8.6	6.8	6.8	5.4	4.6	4.6	4.6
110	6.4	7.0	7.6	6.6	6.8	5.4	4.6	4.6	4.6
115	5.6	6.2	6.8	5.8	6.8	5.4	4.6	4.6	4.6
120	4.8	5.4	6.0	5.2	6.4	5.4	4.6	4.6	4.6
125	4.2	4.8	5.2	4.6	5.6	5.4	4.2	4.6	4.6
130	3.6	4.2	4.4	4.0	5.0	5.4	3.6	4.6	4.6
135	3.0	3.6	3.8	3.4	4.4	5.2	3.0	4.2	4.6
140	2.4	3.0	3.2	2.8	3.8	4.4	2.6	3.6	4.4
145	2.0	2.4	2.8	2.4	3.2	3.8	2.0	3.0	3.8
150	—	2.0	2.2	2.0	2.8	3.4	1.6	2.6	3.2
155	—	—	1.6	1.4	2.2	2.8	—	2.0	2.6
160	—	—	—	—	1.8	2.4	—	1.6	2.2
165	—	—	—	—	—	1.8	—	—	1.6

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

Load charts

Integrated heavy duty jib

Intermediate angle

11.7 m - 60 m (38 ft - 197 ft)	3.3 m (10.8 ft)	26 100 kg (57,500 lb)	27.3 ft x 23.0 ft 100%	360°

Feet	38.2 + 10.8			64.9 + 10.8			91.4 + 10.8			117.6 + 10.8			145.3 + 10.8			172.0 + 10.8			196.9 + 10.8		
	0°	<20°	<40°	0°	<20°	<40°	0°	<20°	<40°	0°	<20°	<40°	0°	<20°	<40°	0°	<20°	<40°	0°	<20°	<40°
10	73.0	73.0	73.0	-	-	73.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	71.0	65.0	66.0	-	-	73.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	60.0	57.0	59.0	73.0	71.0	70.0	-	-	-	-	-	41.0	-	-	-	-	-	-	-	-	-
25	51.0	51.0	55.0	71.0	65.0	65.0	73.0	68.0	57.0	-	-	41.0	-	-	27.4	-	-	-	-	-	-
30	45.0	46.0	-	63.0	59.0	61.0	64.0	64.0	57.0	49.0	46.0	41.0	-	-	27.4	-	-	17.6	-	-	-
35	40.2	42.6	-	57.0	55.0	58.0	58.0	57.0	57.0	46.0	43.6	41.0	-	-	27.4	-	-	17.6	-	-	-
40	-	-	-	52.0	51.0	52.0	48.0	48.0	49.0	43.2	41.2	41.0	32.8	29.6	27.4	-	-	17.6	-	-	11.0
45	-	-	-	44.0	44.0	44.0	41.2	41.2	41.6	38.4	38.6	39.0	32.8	29.6	27.4	20.0	18.0	17.6	-	-	11.0
50	-	-	-	37.8	37.8	-	35.6	35.6	36.0	33.2	33.4	33.6	29.8	29.6	27.4	20.0	18.0	17.6	12.6	11.0	11.0
55	-	-	-	32.4	32.4	-	31.2	31.2	31.4	29.0	29.2	29.4	26.0	26.0	26.2	20.0	18.0	17.6	12.6	11.0	11.0
60	-	-	-	28.0	-	-	27.4	27.4	27.6	25.6	25.8	26.0	22.6	22.6	23.0	20.0	18.0	17.6	12.6	11.0	11.0
65	-	-	-	24.2	-	-	24.4	24.4	24.4	22.6	22.8	23.0	20.0	20.0	20.2	19.4	18.0	17.6	12.6	11.0	11.0
70	-	-	-	-	-	-	21.4	21.4	-	20.2	20.2	20.4	17.6	17.6	17.8	17.2	17.2	17.4	12.6	11.0	11.0
75	-	-	-	-	-	-	18.8	18.8	-	18.0	18.0	18.2	15.6	15.6	15.6	15.2	15.2	15.4	12.6	11.0	11.0
80	-	-	-	-	-	-	16.4	16.4	-	16.0	16.2	16.2	13.8	13.8	13.8	13.8	13.8	14.0	12.6	11.0	11.0
85	-	-	-	-	-	-	14.6	14.6	-	14.2	14.4	14.4	12.2	12.2	12.2	12.4	12.4	12.8	12.6	11.0	11.0
90	-	-	-	-	-	-	-	-	-	12.6	12.6	-	10.6	10.6	10.8	11.4	11.4	11.8	11.2	11.0	11.0
95	-	-	-	-	-	-	-	-	-	11.0	11.2	-	9.4	9.4	9.4	10.6	10.8	10.8	10.0	10.2	10.2
100	-	-	-	-	-	-	-	-	-	9.8	9.8	-	8.6	8.6	8.8	10.0	10.0	10.2	9.0	9.2	9.2
105	-	-	-	-	-	-	-	-	-	8.6	8.6	-	8.0	8.0	8.2	9.2	9.4	9.4	8.0	8.2	8.2
110	-	-	-	-	-	-	-	-	-	7.4	7.6	-	7.6	7.6	7.6	8.6	8.8	8.8	7.0	7.2	7.2
115	-	-	-	-	-	-	-	-	-	-	-	-	7.0	7.0	-	8.2	8.2	8.2	6.2	6.4	6.4
120	-	-	-	-	-	-	-	-	-	-	-	-	6.6	6.6	-	7.4	7.4	7.4	5.4	5.6	5.6
125	-	-	-	-	-	-	-	-	-	-	-	-	6.2	6.2	-	6.6	6.6	6.6	4.8	5.0	5.0
130	-	-	-	-	-	-	-	-	-	-	-	-	5.8	5.8	-	5.8	5.8	5.8	4.2	4.2	4.4
135	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.4	-	5.0	5.0	-	3.4	3.6	3.6
140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	4.4	-	2.8	3.0	3.0
145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	3.8	-	2.2	2.4	2.4
150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	3.4	-	1.8	1.8	1.8
155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	2.8	-	-	-	-
160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	-	-	-	-	-


































Loads for luffing

11.7 m - 60 m (38 ft - 197 ft)	3.3 m (10.8 ft)	26 100 kg (57,500 lb)	27.3 ft x 23.0 ft 100%	360°

Feet	38.2 + 10.8		64.9 + 10.8		91.4 + 10.8		117.6 + 10.8		145.3 + 10.8		172.0 + 10.8		196.9 + 10.8	
	0° - 20°	20° - 40°	0° - 20°	20° - 40°	0° - 20°	20° - 40°	0° - 20°	20° - 40°	0° - 20°	20° - 40°	0° - 20°	20° - 40°	0° - 20°	20° - 40°
10	46.0	46.0	-	48.0	-	-	-	-	-	-	-	-	-	-
15	43.4	44.0	-	46.0	-	-	-	-	-	-	-	-	-	-
20	40.6	43.0	45.0	45.0	-	46.0	-	39.0	-	-	-	-	-	-
25	38.6	42.8	43.8	44.0	45.0	45.0	-	39.0	-	26.0	-	-	-	-
30	37.2	-	41.8	43.2	45.0	45.0	43.8	39.0	-	26.0	-	17.2	-	-
35	36.6	-	40.2	42.8	43.8	44.0	41.6	39.0	-	26.0	-	17.2	-	-
40	-	-	38.8	42.6	42.4	43.4	39.2	39.0	29.6	26.0	-	17.2	-	11.0
45	-	-	37.8	41.6	41.0	41.6	36.8	37.6	29.6	26.0	18.0	17.2	-	11.0
50	-	-	34.8	-	35.0	35.2	33.4	33.6	29.0	26.0	18.0	17.2	10.8	11.0
55	-	-	29.6	-	29.8	30.0	29.2	29.4	26.0	26.0	18.0	17.2	10.8	11.0
60	-	-	-	-	25.8	25.8	25.6	25.8	22.6	23.0	18.0	17.2	10.8	11.0
65	-	-	-	-	22.4	22.4	22.2	22.4	20.0	20.2	18.0	17.2	10.8	11.0
70	-	-	-	-	19.6	-	19.4	19.4	17.6	17.8	17.2	17.2	10.8	11.0
75	-	-	-	-	17.2	-	17.0	17.0	15.6	15.6	15.2	15.4	10.8	11.0
80	-	-	-	-	15.2	-	15.0	15.0	13.6	13.8	13.6	13.6	10.8	11.0
85	-	-	-	-	13.4	-	13.2	13.2	11.8	12.0	12.0	12.2	10.8	11.0
90	-	-	-	-	-	-	11.8	-	10.4	10.4	11.0	11.2	10.8	11.0
95	-	-	-	-	-	-	10.4	-	9.0	9.0	10.2	10.4	10.2	10.2
100	-	-	-	-	-	-	9.2	-	8.2	8.4	9.6	9.6	9.2	9.2
105	-	-	-	-	-	-	8.0	-	7.8	7.8	8.8	9.0	8.2	8.2
110	-	-	-	-	-	-	7.2	-	7.2	7.2	8.4	8.4	7.2	7.2
115	-	-	-	-	-	-	-	-	6.8	-	7.8	7.8	6.4	6.4
120	-	-	-	-	-	-	-	-	6.4	-	6.8	7.0	5.6	5.6
125	-	-	-	-	-	-	-	-	6.0	-	6.2	6.2	5.0	5.0
130	-	-	-	-	-	-	-	-	5.6	-	5.4	5.4	4.2	4.2
135	-	-	-	-	-	-	-	-	2.0	-	4.8	-	3.6	3.6
140	-	-	-	-	-	-	-	-	-	-	4.2	-	3.0	3.0
145	-	-	-	-	-	-	-	-	-	-	3.8	-	2.4	2.4
150	-	-	-	-	-	-	-	-	-	-	3.2	-	1.8	1.8
155	-	-	-	-	-	-	-	-	-	-	2.8	-	-	-

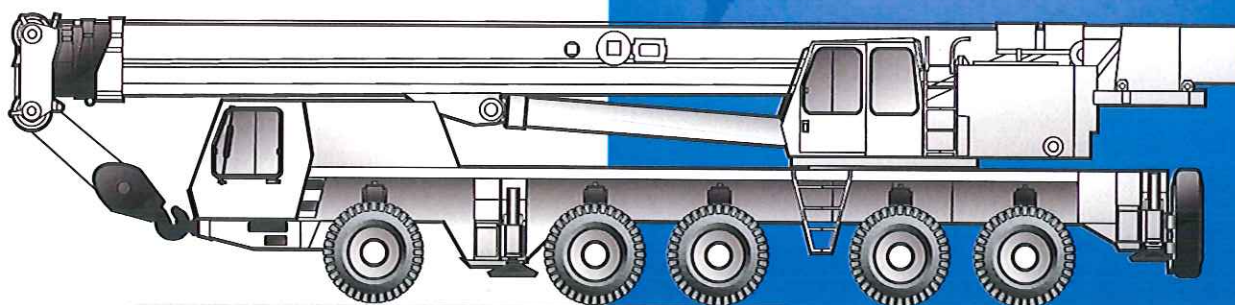
THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

Symbols glossary

	Axles		Counterweight		Grade		Outriggers
	Boom		Drive		Heavy duty jib		Radius
	Boom elevation		Electrical system		Hoist		Rotation
	Boom extension		Engine		Hookblock		Speed
	Boom length		Extension		Hydraulic system		Steering
	Boom nose		Frame		Lights		Suspension
	Brakes		Fuel tank capacity		Oil		Swing
	Cab		Gear		Outrigger controls		Tires
							Transmission



GMK5150B



All Terrain Hydraulic Crane

Working Range



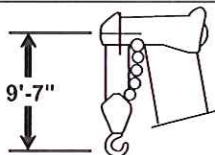
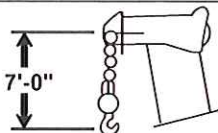
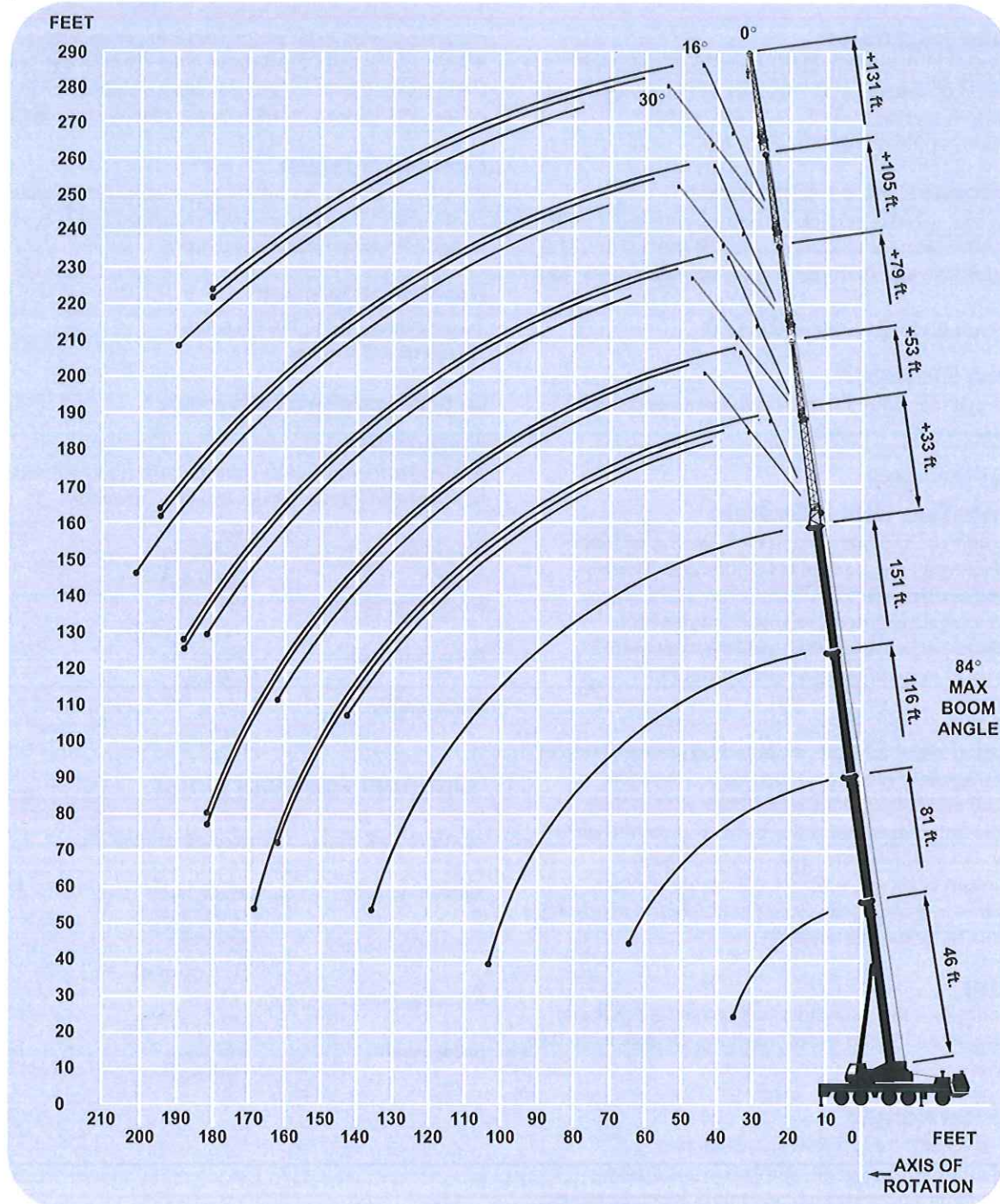
46-151 ft.
(14.0-46.0 m)



33-131 ft.
(10.0-39.9 m)



360°



DIMENSIONS ARE FOR LARGEST GROVE FURNISHED HOOKBLOCK AND HEADACHE BALL, WITH ANTI-TWO BLOCK ACTIVATED.

Carrier specifications

Chassis

Five-axle, all-welded torsion-resistant box-type construction of high strength steel.

Outriggers

Four hydraulically telescoping beam outriggers with vertical cylinders and outrigger pads. Independent horizontal and vertical movement control on each side of chassis. Crane level indicators for leveling control.

Engine

Mercedes Benz OM 442 LA diesel, 8 cylinders, water-cooled, with turbocharger and supercharger intercooler, 496 hp (370 kW) @ 2100 RPM. Maximum torque: 2,020 ft. lbs. @ 1,100 - 1,600 RPM

Fuel Tank Capacity

105 gallons (400 L).

Transmission

Allison automatic powershift transmission with 5 forward and 1 reverse gear. Two speed Kessler transfer case with longitudinal differential lock.

Drive

10 x 6 x 10

Axles

1st axle line - steer.
2nd axle line - drive/steer.
3rd axle line - drive/steer.
4th axle line - steer (off road only).
5th axle line - drive/steer.

Suspension

Exclusive "MEGATRAK™" independent hydropneumatic suspension and hydraulic axle lock-out. Level regulation. Suspension range: +6.7 in. (170 mm) to -4.97 in. (-126 mm). Automatic suspension level control by proximity switches.

Tires

10 - 20.5 x 25 radials.

Steering

Dual-circuit hydraulic power-assisted steering. Automatic switch-in of stand-by steering pump in case of main pump failure.

Brakes

Service brake: pneumatic dual circuit acting on all wheels. Air dryer. Parking brake: pneumatically operated spring-loaded brake acting on 2nd, 3rd, 4th and 5th axle lines. Auxiliary brake: hydraulic retarder integrated with automatic transmission.

Cab

Aluminum, two-man design, safety glass, laminated front windshield, windshield wipers/washers, defroster nozzle, lockable doors with sliding windows, driver's seat with hydraulic suspension, engine hot water heater, heatable rear view mirrors. Complete operating and driving controls. Stereo radio/cassette. Cab can be tilted forward by 60° for easy access to engine, transmission, hydraulic pumps, heater and batteries.

Electrical System

24 V lighting system and signals. Generator: 28 V/55 A. Two batteries: 12 V/170 Ah each.

Maximum Speed

46 mph (74 km/h)

Gradeability (Theoretical)

50%

Gross Vehicle Weight (Approximate)

117,640 lbs. (53 360 kg) see page 2.

Miscellaneous Standard Equipment

Hydraulic oil cooler; spare tire and wheel - 20.5R25 with carry bracket; spare parts/service manuals; flashing amber warning light on carrier cab; working light, tool kit, wheel chocks, fire extinguisher; rooster sheave.

Special Equipment to Dismantle Crane for Travel

*Boom float kit for boom dolly operation including electric and air line plugs at rear of carrier frame (less dolly).

*Hydraulic quick disconnect fittings for removal of outriggers beams and jacks.

Optional Equipment

*10 x 8 x 10 drive

*Hookblocks and headache balls

*14.00R25 tires

*16.00R25 tires



46 - 151 ft.
(14.0 - 46.0 m)



46,700 lbs.
(21 200 kg)



100%



360°



85% Domestic (Pounds)

(Feet)	46	64	81	99	116	133	151
9	*300,000						
10	286,000	218,000	136,000				
15	220,000	199,000	131,000	85,000			
20	166,000	163,000	111,000	85,000	71,000	53,000	
25	126,000	123,000	95,000	83,000	67,000	53,000	41,200
30	100,000	97,000	85,000	75,000	64,000	53,000	41,200
35	81,000	85,000	82,000	65,000	60,000	53,000	41,200
40		68,000	65,000	58,000	54,000	51,000	41,200
45		56,000	53,000	52,000	49,000	46,000	38,800
50		47,000	45,000	46,000	43,800	41,600	36,400
55			40,000	39,200	39,200	37,800	34,200
60			36,200	33,800	34,800	33,400	32,000
65			31,600	29,800	30,400	28,800	29,800
70				28,200	26,400	26,400	25,800
75				25,200	23,000	24,000	22,400
80				22,400	20,800	21,200	19,600
85				19,800	19,400	18,800	17,200
90					18,200	16,600	15,000
95					16,400	14,600	13,200
100					14,800	13,000	11,600
105						11,600	10,000
110						10,200	8,800
115						9,000	7,600
120							6,400
125							5,400
130							4,600
135							3,800

*Defined Arc/Over Rear Only

Lifting Capacities > 242,500 lbs. require additional equipment



%

	0	50/0	100/50/0	100/50/0	100/50/0	100/50	100
T1	0	50/0	100/50/0	100/50/0	100/50/0	100/50	100
T2	0	0/25	0/25/50	25/50/75	50/75/100	75/100	100
T3	0	0/25	0/25/50	25/50/75	50/75/100	75/100	100



46 - 151 ft.
(14.0 - 46.0 m)



28,000 lbs.
(12 700 kg)



100%



360°

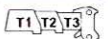


85% Domestic (Pounds)

(Feet)	46	64	81	99	116	133	151
9	*300,000						
10	286,000	218,000	136,000				
15	220,000	199,000	131,000	85,000			
20	153,000	150,000	111,000	85,000	71,000	53,000	
25	116,000	113,000	95,000	83,000	67,000	53,000	41,200
30	88,000	85,000	85,000	75,000	64,000	53,000	41,200
35	67,000	70,000	67,000	65,000	60,000	53,000	41,200
40		56,000	53,000	55,000	53,000	51,000	41,200
45		46,000	47,000	45,000	45,000	43,600	38,800
50		37,800	39,200	37,800	37,800	36,400	36,400
55			33,000	34,000	31,600	32,600	31,000
60			28,200	29,000	27,000	27,800	26,000
65			24,000	25,000	25,200	23,800	22,000
70				21,600	22,200	20,400	18,800
75				18,800	19,400	17,600	16,000
80				16,400	17,000	15,200	13,600
85				14,200	14,800	13,200	11,600
90					13,000	11,400	9,800
95					11,400	9,800	8,200
100					10,000	8,400	7,000
105						7,200	5,600
110						6,000	4,600
115						5,000	3,600
120							2,800
125							2,000

*Defined Arc/Over Rear Only

Lifting Capacities > 242,500 lbs. require additional equipment



%

	0	50/0	100/50/0	100/50/0	100/50/0	100/50	100
T1	0	50/0	100/50/0	100/50/0	100/50/0	100/50	100
T2	0	0/25	0/25/50	25/50/75	50/75/100	75/100	100
T3	0	0/25	0/25/50	25/50/75	50/75/100	75/100	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



33 ft.
(10.0 m)



59,600 lbs.
(27 000 kg)



100%



360°



85% Domestic (Pounds)

	33' - 0° LATTICE EXT.				33' - 16° LATTICE EXT.				33' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
20	30,800											
25	29,400	28,600										
30	26,800	27,000	24,000	20,600	19,200	19,600						
35	24,600	25,200	23,800	20,600	18,200	18,400	18,400		14,200			
40	22,600	23,400	23,200	20,600	17,000	17,600	17,600	17,200	13,600	13,800	13,800	
45	21,000	21,800	22,000	20,600	16,200	16,600	16,800	16,600	13,200	13,400	13,400	13,200
50	19,400	20,600	20,800	20,000	15,000	16,000	16,200	16,000	12,600	13,000	13,000	13,000
55	18,200	19,400	19,800	19,400	14,000	15,200	15,400	15,400	12,200	12,600	12,800	12,600
60	17,200	18,200	18,800	18,600	13,400	14,400	14,600	14,600	11,800	12,200	12,400	12,400
65	16,000	17,200	17,800	18,000	12,800	13,600	13,800	14,000	11,400	11,800	12,000	12,000
70	15,200	16,200	17,000	17,200	12,400	13,000	13,400	13,600	11,200	11,600	11,800	11,800
75	14,200	15,400	16,400	16,600	12,000	12,600	13,000	13,200	10,800	11,200	11,600	11,600
80	13,200	14,400	15,600	16,000	11,400	12,000	12,600	12,800	10,600	11,000	11,200	11,400
85	12,600	13,600	14,800	15,200	11,000	11,800	12,200	12,400	10,400	10,800	11,000	11,200
90	12,000	13,200	14,200	14,600	10,800	11,400	11,800	12,000	10,200	10,400	10,800	11,000
95	11,400	12,600	13,400	14,000	10,400	11,000	11,400	11,800	10,000	10,200	10,600	10,800
100	11,000	12,000	12,800	13,400	10,000	10,800	11,200	11,400	9,800	10,000	10,400	10,600
105	10,600	11,600	12,400	13,000	10,000	10,400	11,000	11,200		10,000	10,200	10,400
110	10,200	11,200	12,000	12,600	9,800	10,200	10,800	11,000		10,000	10,000	10,200
115	9,800	10,800	11,400	11,600	9,800	10,000	10,400	10,800		9,800	10,000	10,200
120		10,400	10,200	10,400		9,800	10,200	10,600			9,800	10,000
125		10,000	9,000	9,400		9,600	9,400	9,800			9,600	9,800
130		9,600	8,000	8,400		9,400	8,400	8,800			8,600	9,000
135			7,000	7,400			7,400	7,800				8,000
140			6,200	6,600			6,400	7,000				7,200
145			5,400	5,800			5,600	6,000				
150			4,600	5,000			4,800	5,200				
155				4,400				4,600				
160				3,600				3,800				
165				3,200								
170				2,600								
T1 T2 T3 %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



79 ft.
(24.0 m)



59,600 lbs.
(27 000 kg)



100%



360°



85% Domestic (Pounds)

(Feet)	79' - 0° LATTICE EXT.				79' - 16° LATTICE EXT.				79' - 30° LATTICE EXT.			
	99	116	133	151	99	116	133	151	99	116	133	151
30	14,800											
35	14,600	13,800										
40	14,600	13,600	11,800		10,600							
45	14,000	13,600	11,800	10,000	10,200							
50	13,200	13,200	11,800	10,000	9,800	9,800	9,600		8,000			
55	12,600	12,600	11,800	10,000	9,400	9,600	9,400	9,200	7,600	7,800		
60	12,000	12,000	11,600	10,000	9,000	9,200	9,000	9,000	7,400	7,800	7,600	
65	11,400	11,600	11,200	10,000	8,600	9,000	8,800	9,000	7,200	7,600	7,400	
70	10,800	11,000	11,000	10,000	8,400	8,600	8,600	8,800	7,000	7,400	7,200	7,400
75	10,400	10,600	10,600	10,000	8,000	8,400	8,400	8,600	7,000	7,200	7,000	7,200
80	9,800	10,200	10,200	9,800	7,800	8,200	8,000	8,400	6,800	7,000	6,800	7,200
85	9,400	9,800	9,800	9,600	7,600	8,000	7,800	8,200	6,600	7,000	6,800	7,000
90	9,000	9,400	9,600	9,400	7,400	7,800	7,600	8,000	6,400	6,800	6,600	7,000
95	8,600	9,000	9,200	9,200	7,200	7,600	7,400	7,800	6,400	6,600	6,400	6,800
100	8,200	8,600	9,000	9,000	7,000	7,400	7,200	7,600	6,200	6,600	6,400	6,600
105	8,000	8,400	8,600	8,800	6,800	7,200	7,200	7,400	6,200	6,400	6,400	6,600
110	7,600	8,000	8,400	8,400	6,600	7,000	7,000	7,400	6,000	6,400	6,200	6,600
115	7,400	7,800	8,000	8,200	6,400	6,800	6,800	7,200	6,000	6,400	6,200	6,400
120	7,000	7,600	7,800	8,000	6,400	6,800	6,800	7,000	5,800	6,200	6,000	6,400
125	6,800	7,200	7,600	7,800	6,200	6,600	6,600	7,000	5,800	6,200	6,000	6,200
130	6,400	7,000	7,200	7,400	6,000	6,400	6,400	6,800	5,600	6,000	5,800	6,200
135	6,200	6,800	7,000	7,200	6,000	6,200	6,400	6,600	5,600	6,000	5,800	6,200
140	6,000	6,600	6,800	7,000	5,800	6,200	6,200	6,600	5,600	5,800	5,800	6,000
145	5,800	6,400	6,600	7,000	5,600	6,000	6,200	6,400		5,800	5,800	6,000
150	5,600	6,200	6,400	6,800	5,600	5,800	6,000	6,200		5,600	5,600	6,000
155	5,600	6,000	6,000	6,000	5,400	5,600	6,000	6,200		5,600	5,600	6,000
160	5,400	5,600	5,400	5,400		5,600	5,800	6,000			5,600	5,800
165		5,600	4,800	4,800		5,400	5,400	5,400			5,600	5,800
170		5,400	4,200	4,200		5,200	4,600	4,800			5,000	5,000
175		5,200	3,600	3,600		5,200	4,200	4,200				4,400
180			3,200	3,200			3,600	3,600				3,800
185			2,800	2,600			3,000	3,200				
190			2,200	2,200			2,600	2,600				
195								2,200				
<div> <div>T1</div> <div>T2</div> <div>T3</div> </div> %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	100	100	25/75	50/100	100	100	25/75	50/100	75	100
T3	25/75	50/100	100	100	25/75	50/100	100	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



131 ft.
(40.0 m)



59,600 lbs.
(27 000 kg)



100%



360°



85% Domestic (Pounds)

	131' - 0° LATTICE EXT.				131' - 16° LATTICE EXT.				131' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
40	6,400	6,600										
45	6,400	6,400	5,800									
50	6,400	6,200	5,800	4,800	6,600							
55	6,200	6,000	5,600	4,800	6,200	5,800						
60	6,000	5,800	5,400	4,800	6,000	5,800	4,800					
65	5,800	5,800	5,200	4,800	5,800	5,600	4,800					
70	5,600	5,600	5,200	4,600	5,600	5,400	4,800	4,600	5,600	5,400		
75	5,400	5,400	5,000	4,600	5,400	5,200	4,800	4,400	5,200	5,000	4,800	
80	5,200	5,200	4,800	4,400	5,000	5,000	4,600	4,200	5,000	4,800	4,600	4,200
85	5,000	5,000	4,600	4,200	4,800	4,800	4,400	4,200	4,800	4,600	4,400	4,000
90	4,800	4,800	4,600	4,200	4,600	4,600	4,400	4,000	4,600	4,400	4,200	4,000
95	4,400	4,400	4,400	4,000	4,400	4,400	4,200	3,800	4,400	4,400	4,200	3,800
100	4,200	4,200	4,200	3,800	4,200	4,200	4,000	3,800	4,200	4,200	4,000	3,800
105	4,000	4,200	4,000	3,800	4,000	4,000	3,800	3,600	4,000	4,000	3,800	3,600
110	4,000	4,000	4,000	3,600	3,800	3,800	3,800	3,600	3,800	3,800	3,800	3,600
115	3,800	3,800	3,800	3,600	3,600	3,800	3,600	3,400	3,600	3,600	3,600	3,400
120	3,600	3,600	3,600	3,400	3,400	3,600	3,400	3,400	3,400	3,600	3,400	3,200
125	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,200	3,400	3,400	3,400	3,200
130	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,000
135	3,000	3,200	3,200	3,000	3,000	3,200	3,200	3,000	3,000	3,200	3,200	3,000
140	3,000	3,000	3,000	3,000	2,800	3,000	3,000	3,000	3,000	3,000	3,000	3,000
145	2,800	3,000	3,000	2,800	2,800	2,800	3,000	2,800	2,800	2,800	3,000	2,800
150	2,600	2,800	2,800	2,800	2,600	2,800	2,800	2,800	2,600	2,800	2,800	2,800
155	2,400	2,600	2,800	2,800	2,400	2,600	2,600	2,600	2,600	2,600	2,800	2,600
160	2,400	2,400	2,600	2,600	2,400	2,600	2,600	2,600	2,400	2,600	2,600	2,600
165	2,200	2,400	2,400	2,600	2,200	2,400	2,400	2,400	2,200	2,400	2,600	2,400
170	2,000	2,200	2,400	2,400	2,200	2,200	2,400	2,400	2,200	2,400	2,400	2,400
175		2,200	2,200	2,400		2,200	2,200	2,400	2,000	2,200	2,400	2,400
180		2,000	2,200	2,200		2,000	2,200	2,200		2,200	2,200	2,200
185				2,200				2,200			2,200	2,200
190											2,200	2,200
T1 T2 T3 %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



53 ft.
(16.0 m)



46,700 lbs.
(21 200 kg)



100%



360°



85% Domestic (Pounds)

	53' - 0° LATTICE EXT.				53' - 16° LATTICE EXT.				53' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
25	15,400											
30	15,400	15,400	14,800									
35	15,400	15,400	14,600									
40	14,800	15,200	14,000	13,400	10,800	11,000						
45	13,400	14,000	13,600	13,000	10,200	10,400	10,400					
50	12,600	13,000	13,200	12,600	9,800	10,000	10,000	10,000	8,200	8,400		
55	11,800	12,400	12,600	12,200	9,200	9,600	9,600	9,600	7,800	8,000	8,000	
60	11,000	11,600	12,000	11,800	8,800	9,200	9,200	9,400	7,600	7,800	7,800	7,800
65	10,400	11,000	11,400	11,400	8,400	8,800	9,000	9,000	7,400	7,600	7,600	7,600
70	9,800	10,400	10,800	11,000	8,000	8,400	8,600	8,800	7,200	7,400	7,400	7,400
75	9,400	10,000	10,400	10,600	7,800	8,200	8,400	8,400	6,800	7,200	7,200	7,200
80	8,800	9,400	9,800	10,000	7,400	7,800	8,000	8,200	6,600	7,000	7,000	7,200
85	8,400	9,000	9,400	9,800	7,200	7,600	7,800	8,000	6,400	6,800	6,800	7,000
90	8,000	8,600	9,200	9,400	7,000	7,400	7,600	7,800	6,400	6,600	6,800	6,800
95	7,600	8,200	8,800	9,000	6,800	7,000	7,400	7,400	6,200	6,400	6,600	6,600
100	7,400	8,000	8,400	8,800	6,400	6,800	7,200	7,200	6,000	6,200	6,400	6,600
105	7,000	7,600	8,200	8,400	6,400	6,600	7,000	7,200	6,000	6,200	6,400	6,400
110	6,800	7,400	7,800	8,200	6,200	6,600	6,800	7,000	5,800	6,000	6,200	6,400
115	6,600	7,200	7,600	8,000	6,000	6,400	6,600	6,800	5,800	6,000	6,000	6,200
120	6,400	7,000	7,400	7,600	5,800	6,200	6,400	6,600	5,800	5,800	6,000	6,000
125	6,000	6,600	7,000	7,400	5,800	6,000	6,200	6,400		5,800	5,800	6,000
130	5,800	6,400	6,800	7,200	5,600	5,800	6,200	6,400		5,600	5,800	5,800
135	5,600	6,200	6,200	6,400	5,600	5,800	6,000	6,200		5,600	5,800	5,800
140		6,000	5,400	5,600		5,600	6,000	6,000			5,800	5,800
145		5,800	4,800	4,800		5,600	5,400	5,600			5,600	5,800
150		5,800	4,000	4,200		5,600	4,600	4,800			4,800	5,200
155			3,400	3,600			4,000	4,200				4,600
160			2,800	3,000			3,200	3,600				3,800
165			2,400	2,400			2,600	3,000				
170				2,000			2,000	2,400				
T1 T2 T3 %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



105 ft.
(32.0 m)



46,700 lbs.
(21 200 kg)



100%



360°



85% Domestic (Pounds)

	105' - 0° LATTICE EXT.				105' - 16° LATTICE EXT.				105' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
35	10,800											
40	10,400	10,200										
45	10,000	9,800	8,600									
50	9,800	9,400	8,600	7,000	9,400	8,800						
55	9,400	9,200	8,600	7,000	9,000	8,600	8,000					
60	9,000	8,800	8,200	7,000	8,600	8,200	7,800	7,000	7,400			
65	8,600	8,400	8,000	7,000	8,200	7,800	7,400	7,000	7,400			
70	8,200	8,200	7,800	7,000	7,800	7,600	7,200	6,800	7,200	7,200	7,000	
75	7,800	7,800	7,400	7,000	7,400	7,200	7,000	6,600	6,800	7,000	6,800	6,400
80	7,400	7,400	7,200	6,800	7,000	7,000	6,800	6,400	6,600	6,800	6,600	6,200
85	7,200	7,200	7,000	6,600	6,800	6,800	6,600	6,200	6,400	6,400	6,400	6,000
90	6,800	6,800	6,800	6,400	6,400	6,400	6,400	6,000	6,200	6,200	6,200	5,800
95	6,400	6,600	6,600	6,200	6,200	6,200	6,200	5,800	5,800	6,000	6,000	5,600
100	6,200	6,400	6,200	6,000	5,800	6,000	6,000	5,800	5,600	5,800	5,800	5,600
105	6,000	6,200	6,200	6,000	5,600	5,800	5,800	5,600	5,400	5,600	5,600	5,400
110	5,600	6,000	6,000	5,800	5,400	5,600	5,600	5,400	5,200	5,400	5,400	5,200
115	5,400	5,800	5,800	5,600	5,200	5,400	5,400	5,400	5,000	5,200	5,200	5,200
120	5,200	5,400	5,600	5,400	5,000	5,200	5,200	5,200	4,800	5,000	5,200	5,000
125	5,000	5,200	5,400	5,200	4,800	5,000	5,000	5,000	4,600	4,800	5,000	5,000
130	4,600	5,000	5,200	5,200	4,600	4,800	5,000	4,800	4,400	4,600	4,800	4,800
135	4,400	4,800	5,000	5,000	4,400	4,600	4,800	4,800	4,400	4,600	4,600	4,600
140	4,400	4,600	4,800	4,800	4,200	4,400	4,600	4,600	4,200	4,400	4,600	4,600
145	4,200	4,400	4,800	4,800	4,200	4,400	4,600	4,600	4,000	4,200	4,400	4,400
150	4,000	4,400	4,600	4,600	4,000	4,200	4,400	4,400	3,800	4,200	4,400	4,400
155	3,800	4,200	4,400	4,400	3,800	4,000	4,200	4,400	3,800	4,000	4,200	4,200
160	3,600	4,000	4,000	4,000	3,600	3,800	4,000	4,200	3,600	3,800	4,000	4,200
165	3,600	3,800	3,600	3,400	3,600	3,800	4,000	4,000	3,400	3,800	4,000	4,000
170	3,400	3,600	3,000	2,800	3,400	3,600	3,600	3,600	3,400	3,600	3,800	4,000
175	3,200	3,600	2,600	2,400	3,200	3,600	3,000	3,000		3,600	3,400	3,400
180	3,200	3,400	2,000	2,000	3,200	3,400	2,600	2,400		3,400	2,800	2,800
185		3,400				3,400	2,000	2,000			2,400	2,400
190		3,200				3,200						
195		3,200				3,200						
200		3,000										
T1 T2 T3 %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



33 ft.
(10.0 m)



28,000 lbs.
(12 700 kg)



100%



360°



85% Domestic (Pounds)

	33' - 0° LATTICE EXT.				33' - 16° LATTICE EXT.				33' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
20	30,800											
25	29,400	28,600										
30	26,800	27,000	24,000	20,600	19,200	19,600						
35	24,600	25,200	23,800	20,600	18,200	18,400	18,400		14,200			
40	22,600	23,400	23,200	20,600	17,000	17,600	17,600	17,200	13,600	13,800	13,800	
45	21,000	21,800	22,000	20,600	16,200	16,600	16,800	16,600	13,200	13,400	13,400	13,200
50	19,400	20,600	20,800	20,000	15,000	16,000	16,200	16,000	12,600	13,000	13,000	13,000
55	18,200	19,400	19,800	19,400	14,000	15,200	15,400	15,400	12,200	12,600	12,800	12,600
60	17,200	18,200	18,800	18,600	13,400	14,400	14,600	14,600	11,800	12,200	12,400	12,400
65	16,000	17,200	17,800	18,000	12,800	13,600	13,800	14,000	11,400	11,800	12,000	12,000
70	15,200	16,200	17,000	17,200	12,400	13,000	13,400	13,600	11,200	11,600	11,800	11,800
75	14,200	15,400	16,400	16,600	12,000	12,600	13,000	13,200	10,800	11,200	11,600	11,600
80	13,200	14,400	15,000	15,400	11,400	12,000	12,600	12,800	10,600	11,000	11,200	11,400
85	12,400	13,400	13,000	13,400	11,000	11,800	12,200	12,400	10,400	10,800	11,000	11,200
90	11,800	12,800	11,200	11,600	10,800	11,400	11,800	12,000	10,200	10,400	10,800	11,000
95	11,400	12,400	9,600	10,000	10,400	10,800	10,400	10,800	9,800	10,200	10,600	10,800
100	10,800	11,800	8,200	8,600	10,000	10,600	9,000	9,400	9,800	10,000	9,400	10,000
105	10,600	10,600	6,800	7,200	10,000	10,400	7,600	8,000		10,000	8,000	8,600
110	9,400	9,400	5,800	6,200	9,800	10,000	6,400	6,800		9,800	6,800	7,400
115	8,400	8,400	4,800	5,200	8,600	8,800	5,400	5,800		9,000	5,800	6,200
120		7,600	3,800	4,200		7,800	4,400	4,800			4,600	5,200
125		6,600	3,000	3,400		6,800	3,400	4,000			3,800	4,200
130		5,800	2,200	2,600		6,000	2,600	3,200			2,800	3,400
135				2,000			2,000	2,400				2,600
<div> <div>T1</div> <div>T2</div> <div>T3</div> </div> %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.



99 - 151 ft.
(30.0 - 46.0 m)



79 ft.
(24.0 m)



28,000 lbs.
(12 700 kg)




100%



360°




85% Domestic (Pounds)


	79' - 0° LATTICE EXT.				79' - 16° LATTICE EXT.				79' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
30	15,400											
35	15,000	13,800										
40	14,600	13,600	11,800		10,600							
45	14,000	13,600	11,800	10,000	10,200							
50	13,200	13,200	11,800	10,000	9,800	9,800	9,600		8,000			
55	12,600	12,600	11,800	10,000	9,400	9,600	9,400	9,200	7,600	7,800		
60	12,000	12,000	11,600	10,000	9,000	9,200	9,000	9,000	7,400	7,800	7,600	
65	11,400	11,600	11,200	10,000	8,600	9,000	8,800	9,000	7,200	7,600	7,400	
70	10,800	11,000	11,000	10,000	8,400	8,600	8,600	8,800	7,000	7,400	7,200	7,400
75	10,400	10,600	10,600	10,000	8,000	8,400	8,400	8,600	7,000	7,200	7,000	7,200
80	9,800	10,200	10,200	9,800	7,800	8,200	8,000	8,400	6,800	7,000	6,800	7,200
85	9,400	9,800	9,800	9,600	7,600	8,000	7,800	8,200	6,600	7,000	6,800	7,000
90	9,000	9,400	9,600	9,400	7,400	7,800	7,600	8,000	6,400	6,800	6,600	7,000
95	8,600	9,000	9,200	9,200	7,200	7,600	7,400	7,800	6,400	6,600	6,400	6,800
100	8,200	8,600	9,000	9,000	7,000	7,400	7,200	7,600	6,200	6,600	6,400	6,600
105	8,000	8,400	8,600	8,800	6,800	7,200	7,200	7,400	6,200	6,400	6,400	6,600
110	7,600	8,000	8,000	8,000	6,600	7,000	7,000	7,400	6,000	6,400	6,200	6,600
115	7,200	7,600	7,000	7,000	6,400	6,800	6,800	7,200	6,000	6,400	6,200	6,400
120	7,000	7,400	6,000	6,000	6,400	6,800	6,800	7,000	5,800	6,200	6,000	6,400
125	6,600	7,000	5,200	5,200	6,200	6,600	6,200	6,200	5,800	6,200	6,000	6,200
130	6,400	6,800	4,400	4,400	6,000	6,400	5,400	5,400	5,600	6,000	5,800	6,200
135	6,200	6,600	3,800	3,800	5,800	6,200	4,600	4,600	5,600	6,000	5,200	5,200
140	6,000	6,200	3,000	3,000	5,800	6,200	3,800	4,000	5,600	5,800	4,400	4,600
145	5,800	5,400	2,400	2,400	5,600	6,000	3,200	3,200		5,800	3,600	3,800
150	5,200	4,800	1,800		5,600	5,400	2,600	2,600		5,600	3,000	3,200
155	4,600	4,400			5,000	4,800	2,000	2,000		5,000	2,400	2,400
160	4,200	3,800				4,200						2,000
165		3,400				3,600						
170		3,000				3,200						
175		2,600				2,800						
 %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.


99 - 151 ft.
(30.0 - 46.0 m)


131 ft.
(40.0 m)



28,000 lbs.
(12 700 kg)


100%


360°



85% Domestic (Pounds)

	131' - 0° LATTICE EXT.				131' - 16° LATTICE EXT.				131' - 30° LATTICE EXT.			
(Feet)	99	116	133	151	99	116	133	151	99	116	133	151
40	6,400	6,600										
45	6,400	6,400	5,800									
50	6,400	6,200	5,800	4,800	6,600							
55	6,200	6,000	5,600	4,800	6,200	5,800						
60	6,000	5,800	5,400	4,800	6,000	5,800	4,800					
65	5,800	5,800	5,200	4,800	5,800	5,600	4,800					
70	5,600	5,600	5,200	4,600	5,600	5,400	4,800	4,600	5,600	5,400		
75	5,400	5,400	5,000	4,600	5,400	5,200	4,800	4,400	5,200	5,000	4,800	
80	5,200	5,200	4,800	4,400	5,000	5,000	4,600	4,200	5,000	4,800	4,600	4,200
85	5,000	5,000	4,600	4,200	4,800	4,800	4,400	4,200	4,800	4,600	4,400	4,000
90	4,800	4,800	4,600	4,200	4,600	4,600	4,400	4,000	4,600	4,400	4,200	4,000
95	4,400	4,400	4,400	4,000	4,400	4,400	4,200	3,800	4,400	4,400	4,200	3,800
100	4,200	4,200	4,200	3,800	4,200	4,200	4,000	3,800	4,200	4,200	4,000	3,800
105	4,000	4,200	4,000	3,800	4,000	4,000	3,800	3,600	4,000	4,000	3,800	3,600
110	4,000	4,000	4,000	3,600	3,800	3,800	3,800	3,600	3,800	3,800	3,800	3,600
115	3,800	3,800	3,800	3,600	3,600	3,800	3,600	3,400	3,600	3,600	3,600	3,400
120	3,600	3,600	3,600	3,400	3,400	3,600	3,400	3,400	3,400	3,600	3,400	3,200
125	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,200	3,400	3,400	3,400	3,200
130	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,000
135	3,000	3,200	3,200	3,000	3,000	3,200	3,200	3,000	3,000	3,200	3,200	3,000
140	3,000	3,000	3,000	3,000	2,800	3,000	3,000	3,000	3,000	3,000	3,000	3,000
145	2,800	3,000	3,000	2,800	2,800	2,800	3,000	2,800	2,800	2,800	3,000	2,800
150	2,600	2,800	2,600	2,400	2,600	2,800	2,800	2,800	2,600	2,800	2,800	2,800
155	2,400	2,600	2,200		2,400	2,600	2,600	2,600	2,600	2,600	2,800	2,600
160	2,400	2,400			2,400	2,600	2,400	2,200	2,400	2,600	2,600	2,600
165	2,200	2,400			2,200	2,400			2,200	2,400	2,200	2,200
170	2,000	2,200			2,200	2,200			2,200	2,200		
175		2,200				2,200			2,000	2,200		
180		2,000				2,000				2,200		
 %												
T1	100/0	100/0	100	100	100/0	100/0	100	100	100/0	100/0	100	100
T2	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100
T3	25/75	50/100	75	100	25/75	50/100	75	100	25/75	50/100	75	100

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE. The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Rated Lifting Capacities

Important Notes:

Warning: THIS CHART IS ONLY A GUIDE.
The notes below are for illustration only and should not be relied upon to operate the crane. The individual crane's load chart, operating instructions and other instruction plates must be read and understood prior to operating the crane.

1. All rated loads have been tested to and meet minimum requirements of SAEJ1063 NOV93 - Cantilevered Boom Crane Structures - Method of Test, and do not exceed 85% of the tipping load on outriggers as determined by SAEJ765 OCT90 Crane Stability Test Code.



























2. Capacities given do not include the weight of hook blocks, slings, auxiliary lifting equipment and load handling devices. Their weights must be added to the load to be lifted. When more than minimum required reeving is used, the additional rope weight shall be considered part of the load.

3. All capacities are for crane on firm, level surface. It may be necessary to have structural supports under the outrigger floats or tires to spread the load to a larger bearing surface.

4. When either boom length or radius or both are between values listed, the smallest load shown at either the next larger radius or boom length shall be used.

5. For outrigger operation, ALL outriggers shall be properly extended with tires raised free of ground before raising the boom or lifting loads.

Symbols Glossary

	Frame		Steering
	Outriggers		Transmission
	Outrigger Controls		Axles
	Engine		Brakes
	Fuel Tank Capacity		Tires
	Electrical System		Suspension
	Drive		360° Rotation
	Lights		Boom Elevation
	Cab		Swing
	Boom		Counterweight
	Fixed Swingaway		Oil
	Tele-Swingaway		Hydraulic System
	Jib		Hoist
	Boom Nose		Radius
	Boom Extension		Boom Length
	Speed		Hookblock
	Grade		Gear
	Lattice Extension		Luffing Jib

GROVE®

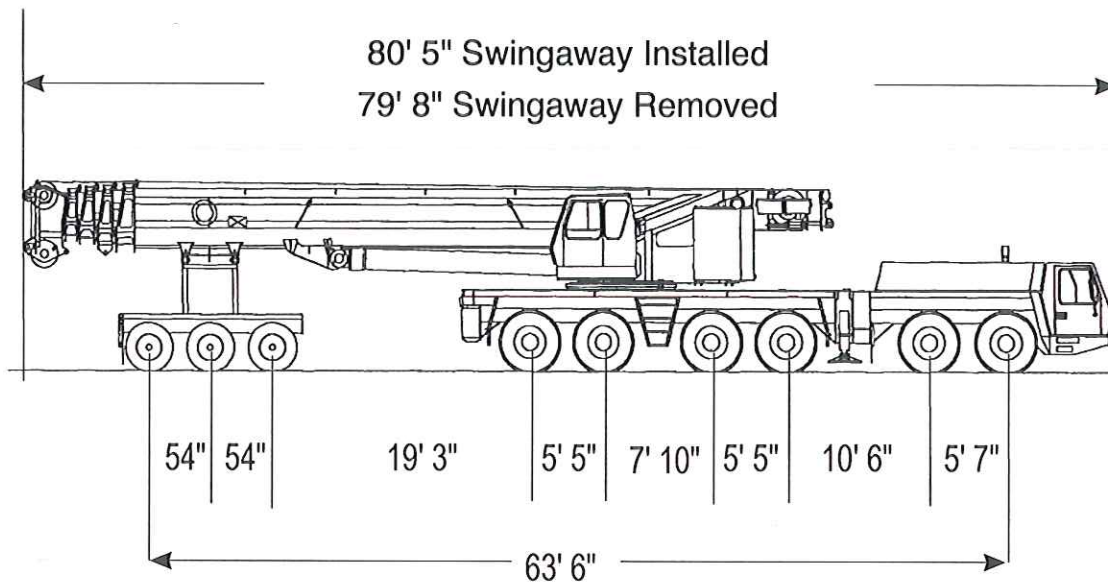
GMK6350



ALL TERRAIN HYDRAULIC CRANE



TRAILING BOOM WEIGHTS



DOLLY

56,167 LBS.

REAR 4 AXLES

90,267 LBS.

FRONT 2 AXLES

34,781 LBS.

G.V.W.: 181,215 LBS.

UNIT EQUIPPED AS FOLLOWS:

Cummins engines carrier and superstructure, outrigger pads in place, frame equipped for removable outrigger box, rear box in place, main & auxiliary hoist with rope, swingaway on boom, 3 axle boom dolly (7,600 LBS.), 20.5 tires, counterweight removed. 12 x 6 x 12 drive.

Weight effects:

Component	Dolly	Rear Axles	Front Axles	Gross
Remove rear outrigger box	0	-17,555 lbs.	+6,753 lbs.	-10,802 lbs.
Remove front outrigger beams	0	-1,980 lbs.	-3,377 lbs.	-5,357 lbs.
Remove rear outrigger beams	0	-9,562 lbs.	+3,753 lbs.	-5,580 lbs.
Remove auxiliary hoist with rope	0	-2,134 lbs.	-3,951 lbs.	-6,085 lbs.
Remove swingaway	-5,952 lbs.	+456 lbs.	+161 lbs.	-5,335 lbs.
Mercedes engines ILO Cummins	0	-317 lbs.	-388 lbs.	-705 lbs.
Add 12 x 8 x 12 Drive	0	-106 lbs.	+966 lbs.	+806 lbs.
Fixed MEGALIFT brackets w/o winch	582 lbs.	-40 lbs.	-13 lbs.	529 lbs.
Fixed bracket for MEGALIFT winch	181 lbs.	110 lbs.	40 lbs.	331 lbs.
Bolted parts for MEGALIFT	181 lbs.	110 lbs.	40 lbs.	331 lbs.
MEGALIFT winch	7,773 lbs.	3,119 lbs.	1,101 lbs.	11,993 lbs.

Note: Weights may vary 3% due to manufacturing tolerances.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Carrier specifications

Chassis

Box-type, torsion resistant frame is fabricated from high-strength steel.

Outrigger System

Hydraulic two-stage outrigger beams are extended by a single hydraulic cylinder and two cables. Outriggers can adjust to two positions:

Fully extended (100%) - 27' 11" (8.5 m)

Partially extended (50%) - 19' 8" (6 m)

Four 29.5 in. x 32 in. (750 mm x 810 mm), self stowing, steel outrigger pads provide rigid lifting base. Outrigger controls are located on both sides of the carrier. An electronic level indicator is located next to each outrigger control box.

Engine

Cummins N14-525 E+, diesel, 6 cylinders, water-cooled, turbocharged, 525 HP (392 kW) at 2100 rpm. Max. torque: 1850 ft. lbs. (2509 Nm) at 1200 rpm. Engine emission: EPA/CARB (on highway).

Fuel Tank capacity

132 gal. (500 L).

Transmission

Allison automatic CLT 755, 5 forward and 1 reverse speed. Transfer case with 2 speeds and inter-axle differential lock.

Drive/Steer

12 x 6 x 12.

Axles

6 axles. 1, 2, 4 and 5 are drive/steer. Axles 3 and 6 are steer only.

Suspension

GROVE GMK6350 features the Grove exclusive MEGATRAK† suspension. This revolutionary design features an independent hydroneumatic system with hydraulic lockout acting on all wheels. The suspension can be raised 6-1/2" (170 mm) or lowered 5" (130 mm) both longitudinally and transversely and features an automatic leveling system for on-highway travel.

Tires

12 tires, 20.5 R25.

Steering

Dual circuit steering system is hydraulic power assisted with a transfer case mounted, ground driven, emergency steering pump. Axles 1, 2, 3, 5 and 6 steer on highway. Separate steering of the 4th, 5th and 6th axle for all wheel steer and crab-steer is controlled by an electric rocker switch.

Brakes

A dual circuit air system operates on all wheels with a spring-applied, air released parking brake acting on axles 2, 4, 5 and 6. An air dryer is fitted to remove moisture from the air system.

Engine compression brake is standard.

Cab

Two-man, aluminum construction driver's cab includes the following features: safety glass; driver and passenger seats with hydraulic suspension, engine-dependent hot water heater, complete instrumentation and driving controls.

Electrical system

24 V system with three-phase alternator 28 V/80 A, 2 batteries 12 V/170 Ah.

Maximum Speed

48 mph (77km/h) with 20.5 R25 tires.

Gradeability (theoretical)

46% with 20.5 R25 tires.

Miscellaneous standard equipment

Boom removal kit; trailing boom kit (less dolly); additional hydraulic oil cooler; removable rear outrigger box (Cummins engine version); spare tire and wheel - 20.5 R25 with carry bracket; flashing amber warning light on carrier cab; working light; tool kit; fire extinguisher; radio cassette in carrier cab.

* Optional equipment

- * 12 x 8 x 12
- * Electric driveline retarder
- * 16.00 R25 tires (vehicle width 9 ft. 10 in. [3 m])
- * Outrigger pressure measurement devices
- * Engine-independent hot water heater, with engine pre-heater
- * Third seat
- * Trailing boom "boost" weight transfer kit
- * Air conditioning
- * Mercedes-Benz engine (removable outrigger box not supplied)





* Denotes optional equipment

† "G MEGATRAK" (and design) is a trademark of Grove U.S. L.L.C.

 51 - 197 ft.
(15.5 - 60.0 m)
  220,400 lbs.
(100 Tonnes)
  100%
27'11" Spread
  360°

Pounds (thousands)										
Feet	51*	51	69	87	106	124	142	160	178	197
8	700.0†									
10	542.0	466.0	422.0	342.0						
15	412.0	370.0	366.0	342.0	242.0					
20	332.0	302.0	302.0	300.0	242.0	185.0	139.0			
25	266.0	254.0	258.0	254.0	242.0	185.0	139.0	106.0		
30	219.0	218.0	222.0	222.0	220.0	185.0	139.0	106.0	78.0	66.0
35	185.0	185.0	188.0	188.0	187.0	174.0	137.0	106.0	78.0	66.0
40			162.0	163.0	161.0	161.0	126.0	106.0	78.0	66.0
45			142.0	143.0	141.0	144.0	116.0	102.0	78.0	66.0
50			126.0	126.0	128.0	128.0	106.0	95.0	78.0	66.0
55			113.0	113.0	116.0	114.0	98.0	88.0	78.0	66.0
60				102.0	105.0	103.0	91.0	82.0	75.0	66.0
65				92.0	95.0	93.0	84.0	76.0	70.0	65.0
70				85.0	86.0	85.0	78.0	71.0	66.0	62.0
75					79.0	77.0	73.0	66.0	62.0	59.0
80					72.0	70.0	67.0	62.0	58.0	56.0
85					67.0	65.0	64.0	58.0	54.0	52.0
90					62.0	60.0	61.0	54.0	50.0	49.0
95						55.0	57.0	50.0	47.0	46.0
100						51.0	53.0	48.0	45.0	43.4
105						47.0	50.0	45.0	42.4	41.0
110						45.0	46.0	42.4	40.2	39.0
115							43.2	40.4	38.2	37.0
120							40.6	38.6	36.2	35.2
125								37.0	34.4	33.6
130								34.6	32.6	32.0
135								33.4	31.2	30.0
140								32.4	30.0	27.8
145									28.8	26.0
150									27.2	24.8
155									25.6	23.8
160									24.4	22.6
165										21.8
170										20.6
175										19.2
180										17.2

* Over rear only, 28'6" x 19'8" outrigger base.
 Lifting capacities greater than 425,000 lbs require additional equipment.
 † 700,00 lbs is a comparative rating

 51 - 197 ft.
(15.5 - 60.0 m)
  110,200 lbs.
(50 Tonnes)
  100%
27'11" Spread
  360°

Pounds (thousands)										
Feet	51	69	87	106	124	142	160	178	197	
10	446.0	422.0	342.0							
15	352.0	352.0	342.0	242.0						
20	278.0	282.0	282.0	242.0	185.0	139.0				
25	222.0	224.0	224.0	224.0	185.0	139.0	106.0			
30	180.0	183.0	183.0	182.0	182.0	139.0	106.0	78.0	66.0	
35	147.0	150.0	151.0	155.0	150.0	137.0	106.0	78.0	66.0	
40		129.0	131.0	130.0	126.0	118.0	106.0	78.0	66.0	
45		111.0	113.0	112.0	108.0	102.0	97.0	78.0	66.0	
50		95.0	97.0	97.0	94.0	94.0	87.0	78.0	66.0	
55		81.0	83.0	83.0	82.0	83.0	79.0	73.0	66.0	
60			73.0	72.0	75.0	73.0	70.0	68.0	66.0	
65			64.0	63.0	66.0	64.0	64.0	63.0	59.0	
70			57.0	59.0	59.0	57.0	58.0	56.0	53.0	
75				54.0	53.0	52.0	52.0	51.0	48.0	
80				48.0	48.0	48.0	47.0	46.0	43.0	
85				43.8	42.8	43.6	42.6	41.2	39.0	
90				39.6	38.8	39.6	38.4	37.0	35.4	
95					36.2	36.0	34.8	33.4	31.8	
100					33.0	32.8	31.6	30.2	28.6	
105					30.0	29.8	28.8	27.4	25.6	
110					27.6	27.4	26.2	24.8	23.2	
115						25.0	23.8	22.6	20.8	
120							21.8	20.4	18.8	
125							19.8	18.6	16.8	
130							18.2	16.8	15.0	
135							16.6	15.2	13.4	
140							15.0	13.8	12.0	
145								12.4	10.6	
150								11.2	9.4	
155								10.0	8.2	
160								9.0	7.0	
165									6.0	
170									5.0	
175									4.2	

Lifting capacities greater than 425,000 lbs require additional equipment.
 Note: Above chart is available with reduced outriggers.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
 The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Working range - MEGALIFT



142 - 197 ft.
(43.4 - 60 m)



220,400 lbs
(100 tonnes)

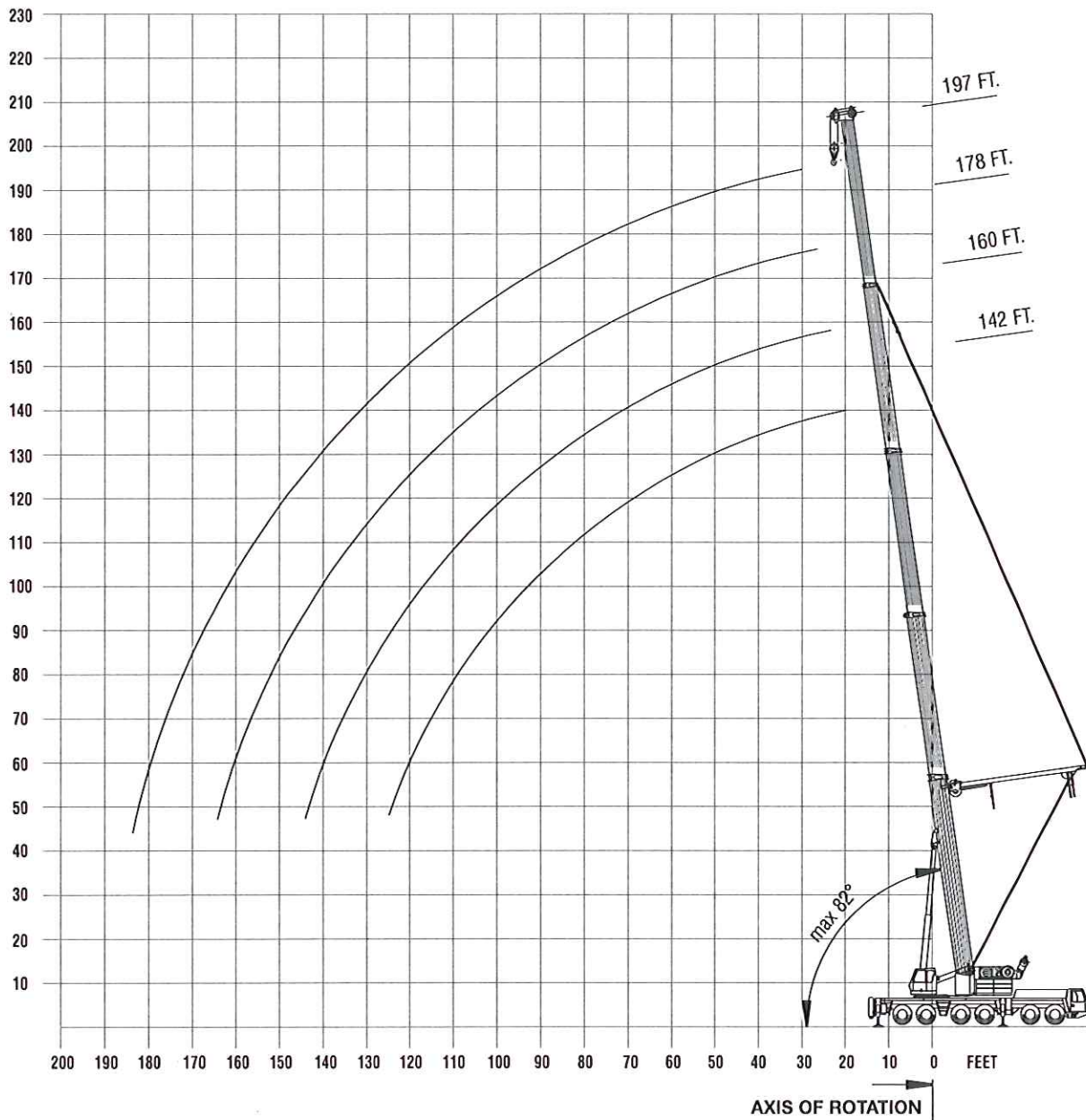


100%



360°

FEET



THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Working range



51 - 197 ft.
(15.5 - 60 m)



62 - 167 ft.
(19 - 51 m)



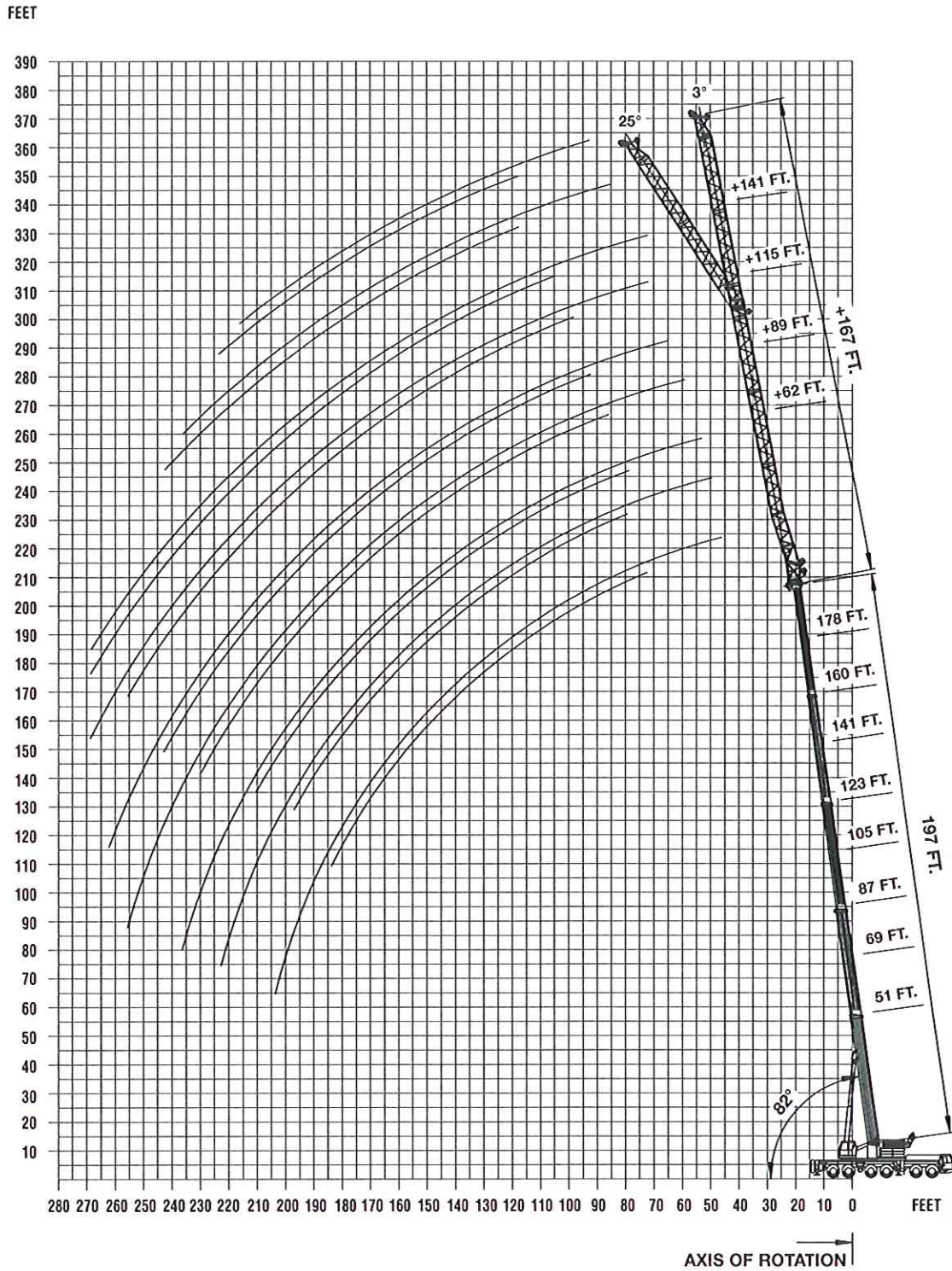
220,400 lbs
(100 tonnes)



100%



360°



THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

GROVE GMK6350

Working range



51 - 160 ft.
(15.5 - 48.6 m)



69 - 200 ft.
(21 - 61 m)



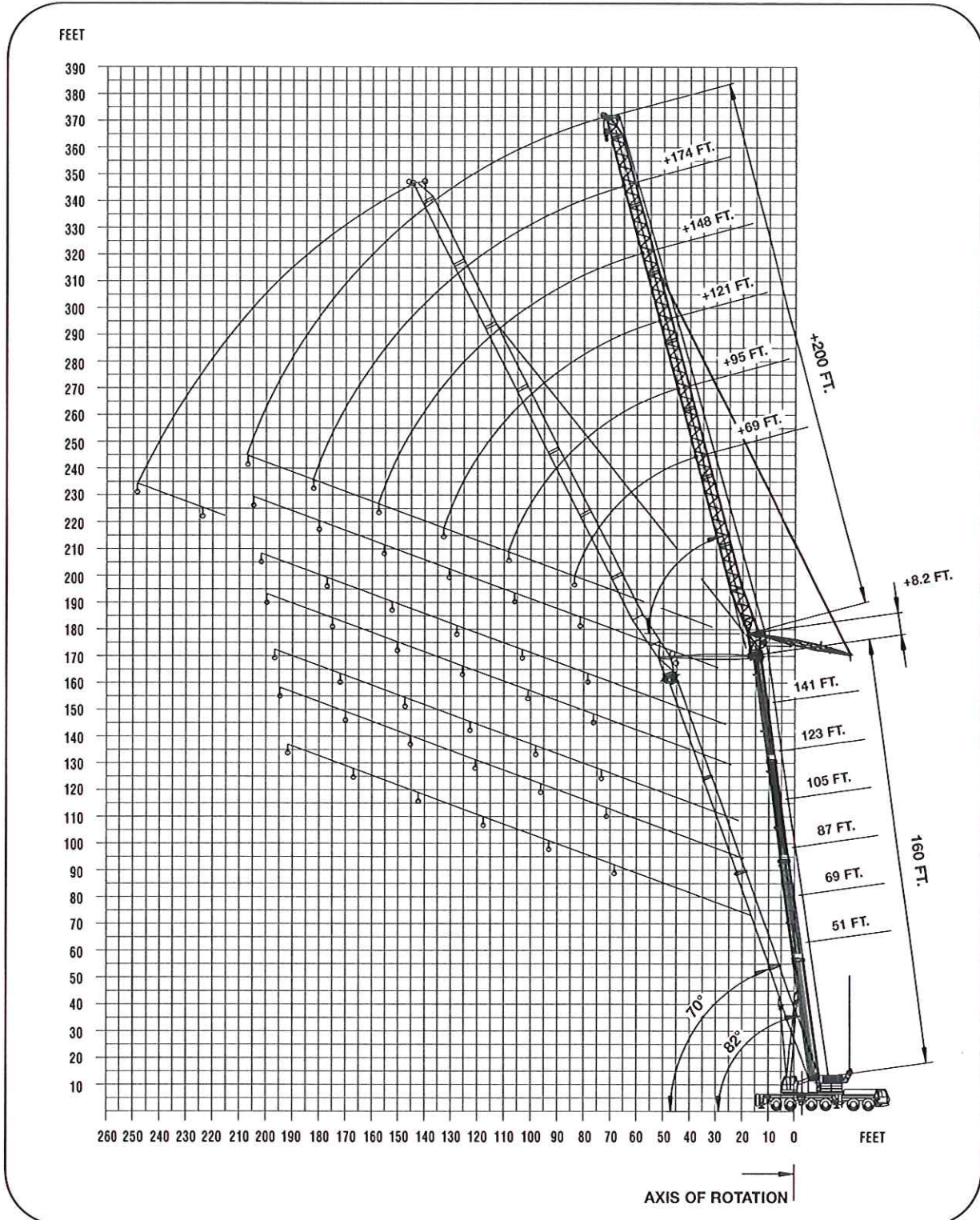
220,400 lbs
(100 tonnes)



100%



360°



THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

51 - 178 ft.
(15.5 - 54.3 m)

148 ft.
(45 m)

220,400 lbs.
(100 Tonnes)


100%
27'11" Spread

360°

Pounds (thousands)


70° MAIN BOOM ANGLE

Feet	51	69	87	105	123	141	160	178
95	42.6							
100	42.4							
105	41.8	38.8						
110	41.2	38.6						
115	39.6	38.4	34.8					
120	37.4	38.0	34.8	30.6				
125	35.4	37.6	34.6	30.6	26.4			
130	32.8	36.2	34.4	30.6	26.4			
135	30.4	34.6	34.4	30.4	26.4			
140	27.8	32.6	33.8	30.4	26.4	20.8		
145	25.4	30.4	33.0	30.4	26.4	20.8	15.2	
150	23.2	27.8	32.0	30.2	26.4	20.8	15.2	
155	20.8	25.4	30.0	28.8	26.2	20.6	15.2	
160		23.0	27.4	27.8	25.8	20.6	15.2	10.8
165			25.0	26.6	24.8	20.6	15.2	10.8
170			22.8	25.6	23.8	20.6	15.2	10.8
175				24.6	23.0	20.6	15.2	10.8
180					22.0	20.2	15.2	10.8
185						19.4	15.2	10.8
190							15.2	10.8
195							15.2	10.8
200								10.8




51 - 178 ft.

(15.5 - 54.3 m)




174 ft.

(53 m)




220,400 lbs.

(100 Tonnes)





100%


27'11" Spread





360°













Pounds (thousands)

70° MAIN BOOM ANGLE


Feet	51	69	87	105	123	141	160	178
105	29.4							
110	28.6							
115	28.0							
120	27.4	26.6						
125	26.8	25.8	24.6					
130	26.2	24.8	24.2					
135	25.2	24.2	23.6	21.6				
140	24.4	23.8	23.2	21.6	18.8			
145	23.6	23.4	22.8	21.4	18.8			
150	23.0	22.8	22.4	21.2	18.8			
155	22.4	22.4	22.0	20.8	18.6	14.6		
160	21.6	21.8	21.4	20.6	18.6	14.6	10.4	
165	20.0	21.4	21.2	20.2	18.4	14.6	10.4	
170	18.4	21.0	20.8	19.8	18.4	14.6	10.4	
175	17.0	19.8	20.4	19.6	18.2	14.6	10.4	6.6
180	15.6	18.4	19.8	19.2	17.8	14.6	10.4	6.6
185		16.8	18.8	18.8	17.8	14.6	10.4	6.6
190		15.6	17.8	18.6	17.6	14.6	10.4	6.6
195			17.0	18.4	17.4	14.6	10.4	6.6
200				18.0	17.0	14.6	10.4	6.6
205					16.8	14.4	10.4	6.6
210							10.4	6.6
215							10.4	6.6
220								6.6




51 - 178 ft.
(15.5 - 54.3 m)




200 ft.
(61 m)




220,400 lbs.
(100 Tonnes)



100%
27'11" Spread



360°



THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

 51 - 178 ft.
(15.5 - 54.3 m)
  148 ft.
(45 m)
  220,400 lbs.
(100 Tonnes)
  100%
27'11" Spread
  360°

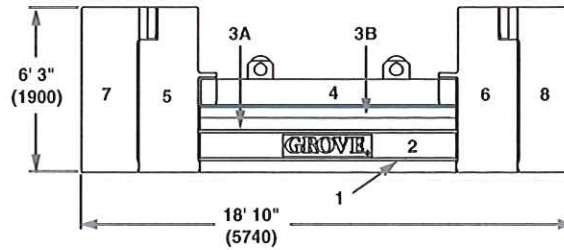
	Pounds (thousands)							
	82° MAIN BOOM ANGLE							
Feet	51	69	87	105	123	141	160	178
50	43.8							
55	43.8	39.6						
60	43.6	39.6	35.8	31.0				
65	43.4	39.6	35.6	31.0				
70	43.2	39.2	35.6	31.0	26.6			
75	43.0	39.0	35.4	31.0	26.6	21.0	15.8	11.2
80	42.6	39.0	35.2	30.8	26.6	21.0	15.8	11.2
85	42.4	38.8	35.0	30.8	26.6	21.0	15.8	11.2
90	42.0	38.4	35.0	30.6	26.6	21.0	15.8	11.2
95	40.6	38.4	34.8	30.6	26.4	21.0	15.8	11.2
100	38.6	37.8	34.6	30.6	26.4	21.0	15.8	11.2
105	36.4	36.2	34.2	30.4	26.4	21.0	15.8	11.2
110	33.6	34.8	33.6	30.4	26.4	21.0	15.8	11.2
115	31.0	33.2	32.8	30.2	26.4	21.0	15.8	11.2
120	28.4	31.4	32.4	30.0	26.2	21.0	15.8	11.2
125	25.6	29.0	31.6	29.8	26.2	21.0	15.8	11.2
130	23.4	26.2	29.2	28.2	26.0	21.0	15.8	11.2
135	21.2	23.8	26.6	26.6	25.2	21.0	15.8	11.2
140		21.4	24.2	24.8	24.2	21.0	15.8	11.2
145			21.8	23.2	23.2	21.0	15.8	11.2
150			18.8	21.4	22.0	21.0	15.8	11.2
155					21.0	21.0	15.8	11.2
160								11.2

 51 - 178 ft.
(15.5 - 54.3 m)
  174 ft.
(53 m)
  220,400 lbs.
(100 Tonnes)
  100%
27'11" Spread
  360°

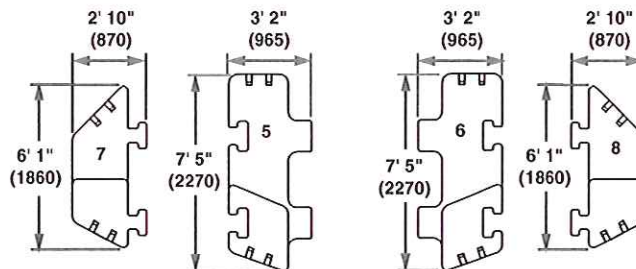
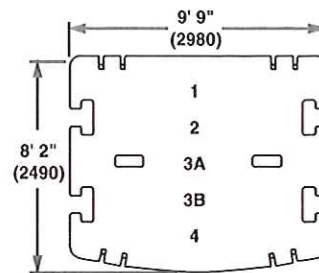
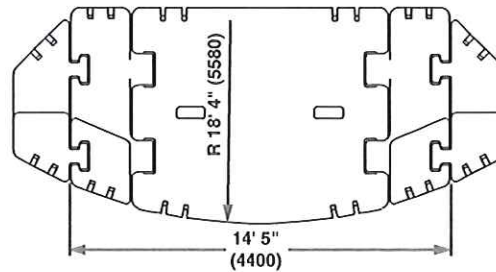
	Pounds (thousands)							
	82° MAIN BOOM ANGLE							
Feet	51	69	87	105	123	141	160	178
60	31.6							
65	31.4							
70	31.0	28.2	25.8					
75	30.4	28.2	25.6	22.2	19.0			
80	30.2	28.0	25.4	22.0	19.0	14.4	10.6	
85	29.8	27.8	25.4	22.0	19.0	14.4	10.6	
90	29.4	27.4	25.2	21.8	19.0	14.4	10.6	6.8
95	28.8	27.4	25.0	21.8	19.0	14.4	10.6	6.8
100	28.4	27.0	24.6	21.8	19.0	14.4	10.6	6.8
105	27.6	26.6	24.2	21.6	19.0	14.4	10.6	6.8
110	26.8	26.0	24.0	21.4	18.8	14.4	10.6	6.8
115	26.0	25.4	23.6	21.2	18.8	14.4	10.6	6.8
120	25.4	24.4	23.0	21.2	18.8	14.4	10.6	6.8
125	24.6	23.8	22.6	21.0	18.6	14.4	10.6	6.8
130	23.8	23.4	22.4	20.8	18.6	14.4	10.6	6.8
135	22.8	22.8	22.0	20.4	18.4	14.4	10.6	6.8
140	22.0	22.2	21.4	20.2	18.4	14.4	10.6	6.8
145	21.0	21.6	21.2	19.8	18.0	14.4	10.6	6.8
150	19.2	20.4	20.6	19.6	17.8	14.4	10.6	6.8
155	17.4	18.8	20.2	19.4	17.8	14.4	10.6	6.8
160	15.6	17.4	19.2	19.0	17.6	14.4	10.6	6.8
165		16.0	17.8	18.4	17.2	14.4	10.6	6.8
170		14.2	16.0	17.2	16.6	14.4	10.6	6.8
175			13.8	15.8	16.0	14.4	10.6	6.8
180					15.2	14.4	10.6	6.8
185							10.6	6.8
190							10.6	6.8

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Counterweight configurations



1. 17,600 lbs. (8 Tonnes)
2. 30,900 lbs. (14 Tonnes)
- 3A. 15,450 lbs. (7 Tonnes)
- 3B. 15,450 lbs. (7 Tonnes)
4. 30,900 lbs. (14 Tonnes)
5. 33,000 lbs. (15 Tonnes)
6. 33,000 lbs. (15 Tonnes)
7. 22,050 lbs. (10 Tonnes)
8. 22,050 lbs. (10 Tonnes)



Note: () Reference dimensions in mm

	1	2	3A	3B	4	5	6	7	8
17,600 lbs.	X								
48,500 lbs.	X	X							
79,400 lbs.	X	X	X	X					
110,200 lbs.	X	X	X	X	X				
176,300 lbs.	X	X	X	X	X	X	X		
220,400 lbs.	X	X	X	X	X	X	X	X	X

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Overview of standard duty charts



51 ft. - 197 ft.



360°



28.5 x 27.9 ft.



28.5 x 19.7 ft.



ft.



Thousand lbs.

	220.4	176.3	110.2	79.3	48.5	17.6	0	220.4	176.3	110.2	79.3	48.5	17.6	0
51	•	•	•	•	•	•	•	•	•	•	•	•	•	•
69	•	•	•	•	•	•	•	•	•	•	•	•	•	•
87	•	•	•	•	•	•	•	•	•	•	•	•	•	•
105	•	•	•	•	•	•	•	•	•	•	•	•	•	•
124	•	•	•	•	•	•	•	•	•	•	•	•	•	•
142	•	•	•	•	•	•	•	•	•	•	•	•	•	•
160	•	•	•	•	•	•	•	•	•	•	•	•	•	•
178	•	•	•	•	•	•	•	•	•	•	•	•	•	•
197	•	•	•	•	•	•	•	•	•	•	•	•	•	•

* 0° over rear



5° , 30°
36 ft./59 ft.



360°



28.5 x 27.9 ft.



28.5 x 19.7 ft.



ft.



Thousand lbs.

	220.4	176.3	110.2	79.3	48.5	17.6	110.2	79.3	48.5
51	•	•	•	•	•	•	•	•	•
69	•	•	•	•	•	•	•	•	•
87	•	•	•	•	•	•	•	•	•
105	•	•	•	•	•	•	•	•	•
124	•	•	•	•	•	•	•	•	•
142	•	•	•	•	•	•	•	•	•
160	•	•	•	•	•	•	•	•	•
178	•	•	•	•	•	•	•	•	•
197	•	•	•	•	•	•	•	•	•



3° , 25°
62 ft./167 ft.



360°



28.5 x 27.9 ft.

Thousand lbs.



ft.



ft.



220.4



176.3



110.2



79.3



48.5

	62	88	115	141	167	194(1)	62	88	115	141	167	194(1)	62	88	115	141	167	194(1)	62	88	115
51	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
69	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
87	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
105	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
124	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
142	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
160	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
178	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
197	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

(1) 3° only



69 ft. - 200 ft.



82° / 70°



28.5 x 27.9 ft.



360°

Thousand lbs.



ft.



ft.



220.4



176.3



110.2



79.3

	69	95	121	147	174	200	69	95	121	147	174	200	69	95	121	147	174	200	69	95	121	147	174	200
51	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
69	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
87	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
105	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
124	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
142	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
160	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
178	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

† Only with 82° boom angle.

THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Water Treatment and Technical Assistance,
San Juan Power Plant***

1/26/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	San Juan Power Plant –Water Treatment and Technical Assistance
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
San Juan Power Plant	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

The San Juan Power Plant needs a Chemical Treatment of Cooling Water Systems and a Chemical Advisor. Services will be for the operation and maintenance of the water treatment system for the cooling towers of the Plant's auxiliary equipment. The treatment will protect the infrastructure of the cooling towers. These services are essential to comply with monthly reports filing, and handling of waste materials for environmental compliance in accordance with: Federal Environmental Protection Agency (EPA), Department of Natural and Environmental Resources, and the Aqueduct and Sewer Authority.

Section 3. Scope of Work

3.1. Scope of Work Description



The scope of work for the Water Treatment and Technical Assistance of the Cooling Water System in the San Juan Power Plant will consist of the following:

- Furnish the equipment, materials, instrumentation, supervision, tools, installation and maintenance of a chemical treatment program for all the Cooling Water Systems, as well as all the additional chemicals required.
- Provide the specialized personnel, materials and all the necessary equipment to perform the sampling (when required), sample preservation, transportation, and chemical analysis of water (fresh and salt) and materials for determining hazardous characteristics in solid or liquid wastes under the Resource Conservation and Recovery Act (RCRA).
- Acquire professional services for water treatment, which will provide an effective chemical treatment program for boilers, HRSG, combustion turbines, auxiliary equipment, cooling towers systems, wastewater treatment plant, reverse osmosis, membrane filtration, and ion exchange resins plant.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.



Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$)
Services, materials, installation and maintenance	\$232,727.04
Total Project Estimated Cost	\$232,727.04

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature



Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

Please see attached the following:

- Justification Memo
- Special Conditions and Technical Specification
- Technical Evaluation and Determination_RFP 3147

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)



N/A

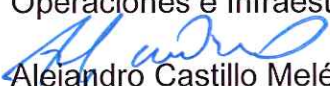


GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

DS-02204

22 de junio de 2021

Anthony Vega Plúñez, Administrador
Operaciones e Infraestructura


Alejandro Castillo Meléndez, Jefe
Central Generatriz San Juan

TRATAMIENTO QUÍMICO DEL SISTEMA DE AGUA DE ENFRIAMIENTO Y ASISTENCIA
TÉCNICA DE PROCESOS QUÍMICOS DE LA PLANTA DE GENERACIÓN ELÉCTRICA,
REQUISICIÓN DE CONTRATO 245172

Para tener una generación confiable es necesario mantener todos los equipos asociados a las unidades en óptimas condiciones. El sistema de agua de enfriamiento es importante para la operación óptima de los equipos auxiliares. Este sistema es propenso a sufrir ensuciamiento, incrustaciones, corrosión y erosión. Para evitar daños debido a estos problemas, es necesario un tratamiento diseñado específicamente para las torres de enfriamientos y que tome en cuenta las variables, no de forma independiente si no como un todo. Estos tratamientos de vanguardia son diseñados y administrados por compañías especializadas, de manera que garanticen resultados y respuestas inmediatas a cambios. Por tal razón, se prefiere un sistema dinámico como el que ofrecen estas compañías a un sistema tradicional donde las variaciones del sistema, no se atendían eficientemente. Estas compañías especializadas con experiencia en el área química de las plantas de generación también nos ofrecen asesoramiento en el tratamiento químico aplicado a generadores de vapor, turbinas y equipos auxiliares.

De necesitar información adicional, favor de comunicarse con el Químico Otilio Reyes, por el 7478.

JefeOper/Lab.





GOBIERNO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA

DS-02746

12 de octubre de 2021

Romano A. Zampierollo Vilá, Presidente
Comité de Subastas

af *af* *af*
Alejandro Castillo Meléndez, Jefe
Central Generatriz San Juan

EVALUACIÓN TÉCNICA DEL RFP-00003147 REQUISICIÓN DE CONTRATO 245172
CHEMICAL TREATMENT OF COOLING WATER SYSTEMS AND POWER PLANT
CHEMICAL ADVISOR OF SAN JUAN STEAM PLANT

Para la subasta RFP-3147 recibimos propuestas de las compañías:

1. Nalco
2. Industrial Chemicals
3. H2O

Las tres compañías cumplen con nuestras especificaciones técnicas. Evaluamos los costos sin considerar las pruebas de rendimiento, ya que son a requerimiento y probablemente no se ejecuten. Aunque para este renglón el postor con el precio más bajo también tiene el menor precio en este renglón.

Las limpiezas químicas son a requerimiento, solo se ejecutarían si surge una emergencia que lo amerite y no se pueden considerar para precio porque el precio varía en los tres licitadores y ninguno de los procedimientos de limpieza propuestos son iguales.

De necesitar información adicional, favor de comunicarse con el Sr. Otilio Reyes, Químico Supervisor, por el 7478.

Adjunto tabla con nuestra evaluación.



Apartado 364267 San Juan, Puerto Rico 00936-4267

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

EVALUACIÓN TÉCNICA DEL RFP-00003147 REQUISICIÓN DE CONTRATO 245172
PÁGINA 2

DATOS EVALUACIÓN PROPUESTAS RFP-00003147

TORRE	NALCO Precios \$ EQUIPOS SERV/QUIMICOS	H2O Precios \$ EQUIPOS SERV/QUIMICOS	INDUSTRIAL Precios \$ EQUIPOS SERV/QUIMICOS
5	844 / 1249.73	1718.70 / 1464.08	1017.91 / 1388.76
6	844 / 1249.73	1718.70 / 1464.08	1017.91 / 1386.90
7	844 / 484.57	622.29 / 530.10	1017.91 / 489.26
8	844 / 484.57	622.29 / 530.10	1017.91 / 489.26
9	844 / 397.18	622.29 / 530.10	1017.91 / 481.07
10	844 / 397.18	622.29 / 530.10	1017.91 / 481.07
SUB TOTAL	5,064 / 4,262.96= 9,326.96	5,926.56 / 5,048.56=10,975.12	6,107.46 / 4,716.32=10,823.78
LEGIO	185 EA	350 EA	400 EA
CC	85,582.12 ALL	27,270.00 ALL	7,250.00 ALL
PT	2400/5-6 EA 800 /7-8-9-10	2,500.00 EA	5,000 EA
2años	\$232,727.04	\$280,202.88	\$278,970.72


Tratamiento

NALCO	H2O	INDUSTRIAL
3DT-337	451VFT	ICC 3208
3DT-179	BELLACIDE 355 OPCIONAL	BELLACIDE 355 OPCIONAL
H2SO4	H2SO4	H2SO4
MIOX	MIOX	MIOX
EXPERTISE 1	EXPERTISE 2	EXPERTISE 3
EXPERIENCE IN POWER PLANT CHEMICAL SITE : NALCO BETTER		

LEGIONELLA (LEGIO) SI SE TOMÓ EN CUENTA Y SE REALIZA OCHO VECES POR TORRE, TOTAL 48 EN DOS AÑOS. **CHEMICAL CLEANING (CC) & PERFORMANCE TEST (PT)**: NO SE CONSIDERAN PARA EVALUACIÓN ECONÓMICA, YA QUE SON UN REQUERIMIENTO Y PROBABLEMENTE NO SE EJECUTEN. ADEMÁS, LA LIMPIEZA QUÍMICA DEPENDE DEL PROCEDIMIENTO RECOMENDADO Y TODOS PRESENTAN PROCEDIMIENTOS DIFERENTES, POR LO QUE NO SE DEBEN UTILIZAR PARA EVALUAR COSTOS.

POR LO CUAL, PARA LOS DOS AÑOS EL POSTOR CON EL PRECIO MÁS BAJO ES NALCO.

EVALUACIÓN POR:


OTILIO REYES APONTE, QUIMICO SUPERVISOR
CENTRAL SAN JUAN

SPECIAL CONDITIONS AND TECHNICAL SPECIFICATION

ARTICLE 1: THE REQUIREMENTS

- a. BIDDERS SHALL BE INCLUDED IN PREPA'S REGISTER OF QUALIFIED SUPPLIERS, AS QUALIFIED SUPPLIERS FOR THE REQUIRED WORK UNDER THESE SPECIFICATIONS.
- b. THE CONTRACTOR IS REQUIRED TO FURNISH ALL LABOR, CHEMICALS AND PROCEDURES, MATERIALS FOR COOLING WATER SYSTEMS TREATMENT AND CHEMICAL CLEANING AS WELL AS MATERIALS NOT PROVIDED BY PREPA, TOOLS, EQUIPMENT, FACILITIES, SUPERVISION, JOB ADMINISTRATION AND SUPERINTENDENCE REQUIRED, AND ALL SPECIFIED TO BE FURNISHED BY THE CONTRACTOR IN ARTICLE 3, TO BE FURNISHED BY CONTRACTOR, OF THIS SPECIAL CONDITIONS AND ARTICLE 2, SCOPE, OF THE TECHNICAL SPECIFICATIONS, IN PREPA'S POWER PLANTS AS REQUESTED BY PREPA. CONTRACTOR WILL PERFORM ALL REPAIR WORK EXPEDITIOUSLY AND TO THE ENTIRE SATISFACTION OF THE CONTRACTING OFFICER. THE WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THIS SPECIFICATION, AS DIRECTED BY THE CONTRACTING OFFICER AND AS DESCRIBED IN ARTICLE 2, SCOPE OF WORK, OF THIS SPECIAL CONDITIONS AND TECHNICAL SPECIFICATIONS.
- c. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE DONE IN A SAFE AND WORKMANLIKE MANNER AND IN STRICT CONFORMANCE WITH ALL LOCAL AND FEDERAL RULES, REGULATIONS AND ORDINANCES, ETC., OF GOVERNMENT AGENCIES HAVING JURISDICTION OVER THE CLASS OF WORK INVOLVED AND INCLUDING THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME), THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), THE ENVIRONMENTAL PROTECTION AGENCY (EPA), THE OCCUPATIONAL SAFETY AND HEALTH OFFICE (OSHO) AND OSHA 29CFR 1910.1200 HAZARD COMMUNICATION STANDARD REQUIREMENTS AND THE LATEST EDITION OF ALL OTHER APPLICABLE CODES AND STANDARDS.

ARTICLE 2: SCOPE OF WORK

THE EXTENT AND GENERAL SCOPE OF THE WORKS REQUIRED UNDER HIS CONTRACT FOR THE CHEMICAL TREATMENT OF COOLING WATER SYSTEMS AND POWER PLANT CHEMICAL ADVISOR SHALL BE PERFORMED AS SPECIFIED IN:

- 1) ARTICLE 2(A), TECHNICAL SPECIFICATIONS, OF THIS DOCUMENT
- 2) CONTRACTOR'S PROPOSAL
- 3) AS DESCRIBED

THE CONTRACTOR SHALL FURNISH THE EQUIPMENT, MATERIALS, INSTRUMENTATION, SUPERVISION, TOOLS, INSTALLATION AND MAINTENANCE OF A CHEMICAL TREATMENT PROGRAM FOR ALL THE COOLING WATER SYSTEMS, AS WELL AS ALL THE ADDITIONAL CHEMICALS REQUIRED.

THE CONTRACTOR WILL ALSO ACQUIRE PROFESSIONAL SERVICES FOR WATER TREATMENT, WHICH WILL PROVIDE AN EFFECTIVE CHEMICAL TREATMENT PROGRAM FOR BOILERS, HRSG, COMBUSTION TURBINES, AUXILIARY EQUIPMENT, COOLING TOWERS SYSTEMS, WASTEWATER TREATMENT PLANT, REVERSE OSMOSIS, MEMBRANE FILTRATION AND ION EXCHANGE RESINS PLANT.

THESE OBJECTIVES SHALL BE ACCOMPLISHED COMPLYING WITH ALL OF PREPA'S PROCEDURES, COMPANY POLICIES AS WELL AS ALL LOCAL, STATE AND FEDERAL REGULATIONS OR STANDARDS PERTAINING TO SAFETY, HEALTH AND ENVIRONMENTAL ISSUES.

a. TECHNICAL SPECIFICATIONS

CHEMICAL PRODUCT ACCEPTABILITY CRITERIA ARE THE FOLLOWING:

- 1) CHEMICALS SHALL BE OF THE HIGHEST QUALITY IN ACCORDANCE WITH THE WRITTEN SPECIFICATIONS IN THIS CONTRACT.
- 2) ALL CHEMICALS SHALL BE APPROVED FOR THEIR USE PRIOR TO THE BIDDING PROCESS, ACCORDING TO THE AUTHORITY'S PROCEDURE FOR THE ACQUISITION OF CHEMICAL PRODUCTS.
- 3) THE CONTRACTOR SHALL USE THE NECESSARY PERSONAL PROTECTION EQUIPMENT INDICATED IN ACCORDANCE WITH THE CHEMICAL PRODUCTS' MSDS AND THE AUTHORITY'S

APPROVAL SHEET.

- 4) NOTHING CONTAINED HEREIN IS TO BE CONSTRUED AS A RECOMMENDATION OR REQUEST TO USE ANY PRODUCT OR PROCESS IN CONFLICT WITH ANY PATENT.
- 5) UPON DELIVERY OF THE CHEMICAL PRODUCTS TO THE SITE, THE CONTRACTOR SHALL PROVIDE A CERTIFIED CHEMICAL ANALYSIS REPORT STATING THAT THE ACTIVE INGREDIENTS ARE PRESENT IN THE QUANTITY AND POTENCY REQUIRED TO FULFILL THE TREATMENT NECESSITIES AS STATED IN HIS PROPOSED COOLING WATER SYSTEM TREATMENT STRATEGY. IN ADDITION TO THIS, THE CONTRACTOR SHALL STATE THE REMAINING SHELF LIFE AND MANUFACTURING DATE. DURING THE LIFE OF THIS CONTRACT. ANY CHANGE IN THE PRODUCT FORMULA SHALL BE PREVIOUSLY DISCUSSED WITH THE CHIEF CHEMIST OR HIS REPRESENTATIVE BEFORE ITS IMPLANTATION IN THE COOLING WATER TREATMENT PROGRAM.
- 6) THE AUTHORITY RESERVES THE RIGHT TO TAKE SAMPLES OF THE PRODUCTS SUPPLIED BY THE CONTRACTOR AT ANY TIME TO CONFIRM ITS QUALITY. FAILURE TO COMPLY WITH THE STANDARDS OF QUALITY OR POTENCY OF THE ACTIVE INGREDIENTS, TECHNICAL SPECIFICATIONS OF THE PRODUCTS OR THE DETECTION OF ANY SUBSTANCE NOT APPROVED OR REQUIRED OR A CONTAMINANT, SHALL CONSTITUTE A FAULT. THE CONTRACTOR WILL BE NOTIFIED VERBALLY AND IN WRITING TO REQUEST THE FULL REPLACEMENT OF ALL THE DEFECTIVE PRODUCT(S) WITHIN TWENTY FOUR (24) HOURS FROM THE NOTIFICATION. REPEATED DELIVERIES OF DEFECTIVE PRODUCTS COULD CONSTITUTE A CONDITION TO SUSPEND THIS CONTRACT. THE CONTRACTOR SHALL INFORM VERBALLY AND IN WRITING THE REASON OF THE FAILURE AND THE MEASURES TAKEN TO PREVENT FUTURE RECURRENCE.

PRIOR TO THE USE OF ANY CHEMICAL PRODUCT, THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) HAS TO APPROVE THEIR USE AS PART OF A CHEMICAL TREATMENT PROGRAM FOR THE AUTHORITY'S PLANTS COOLING WATER SYSTEMS. THE DISCHARGE OF ANY TOXIC SUBSTANCE IS PROHIBITED UNDER THE NPDES PERMIT. THE DISCHARGE OF ANY PRODUCT REGISTERED UNDER THE FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) IS PROHIBITED, UNLESS SPECIFICALLY AUTHORIZED IN THE NPDES PERMIT. THE CONTRACTOR SHALL ASSIST PREPA IN THE EVALUATION PROCESS WITH USEPA FOR THE DISCHARGE AUTHORIZATION UNDER THE NPDES PERMIT OR ANY OTHER IN EFFECT. THE ASSISTANCE SHALL INCLUDE, BUT WILL NOT BE LIMITED TO, PARTICIPATION IN MEETINGS PROGRAMMED BY

PREPA OR EPA IN ANY OF THEIR FACILITIES TO PRESENT INFORMATION REGARDING THE PROCESS, PRODUCTS AND TECHNICAL ISSUES UNDER EVALUATION.

b. THE COST OF CHEMICALS AND EQUIPMENT/SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM SHALL INCLUDE:

- 1) THE SUPPLY OF THE CHEMICALS, EQUIPMENTS AND SERVICES FOR THE AUXILIARY COOLING WATER SYSTEMS OF PREPA SAN JUAN STEAM PLANT, INCLUDING THE COMBINED CYCLES 5/6 COOLING SYSTEMS (SEE TABLE 1 AND TABLE 2). NEEDED TO ACHIEVE THE FOLLOWING MAIN OBJECTIVES:
 - a) MAINTAIN A CLEAN AND EFFECTIVE COOLING WATER SYSTEM BY MEANS OF TECHNOLOGY TO MONITOR THE CONDITION OF COOLING WATER CONTINUOUSLY AND ADD APPROPRIATE CHEMICALS ONLY WHEN NEEDED, RATHER THAN ON A FIXED SCHEDULE. AGAINST FOULING; ORGANIC AND INORGANIC DEPOSITS ACCUMULATION; CORROSION AND BIOLOGICAL ATTACK TO THE WATERSIDE COMPONENTS OF THE SYSTEMS. INCLUDING THE COOLING TOWER. ALSO THE EQUIPMENT SHOULD BE CAPABLE OF MAKES ANY ADJUSTMENT BASE ON ACTIVE INGREDIENT CONCENTRATION OF THE SCALE INHIBITOR.
 - b) PREVENT THE COOLING WATER SYSTEM FROM BACTERIA BY CONTROL THE ADDITION OF MIXED OXIDANTS (GENERATED IN-SITU) BASED ON-LINE REAL TIME TEST FOR ORP.
 - c) THE TREATMENT PROGRAM SHALL SAVES WATER AND ENERGY, OPTIMIZES THE USE OF WATER-TREATMENT CHEMICALS. REDUCES AIR AND WASTEWATER EMISSIONS. AND EXTENDS EQUIPMENT LIFE. THE TREATMENT PROGRAM SHALL BE COMPLY AS GREEN CHEMICAL TECHNOLOGY AS U.S. ENVIRONMENTAL PROTECTION AGENCY, RECOGNIZES AND PROMOTES.
- 2) THE DESIGN AND IMPLEMENTATION OF AN EFFECTIVE WATER TREATMENT PROGRAM FOR EACH COOLING WATER SYSTEM THAT'S BASED ON MODERN, PROVEN INDUSTRY STANDARDS AND ACCEPTED STRATEGIES, THAT IS ABLE TO SATISFY ALL THE OBJECTIVES STATED IN THE SPECIAL CONDITIONS AND TECHNICAL SPECIFICATION'S ARTICLE 2.B.1. ALL PROGRAMS PROPOSED SHALL BE TECHNICALLY EVALUATED AND APPROVED BY PREPA.
- 3) THE CONTRACTOR SHALL SUBSTITUTE ANY CHEMICAL

PRODUCT INCLUDED IN HIS PROPOSAL NOT APPROVED BY USEPA, BY OTHER APPROVED AND EQUALLY EFFECTIVE.

THE COOLING SYSTEMS WATER TREATMENT PROGRAMS SHALL BE INCLUDED IN THE PROPOSAL AND SHALL BE ENDORSED BY A PROFESSIONAL ENGINEER SPECIALIZED IN THE INDUSTRIAL WATER TREATMENT PROGRAM DESIGN AND IMPLEMENTATION AS STATED BY THE INDUSTRY STANDARDS SUCH AS THE COOLING TECHNOLOGY INSTITUTE, ASTM, ASME AND OTHER APPLICABLE INSTITUTIONS AND ALL THE WARRANTIES OF THE CONTRACTING COMPANY AND CHEMICAL PRODUCTS MANUFACTURERS.

DURING THE LIFE OF THE CONTRACT, ALL CHEMICAL PRODUCTS TO BE USED SHALL:

- a) BE FREE OF ZINC, CHROME, CHROMATE OR ANY OTHER HEAVY METALS
 - b) WORK WITHIN THE ALLOWED PH RANGE ESTABLISHED IN THE NPDES PERMIT FOR SAN JUAN STEAM PLANT.
 - c) BE STABLE AND EFFECTIVE WITHIN THE PRESENT SYSTEM'S OPERATING CONDITIONS.
 - d) BE EFFECTIVE IN PROTECTING AGAINST IRON AND COPPER CORROSION OVER THE COMPONENTS ON THE WATERSIDE SURFACES.
 - e) BE APPROVED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND THE PUERTO RICO ENVIRONMENTAL QUALITY BOARD (EQB) FOR THE USE IN PREPA'S GENERATING PLANTS.
- 4) THE CHEMICAL PRODUCTS SHALL BE GENERALLY SUPPLIED IN RETURNABLE PORTABLE CONTAINERS WITH A CAPACITY OF 200 TO 400 GALLONS, AND, FOR THE SAN JUAN 5 AND 6 COOLING SYSTEMS, WITH A MAXIMUM CAPACITY OF 75 GALLONS. THE PORTABLE CONTAINERS SHALL HAVE LOCAL LEVEL INDICATORS AND A SECONDARY CONTAINER OR A CONTAINMENT BASIN ABLE TO CONTAIN ONE HUNDRED AND FIFTY PERCENT (150%) OF THE MAXIMUM CONTAINER CAPACITY. THE CONTAINER WILL BE CONSTRUCTED OF MATERIAL CAPABLE OF WITHSTANDING THE CHEMICAL TO BE USED. THE SAN JUAN PLANT 5 AND 6 COOLING SYSTEM'S CHEMICAL STATION HAS CONTAINMENT FACILITIES FOR THE PORTABLE CONTAINERS. THE CONTRACTOR SHALL VERIFY IF

THE EXISTING CONTAINMENT BASIN IS ADEQUATE. THE CONTRACTOR IS THE SOLE RESPONSIBLE FOR THE TRANSFERRING, HANDLING AND DISPOSAL OF THE CONTAINERS AND CHEMICALS. HE SHALL ALSO BE RESPONSIBLE FOR MAINTAINING THESE FACILITIES CLEAN AND FREE OF PRODUCT SPILLS AND FUMES.

- 5) THE SUPPLYING OF ALL NECESSARY VALVES, LINES, FITINGS, CALIBRATION CYLINDERS, PUMPS, MONITORING SYSTEMS, CONTROLLER VALVES AND INSTALLATION OF THIS EQUIPMENT SHALL BE BY THE CONTRACTOR.
- 6) THE SUBMITTAL OF A LOT ANALYSIS REPORT TO THE PLANT CHEMIST SUPERVISOR INDICATING TECHNICAL COMPLIANCE OF EACH PRODUCT ACCORDING TO ARTICLE 2.B.2 OF THIS SPECIFICATION UPON DELIVERY TO THE PLANTS. NO PAYMENT WILL BE PROCESSED IF THERE IS FAILURE TO COMPLY WITH THIS MANDATORY REQUIREMENT.
- 7) THE CONTRACTOR SHALL ASSURE THAT THE INSTANTANEOUS CORROSION RATE IN THE COOLING WATER SYSTEM SHALL NOT EXCEED 3.0 MILS/YEAR ON CARBON STEEL AND SHALL NOT EXCEED 0.3 MILS/YEAR ON COPPER, IN ACCORDANCE WITH THE ACTUAL INDUSTRY STANDARD TESTING METHOD ESTABLISHED. ANY INCREASE OVER THE MAXIMUM LEVEL PERMITTED OF THIS PARAMETER SHALL REQUIRE A CORRECTIVE ACTION THAT HAS TO BE IMMEDIATELY IMPLEMENTED AND INFORMED TO THE PLANT CHEMIST SUPERVISOR VERBALLY AND IN A WRITTEN REPORT, INCLUDING THE REASONS FOR THE INCREASE.
- 8) THE CONTRACTOR SHALL SUPPLY THE PLANT'S LABORATORY WITH ALL THE CHEMICAL REAGENTS NEEDED TO PERFORM THE CHEMICAL ANALYSES ESTABLISHED FOR THE COOLING SYSTEM WATER TREATMENT PROGRAM TWICE A DAY FOR THE DURATION OF THE CONTRACT. ALSO, THE CONTRACTOR SHALL PROVIDE A BINDER WITH ALL THE RECENT CHEMICAL ANALYSIS PROCEDURES AND ANY SPECIALIZED LABORATORY EQUIPMENT NEEDED TO PERFORM THE CHEMICAL ANALYSIS.
- 9) THE INSPECTION AND EVALUATION OF THE COOLING WATER SYSTEMS (INCLUDING ITS COOLING TOWER) AFTER THE SYSTEM'S SHUTDOWN. THE EVALUATION SHALL INCLUDE THE COLLECTION OF DEPOSITS BY THE CONTRACTOR, WHICH SHALL BE ANALYZED TO PROVIDE INFORMATION ABOUT THE CONDITIONS OF THE COOLING TOWERS. A WRITTEN REPORT OF SUCH INSPECTION SHALL BE SUBMITTED TO THE PLANT CHEMIST SUPERVISOR AND THE CHIEF CHEMIST.

- 10) THE INSTALLATION OF ONLINE INSTANTANEOUS CORROSION RATE METERS. AN APPARATUS DESIGNED TO MEASURE CORROSION UNDER OPERATIONAL CONDITIONS, TO MONITOR THE COOLING WATER SYSTEMS. IN ADDITION THE CONTRACTOR SHALL BE INCLUDE ON-LINE MONITORS AND CONTROLLERS FOR THE ADDITION OF ANTI- SCALANT, CORROSION INHIBITOR. BIOCIDES AND SULFURIC ACID. SUCH INSTRUMENT SHALL BE CERTIFIED AND CALIBRATED CONFORMING TO THE APPLICABLE STANDARD OR PROCEDURE.
- 11) A VISIT BY AN EXPERIENCED SERVICE REPRESENTATIVE, AT LEAST ONCE A WEEK OR AS NEEDED, WHO SHALL REVIEW THE DAILY OPERATIONS, WATER TREATMENT PROGRAM EFFECTIVENESS AND PERFORMANCE, CONTROL AND MONITORING EQUIPMENT PERFORMANCE AND OTHER RELATED ISSUES. HE SHALL ALSO PERFORM CHEMICAL ANALYSES TO EACH OF THE COOLING WATER SYSTEMS FOR ALL THE KEY PARAMETERS STATED IN THE PROPOSED TREATMENT PROGRAM. THE OBTAINED ANALYSIS DATA WILL BE SUBMITTED IN A MONTHLY WRITTEN REPORT, ALONG WITH A PROFESSIONAL EVALUATION OF THE PERFORMANCE OF THE TOWERS, THE SERVICE REPRESENTATIVE REVIEW, FINDINGS, PROGRESSES, OBSERVATIONS AND RECOMMENDATIONS.

THIS REPORT SHALL INCLUDE, AND SHALL NOT BE LIMITED, TO THE FOLLOWING:

- A. LEVELS OF THE KEY PARAMETERS ESTABLISHED IN THE WATER TREATMENT PROPOSAL, SUCH AS:
 1. PH
 2. ALKALINITY
 3. VALIDATE ON LINE-READINGS
 4. LANGELETT SATURATION INDEX
 5. CYCLES OF CONCENTRATIONS
 6. HARDNESS
 7. CORROSION
 8. CALCIUM
 9. SPECIFIC CONDUCTIVITY
 10. LEGIONELLA SPECIFIC ANALYSIS (4 PER YEAR)/TOWER.
 11. THE ANALYSIS METHOD SHALL FOLLOW THE INTERNATIONAL OFFICIAL STANDARD METHOD (ISO 11731:1998(E), WATER QUALITY-DETECTION AND ENUMERATION OF LEGIONELLA.
 12. ANY OTHER PARAMETER INCLUDED IN THE TREATMENT PROGRAM PROPOSED

- B. OBSERVATIONS AND TECHNICAL RECOMMENDATIONS THE REPORT SHALL BE SUBMITTED TO PLANT CHEMIST SUPERVISOR NO LATER THAN FIRST WEEK OF THE NEXT MONTH. FAILURE TO COMPLY WITH THIS REQUIREMENT WILL RESULT IN A ONE HUNDRED DOLLAR PENALTY (\$100) PER REPORT, PER DAY NOT SUBMITTED.
 - C. IF LEGIONELLA IS DETECTED THE REPORT SHALL INCLUDED A CONTINGENCY PLAN FOR THE COOLING WATER SYSTEM. THE PLAN SHALL COMPLY OSHA GUIDELINES.
- 12) CONDUCTING A PERFORMANCE TEST FOR EACH COOLING WATER SYSTEM WHEN REQUIRED BY PREPA. THE ACTUAL TEST DATE SHALL BE COORDINATED WITH PLANT SUPERVISOR CHEMIST. THE BIDDERS SHALL GIVE A PRICE FOR EACH TEST.
- 13) THE CONTRACTOR SHALL BE INCLUDE MONITORS, CONTROLLERS AND PUMPS NECESSARIES TO CONTROL THE ADDITION OF CHEMICALS INCLUDING SULFURIC ACID AND MIX OXIDANTS (NO PUMPS REQUIRED FOR MIXED OXIDANTS) BASED ON THE CONDITION (REAL TIME TEST) OF COOLING WATER. FOR THE PARAMETERS TO BE MONITORED SHALL BE, BUT SHALL NOT BE LIMITED TO THE FOLLOWING:
- A. CONDUCTIVITY
 - B. CHEMICAL FEEDING RATES
 - C. PH
 - D. BLOWDOWN RATES
 - E. ORP (OXIDATION – REDUCTION POTENTIAL)
 - F. COOLING WATER FLOW RATES
 - G. METAL CORROSION RATES
 - H. ANTI-SCALANT
 - I. OTHER PARAMETERS INCLUDED IN THE PROPOSAL
- 14) A CHEMICAL DOSING STATION WITH ALL THE PROVISIONS FOR THE INJECTION OF THE CHEMICALS PROPOSED FOR ALL THE COOLING WATER SYSTEMS COVERED BY THIS CONTRACT, INCLUDING, BUT NOT LIMITED TO, THE PUMPS, TUBE ARRANGEMENTS, VALVES, TANKS, LEVEL METERS, ETC. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF THESE SYSTEMS. THE CONCENTRATED SULFURIC ACID (WITHOUT PUMPS) AND BIOCIDES (MIXED OXIDANTS WITH PUMPS). WILL BE PROVIDED BY PREPA. FAILURE TO OPERATE WITHIN THE CHEMICAL OPERATIONAL PARAMETERS ESTABLISHED BY THE PLANT CHEMIST, CHIEF CHEMIST AND THE CONTRACTOR WILL RESULT IN A ONE HUNDRED (\$100) PER-DAY-PER TOWER PENALTY, UP TO TWENTY FIVE PERCENT (25%) OF THE

MONTHLY RATE PER TOWER. FAILURE TO MAINTAIN THE INJECTION EQUIPMENT SYSTEMS (PUMPS, CONTROLLERS, ETC.) IN OPTIMAL OPERATION CONDITIONS WILL RESULT IN A ONE HUNDRED DOLLAR (\$100) *PER DAY-PER* TOWER PENALTY, UP TO TWENTY FIVE PERCENT (25%) OF THE MONTHLY RATE PER TOWER UPON NOTIFICATION BY THE AUTHORITY, THE CONTRACTOR WILL HAVE A MAXIMUM OF TWENTY FOUR(24) HOURS ALLOWANCE TO RESOLVE THE CONTINGENCY. THE AFOREMENTIONED PENALTIES WILL COME INTO EFFECT *IMMEDIATELY* AFTER THIS TWENTY FOUR HOUR PERIOD.

A FIVE HUNDRED DOLLARS (\$500) PENALTY PER OCCURRENCE PER SYSTEM WILL BE APPLIED IMMEDIATELY UPON THE OCCURRENCE OF A LOW PH INCIDENT ($\text{PH} \leq 6.0$).

- 15) MICROBIOLOGICAL TESTS (PLATES COUNTS FOR TOTAL AEROBIC AND INCUBATION FOR ANAEROBES OR SULPHATE REDUCING). THESE ANALYSES SHALL BE PERFORMED ON A MONTHLY BASIS IN ORDER TO MONITOR THE EFFECTIVENESS OF OXIDANT BIOCIDES.

INCLUDING SPECIFIC LEGIONELLA TEST 4/YEAR/TOWER.

C. BIOLOGICAL CONTROL PROGRAM

THE OBJECTIVE OF THE BIOLOGICAL CONTROL PROGRAM IN THE COOLING WATER SYSTEMS IS TO REDUCE OR ELIMINATE ALL KINDS OF BACTERIA INCLUDING BACTERIA THAT CAUSE THE LEGIONELLA DISEASE). ALGAE AND FUNGI THAT COULD CAUSE HARM TO THE EQUIPMENT AND HUMANS.

A CHARACTERIZATION STUDY OF THE BIOLOGICAL LOAD PRESENT FROM THE INITIAL STAGES OF THE TREATMENT PROGRAM SHALL BE INCLUDED AND USED AS A REFERENCE THROUGH THE PROGRESS OF THE WATER TREATMENT PROGRAM.

THE CONTRACTOR SHALL ESTABLISH IN HIS PROPOSAL A MONITORING AND CONTROLLER FOR MIXED OXIDANTS AND COULD INCLUDE APPROVED SUPPLEMENTAL CHEMICAL PRODUCTS, AS NEEDED BIO-DISPERSANTS, ETC.) TO INCREASE ITS EFFECTIVENESS. ALL CHEMICAL PRODUCTS SHALL BE EVALUATED BY THE AUTHORITY'S ENVIRONMENTAL, HEALTH AND SECURITY DEPARTMENTS TO ENSURE COMPLIANCE WITH ANY REGULATORY STATE AND FEDERAL LAWS APPLICABLE.

ARTICLE 3: TO BE FURNISHED BY CONTRACTOR

- A. ALL LABOR FORCES AND SUPERVISION, JOB ADMINISTRATION AND SUPERINTENDENCE PERSONNEL REQUIRED, AS REQUESTED BY PREPA.
- B. ALL NECESSARY TOOLS, MATERIALS AND EQUIPMENT TO PERFORM THE WORK SUCH AS. BUT NOT LIMITED TO: CHEMICALS, PUMPS, INSTRUMENTATION, HOISTS, DRILLS, GRINDERS, AIR TUGGERS, FORK LIFTS, CRANES, CHAIN FALLS, HYDRAULIC AND AIR JACKS, WELDING MACHINES, LADDERS, SCAFFOLDS, WELDING EQUIPMENT, AIR COMPRESSORS (FOR EQUIPMENT INSTALLATION WORKS), TUBES EXPANSION AND CUTTING MACHINES, ETC.
- C. ALL TECHNICAL ASSISTANCE, CONSULTING SERVICES AND REPORTS REQUIRED TO PERFORM THE SCOPE OF WORK.

IN ORDER TO COMPLY WITH THIS REQUIEREMENTS (SEE ARTICLE 2) ,THE BIDDERS SHALL BE INCLUDED WITH THE PROPOSAL , A LIST OF COMPANIES IN THE UNITED STATES SIMILAR TO PREPA WHERE EQUIVALENT EXPERTISE SERVICES ARE RENDERED AND WHERE SIMILAR EQUIPMENT AND CHEMICAL PRODUCTS ARE BEING USED WITH RESULTS. THIS LIST SHALL HAVE THE NAME,ADDRESS AND TELEPHONE OF A PERSON THAT CAN BE CONTACTED FOR INFORMATION AND VERIFICATION. RESUMES AND QUALIFICATION DOCUMENTS IN THIS RESPECT SHALL BE SUBMITTED FOR EVALUATION BY PREPA.THE BIDDERS SHALL SUBMIT A LIST OF SENIOR CONSULTANTS,CONSULTING ENGINEERS AND DETAILED INFORMATION CONCERNING PROFESSIONAL BACKGROUND, YEARS OF EXPERIENCE AND ACADEMICAL PREPARATION.

- D. ALL MATERIALS AND SPARE PARTS PURCHASED BY THE CONTRACTOR AT PREPA'S REQUEST.
- E. SAFETY EQUIPMENT, SUCH AS HELMETS, WELDERS JACKETS, GOGGLES, GLOVES, ETC.
- F. ADEQUATE AND PROPER IDENTIFICATION OF CONTRACTOR'S PERSONNEL.
- G. THE CONTRACTOR SHALL FURNISH MATERIALS AND ACCESSORIES SUCH AS EXPENDABLE MATERIALS SUCH AS CLEANING AGENTS, SOLVENTS, THREAD AND GASKET COMPOUNDS, GREASES, WIPING CLOTHS, BLASTING

MATERIALS, WELDING ROD, DRINKING CUPS, ICE, PAPER TOWELS, TOILET PAPER, ETC.

- H. CHANGE FACILITIES FOR THE CONTRACTOR'S PERSONNEL.
- I. ALL OTHER RESOURCES OR ACTIVITIES NEEDED FOR PERFORMING THE JOB, NOT FURNISHED BY PREPA, ACCORDING TO THE SCOPE OF WORK.
- J. TRANSPORTATION OF COMPONENTS TO AND FROM SHOP.
- K. FABRICATION AND DELIVERY OF PARTS THAT WERE BROKEN IN SUCH A WAY THAT REPAIR IS IMPOSSIBLE, AND OF WHICH THERE ARE NO REPLACEMENT SPARE PARTS.
- L. COMMUNICATION SYSTEMS REQUIRED FOR THE EQUIPMENT.

ARTICLE 4: TO BE FURNISHED BY PREPA

- A. WATER, ELECTRIC POWER AND PLANT COMPRESSED AIR.
- B. EQUIPMENT DRAWINGS, IF AVAILABLE.
- C. PARKING FACILITIES, IF AVAILABLE.
- D. SULFURIC ACID.
- E. MIXED OXIDANTS
- F. PUMPS FOR MIXED OXIDANTS INJECTION.

A SUPERVISOR FOR LOCAL INSPECTION AND MANAGEMENT OF PROJECT.

ARTICLE 5: COMMENCEMENT. PROSECUTION AND COMPLETION

THE CONTRACTOR SHALL START HIS WORK AT THE TIME INDICATED IN PREPA'S NOTICE TO PROCEED.

DELIVERY INSTALLATION, CALIBRATION, TESTING AND PUT IN SUCCESSFUL SERVICE

- A. THE TIME FOR THE DELIVERY AND COMPLETION OF THE INSTALLATION WORK OF THE CHEMICAL TREATMENT SYSTEMS EQUIPMENT FOR ALL THE COOLING WATER SYSTEMS, INCLUDING CALIBRATION AND TUNING, WILL BE THIRTY (30) CONSECUTIVE DAYS FROM THE COMMENCEMENT DATE SPECIFIED IN THE GENERAL

MOBILIZATION LETTER.

NOTE: THE INSTALLATION WORK COMMENCEMENT DATE SHALL BE MADE IN ACCORDANCE WITH PREPA'S UNITS' MAINTENANCE SCHEDULE. THEREFORE, UNITS MAY NOT BE AVAILABLE TO THE CONTRACTOR TO COMMENCE THE INSTALLATION WORK IMMEDIATELY AFTER DELIVERY OF THE EQUIPMENT TO THE PROJECT SITE.

- B. AFTER THE SUCCESSFUL INSTALLATION AND TESTS, THE EQUIPMENT SHALL BE SUCCESSFULLY PUT IN SERVICE FOR DESIGNED OPERATION BY THE CONTRACTOR, IN ORDER FOR HIM TO HAVE THE RIGHT FOR PAYMENTS.

THIS CONTRACT TERM SHALL BE FOR TWO YEARS. AT THE END OF THE ORIGINAL TERM OF TWO YEARS, THE CONTRACT WILL HAVE THE OPTION TO BE EXTENDED BY PREPA WITH AT LEAST THIRTY (30) DAYS BEFORE THE EXPIRATION DATE OF THE ORIGINAL CONTRACT. THE EXTENSION WOULD NOT EXCEED TWELVE MONTHS FROM THE ORIGINAL EXPIRATION DATE AND SHALL BE GOVERNED BY THE SAME TERMS AND CONDITIONS STIPULATED IN THIS CONTRACT.

IF PREPA EXERCISED ITS RIGHT TO EXTEND THE TIME TERM OF THE ORIGINAL CONTRACT, BUT AFTERWARDS DECIDES TO CONCLUDE THE SAME CONTRACT EXTENSION BEFORE THE CONCLUSION OF THE TWELVE (12) MONTHS OF MAXIMUM EXTENSION, PREPA WILL NOTIFY ITS DECISION TO THE CONTRACTOR IN WRITTEN FORM WITH AT LEAST FIFTEEN (15) DAYS BEFORE THE EFFECTIVE TERMINATION DATE.

ARTICLE 6: ADDITIONAL DEFINITIONS

OWNER OR "PREPA"

PUERTO RICO ELECTRIC POWER AUTHORITY

G.P.O. BOX 364267

SAN JUAN, PUERTO RICO 00936

ANY REFERENCE IN ANY DOCUMENT, DRAWING OR PART OF THIS SPECIFICATION TO THE "PUERTO RICO WATER RESOURCES AUTHORITY" SHALL BE CONSTRUED TO BE "PUERTO RICO ELECTRIC POWER AUTHORITY"

ARTICLE 7: TRANSPORTATION AND STORAGE OF MATERIALS. CHEMICALS AND EQUIPMENT

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PICKING UP AND LOADING THE MATERIALS, CHEMICALS AND EQUIPMENT FROM THE DELIVERY POINT AND FOR TRANSPORTING, UNLOADING, UNCRATING AND HANDLING THE SAME AT THE SITE. THE SALVAGE MATERIALS, DUNNAGE AND SCRAP RESULTING FROM SUCH WORK SHALL BE DISPOSED OF BY THE CONTRACTOR AS DESCRIBED IN CLAUSE 46, CLEANING UP, OF THE CONTRACT, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. IN THE EVENT THAT REHANDLING OR RELOCATING OF MATERIALS BE DEEMED NECESSARY BY THE ENGINEER OR HIS REPRESENTATIVE AND, IN THE BEST INTEREST OF THE JOB AS A WHOLE, THE CONTRACTOR SHALL, UNDER THE DIRECTION OF THE ENGINEER OR HIS REPRESENTATIVE, DO SUCH REHANDLING AT NO EXTRA CHARGE.

B. THE CONTRACTOR WILL PROVIDE, FOR ALL EQUIPMENT, CHEMICALS AND MATERIALS, A SUITABLE WAREHOUSE OR OTHER MEANS OF PROTECTION INCLUDING WEATHER PROTECTION AND PROPER MAINTENANCE, SATISFACTORY TO THE ENGINEER. EQUIPMENT SUBJECT TO MOISTURE CONTAMINATION SHALL BE KEPT DRY WITH ADEQUATE HEATING ELEMENTS BY THE CONTRACTOR AT HIS OWN COST, IN A MANNER SATISFACTORY TO THE ENGINEER.

THE CONTRACTOR MUST PROVIDE PROTECTED STORAGE SPACE AS THE WORK, MATERIALS, CHEMICALS AND EQUIPMENT MAY REQUIRE.

- C. THE CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR ALL EQUIPMENT, CHEMICALS AND MATERIALS REQUIRED AGAINST DAMAGE, SPILL, THEFT OR MISUSE. NO EQUIPMENT, CHEMICALS OR MATERIALS SHALL BE PLACED DIRECTLY ON THE GROUND, BUT ON SLEEPERS OR STRUCTURES SO AS TO PROVIDE PROPER PROTECTION AGAINST SPILLS.

ARTICLE 8: EXISTING FACILITIES PROTECTION

- A. THE CONTRACTOR'S OPERATIONS SHALL BE CARRIED OUT WITH EXTREME CARE AT ALL TIMES TO AVOID DAMAGES TO STRUCTURES AND FACILITIES AND INTERFERENCE WITH UNITS IN OPERATION AT THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY INTERFERENCE WITH THE OPERATION THAT CAN BE ATTRIBUTABLE TO HIS NEGLIGENCE OR FAULT IN THE PERFORMANCE OF THE WORK.
- B. THE CONTRACTOR SHALL PROTECT FROM DAMAGE, TO THE SATISFACTION OF THE ENGINEER, ALL EXISTING SITE STRUCTURES AND EQUIPMENT. ANY DAMAGE TO THESE STRUCTURES OR EQUIPMENT SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.

ARTICLE 9: SUBCONTRACTS

- A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SUPERVISE THE WORK OF HIS SUBCONTRACTORS AT ALL TIMES. THE CONTRACTOR SHALL MENTION IN THE PROPOSAL ALL ITS SUBCONTRACTORS, WHICH SHALL BE EVALUATED FOR THE WORK BEFORE THE AWARDED OF THIS CONTRACT.

ARTICLE 10: BILLINGS BY THE CONTRACTOR

- A. ALL BILLINGS BY THE CONTRACTOR MUST MEET PREPA'S INDIVIDUAL POWER PLANT DIVISION HEAD'S AND PLANT CHEMIST SUPERVISOR'S APPROVAL, PRIOR TO ANY INVOICE PROCESSING FOR PAYMENT.
- B. ALL BILLINGS MUST BE ACCOMPANIED BY THE PROPER SUPPORTING DOCUMENTS, SHOWING PREPA'S AUTHORIZED REPRESENTATIVE'S ACCEPTANCE.
- C. CONTRACTORS' INVOICES AND TIME SHEETS MUST MEET THE ENGINEER'S OR HIS REPRESENTATIVE'S APPROVAL

AND MUST BE SUBMITTED IN ORIGINAL FORM.

- D. MONTHLY REQUISITIONS FOR PAYMENT SHALL BE SUBMITTED IN TRIPLICATE, AND ARE PAYABLE WITHIN SIXTY (60) DAYS AFTER ITS APPROVAL BY PREPA.
- E. THIS CONTRACT WILL HAVE 15 BILLINGS ITEMS (LINES).
- 1) MONTHLY COST OF EQUIPMENT / SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWERS 5
Price \$_____
 - 2) MONTHLY COST OF EQUIPMENT / SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWERS 6
Price \$_____
 - 3) MONTHLY COST OF EQUIPMENT / SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWERS 7
Price \$_____
 - 4) MONTHLY COST OF EQUIPMENT / SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWERS 8
Price \$_____
 - 5) MONTHLY COST OF EQUIPMENT / SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWERS 9
Price \$_____
 - 6) MONTHLY COST OF EQUIPMENT / SERVICES FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWERS 10
Price \$_____
 - 7) MONTHLY COST OF CHEMICALS FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWER 5
Price \$_____
 - 8) MONTHLY COST OF CHEMICALS FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWER 6
Price \$_____
 - 9) MONTHLY COST OF CHEMICALS FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWER 7
Price \$_____
 - 10) MONTHLY COST OF CHEMICALS FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWER 8

Price \$_____

11) MONTHLY COST OF CHEMICALS FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWER 9

Price \$_____

12) MONTHLY COST OF CHEMICALS FOR THE COOLING WATER SYSTEMS TREATMENT PROGRAM , TOWER 10

Price \$_____

13) LEGIONELLA ANALISYS (EACH) Price \$_____

14) PERFORMANCE TEST (EACH) Price \$_____

15) COOLING TOWER CHEMICAL CLEANING, PRICE PER TOWER
Price _____

NOTES:

- PREPA PAY FOR LINES 7 TO 12 , ONLY IF THE COOLING TOWER IS IN SERVICE.
- PREPA WILL PAY LINES 1 TO 6 ONLY IF THE TOWER (OF THE LINE) IS ON SERVICE, OR IS IN STAND-BY. IF PREPA TAKE OUT THE TOWER DEFINITLY WILL STOP THE PAYMENT FOR THE LINE.
- LINE 13 , PREPA WILL PAY ONLY THE REQUEST ANALYSIS FOR LEGIONELLA . ASSUME 4 PER YEARS PER TOWER IN SERVICE OR IN STAND-BY.
- LINES 14 AND 15, PREPA WILL PAY ONLY IF ITS REQUEST

ARTICLE 11: MANUFACTURER'S INFORMATION

FOR EXPEDITING PURPOSES, IF MATERIALS ARE MANUFACTURED BY A THIRD PARTY. THE CONTRACTOR SHALL INDICATE THE NAME. ADDRESS, AND TELEPHONE NUMBER OF THE MANUFACTURER.

ARTICLE 12: CHANGES

ALL CHANGES OR DEVIATIONS FROM PLANS AND SPECIFICATIONS. WHETHER OR NOT THEY RESULT IN A COST CHANGE, SHALL BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH SUCH CHANGES OR DEVIATIONS.

ARTICLE 13: WORKING HOURS

- A. PREPA'S WORKING HOURS ARE SUNDAY THRU SATURDAY:

7:30 A.M. -11:30 A.M. AND 12:30 P.M. - 4:00 P.M.

- B. THE CONTRACTOR WILL ALSO SUBMIT HIS PROPOSED JOB ORGANIZATION AND DETAILED DESCRIPTION OF A TYPICAL WORKING CREW FOR THE SPECIFIED JOB.
- C. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED WORKING HOURS FOR PREPA'S APPROVAL.
- D. THE CONTRACTOR, BEFORE COMMENCING ANY WORK AT THE GENERATING STATION, SHALL REPORT TO AND COORDINATE HIS TASKS FOR THE DAY WITH THE ENGINEER.
- E. ALL INSTALLATION WORK SHALL BE CARRIED OUT ON A CONTINUOUS SCHEDULE FOLLOWING THE COMMENCEMENT DATE SPECIFIED BY PREPA.

ARTICLE 14: ENGINEER'S SUPERVISION AND INSPECTION

THE ENGINEER'S SUPERVISION AND INSPECTION IS FOR THE PURPOSE OF ASSURING HIM THAT THE WORK IS BEING PROPERLY EXECUTED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. THE FACT THAT THE ENGINEER IS INSTRUCTED TO GIVE THE CONTRACTOR ALL DESIRED ASSISTANCE IN INTERPRETING SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY FOR THE WORK AS INTENDED BY THE CONTRACT DOCUMENTS.

ARTICLE 15: TESTING

- A. UPON COMPLETION OF THE INSTALLATION, OR AT SUCH TIME AS DESIGNATED BY THE ENGINEER, ALL EQUIPMENT AND SYSTEMS SHALL BE FIELD TESTED BY THE CONTRACTOR AT HIS OWN EXPENSE. SUCH TESTS SHALL BE WITNESSED BY THE ENGINEER AND SHALL BE SUBJECT TO HIS APPROVAL. THE CONTRACTOR SHALL FURNISH THE NECESSARY LABOR, FIELD SUPERVISION, TEST INSTRUMENTS, MATERIAL AND TEST CONNECTIONS REQUIRED FOR CHECKING, SETTING, ADJUSTING AND TESTING THE INSTALLATION.
- B. THE CONTRACTOR SHALL MAINTAIN RECORDS OF ALL TESTS PERFORMED AND SHALL SUBMIT THE RECORDS TO THE ENGINEER PRIOR TO ENERGIZING OR RUNNING THE EQUIPMENT.
- C. ALL INSTALLATION DEFICIENCIES DISCOVERED DURING THE TESTS SHALL BE CORRECTED AS DIRECTED BY THE

ENGINEER AT THE CONTRACTOR'S EXPENSE.

ARTICLE 16: EXPERIENCE AND FACILITIES

BIDDERS SHALL FURNISH WITH THEIR PROPOSALS EVIDENCE SATISFACTORY TO PREPA TO THE EFFECT THAT THEY HAVE SATISFACTORILY PERFORMED SIMILAR TYPES OF WORK AS THOSE COVERED BY THESE SPECIFICATIONS THAT ARE IN SATISFACTORY OPERATION.

ARTICLE 17: TAXES

COPY OF THE 1979 EDITION OF "WHAT YOU SHOULD KNOW ABOUT TAXES IN PUERTO RICO", PUBLISHED BY THE COMMONWEALTH OF PUERTO RICO, DEPARTMENT OF THE TREASURY, OFFICE OF ECONOMIC AND FINANCIAL RESEARCH, SAN JUAN, PUERTO RICO IS AVAILABLE AT THE DEPARTMENT OF THE TREASURY AND THE CONTRACTOR SHALL COMPLY ITS OBLIGATIONS PURSUANT TO THE LAWS OF THE COMMONWEALTH OF PUERTO RICO.

ARTICLE 18: TIME EXTENSIONS

THE CONTRACTOR SHALL APPLY FOR TIME EXTENSIONS CAUSED BY CONSTRUCTION CHANGES, UNFORESEEABLE CAUSES, CHANGED CONDITIONS, ETC., AS INDICATED THROUGHOUT THE SPECIFICATION, ONLY IF THE SCHEDULE OF PROPOSED PROGRESS IS AFFECTED. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTING OFFICER CONSIDER APPLICATIONS FOR EXTRA TIME IF THE MASTER SCHEDULE IS NOT CLEARLY AFFECTED.

ARTICLE 19: PAYMENT

- A. THE MONTHLY RATE PRICE FOR THE CHEMICAL TREATMENT AND REAGENTS FOR WATER TREATMENT QUOTED IN THE PROPOSAL, SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING, INSTALLING, TESTING, COMMISSIONING AND PLACING IN SERVICE, AS WELL AS THE SUPPLYING OF REAGENTS, LABOR, TOOLS, MATERIALS, TESTS, ANALYSIS, REPORTS, CONSULTING SERVICES, EQUIPMENT, TRAINING, OTHER ACCESSORIES, COST OF ALL INSURANCE, PROFIT. CONTRACTOR'S OVERHEAD AND ALL OTHER WORK SATISFACTORILY IN ACCORDANCE WITH THIS SPECIFICATION.
- B. DURING THE LIFE OF THE CONTRACT, MONTHLY INVOICES WILL BE MADE, BASED ON SERVICES RENDERED AND WORK

PERFORMED DURING THE MONTH.

- C. PREPA'S EXPENSE ACCOUNTS ARE ASSIGNED FROM JULY 1 OF THE CURRENT YEAR TO JUNE 30 OF THE COMING YEAR. FOR THIS REASON, IT IS NECESSARY THAT THE CONTRACTOR MUST SUBMIT ALL INVOICES FOR WORK ALREADY DONE WITHIN THIRTY (30) DAYS AFTER THE COMPLETION OF SUCH WORK.
- D. IF THE INVOICES OR SUPPORTING DOCUMENTS SUBMITTED BY THE CONTRACTOR WITHIN THE ESTABLISHED THIRTY (30) DAY PERIOD AFTER THE COMPLETION OF THE WORK CONTAIN ERRORS, DEFICIENCIES OR DISCREPANCIES. THEN, THEY SHALL BE RETURNED TO THE CONTRACTOR TOGETHER WITH A FORM DETAINING THE ERRORS OR DEFICIENCIES FOUND AND THE DATE OF RETURN. ONCE THE DOCUMENTS ARE CORRECTED BY THE CONTRACTOR THEY SHALL BE SENT BACK TO PREPA WITHIN THE ESTABLISHED THIRTY (30) DAY PERIOD, PROVIDED, THAT, IF THE DOCUMENTS WERE RETURNED TO THE CONTRACTOR FIFTEEN (15) DAYS OR MORE AFTER THEY WERE INITIALLY SUBMITTED, THEN. THE CONTRACTOR SHALL HAVE FIFTEEN (15) ADDITIONAL DAYS TO CORRECT SUCH DEFICIENCY.

ARTICLE 21: EXECUTIVE ORDER NO. 4385 DATED JANUARY 3, 1985

IN COMPLIANCE WITH EXECUTIVE ORDER NO. 4385 DATED JANUARY 3, 1985 AND IN ACCORDANCE WITH ARTICLE 105 OF THIS ORDER, THE CONTRACTOR SHALL SUBMIT THE FOLLOWING INFORMATION TO THE AUTHORITY.

- A. TRI-MONTHLY REPORTS (AT LEAST ONE REPORT FOR CONTRACTS OF LESS THAN THREE (3) MONTH DURATION) CONTAINING THE FOLLOWING INFORMATION:
 - I. THE NAMES, AGES AND TITLES OF ALL PERSONS HIRED DURING THE PERIOD COVERED BY THE REPORT.
 - II. THE NAMES AND AGES OF ALL PERSONS DISMISSED OR TERMINATED DURING THE PERIOD COVERED BY THE REPORT, AS WELL AS THE REASON IN EACH PARTICULAR CASE.

TABLE 1
COOLING TOWERS SPECS.

TABLE 2

TOWER	MAKE-UP FLOW (GPM)	CONC. CYCLES	TOTAL WATER GALS.	RECIRCULATION GPM	RETURN WATER TEMPF	BASIN WATER TEMPF	BASIN APPROX. WATER VOLUME GALS.	NO. CELLS	PUMPS
5	67	3-5	18,875	4,510	101	90	5,500	3	2
6	67	3-5	15,740	4,510	101	90	5,500	3	2
7	26	3-5	*	1,750	101	85-92	24,250	1	2
8	26	3-5	*	1,750	101	85-92	24,250	1	2
9	26	3-5	*	1,750	101	85-92	13,300	1	2

10	26	3-5	*	1,750	101	85-92	13,300	1	2
----	----	-----	---	-------	-----	-------	--------	---	---

MAKE UP WATER
(FROM CITY WATER)

CATIONS/METALS	TOTAL (PPM)
ALUMINUM	<0.1
BARIUM	<0.4
BORON	<0.1
CADMIUM	<0.04
CALCIUM	34
CHROMIUM	<0.01
COPPER	<0.01
IRON	<0.01
LEAD	<0.2
LITHIUM	<0.01
MAGNESIUM	4.8
MANGANESE	<0.01
MOLYBDENUM	<0.1
NICKEL	<0.1
PHOSPHORUS	<1.0
PHOSPHORUS(P04)	<3.1
POTASSIUM	2.1
SILICA(SI02)	19.0
SODIUM	8.2
STRONTIUM	0.18
VANADIUM	<0.50
ZINC	<0.01
CALCIUM(CAC03)	84
MAGNESIUM(CAC03)	20

SODIUM(CAC03)	18
CALCULATED HARDNESS(CAC03)	100
ANIONS	TOTAL (PPM)
BROMIDE	<0.2
CHLORIDE	12
NITRATE (N035)	2.5
NITRITE(N02)	<0.2
SULFATE(S04)	24
CHLORIDE(CAC03)	18
NITRATE(CAC03)	2.0

SULFATE(CAC03)	25
ALKALINITY	
BICARBONATE(CAC03)	77
METHYL ORANGE(CAC03)	77
PHENOLPHTALEIN(CAC03)	<10
OTHERS	
Ph	8.1 S.U.
Conductivity	250 MICROMHOS/CM
Organic carbon(C)	<2.0
AMMONIA (NH3)	<0.04
AMMONIA(CAC03)	<0.12
TSS@105C	<1.5

NOTE: THE BIDDERS SHALL BE CONFIRM THE NUMBERS BEFORE QUOTE BY TAKING SAMPLES.

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



FEMA

Unit 6 – Major Overhaul (Combustion Turbine Replacement)

1/25/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	<i>Unit 6 – Major Overhaul (Combustion Turbine Replacement)</i>
PREPA Project Number	1023

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
<i>San Juan Power Plant Unit 6</i>	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Unit 6 of Central Plant in San Juan requires conservation repairs and replacement of its Combustion Turbine unit system due to excessive deterioration. Inspections performed to these assets identified repeated failures resulting in the determination to replace such. Work will increase efficiency, reliability and capacity of the unit. Also it will avoid forced outages and unit limitations.



Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Unit 6 Major Overhaul- Combustion Turbine Replacement and repairs is the following:

Inspection, repairs, and replacements of essential parts of the combustion turbine:

- Combustion Turbine AVR System acquisition and installation
- GT Generator Inspection/Maintenance
- GT Bearing Rebabbit
- Performance Test on Combined Cycle 6
- GT Torque Tube Upgrade
- GT Compressor Spindle Bolt Upgrade
- Provide Office Trailers, Portable Toilets, Washing Stations for workers during the period of performance
- Rotor Exchange Program GT Unit 6 - Scheduled for year 2023
- GT Major Inspection Contingencies
- EAs for Unplanned Extra Work

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)
<i>If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.</i>
Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.



3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)



Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$M)
On site services for Generators and Combustion Turbine , including generator testings	\$3,429,547.14
In shop repairs for Combustion Turbine	\$3,901,402.90
In shop repairs for Generator Rotor	\$220,410.96
Oil Flush	\$253,171.95
Replace In kind spare parts for Combustion Turbine	\$977,602.66
Combustion Turbine buckets supply	\$3,205,975.59
Service, parts and repairs transport	T.B.D
Local Taxes (Turbine services on site only)	\$314,978.41
Total	\$12,768,424.79

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.



Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

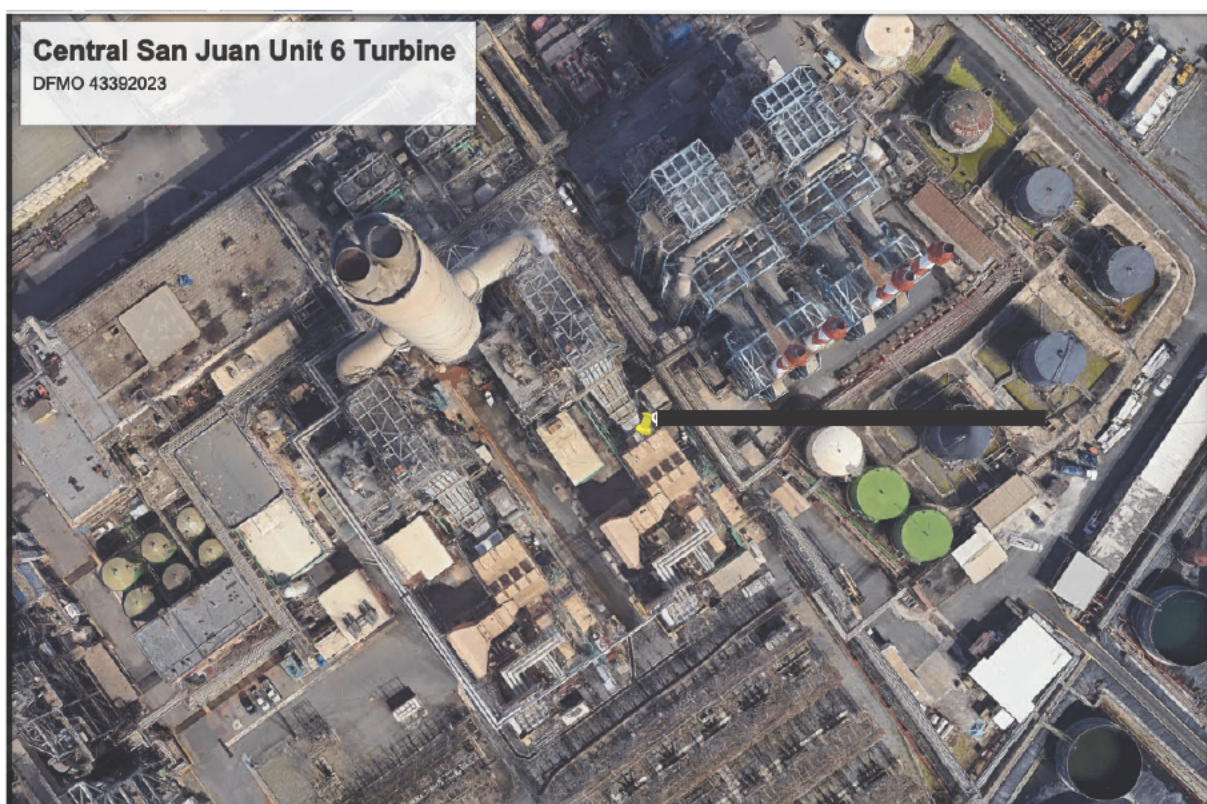
10.1. Project Detailed Cost Estimates

- Please see attached to SOW and Benefits memo

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



FEMA

Unit 6 – Major Overhaul (Steam Turbine Replacement)

1/25/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	<i>Unit 6 – Major Overhaul (Steam Turbine Replacement)</i>
PREPA Project Number	1023

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASSt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
<i>San Juan Power Plant Unit 6</i>	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Unit 6 of Central Plant in San Juan requires conservation repairs and replacement of its Steam Turbine unit system due to excessive deterioration. Inspections performed to these assets identified repeated failures resulting in the determination to replace such. Work will increase efficiency, reliability and capacity of the unit. Also it will avoid forced outages and unit limitations.



Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Unit 6 Major Overhaul- Steam Turbine Replacement and repairs is the following:

Inspection, repairs, and replacements of essential parts of the Steam turbine:

- Steam Turbine AVR System acquisition and installation
- Steam Turbine Major Insp/Maintenance Overhauling
- Steam Turbine Guardian Seal Parts
- Steam Turbine Major Inspection Contingencies
- EAs for Unplanned Extra Work

Benefits:

OEM unit operating hours maintenance range

Avoid forced outages

Unit reliability

Maintenance Unit performance

Avoid Unit limitations

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)


Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$M)
On site services for Generators and SteamTurbine , including generator testings	\$3,429,547.14
In shop repairs for Steam Turbine	\$3,901,402.90
In shop repairs for Generator Rotor	\$220,410.96
Oil Flush	\$253,171.95
Replace In kind spare parts for Steam Turbine	\$977,602.66
Combustion Turbine buckets supply	\$3,205,975.59
Service, parts and repairs transport	T.B.D
Local Taxes (Turbine services on site only)	\$314,978.41
Total	\$12,768,424.79



Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: *If available, detailed engineering cost estimates will be included as an attachment.*

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

- Please see attached to SOW and Benefits memo

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures





10.4. Other: (Please Describe)

N/A

2029

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Aguirre Unit 1:
South Wall Boiler Tubing Replacement - Boiler Repairs &
Air and Gas Duct Pre-Heaters Repair Works***

11/29/2021



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Aguirre Unit 1 – -South Wall Boiler Tubing Replacement & Repairs -Air and Gas Duct Pre-Heaters Repair Works
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
<i>Aguirre Unit 1 - Boiler, Pre heater and condenser pump</i>	[REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

A technical assessment performed by GE on the Aguirre Plant Unit 1 reported that the boiler of unit 1 has experienced several breaks in the past, specifically in the front wall of the furnace tubes at the burner level, causing forced exits as a consequence or outages. In addition, studies carried out for the useful life section have confirmed that the thicknesses of the front wall tubes have reached the minimum thickness allowed by MWT codes.

The GE service report addressed the following concerns in the Aguirre Unit 1 facility:

1. Multiple tube failures in the furnace front waterwall
 - From Burner Corner B to the centerline of the furnace and from approximately EL 96' to 53'
2. Multiple tube failures and sagging tubes in the platen superheater assemblies
3. Excessive O₂ in the air heater gas outlet ducts
4. Sagging economizer assemblies
5. Deterioration of the gas recirculation fan discharge duct
6. Deterioration of seal boxes for sootblowers, thermoprobes, and observation doors at EL 139'-10"
7. Deterioration of the boiler access door at EL 143'-3"
8. Deterioration of the roof of the left burner connecting duct



9. Link failure of the constant load support hanger levers for the right burner connecting duct

The Unit 1 South Wall Boiler Tubing Replacement and Repairs Project & Unit Air and Gas Duct Pre-Heaters Repair Works are necessary to assure the operation and conditions of the Unit 1 boiler system. The boiler has suffered tube breaks which has caused forced outages of the unit. Air ducts have also suffered damages that has caused air infiltrations, which affects the unit's power efficiency.

Section 3. Scope of Work

3.1. Scope of Work Description

- I. Rehabilitation of the South Waterwall Boiler Unit 1 Aguirre Power Plant will consist of the following:
 - Purchase and delivery of boiler tube waterfall panels: 30 tubes wide x 43' ½ long, set of 6 panels
 - Rehabilitation of the Furnace Front Waterwall Tubes:
 - o Removal and installation of the outer casing - Approximate area of 50'x50' elev 48'8 3/4" to elev 90' 10'.
 - o Removal and installation of insulation - Approximate area of 50'x50'. Calcium silicate 2"X12"X36".
 - o Removal and installation of panels, approximately 43' long with 30 tubes of 2". Total of six (6) panels. elev 48'8 3/4" - 90' 10'.
 - o Manufacture and installation of additional panel of 13 tubes to complete raised front wall; elev 48'8 3/4" to 90' 10'.
 - o Removal of trunks (9EA) observation ports, cutting and installation of sight tubes and filling of refractory.
 - o Fix membranes and weld wall to buckstay.
 - o Wall cutout for boiler access
- II. The scope of work for the air and gas duct pre-heaters repair will consist of the following:
 - Inspections looking for leakages and repairs on ducts will be addressed including insulation repair.
 - Ducto de GRF (Gas Recirculation Fan Discharge Duct):
 - o Existing duct demolition, duct fabrication and installation including damper area. Duct measurements: 38'x12'x4' in two sections of dampers.
 - o Insulation and refractory removal
 - o Duct will be manufactured according to existing plans and current field measurements



- Repair of air heater Unit 1, Aguirre:
 - Axial plate replacement / Axial plate installation include the following parts:
 - Axial plate adjusters
 - Static seals / axial plate
 - Axial plate calibration
 - Scope of work for this replacement includes the following:
 - axial access plate removal
 - remove inner casing area axial plate
 - remove static stamps
 - remove rack pin section
 - Replacement section plate hot/cold - includes the following parts:
 - Adjusters and axial reinforcement plate
 - Axial plate static seals
 - Hot/cold plate sector calibration
 - Scope of work for this replacement includes the following:
 - Removal access to remove and install sector plate
 - Removal of static seals for plate sector removal / installation
 - Removal / installation of adjusters
 - Calibration
 - Replacement of Rotor Seal Support and T-bar. Removal and installation of these parts, also the calibration.
 - Inspection and Repairs of the following:
 - End Plate
 - Stay plate - sol area
 - Front/rear diaphragm – sol area
 - Inspection repair torch / steam
 - Inspection repair washing/ device
 - Inspection repair support / pin rack
 - Inspection guide / support bearing / rotor drive
 - Removal /. Installation Hot/ Cold
 - Stamps
 - Radials
 - Bypass
 - Axials

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
 2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
-



- a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$M)
Purchase of Front Wall (materials) to EGI, Inc.	\$178,500.00
Pipe Wall Installation	1,030,000.00
Reconstruction of GRF Duct (Air / Gas Duct)	639,00.00
Air Heaters - Labor, tools and equipment:	
Axial Plates Replacement	180,00.00
Replacement of section plates	180,00.00
Replacement of seals	180,00.00
Materials for work on air heaters	250,00.00
Insulation – Replacement of Insulation	1,044,000.00
Chemical Washing Application (EDTA)	315,000.00
High Pressure Washing and Boiler cleaning	150,000.00
Scaffolding Rental	100,000.00
Technical Advisor Assistant	150,000.00
Allowance for different site conditions	250,000.00
Mobilization and demobilization	100,000.00
Overhead & Profit	929,300.00
Insurances	278,790.00
Patents & Taxes	29,272.95
Total Project Estimated Cost	\$ 5,983,862.95

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.



Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates



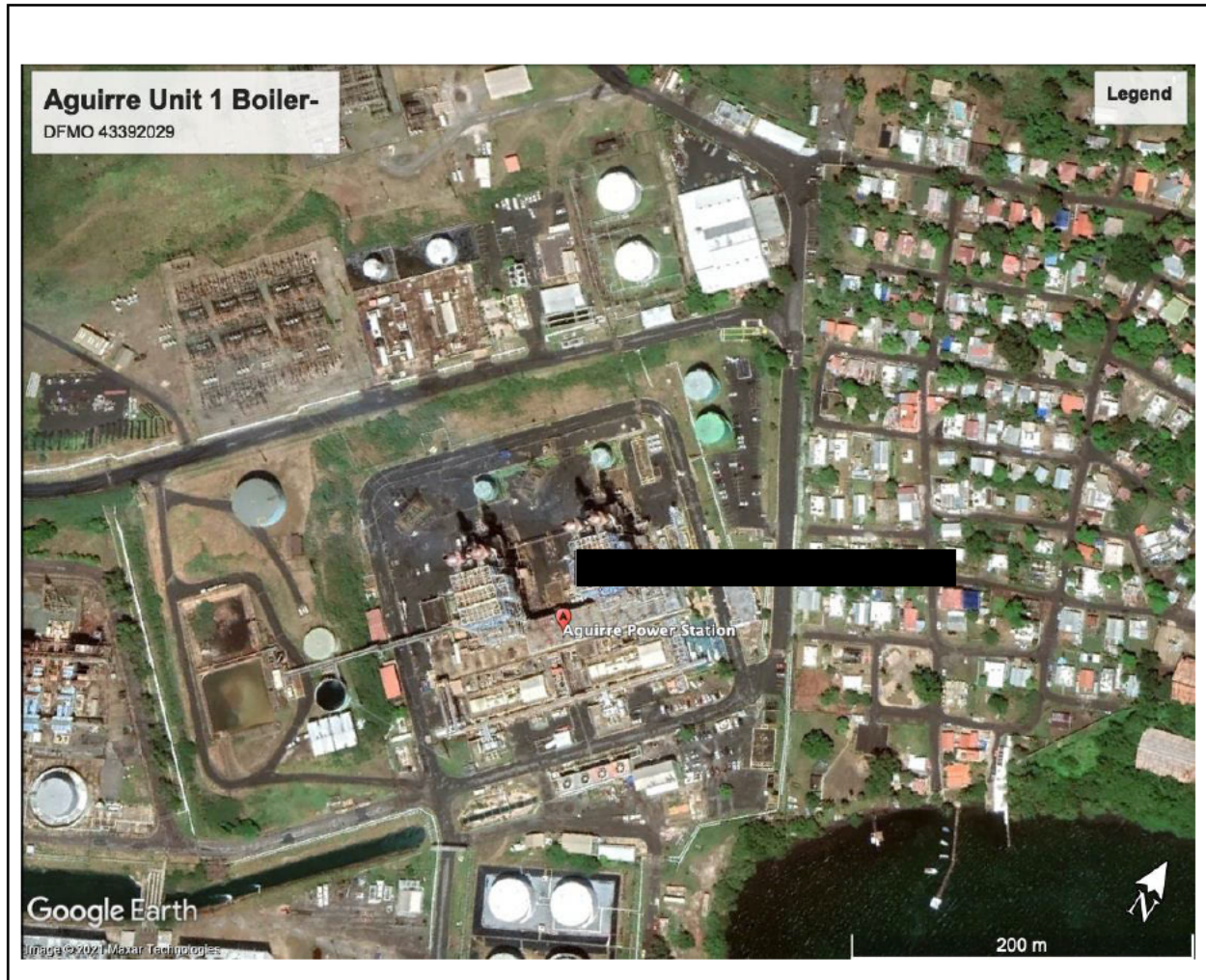
Please see attached the following supporting documentation:

- Executed PO Contract #86335,
- Proposal #86335
- Fund Certification #86335
- General Electric's Technical Assessment Report related to rehabilitation works on Aguirre.
- Service Proposal: Propuesta_JC Mechanical Industrial Services Also refer to PREPAs Fund certification
- 2029-2030 Cost Estimate Boilers Works (Alexis Cruz, PREPA Aguirre Plant Manager)

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOVERNMENT OF PUERTO RICO

PUERTO RICO ELECTRIC POWER AUTHORITY

Executive Director | Josué A. Colón Ortiz | director_ejecutivo@prepa.com

November 3, 2021

Mary C. Zapata Acosta
Deputy Executive Director
Operations



Josué A. Colón Ortiz
Executive Director

Authorization to Utilize the Procedures for Acquisition of Goods and Services in Emergency Situations for the Generation Assets

We have reviewed the Generation Directorate's request for approval to use the Procedures for Acquisition of Goods or Services in Emergency Situations (Emergency Procedures) for the critical repair works of our system's most important base load and emergency generating units such as, but not limited to, the Aguirre 2, Costa Sur 5 and 6, Palo Seco 3 and 4, Cambalache 2 and 3 and the Aguirre Combined Cycle Units.

After careful consideration of mister William Ríos Mera, Generation Director's, request, we authorize the use of the Emergency Procedures, approved by PREPA's Governing Board through Resolution 4598, of March 28, 2018, for the critical repair works of base load and emergency generating units of the Generation Directorate.

All the emergency procurements, regardless of their estimated costs, will be procured through the Power Advocate Platform only and will be published in PREPA's web page. The Deputy Executive Director of Operations, in coordination with the Chief of the Supply Chain Division, will oversee the emergency procurement process, in compliance with the Emergency Procedures. The Deputy Executive Director of Operations and the Generation Director will designate a committee of at least three members to each procurement process, who will be responsible for the evaluation of the proposals and the award recommendation.



PO Box 364267 SAN JUAN, Puerto Rico 00936-4267 | 787.521.4671

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

Engineers Carlos Negrón Alfonso and Ferdinand Correa Méndez, Administrator in Operations and Administrator in Generation, respectively, in coordination with the Head of each Power Plant, have identified the need for the following projects of vital importance, which require maintenance work to achieve the necessary reliability of each unit. The project descriptions, by power plant and division, are the following:

San Juan Power Plant

1. Units 5 and 6 Auxiliary Equipment Cooling Towers Replacement – the project is necessary to maintain all the auxiliary equipment under the operational temperature parameters. PREPA already procured the equipment as part of the Major Overhaul Project of both units 5 and 6. The project estimated cost is \$0.85 MM shall be completed in 120 days. This project is essential for returning unit 5 and 6 back on service on a safe manner.
2. Procurement Ammonium for Unit 5 – this good is necessary for the compliance of the Federal Air Permit of the power plant. The purchase estimated cost is \$0.50 MM and shall have a term of 365 days.
3. Procurement of High-Pressure Pumps Units 5 and 6 – the goods are necessary to proceed with a replacement of the existing high pressure boiler feed water pumping system to assure the efficient and reliable operation of both units 5 and 6. The purchase and service estimated cost is \$1.6 MM and shall be completed in 300 days,
4. Unit 5 Repair and Coating Application Condenser, East Side – the project is necessary to repair various areas of the condenser and to apply the necessary amount of epoxy coating to avoid future forced outages. The project will result in an improvement of the unit's reliability. The project is estimated in \$0.615 MM and shall be completed in 120 days.
5. Heavy Equipment Rental Services for Units 5-6 and 7-10 – the service is necessary for the repair and maintenance works of all the units of the San Juan Steam Plant. The service estimated cost is \$0.85 MM and shall have a term of 365 days.

6. Repairs to the Nautilus Water Treatment System – the project is necessary to repair the structural walls and floor of the nautilus water clarifier system. This equipment is an essential component of the water treatment which will be discharge to the sea, as part of the NPDES permit. The project is estimated in \$0.25 MM and shall be completed in 120 days.
7. Structural Repairs Service Fuel Tank S-10 – the project is necessary to perform the structural repairs to ring walls, roof, stairs, and floor of a fuel service tank S-10. The project is estimated in \$0.75 MM and shall be completed in 240 days.
8. Unit 7 Air Preheater Maintenance and Replacement – the project is necessary to assure the efficiency of the boiler system and the number of megawatts of power production of the unit. The project is estimated in \$0.6 MM and shall be completed in 120 days.
9. Water Treatment and Technical Assistance Cooling Water System – the service is necessary to maintain the cooling towers water system within chemical parameters to assure the protection of its mechanical components. This will have the effect of maintaining the necessary water temperatures for the auxiliary equipment of the power plant's units. The service estimated cost is \$0.25 MM and shall have a term of 365 days.
10. Cooling Tower Unit 10 Repair Works – the project is necessary to have a backup cooling system for the auxiliary equipment of Unit 9, which is in service. Also, it will be necessary to have this equipment ready for operation if a decision is made to repair and return to service unit 10. The project estimated cost is \$0.385 MM and shall be completed in 120 days.
11. High Pressure Bleed Valve, Low Pressure Bleed Valve and Steam Injection Block Valve Units 5 and 6 – the purchase is necessary to maintain the level of compressed air extractions and steam injection for the operation of the gas turbines. The purchase estimated cost is \$0.35 MM and shall be received in 120 days.
12. Black Start Generators Units 5 & 6 Control Upgrade – the project is necessary to maintain the reliability of two emergency generators whose purpose is to provide power to start up units 5 and 6 during a black out event. The project estimated cost is \$0.35 MM and shall be completed in 120 days.

13. Replacement of Outlet Valves and Elbow Condenser Units 5 and 6 – the project is necessary because of past forced outages on both units 5 and 6 due to pipe elbow breaks and valves with water passage. The project estimated cost is \$0.35 MM and shall be completed in 60 days per unit.
14. Replacement of Two Uninterruptible Power Supply Systems for Units 7 and 8 – the project is necessary assure a back-up power during any event in the electrical system that may cause a breakdown or fluctuations in voltage that could affect the units. The project estimated cost is \$0.45 MM and shall be completed in 180 days.
15. New Raw Water Tank – the project is necessary to provide potable water for the daily operations of the technical and administrative personnel of the power plant and to create demineralized water for the units 7 through 10. The existing tank presents high levels of corrosion and wear that ensure a future rupture which will result in taken it out of service. The project estimated cost is \$1 MM and shall be completed in 180 days.

Aguirre Power Plant and Combined Cycle

1. Unit 1 South Wall Boiler Tubing Replacement and Repairs of – the project is necessary to assure the operation and conditions of the Unit 1 boiler system. As a result of the Events the boiler has suffered tube breaks which has caused forced outages of the unit. The project estimated cost is \$7 MM and shall be completed in 150 days.
2. Unit 1 Air and Gas Duct Pre-Heaters Repair Works – the project is necessary to assure the operation and conditions of the Unit 1 boiler system. As a result of the Events the air ducts have suffered damages that has caused air infiltrations, which affects the unit's power efficiency. The project estimated cost is \$1 MM and shall be completed in 120 days.
3. Rehabilitation Fuel Tank Farm Liners – the project is necessary to comply with the Spill Prevention, Control and Countermeasure (SPCC) plan under the Oil Pollution Act of 1990. This act amended the Clean Water Act to require facilities to have spill response plans of oils, which can reach the navigable waters of the United States. The project estimated cost is \$1.2 MM and shall be completed in 180 days.

4. Replacement of Load Center 1-4 Condenser Circulating Water Pump – the project is necessary to obtain the level measurements of the fuel tanks system which will assure a more reliable and efficient operation. The project estimated cost is \$0.6 MM and shall be completed in 180 days.
5. Sea Water Intake Structural Repairs Work – the project is necessary to improve the structural conditions of the sea water intake and outfall pool of the units 1 and 2 condenser's cooling system that present corrosion and concrete segments broken. The project estimated cost is \$5 MM and shall be completed in 365 days.
6. Procurement of Stages 1, 2, 3 Turbine Rotor Bucket Set, Aguirre Combined Cycle – the purchase is necessary to obtain the refurbished stages 1, 2 and 3 rotors bucket set to be used as a replacement for a major inspection work of a combustion turbine. The equipment estimated cost is \$0.75 MM and shall be received in 240 days.
7. New Water Condensate Tank for the Aguirre Combined Cycle – the project is necessary to provide water for the steam cycle of the combined cycle which allows the power plant to be more reliable. The project estimated cost is \$1 MM and shall be completed in 180 days.
8. Hot Gas Path Inspection Work Units 1-1 and 1-2 – the project consists of the inspection and repair of the combustion system components and is necessary to maintain these units available and reliable to respond to emergency situations and peak demand hours of the island's electric system. The project estimated cost is \$2 MM and shall be completed in 240 days.
9. Hot Gas Path Inspection Work Unit 2-4 and Standby Transformer – the project consists of the inspection and repair of the combustion system components and is necessary to maintain the unit available and reliable to respond to emergency situations and peak demand hours of the island's electric system. The project estimated cost is \$1.7 MM and shall be completed in 120 days.
10. Major Inspection Work Unit 1-3 – the project consists of the inspection and repair of the combustion and turbine system components and is necessary to maintain the unit available and reliable to respond to emergency situations and peak demand hours of the island's electric system. The project estimated cost is \$2.5 MM and shall be completed in 240 days.

11. Procurement of Two Discharge Condenser Water Pump Motors – the project is necessary to assure the flow of the sea water use for the cooling system of the condenser of both units 1 and 2. This will maintain a reliable operational condition of these 900 MW generating units. The purchase estimated cost \$0.75 MM and shall be delivered in 270 days.
12. Procurement of Two Boiler Circulating Water Pump Motors – the project is necessary to assure the flow of the demineralized water for boiler system of both units 1 and 2. This will maintain a reliable operational condition of these 900 MW generating units. The purchase estimated cost \$0.75 MM and shall be delivered in 270 days.

Costa Sur Power Plant

1. Travelling Screens Replacement – the project is necessary to improve reliability on the units 5 and 6 condensers' cooling system and the compliance with the Section 316 (b) of the Clean Water Act. The project estimated cost is \$5 MM and shall be completed in 540 days.
2. Procurement and Replacement of Regulator Valves for Boiler Feed Water Units 5 and 6 – the project is necessary to assure the flow of water to the boiler of each of the units during operational mode by replacing the existing valves which has surpassed its operational life and require repair. The project estimated cost is \$0.5 MM and shall be completed in 180 days.
3. Low Pressure Water Heater 3 Repair Work – the project is necessary to maintain temperature efficiency in the boiler of the unit and reduce the cost of burning fuel. The project estimated cost is \$0.4 MM and shall be completed in 90 days.
4. Procurement of Water Heater 5 (Deaerator) Spare Pump – the purchase is necessary to assure an efficient process of the boiler system of any of units, in case of a malfunction of the existing one. The purchase estimated cost is \$0.4 MM and shall be delivered in 180 days.
5. Procurement of Air-Preheaters Baskets, Unit 5 – the purchase is necessary to replace the existing baskets during the major overhaul of the unit next year. The material must be ready on site for the commencement of the project and are essential to maintain a more efficient boiler system. The purchase estimated cost is \$1 MM and shall be delivered in 180 days.

6. Replacement of Air-Preheaters Baskets, Unit 5 – the project is necessary to replace the existing baskets during the major overhaul of the unit next year and is essential to maintain a more efficient boiler system. The project estimated cost is \$0.7 MM and shall be completed in 120 days.
- * 7. Procurement of Condenser Circulating Water Pump (CCWP) and Boiler Circulating Water Pump (BCWP) Spare Motors for Units 5 and 6 – the purchase of these spare motors is necessary in case of a malfunction of any of the existing ones, the power plant's personnel may have the equipment available and can proceed to change the damaged part in the shortest period and reduce the impact to the island's electrical system. The CCWP and the BCWP are an essential component of the condenser cycle system and boiler cycle system, respectively. The purchase estimated cost is \$0.62 MM and shall be delivered in 180 days.
8. Procurement of Induced Draft Fan (IDF) and Forced Draft Fan (FDF) Spare Motors for Units 5 and 6 – the purchase of these spare motors is necessary in case of a malfunction of any of the existing ones, the power plant's personnel may have the equipment available and can proceed to change the damaged part in the shortest period and reduce the impact to the island's electrical system. The IDF and the FDF are essential components of the and boiler cycle system. The purchase estimated cost is \$0.87 MM and shall be delivered in 270 days.
9. Procurement of Condensate Pump (CP) Motor for Units 5 and 6 – the purchase of these spare motor is necessary in case of a malfunction of any of the existing ones, the power plant's personnel may have the equipment available and can proceed to change the damaged part in the shortest period and reduce the impact to the Island's electrical system. The CP are essential components of the boiler cycle system. The purchase estimated cost is \$0.87 MM and shall be delivered in 180 days.
10. Replacement of Unit 5 Electric Load Center – the project is necessary to improve the reliability of the auxiliary equipment of the unit during operations by replacing an already obsolete motor control center with an advance and more efficient equipment. The project estimated cost is \$1 MM and shall be completed in 270 days.
11. Replacement of Excitation System Units 5 and 6 – the project is necessary to improve the reliability of the generator of both units 5 and 6. The project estimated cost is \$1.5 MM and shall be completed in 180 days.

12. Replacement of 4160 V Electric Cable Normal Transformer 5A, 5B – the project is necessary to improve the reliability of the electric auxiliary equipment of unit 5. The project estimated cost is \$0.25 MM and shall be completed in 90 days.

Palo Seco Power Plant

1. Procurement and Delivery of Water Wall Boiler Tubes and Economizer – the project is necessary to have the components. The project estimated cost is \$5 MM and shall be completed in 365 days.
2. Low Pressure Turbine Rotor Refurbished, Unit 3 – the project is necessary to repair the existing low-pressure turbine during a major outage. The project estimated cost is \$2 MM and shall be completed in 240 days.
3. Fuel Tanks Level Measurement System – the project is necessary to obtain the level measurements of the fuel tanks system which will assure a more reliable and efficient operation. The project estimated cost is \$0.55 MM and shall be completed in 120 days.
4. Water Retention Tank Num. 3 – the project is necessary for the treatment of the water, resulting from the pre-heater and boiler washing processes of the generating units, as well as in the treatment of the water that reaches the washing wells of the units by any other reason. In these tanks the excess water is received from these wells and is retained for two important purposes; store excess water from the wash basins to prevent them from overflowing and neutralize the pH that is outside the parameters for disposal. The project estimated cost is \$0.8 MM and shall be completed in 240 days.
5. Unit 4 Refractory, Insulation, scaffolding and Painting Application Works – the services are necessary for the rehabilitation works of Unit 4 and related structures during the future environmental maintenance outages. The service estimated cost is \$1 MM and shall have a term of 365 days.
6. Contract, on request, for Crane Services – the service is necessary for the repair and maintenance works of both units 3 and 4. The service estimated cost is \$0.7 MM and shall have a term of 365 days.

7. Procurement Turning Gear System, Units 3 and 4 – the purchase is necessary for the power plant to replace existing turning gear system of any of the units 3 and 4, in case of a malfunction. This system is essential to maintain the turbo-generator rotor in slow rotation motion to avoid possible structural deflections that may affect the return to service of the unit after a programmed, maintenance or forced outage repair is completed. The purchase estimated cost is \$0.3 MM and shall be received in 180 days.
8. New Water Condensate 1-2 Tank – the project is necessary to provide water for the steam cycle of the units 3 and 4, which allows the power plant to be more reliable. The project estimated cost is \$1 MM and shall be completed in 210 days.

Hydro-Gas Turbines

1. Procurement of Seven Generator Breakers for Frame 5000 Hitachi Gas Turbines – the purchase is necessary to assure the reliability of the unit's synchronism to the electrical system. The purchase estimated cost is \$0.5 MM and shall be received in 180 days.
2. Procurement of Two Turbo-Compressors for Frame 5000 Gas Turbines – the purchase is necessary to perform the major repairs works of the turbo-compressor of two gas turbines units. The purchase estimated cost is \$4 MM and shall be delivered in 240 days.
3. Procurement of Two Spare Speed Reduction Gear for Frame 5000 Gas Turbines – the purchase is necessary to have the availability of two speed reduction gears due to the long lead fabrication and delivery and the continues used of the Frame 5000 Gas Turbine. The purchase estimated cost is \$1.2 MM and shall be delivered in 180 days.
4. Procurement of Three Exhaust Plenums for Frame 5000 Gas Turbines – the purchase is necessary to have the availability of three exhaust plenum due to the long lead fabrication and delivery and the continues used of the Frame 5000 Gas Turbine. The purchase estimated cost is \$0.6 MM and shall be delivered in 180 days.

5. Procurement of Three Exhaust Gas Diffusion Ducts for Frame 5000 Gas Turbines – the purchase is necessary to have the availability of the diffusion ducts due to the long lead fabrication and delivery and the continues used of the Frame 5000 Gas Turbine. The purchase estimated cost is \$0.3 MM and shall be delivered in 180 days.

Engineering and Technical Services

1. Stamp R - Mechanical Repair Works for Boilers and Turbo-Generators Contract – the contract is necessary to provide repair services to boilers and turbogenerators for all the power plants. The contract is \$1.95 MM and shall have a term of 365 days.
2. Hydro-blasting Service for Boilers – the service is necessary to remove all debris and dirt lodged the interior of a condenser of a generating unit. This will allow the required level of vacuum necessary to complete the turbine's steam cycle, ensuring efficient and reliable energy production at the lowest cost. The service estimated cost is \$0.65 MM and shall have a term of 365 days.
3. Hydro-blasting Service for Boilers – the service is necessary to remove all combustion debris of the interior of boiler's oven and heat recovery systems using high pressure water. The service estimated cost is \$0.95 MM and shall have a term of 365 days.
4. Interior Dry-Cleaning Service for Boilers – the service for the soot dry cleaning and vacuum truck inside the boilers, pipelines, and chimney. The service estimated cost is \$0.85 MM and shall have a term of 365 days.
5. Electrical and Instrumentation works in power plants – the contract is necessary to provide repair services to electrical equipment for all the power plants. The contract is \$0.85 MM and shall have a term of 365 days.
6. Procurement Acid for all power plants – this good is necessary for chemical control of the water use in the steam cycle and for the process water to be treated and discharge to the sea in compliance with the NPDES Permit of the power plant. The purchase estimated cost is \$1 MM and shall have a term of 365 days.

7. Refractory, Insulation and Painting Application Works – the services are necessary for the rehabilitation works of all power units and related structures during the future environmental maintenance outages. The service estimated cost is \$1.95 MM and shall have a term of 365 days.
8. Scaffolding Inside and Outside Boiler Works Works – the services are necessary for the installation of equipment necessary for the technical personnel to access elevated areas within all safety criteria, for the rehabilitation works of all power units and related structures during the future environmental maintenance outages. The service estimated cost is \$1.99 MM and shall have a term of 365 days.
9. Waste Management Services Contract for Power Plants – the service is necessary to continue the disposal of silt, asbestos-containing materials, and non-hazardous waste from generating plants, combustion turbine and hydroelectric stations. The service estimated cost is \$1 MM and shall have a term of 365 days.
10. Non-Destructive Examinations and Inspection Services – the services are needed for the inspection and evaluation of critical equipment in our Generation Units, Tanks, High Energy Steam Piping and Fuel transfer and distribution lines. The before mentioned assessments are required by law and the estimated cost is \$.75 MM for a term of 365 days.
11. Inspection and Maintenance Work Cargo Elevators in the Power Plants – the services are need to main a safety and reliable operation of all the cargo elevators for PREPA's power plants. The service estimated cost is \$.9 MM and shall have a term of 365 days.

Based on the abovementioned situation, in order to have a reliable and stable generation with enough capacity to meet peak demands, the request is approved.

Gerardo Antonio Sanchez Pierluisi

From: Carmen Elisa Rodríguez Rodríguez
Sent: Tuesday, November 30, 2021 9:12 AM
To: Angel A. Perez Carrasquillo
Cc: Mary C Zapata Acosta; FERDINAND CORREA MENDEZ; Jorge E. Sanchez Valle; ejn1714@gmail.com; Gerardo Antonio Sanchez Pierluisi
Subject: Listado de Proyectos Prioritarios de Generación - Fondos FEMA
Attachments: Book2.xlsx

Saludos:

Les incluyo los proyectos que se están considerando para solicitar los fondos a FEMA.

Es importante nos envíe la siguiente documentación para preparar el PW.

- Estimado completo de costos
- Documentación de licitación (Pedidos, contratos, RFPs)
- Listado de Personal y horas estimadas (Horas hombres sin overhead)
- Material (retiros de inventario y/o compra de materiales) – Incluir 25% de almacén
- Equipo de AEE a utilizarse y uso de horas
- Estimado de retiro y disposición de chatarra

Atentamente,



Carmen Elisa Rodríguez Rodríguez
Jefa Auxiliar de División

Tel (787) 521-4885
carmene.rodriguez@prepa.com



J.C. Mechanical Industrial Services LLC

TEL. (787) 981-0050

[E-MAIL: jcolon@jcmechanicalpr.com](mailto:jcolon@jcmechanicalpr.com)

Article 1: Requirements

- A. The contractor is required to furnish all labor, materials not provided by PREPA, tools, equipment, facilities, supervision, job administration and superintendence required, as requested by PREPA and shall perform all repair work expeditiously and to the entire satisfaction of the Contracting Officer. The work shall be conducted in accordance with this specification, as directed by the Engineer; and as described in the purchase order. Also, shall have a current R stamp to be submitted in the proposal.
- B. All work performed under this Specifications shall be done in a safe and workmanlike manner and in strict conformance with all rules, regulations, and ordinances, etc., of government agencies having jurisdiction over the class of work involved and including the American National Standard Institute (ANSI), the American Welding Society (AWS), the American Society of Non-Destructive Testing (ASNT), the American Society of Mechanical Engineers (ASME), the National Board of Inspection Codes (NBIC), the Environmental Protection Agency (EPA), the Occupational Safety and Health Office (OSHO) requirements, and the latest edition of all other applicable codes and standards.
- C. The contractor shall Develop a schedule of the activities to be performed in connection with the work of the Purchase Order and shall submit the same to PREPA for the approval of the Engineer.
- D. The contractor shall furnish all tools and equipment required to perform the inspection, adjustments, repairs and/or replacements expeditiously and to the satisfaction of the Engineer.
- E. All welding performed under this Contract shall be in accordance with welding procedures which have been qualified with section IX of the ASME Boiler and Pressure Vessel Code and ASME Boiler and Pressure Vessel Code, Section I, Section VIII, Div. 1, Section IX and NBIC Part 3, latest addenda. All welders engaged in work under this Contract shall be qualified in accordance with the latest requirements of Section IX of the ASME Boiler and Pressure Vessel Code, welding and brazing qualifications. The Contractor shall submit the welding procedures and welders qualifications before commencement of the work. Each welders certification shall be on file at the prefabrication shop and available for PREPA'S inspectors upon request. Welding records shall be kept according to ASME Section 1; Roots passes in piping shall be made by the GTAW (Gas and Tungsten Arc Welding) process. The balance of the welds may then be completed by the use of coated electrodes-shield metal arc welding (SMAW) -. Backing rings are not allowed. Preheat and post-heat treatments shall be in accordance with ASME Boiler and Pressure Vessel Code, Section I, Section VIII, Div. 1, Section IX and NBIC latest addenda. Structural steel welding shall be performed by the SMAW method. Preparation of the welds and weld design shall be according to ASME Boiler and Pressure Vessel Code, Section I, Section VIII, Div. 1, Section IX and NBIC. To the extend that they apply, the Contractor shall impose on each of his sub suppliers/subcontractors the complete requirements of the technical specifications under this contract. He shall be directly responsible to see that the sub suppliers/subcontractors is completely aware of all these requirements and those they abide thereby.

The extend and general scope of the work; Pared Frontal, GRF & Air heater.

Descripcion del trabajo:

I. Pared Frontal: **** SOW #2029 -
Furnace Front Waterwall Tubes**

1. Remocion e instalacion de outer casing – Area aproximada de 50'X50' elev 48'8 3/4" a elev 90' 10'.
2. Remocion e instalacion de aislacion – Area 50'X50'. Silicato de calcio 2"X12"X36".
3. Remocion e instalacion de paneles de aproximadamente 43' de largo con 30 tubos de 2". Seis (6) paneles en total. Elev 48'8 3/4" - 90' 10'.
4. Fabricacion e instalacion de panel adicional de 13 tubos para completar pared frontal elev 48'8 3/4" a elev 90' 10'.
5. Remocion de cajuelas (9EA) observations ports, corte e instalacion de tubos mirillas y llenado de refractario.
6. Soldar membranas y fijar pared a los buckstay.
7. Corte de pared para acceso a la caldera

Nota: En la pared frontal incluye andamios parte exterior de la pared y Plataforma para recibir los paneles Incluye tubos de mirilla

II. Ducto de GRF **** p.6 GE Technical Assesment Report 2021 -
** Gas Recirculation Fan Discharge Duct**

1. Demolicion de ducto existente, fabricacion e instalacion de ducto incluyendo el area del damper. Medidas del ducto 38'X12'X4' en 2 secciones de dampers.
2. Remocion de aislacion y refractario
3. Ducto sera fabricado de acuerdo a planos existentes y medidas de campo actuales

Nota: Trabajo incluye andamios, equipos y materiales para la fabricacion de ducto nuevo.

Reparacion Air Heater Unit 1, Aguirre

**** SOW #2030
** p.4 GE Technical Assesment Report 2021**

Reemplazo Axial Plate / Instalacion Axial Plate

- A. Ajustadores Axial Plate
- B. Sellos estaticos / Axial Plate
- C. Calibracion Axial Plate

Para realizar este trabajo

- Remocion acceso axial plate
- Remover inner casing area axial plate
- Remocion sellos estaticos
- Remocion seccion pin rack

Todos los materiales seran suplidos por AEE

1. Reemplazo section plate hot/cold
- A. Ajustadores y refuerzos section plate
 - B. Sellos estaticos axial plate
 - C. Calibracion sector plate hot/cold

Para realizar este trabajo

- Remocion acceso para remover e instalar sector plate
- Remocion sellos estaticos para remocion sector plate / instalacion
- Remocion ajustadores / instalacion
- Calibracion de estos

Todos los materiales seran suplidos por AEE

2. Reemplazo

- Rotor Seal Support
- Rotor T-bar support
- Remocion e instalacion y calibracion de estos

Todos los materiales seran suplidos por AEE

3. Inspeccion y Reparacion

- End Plate
- Sol area Stay plate
- Sol area diafragma frontal / trasero
- Inspeccion reparacion soplete / vapor
- Inspeccion reparacion washing / device
- Inspeccion reparacion soporte / pin rack
- Inspeccion guide / support bearing / rotor drive

4. Remocion / Instalacion Hot / Cold

- Sellos
- Radiales
- By pass
- Axiales

Todos los materiales seran suplidos por AEE

Nota: Hay que coordinar si los section plates se van a reparar en sitio ya que no los hay complete los set frios y calientes. Se puede verificar la instalacion de un liner.

Hay 2 secciones frios en el patio.

General Notes:

1. Disposal of used tubes shall be performed by PREPA. The Contractor shall dispose them in the required PREPA containers with previous coordination with the plant personnel.
2. Hydrostatic test shall be performed by PREPA in coordination with an authorized representative of the Contractor as soon as all labor is completed and all the equipment is available for this particular test.
3. Any cut bevel preparation needed to fit the components described shall be considered part of the contractor scope of work.
4. The contractor shall furnish all necessary metal materials, such as I-beams, channels, steel angles, steel plates and others required to perform the scope of work described in this Purchase Order. Any material to be welded to a pressure part shall have the manufacturer data report in compliance with ASME and NBIC latest editions.
5. To perform this scope of work the contractor shall prepare all required bevels as specified or required.
6. The contractor is responsible of the radiographic examination, required in twenty percent (20%) of the total performed welds of the tubes at the elements and that shall be examined throughout their entire

length by the X-Ray or gamma-ray method in accordance with the ASME Code; Article 2 of Section V. If in this twenty percent (20%) more than three percent (3%) of welds are rejected, radiographic examination is required to fifty percent (50%) of total welds. If in this fifty percent (50%) more than five percent (5%) of welds are rejected, radiographic examination is required in one hundred percent (100%). For header welds, perform one hundred (100%) ultrasound test. This shall be included on contractor scope. PREPA requires that the activity described in this item shall be performed by a third party.

7. Refractory material (by others).
8. Scaffolding for boiler (furnace inside by others)
9. All material needed for Air heater rehabilitation (by others)
10. Water pressure Clean up (by others) – Areas air heater, GRF & Boiler furnace.

Costo Estimado del Servicio:

Pared Frontal, Ducto GRF & Air Heater: **\$ 2,209,985.00**

Incluye andamios, pared frontal, ducto del GRF y Plataforma para recibir paneles

Remocion e instalacion y materiales de 10,000 pies cuadrados de aislacion: **\$ 1,044,000.00**

Calcium Silicate 4", wire mesh and cal coat cement and fuster 90-07 Asphalt emulsion

Areas: Pared frontal ducto del GRF Area del air heater

Total: \$ 3,253,985.00



Date:	08 Oct 2021		
Site:	PREPA Aguirre Unit 1		
P.O.:	83998	T.S.:	TSV-25-16
From:	Tim Heyne FieldCore Boiler Technical Field Advisor		
To:	Alexis Cruz PREPA Aguirre Plant Manager	Jorge Sanchez PREPA Life Extension Department Manager	

SERVICE REPORT

PLANNING FOR UNIT 1 OUTAGE IN 2022

On 01 Oct 2021, Alexis Cruz hosted a meeting with Francisco Marquez, Wilnec Robles, and Tim Heyne to discuss the status of boiler equipment in preparation for the Unit 1 outage currently scheduled to start in Jan 2022. Per the request of Alexis Cruz, the following report addresses the concerns and requests addressed during the meeting and during the walkdown of the unit with Wilnec Robles.

The following concerns were raised during the meeting and during the walkdown of the unit.

1. Multiple tube failures in the furnace front waterwall
 - From Burner Corner B to the centerline of the furnace and from approximately EL 96' to 53'
2. Multiple tube failures and sagging tubes in the platen superheater assemblies
3. Excessive O₂ in the air heater gas outlet ducts
4. Sagging economizer assemblies
5. Deterioration of the gas recirculation fan discharge duct
6. Deterioration of seal boxes for footblower thermoprobes, and observation doors at EL 139'-10"
7. Deterioration of the boiler access door at EL 143'-3"
8. Deterioration of the roof of the left burner connecting duct
9. Link failure of the constant load support hanger levers for the right burner connecting duct



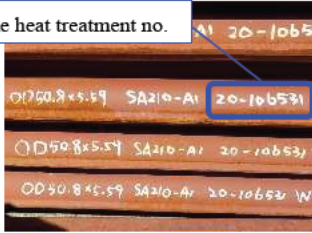
Equipment of concern to GE not discussed during the meeting but included in this report are listed below.

10. Superheater front horizontal upper outlet header
11. Superheater front horizontal upper spaced assemblies

Furnace Front Waterwall Tubes

The plant intends to replace the waterwall panels that have experienced multiple tube failures. The Aguirre stock yards have six waterwall panels of 30 tubes each. Each waterwall panel is reportedly 43'-1" long. The furnace front wall consists of 227 tubes. Four of the six panels would be required to replace the reported area of tube failures. If a contractor installs these waterwall panels then the authorized inspector would require the mill test reports for these tube panels. The authorized inspector would want to cross reference the heat treatment no. on the mill test reports with the heat treatment no. on the tube panels. For more details reference the photos below.



		
Waterwall tube panels in stockyard	Tube specifications and heat treatment nos. marked on tube panels	

The new waterwall panels do not have any observations doors or scallop bars from the buy kstay modifications installed in 2001. Existing materials not supplied with the new waterwall panels will have to be reused or replaced.

- To order replacement materials for the observation doors from GE, reference mark no. OD-5A on C-E drawing [E-673-743](#). Approximately eight observation doors and the seal boxes and the pressure part openings associated with the observation doors need to be reused or replaced.
- To order replacement scallop bars from GE, reference the attached ABB drawing no. [01968-4E9082](#) that is marked up with the approximate location where the new waterwall panels would be installed to replace the reported area of failed tubes. At least 18 scallop bar of piece mark no. FBA-2 and 76 scallop bars of piece mark no. FBA-3 would need to be reused or replaced.

In 2012 the furnace front waterwall tubes were replaced from EL 118'-9" to approximately 78'-8". During the Jul 2013 condition assessment significant internal corrosion was found in the furnace front waterwall tubes between EL 77'-8" and 69'-8" between tube nos. 22 and 47. Unit 1 experience multiple tube failures in this area between the 2013 outage and the 2017 outage when many of the pad welded tubes were replaced. During the 2017 outage a tube sample with multiple pad welds removed from tube no. 20 from EL 72'-8" to 70'-8" was sent to a laboratory for metallurgical analyses. The laboratory found significant internal corrosion on the furnace side of the sample and identified the corrosion mechanism as "onload corrosion". A significant amount of copper was found in the internal deposits. For more details reference the attached [metallurgical laboratory report](#).

Any corrodents in the boiler water would typically concentrate in the high heat flux zone of the furnace. The high heat flux zone inside the furnace is typically from the top burner elevation and up approximately 15'. At Aguirre the upper burner elevation is at 78'-7¾". In recent years GE suspects that the heat absorption from the waterwalls has increased for the following reasons.

1. The furnace waterwalls operate cleaner due to the lower sulfur fuel oil burned in the furnace. Lower sulfur fuel oils typically have less ash and asphaltenes than high sulfur fuel oils. Soot and ash accumulation on the waterwalls behave as insulators. The boiler was originally designed to fire No. 6 fuel oil with four percent sulfur. In recent years the boiler has been firing No. 6 fuel oil with less than 0.5 percent sulfur.
2. Baseline tests in 2012 for the gas conversion project indicate that the unit heat rate was 12 to 13 percent higher than predicted performance. Approximately one percent of the increase in heat rate was due to lower boiler efficiency and most of the boiler efficiency loss was from the air heaters. For more details reference the table below and the attached [report for the gas conversion study](#).



Description	Boiler Predicted Performance		Steam Turbine Predicted Performance		2012 Test at 450 MW
	At MCR Load	At Peak Load	Original at 450 MW	Post Retrofit at 460 MW	
Main Steam Flow (lb/hr)	3,170,000	3,270,000	3,048,380	3,047,996	3,438,620
Heat Input (MMBtu/hr)	4,178	4,306			4,700
Boiler Efficiency (%)	89.57	89.52			88.63

MCR Load = Maximum Continuous Rated Load

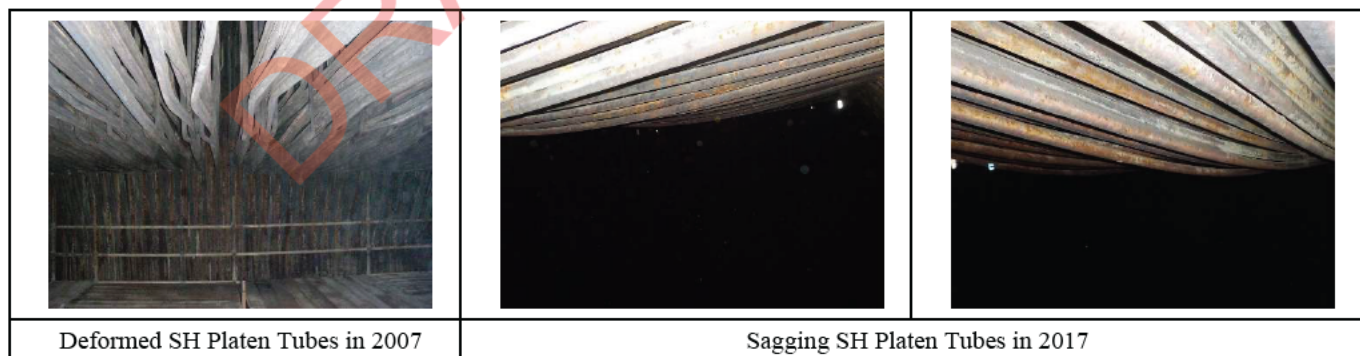
Peak Load is typically limited to 4 hours of operation within a 24-hour period to protect the waterwalls from overheating.

To mitigate the internal corrosion rate of the waterwall tubes in the high heat flux zone of the furnace PREPA should consider taking the following actions.

1. Reduce the amount of corrodents and copper entering the boiler water system by improving the monitoring and the control of feedwater and feedwater treatment
2. Reduce the heat absorption by the furnace waterwalls by using more gas recirculation and/or improving the unit heat rate.
3. Upgrade the tube material for the waterwalls per the recommendations in [ABB C-E Services' letter to PREPA on 31 Aug 1995](#), which is attached for your reference.

Platen Superheater Assemblies

Aguirre reported that the platen superheater has suffered several tube failures in recent years and that sagging assemblies are interfering with sootblower operation. Deformation and sagging of the platen superheater assemblies has been documented in prior outages. Sagging tubes cannot drain properly. Condensate that accumulates in non-drainable tubes during outages will cause internal corrosion, which may lead to tube failures. For more details reference the photos below.



The platen superheater assembly tubes were upgraded in 1993 from SA-209-T1 to SA-213-T22 material. Due to the difficulty and the time required to repair the platen superheater tubes during forced outages the plant would like to replace the platen superheater assemblies as soon as possible. Ordering replacement in kind assemblies would require several months lead time to arrive on site. The Aguirre stock yards have two full sets of platen superheater assemblies (each set consists for 56 assemblies) that were intended for the gas conversion project.



However, the termination points for the new platen superheater assemblies are designed to terminate at the hanger tubes for the new intermediate superheater assemblies and at the terminal tubes for the new superheater front horizontal inlet-outlet header (Header SH-5X). To weld the new platen superheater assemblies to the existing hanger tubes and superheater front horizontal inlet-outlet header terminal tubes GE recommends using safe ended spool pieces between the new assemblies and the existing tube materials. For a summary of the terminal points requiring safe ended spool pieces reference the tables below.

Hanger Tube Specifications at Existing Intermediate Superheater Assemblies	Hanger Tube Specifications at New Platen Superheater Assemblies	Quantity of Tube Circuits
1 $\frac{5}{8}$ " OD x 0.180" MWT, SA-213-T22	1 $\frac{5}{8}$ " OD x 0.180" MWT, SA-213-TP347H	448

Terminal Tubes at Existing Superheater Front Horizontal Inlet-Outlet Header (SH-5)	Assembly Tube Specifications at New Platen Superheater Assemblies	Quantity of Tube Circuits
1 $\frac{5}{8}$ " OD x 0.180" MWT, SA-210-A1	1 $\frac{5}{8}$ " OD x 0.180" MWT, SA-213-TP347H	448

If a contractor installs the new platen superheater assemblies then the authorized inspector would require the mill test reports for these tube assemblies. The authorized inspector would want to cross reference the heat treatment no. on the mill test reports with the heat treatment no. on the tube assemblies.

Excessive O₂ in the Air Heater Gas Outlet Ducts

During the visit at Aguirre on 01 Oct the O₂ in Unit 1 air heater gas outlet ducts measured 10.2% and 6.6% in ducts 1-1 and 1-2, respectively, while the unit was operating at 300 MW. Assuming that the O₂ indications in the flue gas at the inlet and the outlet of the air heaters are representative then the leakage across the air heaters would be 65% and 34% for air heaters 1-1 and 1-2, respectively. The original air heaters were designed to 5.5% leakage.

The uncorrected flue gas temperature (temperature of flue gas if there was no leakage) would be 425°F and 362°F from air heaters 1-1 and 1-2, respectively. The predicted uncorrected flue gas temperature at the air heater outlet at 300 MW from the original air heaters was approximately 295°F. The predicted uncorrected flue gas temperature at the air heater outlet at 300 MW after the 3-layer to 2-layer basket retrofit is 250°F. As a rule of thumb, every 10°F increase in air heater flue gas outlet temperature reduces the boiler efficiency 0.25%. If the flue gas O₂ and temperature indications are representative and accurate then the boiler efficiency is approximately 2.5% less than the original predicted performance and 3.6% less than the predicted performance after the air heater upgrades. PREPA should consider investing in a thorough condition assessment and overhaul of the air heaters. The assessment should include the condition of the flue ducts and the rotor housing and the connecting plates of the air heaters as well as the baskets, the seals, the sector plates, the axial seal plates, and the center sections. For more details reference the following documents.

- [Aguirre Unit 1 Air Heater Operating Data on 01 Oct 2021](#)
- [Aguirre Unit 1 Air Heater Performance Evaluation on 01 Oct 2021](#)
- [Aguirre Units 1 and 2 Air Heater Predicted Performance Data and Curves](#)
- [Aguirre Unit 1 Air Preheater Technical Services Report from 01 Nov 2004](#)



Sagging Economizer Assemblies

Near the left sidewall of the rear convection pass several of the economizer assemblies are sagging because the panto strap supports and tie lugs were cut to repair tubes that had failed. During the 2011 and 2013 condition assessments the first five panto strap (counting from the left sidewall) below the front economizer intermediate header (EH-2A) were not providing support for the economizer assemblies and most of the assemblies at this location are out of alignment. For more details reference the reports for the condition assessments performed in [Nov 2011](#) and [Jul 2013](#).

A wire cable was installed several years ago to provide some support for the sagging assemblies. However, plant personnel report that this wire cable has failed. Some of the repaired tubes are not straight. Recommissioning the panto hanger assemblies, tie lugs, and puff ties would require custom modifications to the hangers, straps, and ties. For material specifications reference the attached drawings and tables below.

Per Combustion Engineering Pressure Part Arrangement Drawing E-651-643			
Description	Material	Mark No.	Qty. per Boiler
Economizer Assemblies	1.75" OD economizer elements	EA-1	1
Economizer Assemblies	1.75" OD economizer elements	EA-2	1
Economizer Assemblies	1.75" OD economizer elements	EA-3	42
Economizer Assemblies	1.75" OD economizer elements	EA-4	6
Economizer Assemblies	1.75" OD economizer elements	EA-5	23
Economizer Assemblies	1.75" OD economizer elements	EA-6	2
Front Economizer Support Straps	2½" x ¼" x 25¾" plate, SA-387-B	CL-2	150
Rear Economizer Support Straps	2½" x ¼" x 29½" plate, SA-387-B	CL-1	150
Shoulder Bolts	¾" Ø, A-29	C-1	300
Nuts	¾" Ø SA 194 Grade 2	C-2	300

Per Combustion Engineering Spiral Fin Economizer Elements Drawing E-652-448			
Description	Material	Mark No.	Qty. per Boiler
Spiral Fin Economizer Tubes	1.75" OD x 0.200" MWT, SA-210-A1, 3 fins/inch x ¾" high	E-1	264
Spiral Fin Economizer Tubes	1.75" OD x 0.200" MWT, SA-210-A1, 3 fins/inch x ¾" high	E-2	32
Spiral Fin Economizer Tubes	1.75" OD x 0.200" MWT, SA-210-A1, 3 fins/inch x ¾" high	E-3	2
Spiral Fin Economizer Tubes	1.75" OD x 0.200" MWT, SA-210-A1, 3 fins/inch x ¾" high	E-4	2
Front Panto Hanger Assemblies	¼" x 1½" bent plates and ⅜" x 3¾" x 54¾" plates, SA-387-B	Panto #1	75
Rear Panto Hanger Assemblies	¼" x 1½" bent plates and ⅜" x 3¾" x 59¼" plates, SA-387-B	Panto #2	75
Tie Lugs	¼" x 3" x 3⅝" plates, SA-387-B	B-4	50
Puff Ties	SA-217-WC6	A-913-162	50
Bars	¼" x 1" x 18", SA-387-B	B-1	300
Bars	¼" x 1" x 36", SA-387-B	B-2	300



The puff ties are referenced as bumper lugs on pressure part arrangement drawing no. F-650-521. For more details reference the attached drawing and table below.

Per Alstom Pressure Part Arrangement Drawing F-650-521			
Description	Detail	Mark No.	Qty. per Boiler
Bumper Lugs at Front Economizer Tube Bends	“PE”	B-914-344-L	25
Bumper Lugs at Rear Economizer Tube Bends	“PF”	B-914-344-N	25

Another option would be to replace or partially replace the economizer assemblies. The economizer assemblies are original and have experienced multiple tube failures. During the condition assessments in Nov 2011 and Jul 2013 significant wall loss was identified on many tubes at localized areas of abrasion and erosion. For more details reference the condition assessment reports.

Gas Recirculation Fan Discharge Duct

Plant personnel report that the gas recirculation fan discharge duct between the shutoff dampers and the furnace rear wall is in poor condition. To order replacement casing for the gas recirculation duct between the shutoff dampers and the furnace from GE reference the tables below.

Per Combustion Engineering Gas Recirculation Duct to the Furnace Arrangement Drawings E-679-191 and D-679-517			
Description	Material	Mark No.	Qty. per Boiler
To Be Determined			



Per Combustion Engineering Gas Recirculation Duct to the Furnace Arrangement Drawings E-679-191 and D-679-517			
Description	Material	Mark No.	Qty. per Boiler
To Be Determined			




For setting arrangements reference the following drawings from Combustion Engineering, which are in the instruction manual and attached to this report for your convenience.

- [E-675-314](#) and [E-675-626](#)

In 2017 GE Boiler TFA Tim Heyne made some recommendations regarding the setting arrangements and the operation of the gas recirculation dampers. For more details reference the attached [Boiler TFA Report dated 07 Jul 2017](#). However, many of the problems associated with the gas recirculation duct could be mitigated if more gas recirculation is used at higher loads and/or the unit heat rate is improved.

Seal Boxes for Sootblowers, Thermoprobes, and Observation Doors at EL 139'-10"

The seal boxes for the sootblowers, the moprob s, and observation doors are not sealing the furnace. Radiant heat was visible through the seal boxes and ambient air is infiltrating the furnace. For more details reference the photos below.

		
Sootblower 1L sleeve assembly connection to the seal box has failed.	Radiant heat is visible through most of the sootblower seal boxes.	Most of the sootblower sleeve assemblies are missing the scrapper plates and retaining bars.



Several observation doors have cracked frames and/or broken handles.

To order replacement materials for the seal boxes and the doors reference the drawings and the table below.

Description	Drawing	Mark No.	Qty.
Sootblower Seal Box and Inner Sleeve	Combustion Engineering E-73-743	S-208	6
Sootblower Sleeve Assembly	Copes-Vulcan B-16657	141248 / A = 7 ³ / ₄ "	1 (minimum)
Sootblower Scraper Plates	Copes-Vulcan B-16657	68098	6 sets
Sootblower Scraper Plate Retaining Bars	Copes-Vulcan B-16657	82688	6 sets
Thermoprobe Seal Box	Combustion Engineering E-673-743	S-208B	2
Observation Doors, Frames, and Seal Boxes at EL 139'-10"	Combustion Engineering E-673-743	OD-5A	8

Access Door on Left Side of Boiler at EL 143'-4"

The access door on the left side of the boiler at EL 143'-3" is warped and is not sealing the furnace from ambient air. For more details reference the photos below.



The boiler access door at EL 143'-4" on the left side of the unit is warped and not sealing the furnace from ambient air.

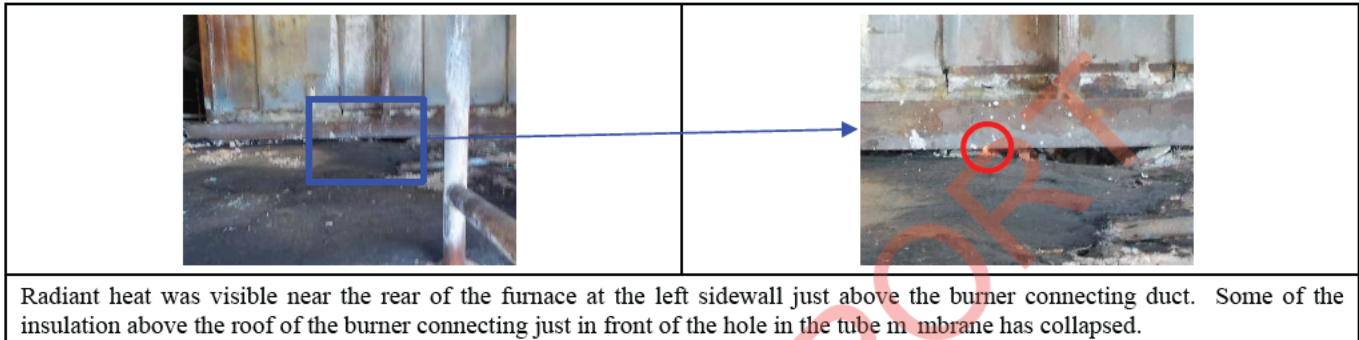
To order replacement materials for the access door, door frame, and seal box reference the drawing and the table below.

Description	Drawing	Mark No.	Qty.
Boiler Access Door, Frame, and Seal Box on Left Side of Boiler at EL 143'-4"	Combustion Engineering E-673-743	AD-2	1



Left Burner Connecting Duct Roof

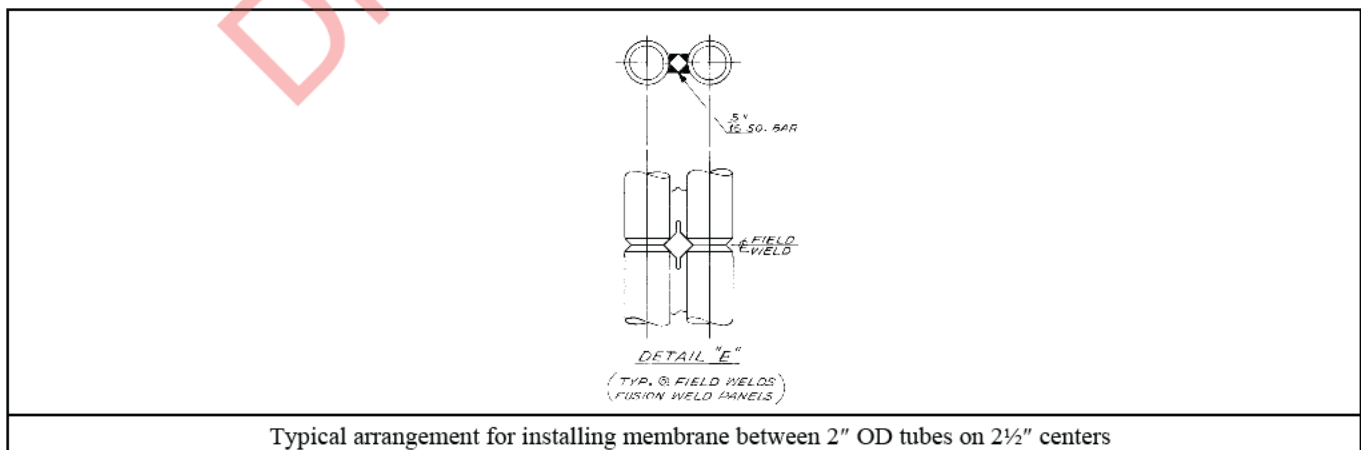
Near the rear of the furnace radiant heat was visible through the furnace left side wall at the roof of the left burner connecting duct. The insulation above the roof of the left burner connecting duct is collapsed. For more details reference the following photos.



Plant personnel should not be permitted to access the roof of the left burner connecting duct until it has been inspected from inside the duct. During the next scheduled outage scaffolding should be installed to access roof of the burner connecting duct to facilitate inspections of the roof casing, scallop bars, and tube membrane. For specifications of the roof casing, scallop bars, and tube membrane reference the table below.

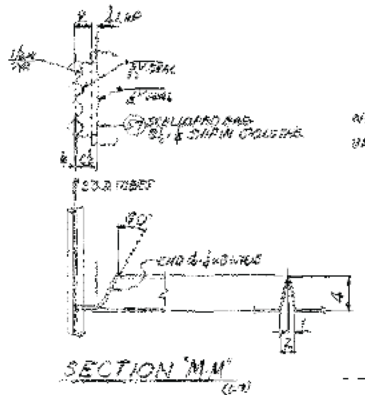
Description	Material	Estimated Quantity Needed
Waterwall Tubes	2.000" OD x 0 220" MWT, SA-210-A1	For information purposes only
Waterwall Tube Panels	2" OD tubes on 2½" centers	For information purposes only
Tube Membrane	⅝" square stock, A-36 or A-576	10 ft.
Scallop Bar	2½ x ¼" x 6', A-36 or A-576	30 ft.
Casing	¼" thick, hot rolled, weldable, carbon steel, copper bearing plate	128 sq. ft.

Install ⅝" square stock tube membrane as shown below.





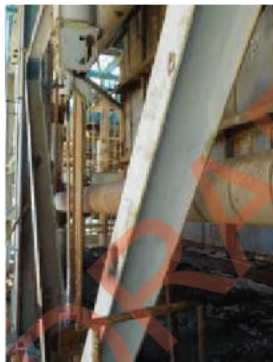
Install scallop bars between the waterwall tubes and the roof of the burner connecting duct as show below.



Typical arrangement for installing scallop bars between the furnace waterwalls and roof of the burner connecting duct

Right Burner Connecting Duct Constant Load Support Hanger

The link connecting the upper and the lower levers of the middle constant load support hanger supporting the right burner connecting duct has failed. For more details reference the photos below.



The link connecting the upper and the lower levers of the middle constant load support hanger supporting the right burner connecting duct has failed.

This link between the upper and the lower levers of this constant load support hanger has failed in the past. For more details reference the attached [Boiler TFA Report dated 12 Nov 2014](#). PREPA should consider replacing this constant load support hanger. To order a new constant load support hanger from GE reference the table below. The existing hanger rod and load yoke

Description	Drawing	Mark No.	Qty.
Right Burner Connecting Duct Constant Load Support Hanger	E-673-471	ABC-12	1
Right Burner Connecting Duct Hanger Rod Assembly	E-673-471	ABC-8	1



Superheater Front Horizontal Upper Outlet Header (SH-8)

In May 2011, the superheater front horizontal upper outlet header (SH-8) failed between terminal tube nos. 15B and 18B at the longitudinal seam weld (LS-1). The seam weld was weld repaired and the header was returned to service. Non-destructive examinations in Nov 2011, 2013, and 2014 identified creep damage in the same seam weld. Calculations indicate that several components of this header have exceeded the minimum and the average creep life. Alstom Power Inc. recommended replacing this header at the earliest opportunity. Alstom also recommended examining the seam weld annually if the decision was made to return the header to service. For more details reference the attached [report for the 2014 condition assessment](#).

Superheater Front Horizontal Upper Spaced Assemblies

Unit 1 superheater front horizontal upper spaced assemblies are original equipment. The support lugs and ties in the assemblies are very corroded and have been failing for more than 10 ye rs. Every outage maintenance personnel lift fallen tube assemblies back to their original position and install new lugs to support them. For more details reference the photos below and the [report for the 2014 condition assessment](#).

		
Fallen SH Front Horizontal Upper Spaced Assembly Tubes in 2007	Fallen SH Front Horizontal Upper Spaced Assembly Tubes in 2014	Fallen SH Front Horizontal Upper Spaced Assembly Tubes in 2017

Aguirre had plans to ov rha l Unit 1 superheater front horizontal upper spaced assemblies during the gas conversion project orig nally, which was originally scheduled to occur in 2014 or 2015. For more details reference the following drawing and table.

- [SH Front Horizontal Upper Assemblies_Suggested Spare Parts_Drawing.jpg](#)
- [Suggested Spa e Parts for SH Front Horizontal Upper Assemblies.pdf](#)

The gas conversion project was canceled so the overhaul of the upper spaced assemblies never occurred. Overhauling the superheater front horizontal upper spaced assemblies would only be economical if the assemblies above or below the upper spaced assemblies were being replaced. Condition assessments and the tube failure history of the superheater front horizontal upper spaced assemblies in 2014 indicated that the tubes had significant life remaining in them. Tubes that fall from the upper assemblies into the intermediate and platen assemblies may overheat and fail due to the higher gas temperatures. GE predicts that the superheater front horizontal upper spaced assemblies will become less reliable and more susceptible to tube failures until the assemblies are overhauled or replaced.

ESTIMADO DE COSTOS MEJORAS CALDERA UNIDAD 1

REGLON	DESCRIPCION	UNIDAD	CANTIDAD	COSTO UNITARIO	COSTO TOTAL
	AREAS				
1.000	PARED FRONTAL				
1.010	Panel de tubos (material)	LS	1	\$ 178,500.00	\$ 178,500.00
1.020	Instalacion de pared de tubos	LS	1	\$ 1,030,000.00	\$ 1,030,000.00
2.000	DUCTOS DE GASES Y AIRE				
2.010	Reconstruccion de ducto GRF	LS	1	\$ 639,000.00	\$ 639,000.00
3.000	AIR HEATERS (Mano de obra, herramientas y equipos)			\$ -	\$ -
3.010	Reemplazo de axial plates	LS	1	\$ 180,000.00	\$ 180,000.00
3.020	Reemplazo de sections plates	LS	1	\$ 180,000.00	\$ 180,000.00
3.030	Reemplazo de sellos	LS	1	\$ 180,000.00	\$ 180,000.00
3.040	Materiales para trabajos en los air heaters	LS	1	\$ 250,000.00	\$ 250,000.00
4.000	 AISLACION			\$ -	\$ -
4.010	Reemplazo de aislacion	LS	1	\$ 1,044,000.00	\$ 1,044,000.00
5.000	LAVADO QUIMICO			\$ -	\$ -
5.010	Aplicacion de lavado quimico (EDTA)	LS	1	\$ 315,000.00	\$ 315,000.00
6.000	LAVADO & LIMPIEZA DE CALDERA			\$ -	\$ -
6.010	Lavado alta presion y limpieza	LS	1	\$ 150,000.00	\$ 150,000.00
					\$ -
7.000	ANDAMIOS			\$ -	\$ -
7.010	Alquiler de andamios	LS	1	\$ 100,000.00	\$ 100,000.00
					\$ -
8.000	TECHNICAL ADVISOR			\$ -	\$ -

8.010	Technical advisor assistant	LS	1	\$ 150,000.00	\$ 150,000.00
					\$ -
9.000	ALLOWANCE				
9.010	ALLOWANCE PARA DIFERENT SITE CONDITIONS	LS	1	\$ 250,000.00	\$ 250,000.00
	TOTAL COSTOS DE CONSTRUCCION				\$ 4,646,500.00
10.000	CONDICIONES GENERALES				
10.010	MOVILIZACION	LS	1	\$ 50,000.00	\$ 50,000.00
10.020	DESMOVILIZACION	LS	1	\$ 50,000.00	\$ 50,000.00
10.030	OVERHEAD & PROFIT	LS	1	\$ 929,300.00	\$ 929,300.00
10.040	INSURANCES	LS	1	\$ 278,790.00	\$ 278,790.00
10.050	PATENTS & TAXES	LS	1	\$ 29,272.95	\$ 29,272.95
	TOTAL GENERAL CONDITIONS COST				\$ 1,337,362.95
	TOTAL PROJECT COST				\$ 5,983,862.95



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

D6-291981

30 de marzo de 2020

Neftalí González Cruz, Jefe
División de Suministros


Alexis Cruz Figueroa, Jefe
Complejo de Aguirre

ORDEN DE COMPRA DE PANELES DE TUBOS DE CALDERA UNIDAD 1, CENTRAL
GENERATRIZ AGUIRRE (RFQ 49399 – Req. 176867)

Solicitamos se adjudique la orden de compra de asunto para la adquisición de paneles de tubos de caldera para la unidad 1 de la Central Aguirre.

La caldera de la unidad 1 ha experimentado en el pasado varias roturas, específicamente en la pared frontal de tubos del horno a nivel de los quemadores, ocasionando como consecuencia salidas forzadas. En adición, estudios realizados por la sección de vida útil han confirmado que los espesores de los tubos de la pared frontal han alcanzado el mínimo de espesor permitido por códigos MWT.

Incluimos la Certificación de Fondos para el año fiscal 2019-20 por \$178,894.00, adjudicada a Engineering Services International.

De necesitar información adicional, puede comunicarse por el 3903 o 3906.

Coordinado



Daniel Hernández Morales
Director de Generación



CERTIFICACIÓN DE FONDOS DE
CONTRATOS POR SERVICIOS PROFESIONALES

Se incluye copia del Contrato descrito a continuación:

Cantidad: \$178,894.00 Fecha de Comienzo: Adjudicación Fecha de Terminación: 06/30/2020

Certificamos que no se proyectó sobregiro presupuestario y se posee capacidad financiera para cubrir esta transacción. Este contrato está en cumplimiento con el Inciso G de la Carta Circular de la Oficina de Gerencia y Presupuesto Núm. 117-14 del 1 de julio de 2014.

1. Requerido por:

Firma:

Nombre: Alexis Cruz Figueroa

Título: Jefe, Complejo Generatriz Aquirre

Fecha: 20 de marzo de 2020

2. Aprobado por el Director Correspondiente:

Firma:

Nombre: Daniel Hernández Morales

Título: Director de Generación

Fecha: 31/01/2020

3. Recomendado por el Departamento de Presupuesto:

Firma: _____

Nombre: Lizzandra Matías Varela

Título: Contralora, Contabilidad y Presupuesto

Fecha:

4. Aprobado por el Director de Finanzas:

Firma: _____

Nombre: Nelson Morales Rivera

Fecha: _____

Todo contrato por servicios profesionales con una cuantía sobre cien mil dólares (\$100,000), debe presentarse para la aprobación de la Junta de Gobierno, según la Norma Sobre Niveles de Aprobación de Documentos de la Autoridad de Energía Eléctrica de Puerto Rico.

Aprobado por la Junta de Gobierno:

Firma: _____

Nombre: _____

Fecha:

Yadira L Lugo Cordero

From: Benny Albarrán Vázquez
Sent: Thursday, April 2, 2020 8:45 AM
To: Yadira L Lugo Cordero
Cc: Alexis Cruz; Brunilda Maurás Rivera
Subject: FW: Certificación de Fondos tubos caldera U1 Aguirre DG291981
Attachments: 202004011343.pdf

Buenos días Yadira,

Para tu conocimiento y acción correspondiente.

Saludos,

Benny Albarrán Vázquez
Jefe Administrador Central Aguirre
Tel: (787) 521-3906
Cel: (787) 467-2156
Email: benny.albarran@prepa.com

From: Gerardo Antonio Sanchez Pierluisi
Sent: Thursday, April 2, 2020 8:35 AM
To: Benny Albarrán Vázquez <BENNY.ALBARRAN@prepa.com>
Subject: FW: Certificación de Fondos tubos caldera U1 Aguirre DG291981

Aprobación Director Finanzas.

From: Nelson Morales Rivera
Sent: Thursday, April 2, 2020 2:38 AM
To: Gerardo Antonio Sanchez Pierluisi <GERARDO.SANCHEZ@prepa.com>; Lizzandra Matias Varela <LIZZANDRA.MATIAS@prepa.com>
Cc: Hellenia Castro Alvarez <HELENIA.CASTRO@prepa.com>; NORMA I. RIVERA NEGRON <NORMAI.RIVERA@prepa.com>
Subject: FW: Certificación de Fondos tubos caldera U1 Aguirre DG291981

Aprobado por el Director de Finanzas

From: Lizzandra Matias Varela <LIZZANDRA.MATIAS@prepa.com>
Sent: Wednesday, April 1, 2020 9:12 PM
To: Nelson Morales Rivera <Nelson.Morales@prepa.com>; NORMA I. RIVERA NEGRON <NORMAI.RIVERA@prepa.com>
Cc: Gerardo Antonio Sanchez Pierluisi <GERARDO.SANCHEZ@prepa.com>; Hellenia Castro Alvarez <HELENIA.CASTRO@prepa.com>
Subject: FW: Certificación de Fondos tubos caldera U1 Aguirre DG291981

Saludos

Aprobado por la Oficina de la Contralora

Gracias



Lizzandra Matías Varela

Contralora

Contabilidad y Presupuesto

Directorado de Finanzas

Edificio NEOS, Oficina 513

Santurce, Puerto Rico

Tel: (787) 521-4515

e-mail: lizzandra.matias@prepa.com

web: www.aeepr.com / www.prepa.com



From: Gerardo Antonio Sanchez Pierluisi

Sent: Wednesday, April 1, 2020 1:13 PM

To: Lizzandra Matias Varela <LIZZANDRA.MATIAS@prepa.com>

Cc: Helenia Castro Alvarez <HELENIA.CASTRO@prepa.com>

Subject: Certificacion de Fondos tubos caldera U1 Aguirre DG291981

Saludos.

Gerardo A. Sánchez Pierluisi

Supervisor Principal

Ofic. Mejoras Capitaes y Presupuesto

Ext. 5548



Purchase Order : 00086335
Revision :
Release :
Printed : 07/14/2020
Page : 1

KEILA HERNÁNDEZ
ENGINEERING SERVICES
DISTRICT VIEW PLAZA
644 AVE FERNANDEZ JUNCOS SUITE
SAN JUAN PR 00907-3181

Payment Terms	%	Days	Net	30	Days	Transit Type
ERS N	Reference Contract					Carrier Name
	FOB	DELIVERED	DUTY PA			FOB Point
						CENTRAL AGUIRRE

COMPRADORA: YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
EMAIL: YADIRA.LUGO@AEEP.RC



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335**Revision :****Release :****Printed :** 07/14/2020**Page :** 2**INSTRUCCIONES DE ENTREGA****HORARIO DE ENTREGA****LUNES A VIERNES DE**

7:30A A 11:00A Y DE 12:30P A 3:30P

Fac	Standard Name	Rev	S/P	Text	Header Terms and Conditions	-	Text at End
	PH000001	004	S	Y	EQUAL OPPORTUNITY		
	PH000002	005	S	Y	COMPLIANCE WITH LAWS.		
	PH000004	005	S	Y	INFRINGEMENT		
	PH000006	016	S	Y	CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE		
	PH000007	004	S	Y	APPLICABLE LAW		
	PH000010	013	S	Y	ASSIGNMENT		
	PH000011	006	S	Y	CHANGES TO ORDER.		
	PH000031	009	S	Y	CONFIDENTIALITY		
	PH000033	009	S	Y	FORCE MAJEURE		
	PH000037	008	S	Y	TERMINOS PARA RETENCION EN EL ORIGEN		
	PH000038	005	S	Y	NONWAIVER.		
	PH000039	008	S	Y	PRICE & PAYMENT		
	PH000040	007	S	Y	RELATIONSHIP OF THE PARTIES.		
	PH000057	005	S	Y	TERMINATION		
	PH000079	001	S	Y	QUALITY STANDARDS AND WARRANTIES 1		

Line	Quantity	UP	Item Description	Unit Price	Extension
0001	1	ST	Catalog ID: 0000078320 0	\$178,894.000000	\$178,894.00

NON-TAX**Schedule:** **Quantity** 1 **Delivery Date** 12/15/2020

Description: TUBE, WATERWALL, 78320, WATERWALL
PANELS, 30 TUBES WIDE X 43' 1/2" LONG,
SET OF 6 PANNELS.
WATERWALL PANEL SET
30 TUBES WIDE X 43' 1/2" LONG,
QTY. (6) FLAT STRAIGHT WATERWALL PANELS
30 TUBES WIDE X 43'-6" LONG
2.0"OD X .220"MWT SA-210A1 ON 2.5"
CENTERS
ALL ENDS WILL BE PREPPED
¿" WIDTH EDGE BAR, ¿" BARE BACK, 3"



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335**Revision :****Release :****Printed : 07/14/2020****Page : 3**

SPLIT BACK
STKNO: 78320
DIAMETER:
MATERIAL:
LENGTH:
TYPE:

Purchase Order Total Amount**TOTAL THIS PO: \$178,894.00****AUTHORIZED SIGNATURE**

Yadira Lugo Cordero
YADIRA LUGO CORDERO
Supervisora de Compras

07.14.2020

Fac	Standard Name	Rev	Terms and Conditions
PH000001		004	EQUAL OPPORTUNITY EQUAL OPPORTUNITY.

By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer against any claims arising from such unlawful discrimination by Seller.

PH000002	005 COMPLIANCE WITH LAWS. COMPLIANCE WITH LAWS.
----------	--

Seller warrants that the Materials, Services or Work Product shall be performed, produced, priced, sold and delivered in strict compliance with all applicable local, domestic and international laws, rules and regulations.

PH000004	005 INFRINGEMENT INFRINGEMENT.
----------	-----------------------------------

Seller shall hold harmless, defend and indemnify Buyer, its affiliates and its and their respective employees, officers and directors from and against all claims, demands, losses or damages, costs or expenses (including attorneys' fees and other expenses incident thereto) arising out of any infringement, or any alleged



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335

Revision :

Release :

Printed : 07/14/2020

Page : 4

infringement, of any intellectual property rights, including rights arising under any patent, copyright, trademark, license and trade secret, in connection with any Material, Work Products, or Services, except to the extent any infringement resulted from designs provided by Buyer to Seller. Without limiting the foregoing, the Seller shall, at its own expense (i) procure for the Buyer an irrevocable royalty-free license or right to continue using such Materials, Work Product or Services (ii) with Buyer's prior written approval, replace the infringing Material, Work Product, or Services with substantially equal but non-infringing Materials, Work Product or Services or (iii) with Buyer's prior written authorization, modify the infringing Materials, Work Product or Services so it becomes non-infringing; provided that no such replacement or modification shall in any way amend or relieve Seller of its warranties and guarantees set forth in this Order.

PH000006 016 CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE
CLÁUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDERALES

EN CUMPLIMIENTO CON LA SECCIÓN 2906 DEL ARTÍCULO 2, DEL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO, LA AUTORIDAD DE ENERGÍA ELÉCTRICA ESTÁ EXENTA DEL PAGO DEL ARBITRIO GENERAL DEL 6.6%. ADEMÁS, A PARTIR DEL 15 DE NOVIEMBRE DE 2006, ESTÁ EXENTA DEL PAGO DEL IMPUESTO A LA VENTA Y USOS (IVU) ESTATAL Y MUNICIPAL POR VIRTUD DE LA SECCIÓN 2508 DE LA LEY 117 DEL 4 DE JULIO DE 2006, CONOCIDA COMO LA LEY DE JUSTICIA CONTRIBUTIVA.

* LAS FACTURAS TIENEN QUE DETALLAR EL CONCEPTO DE LA COMPRA O SERVICIO.

LOCAL AND FEDERAL TAXES CLAUSE

IN COMPLIANCE WITH PUERTO RICO'S INTERNAL REVENUE SERVICE CODE, SECTION 2906, ARTICLE 2, PUERTO RICO ELECTRIC POWER AUTHORITY IS EXEMPT OF 6.6% TAX PAYMENT, ALSO, STARTING ON NOVEMBER 15TH, 2006; AND IN ACCORDANCE TO LAW 117 OF 4TH OF JULY OF 2006, KNOWN AS "LEY DE JUSTICIA CONTRIBUTIVA"; PREPA IS EXEMPT OF "IVU (IMPUESTO A LA VENTA Y USOS ESTATAL Y MUNICIPAL)" TAX PAYMENT.

INVOICES SHALL INCLUDE ALL DETAILS RELATED TO GOOD OR SERVICE PURCHASED.



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335**Revision :****Release :****Printed : 07/14/2020****Page : 5**

PH000007 004 APPLICABLE LAW
APPLICABLE LAW.

This Order will be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico without regard to its principles regarding conflicts of laws. Exclusive jurisdiction and venue for any action arising hereunder will be in Puerto Rico, whether in Federal or Commonwealth Court.

PH000010 013 ASSIGNMENT
ASSIGNMENT.

This Order may not be assigned, in whole or in part, without Buyer's prior written consent.

PH000011 006 CHANGES TO ORDER.
CHANGES TO ORDER.

No modifications, changes or substitutions of Materials, Services or Work Product or extra charges of any kind or change in or cancellation of or waiver of or exception to any of the terms or conditions of this Order will be recognized unless authorized by Buyer in writing. Buyer may direct, in writing, changes, including additions to or deletions from the quantities of Materials, Work Product or Services originally ordered, or in the specifications or drawings. Unless otherwise agreed to by the parties, if any such change causes an increase or decrease in the cost of, or the time required for performance hereunder, an equitable adjustment shall be made in the price and/or delivery schedule. Any claims for adjustment shall be asserted by Seller no later than thirty (30) days from the date of Seller's receipt of notice of such change. Nothing contained herein shall excuse Seller from proceeding with a change directed by Buyer prior to negotiation of any adjustment. Notwithstanding the foregoing, mutually agreeable adjustments for any changes under this Order may be made by a written Order revision from one party which is confirmed in writing by the other party.

PH000031 009 CONFIDENTIALITY
CONFIDENTIALITY.



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335**Revision :****Release :****Printed : 07/14/2020****Page : 6**

This Order and all plans, drawings, designs and specifications which may be supplied by Buyer to Seller shall remain the property of Buyer and any information derived there from or otherwise communicated to the Seller in connection with this Order shall be regarded by Seller as strictly confidential and shall not, without the prior written consent of Buyer, be disclosed to any third party or made use of by Seller.

PH000033 009 FORCE MAJEURE
FORCE MAJEURE.

Neither party shall be in breach of the Order to the extent that any delay or default in performance is due to Force Majeure. The term "Force Majeure" will mean any cause which is not within the control of the party claiming force majeure and which, by the exercise of due diligence, such party is unable to prevent or overcome, including but not limited to, flood, fire, tornado, governmental order, insurrections, riots and wars. Within seven (7) days of the commencement of an event of Force Majeure, the party affected thereby will provide the other party with written notice of the event. Any event of Force Majeure shall not affect Buyer's right of termination as set forth in TERMINATION Section hereof.

PH000037 008 TERMINOS PARA RETENCION EN EL ORIGEN
INFORMACION SOBRE RETENCIÓN EN EL ORIGEN

LA AUTORIDAD RETENDRÁ EL EQUIVALENTE AL 10% DE TODO PAGO POR SERVICIOS PRESTADOS QUE SE EFECTÚE BAJO ESTE CONTRATO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIÓN 1143, SEGÚN ENMENDADA. NO OBSTANTE, SE DISPONE QUE LA RETENCIÓN A EFECTUARSE POR LA AUTORIDAD BAJO LAS DISPOSICIONES DE LA PRESENTE CLÁUSULA PODRÍA AUMENTAR A:

20% EN CASO DE QUE EL PROFESIONAL FUERA UN INDIVIDUO NO RESIDENTE CIUDADANO DE LOS ESTADOS UNIDOS DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994 , SECCION 1147; O UN 29% EN CASO DE QUE EL POFESIONAL FUERA UN INDIVIDUO NO RESIDENTE Y NO CIUDADANO DE LOS ESTADOS UNIDOS, O UNA CORPORACIÓN O SOCIEDAD EXTRANJERA NO DEDICADA A INDUSTRIA O NEGOCIO EN PUERTO RICO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIONES 1147 Y 1150.



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335**Revision :****Release :****Printed : 07/14/2020****Page : 7**

SI EL DEPARTAMENTO DE HACIENDA HA EMITIDO UN CERTIFICADO DE RELEVO A FAVOR DEL PROFESIONAL, ES RESPONSABILIDAD DE ÉSTE, SOMETER COPIA DEL RELEVO A LA AUTORIDAD PARA CADA AÑO NATURAL, DE LO CONTRARIO, LOS PAGOS SEGUIRÁN SUJETOS A LA RETENCIÓN EN EL ORIGEN. TODA FACTURA DEBE DETALLARSE POR CONCEPTOS (SERVICIOS, MATERIALES, EQUIPO, ETC.) PARA IDENTIFICAR LAS PARTIDAS SUJETAS A RETENCIÓN Y EVITAR DESCUENTOS INDEBIDOS.

LA AEE PUEDE TERMINAR ESTE CONTRATO UNILATERALMENTE, EN CASO DE QUE EL CONTRATISTA NO OBSERVE CUALQUIERA DE LAS CLÁUSULAS ANTERIORES, POR CUALQUIER FALLA EN EL CUMPLIMIENTO CON CUALQUIERA DE LAS DISPOSICIONES DEL CONTRATO, INCLUYENDO ESTE ADDENDUM, MEDIANTE LA PREVIA NOTIFICACIÓN POR ESCRITO AL CONTRATISTA DENTRO DEL TÉRMINO DE TREINTA DÍAS ANTES DE COBRAR EFECTIVIDAD LA TERMINACIÓN.

PH000038 005 NONWAIVER.
NONWAIVER.

No waiver by any party of any condition, or of any breach of any provision contained in this Order, in any one or more instances, will be deemed to be or construed as a further or continuing waiver of any such condition or breach or waiver of any other condition or of any breach of any other provision.

PH000039 008 PRICE & PAYMENT
PRICE & PAYMENT.

The prices specified in the Purchase Order shall include all charges and expenses in connection with the packing and shipping of the Materials to Buyer. No additional charges of any kind will be allowed unless specifically agreed to in writing in advance. Payment will be made as set forth in this Order; however payment may be withheld or portions thereof may be deducted or setoffs may be made against Seller if Seller does not perform in accordance with this Order. The time for payment of invoices and acceptance of any applicable discounts shall be based on the date when the invoice is received and stamped by PREPA's Accounts Payable, and all pertinent information is correct on the invoice.

All invoices are to be sent to the following address: Puerto Rico Electric Power Authority, Treasury Division, PO Box 70253, San Juan,



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335**Revision :****Release :****Printed :** 07/14/2020**Page :** 8

PR 00936.

PH000040 007 RELATIONSHIP OF THE PARTIES.
RELATIONSHIP OF THE PARTIES.

Seller is an independent contractor. This Purchase Order does not create a partnership or joint venture between Seller and Buyer. Seller is not an agent of Buyer, and Seller has no authority to act on behalf of Buyer. Except as otherwise provided in this Purchase Order, Seller will provide any and all labor, supervision, materials, and equipment necessary to provide the Materials, Services or Work Product as set forth in this Order, and Seller will obtain any and all permits and authorizations required by applicable law to provide such Materials, Services or Work Product. Seller will control the means and manner of the providing of the Materials, Services or Work Product. Seller's personnel will not be considered employees of Buyer, and Buyer will not provide Seller's personnel with wages, salaries, or benefits.

PH000057 005 TERMINATION
TERMINATION.

Buyer may, at its option, cancel any unfulfilled Order, in which event Buyer's only obligation shall be to pay for Materials shipped or Work Product or Services performed prior to the receipt cancellation; provided, however, that if this Order covers Materials manufactured to Buyer's specifications, upon receipt of notice of cancellation, Seller shall stop all performance except as otherwise directed by Buyer, and if Seller is not in breach of this Order, Buyer shall pay Seller's actual, direct, unavoidable and reasonable costs resulting from such termination, not to exceed the total price of the Materials, Work Product or Services stated in this Order. Upon such payment, title to any Materials or Work Product, including uncompleted Materials or Work Product, shall pass to Buyer. In the event of default by Seller in the performance of any obligation hereunder, including time of delivery, or in the event it becomes apparent that delivery cannot be accomplished within the time specified, Buyer may, at its option, cancel this Order entirely, without penalty or liability (except for Materials received and accepted.) All provisions necessarily requiring survival beyond any termination of this Order, including, but not limited to, those



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00086335

Revision :

Release :

Printed : 07/14/2020

Page : 9

relating to audit, choice of law, confidentiality, indemnity, title and warranty shall survive any such termination.

PH000079 001 QUALITY STANDARDS AND WARRANTIES 1
QUALITY STANDARDS AND WARRANTIES.

Seller warrants (i) title to the Materials or Work Product, free and clear of all liens and encumbrances and (ii) that Materials, Work Product and Services will be in exact accordance with this Order, the specifications, drawings, samples or other descriptions furnished or adopted by Buyer and will be fit and sufficient for the purpose intended, merchantable, of good material, design and workmanship, free from defect and be new and of best quality, unless otherwise specified. Such warranty shall survive delivery and shall not be deemed waived either by reason of Buyer's acceptance of the Materials, Work Product or Services or by payment for them. The Materials, Work Product or Services shall be subject to Buyer's right of inspection and rejection at any reasonable time before or during the manufacturing process or provision of Service and within forty-five (45) days after delivery to destination or completion. Materials, Work Product or Services other than those specified shall not be submitted without Buyer's written authorization.

End of Purchase Order



24 de enero de 2020.

Yadira Lugo Cordero
Gerente de Compras
División de Suministros
Autoridad de Energía Eléctrica
San Juan, PR 00936-4267

Re: RFQ 49399 Compra paneles de tubos de caldera Unidad 1 Central Aguirre

Estimada señora Lugo:

Para la subasta en referencia extendemos la validez de la oferta sometida en el 2017. Según solicitado la extensión es por un término de 60 días adicionales.

Incluimos copia de la propuesta para su información.

Cordialmente,

Keila Hernández
Representante de Ventas
esi-energy, inc.

encl



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:
PR ELECTRIC POWER AUTHORITY
PURCHASING DIVISION
PO BOX 364267
SAN JUAN PR 00936-4267

RFQ Number : 00049399
Issue Date : 03/29/2017
Due Date : 04/11/2017
Due Time : 02:00
Page : 1

Please Direct Inquiries to:
BRYAN ORTIZ-ALVAREZ
B-ORTIZ@AEEPR.COM
Title: SUP COMPRA PRINCIPAL
Phone: 787-521-2185
Fax : (787) 521-3340
***** DRAFT ONLY *****

Vendor:
BULLETIN BOARD
DIVISION DE SUMINISTROS
SAN JUAN PR 00936
Engineering Services International
644 Fernandez Juncos Suite 404
San Juan, PR 00907

Authorized Signature

Vendors Signature
 Keila Hernandez Velez Keila Hernandez, Sales Rep.

RFQ Type: STANDARD RFQ	Quote Duration	-	Days	Net	30 Days
Validity: 60 days	Payment Terms	%			
Validity Extension: 60 days 1/24/2020 <i>KHY</i>					

Instructions SUBASTA: RFQ-49399 REQ. 176867
APERTURA: 4/11/17 HORA: 2:00PM
LUGAR: SALON DE SUBASTAS, TERCER PISO,
EDIF. NEOS, SANTURCE, PR
ENTREGA: CENTRAL AGUIRRE
CONTACTO: MANUEL NAZARIO
TEL. 787-521-3862
PARA ESTA SUBASTA, SOLO SE ACEPTARAN
PROPUESTAS EN SOBRE SELLADO POR EL
CORREO DE SUMINISTROS.
***** NOTA *****
1) PARA ESTA SUBASTA NO SE SOLICITARA
LA FIANZA DE LICITACION.
2) AL LICITADOR AGRACIADO SE LE
REQUERIRA FIANZA DE EJECUCION 20% DEL
TOTAL DE SU OFERTA.
3) TODA PROPUESTA TIENE QUE VENIR



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:
PR ELECTRIC POWER AUTHORITY
PURCHASING DIVISION
PO BOX 364267
SAN JUAN PR 00936-4267

RFQ Number : 00049399
Issue Date : 03/29/2017
Due Date : 04/11/2017
Due Time : 02:00
Page : 1



Please Direct Inquiries to:
BRYAN ORTIZ-ALVAREZ
B-ORTIZ@AEEPR.COM
Title: SUP COMPRA PRINCIPAL
Phone: 787-521-2185
Fax : (787) 521-3340

Vendor:

BULLETIN BOARD
DIVISION DE SUMINISTROS
SAN JUAN PR 00936

Engineering Services International
644 Fernandez Juncos Suite 404
San Juan, PR 00907

***** DRAFT ONLY *****

Authorized Signature

Vendors Signature
 Keila Hernandez, Sales Rep.



RFQ Type: STANDARD RFQ

Quote Duration

-

Payment Terms

%

Days

Net

30 Days

Validity: 60 days

Instructions SUBASTA: RFQ-49399 REQ. 176867
APERTURA: 4/11/17 HORA: 2:00PM
LUGAR: SALON DE SUBASTAS, TERCER PISO,
EDIF. NEOS, SANTURCE, PR
ENTREGA: CENTRAL AGUIRRE
CONTACTO: MANUEL NAZARIO
TEL. 787-521-3862
PARA ESTA SUBASTA, SOLO SE ACEPTARAN
PROPUESTAS EN SOBRE SELLADO POR EL
CORREO DE SUMINISTROS.
***** NOTA *****
1) PARA ESTA SUBASTA NO SE SOLICITARA
LA FIANZA DE LICITACION.
2) AL LICITADOR AGRACIADO SE LE
REQUERIRA FIANZA DE EJECUCION 20% DEL
TOTAL DE SU OFERTA.
3) TODA PROPUESTA TIENE QUE VENIR



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:
PR ELECTRIC POWER AUTHORITY
PURCHASING DIVISION
PO BOX 364267
SAN JUAN PR 00936-4267

RFQ Number : 00049399
Issue Date : 03/29/2017
Due Date : 04/11/2017
Due Time : 02:00
Page : 2

ACOMPAÑADA DE LITERATURA DE LO COTIZADO
PARA EVALUACION TECNICA, PROPUESTAS QUE
NO CUMPLAN CON ESTE REQUISITO, SERAN
RECHAZADAS.

Fac	Standard Name	Rev	S/P	Text	Header Terms and Conditions - Text at End
	PH000001	004	S	Y	EQUAL OPPORTUNITY
	PH000005	024	S	Y	DOCUMENTOS Y REQUISITOS GENERALES PARA PUBLICACION
	PH000006	016	S	Y	CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE
	PH000032	009	S	Y	DELIVERY
	PH000036	012	S	Y	LIENS
	PH000037	007	S	Y	TERMINOS PARA RETENCION EN EL ORIGEN

Line	Quantity	UP	Item Description	Unit Price
------	----------	----	------------------	------------

1 ST Catalog ID : 0000078320 0

\$178,890.00/set

Need Date : 03/13/2017 Destination AGUIRRE

PR

Description: TUBE, WATERWALL, 78320, WATERWALL
PANELS, 30 TUBES WIDE X 43' 1/2" LONG,
SET OF 6 PANNELS.
WATERWALL PANEL SET
30 TUBES WIDE X 43' 1/2" LONG,
QTY. (6) FLAT STRAIGHT WATERWALL PANELS
30 TUBES WIDE X 43'-6" LONG
2.0"OD X .220"MWT SA-210A1 ON 2.5"
CENTERS
ALL ENDS WILL BE PREPPED
1/2" WIDTH EDGE BAR, 1/2" BARE BACK, 3"
SPLIT BACK
STKNO: 78320
DIAMETER:
MATERIAL:
LENGTH:
TYPE:



Lead Time Days
22 - 24 weeks

Method of Shipment
As required

FOB
Delivered

FOB Point
As per specified

Fac	Standard Name	Rev	Terms and Conditions
-----	---------------	-----	----------------------



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:
PR ELECTRIC POWER AUTHORITY
PURCHASING DIVISION
PO BOX 364267
SAN JUAN PR 00936-4267

RFQ Number : 00049399
Issue Date : 03/29/2017
Due Date : 04/11/2017
Due Time : 02:00
Page : 3

PH000001 004 EQUAL OPPORTUNITY
EQUAL OPPORTUNITY.

By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer against any claims arising from such unlawful discrimination by Seller.

PH000005 024 DOCUMENTOS Y REQUISITOS GENERALES PARA PUBLICACION
REQUISITOS Y DOCUMENTOS GENERALES:

1. TODO PROVEEDOR QUE INTERESE PARTICIPAR EN LOS PROCESOS DE COMPRAS EN LA AUTORIDAD DE ENERGÍA ELÉCTRICA, TIENE QUE PERTENECER AL REGISTRO DE PROVEEDORES DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA.
2. LOS LICITADORES TIENEN QUE INCLUIR CON SU COTIZACIÓN UNA DECLARACIÓN JURADA DE NO CONFLICTO DE INTERESES O COPIA CERTIFICADA DE LA DECLARACIÓN JURADA DE NO CONFLICTO DE INTERESES VIGENTE EN EL REGISTRO DE PROVEEDORES DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA.

1. BIDDERS WHO INTEND TO PARTICIPATE IN PREPA'S PURCHASING PROCESSES MUST BE REGISTERED IN THE PUERTO RICO ELECTRIC POWER AUTHORITY'S BIDDER'S REGISTRY.

2. BIDDERS SHALL INCLUDE PREPA'S SWORN STATEMENT OF "NON-CONFLICT OF INTERESTS" WITH PROPOSAL DOCUMENTS OR A CERTIFIED COPY OF THE CURRENT SWORN STATEMENT PREVIOUSLY SUBMITTED ON THE BIDDER'S REGISTRY OFFICE.

PH000006 016 CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE
CLÁUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDERALES

EN CUMPLIMIENTO CON LA SECCIÓN 2906 DEL ARTÍCULO 2, DEL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO, LA AUTORIDAD DE ENERGÍA ELÉCTRICA ESTÁ EXENTA DEL PAGO DEL ARBITRIO GENERAL DEL 6.6%. ADEMÁS, A PARTIR DEL 15 DE NOVIEMBRE DE 2006, ESTÁ EXENTA DEL PAGO DEL IMPUESTO A LA VENTA Y USOS (IVU) ESTATAL Y MUNICIPAL POR VIRTUD DE LA SECCIÓN 2508 DE LA LEY 117 DEL 4 DE JULIO DE 2006, CONOCIDA COMO LA LEY DE



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:
PR ELECTRIC POWER AUTHORITY
PURCHASING DIVISION
PO BOX 364267
SAN JUAN PR 00936-4267

RFQ Number : 00049399
Issue Date : 03/29/2017
Due Date : 04/11/2017
Due Time : 02:00
Page : 4

JUSTICIA CONTRIBUTIVA.

* LAS FACTURAS TIENEN QUE DETALLAR EL CONCEPTO DE LA COMPRA O SERVICIO.

LOCAL AND FEDERAL TAXES CLAUSE

IN COMPLIANCE WITH PUERTO RICO'S INTERNAL REVENUE SERVICE CODE, SECTION 2906, ARTICLE 2, PUERTO RICO ELECTRIC POWER AUTHORITY IS EXEMPT OF 6.6% TAX PAYMENT, ALSO, STARTING ON NOVEMBER 15TH, 2006; AND IN ACCORDANCE TO LAW 117 OF 4TH OF JULY OF 2006, KNOWN AS "LEY DE JUSTICIA CONTRIBUTIVA"; PREPA IS EXEMPT OF "IVU (IMPUESTO A LA VENTA Y USOS ESTATAL Y MUNICIPAL)" TAX PAYMENT.

INVOICES SHALL INCLUDE ALL DETAILS RELATED TO GOOD OR SERVICE PURCHASED.

PH000032 009 DELIVERY
DELIVERY.

Seller agrees to provide for delivery of the Materials, Work Product or Services on the date(s) and to the address set forth in the Order. Seller shall bear all costs of shipping, transportation and packing unless otherwise provided in this Order. On all Materials delivered in error, or in excess of the quantity shown on Order, Buyer reserves the right to return the Materials at Seller's expense. Buyer's count shall be final and conclusive on any shipment not accompanied by the packing slip.

PH000036 012 LIENS
LIENS.

Seller will pay any and all amounts owed to its subcontractors and suppliers as and when due. Seller will ensure that its subcontractors and suppliers do not file any liens, claims, security interests, or other encumbrances against any property owned or otherwise occupied by Buyer. Within ten (10) days of receipt of notice from Buyer that one of Seller's subcontractors or suppliers has filed a lien, claim, security interest, or other encumbrance against any property owned or otherwise occupied by Buyer, Seller will clear such lien, claim, security interest, or other encumbrance



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:
PR ELECTRIC POWER AUTHORITY
PURCHASING DIVISION
PO BOX 364267
SAN JUAN PR 00936-4267

RFQ Number : 00049399
Issue Date : 03/29/2017
Due Date : 04/11/2017
Due Time : 02:00
Page : 5

by payment or by bond. Provided that Buyer is paying Seller in compliance with this Purchase Order, Seller will not file any liens, claims, or other encumbrances against any property owned or otherwise occupied by Buyer. If Seller files a lien, claim, security interest, or other encumbrance against any property owned or otherwise occupied by Buyer, Seller will clear such lien, claim, security interest, or other encumbrance of record within ten (10) days of receipt of payment of the amount due from Buyer.

PH000037 007 TERMINOS PARA RETENCION EN EL ORIGEN
INFORMACION SOBRE RETENCIÓN EN EL ORIGEN

LA AUTORIDAD RETENDRÁ EL EQUIVALENTE AL 7% DE TODO PAGO POR SERVICIOS PRESTADOS QUE SE EFECTÚE BAJO ESTE CONTRATO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIÓN 1143, SEGÚN ENMENDADA. NO OBSTANTE, SE DISPONE QUE LA RETENCIÓN A EFECTUARSE POR LA AUTORIDAD BAJO LAS DISPOSICIONES DE LA PRESENTE CLÁUSULA PODRÍA AUMENTAR A:

20% EN CASO DE QUE EL PROFESIONAL FUERA UN INDIVIDUO NO RESIDENTE CIUDADANO DE LOS ESTADOS UNIDOS DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994 , SECCION 1147; O UN 29% EN CASO DE QUE EL POFESIONAL FUERA UN INDIVIDUO NO RESIDENTE Y NO CIUDADANO DE LOS ESTADOS UNIDOS, O UNA CORPORACIÓN O SOCIEDAD EXTRANJERA NO DEDICADA A INDUSTRIA O NEGOCIO EN PUERTO RICO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIONES 1147 Y 1150.

SI EL DEPARTAMENTO DE HACIENDA HA EMITIDO UN CERTIFICADO DE RELEVO A FAVOR DEL PROFESIONAL, ES RESPONSABILIDAD DE ÉSTE, SOMETER COPIA DEL RELEVO A LA AUTORIDAD PARA CADA AÑO NATURAL, DE LO CONTRARIO, LOS PAGOS SEGUIRÁN SUJETOS A LA RETENCIÓN EN EL ORIGEN. TODA FACTURA DEBE DETALLARSE POR CONCEPTOS (SERVICIOS, MATERIALES, EQUIPO, ETC.) PARA IDENTIFICAR LAS PARTIDAS SUJETAS A RETENCIÓN Y EVITAR DESCUENTOS INDEBIDOS.

LA AEE PUEDE TERMINAR ESTE CONTRATO UNILATERALMENTE, EN CASO DE QUE EL CONTRATISTA NO OBSERVE CUALQUIERA DE LAS CLÁUSULAS ANTERIORES, POR CUALQUIER FALLA EN EL CUMPLIMIENTO CON CUALQUIERA DE LAS DISPOSICIONES DEL CONTRATO, INCLUYENDO ESTE ADDENDUM, MEDIANTE LA PREVIA NOTIFICACIÓN POR ESCRITO AL CONTRATISTA DENTRO DEL TÉRMINO DE



REQUEST FOR QUOTATION

THIS IS NOT AN ORDER!

Return RFQ Response to:

PR ELECTRIC POWER AUTHORITY

PURCHASING DIVISION

PO BOX 364267

SAN JUAN PR 00936-4267

RFQ Number : 00049399

Issue Date : 03/29/2017

Due Date : 04/11/2017

Due Time : 02:00

Page : 6

TREINTA DÍAS ANTES DE COBRAR EFECTIVIDAD LA TERMINACIÓN.

End of Request for Quotation



QUOTATION

Date: 11.04.2017

Date: 11.04.2017

To:

Puerto Rico Electric Power Authority,
Attention: Bryan Ortiz, Purchasing
Dept.

REF: RFQ 49399

Dear Sir,

We are pleased to quote the following:

Sr. No.	PARTICULARS				
	Fabrication, Testing and Supply of Straight Water Wall Panels with 2 Nos. of Openings made out of Seamless Carbon Steel Boiler Tubes of Size: 2" (50.8 mm OD) x 0.220" (5.59 mm Thk) conforming to SA 210 Gr. A1 having a Maximum Length in Mtrs. long Per Tube x 32 Nos. of Tube Per Panel x No. of Tubes as tabulated below, complete with 4 side Welded Calibrated Fin of Size: 12.7 mm x 6 mm Thk made out of SA 515/516 Gr. 60/70 and Edge Bars, generally as per your Drawing No. Nil and the Tolerance mentioned therein duly approved by your representative.				
	Water Wall Panel No.	Length of Panel	Nos. of Tube Per Panel	Qty in Nos.	PRICE Per Set
1.	WW Panels	43'-½" Long (13.119 Mtrs.)	30 Nos. Tubes Per Panel	06	US \$ 178,890.00

GENERAL NOTES:

- Raw Materials: The WW Panels shall be made out of 2" OD X 0.220" Thick Seamless Carbon Steel Boiler Tube conforming to ASTM SA 210 Gr. A1. We shall furnish Material Test Certificate (MTC) for the tubes used and the M.T.C shall be approved /endorsed by CQC or by your TPI.

2. **Fins :** Fins shall be furnished with Laboratory Check Test Certificate conforming to SA 515/516 Gr. 60/70.
3. **Drawing:** Fabrication drawings for the WW Panels shall be prepared by us and got approved from you, prior to start of fabrication as per standard practice. You shall send us fresh/clear copies of the drawings along with the purchase order mentioning clearly the Working Pressure & Temperature.
4. **Fabrication Code:** Fabrication shall be done strictly as per Boiler Regulation 1950-Latest and ASME/B & PVC, other fabrication codes generally accepted as Good Engineering Practices.
5. **Bending:** The Bends of the WW Panels Opening shall be made by cold working only on our CNC Tube Bending Machine and the Ovality and Thinning at bends shall be well within the limits accepted by QC.
6. **Welding:** Butt welding of tubes to maintain continuity of the WW Panels shall be done by IBR approved welders using TIG (Argon Arc) process for the root-run as well as the consecutive runs.
7. **Fin Welding:** Fin welding shall be done using Automatic wire feeding MIG Welding Machines(CO2) for low heat input and shall be welding and all four side of the Tubes. Fin welding shall be done using Automatic HFRW Machine.
8. **Radiography:** Radiography of 10% of the total Butt welds joints shall be done (as per ASME) and the radiographs shall be approved by Our prior to Hydraulic Testing of the panels.
9. **Hydraulic Testing:** All the WW Panels shall be Hydro- Static tested by you at site after erection.
10. **Certification:** Certificate shall be comprise of MTC, Radiography Reports , Dimensions Reports and As Built fabrication drawings. All these shall be approved and signed by Our QC and furnished to you along with supplies.
11. **Third Party Inspection:** Your final Pre-dispatch Inspection at our works is acceptable to us and we shall prefer the same if convenient for your user department. We shall give Max. 7 days Advance Notice to send your Inspector to our Works and in case you fail to send your Inspector on time it shall be presumed the goods are Accepted to you and we shall Despatch the Goods under these Presumption without any confirmation from you to avoid delays in Supply.
12. **Stamping:** The Inspectors Stamp on the WW Panels shall be circled in white water proof paint. The stamp shall also be identified in Certificate. The Drawing Nos/Mark Nos. of the shall be painted punched on them for easy identification, along with our Company Stamp and our Job Number.
13. **Packing:** The WW Panels shall be given one or two coats of Red Oxide Zinc Chromate primer and the ends shall be suitably plugged /Plastic Capped after Cleaning Tubes internally to remove water/Grime by compressed air. The WW Panels shall be packed in wooden and metal crates suitably to avoid damage/distortion of during transit.
14. **Unloading:** The unloading and proper stacking/storing of WW Panels at your site carefully shall be solely your responsibility.
15. **Delivery:** Our quoted Delivery shall be deemed to commence from the date of receipt of drawings approved by you. We shall require minimum 2 weeks to prepare and post the same to you. The delivery shall be deemed to end on the date of your Pre-dispatch inspection visit intimated by us with max. 7 days prior notice.
16. **Guarantee:** We shall guarantee our Supplies against Defective Materials and/or Bad Workmanship for a period of 18 months from the date of supply or 12 months from the date of Commissioning whichever is earlier.

17. **Force Majuere:** Our quoted delivery is subject to Force Majeure Clause as below:

Neither the Owner nor the Supplier/Contractor shall be considered in default in performance of its obligations if such performance is prevented or delayed because of declared or undeclared war, hostilities, civil commotion, strike, lock out, sabotage, explosion, electrical Power failure or shedding or any other factor beyond the control of the contractor, epidemic, fire, excessive rainfall, flood or any other acts of God, should one or both parties be prevented from fulfilling their contractual obligation for a period of Three months, the two parties should consult each other regarding the future implementation of the contract.

Commercial Terms:

Delivery: Shipment within 22 to 24 weeks

Payment: As PREPA requirements



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

Confidencial

LA INFORMACIÓN EN ESTE DOCUMENTO ES CONFIDENCIAL Y LEGALMENTE PRIVILEGIADA. LA MISMA VA DESTINADA SOLO PARA EL USO DE LA PERSONA A LA QUE VA DIRIGIDA. SI USTED NO ES ESA PERSONA, SE LE NOTIFICA QUE ESTA EstrictAMENTE PROHIBIDO FOTOCOPIAR, DIVULGAR, DISTRIBUIR O TOMAR CUALQUIER ACCIÓN BASADA EN EL CONTENIDO DE ESTA INFORMACIÓN.



Neftalí González Cruz
Jefe Interino
División de Suministros



Comité Permanente de Subastas

Directorado Generación
Central Aguirre – Paneles de Tubos de Caldera U-1 Aguirre
Invitación a Subasta RFQ-49399 (Requisición: 176867) - Adjudicación

La subasta de referencia se publicó para la compra de Paneles de Tubos de Caldera para la Unidad 1 Central Aguirre.

Licitadores invitados:

Esta subasta se publicó en Power Advocate, en la página de Internet de la Autoridad y se invitó a los siguientes licitadores:

- JUP*
VLG
WPF.
1. Engineering Parts Services
 2. Phoenix Industrial Sales Inc.
 3. RG Engineering Inc.
 4. Alstom Caribe Inc.
 5. Enersys Engineering Corp
 6. Sun Energy
 7. Malnat Asociados
 8. Allied Power Technologies
 9. AP Equipment Inc.
 10. Serpaga

02/11/20
FECHA
PROCEDER

[Signature]
FIRMA

Neftalí González Cruz
JEFE DIVISION DE SUMINISTROS

Licitadores Participantes:

1. Enersys Engineering Corp.
2. Engineering Services International



Apartado 364267 San Juan, Puerto Rico 00936-4267

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

Surge del expediente que para esta subasta no se solicitó Fianza de Licitación.

Síntesis de las propuestas y defectos o desviaciones de las especificaciones, términos y condiciones:

Engineering Services International - Esta compañía cotizó según requerido y no tomó excepciones. La propuesta de esta compañía resulta ser la más económica y no excede el costo estimado del usuario de la Autoridad.

Enersy Engineering Corporation - Esta compañía cotizó según requerido y no tomó excepciones. La propuesta de esta compañía resulta ser la más onerosa, además de exceder el costo estimado del usuario de la Autoridad.

Determinación:

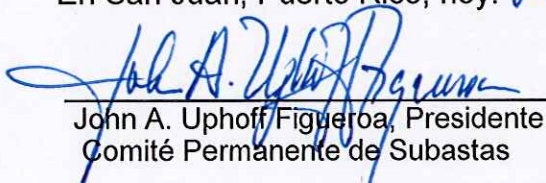
Se adjudica esta subasta a la compañía **Engineering Services International** como el postor más bajo evaluado que cumple con las especificaciones técnicas, términos y condiciones. Además, figura activo en el Registro de Proveedores de la Autoridad y tiene la declaración jurada de no conflicto de interés vigente, según indica el señor Rafael Olivero Figueroa, Supervisor del Registro de Proveedores mediante correos electrónicos del 28 de enero de 2020 y del 3 de febrero de 2020.

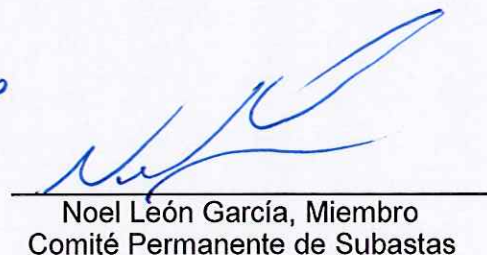
El precio total de esta subasta asciende a \$178,894.00 con la entrega y las especificaciones correspondientes según requerido, en sitio y sin arbitrios.

Notificación:

El Gerente de Compras debe enviar a los licitadores participantes y al usuario copia del Anexo A con su notificación.

En San Juan, Puerto Rico, hoy: Feb 10, 2020


John A. Uphoff, Presidente
Comité Permanente de Subastas


Noel León García, Miembro
Comité Permanente de Subastas


Miguel A. Del Valle Morales
Miembro Alterno
Comité Permanente de Subastas



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico



Confidencial

LA INFORMACIÓN EN ESTE DOCUMENTO ES CONFIDENCIAL Y LEGALMENTE PRIVILEGIADA. LA MISMA VA DESTINADA SOLO PARA EL USO DE LA PERSONA A LA QUE VA DIRIGIDA. SI USTED NO ES ESA PERSONA, SE LE NOTIFICA QUE ESTA EstrictAMENTE PROHIBIDO FOTOCOPIAR, DIVULGAR, DISTRIBUIR O TOMAR CUALQUIER ACCIÓN BASADA EN EL CONTENIDO DE ESTA INFORMACIÓN.

ANEXO A

Directorado Generación
Central Aguirre – Paneles de Tubos de Caldera U-1 Aguirre
Invitación a Subasta RFQ-49399 (Requisición: 176867) - Adjudicación

La subasta de referencia se publicó para la compra de Paneles de Tubos de Caldera para la Unidad 1 Central Aguirre.

Licitadores invitados:

Esta subasta se publicó en Power Advocate, en la página de Internet de la Autoridad y se invitó a los siguientes licitadores:

1. Engineering Parts Services
2. Phoenix Industrial Sales Inc.
3. RG Engineering Inc.
4. Alstom Caribe Inc.
5. Enersys Engineering Corp
6. Sun Energy
7. Malnat Asociados
8. Allied Power Technologies
9. AP Equipment Inc.
10. Serpaga

Licitadores Participantes:

1. Enersys Engineering Corp.
2. Engineering Services International

Surge del expediente que para esta subasta no se solicitó Fianza de Licitación.



Apartado 364267 San Juan, Puerto Rico 00936-4267

"Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acecho, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos por condición de veterano(a) o por información genética."

Síntesis de las propuestas y defectos o desviaciones de las especificaciones, términos y condiciones:

Engineering Services International - Esta compañía cotizó según requerido y no tomó excepciones. La propuesta de esta compañía resulta ser la más económica y no excede el costo estimado del usuario de la Autoridad.

Enersy Engineering Corporation - Esta compañía cotizó según requerido y no tomó excepciones. La propuesta de esta compañía resulta ser la más onerosa, además de exceder el costo estimado del usuario de la Autoridad.

Determinación:

Se adjudica esta subasta a la compañía **Engineering Services International** como el postor más bajo evaluado que cumple con las especificaciones técnicas, términos y condiciones. Además, figura activo en el Registro de Proveedores de la Autoridad y tiene la declaración jurada de no conflicto de interés vigente, según indica el señor Rafael Olivero Figueroa, Supervisor del Registro de Proveedores mediante correos electrónicos del 28 de enero de 2020 y del 3 de febrero de 2020.

El precio total de esta subasta asciende a \$178,894.00 con la entrega y las especificaciones correspondientes según requerido, en sitio y sin arbitrios.

PERFORMANCE BOND

BOND NO. 20212831



KNOW ALL MEN BY THESE PRESENTS, That we, **ENGINEERING SERVICES INTERNATIONAL, INC.** hereinafter called the Principal), and UNITED SURETY & INDEMNITY COMPANY a corporation organized and existing under the laws of the State of COMMONWEALTH OF PUERTO RICO-- and authorized to transact business in Puerto Rico, (hereinafter called the Surety), are held and firmly bound unto the PUERTO RICO ELECTRIC POWER AUTHORITY, a public corporation and governmental instrumentality of the Commonwealth of Puerto Rico, in the penal sum of THIRTY FIVE THOUSAND SEVEN HUNDRED SEVENTY EIGHT DOLLARS 80/100 (\$35,778.80) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such, that whereas the Principal entered into a certain contract with the PUERTO RICO ELECTRIC POWER AUTHORITY, dated numbered _____ for "PANELES DE TUBOS DE CALDERA, UNIDAD 1, CENTRAL AGUIRRE, SEGUN PUBLICACION: RFQ NUM. 49399, CONTRATO NUM. 00086335." which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms conditions, and agreement of said contract during the original term of said contract and any extension thereof that may be granted by the PUERTO RICO ELECTRIC POWER AUTHORITY, with or without notice to the Surety, and during the life of any guaranty required under said contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void ; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bound parties have executed this instrument under their several seals April 6, 2020, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

WITNESS:

(IF INDIVIDUAL OR FIRM)

ATTEST:

(IF CORPORATION)

ENGINEERING SERVICES INTERNATIONAL, INC.


(PRINCIPAL) (SEAL)

By _____ (SEAL)

(SEAL)



UNITED SURETY & INDEMNITY COMPANY (SURETY)

ATTEST: 

By: 
LOURDES SANTANA LOPEZ
Attorney-in-fact

Countersigned:



The rate of premium on this bond is \$3.50 per thousand.

Total amount of premium charged, \$429.00

(THE ABOVE MUST BE FILLED IN BY SURETY)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, Citlalin Olivares certify that I am the Secretary secretary of the corporation named as principal in the within bond; that

who signed the said bond on behalf of the principal, was then

President of said corporation, that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested for and in behalf of said corporation by authority of its governing body.



INSTRUCTIONS

1. This form shall be used for construction work or the furnishing of supplies or services, whenever a performance bond is required. There shall be no deviation from this form except as authorized by the Puerto Rico Electric Power Authority.
2. The surety on the bond may be any corporation authorized by the Superintendent of Insurance of Puerto Rico to act as surety and the bond must be countersigned, in the space provided therefor, by the agents of the surety in Puerto Rico.
3. The name, including full Christian name, and business or residence address of each individual party to the bond shall be inserted in the space provided therefor, and each such party shall sign the bond with his usual signature on the line opposite the scroll seal.
4. If the principals are partners, their individual names shall appear in the space provided therefor, with the recital that they are partners composing a firm, naming it, and all the members of the firm shall execute the bond as individuals.
5. If the principal is a corporation, the name of the State in which incorporated shall be inserted in the space provided therefor, and said instrument shall be executed and attested under the corporate seal as indicated in the form. If the corporation has no corporate seal the fact shall be stated, in which case a scroll or adhesive seal shall appear following the corporate name.
6. The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be certified by the secretary or assistant secretary, according to the form herein provided. In lieu of such certificate there may be attached to the bond copies of so much of the records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.
7. The date of this bond must not be prior to the date of the instrument in connection with which it is given.



United Surety & Indemnity Co.
PO Box 2111
San Juan, PR 00922-2111
t. 787.273.1818
f. 787.625.0893 • 787.783.8115
www.usicgroup.com

Bond no. **20212831**
Rider #2

ASSIGNMENT OF FUNDS PROHIBITION

THIS ENDORSEMENT CHANGES THIS BOND, READ CAREFULLY

The proceeds of the contract guaranteed by this bond constitute a collateral to the surety; therefore, the surety has a vested interest over said funds. The Principal of this bond cannot assign, directly nor indirectly, the proceeds of the contract guaranteed by this bond. The assignment of the proceeds of the contract guaranteed by this bond annuls this bond and releases that surety from any and all obligations arising from this bond.

Authorized Representative
**UNITED SURETY &
INDEMNITY
COMPANY**





United Surety & Indemnity Co.
PO Box 2111
San Juan, PR 00922-2111
t. 787.273.1818
f. 787.625.0893 • 787.783.8115
www.usicgroup.com

Bond no. 20212831
Rider #4

ELECTRONICALLY EXECUTED BOND ENDORSEMENT

This bond has been signed and sealed electronically for operational purposes in order to comply with the Executive Order #OE-2020-023 issued by the government of Puerto Rico related to Covid-19(Corona Virus). If this bond requires an acknowledgement of surety affidavit, such document will not be included for the reasons stated above.

We hereby certify that this bond is valid as if originally signed and sealed by hand.

Consequently, if the obligee requires an originally executed bond, and acknowledgement of surety affidavit, if applicable, we will issue such documents at a later date, in substitution of the original electronic bond.

Authorized Representative

UNITED SURETY & INDEMNITY COMPANY



ENDOSO OBLIGATORIO DE PRIMAS Y CONDICIONES DE CUBIERTA – PUERTO RICO

Por la presente se entiende y se conviene que de conformidad con las reglas aprobadas por el Comisionado de Seguros de Puerto Rico, la presente fianza queda enmendada según las condiciones y estipulaciones vertidas a continuación:

1. **Primas de fianzas pagadas en su totalidad por usted:** Si las primas de esta fianza han de ser pagadas en su totalidad por usted, la cubierta de la fianza será concedida siempre y cuando se haya pagado la prima total a, y ésta se haya recibido por, nosotros o nuestro representante autorizado en o antes de la fecha de efectividad indicada en la fianza. De lo contrario, la fianza entrará en vigor en la fecha en que se haya pagado la prima total a, y se haya recibido por, nosotros o nuestro representante autorizado, y procederemos según indica la Sección 4 de este Endoso.
2. **Prima de Endoso:** Los endosos emitidos después de la fecha de inceptión de esta fianza concediendo cubierta adicional y los cuales resultan en alguna prima adicional, no entrarán en vigor hasta tanto la prima total adicional de los mismos se haya pagado en su totalidad a, y se haya recibido por, nosotros o nuestro representante autorizado.
3. **Corrección de primas:** Cualesquiera primas adicionales que se adeuden como resultado de cambios en tarifas, clasificaciones, bases de primas o cualesquiera otros ajustes (según determinado por nosotros o por la correspondiente organización tarifadora) serán pagadas en su totalidad dentro de los (30) días de la fecha de facturación del endoso correctivo.
4. **Pagos atrasados:** De recibirse el pago después de la fecha de vencimiento indicado, procederemos de la siguiente manera:
 - a. Para fianzas nuevas (Sección 1 antes indicada) emitiremos un Aviso de Cambio de Fecha de Efectividad de Cubierta, indicando:
 - (1) que la cubierta que se conceda bajo la fianza entrará en vigor a partir de la fecha en que se recibe el pago de la prima aplicable,
 - (2) las fechas enmendadas de inceptión y de vencimiento de la fianza que resulten, las cuales serán aplazadas por el mismo número de días en que no se concedió cubierta debido al recibo tardío del pago de la prima, y
 - (3) el correspondiente período durante el cual no se concede cubierta bajo la fianza.
 - b. Para endosos de corrección de primas (Sección 3 antes indicada), emitiremos, sujeto a la reglamentación aplicable, un Aviso de Reinstalación limitada, indicando:
 - (1) que la cubierta que se ofrece bajo la fianza será reinstalada a partir de la fecha en que se recibe el pago aplicable de la prima adicional,
 - (2) el período durante el cual no se concede cubierta, y
 - (3) el monto de la devolución de prima, si alguna, que se le adeude a usted.
5. **Cancelación de fianza:** Con relación a la renovación de una fianza, dicha fianza no entrará en vigor si la prima adeudada no ha sido recibida por nosotros o por nuestro representante autorizado en la fecha establecida en el Aviso de Cancelación, el cual será emitido conforme a los términos establecidos en la fianza.
6. **Definición de Representante Autorizado:** Para fines de este endoso, representante autorizado significa un Agente General, Apoderado, o una persona debidamente autorizada por nosotros, por escrito, para efectos del cobro de primas.
7. Este endoso obligatorio reemplaza cualesquiera otras condiciones que existan a estos efectos en la fianza al que se aneja el presente.

MANDATORY PREMIUM AND COVERAGE CONDITIONS RIDER-PUERTO RICO

It is hereby understood and agreed that pursuant to the regulations approved by the Commissioner of Insurance of Puerto Rico, this bond is amended according to the following conditions and stipulations:

1. **Bond Premium Paid in Full by You:** If the premium for this bond is to be paid by you in its entirety, surety coverage will be afforded only if the total premium is paid in full to, and received by, us or our authorized representative on or before the effective date shown in the bond. Otherwise, the bond will be effective on the date the total premium is paid in full to, and received by, us or our authorized representative, and we will proceed as indicated on Section 4 of this rider.
2. **Rider Premium:** Riders issued after the inception date of this bond, affording additional coverage and which result in an additional premium, shall not be effective until the total additional premium due thereon is paid in full to, and received by, us or our authorized representation.
3. **Premium Corrections:** Any additional premium due resulting from changes in rates, classifications, premium bases, or any other adjustments (as determined by us or the proper rating organization), shall be paid full within thirty (30) days from the date of billing of the corrective rider.
4. **Late Payments:** If payment is received after the specified due date, we will proceed as follows:
 - a. For new bonds (Section 1 above) we will issue a Change of Effective Date of Coverage Notice stating:
 - (1) that the coverage afforded under the bond is effective as of the date of receipt of the applicable premium payment,
 - (2) the resulting amended inception and expiration dates of the bond, which will be postponed by the same number of days that coverage was not afforded due to the late receipt of the premium payment, and
 - (3) the corresponding period of time during which coverage is not afforded under the bond.
 - b. For premium corrections riders (Section 8 above) we will issue, subject to the applicable regulations, a limited Reinstatement Notice stating:
 - (1) that the coverage afforded by the bond will be reinstated as of the date of receipt of the applicable additional premium payment,
 - (2) the period for which coverage is not afforded, and
 - (3) the amount of premium return due to you, if any.
5. **Cancellation of Bond:** With reference to renewal of bonds, such bonds will not be effective if the corresponding premium has not been received by us or our authorized representative on the date established in the Cancellation Notice, which will be issued in compliance with the terms of the bond.
6. **Definition of Authorized Representative:** Authorized representative for the purpose of this rider means a General Agent, an Attorney in Fact, or a person duly authorized in writing by us for premium collection purposes.
7. This mandatory rider supersedes any other conditions to this effect in the bond to which it is attached.



UNITED SURETY & INDEMNITY COMPANY

A Commitment to Excellence and Integrity

CERTIFICATE OF APPOINTMENT OF ATTORNEY-IN-FACT

Know All Men by these Presents, that UNITED SURETY & INDEMNITY COMPANY, a corporation duly organized and existing under the laws of the Commonwealth of Puerto Rico, and having its principal office in the City of Guaynabo, Puerto Rico, does hereby certify that it has made, constituted and appointed LOURDES SANTANA LOPEZ, of Bayamón, Puerto Rico, its true and lawful Attorney-in-Fact with full power and authority conferred to sign, seal and execute in its behalf bonds, undertakings and other obligatory instruments of similar nature as follows:

WITHOUT LIMITATION

and to bind UNITED SURETY & INDEMNITY COMPANY thereby as fully and to the same extent as if such instruments were signed by an officer of UNITED SURETY & INDEMNITY COMPANY and all the acts of said Attorney, pursuant to the authority given by virtue of Deed Number Eighteen (18), executed on the 10th of October, 2008; before Notary Public Johanny Martínez Batista, are hereby ratified and confirmed.

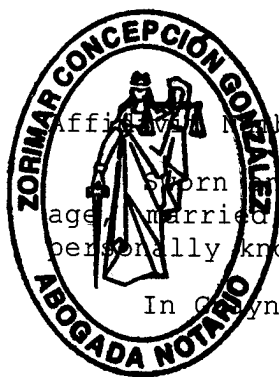
The Power of Attorney granted by the above mentioned deed, was made and executed pursuant to and by authority of the By-Laws duly adopted by the Stockholders of the Company. Certified copy of the above mentioned Deed shall be filed at the Office of the Commissioner of Insurance of Puerto Rico.

In Witness Whereof, UNITED SURETY & INDEMNITY COMPANY has, pursuant to its By-Laws, caused the present certificate to be signed by the Secretary and its corporate seal to be hereto affixed this 31st of March, 2011.

UNITED SURETY & INDEMNITY COMPANY

By:

Rafael A. Blanes González, Secretary



Affidavit Number: 0185

I, _____, do hereby certify that I have personally known _____, of legal age, married, executive and resident of Guaynabo, Puerto Rico, to me personally known.

In Guaynabo, Puerto Rico, this 31st day of March, 2011.

Notary

The present certificate is in full force and effect as of this
6th day of APRIL, 2020.

Secretary

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Stage 2 & 3 Gas Turbine Rotor Bucket Set,
Aguirre Combined Cycle Plant***

1/24/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Aguirre Combined Cycle – Stage 2&3 Turbine Rotor Bucket Set
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Aguirre Combined Cycle, unit 1-3	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

The Aguirre Combined Cycle Plant needs to acquire a Stage 2 & 3 Gas Turbine Rotor Bucket Set for the next big inspection of the unit to gas 1-3. The Plant already has the stage 1 bucket set, but the complete set is necessary to assemble and balance the rotor, and in case replacement is needed during the 2022 inspections.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Stage 2 & 3 Gas Turbine Rotor Bucket Set will consist of the following:



- Supply one (1) MS7001EA stage 2 gas turbine rotor bucket set (refurbished).
- Supply one (1) MS7001EA stage 3 gas turbine rotor bucket set (refurbished).

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?



4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Gas turbine rotor bucket set, stage 2	251,366.00
Gas turbine rotor bucket set, stage 3	245,901.00
Total Project Estimated Cost	\$497,267.00



Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature



Section 10. Attachments

10.1. Project Detailed Cost Estimates

Please see attached the following:

- PO 91906_Serpaga, Inc.
- Justification
- Technical Specifications

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

9 de abril de 2021

Neftalí González Cruz, Jefe
División de Suministros

Alexis Cruz Figueroa, Jefe
División Central Aguirre

Harry E. Velázquez Plaza
Jefe de Central Auxiliar, Interino
Central Ciclo Combinado

SOLICITUD DE SUBASTA FORMAL, SET DE PALETAS (BUCKETS) ETAPAS 2 Y 3, ROTOR DE TURBINA UNIDAD A GAS, CENTRAL CICLO COMBINADO (MR 664723)

Solicitud de subasta formal, por un estimado de \$500,000, para suplir los sets de paletas de las etapas 2 y 3 a instalarse en el rotor de turbina de repuesto que la Central tiene en inventario. El rotor es necesario para la próxima inspección mayor de la Unidad a Gas 1-3 durante el año fiscal 2021-22, en la Central Ciclo Combinado de Aguirre. Todo de acuerdo con las especificaciones, términos y condiciones de la requisición 664723.

Los fondos para el proceso provendrán de la cuenta 01-4021-65100-200-304 del presupuesto operacional y de mantenimiento de la Central. Esto en lo que se aprueba la nueva cuenta y estimado para el proyecto 14672 para el año fiscal 2021-22, del programa de Gastos de Mantenimiento Necesarios (GMN) de la Central.

Como parte de la planificación antes de la salida de una unidad para mantenimiento mayor, es necesario tener disponibles los componentes de repuesto. Además del rotor, la Central cuenta con un set de paletas de la etapa 1. Para poder completar el ensamble y balance del rotor, generamos la requisición 664723 para adquirir los sets de paletas de las etapas 2 y 3. La requisición especifica que los sets deben ser reparados (*refurbished*) con las garantías correspondientes. Esto es favorable para la Autoridad, ya que el costo es menor al compararlo con piezas nuevas.

APROBADO

Daniel Hernández Morales
Director de Generación





GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

27 de diciembre de 2021

Serpaga Inc.
P.O. Box 367307
San Juan PR, 00936-7307

Email: jgarcia@serpaga.com

Subasta: RFQ 54095 (Req. 246771)
Stage 2 & Stage 3 Turbine Rotor Bucket Set – Aguirre Combined Cycle

Nos place informarle la adjudicación de la subasta en referencia como el postor evaluado que cumple con las especificaciones, términos y condiciones.

Cualquier parte adversamente afectada por la presente decisión final podrá presentar una Moción de Reconsideración luego de cumplir con las disposiciones del Capítulo IV, Artículo C del Reglamento de Subastas de la Autoridad de Energía Eléctrica y las disposiciones aplicables de la Ley 38-2017 (conocida como la Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico), incluyendo, pero no limitado a la Sección 3.19 de la Ley 38-2017. La moción de reconsideración debe ser presentada dentro del término de veinte (20) días calendario contados a partir del depósito en el correo federal o correo electrónico de la notificación de adjudicación de la subasta. La moción de reconsideración debe presentarse en la Secretaría de Procedimientos Adjudicativos, 8vo piso, Edificio NEOS, parada 16 ½, Santurce, Puerto Rico o enviarse al PO Box 363928, San Juan, PR 00936-3928. Las razones de la reconsideración deberán estar claramente establecidas y también deberá contener una certificación de haberse enviado copia de la moción de reconsideración a los demás licitadores comparecientes en la subasta.

La Autoridad de Energía Eléctrica considerará la Moción de Reconsideración dentro de los treinta (30) días de haberse presentado y podrá extender dicho término una sola vez, por un término adicional de quince (15) días calendario. Si se tomare alguna determinación en su moción de reconsideración, el término para solicitar revisión judicial empezará a contarse desde la fecha en que se depositó en correo federal copia de la notificación de la decisión de la Autoridad de Energía Eléctrica resolviendo la moción de reconsideración. Si la Autoridad de Energía Eléctrica no toma alguna acción en relación con la Moción de Reconsideración dentro del término correspondiente según mencionado en la Ley 38-2017, se entenderá que ésta ha sido rechazada de plano y a partir de esa fecha comenzará a correr el tiempo para la revisión judicial.



La parte adversamente afectada con relación a su reconsideración por una orden o resolución final de la Autoridad, podrá presentar una solicitud de revisión judicial a tenor con la Sección 4.2 de la Ley 38-2017 ante el Tribunal de Apelaciones dentro del término de veinte (20) días, contados a partir del archivo en autos de la copia de la notificación de la determinación final de la Autoridad o dentro del término aplicable de veinte (20) días calendario de haber transcurrido el plazo dispuesto por la Sección 3.19 de la Ley 38-2017. La mera presentación de una solicitud de revisión al amparo de la Sección 4.2 de la Ley 38-2017 no tendrá efecto de paralizar la adjudicación de la subasta impugnada.

La Autoridad de Energía Eléctrica se entenderá notificada de la solicitud de revisión únicamente por la radicación de la misma ante la Secretaría de Procedimientos Adjudicativos. Las radicaciones efectuadas fuera del lugar o apartado mencionado se entenderán por no sometidas.

Incluimos la Determinación de Adjudicación, la que contiene una síntesis de las propuestas de cada uno de los licitadores y sus defectos o desviaciones y el cual se hace formar parte íntegra de la presente notificación.

Atentamente,



Joel D. Pantojas Caraballo
Supervisor de Compras Principal
División de Suministros

CERTIFICO: haber enviado hoy copia de la presente por correo electrónico a:
alliedpowertechnologies@gmail.com, Liliana.Torres@ethosenergygroup.com y
abrusi@mdaturbines.com.



GOBIERNO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA

Confidencial

LA INFORMACIÓN EN ESTE DOCUMENTO ES CONFIDENCIAL Y LEGALMENTE PRIVILEGIADA. LA MISMA VA DESTINADA SOLO PARA EL USO DE LA PERSONA A LA QUE VA DIRIGIDA. SI USTED NO ES ESA PERSONA, SE LE NOTIFICA QUE ESTÁ EstrictAMENTE PROHIBIDO FOTOCOPIAR, DIVULGAR, DISTRIBUIR O TOMAR CUALQUIER ACCIÓN BASADA EN EL CONTENIDO DE ESTA INFORMACIÓN.

A: Mario M. Miranda Sánchez
Jefe
División de Suministros

De: Comité Permanente de Subastas

Re: ADJUDICACION: RFQ-54095 - Requisición: 246771
Directorado Generación
Central Ciclo Combinado Aguirre
Stage 2 & 3 Turbine Rotor Bucket

La subasta de referencia se publicó para la compra de los dos "sets" de paletas de las etapas 2 & 3 para un rotor de turbina de repuesto, en la Central Ciclo Combinado de Aguirre.

Licitadores invitados:

✓ Esta subasta se publicó en la plataforma electrónica *PowerAdvocate*®, en la página de Internet de la Autoridad

Licitadores participantes:

1. Allied Power Technologies Inc.;
2. Mechanical Dynamics & Analysis, LLC;
3. EthosEnergy Power Plant Services, LLC; &
4. Serpaga, Inc.

Surge del expediente que la apertura de la subasta se celebró el 18 de mayo de 2021.

Costo estimado: \$500,000.00 (quinientos mil dólares).

Síntesis de las propuestas y defectos o desviaciones de las especificaciones, términos y condiciones:

I. Allied Power Technologies Inc. -

La propuesta incluye la fianza de licitación por el 10% de su propuesta, que está acompañada por el correspondiente *Certificate of Appointment of Attorney in Fact*. Esta compañía cumple con todas las especificaciones técnicas y no tomó excepciones.



Apartado 364267 San Juan, Puerto Rico 00936-4267

Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social, afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acoso, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos, por condición de veterano(a) o por información genética.

Según informa la representante de la a División de Suministros, la corporación figura en el Registro de Proveedores de la Autoridad.

Propuesta: **\$640,000.00** (siescientos cuarenta mil dólares).
Desviación del costo estimado: **>28.00%** (mayor de veinte y ocho por ciento).

II. Mechanical Dynamics & Analysis, LLC –

La propuesta incluye la fianza de licitación por el 10% de su propuesta, que está acompañada por el correspondiente *Certificate of Appointment of Attorney in Fact*. Esta compañía cumple con todas las especificaciones técnicas y no tomó excepciones.

Según informa la representante de la a División de Suministros, la corporación figura en el Registro de Proveedores de la Autoridad.

Propuesta: **\$545,740.00** (quinientos cuarenta y cinco mil, setecientos cuarenta dólares).
Desviación del costo estimado: **>9.00%** (mayor de nueve por ciento).

III. EthosEnergy Power Plant Services, LLC -

La propuesta incluye la fianza de licitación por el 10% de su propuesta, que está acompañada por el correspondiente *Certificate of Appointment of Attorney in Fact*. Esta compañía cumple con todas las especificaciones técnicas y no tomó excepciones.

Según informa la representante de la a División de Suministros, la corporación figura en el Registro de Proveedores de la Autoridad.

Propuesta: **\$568,000.00** (quinientos sesenta y ocho mil dólares).
Desviación del costo estimado: **>14.00%** (mayor catorce por ciento).

IV. Serpaga, Inc. –

La propuesta incluye la fianza de licitación por el 10% de su propuesta, que está acompañada por el correspondiente *Certificate of Appointment of Attorney in Fact*. Esta compañía cumple con todas las especificaciones técnicas y no tomó excepciones.

Según informa la representante de la a División de Suministros, la corporación figura en el Registro de Proveedores de la Autoridad.

Propuesta: **\$497,267.00** (cuatrocientos noventa y siete mil, doscientos sesenta y siete dólares).
Desviación del costo estimado: **<1.00%** (menor de un por ciento).



GOBIERNO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA

Determinación:

Un total de cuatro licitadores participaron y presentaron propuestas para la subaste de epígrafe. Estas fueron:

1. Allied Power Technologies Inc.;
2. Mechanical Dynamics & Analysis, LLC;
3. EthosEnergy Power Plant Services, LLC; &
4. Serpaga, Inc.

La propuesta presentada por Allied Power Technologies Inc. se declara como "Onerosa" ya que tiene un costo por encima del 20% permitido por el Reglamento de Subastas de la Autoridad.

La propuesta presentada por Serpaga, Inc. además de cumplir con las especificaciones técnicas, términos y condiciones; los requisitos y figura en el Registro de Proveedores de la Autoridad, cumplen con ofrecer el servicio dentro de los parámetros presupuestarios, por consiguiente, considerados cualificados.

Por lo tanto, según discutido anteriormente, se adjudica esta subasta a **Serpaga, Inc.**, como el postor evaluado cualificado más económico. El precio total de esta subasta asciende a **\$497,267.00** (cuatrocientos noventa y siete mil, doscientos sesenta y siete dólares) con entrega según requerido.

Notificación:

El Gerente de Compras debe enviar a los licitadores participantes y al usuario notificación de esta determinación.

En San Juan, Puerto Rico, hoy 22 de diciembre de 2021,

Romano A. Zamperolli Vilá
Presidente
Comité Permanente de Subastas

Carmen E. Rodríguez Rodríguez
Miembro Alterno
Comité Permanente de Subastas

Juan C. Adrover Ramírez
Miembro Alterno
Comité Permanente de Subastas





PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order

00091906

Revision**Release****Printed****Page**

Jan 3, 2022

1 of 9

Please Direct Inquiries To:

JOEL D PANTOJAS-CARABALLO
JPANTOJAS13525@AEEPR.COM
TITLE PROCUREMENT SUPV G5
787-521-3034 Ext.
FAX 787-521-3171

Vendor:

JUAN GARCIA USCOCOVICH
SERPAGA INC
PO BOX 367307
SAN JUAN PR 00936-7307

Payment Terms

0% 0 Days Net 60 Days
ERS N

Transit Type**Carrier Name****FOB****FOB Point**

F.O.B. JOBSITE

CICLO COMBIN AGUIRRE

Primary Ship To

PREPA
PREPA
SAN JUAN

Instructions

ORDEN DE MATERIALES
REQ. 246771

SE ADJUDICA ORDEN DE ACUERDO A
NUESTRAS ESPECIFICACIONES, TÉRMINOS Y
CONDICIONES SOLICITADOS Y ACEPTADAS
POR SU COMPAÑÍA EN EL RFQ 54095.

ENTREGA: CICLO COMBINADO CENTRAL AGUIRRE
ATENCIÓN: HARRY VELÁZQUEZ 787-521-3974

SUPLIDOR COTIZÓ SEGÚN SOLICITADO. NO
EXCEPCIONES.

NOTAS ESPECIALES:

1. SE LE REQUIERE AL SUPLIDOR UNA FIANZA
DE EJECUCIÓN POR EL 40% DEL TOTAL DE LA
ORDEN DE COMPRA.

2. LUGAR DE ENTREGA: CICLO COMBINADO DE
LA CENTRAL AGUIRRE.
ATENCIÓN: HARRY VELÁZQUEZ 787-521-3974

Header Terms and Conditions

Facility	Standard Name	Revision	S/P	Text	Description - Text at End
	PH000001	004	S	Y	EQUAL OPPORTUNITY
	PH000002	005	S	Y	COMPLIANCE WITH LAWS.
	PH000003	001	S	Y	PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS
	PH000004	005	S	Y	INFRINGEMENT
	PH000006	016	S	Y	CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE
	PH000007	004	S	Y	APPLICABLE LAW
	PH000011	006	S	Y	CHANGES TO ORDER.
	PH000031	009	S	Y	CONFIDENTIALITY
	PH000032	009	S	Y	DELIVERY
	PH000033	009	S	Y	FORCE MAJEURE
	PH000037	008	S	Y	TERMINOS PARA RETENCION EN EL ORIGEN
	PH000038	005	S	Y	NONWAIVER.
	PH000039	008	S	Y	PRICE & PAYMENT
	PH000040	007	S	Y	RELATIONSHIP OF THE PARTIES.
	PH000056	008	S	Y	TAXES AND DUTIES
	PH000057	005	S	Y	TERMINATION
	PH000079	001	S	Y	QUALITY STANDARDS AND WARRANTIES 1
	PH000082	002	S	Y	ANTI-KICKBACK

Line	Quantity	UP	Item Description	Unit Price	Extension
------	----------	----	------------------	------------	-----------



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order
Revision
Release
Printed
Page

00091906

Jan 3, 2022
2 of 9

0001 1.00 ST \$ 251,366.000000 \$ 251,366.0000
TAXABLE

Bid Reference: REQ. 246771

Description: MS7001EA STAGE 2 TURBINE ROTOR BUCKET SET (REFURBISHED)
TO INCLUDED SPECIFICATIONS, TERMS & CONDITIONS

ALL ACCORDING

Schedule

Quantity	1.00	Delivery Date	Jul 5, 2021
Transit Type		Carrier Name	
FOB	F.O.B. JOBSITE	FOB Point	CICLO COMBIN AGUIRRE

Line Comments

MATERIAL: NIMONIC 263 ALLOY
CONDITION: REFURBISHED AS NEW
OEM PART #: 943E0236G031
(FOR REFERENCE ONLY)

Line	Quantity	UP	Item Description	Unit Price	Extension
0002	1.00	ST		\$ 245,901.000000	\$ 245,901.0000
TAXABLE					

Bid Reference: REQ. 246771

Description: MS7001EA STAGE 3 TURBINE ROTOR BUCKET SET (REFURBISHED)
TO INCLUDED SPECIFICATIONS, TERMS & CONDITIONS

ALL ACCORDING

Schedule

Quantity	1.00	Delivery Date	Jul 5, 2021
Transit Type		Carrier Name	
FOB	F.O.B. JOBSITE	FOB Point	CICLO COMBIN AGUIRRE

Line Comments

MATERIAL: NIMONIC 263 ALLOY
CONDITION: REFURBISHED AS NEW
OEM PART #: 943E0236G031
(FOR REFERENCE ONLY)

Purchase Order Total Amount

Total This PO \$ 497,267.0000

por:

Mario E. Miranda - Jefe División de Suministros

01-03-2022

Authorized Signature

Terms and Conditions

Facility	Standard Name	Revision	Description
	PH000001	004	EQUAL OPPORTUNITY

EQUAL OPPORTUNITY.

By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer

against any claims arising from such unlawful discrimination by Seller.

PH000002 005 COMPLIANCE WITH LAWS.

COMPLIANCE WITH LAWS.

Seller warrants that the Materials, Services or Work Product shall be performed, produced, priced, sold and delivered in



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order 00091906
Revision
Release
Printed Jan 3, 2022
Page 3 of 9

Terms and Conditions

Facility Standard Name Revision Description
strict compliance with all applicable local, domestic and international laws, rules and regulations.

PH000003 001 PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

1. Receiving Documentation must be included with all Purchase Order deliverables.
2. All Receiving Documentation and shipping notices must include reference to the Purchase Order number and any applicable item number(s).
3. Each invoice must include the Purchase Order number and any applicable item number, receipted expense bill, and description shown on this Purchase Order. Delays in receiving invoices and errors or omissions on invoices shall be just cause for Buyer's withholding of payment, without loss of cash discount privilege.

PH000004 005 INFRINGEMENT

INFRINGEMENT.

Seller shall hold harmless, defend and indemnify Buyer, its affiliates and its and their respective employees, officers and directors from and against all claims, demands, losses or damages, costs or expenses (including attorneys' fees and other expenses incident thereto) arising out of any infringement, or any alleged infringement, of any intellectual property rights, including rights arising under any patent, copyright, trademark, license and trade secret, in connection with any Material, Work Products, or Services, except to the extent any infringement resulted from designs provided by Buyer to Seller. Without limiting the foregoing, the Seller shall, at its own expense (i) procure for the Buyer an irrevocable royalty-free license or right to continue using such Materials, Work Product or Services (ii) with Buyer's prior written approval, replace the infringing Material, Work Product, or Services with substantially equal but non-infringing Materials, Work Product or Services or (iii) with Buyer's prior written authorization, modify the infringing Materials, Work Product or Services so it becomes non-infringing; provided that no such replacement or modification shall in any way amend or relieve

Seller of its warranties and guarantees set forth in this Order.

PH000006 016 CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDE

CLÁUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDERALES
EN CUMPLIMIENTO CON LA SECCIÓN 2906 DEL ARTÍCULO 2, DEL CÓDIGO DE RENTAS
INTERNAS DE PUERTO RICO, LA AUTORIDAD DE ENERGÍA



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order

00091906

Revision**Release****Printed****Page**

Jan 3, 2022

4 of 9

Terms and Conditions

Facility	Standard Name	Revision	Description
----------	---------------	----------	-------------

ELÉCTRICA ESTÁ EXENTA DEL PAGO DEL ARBITRIO GENERAL DEL 6.6%. ADEMÁS, A PARTIR DEL 15 DE NOVIEMBRE DE 2006, ESTÁ EXENTA DEL PAGO DEL IMPUESTO A LA VENTA Y USOS (IVU) ESTATAL Y MUNICIPAL POR VIRTUD DE LA SECCIÓN 2508 DE LA LEY 117 DEL 4 DE JULIO DE 2006, CONOCIDA COMO LA LEY DE JUSTICIA CONTRIBUTIVA.

* LAS FACTURAS TIENEN QUE DETALLAR EL CONCEPTO DE LA COMPRA O SERVICIO.

LOCAL AND FEDERAL TAXES CLAUSE

IN COMPLIANCE WITH PUERTO RICO'S INTERNAL REVENUE SERVICE CODE, SECTION 2906, ARTICLE 2, PUERTO RICO ELECTRIC POWER AUTHORITY IS EXEMPT OF 6.6% TAX PAYMENT, ALSO, STARTING ON NOVEMBER 15TH, 2006; AND IN ACCORDANCE TO LAW 117 OF 4TH OF JULY OF 2006, KNOWN AS "LEY DE JUSTICIA CONTRIBUTIVA"; PREPA IS EXEMPT OF "IVU (IMPUESTO A LA VENTA Y USOS ESTATAL Y MUNICIPAL)"

TAX PAYMENT.

INVOICES SHALL INCLUDE ALL DETAILS RELATED TO GOOD OR SERVICE PURCHASED.

PH000007

004

APPLICABLE LAW

APPLICABLE LAW.

This Order will be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico without regard to its principles regarding conflicts of laws. Exclusive jurisdiction and venue for any action arising hereunder will be in

Puerto Rico, whether in Federal or Commonwealth Court.

PH000011

006

CHANGES TO ORDER.

CHANGES TO ORDER.

No modifications, changes or substitutions of Materials, Services or Work Product or extra charges of any kind or change in or cancellation of or waiver of or exception to any of the terms or conditions of this Order will be recognized unless authorized by Buyer in writing. Buyer may direct, in writing, changes, including additions to or deletions from the quantities of Materials, Work Product or Services originally ordered, or in the specifications or drawings. Unless otherwise agreed to by the parties, if any such change causes an increase or decrease in the cost of, or the time required for performance hereunder, an equitable adjustment shall be made in the price and/or delivery schedule. Any claims for adjustment shall be asserted by Seller no later than thirty (30) days from the date of Seller's receipt of notice of such



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order 00091906
Revision
Release
Printed Jan 3, 2022
Page 5 of 9

Terms and Conditions

Facility Standard Name Revision Description

adjustment shall be asserted by Seller no later than thirty (30) days from the date of Seller's receipt of notice of such any adjustment. Notwithstanding the foregoing, mutually agreeable adjustments for any changes under this Order may be made by a written Order revision from one party which is confirmed in writing by the other party.

PH000031 009 CONFIDENTIALITY

CONFIDENTIALITY.

This Order and all plans, drawings, designs and specifications which may be supplied by Buyer to Seller shall remain the property of Buyer and any information derived there from or otherwise communicated to the Seller in connection with this Order shall be regarded by Seller as strictly confidential and shall not, without the prior written consent of Buyer, be

disclosed to any third party or made use of by Seller.

PH000032 009 DELIVERY

DELIVERY.

Seller agrees to provide for delivery of the Materials, Work Product or Services on the date(s) and to the address set forth in the Order. Seller shall bear all costs of shipping, transportation and packing unless otherwise provided in this Order.

On all Materials delivered in error, or in excess of the quantity shown on Order, Buyer reserves the right to return the Materials at Seller's expense. Buyer's count shall be final and conclusive on any shipment not accompanied by the packing slip.

PH000033 009 FORCE MAJEURE

FORCE MAJEURE.

Neither party shall be in breach of the Order to the extent that any delay or default in performance is due to Force Majeure.

The term "Force Majeure" will mean any cause which is not within the control of the party claiming force majeure and which, by the exercise of due diligence, such party is unable to prevent or overcome, including but not limited to, flood, fire, tornado, governmental order, insurrections, riots and wars. Within seven (7) days of the commencement of an event of Force Majeure, the party affected thereby will provide the other party with written notice of the event. Any event of Force Majeure shall not affect Buyer's right of termination as set forth in TERMINATION Section hereof.

PH000037 008 TERMINOS PARA RETENCION EN EL ORIGEN

INFORMACION SOBRE RETENCIÓN EN EL ORIGEN



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order 00091906
Revision
Release
Printed Jan 3, 2022
Page 6 of 9

Terms and Conditions

Facility Standard Name Revision Description

LA AUTORIDAD RETENDRÁ EL EQUIVALENTE AL 10% DE TODO PAGO POR SERVICIOS PRESTADOS QUE SE EFECTÚE BAJO ESTE CONTRATO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIÓN 1143, SEGÚN ENMENDADA. NO OBSTANTE, SE DISPONE QUE LA RETENCIÓN A EFECTUARSE POR LA AUTORIDAD BAJO LAS DISPOSICIONES DE LA PRESENTE CLÁUSULA PODRÍA AUMENTAR A:
20% EN CASO DE QUE EL PROFESIONAL FUERA UN INDIVIDUO NO RESIDENTE CIUDADANO DE LOS ESTADOS UNIDOS DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994 , SECCION 1147; O UN 29% EN CASO DE QUE EL POFESIONAL FUERA UN INDIVIDUO NO RESIDENTE Y NO CIUDADANO DE LOS ESTADOS UNIDOS, O UNA CORPORACIÓN O SOCIEDAD EXTRANJERA NO DEDICADA A INDUSTRIA O NEGOCIO EN PUERTO RICO, DE CONFORMIDAD CON EL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO DE 1994, SECCIONES 1147 Y 1150.
SI EL DEPARTAMENTO DE HACIENDA HA EMITIDO UN CERTIFICADO DE RELEVO A FAVOR DEL PROFESIONAL, ES RESPONSABILIDAD DE ÉSTE, SOMETER COPIA DEL RELEVO A LA AUTORIDAD PARA CADA AÑO NATURAL, DE LO CONTRARIO, LOS PAGOS SEGUIRÁN SUJETOS A LA RETENCIÓN EN EL ORIGEN. TODA FACTURA DEBE DETALLARSE POR CONCEPTOS (SERVICIOS, MATERIALES, EQUIPO, ETC.) PARA IDENTIFICAR LAS PARTIDAS SUJETAS A RETENCIÓN Y EVITAR DESCUENTOS INDEBIDOS.
LA AEE PUEDE TERMINAR ESTE CONTRATO UNILATERALMENTE, EN CASO DE QUE EL CONTRATISTA NO OBSERVE CUALQUIERA DE LAS CLÁUSULAS ANTERIORES, POR CUALQUIER FALLA EN EL CUMPLIMIENTO CON CUALQUIERA DE LAS DISPOSICIONES DEL CONTRATO, INCLUYENDO ESTE ADDENDUM, MEDIANTE LA PREVIA NOTIFICACIÓN POR ESCRITO AL CONTRATISTA DENTRO DEL TÉRMINO DE TREINTA DÍAS ANTES DE COBRAR

EFFECTIVIDAD LA TERMINACIÓN.

PH000038 005 NONWAIVER.

NONWAIVER.

No waiver by any party of any condition, or of any breach of any provision contained in this Order, in any one or more instances, will be deemed to be or construed as a further or continuing waiver of any such condition or breach or waiver of any other condition or of any breach of any other provision.

PH000039 008 PRICE & PAYMENT

PRICE & PAYMENT.

The prices specified in the Purchase Order shall include all charges and expenses in connection with the packing and shipping of the Materials to Buyer. No additional charges of any kind will be allowed unless specifically agreed to in



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order 00091906
Revision
Release
Printed Jan 3, 2022
Page 7 of 9

Terms and Conditions

Facility Standard Name Revision Description

shipping of the Materials to Buyer. No additional charges of any kind will be allowed unless specifically agreed to in
be deducted or setoffs may be made against Seller if Seller does not perform in accordance with this Order. The time for
payment of invoices and acceptance of any applicable discounts shall be based on the date when the invoice is received and
stamped by PREPA's Accounts Payable, and all pertinent information is correct on the invoice.

All invoices are to be sent to the following address: Puerto Rico Electric Power Authority, Treasury Division, PO Box 70253,

San Juan, PR 00936.

PH000040 007 RELATIONSHIP OF THE PARTIES.

RELATIONSHIP OF THE PARTIES.

Seller is an independent contractor. This Purchase Order does not create a partnership or joint venture between Seller and
Buyer. Seller is not an agent of Buyer, and Seller has no authority to act on behalf of Buyer. Except as otherwise provided
in this Purchase Order, Seller will provide any and all labor, supervision, materials, and equipment necessary to provide
the Materials, Services or Work Product as set forth in this Order, and Seller will obtain any and all permits and
authorizations required by applicable law to provide such Materials, Services or Work Product. Seller will control the means
and manner of the providing of the Materials, Services or Work Product. Seller's personnel will not be considered employees
of Buyer, and Buyer will not provide Seller's personnel with wages, salaries, or benefits.

PH000056 008 TAXES AND DUTIES

TAXES AND DUTIES.

Seller shall be responsible for and pay directly, all corporate and individual taxes measured by net income or profit
imposed by any governmental authority on Seller, its employees or subcontractors due to the execution of any agreement or
the performance of or payment for work hereunder. Unless otherwise agreed in writing or prohibited by law, the price set
forth in this Order shall not include any local tax (IVU) but Seller shall pay any federal tax, US Customs fees, Shipping
Surcharge fees or other tax required to be imposed on the Materials, Services or Work Product.

Important:

PREPA is a government owned company exempt for pay taxes under Section 2906, Article 2 of Puerto Rico's Internal Revenue



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order 00091906
Revision
Release
Printed Jan 3, 2022
Page 8 of 9

Terms and Conditions

Facility	Standard Name	Revision	Description
	PREPA is a government owned company exempt for pay taxes under Section 2906, Article 2 of Puerto Rico's Internal Revenue		
PH000057		005	TERMINATION

TERMINATION.

Buyer may, at its option, cancel any unfulfilled Order, in which event Buyer's only obligation shall be to pay for Materials shipped or Work Product or Services performed prior to the receipt cancellation; provided, however, that if this Order covers Materials manufactured to Buyer's specifications, upon receipt of notice of cancellation, Seller shall stop all performance except as otherwise directed by Buyer, and if Seller is not in breach of this Order, Buyer shall pay Seller's actual, direct, unavoidable and reasonable costs resulting from such termination, not to exceed the total price of the Materials, Work Product or Services stated in this Order. Upon such payment, title to any Materials or Work Product, including uncompleted Materials or Work Product, shall pass to Buyer. In the event of default by Seller in the performance of any obligation hereunder, including time of delivery, or in the event it becomes apparent that delivery cannot be accomplished within the time specified, Buyer may, at its option, cancel this Order entirely, without penalty or liability (except for Materials received and accepted.) All provisions necessarily requiring survival beyond any termination of this Order, including, but not limited to, those relating to audit, choice of law, confidentiality, indemnity, title and warranty shall survive any such termination.

PH000079	001	QUALITY STANDARDS AND WARRANTIES 1
----------	-----	------------------------------------

QUALITY STANDARDS AND WARRANTIES.

Seller warrants (i) title to the Materials or Work Product, free and clear of all liens and encumbrances and (ii) that Materials, Work Product and Services will be in exact accordance with this Order, the specifications, drawings, samples or other descriptions furnished or adopted by Buyer and will be fit and sufficient for the purpose intended, merchantable, of good material, design and workmanship, free from defect and be new and of best quality, unless otherwise specified. Such warranty shall survive delivery and shall not be deemed waived either by reason of Buyer's acceptance of the Materials, Work Product or Services or by payment for them. The Materials, Work Product or Services shall be subject to Buyer's right of inspection and rejection at any reasonable time before or during the manufacturing process or provision of Service and



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order 00091906
Revision
Release
Printed Jan 3, 2022
Page 9 of 9

Terms and Conditions

Facility Standard Name Revision Description

within forty-five (45) days after delivery to destination or completion.
Materials, Work Product or Services other than

those specified shall not be submitted without Buyer's written authorization.

PH000082 002 ANTI-KICKBACK

Seller represents that no unrecited consideration, kickbacks, fees, payments, gifts, entertainment, or things of value were given to or requested by any Buyer employee as an inducement to enter into or continue this Order, and that Seller further agrees to immediately report any such request, demand, or occurrence relating to any Buyer employee or this Order to: Puerto Rico Electric Power Authority, Material Management Division Head Office, P.O. Box 3670151, San Juan, Puerto Rico 00936-0151; Telephone: 787-521-3268, or 787-521-3310. Seller shall adhere to Buyer's Expected Ethical Conduct Standards as defined in

PREPA's Code of Ethic or Leyes de Ética which is available at:

<http://www.prepa.com/spanish.asp?url=http://www.aeepr.com/suministros.asp>

End of Purchase Order

**Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant**

MR #: 664723
Asset: Gas Turbine Rotor
Scope: Supply MS7001EA Stage 2 and 3 Buckets sets (refurbished)

Technical Specifications

Article 1: Scope of Supply

- 1.1) Contractor shall supply Stage 2 and 3 Turbine Buckets refurbished sets for a General Electric's MS7001EA Gas Turbine Rotor, at Aguirre Combined Cycle Plant. All in strict accordance with the provisions of this Order, Terms and Conditions and Contractor's Proposal, all of which are hereby made a part hereof.
- 1.2) Provided that, on or before the term of this Order is expired, as part of its obligations herein stated, the Contractor shall deliver to PREPA a true and exact copy of all diagrams, plans, sketches, maps, and other documents used in the performance of this Order and for which a third party copyright or patent right would not be an impediment for such delivery.
- 1.3) Bidder shall include with proposal all the technical information related to each bucket set, and a certification that all the requirements in Article 2 below are met. The certification shall be signed by the responsible Bidder representative.

Article 2: Technical Requirements

- 2.1) Contractor shall supply one (1) complete set of refurbished Stage 2 buckets for a Gas Turbine Rotor, model MS7001EA, all according to the following minimum requirements:
 - a) Condition: refurbished as new
 - b) Operating life: after repair completion, set shall have a minimum of 48,000 operating hours at 1840 F on liquid distillate fuel
 - c) OEM Part #: 314B7166G038
 - d) Design: Cutter teeth, scallop shroud band, 2055 F rated firing temp capable, 10 cooling radial holes
 - e) Material: IN-738 alloy
 - f) Coating: HVOF applied MCrAlY
 - g) Set shall include installation hardware kit (seal pins & twist locks)
 - h) Set shall include a bucket moment weight chart
- 2.2) Contractor shall supply one (1) complete set of refurbished Stage 3 buckets for a Gas Turbine Rotor, model MS7001EA, all according to the following minimum requirements:
 - a) Condition: refurbished as new
 - b) Operating life: after repair completion, set shall have a minimum of 48,000 operating hours at 1840 F on liquid distillate fuel

- c) OEM Part #: 314B7167G027 or 314B7167G029
- d) Design: Cutter teeth, scallop shroud band, 2055 F rated firing temp capable
- e) Material: GTD-741 alloy or IN-738 alloy
- f) Coating: HVOF applied MCrAlY
- g) Set shall include the installation hardware kit (seal pins & twist locks)
- h) Set shall include a bucket moment weight chart

Article 3: Final Documentation

3.1) Contractor shall submit a final repair report for each stage, including:

- a) Description of the complete repair process
- b) Mapping of all defects identified and all repair locations
- c) Incoming, in-process and final dimensional inspections. All dimensions should comply with OEM specifications.
- d) Final FPI results, including any metallographic analysis
- e) Coating process and certification.

3.2) Contractor should include with final repair report a Certificate of Compliance. This is a document certifying that all aspects of this Order and specifications have been met and should be signed by the responsible Contractor representative.

Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant

MR #: 664723
Asset: Gas Turbine Rotor
Scope: Supply MS7001EA Stage 2 and 3 Buckets set (refurbished)

Terms and Conditions

Article 1: Definitions

Whenever the words defined in this article or pronouns used instead are mentioned in this Contract, they shall have the meanings here given:

- 1.1) PREPA or Authority: shall mean the Puerto Rico Electrical Power Authority and all his corresponding Divisions.
- 1.2) Engineer - shall mean the Generation Director of PREPA, acting directly or through his properly authorized representatives.
- 1.1) Contracting Officer - shall mean the Executive Director of PREPA, acting directly or through his properly authorized representatives.
- 1.2) Order- shall mean collectively, all the covenants, terms, and stipulations in these articles of agreement and in all supplementary documents hereto attached which constitute essential parts of the Order and are hereby made part thereof, to wit:
 - Purchase Order
 - Instruction to Bidder
 - Invitation to Bid and Advertisement for Bids
 - Contractor's Bid Including Bid Data and Schedules
 - Terms and Conditions
 - Technical Specifications
 - Proposal Forms
 - Bid, Performance, and Payment Bonds
 - Sworn Statement
 - Letter of Award
- 1.3) Contractor - designates the company that will supply the parts or equipment as defined in the Order and Specifications and Terms and Conditions contained in it.

Article 2: Quality Requirements

- 2.1) Pre-Production Qualification
 - a) Bidder Audits: Prior to placing an order for the supply of any part or equipment, the manufacturer's facilities, quality control system, and general operation can be audited for capability to adequately supply the parts or equipment by representative(s) from PREPA's purchasing, quality control and/or engineering organizations. Approval shall be granted for a period specified by PREPA, but may be removed by PREPA for inadequate Bidder performance at any time.

- b) Records: Contractor shall maintain all process control records and quality control test results on file for a period of five years. This information shall be made available to PREPA upon request.

Article 3: Shipment

- 3.1) Arrange a pre-shipment inspection with Engineer to:
 - a) Review documentation
 - b) Perform visual inspection if necessary
 - c) Deliver copies of the documentation.
- 3.2) Advise Engineer of the shipping date, route and carrier.
- 3.3) With shipment, the Contractor shall include a packing list with each package, which shall be plainly marked "Packing List Enclosed".

Article 4: Consideration

- 4.1) The price quoted in the Proposal shall constitute full compensation for transportation, inspection, repair, supplies, labor, tools, equipment, other accessories, cost of all insurance, profit, Contractor's overhead, and all other work satisfactorily in accordance with this Order.
- 4.2) In accordance with the Terms and Conditions contained herein, PREPA agrees to pay and the Contractor accepts, as full payment for the complete performance of this Order, the final agreement price, plus any additional amount to be paid due to extra work ordered and accepted by the Engineer and approved by the Contracting Officer, according to Article 7, Changes and/or Extra Work, below.
- 4.3) All invoices submitted by the Contractor shall be subject to PREPA's approval before being paid, and its payment shall be done within thirty (30) days after the date of its approval by PREPA.
- 4.4) All invoices submitted by the Contractor shall include the following Certification in order to proceed with its payment. This is an essential requirement and those invoices without this Certification will not be processed for payment.

"Under penalty of absolute nullity, I hereby certify that no employee, official or director of PREPA is a party or has any interest in the profits or benefits to be obtained under this Contract, or if any employee, official or director of PREPA has any interest in the profits or benefits under this contract a waiver has been previously obtained. I, also certify that the only consideration to (furnish the goods) or (provide the services) under this Contract is the payment agreed with PREPA's authorized representative. The total amount of this invoice is fair and correct. The (works) were completed, (the products) were delivered or (the services) were provided and no payment has been received for said concept.

Contractor's Signature"

Article 5: Delivery of Parts

5.1) Delivery of Parts at Combined Cycle Plant (site)

All parts or equipment shall be delivered at site (FOB) as follows; ten (10) consecutive weeks, from the date the Order is awarded.

Article 6: Specifications and Drawings

- 6.1) PREPA reserves the right to review and approve all drawings, specifications, methods and data, which the Contractor develops hereunder. Such review or approval shall in no way relieve the Contractor from its responsibilities, obligations or liabilities under this Contract. The Contractor shall obtain such reviews or approval in writing from PREPA.

Article 7: Changes and/or Extra Work

- 7.1) PREPA may, at any time, make changes or order extra work within the Scope of Work contracted, subject to previous written acceptance by PREPA's Contracting Officer. If such changes or extra work require a price and/or schedule revision, such revision(s) shall be negotiated and agreed in writing by both parties before the commencement.
- 7.2) Changes and/or Extra Work must be approved by the appropriate official pursuant to the general authorization for approval in order for payment of such change or extra work be made.

Article 8: Force Majeure

- 8.1) The parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform, or are prevented from performing by a Force Majeure event. For purposes of this Order, Force Majeure means any event not caused by the fault or negligence of, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event.
- 8.2) Force Majeure may include, but not be limited to, the following: Acts of God, industrial disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections, epidemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a Force Majeure event, and/or its effects, are beyond the reasonable control and were not caused by the fault or negligence of the party claiming the Force Majeure event, and that such party, within ten (10) days after the occurrence of the alleged Force Majeure, gives the other party written notice describing the particulars of the occurrence and its estimated duration. The burden of proof as to whether a Force Majeure has occurred shall be on the party claiming the Force Majeure.

Article 9: Penalty for Delays

- 9.1) If Contractor fails to complete the Order, or any separable part thereof, within the time established, Contractor shall pay to PREPA a penalty of USD \$500.00 for each day of delay in completing the Order or separable part thereof, up to a maximum of ten percent (10%) of the Order price, and the Contractor and his sureties shall be joint and several liable for said amount.
- 9.2) In the event that Contractor, due to his delay, had pay the total amount of the penalty as above mentioned, and has failed to complete the Order or any part separable thereof, it could be considered a breach of the Order, and PREPA may terminate the Order, execute the performance bond and pursue any other remedies under this Order, law or equity.
- 9.3) In case of delay, the Contractor shall within ten (10) days from the beginning of any such delay notify the Engineer in writing of the causes of delay, who shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in his judgment, the findings of facts justify such an extension.
- 9.4) If PREPA does not terminate the right of the Contractor to proceed, the Contractor shall continue with the Order, in which event shall pay to PREPA a penalty in the amount set forth above for each calendar day of delay until the Order is completed, and the Contractor and his sureties shall be liable for the amount thereof: provided that, the right of the Contractor to proceed shall not be terminated or the Contractor charged with a penalty because of any delays in the completion of the work due to Force Majeure events or situations, or failures on the part of PREPA to carry out its obligations.
- 9.5) PREPA shall have the right to the payment or to the withholding of Contractor's payments in case of Contractor's delay in completion of the Order. The Contractor agrees that the penalty shall not be subject to reduction, moderation or modification, since this penalty is a pecuniary punishment for the delay, and not a liquidation of damages.

Article 10: Termination

- 10.1) Notwithstanding anything to the contrary in this Order regarding its term, PREPA may, at any moment, terminate, cancel or accelerate its expiration, after giving Contractor a not less than thirty (30) days prior notice, when in PREPA's judgment such action responds to PREPA's best interest. Provided that, in the event Contractor fails to comply with any of its obligations under the Order, PREPA may declare an immediate Order termination, cancellation or rescission, without prior notice to Contractor. The exercise of its right to terminate, cancel or rescind the Order shall not be understood as a waiver by PREPA to any other remedy it may have under this Order or under the law for delays or breach incurred by Contractor in the performance of its obligations under the Order.

- 10.2) If PREPA terminate the Order and take possession of the premises, and of all materials, tools, and appliances thereon, and finish the work by whatever method it may deem expedient. In such a case, Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Order price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor shall pay the difference to PREPA. The expense incurred by PREPA as herein provided, and the Engineer shall certify the damage incurred through Contractor's default.

Article 11: Insurance, Bonds, and Indemnities

- 11.1) Contractor shall be responsible for any and all damages caused to the equipment from the time that said equipment leaves Contractor's facilities until such time as said equipment returns to PREPA's facilities. Contractor agrees to relieve and exonerate from responsibility and indemnify PREPA for all costs and expenses of any nature (including attorney's fees) incurred by PREPA and which originate or arise relating to claims by third parties for personal damages, including death, or for property damage, but which damages have been caused by act or omission of Contractor in the performance or nonperformance of its obligations under this Order.

Article 12: Patents and Copyrights

- 12.1) The Contractor agrees to indemnify and hold harmless PREPA from any rightful suit and/or claim of any third party that any Parts manufactured by the Contractor and furnished hereunder infringes any patent and/ or copyright of the United States. If PREPA notifies Contractor promptly of the receipt of any claim, and does not take any position adverse to Contractor regarding such Claim and gives Contractor information, assistance and exclusive authority to settle and defend the claim, Contractor shall at its own expense and option either (i) settle or defend the claim or any suit or proceeding and pay all damages and costs awarded in it against PREPA, or (ii) procure for Contractor royalty – free, irrevocable, non – transferable the right to continue using the Part, or (iii) modify the Part so that it becomes non – infringing, or (iv) replace the Part with non-infringing Parts; or (v) if mutually acceptable to the Parties, remove the infringing Part and refund and/or reduce the price allocable to such part. The foregoing states the entire liability of Contractor for patent and / or copyright infringement of any Parts.
- 12.2) This shall not apply to any Part which is altered, modified or manufactured exclusively to PREPA's design. With respect to any Part furnished under the Contract which is not manufactured by Contractor, only the patent and /or copyright indemnity of the manufacturer, if any, shall apply. This IP Indemnity shall be the sole and exclusive remedy for any claim based on patent, trademark or copyright infringement for product or services.

- 12.3) Each party shall retain ownership of all Confidential Information and intellectual property it had prior to the Contract. All new intellectual property conceived or created by Contractor in the performance of this Contract, whether alone or with any contribution from PREPA, shall be owned exclusively by Contractor. PREPA agrees to deliver assignment documentation as necessary to achieve that result.

Article 13: Disputes

- 13.1) Except as otherwise specifically provided in this Service Order, all disputes concerning questions of fact arising under this Service order shall be decided by the Engineer, subject to written appeal by the Contractor within thirty (30) days to the Contracting Officer. As soon as practicable thereafter, the Contracting Officer shall inform each party hereto of his decision regarding the dispute, which decision shall be final and conclusive upon the parties hereto, unless such decision is challenged on the basis of being arbitrary, malicious or capricious. If such challenge is made, either party may pursue its remedy at law or equity. In the meantime, the Contractor shall diligently proceed with the work as directed.
- 13.2) In the event of a dispute arising during the warranty period, Contractor shall ensure that the Performance Bond remains in full force and effect until such dispute is resolved and all obligations of Contractor under the agreement are duly performed.

Article 14: Quality Assurance

- 14.1) The Contractor shall have an adequate quality control program to satisfy all applicable regulation and requirements specified in the procurement documents. The program shall contain all those measures necessary to assure that all basic technical requisites are fulfilled.
- 14.2) PREPA reserves the right to conduct audits and inspections to the facilities, activities, and/or documents; limited to inspection and quality control documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract; when estimated necessary in order to assure that the quality control program is adequate and is being properly implemented. The Contractor shall provide PREPA access to its facilities and documents; limited to inspection and quality control documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract; so that PREPA, through audits and inspections can verify the quality of the purchased products or services. PREPA is responsible for all expenses incurred in connection with any such review or audit. PREPA shall not have the right to audit the derivation of any lump sum amounts.
- 14.3) In every case in which the parts or services to be furnished to PREPA are subcontracted partially or totally by the Contractor, the Contractor shall request the subcontractor to accept and comply with all the requirements of this Quality Assurance Clause.

Article 15: Liabilities

- 15.1) The appearing Parties agree that their responsibilities for damages under this Order will be governed by the Puerto Rico Civil Code and its case law, as dictated by the Supreme Court of Puerto Rico. Notwithstanding, the total liability of the Contractor for all claims arising out of or relating to the performance or breach of the Order or use of any Parts, Products or Services or any order shall not exceed the Order price. Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable under Article 13, Disputes, before the expiration of the applicable statute of limitations or repose, but not later than one (1) year after the expiration of such warranty period.
- 15.2) The Contractor shall not be responsible for loss of profits or revenues, indirect or consequential damages that may occur in relation to the work performed under this Contract.

Article 16: Warranty

- 16.1) The Contractor warrants that all materials, parts, equipment used, and work performed under this Contract comply in all respect with its terms and conditions; that they are free from any and all latent and patent defects in design, materials, and workmanship; that they are suitable and adequate for the purposes for which they were designed and for such others purposes, if any, as are specified in the contract, and that the services provided under this Contract will conform with the highest standards of care and practice appropriate to their nature.
- 16.2) The warranty period will begin the date once PREPA accepts the parts within 60 calendar days and will continue for a period of eighteen months in storage or one year in operation. The Contractor will, upon written notice by PREPA, fully remedy, free of expense to PREPA, such defects as may develop on said services, materials, parts or equipment provided that they have been properly stored, installed, maintained, and operated within the specified parameters. The Performance Bond shall cover and serve as guarantee for this warranty.
- 16.3) For those materials, parts, equipment which proves defective or deficient during the warranty period, whether cause by material failure, deficient installation or wrongly operation under the supervision and guidance of the Contractor shall, at his own expense, repair or replace, transport-in, from Contractor's facilities to PREPA's site, and transport-out, from PREPA's site to Contractor's facilities, such materials, parts, and/or equipment.
- 16.4) For parts and equipment to be procured by Contractor from other suppliers, and which will be furnished by Contractor to PREPA under this Contract, a written warranty shall be obtained by the Contractor from each supplier and legally tendered to PREPA prior to the commencement of work.

Government of Puerto Rico
Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339
PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***New Water Condensate Tank for the Aguirre
Combined Cycle***

11/29/2021



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	New Water Condensate Tank for the Aguirre Combined Cycle
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>


PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
<i>Aguirre – Condensate Water Tank</i>	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

This project related to New Water Condensate Tank for the Aguirre Combined Cycle -is necessary to provide water for the steam cycle of the combined cycle which allows the power plant to be more reliable. The tank in question reflects an advanced state of corrosion and several bent sections, compromising its long-term integrity and reliability. Based on the foregoing, the Central understands that the best alternative is to replace the tank as soon as possible.

Section 3. Scope of Work

3.1. Scope of Work Description

The general scope of this project will consist of the design and replacement of the STAG 1 Condensate Water Storage Tank, at Aguirre Combined Cycle Plant.



Detailed specifications of the works to be completed are the following:

- I. Contractor shall supply all resources, materials and equipment for the design and replacement of the STAG 1 Condensate Water Storage Tank, all according to the following scope of work:

Tank information:

- i. 127,000 gallons (nominal)
 - ii. 26' diameter, 32' height
 - iii. Type: vertical type with flat bottom and dome roof
 - iv. Standard: API 650
- II. Contractor shall dismantle existing tank, including dome roof plates, shell plates, bottom plates and other miscellaneous items. Load all removed steel material into dumpsters, provide by PREPA, to be disposed as scrap metal.
- III. Design, fabricate and install on site a new water condensate storage tank in complete accordance with the API 650 Standard of latest adoption. The tank shall have the following connections & accessories:

- a) One (1) 30" diam. shell manhole (hinged type)
- b) One (1) 24" diam. shell manhole (hinged type)
- c) One (1) 24" diam. roof manhole
- d) One (1) 4" diam. drain (RFSO flange)
- e) One (1) 10" diam. inlet (RFSO flange)
- f) One (1) 10" diam. outlet (RFSO flange, with outlet support)
- g) One (1) 12" diam. overflow stub pipe
- h) Two (2) 4" diam. returns (RFSO flange)
- i) One (1) 8" diam. shell connection (RFSO flange)
- j) One (1) 4" diam. roof connection (RFSO flange)
- k) One (1) 6" diam. roof connection RFSO flange
- l) One (1) 6" diam. spare roof (RFSO flange with blind flange)
- m) One (1) 16" diam. mushroom type roof vent
- n) One (1) liquid level indicator, aluminum board (target type)
- o) Anchor chairs, as per tank's design
- p) Anchor bolts, installed by others
- q) Exterior pipe support brackets
- r) Two (2) grounding lugs
- s) One (1) stainless steel name plate

IV. Materials:

1. Bottom plates - carbon steel, A36, as per code design
2. Shell plates - carbon steel, A36, as per code design
3. Roof plates - carbon steel, A36, as per code design

V. Paint – Internal coating:

1. Contractor shall supply all coating materials and labor for the application of a coating system to the tank interior and suitable to be in contact with potable water, all according to the following and AWWA D102-11.
 - a) Blast to near-white grade the interior surface as per SSPC-SP10
 - b) Apply the coating system as follows: one (1) coat of a primer and two (2) coats of final coating for a total of 24 mils DFT.



VI. Paint – External coating:

2. Contractor shall supply all coating materials and labor for the application of a coating system to the tank interior and suitable to be in contact with potable water, all according to the following and AWWA D102-11.
 - a) Blast to near-white grade as per SSPC-SP6
 - b) Apply the coating system as follows: one (1) coat of a primer and two (2) coats of final coating for a total of 14 mils DFT.

VII. Required Tests:

1. Contractor shall perform the following tests and submit to the Engineer all related documentation:
 1. Bottom – Vacuum Test
 2. Shell – Spot Radiography
 3. Corner weld – Liquid Penetrant
 4. Roof – None Required by code
 5. Tank – Preparation only for Hydrostatic Test. Test to be by others.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)
<i>If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.</i>
Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?



No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- | |
|--|
| <ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA) |
|--|

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- | |
|--|
| <ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA) |
|--|

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$M)
Dismantling works (Removal) for 127,000 Gallons Water Tank	\$72,800.00
Design, materials, fabrication, tests and paint for 127,000 Gallons Condensate Water Storage Tank	\$337,325.00
Total Project Estimated Cost	\$ 410,125.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments



<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

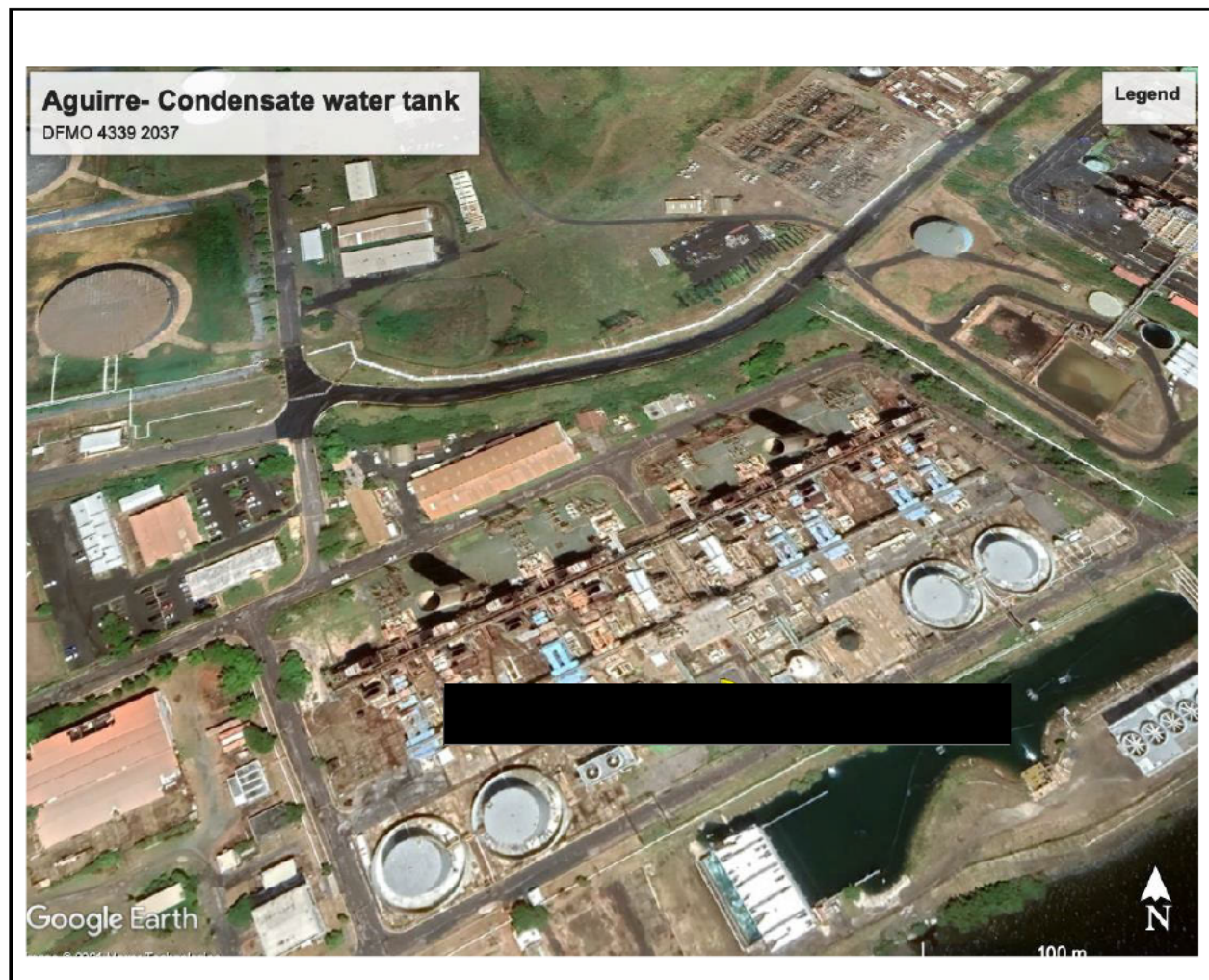
Please see attached the following supporting documentation:

- Solicitud de Subasta
- Request For Proposal (RFP) #00002996
- Technical Specifications Rev 1_Aguirre Combined Cycle Plant CR 208719
- 2037_Contractors Proposal_Alonso & Carus
- Project 37 New Water Condensate Tank (1) (full package)

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

**Puerto Rico Electrical Power Authority
Aguirre Combined Cycle Plant**

Technical Specifications Rev1

CR #: 208719

Equipment: STAG 1 Condensate System

Scope: Supply Resources, Materials & Equipment to Design and Replace
STAG 1 Condensate Water Storage Tank

Article 1: Scope of supply

- 1.1) This specification details the technical and quality assurance requirements for the design and replacement of the STAG 1 Condensate Water Storage Tank, at Aguirre Combined Cycle Plant.
- 1.2) Contractor shall provide all engineering, design, construction, hydrostatic test, labor, equipment, materials, permits and supervision required to build one (1) new condensate tank with a nominal capacity of 125,000 gallons.
- 1.3) Bidder shall quote all necessary resources, materials and equipment for the specified job. All in strict accordance with the provisions of this Service Order, including the attached notes, terms, conditions, specifications and Bidder's Bidding Proposal, all of which are hereby made a part hereof.
- 1.4) Contractor shall furnish all accessories, services, labors, materials not supplied by PREPA and add-ons as called for on the technical specifications or which he deems necessary to make a complete and well-integrated work within the scope of work and the following requirements:
 - a) All engineering, resources and supervision required
 - b) All necessary tools, installation hardware, equipment and miscellaneous materials
 - c) All necessary scaffold equipment to complete all works as required by PREPA
 - d) All necessary coatings, grit blast materials and equipment, including proper storage
 - e) Adequate and proper identification of Contractor's personnel
 - f) Field office, sanitary and first aid facilities for his personnel
 - g) Safety equipment, such as helmets, welders' jackets, goggles, gloves, etc.
 - h) Transportation of components to and from shop, as applicable.
 - i) Any additional storage that may be required to perform its duties, at no extra cost.
 - j) Necessary security at its own cost to the project site.

Article 2: General Requirements

- 2.1) Bidders shall furnish evidence about his capacity and experience in similar works or related components not less than three (3) years. Provide name of the company, telephone and contact person for evaluation by PREPA on similar projects been constructed in the United States and its territories.

- 2.2) Prior to submitting a proposal, Bidders should visit the site for an inspection and learn by himself with the aid of PREPA's personnel, about the details of the scope of work and about local conditions, which might affect his work.
- 2.3) All work performed under this Specification shall be done in a safe and workmanlike manner and in strict conformance with all rules, regulations and ordinances, etc., of government agencies having jurisdiction over the class of work involved. Includes the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), the National Board of Inspection Codes (NBIC), the Environmental Protection Agency (EPA), the Occupational Safety and Health Office (OSHO) requirements, (CTI) and the latest edition of all other applicable codes and standards. Area shall be repaired by welding in accordance with AISC specifications in conjunction with AWS structural welding code D1.1 or latest edition.
- 2.4) Contractor should follow the coating OEM procedures. All removed materials should be disposed in the area designated by the Engineer.
- 2.5) Contractor should apply as required the aforementioned codes and standards in the construction of all components. If conflicts and differences appeared between codes and standards, the most stringent shall apply.
- 2.6) All work should be carried out on a continuous schedule following the commencement date specified by PREPA and the proposed work schedule submitted by the Contractor and accepted by the Engineer.
- 2.7) Contractor should furnish to the Engineer, summary weekly reports of the various divisions of the work under the Order, whether in the mills or shops or in the field, stating the existing status, rate of progress, estimated time of completion and cause of delays, if any.
- 2.8) Contractor should allow PREPA access to the repair area for reviewing the progress. The Engineer's supervision and inspection is for the purpose of assuring that the work is being properly executed in accordance with the drawings and specifications. The fact that the Engineer is instructed to give the Contractor all desired assistance in interpreting shall not relieve the Contractor of any responsibility for the work as intended by the Service Order documents.

Article 3: To be supplied by PREPA

- 3.1) PREPA will provide the following to the Contractor as part of this project:
 - a) Electrical power for equipment
 - b) Water and air for works
 - c) Mobile crane as required
 - d) Local supervisor
 - e) Laydown area next to condensate tank
 - f) Dumpster for scrap metal, including disposition

Article 4: Scope of Work

- 4.1) Contractor shall supply all resources, materials and equipment for the design and replacement of the STAG 1 Condensate Water Storage Tank, all according to the following scope of work:
- a) Tank information:
- Capacity: 127,000 gallons (nominal)
 - Dimensions: 26' diameter, 32'-0" height
 - Type: vertical type with flat bottom and dome roof
 - Standard: API 650
- 4.2) Contractor shall dismantle existing tank, including dome roof plates, shell plates, bottom plates and other miscellaneous items. Load all removed steel material into dumpsters, provide by PREPA, to be disposed as scrap metal.
- 4.3) Design, fabricate and install on site a new water condensate storage tank in complete accordance with the API 650 Standard of latest adoption. The tank shall have the following connections & accessories:
- a) One (1) 30" diam. shell manhole (hinged type)
 - b) One (1) 24" diam. shell manhole (hinged type)
 - c) One (1) 24" diam. roof manhole
 - d) One (1) 4" diam. drain (RFSO flange)
 - e) One (1) 10" diam. inlet (RFSO flange)
 - f) One (1) 10" diam. outlet (RFSO flange, with outlet support)
 - g) One (1) 12" diam. overflow stub pipe
 - h) Two (2) 4" diam. returns (RFSO flange)
 - i) One (1) 8" diam. shell connection (RFSO flange)
 - j) One (1) 4" diam. roof connection (RFSO flange)
 - k) One (1) 6" diam. roof connection RFSO flange
 - l) One (1) 6" diam. spare roof (RFSO flange with blind flange)
 - m) One (1) 16" diam. mushroom type roof vent
 - n) One (1) liquid level indicator, aluminum board (target type)
 - o) Anchor chairs, as per tank's design
 - p) Anchor bolts, installed by others
 - q) Exterior pipe support brackets
 - r) Two (2) grounding lugs
 - s) One (1) stainless steel name plate
- 4.4) Materials:
- a) Bottom plates - carbon steel, A36, as per code design
 - b) Shell plates - carbon steel, A36, as per code design
 - c) Roof plates - carbon steel, A36, as per code design

4.5) Required Tests

Contractor shall perform the following tests and submit to the Engineer all related documentation:

- a) Bottom - Vacuum Test
- b) Shell - Spot Radiography
- c) Corner weld – Liquid Penetrant
- d) Coating Adhesion Tests as per NACE STANDARDS
- e) Coating Holiday Test-Voltage discontinuity test as per NACE STANDARDS
- f) DFT- Coating Dry Film Thickness

4.6) Internal Coating

Contractor shall supply all coating materials and labor for the application of a coating system to the tank interior and suitable to be in contact with potable water, all according to the following and AWWA D102-11.

- a) Blast to near-white grade the interior surface as per SSPC-SP10
- b) Apply the coating system as follows: one (1) coat of a primer and two (2) coats of final coating for a total of 24 mils DFT.

4.7) External Coating

Contractor shall supply all coating materials and labor for the application of a coating system to the tank exterior, all according to the following and AWWA D102-11.

- a) Blast to near-white grade as per SSPC-SP6
- b) Apply the coating system as follows: one (1) coat of a primer and two (2) coats of final coating for a total of 14 mils DFT.

**Puerto Rico Electrical Power Authority
Aguirre Combined Cycle Plant**

Terms and Conditions

CR #: 208719
Equipment: STAG 1 Condensate System
Scope: Supply Resources, Materials & Equipment to Design and Replace
STAG 1 Condensate Water Storage Tank

Article 1: Definitions

Whenever the words defined in this article or pronouns used instead are mentioned in this Contract, they shall have the meanings here given:

- 1.1) The words "PREPA" or "Authority" shall mean the Puerto Rico Electrical Power Authority and all his corresponding Divisions.
- 1.2) The words "Contracting Officer" shall mean the Head Materials Management Division, acting directly or through his properly authorized representatives.
- 1.3) The word "Engineer" shall mean the Head of Combined Cycle Plant, acting directly or through his properly authorized representatives.
- 1.4) The word "Contract" shall mean, collectively, all the covenants, terms, and stipulations in these articles of agreement and in all supplementary documents hereto attached which constitute essential parts of the Contract and are hereby made part thereof, to wit:
 - Contract order
 - Technical Specifications
 - Terms and Conditions
 - Instructions to Bidders
 - Invitation to Bid and Advertisement for Bids
 - Bidder's Bid Including Bid Data and Schedules
 - Bid, Performance, and Payment Bonds
 - Sworn Statement
- 1.5) The word "Bidder" designates the company that shall submit the proposal based on the Technical Specifications, Terms and Conditions and other documents required by PREPA.
- 1.6) The word "Contractor" designates the company that will perform all work as defined in the Contract and the Terms and Conditions and Specifications contained in it.

Article 2: Quality Requirements

2.1) Pre-Production Qualification

- a) Bidder Audits: Prior to placing a Contract for the manufacture of any component, the manufacturer's facilities, quality control system, and general operation can be audited for capability to adequately perform the indicated works by representative(s) from PREPA's purchasing, quality control and/or engineering organizations. Approval shall be granted for a period specified by PREPA, but may be removed by PREPA for inadequate Bidder performance at any time.
- b) Records: Contractor shall maintain all process control records and quality control test results on file for a period of five years. This information shall be made available to PREPA upon request.

Article 3: Consideration

- 3.1) This Contract is a lump sum price and the price quoted in the Proposal shall constitute full compensation for designing, manufacturing, furnishing, and/or all supplies, labor, tools, construction equipment, other accessories, cost of all insurance, profit, Contractor's overhead, and all other work satisfactorily in accordance with this Contract.
- 3.2) In accordance with the terms and conditions contained herein, PREPA agrees to pay and the Contractor accepts, as full payment for the complete performance of this Contract, plus any additional amount to be paid due to extra work Contracted and accepted by the Engineer and approved by the Contracting Officer.
- 3.3) Contractor shall submit its invoices for work already done according to the payment schedule approved by the Engineer, together with the technical supporting documents of required tests. During the life of the Contract, invoices for partial payments shall be made as follow:
 - 20%: Mobilization and demolition of existing tank
 - 20%: Design and approval of drawings
 - 40%: Fabricate and install tank
 - 10%: Paint tank (internal and external)
 - 10%: Final Engineer inspection and acceptance
- 3.4) All invoices submitted by the Contractor shall be subject to PREPA's approval before being paid, and its payment shall be done within sixty (60) days after the date of its approval by PREPA.

- 3.5) All invoices submitted by the Contractor shall include the following Certification in Contract to proceed with its payment. This is an essential requirement and those invoices without this Certification will not be processed for payment.

"Under penalty of absolute nullity, I hereby certify that no employee, official or director of PREPA is a party or has any interest in the profits or benefits to be obtained under this Contract, or if any employee, official or director of PREPA has any interest in the profits or benefits under this contract a waiver has been previously obtained. I, also certify that the only consideration to (furnish the goods) or (provide the services) under this Contract is the payment agreed with PREPA's authorized representative. The total amount of this invoice is fair and correct. The (works) were completed, (the products) were delivered or (the services) were provided and no payment has been received for said concept.

Contractor's Signature"

Article 4: Commencement and Completion of Work

- 4.1) Mobilization of personnel and equipment shall begin in such a way that work is started within one (1) calendar week after noticed to proceed (mobilization) and Contractor receives the order. After mobilization, Contractor shall finish the works within sixteen (16) calendar weeks

Article 5: Suspension of Work

- 5.1) The Contracting Officer or the Engineer may, at any time, suspend the whole or any portion of the work under this Contract, but this right to suspend the work shall not be construed as denying Contractor actual reasonable, and necessary expenses due to delays, caused by such suspension, it being understood that expenses will not be allowed for such suspension when Contracted by the Contracting Officer or the Engineer on account of a Force Majeure Event, as defined in Force Majeure Article, herein.
- 5.2) The cause of such suspension shall be put in writing by the Contracting Officer or the Engineer within two (2) working days after the suspension or as soon as practicable.

Article 6: Changes and/or Extra Work

- 6.1) PREPA may, at any time, make changes or Contract extra work within the Scope of Work contracted, subject to previous written acceptance by the Contracting Officer. If such changes or extra work require a price and/or schedule revision, such revision(s) shall be negotiated and agree in writing by both parties before the commencement.

Article 7: Time Extensions

- 7.1) The Contractor shall apply for time extensions for construction changes, unforeseeable causes, changed conditions, etc., as indicated throughout the Specification only if the schedule of proposed progress is affected. Under no circumstances shall the Contracting Officer consider applications for extra time if the master schedule is not clearly affected.

Article 8: Inspection

- 8.1) Whenever all the materials have been furnished and all work has been performed, below, all in accordance with the drawings and specifications, Contractor shall notify the Engineer that said work is completed and ready for final inspection. If all work provided for and contemplated by the Contract is found completed in accordance with the specifications, this inspection shall constitute the final inspection and the date of completion shall be established as the date of receipt of the notice of Contractor that the work was completed and ready for final inspection.
- 8.2) If however, upon inspection by the Engineer it is found that any work, in whole or in part, is unsatisfactory, the Engineer shall give Contractor the necessary instructions as to replacement of material and performance of work necessary to final completion and acceptance and Contractor immediately shall comply with and execute such instructions.

Article 9: Force Majeure

- 9.1) The parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform, or are prevented from performing by a Force Majeure event. For purposes of this Contract, Force Majeure means any cause without the fault or negligence, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event.
- 9.2) Force Majeure may include, but not be limited to, the following: Acts of God, industrial disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections, epidemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a Force Majeure event, and/or its effects, are beyond the reasonable control and without the fault or negligence of the party claiming the Force Majeure, and that such party, within ten (10) days after the occurrence of the alleged Force Majeure, gives the other party written notice describing the particulars of the occurrence and its estimated duration. The burden of proof as to whether a Force Majeure has occurred shall be on the party claiming the Force Majeure.

Article 10: Penalty for Delays

- 10.1) If Contractor fails to complete the work, or any separable part thereof, within the time established in Article 5, Commencement and Completion of Work, Contractor shall pay to PREPA a penalty of five hundredth dollars (\$500) for each day of delay in completing the work or separable part thereof, up to a maximum of ten percent (10%) of the Contract price, and Contractor and his sureties shall be joint and several liable for said amount.
- 10.2) In the event that Contractor, due to his delay, had pay the total amount of the penalty as above mentioned, and has failed to complete the work or any part separable thereof, it could be considered a breach of the Contract, and PREPA may terminate the Contract, execute the performance bond and pursue any other remedies under this Contract, law or equity.
- 10.3) In case of delay, the Contractor shall within five (5) days from the beginning of any such delay notify the Engineer in writing of the causes of delay, who shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in his judgment, the findings of facts justify such an extension.
- 10.4) If PREPA does not terminate the right of Contractor to proceed, Contractor shall continue the work, in which event shall pay to PREPA a penalty in the amount set forth above for each calendar day of delay until the work is completed, and Contractor and his sureties shall be liable for the amount thereof: provided that, the right of Contractor to proceed shall not be terminated or Contractor charged with a penalty because of any delays in the completion of the work due to Force Majeure events or situations, or failures on the part of PREPA to carry out its obligations.
- 10.5) PREPA shall have the right to the payment or to the withholding of Contractor's payments in case of Contractor's delay in completion of the work. Contractor agrees that the penalty shall not be subject to reduction, moderation or modification, since this penalty is a pecuniary punishment for the delay, and not a liquidation of damages.

Article 11: Termination

- 11.1) Notwithstanding anything to the contrary in this Contract regarding its term, PREPA may, at any moment, terminate, cancel or accelerate its expiration, after giving Contractor a not less than thirty (30) days prior notice, when in PREPA's judgment such action responds to PREPA's best interest. Provided that, in the event Contractor fails to comply with any of its obligations under the Contract, PREPA may declare an immediate Contract termination, cancellation or rescission, without prior notice to Contractor. The exercise of its right to terminate, cancel or rescind the Contract shall not be understood as a waiver by PREPA to any other remedy it may have under this Contract or under the law for delays or breach incurred by Contractor in the performance of its obligations under the Contract.

- 11.2) If PREPA terminate the Contract and take possession of the premises, and of all materials, tools, and appliances thereon, and finish the work by whatever method it may deem expedient. In such a case, Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor shall pay the difference to PREPA. The expense incurred by PREPA as herein provided, and the Engineer shall certify the damage incurred through Contractor's default.

Article 12: Insurance, Bonds, and Indemnities

- 12.1) Contractor shall be responsible for any and all damages caused to the equipment (if applicable) from the time that said equipment leaves Contractor's facilities until such time as said equipment returns to PREPA's facilities.
- 12.2) Contractor agrees to relieve and exonerate from responsibility and indemnify the Authority for all costs and expenses of any nature (including attorney's fees) incurred by the Authority and which originate or arise relating to claims by third parties for personal damages, including death, or for property damage, but which damages have been caused by act or omission of Contractor in the performance or nonperformance of its obligations under this Contract.

Article 13: Permits and Licenses

- 13.1) Contractor shall obtain, maintain and submit evidence of all the licenses, permits and authorizations required to perform all services and tasks under this Contract, and shall send all notices, pay all fees, and related costs and will comply and will have its subcontractors and agents comply with all laws, ordinances, rules, and regulations applicable to the work, in accordance with the drawings and specifications.
- 13.2) Should the Contractor find any discrepancy between the drawings and specifications and the permits, laws, ordinances, rules, and regulations referred to herein, the Contractor shall proceed immediately to notify PREPA of the discrepancy and shall not continue with the work until PREPA issues and notifies a Contract informing the Contractor what changes are necessary and when to proceed with the work as changed.

Article 14: Claims for Labor and Materials

- 14.1) Contractor shall, at his own expense, assume the defense of and save harmless PREPA from claims for labor and materials and not suffer any mechanics or other liens to remain outstanding against any of the property used in connection with the work; and shall, on request, furnish satisfactory evidence that all persons who have done work or furnished materials have been fully paid. If Contractor fails to comply with his obligations in this respect, PREPA may take such liens or claims and may withhold

from any monies due to Contractor such amounts as may be necessary to satisfy and discharge any such claims and any cost and expense incidental thereto.

Article 15: Laws to be observed

- 15.1) Contractor shall observe and comply with any and all Federal, Commonwealth and Municipal Laws, by-laws, ordinances, and regulations in any manner affecting the work, the equipment or the materials used in the proposed rehabilitation and/or installation or construction, and those employed on the work or the conduct of the work, and with all such Contracts and decrees as exist at present or may be enacted prior to the completion of the work by bodies or courts having any jurisdiction or authority over the work.
- 15.2) Contractor shall save harmless and indemnify PREPA and its representative officers, agents, and servants against any claim or liability arising from or based on the violation of any such law, by-law, ordinance, regulation, Contract or decree, whether by himself or his employees.

Article 16: Liabilities: Civil Responsibility

- 16.1) The appearing Parties agree that their responsibilities for damages under this Service Contract will be governed by the Puerto Rico Civil Code and its case law, as dictated by the Supreme Court of Puerto Rico. Notwithstanding, the total liability of the Contractor for all claims arising out of or relating to the performance or breach of the Contract or use of any Parts, Products or Services or any Contract shall not exceed the Service Contract price. Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable under Article, Disputes, before the expiration of the applicable statute of limitations or repose, but not later than one (1) year after the expiration of such warranty period.
- 16.2) The Contractor shall not be responsible for loss of profits or revenues, indirect or consequential damages that may occur in relation to the work performed under this Contract.

Article 17: Disputes

- 17.1) Except as otherwise specifically provided in this Contract, all disputes concerning questions of fact arising under this Contract shall be decided by the Contracting Officer, subject to written appeal by the Contractor within thirty (30) days to the Contracting Officer. As soon as practicable thereafter, the shall inform each party hereto of his decision regarding the dispute, which decision shall be final and conclusive upon the parties hereto, unless such decision is challenged on the basis of being arbitrary, malicious or capricious. If such challenge is made, either party may pursue its remedy at law or equity. In the meantime, until the dispute is resolved the Contractor shall immediately proceed with the remedies as directed.

Article 18: Warranty

- 18.1) The Contractor warrants that all materials, parts, equipment used, and work performed under this Service Contract comply in all respect with its terms and conditions; that they are free from any and all latent and patent defects in design, materials, and workmanship; that they are suitable and adequate for the purposes for which they were designed and for such other purposes, if any, as are specified in the Service Contract, and that the services provided under this Service Contract will conform with the highest standards of care and practice appropriate to their nature.
- 18.2) The warranty period will begin the date on which PREPA finally accepts the service and/or installation of the contracted product within 30 calendar days and will continue for a period of one (1) year. The Contractor will, upon written notice by PREPA, fully remedy, free of expense to PREPA, such defects as may develop on said services, materials, parts or equipment, provided that they have been properly stored, installed, maintained, and operated within the specified parameters. The Performance Bond shall cover and serve as guarantee for this warranty.
- 18.3) For those materials, parts, equipment, which prove defective, or deficient during the warranty period, the Contractor shall, at his own expense, repair or replace, transport-in, from Contractor's facilities to PREPA's site, and transport out, from PREPA's site to Contractor's facilities, such materials, parts, and/or equipment. The Performance Bond shall cover and serve as guarantee for the Contractor's failure, in whole or in part, to properly perform his obligations under this Service Contract.
- 18.4) For parts and equipment to be procured by Contractor from other suppliers, and which will be furnished by Contractor to PREPA under this Service Contract, a written guarantee shall be obtained by the Contractor from each supplier and legally tendered to PREPA prior to the commencement of work.



ALONSO & CARUS iron works, inc.



AISC
CERTIFIED
FABRICATOR



PO Box 566
Cataño PR 00963
(787) 788-1065
sales@alonsocarus.com
www.alonsocarus.com

PROJECT: Dismantling Works for 127,000 Gallons Water Tank
Aguirre Combine Cycle Plant
Salinas, PR

PROPOSAL NO. 476-19

DATE: 10/9/2019

PAGE: 1 of 2

TO: Puerto Rico Electric Power Auth.
Eng. Harry Velázquez

PHONE: (787) 531-3977
EMAIL: harry.velazquez@prepa.com

WE HEREBY SUBMIT ESTIMATES TO:

Furnish labor and equipments for the dismantling works of one (1) 127,000 Gallons Capacity Steel Tank, used for Condensate Water Storage, located in Salinas, P.R.

Tank is of 26'-0" diam x 32'-0" shell high, vertical type with flat bottom and dome roof. As part of our Scope of Work we are considering:

1. Cut and removal of dome roof plates.
2. Cut and removal of shell plates.
3. Cut and removal of bottom plates.
4. Cut and removal of miscellaneous items (if necessary).
5. Load all removed steel material into industrial dumpsters to be disposed as scrap metal.

Our Budget Price is ----- \$72,800.00 (*Excluding 4% B2B Service Tax)

Notes:

1. Industrial dumpsters for steel material disposal will be supplied by Alonso & Carus. Disposal of steel material as scrap metal will be by Alonso & Carus. Steel plates will be cut to a size of 7'-0" x 18'-0" L.
2. Removal of lead paint, if any, from the steel surface during the cutting process, is **not included**. Any paint stripping will be by others.
3. Tank shall be 100% empty, clean, dry, gas free and disconnected from inlet/outlet pipes before our arrival at jobsite.
4. Any removal of equipment directly related to the tank (sensors, alarms, valves, pumps, instrumentation, etc.) shall be done by others before our arrival at jobsite.
5. Demolition or re-built of existing concrete foundation is not included in our price.
6. **Minimum Wage of \$15.00/hour is not considered in our price.**
7. Our personnel will be working with full protection equipment during cut and dismantling works.
8. We are including one (1) full time fire watcher.
9. Project Manager and Safety Officer will be partial time only.
10. All work permits shall be ready to start at 7:00 AM, during Monday thru Friday.
11. We are not including payment and performance bond. If required, additional cost applies.
12. General Contractor/Owner to provide clear and adequate access for our equipments operation.
13. General Contractor /Owner is responsible that soil capacity is adequate to resist the static and dynamic loads generated by the crane operation and any other heavy equipments necessary for the dismantling works.
14. Exclusions: IVU Tax, B2B Tax, tank's interior cleaning, lead paint abatement, construction permits, scrap metal disposal, EPA/EQB permits, municipal tax, payment & performance bonds, working overtime and any other activities not specified in this quotation.
15. *If Company has Tax Exempt Certificate; evidence shall be submitted with the Purchase Order.
16. No lost time is considered under this Proposal. If work is stopped due to any situation beyond our responsibility or crew is mobilized to jobsite and not allowed to work, A&C will be invoicing for the lost time plus standby equipment rates.
17. Lead time: 2 @ 3 weeks.



ALONSO & CARUS iron works, inc.



AISC
CERTIFIED
FABRICATOR



CWF
CERTIFIED WELDING FABRICATOR



PO Box 566
Cataño PR 00963
(787) 788-1065
sales@alonsocarus.com
www.alonsocarus.com

PROJECT: Dismantling Works for 127,000 Gallons Water Tank
Aguirre Combine Cycle Plant
Salinas, PR

PROPOSAL NO. 476-19

DATE: 10/9/2019

PAGE: 2 of 2

Terms and Conditions:

- 1) Should A&C be awarded the Project, we reserve the right to make future clarifications and exceptions to the Terms before an agreement is executed.
- 2) All payments due net 15: days
- 3) All phases of Project will be billed progressively on a monthly basis according to a payment schedule that will be prepared for the Project. This payment schedule will include line items such as shop drawings, insurance certificates and raw materials at shop, among others.

PAYMENT TERMS: Partial Certifications, net 15 days (subject to credit approval). 10% withheld is not allowed.

The construction, fabrication or design of the items hereunder is to be completed in a professional manner according to standard practices established by The American Institute of Steel Construction. Seller shall have no responsibility for damages caused by: (1) ordinary wear and tear, erosion, corrosion; (2) unintended use, abuse, or improper handling, operation, or storage by Purchaser or any third party; (3) inability of Seller or its subcontractors to make timely delivery on account of Acts of God, labor troubles, intervention of any civil or any other cause reasonably beyond its control. Following acceptance, Purchaser may not cancel except upon payment of cancellation charges to be determined by Seller. Unless noted otherwise, all structural steel will be shop primed at one (1) mil coat of standard oxide primer. The standard shop primer is intended to protect steel for only a short period of exposure in ordinary atmospheric conditions and shall be considered an impermanent and provisional coating. The 10% retainage will be paid upon acceptance of our works and not after the contractor finalizes his entire construction contract. Overdue invoices will be subject to carrying charges of 1.5% per month. Price is based on standard 40-hour workweek. General Contractor will provide clear and adequate access for material delivery and crane operation. Temporary handrail and guardrails will be furnished and installed by the General Contractor if required. Conditions not specifically stated herein shall be governed by established trade customs stated in the Code of Standard Practice from the American Institute of Steel Construction.

Due to recent market instability and rapid escalation of steel prices, the quoted price is valid only for 15 calendar days.

Francis Rodriguez
Sales Vicepresident

ACCEPTANCE OF PROPOSAL – I hereby accept the prices and conditions included in the body of this proposal that automatically is considered as a Contract Agreement with my signature. Alonso & Carus Iron Works, Inc. is authorized to proceed with the work as specified.

Signature

Date of Acceptance



ALONSO & CARUS iron works, inc.



AISC
CERTIFIED
FABRICATOR



CWF
CERTIFIED WELDING FABRICATOR



PO Box 566
Cataño PR 00963
(787) 788-1065
sales@alonsocarus.com
www.alonsocarus.com

PROJECT: 127,000 Gallons Condensate Water Storage Tank
Aguirre Combine Cycle Plant
Salinas, PR

PROPOSAL NO. 475-19

DATE: 10/9/2019

PAGE: 1 of 3

TO: Puerto Rico Electric Power Auth.
Eng. Harry Velázquez

PHONE: (787) 521-3977
EMAIL: harry.velazquez@prepa.com

WE HEREBY SUBMIT ESTIMATES TO:

Design, prepare shop drawings, furnish materials, fabricate, erect test and paint at Salinas, P.R., one (1) 127,000 Gallons Condensate Water Storage Tank, 26'-0" diam. x 32'-0" shell height. Tank will be vertical type with flat bottom and dome roof. The tank shall be designed and fabricated in complete accordance with the American Water Works Association (AWWA D-100) standards of latest adoption. The tank will have the following connections & accessories:

- One (1) shell manhole 30" diam., hinged type
- One (1) shell manhole 24" diam., hinged type
- One (1) roof manhole 24" diam.
- One (1) 4" diam. drain RFSO flange conn.
- One (1) 10" diam. inlet RFSO flange conn.
- One (1) 10" diam. outlet RFSO conn., with outlet support
- One (1) 12" diam. overflow stub pipe
- Two (2) 4" diam. return RFSO conn.
- One (1) 8" diam. shell conn., RFSO
- One (1) 4" diam. roof conn., RFSO Flange
- One (1) 6" diam. roof conn., RFSO flange
- One (1) 6" diam. spare roof, RFSO flange with blind flange
- One (1) 16" diam. mushroom type roof vent
- One (1) liquid level indicator, aluminum board (target type)
- One (1) spiral stairway with galv. grating treads and top platform 3'x 5'-0"
- Roof safety railings – 42" h., 30'-0"
- Anchor chairs, as per tank's design
- Anchor bolts, installed by others
- Exterior pipe support brackets
- Two (2) grounding lugs
- One (1) stainless steel name plate

Materials: Bottom plates - carbon steel, A36, as per code design
Shell plates - carbon steel, A36, as per code design
Roof plates - carbon steel, A36, as per code design

Paint: Internal Surface – shot blasted to near-white grade as per SSPC-SP10, followed by the application of interior Coating System No. 1 (ICS-1), as per AWWA D102-11, with one (1) coat of Copoxy Holding Primer and two (2) coats of Dura-Plate UHS for a total of 24 mils DFT. Suitable to be in contact with potable water.

Exterior Surface – shot blasted to a commercial grade as per SSPC-SP6, followed by the application of outside coating system no. 5 (OCS-5), as per AWWA D102-11, with one (1) coat of Copoxy Holding Primer, one (1) coat of Macropoxy 646 FF Flake Filled and one (1) coat of Sher-Loxane 800 for a total of 14 mils DFT

Tests: Bottom - Vacuum Test
Shell - Spot Radiography
Corner weld – Liquid Penetrant

Roof – None Required by code
Tank – Preparation only for Hydrostatic Test. Test to be by others.

Design Criteria:

- Wind Velocity – 145 mph
- Wind Importance Factor – 1.15
- Seismic Use Group – I
- Seismic Importance Factor – 1.0
- Site Class – D
- Corrosion Allowance – None

Alonso & Carus Iron Works, Inc.



ALONSO & CARUS iron works, inc.



AISC
CERTIFIED
FABRICATOR



PO Box 566
Cataño PR 00963
(787) 788-1065
sales@alonsocarus.com
www.alonsocarus.com

PROJECT: 127,000 Gallons Condensate Water Storage Tank
Aguirre Combine Cycle Plant
Salinas, PR

PROPOSAL NO. 475-19

DATE: 10/9/2019

PAGE: 2 of 3

Our Budget Price is ----- \$337,325.00/ea. (Excluding 11.5% IVU Tax & 4% B2BTax)

Notes:

1. Tank net capacity is 127,083 gallons, while the usable capacity is 119,000 gallons approx.
2. **Minimum Wage of \$15.00/hour is not considered in our price.**
3. Exclusions: IVU Tax, B2B Tax, full-time fire watcher, full-time safety officer, full-time project manager, piping works, interior pipe supports, brackets, valves (ball valves, gate valves, cla-val, float valves, vacuum/pressure relief valves/covers, etc.), level sensors, high/low level alarms, level monitoring system, lightning protection, grounding system, gaskets, pumps, interior ladder, tank foundation, sanitation/chlorination process, disinfection, bacteriological tests, hydrostatic test, water for the hydrostatic test, third party inspection for installation and painting activities, tank insulation, under tank leak detection system, instrumentation, labeling or tank identification, cathodic protection, agitators, template for the installation of anchor bolts, anchor bolts installation, shimming/grouting between concrete base and tank bottom plates, calibration, repair of green areas affected during installation process, construction permits, municipal/construction tax, electrical works, mechanical works, concrete/civil works, payment & performance bonds, working overtime and any other activities/accessories not specified in this quotation.
4. If a full-time fire watcher is required, add **\$12,000.00** to our base price.
5. *If Company has Tax Exempt Certificate; evidence shall be submitted with the Purchase Order.
6. General contractor to provide clear and adequate access for 45'-0" flatbed platform and crane.
7. General Contractor /Owner is responsible that soil capacity is adequate to resist the static and dynamic loads generated by the crane operation and any other heavy equipments necessary for the installation.
8. Anchor bolts to be picked up at our shop by the foundation contractor.
9. Shop drawings and submittals for approval and/or any other use, will be sent electronically. Hard copies will be charged at \$125.00 set.
10. Mill and shop inspections by a commercial inspection agency and independent third-party organization for tank's and coating system will be by others.
11. Quality control, inspection and testing during the manufacturing process and erection is in accordance with our Quality Control Manual for Welded Steel FM Tanks.
12. In our price, we considered the use of our standard scaffolding system for tank's builders. Any other system will be quoted at your request.
13. Lead Time:
 - a) design and shop drawings - two (2) weeks ARO
 - b) fabrication - three (3) @ four (4) weeks upon shop drawings approval
 - c) erection - seven (7) @ eight (8) weeks
 - d) painting - four (4) @ five (5) weeks
14. Delivery Point: Erected & painted at Salinas, PR.
15. No lost time is considered under this Proposal. If work is stopped due to any situation beyond our responsibility or crew is mobilized to jobsite and not allowed to work, Alonso & Carus will be invoicing for the lost time at \$125.00 per hour for our standard crew plus standby equipment rates.

Terms and Conditions:

- 1) Should A&C be awarded the Project, we reserve the right to make future clarifications and exceptions to the Terms before an agreement is executed.
- 2) All payments due net 15: days

Alonso & Carus Iron Works, Inc.



ALONSO & CARUS iron works, inc.



AISC
CERTIFIED
FABRICATOR



CWF
CERTIFIED WELDING FABRICATOR



PO Box 566
Cataño PR 00963
(787) 788-1065
sales@alonsocarus.com
www.alonsocarus.com

PROJECT: 127,000 Gallons Condensate Water Storage Tank
Aguirre Combine Cycle Plant
Salinas, PR

PROPOSAL NO. 475-19

DATE: 10/9/2019

PAGE: 3 of 3

- 3) All phases of Project will be billed progressively on a monthly basis according to a payment schedule that will be prepared for the Project. This payment schedule will include line items such as shop drawings, insurance certificates and raw materials at shop, among others.

PAYMENT TERMS: Partial Certifications, net 15 days (subject to credit approval). 10% withheld is not allowed.

We have based our price on your providing the tank foundation in a clear area, free from overhead obstructions or power lines and the availability of clear and adequate access for material delivery and crane operation. Alonso & Carus Iron Works, Inc. (A&C) will furnish Workmen Compensation Insurance Policy and Certificate of Insurance within our limits. Any additional insurance and/or payment and performance bond, if required, will be at an additional cost. The design and/or fabrication of the items hereunder are to be completed in a professional manner according to known industry standard practices. Unless notified otherwise, the A&C's scope of work stops at the face of the flange. A&C warrants that the tank described hereunder will be free from defects in workmanship and materials, under normal and proper use, maintenance and operation, for a period of one (1) year from the original date of shipment and/or field assembly completion by A&C's personnel. This warranty will become void if: (1) the tank is used for the storage of any other liquid other than the intended design liquid, (2) alterations and or repair works are made to the tank without the prior written approval from A&C. This limited warranty does not cover damages caused by: ordinary wear and tear, erosion, corrosion, unintended use, abuse, improper operation, negligence, alteration, vandalism, civil disturbances, or acts of God. All promises of shipment dates are estimated as closely as possible at the time of proposal but are not guaranteed. Seller shall have no responsibility for not making a timely delivery on account of Acts of God, labor troubles, intervention of any civil or any other cause reasonably beyond its control. Following acceptance of this proposal, Purchaser may not cancel except upon payment of cancellation charges to be determined by Seller. Overdue invoices will be subject to carrying charges of 1.5% per month. Overtime and weekend work are not included.

Due to recent market instability and rapid escalation of steel prices, the quoted price is valid only for 15 calendar days.

Francis Rodriguez
Sales Vicepresident

ACCEPTANCE OF PROPOSAL — I hereby accept the prices and conditions included in the body of this proposal that automatically is considered as a Contract Agreement with my signature. Alonso & Carus Iron Works, Inc. is authorized to proceed with the work as specified.

Signature

Date of Acceptance

Alonso & Carus Iron Works, Inc.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002996
Due Date: 02/04/2021
Due Time: AST
Printed : 01/22/2021
Page : 1

Return RFP to:

YADIRA L. LUGO-CORDERO

Vendor:

BULLETIN BOARD
DIVISION DE SUMINISTROS
SAN JUAN PR 00936

Y-LUGO@AEEPR.COM

Phone: (787) 521-3235

Fax :

Start Date:

End Date :

Work Location:

CENTRAL AGUIRRE

BO. MONTESORIA KM. 152.3

APARTADO 137

AGUIRRE PR 00704

Title: AP I - DISEÑO Y CONSTRUCCIÓN TANQUE DE CONDENSADO STAG 1 CICLO AG

Bid Value:

Currency: USD

Not to Exceed?

Bid Pricing Method:

ESTIMATE

Bid Expiration Date:

Vendor Authorized Signature

Printed Name/Title

Date Signed

Phone

Yadira L. Lugo Cordero
Yadira L. Lugo Cordero
Authorized Signature
Supervisora de Compras

Printed Name/Title

01.22.2021

Date Signed

787.521.3235

Phone

Terms and Conditions - Text at End

Fac	Standard	Rev S/P Text	Title
	PH000009	019 S Y	INSTRUCCIONES PARA SUBASTAS FORMALES

Scope of Work and Terms & Conditions Text follow as attachments

APÉNDICE NÚM. I (01.22.2021 YLC)

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002996
Due Date: 02/04/2021
Due Time: AST
Printed : 01/22/2021
Page : 2

SUBASTA FORMAL NÚM.: RFP 0002996

REQUISICIÓN NÚM.: 208719

TÍTULO: DISEÑO Y CONSTRUCCIÓN DE TANQUE DE CONDENSADO, STAG 1, CICLO COMBINADO AGUIRRE

SEGÚN NUESTRA INVITACIÓN A SUBASTA CON FECHA DEL 01.12.2021 Y REUNIÓN PRE SUBASTA COMPULSORIA DEL 01.21.2021, SE NOTIFICA A LOS LICITADORES LO SIGUIENTE:

1. SE RECIBIRÁN PREGUNTAS RELACIONADAS A ESTA PUBLICACIÓN, HASTA EL JUEVES, 04 DE FEBRERO DE 2021. LAS PREGUNTAS SERÁN ENVIADAS EN FORMATOS WORD Y PDF, A TRAVÉS DE CORREO ELECTRÓNICO, DIRIGIDAS A: YADIRA.LUGO@AEEPR.COM O A TRAVÉS DEL MESSAGING DE POWER ADVOCATE, BAJO EL EVENTO 111932, EN EL SIGUIENTE ENLACE:

<https://www.poweradvocate.com/pR.do?okey=111932&pubEvent=true>

2. SE INCLUYE HOJA DE ASISTENCIA CON LOS PARTICIPANTES DE LA REUNIÓN PRE SUBASTA COMPULSORIA DEL 01.21.2021 (1 PÁGINA).

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

ITINERARIO DE PAGOS

1. 20% - CON LA MOVILIZACIÓN Y DEMOLICIÓN DEL TANQUE EXISTENTE
2. 20% - CON EL DISEÑO Y APROBACIÓN DE LOS DIBUJOS
3. 40% - AL COMPLETAR LA FABRICACIÓN E INSTALACIÓN DEL NUEVO TANQUE
4. 10% - AL COMPLETAR LA PINTURA (INTERIOR Y EXTERIOR) DEL TANQUE
5. 10% - CON LA INSPECCIÓN Y FINAL ACEPTACIÓN POR PARTE DE PREPA

TÉRMINOS DE PAGO

NETO 60 DÍAS, LUEGO DE APROBADA LA FACTURA POR PARTE DE LA AUTORIDAD. TODA FACTURA DEBERÁ DETALLARSE POR CONCEPTOS (SERVICIOS, MATERIALES, EQUIPO, ETC.), PARA LA APLICACIÓN DE RETENCIÓN EN EL ORIGEN APLICABLE BAJO LA LEY NÚM. 1-2011 Y DE LA APORTACIÓN ESPECIAL DE 1.5% BAJO LA LEY NUM. 48-2013. DE NO DETALLAR LA FACTURA, SE APLICARÁ LA RETENCIÓN Y APORTACIÓN A LA TOTALIDAD FACTURADA.

ALCANCE DE TRABAJO

ESTA SUBASTA SE REGISTRARÁ SEGÚN LOS SIGUIENTES DOCUMENTOS:

1. TECHNICAL SPECIFICATIONS, CR 208719 (4 PÁGINAS).

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002996
Due Date: 02/04/2021
Due Time: AST
Printed : 01/22/2021
Page : 3

2. TERMS AND CONDITIONS, CR 208719 (8 PÁGINAS).

TIEMPO DE ENTREGA Y PENALIDAD POR ENTREGA TARDÍA
EL TIEMPO MÁXIMO DE ENTREGA REQUERIDO ES DE DIEZ Y SEIS (16) SEMANAS CONSECUTIVAS, LUEGO DE LA MOVILIZACIÓN. APLICARÁ UNA PENALIDAD POR CADA DÍA DE ATRASO DE QUINIENTOS DÓLARES (\$500), HASTA UN MÁXIMO DE DIEZ POR CIENTO (10%) DEL TOTAL DE LA ORDEN.

CONTRATISTAS - PROTOCOLO COVID-19

A. TODO CONTRATISTA QUE VAYA A TRABAJAR EN LA AUTORIDAD PRESENTARÁ SU PLAN DE MANEJO DE RIESGOS DE CONTAGIO DE COVID-19, SEGÚN REQUERIDO POR OSHA. ADEMÁS, PRESENTARÁ EVIDENCIA DE LA AUTOCERTIFICACIÓN SOMETIDA AL DEPARTAMENTO DEL TRABAJO Y RECURSOS HUMANOS.

B. EL CONTRATISTA SERÁ RESPONSABLE DE QUE LOS EMPLEADOS QUE TRABAJEN EN LOS PREDIOS DE LA AUTORIDAD PRESENTEN LOS RESULTADOS NEGATIVOS DE LA PRUEBA DE COVID-19 CON MENOS DE 5 DÍAS DE HABERSE REALIZADO LA MISMA.

C. LOS EMPLEADOS DEL CONTRATISTA TIENEN QUE UTILIZAR EN TODO MOMENTO MASCARILLA Y MANTENER EL DISTANCIAMIENTO SOCIAL, MIENTRAS ESTÉN EN LOS PREDIOS DE LA AUTORIDAD, ADEMÁS CUMPLIRÁN CON EL PROTOCOLO DE MEDIDAS DE SEGURIDAD DE LA AUTORIDAD.

INSTRUCCIONES GENERALES

1. PARA ESTA SUBASTA LA AUTORIDAD REQUIERE QUE LOS LICITADORES INCLUYAN CON SU PROPUESTA UNA FIANZA DE LICITACIÓN INDIVIDUAL EN EL FORMULARIO AEE 500.0-368, POR EL DIEZ POR CIENTO (10%) DEL PRECIO TOTAL DE SU PROPUESTA. LA FIANZA TIENE QUE VENIR ACOMPAÑADA CON EL DOCUMENTO POWER OF ATTORNEY. ESTOS DOCUMENTOS TIENEN QUE SER PREPARADOS POR UNA COMPAÑÍA AUTORIZADA A HACER NEGOCIOS EN PUERTO RICO, Y EN CUMPLIMIENTO CON LAS LEYES APLICABLES EN PUERTO RICO. OFERTAS QUE INCUMPLAN CON ESTE REQUERIMIENTO SERÁN RECHAZADAS.

2. LAS PROPUESTAS SE RECIBIRÁN EN SOBRE SELLADO ENTREGADAS EN LA DIVISIÓN DE SUMINISTROS, EDIF. NEOS, 3ER PISO, SANTURCE Y COPIA IDÉNTICA DE LA PROPUESTA SERÁ ENVIADA A TRAVÉS DE POWER ADVOCATE, AMBOS ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA.

3. SERÁ REQUISITO PARA ADJUDICACIÓN ESTAR ACTIVO EN EL REGISTRO DE PROVEEDORES DE LA AEE.

4. LOS CONTRATISTAS QUE VAYAN A SUBCONTRATAR MATERIALES, EQUIPOS O

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002996
Due Date: 02/04/2021
Due Time: AST
Printed : 01/22/2021
Page : 4

ALGUNO DE LOS TRABAJOS O SERVICIOS OBJETO DE ESTA PUBLICACIÓN, TENDRÁ QUE ASEGURARSE DE QUE DICHS SUBCONTRATISTAS NO SEAN COMPAÑÍAS QUE ESTÉN SUSPENDIDAS DEL REGISTRO DE SUPLIDORES DE LA AUTORIDAD. LA AUTORIDAD NO ACEPTARÁ PROPUESTAS EN LAS QUE SE UTILICEN COMO SUBCONTRATISTAS COMPAÑÍAS QUE ESTÉN SUSPENDIDAS DEL REGISTRO DE SUPLIDORES DE LA AUTORIDAD.

5. TIENEN QUE INCLUIR LITERATURA, DIAGRAMAS CORRESPONDIENTES DE LAS PIEZAS Y ARTÍCULOS COTIZADOS EN TODOS LOS RENGLONES PARA EVALUACIÓN TÉCNICA, DE LO CONTRARIO SERÁ DECLARADO NO RESPONDIENTE. LAS LITERATURAS NO PUEDEN INCLUIR NINGÚN COMENTARIO QUE SEÑALE QUE LAS ESPECIFICACIONES PUEDEN CAMBIAR SIN PREVIO AVISO. EL NO CUMPLIR CON ESTE REQUERIMIENTO ES RAZÓN SUFICIENTE PARA DECLARAR SU PROPUESTA NO RESPONDIENTE.

6. LOS LICITADORES TIENEN QUE COTIZAR ENTREGADO EN SITIO. LA AEE ESTÁ EXENTA DEL PAGO DE IVU.

7. LOS TRABAJOS SE REGISTRÁN POR LOS CÓDIGOS CORRESPONDIENTES EN LA INDUSTRIA.

8. EL CONTRATISTA OBTENDRÁ Y MANTENDRÁ VIGENTE DURANTE LA DURACIÓN DEL CONTRATO LOS PERMISOS APROPIADOS DE TODAS LAS AUTORIDADES REGULADORAS MUNICIPALES, ESTATALES Y FEDERALES, PARA LA REALIZACIÓN DE LOS TRABAJOS CONTRATADOS.

9. EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.

10. ESTE PROCESO DE ADQUISICIÓN SE LLEVARÁ A CABO SEGÚN EL REGLAMENTO DE SUBASTAS VIGENTE, DISPONIBLE A TRAVÉS DE LA PÁGINA DE INTERNET DE LA AUTORIDAD, WWW.AEEPR.COM (SERVICIOS / SUPLIDORES / LEYES, PROCEDIMIENTOS Y REGLAMENTOS).

11. LUEGO DE LA APERTURA DE LA SUBASTA, LOS LICITADORES, SUS REPRESENTANTES Y OTRAS PARTES NO PUEDEN COMUNICARSE EN FORMA ALGUNA CON EMPLEADOS DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA PARA ASUNTOS RELACIONADOS CON LAS PROPUESTAS BAJO ESTUDIO, SALVO LO DISPUESTO POR LA LEY NÚM. 38, DEL 30 DE JUNIO DE 2017 Y LA REGLAMENTACIÓN PROMULGADA A SU AMPARO. REGLAMENTO DE SUBASTAS, CAPÍTULO IV, SECCIÓN VI, ARTÍCULO C, INCISO 2.

12. EL CONTRATISTA AGRACIADO PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002996
Due Date: 02/04/2021
Due Time: AST
Printed : 01/22/2021
Page : 5

RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

- A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO
- B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00
- C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
- D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
- E. SEGURO DE RESPONSABILIDAD PROFESIONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000 POR OCURRENCIA
- F. FIANZAS DE EJECUCIÓN Y PAGO POR EL 100% DEL TOTAL DE LA ORDEN

CUALQUIER PREGUNTA RELACIONADA A ESTA PUBLICACIÓN, SE PUEDEN COMUNICAR CON:

YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
TELÉFONO: 787.521.3235
EMAIL: YADIRA.LUGO@AEEPR.COM

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.
3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.
4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACCIÓN O MEDIOS ELECTRÓNICOS.
5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002996
Due Date: 02/04/2021
Due Time: AST
Printed : 01/22/2021
Page : 6

* * * End of Request For Proposal * * *

CR #: 208719
RFP: RFP-2996
Descripción: Diseño y Construcción Tanque de Condensado STAG 1, Ciclo AG
Fecha: 1/21/2021
Hora: 10:00 am

Yadira
Supervisora
de Compras

Nombre	Firma	Título	Email	Compañía / Teléfono
Jose' J. Ruiz, PE			jruiz@enersyspr.com	Enersys Eng. Corp. 787-470-0013
LARRY CARUS			lcarus@steelandpipes.com	Steel and Pipes 939-644-0045
Nephthely Romero			nerthromero@allcontractorspr.com	All Contractors 787-879-4406
Lore R. Rodriguez			lorerodriguez@R6EPR.com	R6 Eng - 787-923-9639
Fermin Cruz			sales@ironxtechpr.com	Ironxtech Group 787-590-2042
Israel Rodriguez			fermin@ironxtechpr.com	787-649-8412
Francis Rodriguez			edwinde@psenagmail.com	Caribbean Diving Contractor 939-202-3265
Larry N. GARCIA			franklin@alamoscar.com	Alamos & Carus for weeks
			sales@alamoscar.com	787-755-1065 / 787-645-2594
			larrygarcia@cmrpy.com	Milant & Sons 787-612-2792

Bidder Questions
RFP 2996 Design Build Condensate Tank STAG 1 Combined Cycle

1. Please confirm that based on what's stated in Article 3 of the Technical Specifications, PREPA will provide the crane required to perform all works related to the design-build of the new condensate tank.

PREPA will provide mobile crane for all tank related works at site
(Article 3 of Specifications)

2. Are the 127,000 gal. specified nominal or working capacity?

Nominal capacity (Article 4.1a of Specifications)

3. Please confirm that the tank design standard will be the latest edition of AWWA D100 and NOT API 650.

Tank design standard will be API 350 latest edition
(Article 4.3 of Specifications)

4. Who will dismantle the existing tank?

Contractor will be responsible for the demolition of the existing tank
(Article 4.2 of Specifications)

5. Who will be in charge of the disposition of the scrap metal?

PREPA will supply dumpsters for scrap metal, including disposition
(Article 3 of Specifications)

6. Does the existing tank paint contain lead in amounts that require abatement prior to the dismantling?

Existing tank doesn't contain lead paint. A reference report is available for review

7. What will be seismic importance factor assigned to this tank?

8. What will be the tank's design and operating pressure?

9. What will be the tank's design and operating temperature?

10. Will the tank hydrostatic test be by PREPA or the Contractor?

11. What will be the corrosion allowance to be considered in the tank design?
12. If the hydrostatic test is by the Contractor, please clarify the following:
 - a. How far from the tank site is the water connection point?
 - b. How many days should the bidder assume for filling the tank during the hydrotest based on the flow rate that PREPA can provide?
 - c. How far from the tank site is the catch basin into which the water from the hydrotest will be discharged?
 - d. How many days should the bidder assume for draining the tank after the hydrotest?
 - e. Will PREPA's lab personnel sample the water (RCRA) for oil and grease before emptying the tank?
 - f. Will tank settlement readings be required during the hydrotest? This will depend if the design standard is AWWA D100 or API 650.
 - g. Please confirm that if the oil and grease exceed 50 ppm, the water disposal will be an added cost or performed by PREPA.
13. Please confirm if the tank manufacturer must be approved and included in PREPA's Suppliers Register for the specific service requested in this RFP.
14. Can the acting safety officer from the Contractor part be the project superintendent or field supervisor with 30-hrs OSHA certification?
15. Is there any corrosion allowance to be considered in the tank design?
16. Please confirm if the tank's design calculations and shop drawings need to be stamped by a PE.
17. What type of exterior stair is required, vertical or spiral-type?
18. The existing tank does not have PREPA's typical gauger's roof platform. Please confirm if the new tank will require the typical 10' x 10' gauger's platform.
19. The supplied specifications do not refer to any specific coating system for the interior and exterior surfaces. Will PREPA specify any of the coating systems included in PREPA's Section 9900? Bear in mind that if the condensate water to be stored in this tank is to be at 180 F as other condensate water tanks in other power plants, the coating system specified must be able to withstand such high temperatures.
20. Can both exterior and interior tank surfaces be blasted and primed painted at the shop?
21. The scope of work says that the tank new anchor bolts will be installed by others. Please confirm.

22. What is the maximum operational pumping rate into the tank?
23. What is the maximum operation flow rate out of the tank?
24. Does the new tank require any tank labeling?
25. Please provide the existing tank drawings.
26. The object of this RFP is the design-build of a new condensate water tank. However, the scope of work does not contemplate any retrofit on the existing concrete base. Can PREPA confirm that a structural assessment of this concrete base has been performed and that it can withstand the seismic loads imposed by the new tank under the PRBC 2018? Bear in mind that the pull-out tension capacity of an existing concrete base is significantly lower than a new cast in-place base.
27. If the answer to above question is that it is the Contractor's responsibility to determine if the existing concrete base has the capacity to resist the seismic loads under the PRBC 2018, please provide the following information to make this possible:

- a. Existing concrete base design drawings
- b. Recent soil study in the area of the proposed tank
- c. Specify what the Contractor is to consider in terms of the scope related to the concrete base

If any of the above information is not readily available, then determining if the existing concrete base is fit is not possible. It would then require a completely different structural assessment approach.

28. About the payment schedule, we suggest the following breakdown in lieu of the one included in the RFP document. Please confirm that this will be the payment schedule:
- a. 20% - new tank design and shop drawings approval
 - b. 20% - mobilization and existing tank demolition
 - c. 20% - upon arrival of fabricated tank materials on-site
 - d. 20% - upon tank erection completion
 - e. 10% - upon completion of interior and exterior coating application
 - f. 10% - upon final inspection and TOP submittal
29. Will PREPA consider using the internal coating system used on Costa Sur's New Condensate Tank No. 6?
30. Will PREPA consider using the external coating system used on Costa Sur's New Condensate Tank No. 6?

31. Please confirm that the internal coating system must be suitable to be in contact with Potable Water as per NSF/ANSI Standard 61.
32. Article 2.3 of the Technical Specifications: *Area shall be repaired by welding in accordance with AISC specifications in conjunction with AWS structural welding code D1.1 or latest edition.* What areas of the tank will be repaired?
33. Article 4.2 of the Technical Specifications: *Contractor shall cut and remove dome roof plates, shell plates, bottom plates and other miscellaneous items. Load all removed steel material into dumpsters to be disposed as scrap metal.* Who will supply the dumpsters?
34. Does the existing concrete base paint contain lead?
35. Will the new tank require circumferential roof railings or just in the roof platform area?
36. Will grounding the tank be required? If so, will the tank need to be connected to the plant existing grounding system?
37. How far from the tank is the plant grounding system connection point?
38. Can the corner weld be vacuum tested in lieu of the liquid penetrant test specified in Article 4.5 of the Technical Specifications?
39. Please confirm that Holiday Test will only be conducted on the tank interior surface.
40. Is a NACE Certified Inspector required during the coatings application?
41. Do bidders need to consider the B2B Tax?
42. Depending on the final scope of work to be defined yet, the project execution time is estimated between 180 and 210 calendar days. Please confirm if the project execution time will remain at 16 weeks as specified in the RFP or if the time will be extended as suggested.

22 de enero de 2021

Yadira Lugo
Supervisora de Compras

RFP 2996 Tanque condensado Stag 1 Ciclo Aguirre

Estas son las preguntas ingresadas en Power Advocate – Sección *Mesaging*:

Se envían las siguientes preguntas por parte de Energys Engineering Corporation:

1. Favor de confirmar, ¿El contratista será responsable de los andamios?
2. Favor de confirmar, ¿La Grúa y el operador de la AEE estará disponible para la demolición y construcción del tanque?
3. Favor de confirmar, ¿Los contenedores de metales y basura los suplirá PREPA?
4. Favor de confirmar, ¿El tanque no lleva escalera?
5. ¿El diseñador de la base del tanque tiene que ser un ingeniero licenciado?
6. ¿Hay que instalar pilotes? De ser así, ¿Hay que incluir un estudio Geotécnico en la propuesta?
7. ¿Cuál es la zona sísmica para criterio el diseño?
8. Favor de confirmar, ¿Cual es el tratamiento de pintura y preparación de superficie interno y externo a utilizar para que todos los licitadores coticemos en igualdad de condiciones?
9. ¿Hay que incluir arbitrios municipales en el proyecto?
10. Favor indicar, ¿El proyecto esta exento del arbitrio *Business to Business*?

Cordialmente,



José J. Ruiz, PE
Gerente de Proyectos

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



Aguirre Combined Cycle Major Inspection
Units 1-3
1/25/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes
v.1	1/11/2022	
v.2	1/25/2022	New Documentation

Project Notes

- 38.2 is waiting for proposal for new shrouds (direct).
 - 38.3 RFP for CR 254698 in process.
 - 38.4 RFP for CR 254742 in process.
 - 38.5 CR in process.
-



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Aguirre Combined Cycle Plant– Major Inspection Unit 1-3
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Aguirre Combined Cycle Plant Major Inspection Unit 1-3	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

38.1 - Repair Turbine Rotor & Buckets:

By the end of last May, Unit 1-3 had accumulated nearly 44,000 hours of operation since its last Major Inspection completed in 2004, and 26,000 hours since the Hot Gas Passage Inspection in 2007. It is important to note, that the turbine rotor installed in 2004 in this unit was new (0 hours), so it has never been inspected by GE. This is unlike the rotors of the other units, which have been repaired on numerous occasions.

38.2 - Supply New Turbine Casing Shrouds

38.3 - Repair Turbine Nozzles Stages 1, 2 & 3:

As part of the scope of work on a major inspection, the turbine area components are removed and replaced. The Central generated the requisition of the matter to inspect and repair the nozzles(nozzles)of stages 1, 2 and 3, to be removed in the inspection



mayor of Unit 1-3. The cost of rehabilitation of these components is a fraction when compared to the cost of acquiring the new components, which will be used in the major inspection of another of the units of the Plant.

38.4 – Repair Transition Pieces Set:

As part of the scope of work in a major inspection, the transition parts of the combustion system are removed. The Central generated the requisition of the matter to inspect and repair the set of transition parts of Unit 1-3. The rehabilitating cost of these components is a small fraction when compared to the cost of acquiring them new.

38.5 – New Fuel Oil Pump:

The purchase of this equipment is necessary to guarantee the reliability and availability of the units of the Central. Each unit's fuel system features a Warren pump to keep the unit in service. Due to the continuous use or use of the units, especially at peak times, pump maintenance is more frequent (e.g. oil changes). This is indicative of internal wear and tear of the components, which in the event of a failure could leave the unit unavailable for several days. The Central does not have a spare pump in inventory and the delivery of a new one is 20 to 22 weeks.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for Aguirre's Combined Cycle Plant Major Inspection Unit will consist of the following:

38.1 - Repair Turbine Rotor & Buckets:

1.1) The Contractor shall furnish all engineering, work, materials, supervision, tools, and equipment, required for the repair services contracted by the Aguirre Combined Cycle Plant, and outlined in Caribe GE's Proposal No. 1573903, Rev. 3, dated October 18, 2021. The repair services will be performed at the Caribe GE Service Center in Greenville, South Carolina, USA, and will consist of the following:

- a) Remove, Inspect & Repair Turbine Rotor Stages 1, 2 and 3 Buckets
- b) Install Repaired Stage 1, 2 and 3 Buckets and Balance Turbine Rotor
- c) Inspect and Repair Turbine Rotor Bearings 2 and 3

1.2) PREPA represents and guarantees, and it has all the approvals to enter into this Contract to grant this direct contracting in accordance with the applicable public laws and regulations.



1.3) All in strict accordance with the provisions of this Contract, Special Conditions, Technical Specifications, Proposal Forms, and Contractor's Bidding Proposal, all of which are hereby made a part hereof.

38.2 - Supply new turbine casing shrouds:

38.3 - Repair Turbine Nozzles Stages 1, 2 & 3:

The specifications included below are provided to the Contractor as guidelines to establish the minimum requirements required for the job. They're not intended to be a detailed procedure to the Contractor. Inspection and repair shall include but not limited to the following scope of work. Contractor shall submit a report with findings and recommendations after each phase. All dimensions and results shall be record on appropriate forms. All findings and recommendations shall be discussed with the Engineer before taking any further steps.

4.1) 1st Stage Nozzle: Inspection requirements

- a) Pickup nozzle assembly at site. Receive and check for shipping damage. Check purchase order, material and shipping papers to verify that the parts received are correctly identified and fully accounted for. Advise Engineer immediately of any shipping damage.
 - b) Visually inspect each segment for the following:
 - Rubs and wear
 - Trailing edge bowing
 - Surface erosion loss
 - Oxidation/Corrosion
 - Impact damage
 - Cracks
 - Blocked or damaged cooling holes
 - c) Perform incoming dimension check for gas path dimensions, including nozzle concentricity, diameters, seal gaps (inner and outer), TP groove, dowels and drops. Check and record all results.
 - d) Disassemble nozzle segments. Remove cover plates and cooling inserts without damage as possible. Cover plates and inserts shall be reused during assembly.
 - e) Non-destructively identify the alloy from which each segment is manufactured using X-ray fluorescence spectroscopy or similar.
 - f) Clean the nozzles segments using grit blasting with 220-grit aluminum oxide or finer. Avoid excessive blasting and take necessary precautions to prevent blockage of cooling holes. Complete surface cleanliness must be achieved prior to preweld solution heat treatment.
-



- g) Remove coating (if present) by physical or chemical means, while ensuring no excessive base metal attack. Each segment shall be examined for complete coating removal by heat tinting or etching
- h) Inspect all segments (internal and external) following industry standards procedures. Document the location and extent of all cracks, dents, wear, corrosion/erosion, missing material, wall thinning or others.
- i) Report findings and conclusions to the Engineer. Prepare a report outlining the repairs, heat treatment cycles, and procedures to be used after this phase. Obtain written approval from PREPA for any proposed changes to the specification and to proceed with the repairs.

4.2) 1st Stage Nozzle: Repair requirements (minimum)

The repair scope under this specification can be considered for quoting purposes as a Major Repair. Segment vanes have medium to heavy erosion in some areas that requires extensive weld repairs.

- a) The Major Repair scope includes the supply and install of all coupons of matching alloy composition or better, to replace the eroded trailing edge section on all eighteen (18) nozzle segments. This work is not an option, but should be included as a separate cost in the compliance table. Each segment has two (2) vanes for a total of thirty-six (36) coupons to be replaced. After the repairs are completed, the airfoil contours shall be unchanged, the patches blended to the adjacent areas and the cooling hole configurations shall be unchanged.
 - b) Weld repair is performed to repair physical damage such as rubbing, cracking, foreign object damage and erosion. Heat treatments are required prior to welding to improve ductility and after welding to stress relieve weldments and to restore the appropriate microstructure.
 - c) All surfaces shall be dress as required to remove oxidation and corrosion scale and pitting to a maximum depth of 0.020 inches or 1/3 of the local section thickness, whichever is less.
 - d) All defects shall be routed and welded to restore all dimensions to OEM specifications. Blend and re-countor nozzles, restore cooling holes and passages, lost nozzle and sidewall materials.
 - e) All components must be thoroughly degreased as necessary and after each major phase. All nozzle segments shall be solution annealed.
 - f) All segments shall be FPI after each phase. Document the location and extent of any defects not identified during initial inspection and disassembly.
 - g) All existing cracks must be removed by abrasive grinding or equivalent and FPI to ensure the cracks are completely removed.
-



- h) After weld preparation, Engineer shall be informed and allowed to inspect the components. Weld repair the components using gas tungsten arc, plasma transferred arc or equivalent welding methods with appropriate metals compatible with the alloy prior identified.
- i) Areas to be welded must be free of oxide, grease, dirt and chemicals. All welds must be prepared using full penetration welds in the region being repaired.
- j) All repaired areas shall be grinded and polished, to restore the original nozzle contours and dimensions. Restore any cooling holes plugged during repair to original dimensions.
- k) Round out retaining ring within original OEM dimensions and specifications, including nozzle concentricity diameters, seal gaps (inner and outer), transition piece groove, dowel, drops, throat area and harmonic check, etc. Install the core plugs and cover plates.
- l) Install repaired segments into the retaining ring using new seals. If necessary redesign and modify nozzle-cooling holes (sidewall cooling hole pattern).
- m) Check all cooling holes to ensure that all passages are fully open. Cooling holes shall be restored to OEM specifications.
- n) Gas path dimensions, axial and radial location and throat area shall be within OEM specifications. OEM supplied dimensional information contained in manuals and other supporting documentation should be used as reference dimensions where available.
- o) Repairs shall be performed using Nozzalloy filler, AMS 5789B (Aerospace Material Specifications 5789B) or equivalent materials.
- p) Gas path profiles shall be restored to the same contours as new components using smooth blends between the original material and repaired areas.
- q) Post-weld heat treatments that follow the repairs should be combined with the heat treatments required for coating application and diffusion.
- r) Coating: should be applied to full gas path of the each of the nozzle segments, after all repairs are done according to the following requirements:
 - Class A TBC (McrAlY Type) bondcoat with Yttrium stabilized topcoat or equal. To maintain critical dimensions of the throat area no manual coating application is allowed. Only HVOF controlled robotic application is allowed.

4.3) 2nd and 3rd Stage Nozzle: Inspection requirements

- a) Pickup nozzle assembly at site. Receive and check for shipping damage. Check purchase order, material and shipping papers to verify that the parts received



are correctly identified and fully accounted for. Advise Engineer immediately of any shipping damage.

- b) Disassemble diaphragms from nozzle segments.
- c) Visually inspect each segment for the following:
 - Rubs and wear
 - Trailing edge bowing
 - Surface erosion loss
 - Oxidation/Corrosion
 - Impact damage
 - Cracks
- d) Dimensionally inspect each segment for gas path dimensions.
- e) Non-destructively identify the alloy from which each segment is manufactured using X-ray fluorescence spectroscopy or similar.
- f) Clean the nozzles segments and diaphragms using grit blasting with 220-grit aluminum oxide or finer. Avoid excessive blasting and take necessary precautions to prevent blockage of cooling holes. Complete surface cleanliness must be achieved prior to preweld solution heat treatment.
- g) Inspect all segments (internal and external) following industry standards procedures. Document the location and extent of all cracks, dents, wear, corrosion/erosion, missing material, wall thinning or others.
- h) Report findings and conclusions to the Engineer. Prepare a report outlining the repairs, heat treatment cycles, and procedures to be used after this phase. Obtain written approval from PREPA for any proposed changes to the specification and to proceed with the repairs.

4.4) 2nd and 3rd Stage Nozzle: Repair requirements (minimum)

The repair scope under this specification for both nozzle assemblies shall be considered for quoting purposes as medium repair.

- a) Weld repair is performed to repair physical damage such as rubbing, cracking, foreign object damage and erosion. Heat treatments are required prior to welding to improve ductility and after welding to stress relieve weldments and to restore the appropriate microstructure.
 - b) All surfaces shall be dress as required to remove oxidation and corrosion scale and pitting to a maximum depth of 0.020 inches or 1/3 of the local section thickness, whichever is less.
-



- c) All defects shall be routed and welded to restore all dimensions to OEM specifications. Blend and re-countor nozzles, restore cooling holes and passages, lost nozzle and sidewall materials.
 - d) All components must be thoroughly degreased as necessary and after each major phase. All nozzle segments shall be solution annealed.
 - e) All segments shall be inspected after each phase. Document the location and extent of any defects not identified during initial inspection and disassembly.
 - f) All existing cracks must be removed by abrasive grinding or equivalent and inspected to ensure the cracks are completely removed. Sections may be removed for replacement with patches of matching alloy composition ("Wishbone coupons") provided that, after the repairs are completed, the airfoil contours are unchanged, the patches are blended to the adjacent areas and the cooling hole configurations is unchanged.
 - g) After weld preparation, Engineer shall be informed and allowed to inspect the components. Weld repair the components using gas tungsten arc, plasma transferred arc or equivalent welding methods with appropriate metals compatible with the alloy prior identified.
 - h) Areas to be welded must be free of oxide, grease, dirt and chemicals. All welds must be prepared using full penetration welds in the region being repaired.
 - i) All repaired areas shall be grinded and polished, to restore the original nozzle contours and dimensions. Restore any cooling holes plugged during repair to original dimensions.
 - j) Supply and replace all joint seals.
 - k) Gas path dimensions, axial and radial location and throat area shall be within OEM specifications. OEM supplied dimensional information contained in manuals and other supporting documentation should be used as reference dimensions where available.
 - l) Check the Nozzle Down Stream Deflection (DSD) and correct if necessary. Contact Engineer if deflection is out of specifications
 - m) Repairs shall be performed using Nozzalloy filler, AMS 5789B (Aerospace Material Specifications 5789B) or equal or better materials.
 - n) Gas path profiles shall be restored to the same contours as new components using smooth blends between the original material and repaired areas.
 - o) Post-weld heat treatments that follow the repairs should be combined with the heat treatments required for coating application and diffusion.
-



- p) Coating: all 2nd Stage Nozzle segments shall be coated with a diffused aluminide coating (vane pressure side and outer sidewall) after all repairs are done. To maintain critical dimensions of the throat area no manual coating application is allowed. Only HVOF controlled robotic application is allowed.

38.4 - Repair Transition Pieces Set:

The specifications included below are provided to the Contractor as guidelines to establish the minimum requirements required for the job. They're not intended to be a detailed procedure to the Contractor. Inspection and repair shall include but not limited to the following scope of work. Contractor shall submit a report with findings and recommendations after each phase. All dimensions and results shall be record on appropriate forms. All findings and recommendations shall be discussed with the Engineer before taking any further steps.

3.1) Pickup

- a) Pickup components at site. Receive and check for shipping damage. Check purchase order, material and shipping papers to verify that the parts received are correctly identified and fully accounted for. Advise Engineer immediately of any shipping damage.

3.2) Inspection requirements

- a) Record drawing and serial numbers of full set.
- b) Clean all parts and remove all coating with 220 grit aluminum oxide or finer, avoiding excessive blasting.
- c) Dimensionally inspect each part for the following:
- Inlet and exit end openings dimensions
 - Bull horn fit up dimensions
 - Side seal gap
 - FWS end wear and FWD end bracket wear
 - Aft end distortion and Aft bracket sag
 - Seal and seal retainer wear
- d) FPI all parts following industry standards procedures. Document the location and extent of all cracks, dents, wear, corrosion/erosion and missing material.
- e) Prepare a detailed report scope outlining the repairs, heat treatment cycles, and procedures to be used. Contractor shall obtain written approval from Engineer for any proposed changes to this specification and to proceed with the repair scope.

3.3) Repair Requirements



- a) All repaired parts shall comply with OEM specifications and provide maximum performance without affecting gas turbine output and efficiency.
- b) All parts shall be heat treated by solution annealing before any weld repairs.
- c) All indications to be repaired shall be prepared by grinding out the existing cracks and defects and performing FPI to ensure the cracks are completely removed. Areas to be repaired include but not limited to body, wear areas, inlet, picture frame, floating seal areas and side seal area.
- d) Weld and/or blend indications using gas tungsten arc or plasma transferred arc welding methods. Areas to be welded must be free of oxide, grease, dirt or chemicals, and must be welded using full penetration welds through the section being repaired. All repaired areas shall be grinded and polished to restore the original contours and dimensions.
- e) After all repairs are finished, blast clean and NDT each piece.
- f) An age heat treatment shall be performed at the end of the repair process. Follow with blast clean and NDT.
- g) Supply and install new inner and outer floating seal for each transition piece.
- h) Test the complete Transition Piece set against a nozzle simulator fixture. Record all critical dimensional data.
- i) Coating: all transition pieces shall be coated after repairs are completed, according to the following requirements:
 - A high temperature TBC, consisting of a MCrAlY type bondcoat with Yttria stabilized topcoat shall be applied to full interior of each piece. Average thicknesses of TBC must be between .010" to .018".
 - A chrome carbide coating shall be applied to picture frame of each piece. carbide Average thickness must be between .004" to .006".
 - The microstructure of the bond and top coating shall be tested on each part for cracks, integrity, and thickness. To maintain critical dimensions of the throat area no manual coating application is allowed. Only HVOF controlled robotic application is permitted.

3.4) Supply the following installation hardware:

- Bull horn brackets 143D7407G002. armored with FX-414 plates (10 ea.)
- Bolt 5/8 x 1 1/2", part # 219B6733P003 (20 ea.)
- Lockplate (finger type), part # 224B9719P001 (10 ea.)
- Lockplate (finger type), part # 224B9719P002 (10 ea.)
- End Seal Retainer, part # 315A4045G001 (10 ea.)
- End Seal, part # 197C3155G002 (10 ea.)



- Hex Bolt, part # 293A0910P006 (10 ea.)
- Lockplate, part # 294A0151P022 (10 ea.)
- Bolt 5/8" Guide Pin, part # 219B6731P001 (10 ea.)

38.5 – New Fuel Oil Pump:

1.1) This specification covers the minimum requirements for the design and manufacture of one (1) new Warren Fuel Oil Pump to be used on a MS7001B General Electric's Gas Turbine. It's the Contractor's responsibility to supply the indicated parts to meet all the requirements specified below, all in strict accordance with the provisions of this Order, including the attached notes, terms, conditions, specifications and Contractor's Proposal, all of which are hereby made a part hereof.

1.2) Contractor's Scope includes:

- a) Design, manufacture and deliver in the specified time the indicated equipment.

1.3) Pump Data

- a) Type: Screw Pump, Positive Displacement
- b) Model: Warren Model B-2216A-1250 (No substitution permitted)
- c) Suction Lift: Flooded
- d) Discharge Pressure: 1000 Psig
- e) Flow (GPM): 166
- f) RPM: 1206

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.



3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate



The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$M)
38.1 - Repair Turbine Rotor & Buckets Contract Amount	\$340,000.00
38.2 - Supply New Turbine Casing Shrouds	\$320,000.00
38.3 - Repair Turbine Nozzles Stages 1, 2 & 3 Contract Amount	\$350,000.00
38.4 – Repair Transition Pieces Set	\$100,000.00
38.5 – New Fuel Oil Pump	\$1,489,971.00
Total Project Estimated Cost	\$2,599,971.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date



Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

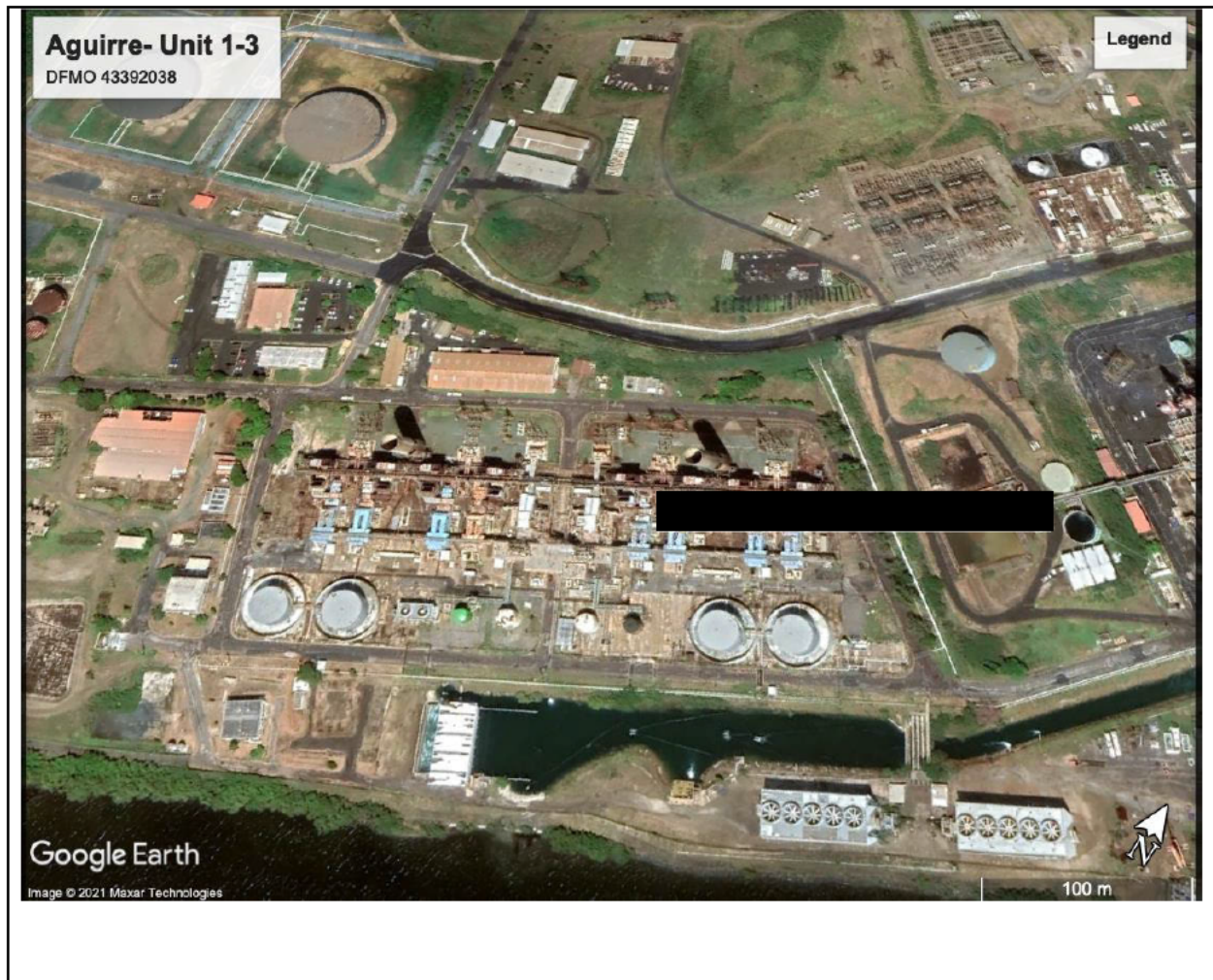
10.1. Project Detailed Cost Estimates

- Please see attached to executed contracts 76368 (Contract, Invoice, CR and Proposal), 77892 (Contract, Invoice, CR and Proposal) and Proposal 1573903. and Technical specifications included PREPAs Fund certifications

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

9 de julio de 2021

Mario E. Miranda Sánchez, Jefe
División de Suministros, Interino

Alexis Cruz Figueroa, Jefe
División Central Aguirre

Harry E. Velázquez Plaza
Jefe de Central Auxiliar, Interino
Central Ciclo Combinado

SOLICITUD NEGOCIACIÓN ORDEN DIRECTA, CARIBE GE ENERGY, REHABILITACIÓN ROTOR DE TURBINA UNIDAD A GAS 1-3, CENTRAL CICLO COMBINADO DE AGUIRRE (CR 246552)

Solicitamos se adjudique una orden directa por \$340,000, sujeto a negociación, a la compañía Caribe GE International Energy Services (GE) como único suplidor y manufacturero original (OEM) de nuestras turbinas a gas, para suplir los recursos, ingeniería y equipo para la inspección y rehabilitación del rotor de turbina de la Unidad a Gas 1-3, en la Central Ciclo Combinado de Aguirre. Esta unidad saldrá programada en octubre de 2021 para una inspección mayor del turbogenerador. Todo en conformidad con el artículo 15, inciso 2c de la Ley 83 de 2 de mayo de 1941, según enmendada, la propuesta de GE y los términos y condiciones de la requisición 246552.

Los fondos para el proceso provendrán de la cuenta 01-4023-65400-555-304 del presupuesto operacional y de mantenimiento de la Central. Esto en lo que se aprueba la nueva cuenta y estimado para el proyecto 14672 para el año fiscal 2021-22, del programa de Gastos de Mantenimiento Necesarios (GMN) de la Central.

A finales de mayo pasado, la Unidad 1-3 había acumulado cerca de 44,000 horas de operación desde su última Inspección Mayor completada en el 2004, y 26,000 horas desde la Inspección del Paso de Gases Calientes en el 2007. Es importante señalar, que el rotor de turbina instalado en el 2004 en esta unidad era nuevo (0 horas), por lo que nunca ha sido inspeccionado por GE. Esto a diferencia de los rotores de las otras unidades, los cuales han sido reparados en numerosas ocasiones.





Autoridad de Energía Eléctrica de Puerto Rico

CERTIFICACIÓN DE FONDOS DE
CONTRATOS POR SERVICIOS PROFESIONALES

Número de Responsabilidad: 304 Nombre de Responsabilidad: Central Ciclo Combinado de Aguirre

Se incluye copia del Contrato descrito a continuación:

Nombre del Contratista o Compañía: Caribe GE International Energy Services, Corp.

Número del Contrato: CR 246552 Número de Cuenta: 01-1071-33101-555-304 Año Fiscal: 2021-22
Número de Estimado: 107606

Cantidad: \$340,000 Fecha de Comienzo: aprobación orden Fecha de Terminación: 6/30/2022

Certificamos que no se proyectó sobregiro presupuestario y se posee capacidad financiera para cubrir esta transacción. Este contrato está en cumplimiento con el Inciso G de la Carta Circular de la Oficina de Gerencia y Presupuesto Núm. 117-14 del 1 de julio de 2014.

1. Requerido por:

Firma:

Nombre:

William Ríos Mera

Título:

Jefe de Central Auxiliar
Central Ciclo Combinado

Fecha:

13 de diciembre de 2021

2. Aprobado por el Director Correspondiente:

Firma:

Nombre:

Jorge L. Cotto Pérez

Título:

Director, Interino, Generación

Fecha:

23 de diciembre de 2021

3. Recomendado por el Departamento de Presupuesto:

Firma:

Nombre:

Lizzandra Matias Varela

Título:

Contralor Contabilidad y Presupuesto

Fecha:

10 de enero de 2022

4. Aprobado por el Director de Finanzas:

Firma:

Nombre:

Nelson Morales Rivera

Fecha:

Todo contrato por servicios profesionales con una cuantía sobre cien mil dólares (\$100,000), debe presentarse para la aprobación de la Junta de Gobierno, según la Norma Sobre Niveles de Aprobación de Documentos de la Autoridad de Energía Eléctrica de Puerto Rico.

Aprobado por la Junta de Gobierno:

Firma:

Nombre:

Fecha:

**Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant**

CR #: 246552
Equipment: MS7001 Gas Turbine Rotor, Buckets and Bearings
Unit SN: 238024 (Unit 1-3)

**GE-PREPA
Terms and Conditions**

Article 1: Scope of Contract

- 1.1) The Contractor shall furnish all engineering, work, materials, supervision, tools, and equipment, required for the repair services contracted by the Aguirre Combined Cycle Plant, and outlined in Caribe GE's Proposal No. 1573903, Rev. 3, dated October 18, 2021. The repair services will be performed at the Caribe GE Service Center in Greenville, South Carolina, USA, and will consist of the following:
 - a) Remove, Inspect & Repair Turbine Rotor Stages 1, 2 and 3 Buckets
 - b) Install Repaired Stage 1, 2 and 3 Buckets and Balance Turbine Rotor
 - c) Inspect and Repair Turbine Rotor Bearings 2 and 3
- 1.2) PREPA represents and guarantees, and it has all the approvals to enter into this Contract to grant this direct contracting in accordance with the applicable public laws and regulations.
- 1.3) All in strict accordance with the provisions of this Contract, Special Conditions, Technical Specifications, Proposal Forms, and Contractor's Bidding Proposal, all of which are hereby made a part hereof.

Article 2: Definitions

Whenever the words defined in this article or pronouns used instead are mentioned in this Contract, they shall have the meanings here given:

- 2.1) Engineer - shall mean the Generation Director of PREPA, acting directly or through his properly authorized representatives.
- 2.2) Contracting Officer - shall mean the Executive Director of PREPA, acting directly or through his properly authorized representatives.
- 2.3) Contract - shall mean collectively, all the covenants, terms, and stipulations in these articles of agreement and in all supplementary documents hereto attached which constitute essential parts of the Contract and are hereby made part thereof, to wit:
 - Contract
 - Invitation to Bid and Advertisement for Bids
 - Contractor's Bidding Proposal, Including Bid Data and Schedules

- Technical Specifications and Drawings enumerated therein
 - Proposal Forms
 - Performance Bond
 - Letter of Award
- 2.4) Contractor - designates Caribe GE International Energy Services Corp., (GE) as the company that will perform all works as defined in Proposal no. 1573903 Rev3, dated 10.18.2021
- 2.5) Change order- A written agreement between the parties that sets out changes in price, time, or scope of work to the Contract, which has been approved by the appropriate official pursuant to the general authorization for approval.
- 2.6) Services – Shall mean the inspection and repair services that will be provided by Contractor in accordance with Proposal No. 1573903, Rev. 3, dated October 18, 2021, included as Annex A of this Contract.
- 2.7) Affiliate – Shall mean with respect to Contractor, any other entity (including without limitation, any corporation, limited liability company, association, or trust, which is a wholly-owned subsidiary of the General Electric Company.

Article 3: Compensation and Payment

- 3.1) The Agreement price quoted in the Proposal shall constitute full compensation for the Services rendered in accordance with this Contract.
- 3.2) In accordance with the terms and conditions contained herein, PREPA agrees to pay and the Contractor accepts, US \$340,000.00 (the "Contract Amount"), plus any additional amount to be paid due to extra work ordered and accepted by the Engineer and approved by the Contracting Officer, according to Article 5, Changes and/or Extra Work, below. The Contract Amount is based on Proposal No. 1573903, Rev. 3, dated October 18, 2021, included as Annex A of this Contract.
- 3.3) The Contractor shall submit its invoices for work already done according to the payment schedule as provided herein, together with all the supporting documents required.
- 3.4) All invoices shall be subject to the Engineer's approval before being paid and shall include all other documents required in the Special Conditions. No invoices shall be accepted for evaluation without the required components.

During the life of the Contract, invoices for partial payments will be made based on the following payment milestones outlined in Proposal No. 1573903, Rev. 3, dated October 18, 2021, included as Annex A of this Contract:

Milestone	Percentage of Contract Price
Upon Contract signature	25%
Upon completion of parts inspection	30%
Upon notification that repaired parts are ready for shipment	20%
Upon equipment is delivered at PREPA's Aguirre Combined Cycle Plant	20%
Upon submittal of final inspection report	5%

- 3.5) The final payment of the Contract will be paid upon the presentation of a properly executed and duly certified invoice.
- 3.6) All invoices submitted by the Contractor, and its payment shall be done within thirty (30) days
- 3.7) All invoices submitted by the Contractor shall include the following Certification in order to proceed with its payment. This is an essential requirement and those invoices without this Certification will not be processed for payment.

- No Interest Certification:

"Under penalty of absolute nullity, I hereby certify that no employee, official or director of PREPA is a party or has any interest in the profits or benefits to be obtained under this Contract, or if any employee, official or director of PREPA has any interest in the profits or benefits under this contract a waiver has been previously obtained. I, also certify that the only consideration to (furnish the goods) or (provide the services) under this Contract is the payment agreed with PREPA's authorized representative. The total amount of this invoice is fair and correct. The (works) were completed, (the products) were delivered or (the services) were provided and no payment has been received for said concept.

Contractor's Signature"

Article 4: Commencement and Completion of Work

- 4.1) Inspection and Repair of Turbine Rotor, Buckets and Bearings

All works are estimated to be completed in fourteen (14) consecutive weeks from the date the turbine rotor and components are received at the Caribe GE Service Center in Greenville, South Carolina (the "Date of Arrival"). Transportation time from PREPA Aguirre to Caribe GE Service Center (and back) is not included.

- 4.2) Schedule of Proposed Progress

The Contractor, within five (5) business days after the Date of Arrival, shall file with the Engineer a time chart or schedule of proposed progress of the work. This progress

chart and statement of operations shall show the dates of commencement and completion of each item of the work.

Article 5: Changes and/or Extra Work

- 5.1) Each Party may, at any time, propose changes or request extra work within the Scope of Work contracted, subject to previous written acceptance by PREPA's Contracting Officer. If such proposed changes or requested extra work require a price and/or schedule revision, such revision(s) shall be negotiated and agreed in writing by both parties before the commencement.
- 5.2) Change Orders and/or Extra Work must be approved by the appropriate official pursuant to the general authorization for approval in order for payment of such change or extra work to be made. PREPA will only pay for the Change Orders and/or Extra Work that is evidenced by properly submitted invoices for Services rendered. Notwithstanding the foregoing, any increase to the Contract Amount shall be evidenced in writing and approved by both parties.

Article 6: Access to Work

At PREPA's request, GE may provide a schedule where PREPA may be able to witness activities within the repair process. Due to the current COVID-19 pandemic, access to the Caribe GE facility is restricted. PREPA may submit Caribe GE at a minimum of two (2) weeks in advance a request to witness an activity within the schedule provided, so that Caribe GE may confirmed if access to its Service Center is allowed.

Article 7: Force Majeure

- 7.1) The parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform or are prevented from performing by a Force Majeure event. For purposes of this Contract, Force Majeure means any event not caused by the fault or negligence of, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event.
- 7.2) Force Majeure may include, but not be limited to, the following: Acts of God, industrial disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections, epidemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a Force Majeure event, and/or its effects, are beyond the reasonable control and were not caused by the fault or negligence of the party claiming the Force Majeure event, and that such party, within ten (10) business days after the occurrence of the alleged Force Majeure, gives the other party written notice describing the particulars of the occurrence and its estimated duration. The burden of proof as to whether a Force Majeure has occurred shall be on the party claiming the Force Majeure.

Article 8: Penalty for Delays

- 8.1) If Contractor is delayed in completing the work, or any separable part thereof, any liability for damages shall commence when the period of delay exceeds the guaranteed date or time by 14 (fourteen) calendar days after the timeframe established in Article 4, Commencement and Completion of Work, Contractor shall pay to PREPA an amount equal to \$1,000.00 USD for each day of delay in completing the work or separable part thereof, up to a maximum of five percent (5%) of the price of the relevant Service Order that was delayed, and the Contractor and any of its subcontractors shall be jointly and severally liable for said amount. The amounts payable for delay established in this Article are the sole and exclusive remedies for all delay claims and shall be paid as liquidated damages and not as penalty.
- 8.2) In case of delay, the Contractor shall within fourteen (14) business days from the beginning of any such delay notify the Engineer in writing of the causes of delay, who shall ascertain the facts and the extent of the delay and extend the time for completing the work subject only to appeal by the Contractor as provided in the Article herein provided on Disputes hereof; provided that, no claim made by Contractor against PREPA, its agents, contractors, subcontractors, employees, successors, assignees, for any cause whatsoever, during the progress of any portion of the work embraced in the Contract shall relieve any of the parties from the performance of its obligations and of the work under this Contract, which shall not suffer any delay by reason of a claim being ascertained by either Party under this Contract. Any damages caused by delays or hindrances exclusively caused by PREPA shall be considered as fully compensated for by the extensions of time as provided above, except in the event of suspension of the work by PREPA as per Article 5 of this Order.

Article 9: Liabilities

- 9.1) The total liability of the Contractor for all claims, whether a claim is based in contract, warranty, indemnity, tort / extra contractual liability (including negligence), strict liability or otherwise, shall not exceed the (i) Contract Amount, or (ii) if PREPA places multiple order(s) under the Contract, the price of each particular order for all claims arising from or related to that order.

DEFINITION OF CONTRACTOR UNDER THIS ARTICLE ON LIABILITIES:

For purposes of this Article on "Liabilities", the term "Contractor" means Contractor, its affiliates, subcontractors and suppliers of any tier, and their respective employees.

INTENT OF PARTIES TO HAVE THIS ARTICLE ON LIABILITIES APPLY IN ALL CASES:

This Article shall apply whether a claim is based in contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise, and shall prevail over any conflicting terms. The parties agree that their respective responsibilities for damages under this Contract will be governed by the terms of this Contract and shall be each Party's sole and exclusive remedies.

TERMINATION OF CONTRACTOR'S LIABILITY:

Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable, under the Article on Disputes, before the expiration of the applicable statute of limitations but not later than one (1) year after the expiration of the warranty period.

This clause does not place a limit or restriction on the indemnity obligations of Contractor with respect to third party personal injury or death claims or third-party property damages claims as defined under the Indemnity clause.

Indirect or Consequential Damages NOT COVERED:

The Contractor shall not be liable or responsible for any special, indirect, incidental or consequential damages, loss of profits or revenue, loss of business, loss or costs because of a plant shutdown, downtime costs, cost of capital, claims of customers of PREPA, or costs of replacement power, or any other such special, indirect, incidental or consequential types of damages that may be claimed in relation to the work performed, under any legal theory which may be invoked for such claims or damages.

INDEMNITY for Third Party Claims:

The Contractor agrees to save and hold harmless and to indemnify PREPA for all expenses and costs of any nature (including attorneys' fees) incurred by PREPA arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by the Contractor, to the extent of Contractor's negligence in the performance of its obligations under the Contract. For purposes of Contractor's indemnity responsibility under this Article, no portion of the unit(s), where the Services are performed is considered third party property.

PREPA agrees to save and hold harmless and to indemnify Contractor for all expenses and costs of any nature (including attorneys' fees) incurred by Contractor arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by PREPA, to the extent of PREPA's negligence in the performance of its obligations under the Contract.

Provision on the Operation of PREPA's Equipment

It is hereby provided that Contractor is NOT allowed to operate PREPA's equipment at any time and that the Scope of Work does not provide for Contractor to operate any of PREPA's equipment. Therefore, PREPA is responsible for the operation of its own equipment at all times.

Article 10: Independent Contractor

- 10.1) The Contractor shall be considered as an independent contractor, for all material purposes under this Contract, and all persons engaged or contracted by the Contractor for the performance of its obligations herein, shall not be considered as employees or agents of PREPA. In consequence, the Contractor is not entitled to any fringe benefits, such as, but not limited to vacations, sick leave, and other to which PREPA's employees are entitled.

Article 11: Termination

11.1) Termination for Cause:

- (i) PREPA shall have the right to terminate this Contract immediately in the event of negligence, dereliction of duty, noncompliance, or material breach by the Contractor, to the extent Contractor shall have failed, within 30 days after receipt of the notice, to commence and diligently pursue cure of the breach such negligence, dereliction of duty, noncompliance, or material breach, or for any other reason described elsewhere in this Contract as a basis for termination. In the event the Contract is terminated by PREPA, PREPA shall be obligated to pay all fees and expenses incurred up to the day of effective termination, in accordance with the terms of this Contract. Also, If PREPA terminates the Contract pursuant to this article, (i) Contractor shall reimburse PREPA the difference between that portion of the Contract allocable to the terminated scope and the actual amounts reasonably incurred by PREPA to complete that scope, and (ii) PREPA shall pay to Contractor (a) the portion of the Contract Amount allocable to Products and/or Services completed, and (c) amounts for Services performed before the effective date of termination. The amount due for Services shall be determined in accordance with the milestone schedule (for completed milestones) and/or rates set forth in the Contract (for work toward milestones not yet achieved and where there is no milestone schedule), as applicable or, where there are no milestones and/or rates in the Contract, at Contractor's then-current standard time and material rates. Contractor shall have no further right to compensation except for what has been accrued for services rendered under this Contract until said date of effective termination. The exercise of its right to terminate, cancel or rescind the Contract shall not be understood as a waiver by PREPA to any other remedy it may have under this Contract or under the law for delays or breach incurred by the Contractor in the performance of its obligations under the Contract.
- (ii) Contractor may suspend or terminate the Contract (or any affected portion thereof) immediately for convenience or for cause if PREPA (i) finds itself unable to fulfill its payment obligations, or (ii) materially breaches the Contract, including, but not limited to, failure or delay in, making any payment when due, or fulfilling any payment conditions. In this case, PREPA shall pay to contractor (a) the portion of the Contract Amount allocable to Services completed, (b) lease fees incurred and clearly defined in the Contractor's proposal No. 1573903 Rev. 3 dated October 18, 2021, and (c) amounts for Services performed before the effective date of termination. The amount due for services shall be determined in accordance with the milestone schedule (for completed milestones) and rates set forth in the Contractor's Proposal No.

1573903 Rev. 3 dated October 18, 2021. If this Contract is so terminated by Contractor, PREPA shall pay to Contractor (a) the portion of the Contract Amount allocable to products and/or services completed and (b) amounts for Services performed before the effective date of termination.

Article 12: Permits and Licenses

- 12.1) The Contractor shall obtain and maintain all the licenses, permits, and authorizations required to perform all services and tasks under this Contract, and shall send all notices, pay all fees and related costs, and will comply and will have its subcontractors and agents comply with all laws, ordinances, rules, and regulations applicable to the work, in accordance with the drawings and specifications. Should the Contractor find any discrepancy between the drawings and specifications and the permits, laws, ordinances, rules, and regulations referred to herein, the

Article 13: Official not to benefit

- 13.1) No officer, employee, or agent of PREPA, or of the Government of the Commonwealth of Puerto Rico or Municipal Governments, shall be admitted to any share or part of this Contract or to any benefit that may arise there from, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.
- 13.2) In addition to the restrictions and limitations established under the provisions of Act of July 24, 1985, No. 12, as amended, retired or former officers or employees of PREPA, whose work was in any way related to the award or management of contracts, shall in no way benefit from any contract with PREPA for a period of two (2) years after leaving employment with or ceasing services to PREPA.

Article 14: Conflict of Interest

- 14.1) The Contractor certifies that he does not receive payment or benefit of any nature for services rendered regularly through an appointment to a governmental agency, body, public corporation or municipality of Puerto Rico. The Contractor also certifies that he may have consulting services contracts with other governmental agencies or bodies, but such condition does not constitute a conflict of interest for the Contractor.
- 14.2) The Contractor represents conflicting interests when on behalf of a client he must contend for that which it is his duty to oppose to comply with its obligations with another previous, present or potential client. Also, the Contractor represents conflicting interests when his conduct is described as such in the canons of ethic applicable to the Contractor and his personnel or in the laws or regulations of the Commonwealth of Puerto Rico.
- 14.3) In contracts with partnerships or firms, in the event that any of the partners, directors or employees of the Contractor should incur in the conduct described herein, said conduct shall constitute a violation to the prohibitions provided herein. The Contractor shall avoid even the appearance of the existence of conflicting interests.

- 14.4) The Contractor acknowledges that the Executive Director of PREPA shall have the power to intervene the acts of the Contractor and/or its agents, employees, and subcontractors regarding the enforcement of the prohibitions contained herein. In the event that PREPA should discover the existence of adverse interests with the Contractor, the Executive Director shall inform the Contractor, in writing, of PREPA's intention to terminate this Contract within a thirty (30) day period. During said period, the Contractor may request a meeting with the Executive Director to present his arguments regarding the alleged conflict of interests, which meeting shall be granted by PREPA in every case of alleged conflict of interests. In the event that the Contractor does not request such a meeting during the specified thirty (30) day period or the controversy is not satisfactorily settled during the meeting, this Contract shall be cancelled.
- 14.5) The Contractor certifies that, at the time of award of this Contract, it does not have any other contractual relation that can enter in a conflict of interest with this Contract. The Contractor also certifies that no public employee has any personal or economical interest in this Contract.

Article 15: Assignment

- 15.1) This Contract or any interest therein or any monies due or to become due there under shall not be assigned, hypothecated or otherwise disposed of by any Party without the previous consent in writing of the other Party. Contractor is allowed to internally assign to any of its Affiliates for its accounts receivables under this Contract without PREPA's consent.

Article 16: Novation

- 16.1) The Contractor and PREPA expressly agree that no amendment or change order which could be made to this Contract, during its term, shall be understood as a contractual novation, unless both parties agree to the contrary, specifically and in writing. This previous provision shall be equally applicable in such other cases where PREPA gives the Contractor a time extension for the compliance of any of its obligations under the Contract or where PREPA dispenses the claim or demand of any of its credits or rights under this Contract. Neither Party can assign this Contract without the approval in writing of the other Party, but Contractor is authorized to assign its contract payment rights to an Affiliate without prior approval.

Article 17: Patents and Copyrights

- 17.1) Except for Contractor's working papers and subject to the Confidentiality obligations provided herein, the Contractor acknowledges PREPA shall have the right to use all information, documents, reports, papers, drawings and other similar materials (the "Deliverables") supplied to PREPA under this Contract as strictly necessary to own, operate, maintain, or repair the Services supplied hereunder, provided that, Intellectual Property Rights, if any, relating to the Deliverables, are and shall remain the exclusive property of Contractor. For purposes of this article, "Intellectual Property Rights" shall mean means all patents, copyrights, trademarks, trade names, trade

dress, service marks, trade secrets, software, firmware, mask works, industrial design rights, rights of priority, know-how, design flows, methodologies and any and all other intellectual property rights protected under any law.

- 17.2) The Contractor agrees to indemnify and hold harmless PREPA from any rightful suit and/or claim of any third party that any Parts manufactured by the Contractor and furnished hereunder infringes any patent and/ or copyright of the United States. If PREPA notifies Contractor promptly of the receipt of any claim, and does not take any position adverse to Contractor regarding such Claim and gives Contractor information, assistance and exclusive authority to settle and defend the claim, Contractor shall at its own expense and option either (i) settle or defend the claim or any suit or proceeding and pay all damages and costs awarded in it against PREPA, or (ii) procure for Contractor royalty – free, irrevocable, non – transferable the right to continue using the Part, or (iii) modify the Part so that it becomes non – infringing, or (iv) replace the Part with non-infringing Parts; or (v) if mutually acceptable to the Parties, remove the infringing Part and refund and/or reduce the price allocable to such part. The foregoing states the entire liability of Contractor for patent and / or copyright infringement of any Parts.
- 17.3) This shall not apply to any Part which is altered, modified or manufactured exclusively to PREPA's design. With respect to any Part furnished under the Contract which is not manufactured by Contractor, only the patent and /or copyright indemnity of the manufacturer, if any, shall apply. This IP Indemnity shall be the sole and exclusive remedy for any claim based on patent, trademark or copyright infringement for product or services.
- 17.4) Each party shall retain ownership of all Confidential Information and intellectual property it had prior to the Contract. All new intellectual property conceived or created by Contractor in the performance of this Contract, whether alone or with any contribution from PREPA, shall be owned exclusively by Contractor. PREPA agrees to deliver assignment documentation as necessary to achieve that result.

Article 18: Waivers

- 18.1) No waiver of any breach of this Contract shall be held to be a waiver of any other subsequent breach.

Article 19: Disputes

- 19.1) All disputes concerning questions of fact arising under this Contract shall be decided by PREPA's Generation Director within 10 days from the submission of the dispute by Contractor, subject to written appeal by Contractor to the Executive Director within thirty (30) days. Within 10 days thereafter, the Executive Director shall inform each party hereto of his decision regarding the dispute. Contractor, at its option, may elect to accept such decision or pursue remedies at law or equity.

- 19.2) In the event of a dispute arising during the warranty period, Contractor shall ensure that the Performance Bond remains in full force and effect until such dispute is resolved and all obligations of Contractor under the agreement are duly performed.

Article 20: Laws to be Observed

The Contractor shall observe and comply with any and all Federal, Commonwealth and Municipal Laws, by-laws, ordinances, and regulations in any manner affecting the Services, the equipment or the materials used in the proposed Services, and those employed on the Services or the conduct of the Services, and with all such orders and decrees as exist at present or may be enacted prior to the completion of the work by bodies or courts having any jurisdiction or authority over the Services. The Contractor shall save harmless and indemnify PREPA and its representatives officers, agents, and servants for fines, attorney's fees and penalties paid by PREPA, to governmental authorities as sole result of Contractor's violation of any such law, by-law, ordinance, regulation, order or decree, whether by himself or his employees subject to the limits of liability in Article 9 - Liabilities.

Article 21: Change in Law

- 21.1) If during the term of this contract, Contractor presents evidence that the change in law has caused a material increase in their cost to provide services, the Parties, at the request of the Contractor, will meet to discuss whether an increase in the contract amount is justified. If the Parties are unable to agree on the applicable price increase, Contractor shall not be obligated to continue to perform the affected scope until the parties reach agreement. Any party, at its option, may elect to accept such decision or pursue remedies at law or equity..

Article 22: Choice of Law

- 22.1) This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico. Also, the contracting parties expressly agree that only the state courts of Puerto Rico will be the courts of competent and exclusive jurisdiction to decide over the judicial controversies that the appearing parties may have among them regarding the terms and conditions of this Contract.

Article 23: Separability

- 23.1) If a court of competent jurisdiction declares any of the Contract provisions as null or invalid, such holding will not affect the validity and effectiveness of the remaining provisions of the Contract and the parties agree to comply with their respective obligations under such provisions not included by the judicial declaration.

Article 24: Warranty

- 24.1) The Contractor warrants to PREPA that the Services shall be performed in a competent, diligent manner in accordance with any mutually agreed specifications. The foregoing warranty for Services shall expire one (1) year after performance of the Service, provided that all warranties of Services shall expire no later than one (1) year

after the expiration or termination of this Contract. No warranty claim shall extend the applicable warranty period.

- 24.2) If Services do not meet the above warranties, PREPA shall promptly notify the Contractor in writing prior to expiration of the warranty period. The Contractor shall re-perform defective Services. If despite The Contractor's reasonable efforts, a non-conforming Services cannot be re-performed, the Contractor shall refund or credit monies paid by PREPA for such non-conforming Services. Warranty repair, replacement or re-performance by the Contractor shall not extend or renew the applicable warranty period. PREPA shall obtain Contractor's agreement on the specifications of any tests it plans to conduct to determine whether a non-conformance exists.
- 24.3) The warranties and remedies are conditioned upon (a) PREPA keeping accurate and complete records of operation and maintenance during the warranty period and providing Contractor with access to those records, and (b) modification or repair of Services only as authorized by the Contractor in writing. Failure to meet any such conditions renders the warranty null and void. The Contractor is not responsible for normal wear and tear. This Article provides the exclusive remedies for all claims based on failure of or defect in Services, regardless of when the failure or defect arises, and whether a claim, however described, is based on contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise. The warranties provided in this Article 24 are exclusive and are in lieu of all other warranties, conditions and guarantees whether written, oral, implied or statutory. NO IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.

Article 25: Correlation of Documents

- 25.1) In case of discrepancy or in the event of conflict among the different Contract documents such as: The Contract, Special Conditions, Technical Specifications, Proposal Forms, and the Contractors Bidding Proposal, these shall take precedence in the order given. The terms and conditions contained in the Contract shall prevail over any conflictive terms and conditions contained in the Contractor's Bidding Proposal.

Article 26: Notice

- 26.1) All notices and other communications hereunder shall be in writing and shall be deemed given when delivered personally or sent by telecopy, or sent postage prepaid, by registered, certified, or express mail (return receipt requested), or reputable overnight courier service, and shall be deemed given when so delivered by hand, or telecopied, or if mailed, three (3) days after mailing (one (1) business day in the case of express mail or overnight courier service) to the parties at the following addresses:

To PREPA: Puerto Rico Electric Power Authority
PO Box 364267
San Juan, Puerto Rico 00936-4267
Attention: Eng. Jorge L. Cotto Perez, Generation Director

To Contractor: Caribe GE International Energy Services Corp.
PO BOX 71403
San Juan, Puerto Rico 00936
El Mundo Office Bldg. 383
F.D. Roosevelt Ave, Suite 205
Hato Rey, Puerto Rico 00918
Attention: Luis Angulo

Article 27: Income Tax Withholding

- 27.1) PREPA will deduct and withhold at source to the Contractor the equivalent of seven percent (7%) from payments for services rendered under this Contract, in compliance with the 1994 Puerto Rico Internal Revenue Code, section 1143, as amended. Notwithstanding, the withholding to be done by PREPA as herein stated could be increased to twenty percent (20%) in the event that the Contractor is a nonresident individual, which is a U.S. citizen, as provided by the 1994 Puerto Rico Internal Revenue Code, section 1147; or twenty nine percent (29%) in the event that the Contractor is a nonresident and non U.S. citizen individual; or a foreign corporation or partnership which is not dedicated to industry or business in Puerto Rico, as provided by the 1994 Puerto Rico Internal Revenue Code, sections 1147 and 1150.
- 27.2) If a Release Letter has been issued to the Contractor by the Treasury Department, the Contractor shall be responsible to submit a copy of said Release Letter to PREPA for every calendar year, otherwise, payments under the Contract shall remain subject to withholding at source. All invoices shall be segregated by concepts (services, materials, equipment, etc.), to identify the amounts subject to withholding, and avoid undue deductions.

Article 28: Discrimination

- 28.1) The Contractor certifies that it is an equal opportunity employer, and does not discriminate by reason of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be victim or domestic violence, sexual aggression or harassment; for physical or mental disability or veteran status.

Article 29: Other Taxes

- 29.1) All applicable unemployment, retirement, and other Social Security contributions and taxes; all sales, use and excise, privilege, business and occupational taxes, and any other taxes or fees payable by the Contractor are and shall be included as part of his prices.

Article 30: Use of Completed Portions

- 30.1) PREPA shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the fact that the time for completion of the entire work may not have expired. PREPA may require the Contractor to expedite the completion of any part of the work for provisional use by PREPA and the Contractor shall comply with such request provided that resources are available at the time the request is made. If such order of completion or prior use increases the cost of the work or delays the work, the Contractor shall be entitled to such extra compensation or extension of time as agreed by the parties.

Article 31: Quality Assurance

- 31.1) The Contractor shall provide evidence of its quality control evidence to satisfy all applicable regulation and requirements specified in the procurement documents. The program shall contain all those measures necessary to assure that all basic technical requisites are fulfilled.
- 31.2) PREPA reserves the right to conduct audits limited to inspection report and quality control certificates that are strictly related to and relevant to the performance of Contractor's activities under this Contract; when necessary in order to assure that the quality control program is being properly implemented. The Contractor shall provide PREPA access to its documents; limited to inspection report and quality control certificates documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract and to the extent it is needed to verify the relevant quality control. PREPA is responsible for all expenses incurred in connection with any such review or audit. PREPA shall not have the right to audit the derivation of any lump sum amounts. Contractor is entitled to a time extension and price adjustment in case the audit impacts its obligations under the Contract. Nothing herein shall constitute an obligation or otherwise require Contractor to share any document, including confidential and/or proprietary information.
- 31.3) In every case in which the materials or services to be furnished to PREPA are subcontracted partially or totally by the Contractor, the Contractor shall request the subcontractor to accept and comply with all the requirements of this Quality Assurance Clause.

Article 32: Code of Ethics

- 32.1) Contractor agrees to comply with the provisions of Act 2-2018 – "Anticorruption Code for the New Puerto Rico", which establishes a Code of Ethics for the Contractors, Suppliers and Economic Incentive Applicants of the Executive Agencies of the Commonwealth of Puerto Rico.

Article 33: Complete Agreement

- 33.1) This document, together with all attachments referenced herein, constitutes the complete Agreement between the parties.

Article 34: Deliveries; Title Transfer; Risk of Loss; Storage

- 34.1) For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Contractor shall deliver Products to PREPA DAP Contractor's facility or warehouse (Incoterms 2010). For export shipments, Contractor shall deliver Products to PREPA DAP Aguirre Combined Cycle Plant (Incoterms 2010). Partial deliveries are permitted. Contractor may deliver Products in advance of the delivery schedule. Delivery times are approximate and are dependent upon prompt receipt by Contractor of all information necessary to proceed with the work without interruption. If Products delivered do not correspond in quantity, type or price to those itemized in the shipping invoice or documentation, PREPA shall so notify Contractor within ten (10) business days after receipt.
- 34.2) For shipments that do not involve export, title to Products shall pass to PREPA upon delivery in accordance with Section 34.1. For export shipments from a Contractor's facility or warehouse outside the U.S., title shall pass to PREPA upon delivery in accordance with Section 34.1. For shipments from the U.S. to another country, title shall pass to PREPA immediately after each item departs from the territorial land, seas and overlying airspace of the U.S. The 1982 United Nations Convention of the law of the Sea shall apply to determine the U.S. territorial seas. For all other shipments, title to Products shall pass to PREPA the earlier of (i) the port of export immediately after Products have been cleared for export or (ii) immediately after each item departs from the territorial land, seas and overlying airspace of the sending country. When PREPA arranges the export or intercommunity shipment, PREPA will provide Contractor evidence of exportation or intercommunity shipment acceptable to the relevant tax and custom authorities.
- 34.3) Risk of loss shall pass to PREPA upon delivery pursuant to Section 34.1, except that for export shipments from the U.S., risk of loss shall transfer to PREPA upon title passage.
- 34.4) If any Products to be delivered under this Contract or if any PREPA equipment repaired at Contractor's facilities cannot be shipped to or received by PREPA when ready due to any cause attributable to PREPA or its other contractors, Contractor may ship the Products and equipment to a storage facility, including storage at the place of manufacture or repair, or to an agreed freight forwarder. If Contractor places Products or equipment into storage, the following apply: (i) title and risk of loss immediately pass to PREPA, if they have not already passed, and delivery shall be deemed to have occurred; (ii) any amounts otherwise payable to Contractor upon delivery or shipment shall be due; (iii) all expenses and charges incurred by Contractor related to the storage shall be payable by PREPA upon submission of Contractor's invoices; and (iv) when conditions permit and upon payment of all amounts due, Contractor shall make Products and repaired equipment available to PREPA for delivery.

- 34.5) If repair Services are to be performed on PREPA's equipment at Contractor's facility, PREPA shall be responsible for, and shall retain risk of loss of, such equipment at all times, except that Contractor shall be responsible for damage to the equipment while at Contractor's facility to the extent such damage is caused by Contractor's negligence.

Article 35: Confidentiality

- 35.1) Contractor and PREPA (as to information disclosed, the "Disclosing Party") may each provide the other party (as to information received, the "Receiving Party") with Confidential Information in connection with this Contract. "Confidential Information" means (a) information that is designated in writing as "confidential" or "proprietary" by Disclosing Party at the time of written disclosure, and (b) information that is orally designated as "confidential" or "proprietary" by Disclosing Party at the time of oral or visual disclosure. In addition, prices for Products and Services shall be considered Contractor's Confidential Information.
- 35.2) Receiving Party agrees: (i) to use the Confidential Information only in connection with the Contract and use of Products and Services, (ii) to take reasonable measures to prevent disclosure of the Confidential Information to third parties, and (iii) not to disclose the Confidential Information to a competitor of Disclosing Party. Notwithstanding these restrictions, (a) Contractor may disclose Confidential Information to its affiliates and subcontractors in connection with performance of the Contract, (b) a Receiving Party may disclose Confidential Information to its auditors, (c) PREPA may disclose Confidential Information to lenders as necessary for PREPA to secure or retain financing needed to perform its obligations under the Contract, and (d) a Receiving Party may disclose Confidential Information to any other third party with the prior written permission of Disclosing Party, and in each case, only so long as the Receiving Party obtains a non-disclosure commitment from any such subcontractors, auditors, lenders or other permitted third party that prohibits disclosure of the Confidential Information and provided further that the Receiving Party remains responsible for any unauthorized use or disclosure of the Confidential Information. Receiving Party shall upon request return to Disclosing Party or destroy all copies of Confidential Information except to the extent that a specific provision of the Contract entitles Receiving Party to retain an item of Confidential Information. Contractor may also retain one archive copy of PREPA's Confidential Information.
- 35.3) The obligations under this Article 35 shall not apply to any portion of the Confidential Information that: (i) is or becomes generally available to the public other than as a result of disclosure by Receiving Party, its representatives or its affiliates; (ii) is or becomes available to Receiving Party on a non-confidential basis from a source other than Disclosing Party when the source is not, to the best of Receiving Party's knowledge, subject to a confidentiality obligation to Disclosing Party; (iii) is independently developed by Receiving Party, its representatives or affiliates, without reference to the Confidential Information; (iv) is required to be disclosed by law or valid legal process provided that the Receiving Party intending to make disclosure in response to such requirements or process shall promptly notify the Disclosing Party in

advance of such disclosure and reasonably cooperate in attempts to maintain the confidentiality of the Confidential Information.

- 35.4) Each Disclosing Party warrants that it has the right to disclose the information that it discloses. Neither PREPA nor Contractor shall make any public announcement about the Contract without prior written approval of the other party. As to any individual item of Confidential Information, the restrictions under this Article 35 shall expire five (5) years after the date of disclosure. Article 35 does not supersede any separate confidentiality or nondisclosure agreement signed by the parties.



GOBIERNO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA

13 de diciembre de 2021

Mario E. Miranda Sánchez, Jefe
División de Suministros
William Ríos Mera
William Ríos Mera
Jefe de Central Auxiliar
Central Ciclo Combinado

CERTIFICACIÓN DE FONDOS REQUISICIÓN 246552, CARIBE GE INTERNATIONAL ENERGY SERVICES, REHABILITACIÓN ROTOR DE TURBINA UNIDAD A GAS 1-3,, CENTRAL CICLO COMBINADO

La requisición 246552 se generó por un estimado de \$340,000 para realizar una negociación directa con la compañía Caribe GE International Energy Services (GE), como único suplidor y fabricante original (OEM) de nuestras turbinas a gas. Esto, para suplir los recursos, ingeniería y equipo para la inspección y rehabilitación del rotor de turbina de la Unidad a Gas 1-3, en la Central Ciclo Combinado de Aguirre. Todo en conformidad la propuesta de GE y los términos y condiciones de la requisición. Esta unidad saldrá programada en enero de 2022 para una inspección mayor del turbogenerador.

Incluimos la Certificación de Fondos bajo la cuenta 01-1071-33101-555-304 y el estimado 107506 del Programa de Gastos de Mantenimiento Necesarios (GMN) de la Central para el año fiscal 2020-21. De necesitar información adicional, puede comunicarse al 3728.

Anejos

Coordinado

Jorge L. Cotto Pérez
Jorge L. Cotto Pérez
Director, Interino, Generación



Apartado 364267 San Juan, Puerto Rico 00936-4267

Somos un patrono con igualdad de oportunidades en el empleo y no discriminamos por razón de raza, color, sexo, edad, origen social o nacional, condición social, afiliación política, ideas políticas o religiosas; por ser víctima o ser percibida(o) como víctima de violencia doméstica, agresión sexual o acoso, sin importar estado civil, orientación sexual, identidad de género o estatus migratorio; por impedimento físico, mental o ambos, por condición de veterano(a) o por información genética.

El total de horas acumulado en esta unidad no tiene precedente en la historia de la Central, por lo que recomendamos que el rotor debe ser enviado para su primera inspección y reparación a un taller certificado por el OEM. A petición de la Central, GE sometió la propuesta 1573903 por \$339,422.28, la que incluye la inspección y reparación del rotor, las tres etapas de paletas (*buckets*), los cojinetes 2 y 3 y todos los costos de transportación ida y vuelta del rotor hacia el taller. Entendemos que la propuesta es razonable y compara favorablemente con el alcance de trabajo en el 2017 en la Unidad 2-2 bajo la orden 76688. En base a lo anterior, solicitamos proceder con la negociación y la orden final antes de la salida de la unidad para mantenimiento.

APROBADO

William Ríos Mera
Director de Generación, Interino

Turbine Rotor Bucket Repairs Bearings' Repairs

Puerto Rico Electric Power Authority
Site: Aguirre Combined Cycle Plant
Unit Serial Number: 238024 (Unit 1-3)



Caribe GE International Energy Services, Corp.
Proposal: 1573903 Rev. 3
October 18, 2021

Proprietary Statement

This entire commercial and technical proposal **1573903 Rev. 3** and the correspondence and communications concerning this proposal collectively the "Proposal" developed by Caribe GE Energy Services Corp. (Caribe GE) and provided to Puerto Rico Electric Power Authority (PREPA) for its MS7001B gas turbine Unit No. 1-3, which is installed at the Aguirre Combined Cycle Station in Salinas, Puerto Rico, are the property of Caribe GE.

This proposal document is proprietary to Caribe GE and is furnished in confidence solely for use in considering the merits of the proposal and for no other direct or indirect use. By accepting this document from Caribe GE, the recipient agrees:

- A. To use this document, and the information it contains, exclusively for the above stated purpose and to avoid use of the information for performance of the proposed work by the recipient or disclosure of the information to, and use by, competitors of Caribe GE on behalf of the recipient.
- B. To avoid publication or other unrestricted disclosure of this document or the information it contains.
- C. To make no copies of any part thereof without the prior written permission of Caribe GE.
- D. To return this document when it is no longer needed for the purpose for which furnished, or upon request of Caribe GE.

Revision	Date	Comments
0	June 25, 2021	N/A
1	June 28, 2021	To include installation of repaired buckets
2	September 22, 2021	Price validation Milestone payments Inclusion of repair cycle Inclusion of inland/ocean marine cargo insurance
3	October 18, 2021	Revised inland/ocean marine cargo insurance

Gas Power

OUR VISION

At Gas Power, a business unit of General Electric Company, we are committed to meeting the present and future service needs of energy companies. Our customers deserve a digital-industrial partner that helps maximize performance, minimize risk, and consistently deliver high-quality service solutions.

WHO WE ARE

Gas Power is a market-focused, customer-driven organization providing services, upgrades, repairs, parts, multi-year agreements, operations and maintenance - as well as advanced digital solutions - for assets supplied by GE and other original equipment manufacturers (OEM's). With the largest power plant services portfolio in the industry, our cross-fleet approach allows us to support more than 90 OEM brands of gas and steam turbines, generators, boilers and other balance-of-plant equipment. Customer service excellence is at the heart of our business. Gas Power recognizes that our energy industry customers generate and use power in highly engineered processes, thus reliability and productivity are paramount.

Our FieldCore Division differentiates us from our competitors. An organization backed by over 125 years of experience and reflects one main purpose - to deliver the highest standard of field services excellence and to advance our customers' critical industrial assets. Our experienced field engineers are highly motivated and dedicated professionals. They provide our customers with proactive technical innovation, problem solving, and sound project management, and are backed by a highly skilled team of technical support engineers. Built from the field up with talent, expertise and best practices, all our Field Engineers receive extensive training and are equipped with digital tools and mobile devices that enable around-the-clock access to our product service department and personnel. Our customers can depend on our Field Engineering expertise, 24 hours a day, 365 days a year.

GE's commitment to technical innovation has never been more exciting or demanding. Technical excellence is at the forefront of our mission to provide successful solutions for our customers. With next-generation tools, finely tuned processes, and total plant solutions, our goal is to deliver services faster, more reliably and with greater safety, so our customers can consistently deliver the outcomes their operations and stakeholders' demand.

Our value to our customers as a digital-industrial service organization is measured by our field services operating excellence, the innovation of our technical solutions and the customer outcomes we deliver.



October 18, 2021

Luis E. Angulo
Sales Manager
Gas Power Services

Harry Velázquez
Puerto Rico Electric Power Authority
Aguirre Power Plant
PO Box 137
San Juan, Puerto Rico

3390 Mary St.
Suite 300
Miami, FL 33133
USA

T +1 786 800-3133
M +1 305 588 2189
www.gepower.com

Subject: Turbine Rotor Inspection, Bucket Repairs, Bearings' Repairs
GT Unit 1-3
Caribe GE Proposal No. 1573903 Rev 3

Dear Mr. Velázquez:

It is our distinct pleasure to present to you our revised proposal for the turbine rotor inspection and bucket repairs for your MS7001B gas turbine Unit 1-3 (serial number 238024), currently in operation at the Aguirre Combined Cycle Plant. The Gas Power team has prepared this proposal to meet your requirements.

The revision includes the repair cycle, inland/ocean marine cargo insurance, and updated milestone payments. PREPA can rest assured that Caribe GE will adequately match the available technical resources to the requirements of this project.

It is our belief that our proposal is complete and contains all the elements necessary to conform to your technical and commercial requirements. We invite you to review this document, and to please contact us with any questions or comments you may have. We look forward to the possibility of serving your needs during this project.

Sincerely,

Luis E. Angulo

Table of Contents

SECTION 1: SCOPE OF SERVICES..... 6

SECTION 2: PRICING SUMMARY 9

SECTION 3: COMMERCIAL TERMS.....12

Section 1: Scope of Services

Turbine Rotor Inspection, Buckets, and Bearings' Repairs

Introduction

Based on PREPA's information, it was reported that referenced rotor has around 3,060 operational hours. PREPA advised GE that rotor was supplied by GE, brand new in 2004. From 2004 until 2009, the unit was hardly used. From 2009 on, it was started sporadically; therefore, the rotor has a monthly average of fifteen (15) starts.

Caribe GE Engineering Services Corp., (Caribe GE) is pleased to submit this proposal to PREPA, for the services required to inspect the turbine rotor, as well as the repairs of both the Stage-1, 2 and 3 buckets, as well as the bearing numbers 2 and 3. The services will be performed at the Caribe GE Service Center in Greenville, North Carolina, USA.

Scope of Repairs

Stage-1 Buckets

Item No.	Activity	Description
1	Inspection	<ol style="list-style-type: none"> 1. Bucket removal. 2. Clean parts and record drawing numbers, serial numbers, and record of previous repair(s), if visible/legible. 3. Perform incoming water flow test to check for blocked cooling holes. 4. Remove aluminum seal strips from blade dovetails. 5. Perform visual inspection of the blade coating to characterize coating condition. <p>Note: Strip coating may be expedited during incoming inspection based on inspection results and PREPA's decision.</p> <ol style="list-style-type: none"> 6. Perform incoming visual inspection of blades to characterize overall condition. 7. Measure and record blade tip heights. 8. Measure and record forward and aft angel wing heights. 9. Measure and record trailing edge thickness dimensions. 10. Perform pre-weld solution heat treatment. 11. Perform FPI inspection. 12. Perform engineering review of blade inspection results and issue Inspection/Condition Report.
2	Medium Repairs	<ol style="list-style-type: none"> 1. Strip external airfoil coating for up to 92 blades 2. Perform FPI inspection. 3. Perform airfoil wall thickness check on parts that have had coating removed. 4. Weld repair angel wings followed by machining and blending to size, as required 5. Perform blend repairs, as required, to remove indications. 6. Post-weld heat-treat turbine blades. 7. Perform post-repair FPI 8. Re-coat turbine blades with GE-specified coating system.

Item No.	Activity	Description
		<ol style="list-style-type: none"> 9. Apply solution and age heat treat. 10. Shot peen airfoils and dovetails. 11. Apply aluminum seal strip to dovetails. 12. Moment weigh and chart turbine blades. 13. Perform final cleaning and quality assurance inspection. 14. Prepare and issue final report. 15. Installation and balance.

Stage-2 Buckets

Item No.	Activity	Description
1	Inspection	<ol style="list-style-type: none"> 1. Bucket removal. 2. Clean parts and record drawing numbers, serial numbers and record of previous repair(s), if visible/legible 3. Perform incoming water flow test to check for blocked cooling holes 4. Perform tip shroud engagement inspection 5. Remove aluminum seal strips from blade dovetails 6. Perform incoming visual inspection of blades to characterize overall condition. 7. Measure and record seal rails heights 8. Measure and record forward and aft angel wing heights 9. Measure and record trailing edge thickness dimensions 10. Inspect z-notch hard facing 11. Perform pre-weld solution heat treatment 12. Perform FPI inspection. 13. Perform engineering review of blade inspection results and issue Inspection/Condition Report.
2	Medium Repairs	<ol style="list-style-type: none"> 1. Perform blend repairs, as required, to remove indications. 2. Weld repair and recontour up to (92) turbine blades on up to two (2) features: hard faces, one or both seal rails, and angel wings 3. Post-weld heat-treat and age heat treat turbine blades. 4. Perform grit blast cleaning of blade exterior 5. Shot peen blade dovetails 6. Apply aluminum seal strip to dovetails. 7. Moment weigh and chart turbine blades. 8. Perform final cleaning and quality assurance inspection. 9. Prepare and issue final report. 10. Installation and balance.

Stage-3 Buckets

Item No.	Activity	Description
1	Inspection	<ol style="list-style-type: none"> 1. Bucket removal. 2. Clean parts and record drawing numbers, serial numbers and record of previous repair(s), if visible/legible 3. Perform incoming visual inspection of blades to characterize overall condition. 4. Measure and record seal rails heights 5. Measure and record forward and aft angel wing heights 6. Measure and record trailing edge thickness dimensions 7. Inspect z-notch hard faces 8. Perform pre-weld solution heat treatment 9. Perform FPI inspection.
2	Medium Repairs	<ol style="list-style-type: none"> 1. Perform blend repairs, as required, to remove indications. 2. Weld repair and recontour all (92) turbine blades on up to two features: hard faces, one or both seal rails, or angel wings 3. Post-weld heat-treat and age heat treat turbine blades. 4. Perform grit blast cleaning of blade exterior 5. Shot peen blade dovetails 6. Moment weigh and chart turbine blades. 7. Perform final cleaning and quality assurance inspection. 8. Prepare and issue final report. 9. Installation and balance.

Turbine Rotor

Item No.	Activity	Description
1	Inspection	1. Receive turbine rotor. Remove rotor from truck, unwrap, remove from skid and document overall general condition.
		2. Clean turbine rotor to remove normal deposits from turbine section
		3. Cleaning methods vary by section and include dry-ice blasting,
		4. hand scrubbing and steam cleaning, as appropriate.
		5. Perform visual inspection of cleaned rotor to determine serviceability of components and document results.
		6. Dimensionally inspect rotor:
		a. Install rotor in lathe.
		b. Inspect all controlled external features including rabbets and journals, where applicable.
		c. Perform runouts inspections on rotor at critical locations in accordance with GE specifications.
		7. Perform NDT testing of all parts, including white light visual, FPI and MPI, as applicable to each rotor component.
		8. Remove old rotor weights.
		9. Remove balance weight stake marks (each stage).
		10. Balance turbine rotor:
		a. Place rotor in balance machine and remove existing weights.
		b. Progressive balance and installation of turbine blades.
		c. Perform multi-plane balance to specification.
		11. Stake balance weights using GE-approved procedures
		12. Prepare rotor for shipment.
Note:		
		a. After cleaning, inspection, and rotor assessment, Caribe GE will inform PREPA if the turbine rotor should be unstacked/restacked. If this is the case, this activity will be considered Extra Work.

Bearings

Item No.	Activity	Description
1	Inspection and Repair	Bearing No. 2
2	Inspection and Repair	Bearing No. 3

Section 2: Pricing Summary

Base Proposal

Item	Description	Cycle (Weeks)	Total Price (US\$)
Stage-1 Buckets			
1	Inspection	14	\$4,499.00
2	Medium Repair ⁴		\$73,886.00
Stage-2 Buckets			
3	Inspection	14	\$4,071.00
4	Medium Repair ⁴		\$40,227.00
Stage-3 Buckets			
5	Inspection	14	\$4,422.00
6	Medium Repair ⁴		\$40,227.00
Turbine Rotor			
7	Inspection Only	14	\$53,795.28
Bearings			
8	Bearing No. 2 Inspection and Repair	4	\$31,412.00
9	Bearing No. 3 Inspection and Repair		\$27,882.00

Note: The cycle for the inspection and repair is fourteen (14) weeks (transportation time is not included). Rotor is expected at Caribe GE Service Center in Greenville, SC no later than February 2, 2022.

Transportation

Item	Description	Total Price (US\$)
1	Skid Usage Fee	\$5,556.00
2	Empty Skid from Storage Location to PREPA Aguirre	\$13,333.00
3	Rotor and Skid from PREPA Aguirre to GE Caribe Center	\$10,222.00
4	Rotor and Skid from GE Caribe Center to PREPA Aguirre	\$14,334.00
5	Empty Skid from PREPA Aguirre to Caribe GE Service Center	\$13,334.00
6	Empty Skid from Caribe GE Service Center to Storage Location	\$2,222.00

Note: Vessel frequency is weekly. Transit time is eight (8) days.

Cargo Insurance

Item	Description	Total Price (US\$)
1	Inland/Ocean Marine Cargo Insurance	\$1,259.00

Notes:

1. To calculate the exact value of the inland/ocean marine cargo, GE would need the value of the rotor that will be used on the shipping documents. For this proposal we have estimated rotor value US\$1,000,000.00.
2. The inland/ocean marine cargo insurance value will change once the value of the repaired rotor is added.

Pricing Conditions

1. The prices above are in US Dollars, and do not include applicable sales, excise, value-added, use, or similar taxes. The amount of any present or future sales, use, excise, or similar tax applicable to the work hereunder shall be paid by PREPA or in lieu thereof, PREPA shall provide Caribe GE with the tax exemption evidence acceptable to the taxing authorities.
2. The delivery cycle for the repairs described in this proposal correspond to the current slot availability at the date this proposal is issued. However, the actual delivery date shall be confirmed once an order acknowledgement is issued.
3. The proposed prices are based on the scope of services outlined in Section 1. Any additional service(s) required by PREPA will be considered extra work, and will be quoted on a separate, written proposal.
4. The repair prices for the Stage-1, Stage-2, and Stage-3 buckets include installation on the existing turbine rotor.
5. This is a repairs-only proposal; specifically, for the parts enlisted above. The prices do not include installation services not specifically defined in this proposal.
6. **Additional Repairs:** In the event that any additional defects are discovered during inspection and/or repair, all parts and repairs will be in addition to the above prices. Please be informed that additional required repairs that are found during the inspection may extend the delivery date. PREPA's review and approval will be required prior to beginning the additional repairs/replacement.
7. All components shall be properly packed by PREPA for transportation purposes. Caribe GE will return the parts to PREPA in PREPA's original packing. Caribe GE has not included any allowance for packing in this proposal.
8. Transport boxes will need to be made of wood that has been heat treated and shows an IPPC stamp, in compliance with US Customs requirements.
9. Once the repaired rotor is shipped back to PREPA's Aguirre Power Station, PREPA will be responsible for making the skid available for transport and return to Caribe GE's Service Center. A daily charge of US\$4,500.00 will be invoiced for any delays beyond four (5) days after the project is completed, until the skid is loaded on the vessel returning to the USA.
10. Prices quoted herein are firm for thirty (30) days from the date of this proposal. Caribe GE reserves the right to modify prices herein for work ordered after that date. This proposal is subject to change upon notice prior to executable order.

Section 3: Commercial Terms

Payment Terms

- A.** Should PREPA like to proceed with an order, please issue it to the following entity:

Caribe GE International Energy Services Corp.

PO Box 71403
San Juan, Puerto Rico 00936

El Mundo Office Building, 383
F.D. Roosevelt Ave, Suite 205
Hato Rey, Puerto Rico 00918

For faster service please send copy via e-mail to my attention at luís.angulo@ge.com and always refer to the Caribe GE proposal number. **All orders require the following information: ship-to address, bill-to address, delivery terms, and payment terms.**

- B.** Payment will be due in U.S. Dollars sixty (60) days after issuance of invoice without any setoff (including, without limitation, setoff under other contracts with Seller or with General Electric Company or its affiliates). Invoice may be sent prior to the completion of milestones. Payment for any out-of-scope (extra) work, if performed, will be due without setoff upon receipt of invoice.

Invoices will be issued in accordance with the following milestone schedule:

Milestone	Percentage of Contract Price
Upon issuance of purchase order	25%
Upon completion of parts inspection	30%
Upon notification that the repaired components are ready for shipment	40%
Upon submittal of final repair report	5%

For Wire Transfers:

Account Name:	GENERAL ELECTRIC INTERNATIONAL INC.
Account Number:	31279294
Currency	USD
Routing/ABA Number:	021000089
SWIFT/BIC Code:	CITIUS33
Branch Number:	930
Bank Name:	Citibank N.A.
Bank Address:	399 Park Avenue New York, NY 10043 USA

Note: The above payment terms are subject to change in accordance with PREPA's total credit obligations at the time the purchase order is issued.

Terms and Conditions

This proposal is based upon the Products and/or Services Terms and Conditions included in the Appendix. Should Caribe GE receive the award of this project, Caribe GE will be open to negotiate the terms and conditions required based on the terms and conditions negotiated under Contract No. 85041 – Unit 2-2 Assembly, dated December 3, 2019

COVID-19 Virus

The parties acknowledge that the COVID-19 pandemic and government actions in response to it have affected and will continue to affect Seller's ability to deliver goods and services around the world (the "COVID-19 Impact"). In the event that the COVID-19 Impact has affected or affects Seller's ability to deliver on time or at the bid price, Seller shall be entitled to an equitable adjustment in schedule and price as appropriate, subject to Seller's obligation to work in good faith with Buyer to mitigate the impact on schedule and/or cost.

Products and/or Services Terms and Conditions

NOTICE: Sale of any Products and/or Services is expressly conditioned on Buyer's assent to these Terms and Conditions. Any acceptance of Seller's offer is expressly limited to acceptance of these Terms and Conditions and Seller expressly objects to any additional or different terms proposed by Buyer. No facility entry form shall modify these Terms and Conditions even if signed by Seller's representative. Any order to perform work and Seller's performance of work shall constitute Buyer's assent to these Terms and Conditions. Unless otherwise specified in the quotation, Seller's quotation shall expire 30 days from its date and may be modified or withdrawn by Seller before receipt of Buyer's conforming acceptance.

1. Definitions

"Buyer" means the entity to which Seller is providing Products and/or Services under the Contract.

"Contract" means either the contract agreement signed by both parties, or the purchase order signed by Buyer and accepted by Seller in writing, for the sale of Products and/or Services, together with these Terms and Conditions, Seller's final quotation, the agreed scope(s) of work, and Seller's order acknowledgement. In the event of any conflict, the Terms and Conditions shall take precedence over other documents included in the Contract.

"Contract Price" means the agreed price stated in the Contract for the sale of Products and/or Services, including adjustments (if any) in accordance with the Contract.

"Hazardous Materials" means any toxic or hazardous substance, hazardous material, dangerous or hazardous waste, dangerous good, radioactive material, petroleum or petroleum-derived products or by-products, or any other chemical, substance, material or emission, that is regulated, listed or controlled pursuant to any national, state, provincial, or local law, statute, ordinance, directive, regulation or other legal requirement of the United States ("U.S.") or the country of the Site.

"Insolvent/Bankrupt" means that a party is insolvent, makes an assignment for the benefit of its creditors, has an administrator, receiver, liquidator or trustee appointed for it or any of its assets, or files or has filed against it a proceeding under any bankruptcy, insolvency dissolution or liquidation laws.

"Products" means the equipment, parts, materials, supplies, software, and other goods Seller has agreed to supply to Buyer under the Contract.

"Seller" means the entity providing Products or performing Services under the Contract.

"Services" means the services Seller has agreed to perform for Buyer under the Contract.

"Site" means the premises where Products are used or Services are performed, not including Seller's premises from which it performs Services.

"Terms and Conditions" means these "Products and/or Services Terms and Conditions", including any relevant

addenda pursuant to Article 18, together with any modifications or additional provisions specifically stated in Seller's final quotation or specifically agreed upon by Seller in writing.

"USD" means United States Dollars.

2. Payment

2.1 Buyer shall pay Seller for the Products and/or Services by paying all invoiced amounts by direct bank transfer in the currency specified by Seller in the Contract, without deduction, withholding or set-off for any payment or claim, within thirty (30) days from the invoice date. If the Contract Price is less than two hundred fifty thousand USD (\$250,000), Seller shall issue invoices upon shipment of Products and as Services are performed. If the Contract Price is two hundred fifty thousand USD (\$250,000) or more, progress payments shall be invoiced starting with twenty-five percent (25%) of the Contract Price for Products and/or Services upon the earlier of Contract signature or issuance of Seller's order acknowledgement and continuing such that the Contract Price for remaining Services are invoiced as they are performed and ninety percent (90%) of the Contract Price for Products is received before the earliest scheduled Product shipment ("Progress Payments"). For each calendar month, or fraction thereof, that payment is late, Buyer shall pay a late payment charge computed at the rate of 1.5% per month on the overdue balance, or the maximum rate permitted by law if it is less. If the price is set by the Contract in a currency other than USD, references to USD in this Section 2.1 shall mean the equivalent amount in the applicable currency.

2.2 As and if requested by Seller, Buyer shall at its expense establish and keep in force payment security in the form of an irrevocable, unconditional, sight letter of credit or bank guarantee allowing for pro-rata payments as Products are shipped and Services are performed, plus payment of cancellation and termination charges, and all other amounts due from Buyer under the Contract ("Payment Security"). The Payment Security shall be (a) in a form, and issued or confirmed by a bank acceptable to Seller, (b) payable at the counters of such acceptable bank or negotiating bank, (c) opened at least sixty (60) days prior to both the earliest scheduled shipment of Products and commencement of Services, and (d) remain in effect until the latest of ninety (90) days after the last scheduled Product shipment, completion of all Services and Seller's receipt of the final payment required under the Contract.

Buyer shall, at its expense, increase the amount(s), extend the validity period(s) and make other appropriate modifications to any Payment Security within ten (10) days of Seller's notification that such adjustment is necessary in connection with Buyer's obligations under the Contract.

2.3 Seller is not required to commence or continue its performance unless and until any required Payment Security is received, operative and in effect and all applicable Progress Payments have been received. For each day of delay in receiving any Progress Payments or acceptable Payment Security, Seller shall be entitled to an equitable extension of time to durations or periods of time (if any) expressly agreed to by the Parties in the written schedule for performance and/or completion of the Services or any parts thereof. If at any time Seller reasonably determines that Buyer's financial condition or payment history does not justify continuation of Seller's performance, Seller shall be entitled to require full or partial payment in advance or otherwise restructure payments, request additional forms of Payment Security, suspend its performance or terminate the Contract.

3. Taxes and Duties

Seller shall be responsible for all corporate taxes measured by net income due to performance of or payment for work under this Contract ("Seller Taxes"). Buyer shall be responsible for all taxes, duties, fees, or other charges of any nature (including, but not limited to, consumption, gross receipts, import, property, sales, stamp, turnover, use, or value-added taxes, and all items of withholding, deficiency, penalty, addition to tax, interest, or assessment related thereto, imposed by any governmental authority on Buyer or Seller or its subcontractors) in relation to the Contract or the performance of or payment for work under the Contract other than Seller Taxes ("Buyer Taxes"). The Contract Price does not include the amount of any Buyer Taxes. If Buyer deducts or withholds Buyer Taxes, Buyer shall pay additional amounts so that Seller receives the full Contract Price without reduction for Buyer Taxes. Buyer shall provide to Seller, within one month of payment, official receipts from the applicable governmental authority for deducted or withheld taxes.

4. Deliveries; Title Transfer; Risk of Loss; Storage

4.1 For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Seller shall deliver Products to Buyer FCA Seller's facility or warehouse (Incoterms 2010). For export shipments, Seller shall deliver Products to Buyer FCA Port of Export (Incoterms 2010). Buyer shall pay all delivery costs and charges or pay Seller's standard shipping charges plus up to twenty-five (25%) percent. Partial deliveries are permitted. Seller may deliver Products in advance of the delivery schedule. If Products delivered do not correspond in quantity, type or price to those itemized

in the shipping invoice or documentation, Buyer shall so notify Seller within ten (10) days after receipt.

4.2 For shipments that do not involve export, title to Products shall pass to Buyer upon delivery in accordance with Section 4.1. For export shipments from a Seller facility or warehouse outside the U.S., title shall pass to Buyer upon delivery in accordance with Section 4.1. For shipments from the U.S. to another country, title shall pass to Buyer immediately after each item departs from the territorial land, seas and overlying airspace of the U.S. The 1982 United Nations Convention of the law of the Sea shall apply to determine the U.S. territorial seas. For all other shipments, title to Products shall pass to Buyer the earlier of (i) the port of export immediately upon clearance of Products for export or (ii) immediately after each item departs from the territorial land, seas and overlying airspace of the sending country. When Buyer arranges the export or intercommunity shipment, Buyer will provide Seller evidence of exportation or intercommunity shipment acceptable to the relevant tax and custom authorities. Buyer may not use any third party vendor for providing customs clearance services until Seller has approved such party prior to shipment of the Parts. Notwithstanding the foregoing, Seller grants only a non-exclusive license, and does not pass title, for any software provided by Seller under this Contract, and title to any leased equipment remains with Seller.

4.3 Risk of loss shall pass to Buyer upon delivery pursuant to Section 4.1, except that for export shipments from the U.S., risk of loss shall transfer to Buyer upon title passage.

4.4 If any Products to be delivered under this Contract or if any Buyer equipment repaired at Seller's facilities cannot be shipped to or received by Buyer when ready due to any cause attributable to Buyer or its other contractors, Seller may ship the Products and equipment to a storage facility, including storage at the place of manufacture or repair, or to an agreed freight forwarder. If Seller places Products or equipment into storage, the following apply: (i) title and risk of loss immediately pass to Buyer, if they have not already passed, and Buyer or its other contractors, Seller may ship the Products and equipment to a storage facility, including storage at the place of manufacture or repair, or to an agreed freight forwarder. If Seller places Products or equipment into storage, the following apply: (i) title and risk of loss immediately pass to Buyer, if they have not already passed, and delivery shall be deemed to have occurred; (ii) any amounts otherwise payable to Seller upon delivery or shipment shall be due; (iii) all expenses and charges incurred by Seller related to the storage shall be payable by Buyer upon submission of Seller's invoices; and (iv) when conditions permit and upon payment of all amounts due, Seller shall make Products and repaired equipment available to Buyer for delivery.

4.5 If repair Services are to be performed on Buyer's equipment at Seller's facility, Buyer shall be responsible for, and shall retain risk of loss of, such equipment at all times, except that Seller shall be responsible for damage to the

equipment while at Seller's facility to the extent such damage is caused by Seller's negligence.4.6 Except as otherwise expressly agreed to by the Parties in writing, acceptance of Products shall be deemed to occur upon delivery and acceptance of Services, upon performance

5. Warranty

5.1 Seller warrants that Products shall be delivered free from defects in material, workmanship and title and that Services shall be performed in a competent, diligent manner in accordance with any mutually agreed specifications incorporated into the Contract.

5.2 The warranty for Products shall expire one (1) year from first use or eighteen (18) months from delivery, whichever occurs first, except that software is warranted for ninety (90) days from delivery; and the warranty for Services shall expire one (1) year after performance of the Service, except that software-related Services are warranted for ninety (90) days (as applicable, the "Warranty Period").

5.3 If Products and/or Services do not meet the above warranties, Buyer shall promptly notify Seller in writing prior to expiration of the applicable Warranty Period. Seller shall (i) at its option, repair or replace defective Products and (ii) re-perform defective Services. If despite Seller's reasonable efforts, a non-conforming product cannot be repaired or replaced, or non-conforming Services cannot be re-performed, Seller shall refund or credit monies paid by Buyer for such non-conforming Products and/or Services. Warranty repair, replacement or re-performance by Seller shall not extend or renew the applicable Warranty Period. Buyer shall obtain Seller's agreement on the specifications of any tests it plans to conduct to determine whether a non-conformance exists.

5.4 Buyer shall bear the costs of access for Seller's remedial warranty efforts (including removal and replacement of systems, structures or other parts of Buyer's facility), de installation, decontamination, re installation and transportation of defective Products to Seller and back to Buyer.

5.5 The warranties and remedies are conditioned upon (a) proper storage, installation, use, operation, and maintenance of Products, (b) Buyer keeping accurate and complete records of operation and maintenance during the warranty period and providing Seller access to those records, and (c) modification or repair of Products and/or Services only as authorized by Seller in writing. Failure to meet any such conditions renders the warranty null and void. Seller is not responsible for normal wear and tear.

5.6 This Article 5 provides the exclusive remedies for all claims based upon the failure of or defect in Products or Services, whether the claim is based in contract, negligence, statute, or any tortious/extra-contractual liability theory, strict liability or otherwise. The foregoing warranties in this Article 5 are exclusive and are in lieu of all

other warranties, conditions and guarantees whether written, oral, implied or statutory. NO IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OR CONDITION OF MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.

6. Confidentiality

6.1 Seller and Buyer (as to information disclosed, the "Disclosing Party") may each provide the other party (as to information received, the "Receiving Party") with Confidential Information in connection with this Contract. "Confidential Information" means information that is designated in writing as "confidential" or "proprietary" by Disclosing Party at the time of written disclosure. In addition, prices for Products and/or Services shall be considered Seller's Confidential Information.

6.2 Receiving Party agrees: (i) to use the Confidential Information only in connection with the Contract and use of Products and/or Services, (ii) to take reasonable measures to prevent disclosure of the Confidential Information to third parties, and (iii) not to disclose the Confidential Information to a competitor of Disclosing Party. Notwithstanding these restrictions, (a) Seller may disclose Confidential Information to its affiliates and subcontractors in connection with performance of the Contract, (b) a Receiving Party may disclose Confidential Information to its auditors, (c) Buyer may disclose Confidential Information to lenders as necessary for Buyer to secure or retain financing needed to perform its obligations under the Contract, and (d) a Receiving Party may disclose Confidential Information to any other third party with the prior written permission of Disclosing Party, and in each case, only so long as the Receiving Party obtains a non-disclosure commitment from any such subcontractors, auditors, lenders or other permitted third party that prohibits disclosure of the Confidential Information and provided further that the Receiving Party remains responsible for any unauthorized use or disclosure of the Confidential Information.

Receiving Party shall upon request return to Disclosing Party or destroy all copies of Confidential Information except to the extent that a specific provision of the Contract entitles Receiving Party to retain an item of Confidential Information. Seller may also retain one archive copy of Buyer's Confidential Information.

6.3 The obligations under this Article 6 shall not apply to any portion of the Confidential Information that: (i) is or becomes generally available to the public other than as a result of disclosure by Receiving Party, its representatives or its affiliates; (ii) is or becomes available to Receiving Party on a non-confidential basis from a source other than Disclosing Party when the source is not, to the best of Receiving Party's knowledge, subject to a confidentiality obligation to Disclosing Party; (iii) is independently developed by Receiving Party, its representatives or affiliates, without reference to the Confidential Information; (iv) is required to be disclosed by law or valid legal process

provided that the Receiving Party intending to make disclosure in response to such requirements or process shall promptly notify the Disclosing Party in advance of such disclosure and reasonably cooperate in attempts to maintain the confidentiality of the Confidential Information.

6.4 Each Disclosing Party warrants that it has the right to disclose the information that it discloses. Neither Buyer nor Seller shall make any public announcement about the Contract without prior written approval of the other party. As to any individual item of Confidential Information, the restrictions under this Article 6 shall expire five (5) years after the date of disclosure. Article 6 does not supersede any separate confidentiality or nondisclosure agreement signed by the parties

7. Intellectual Property

7.1 Seller shall defend and indemnify Buyer against any claim by a non-affiliated third party (a "Claim") alleging that Products and/or Services furnished under this Contract infringe a patent in effect in the U.S., an EU member state or the country of the Site (provided there is a corresponding patent issued by the U.S. or an EU member state), or any copyright or trademark registered in the country of the Site, provided that Buyer (a) promptly notifies Seller in writing of the Claim, (b) makes no admission of liability and does not take any position adverse to Seller, (c) gives Seller sole authority to control defense and settlement of the Claim, and (d) provides Seller with full disclosure and reasonable assistance as required to defend the Claim.

7.2 Section 7.1 shall not apply and Seller shall have no obligation or liability with respect to any Claim based upon (a) Products and/or Services that have been modified, or revised, (b) the combination of any Products and/or Services with other products and/or services when such combination is a basis of the alleged infringement, (c) failure of Buyer to implement any update provided by Seller that would have prevented the Claim, (d) unauthorized use of Products and/or Services, or (e) Products and/or Services made or performed to Buyer's specifications.

7.3 Should any Product and/or Service, or any portion thereof, become the subject of a Claim, Seller may at its option (a) procure for Buyer the right to continue using the Product and/or Service, or applicable portion thereof, (b) modify or replace it in whole or in part to make it non-infringing, or (c) failing (a) or (b), take back infringing Products and/or discontinue infringing Services and refund the price received by Seller attributable to the infringing Products and/or Services.

7.4 Article 7 states Seller's exclusive liability for intellectual property infringement by Products and/or Services.

7.5 Each party shall retain ownership of all Confidential Information and intellectual property it had prior to the Contract. All rights in and to software not expressly granted to Buyer are reserved by Seller. All new intellectual property

conceived or created by Seller in the performance of this Contract, whether alone or with any contribution from Buyer, shall be owned exclusively by Seller. Buyer agrees to deliver assignment documentation as necessary to achieve that result.

8. Indemnity

Each of Buyer and Seller (as an "Indemnifying Party") shall indemnify the other party (as an "Indemnified Party") from and against claims brought by a third party, on account of personal injury or damage to the third party's tangible property, to the extent caused by the negligence of the Indemnifying Party in connection with this Contract. In the event the injury or damage is caused by joint or concurrent negligence of Buyer and Seller, the loss or expense shall be borne by each party in proportion to its degree of negligence. For purposes of Seller's indemnity obligation, no part of the Products or Site is considered third party property.

9. Insurance

During the term of the Contract, Seller shall maintain for its protection the following insurance coverage: (i) Worker's Compensation, Employer's Liability and other statutory insurance required by law with respect to work related injuries or disease of employees of Seller in such form(s) and amount(s) as required by applicable laws; (ii) Automobile Liability insurance with a combined single limit of \$2,500,000.00; and (iii) Commercial General Liability or Public Liability insurance for bodily injury and property damage with a combined single limit of \$2,500,000.00. If required in the Contract, Seller shall provide a certificate of insurance reflecting such coverage.

10. Schedule and Excusable Events

10.1 Any durations or periods of time quoted on the schedule or otherwise agreed for performance, delivery and/or completion of the Services or delivery of Products shall be regarded as estimated only. In addition, delivery times are dependent upon prompt receipt by Seller of all information necessary to proceed with the work without interruption. In the event Seller agrees in writing to guaranteed performance, delivery and/or completion times and specific sums as liquidated damages for late performance, delivery or completion, any such liability for damages shall only commence when the period of delay exceeds the guaranteed date or time by 14 (fourteen) calendar days and liquidated damages may be applied and be levied only from that 14th day onwards. Payment of liquidated damages shall be in full and final settlement of any and all liability of the Seller for delays under the Contract and shall be Buyer's sole and exclusive remedy for failing to achieve the performance, delivery and/or completion guarantee. The Seller's maximum aggregate liability for liquidated damages for delay shall in no

circumstances exceed 5% (five per cent) of the total amount of the Contract Price paid to the Seller.

10.2 Seller shall not be liable and shall not be considered in breach of any obligations to supply manpower, deliver Products or to perform, deliver or complete the Services or any parts thereof within specified durations or periods or by a specified time) if it is delayed or prevented, directly or indirectly, by any cause beyond its reasonable control, or by armed conflict, acts or threats of terrorism, epidemics, strikes or other labor disturbances, or acts or omissions of any governmental authority or of the Buyer or Buyer's contractors or suppliers or for any period of suspension under Section 11.3. If any such cause or excusable event occurs, the schedule for Seller's performance shall be adjusted accordingly and dates or times stated in the schedule for performance and/or completion of the Services shall be extended by the amount of time lost by reason of the event plus such additional time as may be needed to overcome the effect of the event. If acts or omissions of the Buyer or its contractors or suppliers cause the delay, Seller shall also be entitled to an equitable price adjustment.

11. Termination and Suspension

11.1 Buyer may terminate the Contract (or the portion affected) for cause if Seller (i) becomes Insolvent/Bankrupt, or (ii) commits a material breach of the Contract which does not otherwise have a specified contractual remedy, provided that: (a) Buyer shall first provide Seller with detailed written notice of the breach and of Buyer's intention to terminate the Contract, and (b) Seller shall have failed, within 30 days after receipt of the notice, to commence and diligently pursue cure of the breach.

11.2 If Buyer terminates the Contract pursuant to Section 11.1, (i) Seller shall reimburse Buyer the difference between that portion of the Contract Price allocable to the terminated scope and the actual amounts reasonably incurred by Buyer to complete that scope, and (ii) Buyer shall pay to Seller (a) the portion of the Contract Price allocable to Products and/or Services completed, (b) lease fees incurred, and (c) amounts for Services performed before the effective date of termination. The amount due for Services shall be determined in accordance with the milestone schedule (for completed milestones) and rates set forth in the Contract (for work toward milestones not yet achieved and where there is no milestone schedule), as applicable or, where there are no milestones and/or rates in the Contract, at Seller's then-current standard time and material rates.

11.3 Seller may suspend or terminate the Contract (or any affected portion thereof) immediately for cause if Buyer (i) becomes Insolvent/Bankrupt, or (ii) materially breaches the Contract, including, but not limited to, failure or delay in Buyer providing Payment Security, making any payment when due, or fulfilling any payment conditions.

11.4 If the Contract (or any portion thereof) is terminated for any reason other than Seller's default under Section 11.1, Buyer shall pay Seller for all Products completed, lease fees incurred and Services performed before the effective date of termination, plus expenses reasonably incurred by Seller in connection with the termination. The amount due for Services shall be determined in accordance with the milestone schedule (for completed milestones) and rates set forth in the Contract (for work toward milestones not yet achieved and where there is no milestone schedule), as applicable or, where there are no milestones and/or rates in the Contract, at Seller's then-current standard time and material rates. In addition, Buyer shall pay Seller a cancellation charge equal to 80% of the Contract Price applicable to uncompleted made-to-order Products and/or Services and 15% of the Contract Price applicable to all other uncompleted Products and/or Services.

11.5 Either Buyer or Seller may terminate the Contract (or the portion affected) upon twenty (20) days advance notice if there is an excusable event (as described in Article 10) lasting longer than one hundred and twenty (120) days. In such case, Buyer shall pay to Seller amounts payable under Section 11.4, excluding the cancellation charge for uncompleted Products and/or Services.

11.6 Buyer shall pay all reasonable expenses incurred by Seller in connection with a suspension, including, but not limited to, expenses for repossession, fee collection, demobilization/remobilization, and costs of storage during suspension. The schedule for Seller's obligations shall be extended for a period of time reasonably necessary to overcome the effects of any suspension.

12. Compliance with Laws, Codes and Standards

12.1 Seller shall comply with laws applicable to the manufacture of Products and its performance of Services. Buyer shall comply with laws applicable to the application, operation, use and disposal of the Products and Services.

12.2 Seller's obligations are conditioned upon Buyer's compliance with all U.S., EU and other applicable trade control laws and regulations. Buyer shall not trans-ship, re-export, divert or direct or otherwise make or allow any disposition of Products other than in and to the ultimate country of destination declared by Buyer and specified as the country of ultimate destination on Seller's invoice. Buyer hereby certifies that the equipment, materials, services, technical data, software or other information or assistance furnished by Seller under this Contract will not be used in the design, development, production, stockpiling or use of chemical, biological, or nuclear weapons either by Buyer or by any entity acting on Buyer's behalf.

12.3 Notwithstanding any other provision, Buyer shall timely obtain, effectuate and maintain in force any required permit, license, exemption, filing, registration and other authorization, including, but not limited to, building and environmental permits, import licenses, environmental

impact assessments, and foreign exchange authorizations, required for the lawful performance of Services at the Site or fulfillment of Buyer's obligations, except that Seller shall obtain any license or registration necessary for Seller to generally conduct business and visas or work permits, if any, necessary for Seller's personnel. Buyer shall provide reasonable assistance to Seller in obtaining such visas and work permits.

13. Environmental, Health and Safety Matters

13.1 Buyer shall maintain safe working conditions at the Site, including, without limitation, implementing appropriate procedures regarding Hazardous Materials, confined space entry, and energization and de-energization of power systems (electrical, mechanical and hydraulic) using safe and effective lock-out/tag-out ("LOTO") procedures including physical LOTO or a mutually agreed upon alternative method.

13.2 Buyer shall timely advise Seller in writing of all applicable Site-specific health, safety, security and environmental requirements and procedures. Without limiting Buyer's responsibilities under Article 13, Seller has the right but not the obligation to, from time to time, review and inspect applicable health, safety, security and environmental documentation, procedures and conditions at the Site.

13.3 If, in Seller's reasonable opinion, the health, safety, or security of personnel or the Site is, or is apt to be, imperiled by security risks, terrorist acts or threats, the presence of or threat of exposure to Hazardous Materials, or unsafe working conditions, Seller may, in addition to other rights or remedies available to it, evacuate some or all of its personnel from Site, suspend performance of all or any part of the Contract, and/or remotely perform or supervise work. Any such occurrence shall be considered an excusable event. Buyer shall reasonably assist in any such evacuation.

13.4 Operation of Buyer's equipment is the responsibility of Buyer. Buyer shall not require or permit Seller's personnel to operate Buyer's equipment at Site.

13.5 Buyer will make its Site medical facilities and resources available to Seller personnel who need medical attention.

13.6 Seller has no responsibility or liability for the pre-existing condition of Buyer's equipment or the Site. Prior to Seller starting any work at Site, Buyer will provide documentation that identifies the presence and condition of any Hazardous Materials existing in or about Buyer's equipment or the Site that Seller may encounter while performing under this Contract. Buyer shall disclose to Seller industrial hygiene and environmental monitoring data regarding conditions that may affect Seller's work or personnel at the Site. Buyer shall keep Seller informed of changes in any such conditions.

13.7 Seller shall notify Buyer if Seller becomes aware of: (i) conditions at the Site differing materially from those disclosed by Buyer, or (ii) previously unknown physical conditions at Site differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract. If any such conditions cause an increase in Seller's cost of, or the time required for, performance of any part of the work under the Contract, an equitable adjustment in price and schedule shall be made.

13.8 If Seller encounters Hazardous Materials in Buyer's equipment or at the Site that require special handling or disposal, Seller is not obligated to continue work affected by the hazardous conditions. In such an event, Buyer shall eliminate the hazardous conditions in accordance with applicable laws and regulations so that Seller's work under the Contract may safely proceed, and Seller shall be entitled to an equitable adjustment of the price and schedule to compensate for any increase in Seller's cost of, or time required for, performance of any part of the work. Buyer shall properly store, transport and dispose of all Hazardous Materials introduced, produced or generated in the course of Seller's work at the Site.

13.9 Buyer shall indemnify Seller for any and all claims, damages, losses, and expenses arising out of or relating to any Hazardous Materials which are or were (i) present in or about Buyer's equipment or the Site prior to the commencement of Seller's work, (ii) improperly handled or disposed of by Buyer or Buyer's employees, agents, contractors or subcontractors, or (iii) brought, generated, produced or released on Site by parties other than Seller.

14. Changes

14.1 Each party may at any time propose changes in the schedule or scope of Products and/or Services. Seller is not obligated to proceed with any change until both parties agree upon such change in writing. The written change documentation will describe the changes in scope and schedule, and the resulting changes in price and other provisions, as agreed.

14.2 The scope, Contract Price, schedule, and other provisions will be equitably adjusted to reflect additional costs or obligations incurred by Seller resulting from a change, after Seller's proposal date, in Buyer's Site-specific requirements or procedures, or in industry specifications, codes, standards, applicable laws or regulations. Unless otherwise agreed by the parties, pricing for additional work arising from such changes shall be at Seller's time and material rates.

14.3 It shall be acceptable and not considered a change if Seller delivers a Product that bears a different, superseding or new part or version number compared to the part or version number listed in the Contract.

15. Limitations of Liability

15.1 To the maximum extent permitted by applicable law, the total liability of Seller for all claims arising from or related to the formation, performance or breach of this Contract, or provision of any Products and/or Services, shall not exceed the (i) Contract Price, or (ii) if Buyer places multiple order(s) under the Contract, the price of each particular order for all claims arising from or related to that order and ten thousand USD (US \$10,000) for all claims not part of any particular order.

15.2 Seller shall not be liable for loss of profit or revenues, loss of use of equipment or systems, interruption of business, cost of replacement power, cost of capital, downtime costs, increased operating costs, any special, consequential, incidental, indirect, or punitive damages, or claims of Buyer's customers for any of the foregoing types of damages.

15.3 All Seller liability shall end upon expiration of the applicable warranty period, provided that Buyer may continue to enforce a claim for which it has given notice prior to that date by commencing an action or arbitration, as applicable under this Contract, before expiration of any statute of limitations or other legal time limitation but in no event later than one year after expiration of such warranty period.

15.4 Seller shall not be liable for advice or assistance that is not required for the work scope under this Contract. 15.5 If Buyer is supplying Products and/or Services to a third party, or using Products and/or Services at a facility owned by a third party, Buyer shall either (i) indemnify and defend Seller from and against any and all claims by, and liability to, any such third party in excess of the limitations set forth in this Article 15, or (ii) require that the third party agree, for the benefit of and enforceable by Seller, to be bound by all the limitations included in this Article 15.

15.6 For purposes of this Article 15, the term "Seller" means Seller, its affiliates, subcontractors and suppliers of any tier, and their respective employees. The limitations in this Article 15 shall apply regardless of whether a claim is based in contract, negligence, statute, indemnity, tortious/extra-contractual liability theory, strict liability or otherwise.

16. Governing Law and Dispute Resolution

16.1 This Contract shall be governed by and construed in accordance with the laws of (i) the State of New York if Buyer's place of business is in the U.S. or (ii) England and Wales, if the Buyer's place of business is outside the U.S., in either case without giving effect to any choice of law rules that would cause the application of laws of any other jurisdiction (the "Governing Law").

16.2 All disputes and, to the maximum extent permitted by applicable law, all non-contractual obligations arising in any way whatsoever out of or in connection with this Contract

arising in connection with this Contract, including any question regarding its existence or validity, shall be resolved in accordance with this Article 16. If a dispute is not resolved by negotiations, either party may, by giving written notice, refer the dispute to a meeting of appropriate higher management, to be held within twenty (20) business days after the giving of notice. If the dispute is not resolved within thirty (30) business days after the giving of notice, or such later date as may be mutually agreed, either party may commence arbitration or court proceedings, depending upon the location of the Buyer, in accordance with one of the following: (a) if the Buyer's pertinent place of business is in the U.S., legal action shall be commenced in federal court with jurisdiction applicable to, or state court located in, either New York, New York (and Buyer hereby consents to be subject to such New York federal and state jurisdiction) or the location of Buyer's principal place of business; or (b) if the Buyer's pertinent place of business is outside the U.S., the dispute shall be submitted to and finally resolved under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules (the "Rules"). The seat of arbitration shall be in London, England. The arbitration shall be conducted in English. The decision of the arbitrators shall be final and binding upon the parties.

16.3 Notwithstanding the foregoing, each party shall have the right at any time, at its option and where legally available, to commence an action or proceeding in a court of competent jurisdiction, subject to the terms of this Contract, to seek a restraining order, injunction, or similar order (but not monetary damages), or to seek interim or conservatory measures.

17. Inspection and Factory Tests

Seller will apply its normal quality control procedures in manufacturing Products. Seller shall attempt to accommodate requests by Buyer to witness Seller's factory tests of Products, subject to appropriate access restrictions, if such witnessing can be arranged without delaying the work.

18. Software, Leased Equipment, Remote Diagnostic Services, PCB Services

If Seller provides any software to Buyer, the Software License Addendum shall apply. If Seller leases any of Seller's equipment or provides related Services to Buyer, including placing Seller's equipment at Buyer's site to provide remote Services, the Lease Addendum shall apply. If Seller provides remote diagnostic services to Buyer, the Remote Diagnostic Services Addendum shall apply. If Seller provides PCB Services to Buyer, the PCB Services Addendum shall apply. If there is any conflict between these Products and/or Services Terms and Conditions" and the terms of any addendum incorporated pursuant to this

Article 18, the terms of the addendum shall take precedence with respect to the applicable scope.

19. General Clauses

19.1 Products and Services sold by Seller are not intended, in whole or in part, for application (and will not be used) in connection with or nearby any nuclear facility or activity, and Buyer warrants that it shall not use or permit others to use Products and/or Services for any such purposes, without the advance written consent of Seller.

19.2 Seller may assign or novate its rights and obligations under the Contract, in whole or in part, to any of its affiliates or may assign any of its accounts receivable under this Contract to any party without Buyer's consent. Buyer agrees to execute any documents that may be necessary to complete Seller's assignment or novation. Seller may subcontract portions of the work, so long as Seller remains responsible for it. The delegation or assignment by Buyer of any or all of its rights or obligations under the Contract without Seller's prior written consent (which consent shall not be unreasonably withheld) shall be void.

19.3 Buyer shall notify Seller immediately upon any change in ownership of more than fifty percent (50%) of Buyer's voting rights or of any controlling interest in Buyer. If Buyer fails to do so or Seller objects to the change, Seller may (a) terminate the Contract, (b) require Buyer to provide adequate assurance of performance (including but not limited to payment), and/or (c) put in place special controls regarding Seller's Confidential Information.

19.4 If any Contract provision is found to be void or unenforceable, the remainder of the Contract shall not be affected. The parties will endeavor to replace any such void or unenforceable provision with a new provision that achieves substantially the same practical and economic effect and is valid and enforceable.

19.5 The following Articles shall survive termination or cancellation of the Contract: 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 18, 19 and 20.

19.6 The Contract represents the entire agreement between the parties. No oral or written representation or warranty not contained in this Contract shall be binding on either party. Buyer's and Seller's rights, remedies and obligations arising from or related to Products and/or Services sold under this Contract are limited to the rights,

remedies and obligations stated in this Contract. No modification, amendment, rescission or waiver shall be binding on either party unless agreed in writing.

19.7 Except as provided in Article 15 (Limitations of Liability), this Contract is only for the benefit of the parties and not for any third parties.

19.8 This Contract may be signed in multiple counterparts that together shall constitute one agreement.

20. U.S. Government Contracts

20.1 This Article 20 applies only if the Contract is for the direct or indirect sale to any agency of the U.S. government and/or is funded in whole or in part by any agency of the U.S. government.

20.2 Buyer agrees that all Products and/or Services provided by Seller meet the definition of "commercial-off-the-shelf" ("COTS") or "commercial item" as those terms are defined in Federal Acquisition Regulation ("FAR") 2.101. To the extent the Buy American Act, Trade Agreements Act, or other domestic preference requirements are applicable to this Contract, the country of origin of Products is unknown unless otherwise specifically stated by Seller in this Contract. Buyer agrees any Services offered by Seller are exempt from the Service Contract Act of 1965 (FAR 52.222-41). Buyer represents and agrees that this Contract is not funded in whole or in part by American Recovery Reinvestment Act funds unless otherwise specifically stated in the Contract. The version of any applicable FAR clause listed in this Article 20 shall be the one in effect on the effective date of this Contract.

20.3 If Buyer is an agency of the U.S. Government, then as permitted by FAR 12.302, Buyer agrees that all paragraphs of FAR 52.212-4 (except those listed in 12.302(b)) are replaced with these Terms and Conditions. Buyer further agrees the subparagraphs of FAR 52.212-5 apply only to the extent applicable for sale of COTS and/or commercial items and as appropriate for the Contract Price.

20.4 If Buyer is procuring the Products and/or Services as a contractor, or subcontractor at any tier, on behalf of any agency of the U.S. Government, then Buyer agrees that FAR 52.212-5(e) or 52.244-6 (whichever is applicable) applies only to the extent applicable for sale of COTS and/or commercial items and as appropriate for the Contract Price.



11 de enero de 2022

Mario E. Miranda Sánchez, Jefe
División de Suministros

Alexis Cruz Figueroa, Jefe
División Central Aguirre

William Ríos Mera
Jefe de Central Auxiliar
Central Ciclo Combinado

**SOLICITUD DE SUBASTA FORMAL, INSPECCIÓN Y REHABILITACIÓN COMPONENTES DE TURBINA,
INSPECCION MAYOR UNIDAD A GAS 1-3, CENTRAL CICLO COMBINADO (CR 254698)**

Solicitud de subasta formal por un estimado de \$350,000, para suplir todos los recursos, equipo e ingeniería para la inspección y rehabilitación de los componentes estacionarios de turbina, a removerse de la Unidad a Gas 1-3, en la Central Ciclo Combinado de Aguirre. La unidad está programada para salir de servicio en enero para una inspección mayor del turbogenerador. Todo de acuerdo a las especificaciones, términos y condiciones de la requisición 254698.

Los fondos para el proceso provendrán de la cuenta 01-1071-33101-555-304 y el estimado 107506 del programa de Gastos de Mantenimiento Necesarios (GMN) para el año fiscal 2021-22. Esto en lo que se aprueba la nueva cuenta y estimado para el proyecto 14672 para el año fiscal 2022-23.

Como parte del alcance de trabajo en una inspección mayor, los componentes del área de turbina son removidos y remplazados. La Central generó la requisición del asunto para inspeccionar y reparar las toberas (*nozzles*) de las etapas 1, 2 y 3, a removerse en la inspección mayor de la Unidad 1-3. El costo de rehabilitación de estos componentes es una fracción al compararlo con el costo de adquirir los componentes nuevos, los cuales serán utilizados en la inspección mayor de otra de las unidades de la Central.

Aprobado

Jorge L. Cotto Pérez
Director Interino de Generación



Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant

Technical Specifications

CR #: 254698

Equipment: General Electric's MS7001EA Gas Turbine Nozzles, Stages 1, 2 and 3

Scope: Inspection and Repair

Article 1: Scope

- 1.1) This specification covers the minimum requirements for the inspection and repair of several gas turbine components for a General Electric's Gas Turbine MS7001EA, at PREPA's Aguirre Combined Cycle Plant. Components repaired to these requirements should provide service life approaching that of new components. Includes the following:
- Inspection and repair: Stage 1, 2 and 3 Turbine Nozzles
- 1.2) Contractor is responsible to repair the indicated components and meet all the requirements specified below. Contractor shall furnish all work, materials, supervision, tools, and the necessary equipment, required for the repair works, all in strict accordance with the provisions of this Order, including the Technical Specifications, Terms and Conditions and Contractor's Bidding Proposal, all of which are hereby made a part hereof.

Article 2: Available information

2.1) Stage 1 Turbine Nozzle

- a) OEM: GE Energy Power
- b) Part #: 109E3735G003
- c) Material: FSX-414
- d) Fired hours: 45,000 at 1840 F firing temp, on Distillate #2 fuel
- e) Scope: Major repair; includes replacement of all trailing edge coupons
- f) Weight: 2 boxes (3,000 lbs total)
- g) Replace cost: \$400,000

2.2) Stage 2 Turbine Nozzle

- a) OEM: GE Energy Power
- b) Part #: 112E2095
- c) Material: GTD-222
- d) Fired hours: 48,000 at 1840 F firing temp, on Distillate #2 fuel
- e) Scope: Medium repair
- f) Weight: 2 boxes (2,400 lbs)
- g) Replace cost: \$400,000

2.3) Stage 3 Turbine Nozzle

- a) OEM: GE Energy Power
- b) Material: GTD-222
- c) Part #: 103E5569G005
- d) Fired hours: 48,000 at 1840 F firing temp, on Distillate #2 fuel
- e) Scope: Medium repair
- f) Weight: 4 boxes (3,000 lbs. total)
- g) Replace cost: \$400,000

Article 3: Quality Requirements

3.1) Dimensional Requirements

- a) Airfoil profiles shall be restored to the same contours as new components using smooth blends between the original material and repaired areas.
- b) Surface finish on the completely repaired airfoil shall be 80 micro-inches (2 microns) Ra or better, measured according to ANSI B46.1. Surface finish on the root form shall be maintained at 50 micro-inches (1.3 microns) Ra or better.

3.2) Microstructural Requirements

- a) The thermal processing employed shall not result in grain growth.
- b) Process-related alloy depletion, oxidation, nitriding and intergranular attack at the surface of the components shall not exceed 0.001 inch (0.025 mm)
- c) The microstructure shall be comparable to new material.

Article 4: Scope of Work

The specifications included below are provided to the Contractor as guidelines to establish the minimum requirements required for the job. They're not intended to be a detailed procedure to the Contractor. Inspection and repair shall include but not limited to the following scope of work. Contractor shall submit a report with findings and recommendations after each phase. All dimensions and results shall be record on appropriate forms. All findings and recommendations shall be discussed with the Engineer before taking any further steps.

4.1) 1st Stage Nozzle: Inspection requirements

- a) Pickup nozzle assembly at site. Receive and check for shipping damage. Check purchase order, material and shipping papers to verify that the parts received are correctly identified and fully accounted for. Advise Engineer immediately of any shipping damage.

b) Visually inspect each segment for the following:

- Rubs and wear
- Trailing edge bowing
- Surface erosion loss
- Oxidation/Corrosion
- Impact damage
- Cracks
- Blocked or damaged cooling holes

c) Perform incoming dimension check for gas path dimensions, including nozzle concentricity, diameters, seal gaps (inner and outer), TP groove, dowels and drops. Check and record all results.

d) Disassemble nozzle segments. Remove cover plates and cooling inserts without damage as possible. Cover plates and inserts shall be reused during assembly.

e) Non-destructively identify the alloy from which each segment is manufactured using X-ray fluorescence spectroscopy or similar.

f) Clean the nozzles segments using grit blasting with 220-grit aluminum oxide or finer. Avoid excessive blasting and take necessary precautions to prevent blockage of cooling holes. Complete surface cleanliness must be achieved prior to preweld solution heat treatment.

g) Remove coating (if present) by physical or chemical means, while ensuring no excessive base metal attack. Each segment shall be examined for complete coating removal by heat tinting or etching

h) Inspect all segments (internal and external) following industry standards procedures. Document the location and extent of all cracks, dents, wear, corrosion/erosion, missing material, wall thinning or others.

i) Report findings and conclusions to the Engineer. Prepare a report outlining the repairs, heat treatment cycles, and procedures to be used after this phase. Obtain written approval from PREPA for any proposed changes to the specification and to proceed with the repairs.

4.2) 1st Stage Nozzle: Repair requirements (minimum)

The repair scope under this specification can be considered for quoting purposes as a Major Repair. Segment vanes have medium to heavy erosion in some areas that requires extensive weld repairs.

a) The Major Repair scope includes the supply and install of all coupons of matching alloy composition or better, to replace the eroded trailing edge section on all eighteen (18) nozzle segments. This work is not an option, but should be included as a separate cost

- in the compliance table. Each segment has two (2) vanes for a total of thirty-six (36) coupons to be replaced. After the repairs are completed, the airfoil contours shall be unchanged, the patches blended to the adjacent areas and the cooling hole configurations shall be unchanged.
- b) Weld repair is performed to repair physical damage such as rubbing, cracking, foreign object damage and erosion. Heat treatments are required prior to welding to improve ductility and after welding to stress relieve weldments and to restore the appropriate microstructure.
 - c) All surfaces shall be dress as required to remove oxidation and corrosion scale and pitting to a maximum depth of 0.020 inches or 1/3 of the local section thickness, whichever is less.
 - d) All defects shall be routed and welded to restore all dimensions to OEM specifications. Blend and re-contour nozzles, restore cooling holes and passages, lost nozzle and sidewall materials.
 - e) All components must be thoroughly degreased as necessary and after each major phase. All nozzle segments shall be solution annealed.
 - f) All segments shall be FPI after each phase. Document the location and extent of any defects not identified during initial inspection and disassembly.
 - g) All existing cracks must be removed by abrasive grinding or equivalent and FPI to ensure the cracks are completely removed.
 - h) After weld preparation, Engineer shall be informed and allowed to inspect the components. Weld repair the components using gas tungsten arc, plasma transferred arc or equivalent welding methods with appropriate metals compatible with the alloy prior identified.
 - i) Areas to be welded must be free of oxide, grease, dirt and chemicals. All welds must be prepared using full penetration welds in the region being repaired.
 - j) All repaired areas shall be grinded and polished, to restore the original nozzle contours and dimensions. Restore any cooling holes plugged during repair to original dimensions.
 - k) Round out retaining ring within original OEM dimensions and specifications, including nozzle concentricity diameters, seal gaps (inner and outer), transition piece groove, dowel, drops, throat area and harmonic check, etc. Install the core plugs and cover plates.
 - l) Install repaired segments into the retaining ring using new seals. If necessary redesign and modify nozzle-cooling holes (sidewall cooling hole pattern).

- m) Check all cooling holes to ensure that all passages are fully open. Cooling holes shall be restored to OEM specifications.
- n) Gas path dimensions, axial and radial location and throat area shall be within OEM specifications. OEM supplied dimensional information contained in manuals and other supporting documentation should be used as reference dimensions where available.
- o) Repairs shall be performed using Nozzalloy filler, AMS 5789B (Aerospace Material Specifications 5789B) or equivalent materials.
- p) Gas path profiles shall be restored to the same contours as new components using smooth blends between the original material and repaired areas.
- q) Post-weld heat treatments that follow the repairs should be combined with the heat treatments required for coating application and diffusion.
- r) Coating: should be applied to full gas path of the each of the nozzle segments, after all repairs are done according to the following requirements:
 - Class A TBC (McrAlY Type) bondcoat with Yttrium stabilized topcoat or equal. To maintain critical dimensions of the throat area no manual coating application is allowed. Only HVOF controlled robotic application is allowed.

4.3) 2nd and 3rd Stage Nozzle: Inspection requirements

- a) Pickup nozzle assembly at site. Receive and check for shipping damage. Check purchase order, material and shipping papers to verify that the parts received are correctly identified and fully accounted for. Advise Engineer immediately of any shipping damage.
- b) Disassemble diaphragms from nozzle segments.
- c) Visually inspect each segment for the following:
 - Rubs and wear
 - Trailing edge bowing
 - Surface erosion loss
 - Oxidation/Corrosion
 - Impact damage
 - Cracks
- d) Dimensionally inspect each segment for gas path dimensions.
- e) Non-destructively identify the alloy from which each segment is manufactured using X-ray fluorescence spectroscopy or similar.

- f) Clean the nozzles segments and diaphragms using grit blasting with 220-grit aluminum oxide or finer. Avoid excessive blasting and take necessary precautions to prevent blockage of cooling holes. Complete surface cleanliness must be achieved prior to preweld solution heat treatment.
- g) Inspect all segments (internal and external) following industry standards procedures. Document the location and extent of all cracks, dents, wear, corrosion/erosion, missing material, wall thinning or others.
- h) Report findings and conclusions to the Engineer. Prepare a report outlining the repairs, heat treatment cycles, and procedures to be used after this phase. Obtain written approval from PREPA for any proposed changes to the specification and to proceed with the repairs.

4.4) 2nd and 3rd Stage Nozzle: Repair requirements (minimum)

The repair scope under this specification for both nozzle assemblies shall be considered for quoting purposes as medium repair.

- a) Weld repair is performed to repair physical damage such as rubbing, cracking, foreign object damage and erosion. Heat treatments are required prior to welding to improve ductility and after welding to stress relieve weldments and to restore the appropriate microstructure.
- b) All surfaces shall be dress as required to remove oxidation and corrosion scale and pitting to a maximum depth of 0.020 inches or 1/3 of the local section thickness, whichever is less.
- c) All defects shall be routed and welded to restore all dimensions to OEM specifications. Blend and re-countor nozzles, restore cooling holes and passages, lost nozzle and sidewall materials.
- d) All components must be thoroughly degreased as necessary and after each major phase. All nozzle segments shall be solution annealed.
- e) All segments shall be inspected after each phase. Document the location and extent of any defects not identified during initial inspection and disassembly.
- f) All existing cracks must be removed by abrasive grinding or equivalent and inspected to ensure the cracks are completely removed. Sections may be removed for replacement with patches of matching alloy composition ("Wishbone coupons") provided that, after the repairs are completed, the airfoil contours are unchanged, the patches are blended to the adjacent areas and the cooling hole configurations is unchanged.

- g) After weld preparation, Engineer shall be informed and allowed to inspect the components. Weld repair the components using gas tungsten arc, plasma transferred arc or equivalent welding methods with appropriate metals compatible with the alloy prior identified.
- h) Areas to be welded must be free of oxide, grease, dirt and chemicals. All welds must be prepared using full penetration welds in the region being repaired.
- i) All repaired areas shall be grinded and polished, to restore the original nozzle contours and dimensions. Restore any cooling holes plugged during repair to original dimensions.
- j) Supply and replace all joint seals.
- k) Gas path dimensions, axial and radial location and throat area shall be within OEM specifications. OEM supplied dimensional information contained in manuals and other supporting documentation should be used as reference dimensions where available.
- l) Check the Nozzle Down Stream Deflection (DSD) and correct if necessary. Contact Engineer if deflection is out of specifications
- m) Repairs shall be performed using Nozzalloy filler, AMS 5789B (Aerospace Material Specifications 5789B) or equal or better materials.
- n) Gas path profiles shall be restored to the same contours as new components using smooth blends between the original material and repaired areas.
- o) Post-weld heat treatments that follow the repairs should be combined with the heat treatments required for coating application and diffusion.
- p) Coating: all 2nd Stage Nozzle segments shall be coated with a diffused aluminide coating (vane pressure side and outer sidewall) after all repairs are done. To maintain critical dimensions of the throat area no manual coating application is allowed. Only HVOF controlled robotic application is allowed.

Article 5: Shipment

- 5.1) Arrange a pre-shipment inspection with Engineer to:
 - a) Review all documentation
 - b) Mapping of repairs
 - c) Perform visual inspection.
 - d) Deliver copies of the documentation
- 5.2) Package and ship parts in appropriate containers that will prevent component damage. All parts that are lost or damaged beyond repair may be back charged up to the cost of replacement by original OEM parts.

- 5.3) Advise Engineer of the shipping date, route and carrier for each component or equipment

Article 6: Documentation and Certifications

- 6.1) Certificate of Compliance: A document certifying that all aspects of this order and specification have been met shall be signed by the Contractor representative and shall be submitted to PREPA along with the final report
- 6.2) At completion of the repair process for each component or equipment, a final report shall be issued. Failure to comply with report will result in final payment hold, and shall contain (as applicable):
- a) Description of the complete repair process
 - b) Mapping of all defects identified and repair locations
 - c) All incoming, in-process and final dimensional inspection forms, including throat area check forms for nozzles. Results of the area and harmonic analysis (
 - d) Results of area and harmonic check for nozzles after repairs
 - e) Final inspection reports
 - f) Certificate of Compliance for each component and equipment
 - g) Coating process and certification for each component

Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant

Terms and Conditions

CR #: 254698

Equipment: General Electric's MS7001EA Gas Turbine Nozzles, Stages 1, 2 and 3

Scope: Inspection and Repair

Article 1: Definitions

Whenever the words defined in this article or pronouns used instead are mentioned in this Contract, they shall have the meanings here given:

- 1.1) PREPA – shall mean the Puerto Rico Electrical Power Authority and all his corresponding Divisions.
- 1.2) Engineer - shall mean the Generation Director of PREPA, acting directly or through his properly authorized representatives.
- 1.3) Contracting Officer - shall mean the Head Materials Management Division, acting directly or through his properly authorized representatives.
- 1.4) Bidder – shall mean the company that submit the proposal based on the Technical Specifications, Terms and Conditions and other documents required by PREPA.
- 1.5) Contractor - designates the company that will perform all works as defined in the Scope of Work in the Technical Specifications.
- 1.6) Contract / Order - shall mean collectively, all the covenants, terms, and stipulations in these articles of agreement and in all supplementary documents hereto attached which constitute essential parts of the Contract and are hereby made part thereof, to wit:
 - a) Contract
 - b) Invitation to Bid and Advertisement for Bids
 - c) Contractor's Bid Including Bid Data and Schedules
 - d) Technical Specifications and Drawings enumerated therein
 - e) Proposal Forms
 - f) Bid, Performance, and Payment Bonds
 - g) Letter of Award

Article 2: Quality Requirements

2.1) Qualification

- a) Contractor Audits. Prior to placing a component repair order of any sort with a specific Contractor, its facilities, quality control system, and general operation can be audited for capability to adequately perform turbine component repair by representative(s) from PREPA's purchasing, quality control and engineering organizations. Approval must be granted for a period specified by PREPA, but may be removed by PREPA for inadequate Contractor performance at any time.
- b) Bidders must provide evidence about its capacity and experience in the field of gas turbine parts repair with a successful track record of five (5) years or more, with a minimum of two (2) works related to GE MS7001EA GT Nozzles. Provide name of the company, telephone and contact person for evaluation by PREPA on similar projects been constructed in the United States and its territories.
- c) For each specific process (e.g. inspection, grinding, welding, coating), the Contractor will be required to submit a description of the process to the Engineer for review.
- d) Contractor can also be required to process components (and/or other sample material identified by the Engineer) through the entire process for non-destructive and destructive examination. Based on the results, the Engineer will approve the process for use. Contractor must obtain written approval by the Engineer for any change to the process.

2.2) Schedule

- a) Before beginning any work on any of the components, Contractor must develop a schedule of activities in connection with the work of the Contract and submit it for the approval of the Engineer. All work must be carried out on a continuous schedule following the date established by PREPA and Contractor.

2.3) Documentation & Certification

- a) All work performed under this Specification must be done in a safe and workmanlike manner and in strict conformance with all rules, regulations and ordinances, etc., of government agencies having jurisdiction over the class of work involved. Includes the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), the American Welding Society (AWS), the National Board of Inspection Codes (NBIC), the Environmental Protection Agency (EPA), the Occupational Safety and Health Office (OSHO) requirements, (CTI) and the latest

- b) Quality Control Tests: In-process and final Quality Control tests must be performed. Results of all required testing must be recorded by serial number. A certified copy must be given to PREPA's representative at the pre-shipment inspection.
- c) Processing Records: Processing records must be maintained in sufficient detail to indicate compliance with this specification and to allow traceability by lot. A copy of these records must be given to PREPA's representative at the pre-shipment inspection.
- d) Certificate of Compliance: All processing and quality control records must be reviewed by the Contractor to verify compliance with this specification and the Contract. Any deviations must be reported immediately to PREPA and may be cause for rejection. A document certifying that all aspects of this specification and the Contract have been met, must be signed by the responsible Contractor's representative and must be presented to PREPA with the repair report.
- e) Records: All process control records and quality control test results must be maintained on file by the Contractor's for a period of five years. This information must be made available to PREPA upon request.

Article 3: Consideration

- 3.1) The Agreement price quoted in the Proposal shall constitute full compensation for pick-up, transportation, inspection, repair, supplies, labor, tools, equipment, other accessories, cost of all insurance, profit, Contractor's overhead, and all other work satisfactorily in accordance with this Contract.
- 3.2) In accordance with the terms and conditions contained herein, PREPA agrees to pay and the Contractor accepts, as full payment for the complete performance of this Contract, the final agreement price, plus any additional amount to be paid due to extra work ordered and accepted by the Engineer and approved by the Contracting Officer, according to Article, Changes and/or Extra Work, below.
- 3.3) The Contractor must submit its invoices for work already done according to the payment schedule as provided herein, under Payment to Contractor, together with the technical supporting documents of required tests.
- 3.4) During the life of the Contract, invoices for partial payments can be made based on initial inspection, equipment delivered and accepted.
- 3.5) In preparing estimates, the material delivered on the site may be taken into consideration; provided that, the Contractor submits evidence that the materials have been paid for by him and that said materials have been properly housed or stored at the job site in a manner which will insure the preservation of their quality and fitness for the work and that the Contractor shall not withdraw said material for any purpose other than incorporation into the work.

- 3.6) After the terms of the Contract have been fully complied, the final payment of the Contract will be paid upon the presentation of a properly executed and duly certified invoice, therefore, after the Contractor must have furnished PREPA with a release of all claims against PREPA arising under and by virtue of this Contract.
- 3.7) All invoices submitted by the Contractor must be subject to PREPA's approval before being paid, and its payment must be done within sixty (60) days after the date of its approval by PREPA.
- 3.8) All invoices submitted by the Contractor must include the following Certification in Contract to proceed with its payment. This is an essential requirement and those invoices without this Certification will not be processed for payment.

a) No Interest Certification:

"Under penalty of absolute nullity, I hereby certify that no employee, official or director of PREPA is a party or has any interest in the profits or benefits to be obtained under this Contract, or if any employee, official or director of PREPA has any interest in the profits or benefits under this contract a waiver has been previously obtained. I, also certify that the only consideration to (furnish the goods) or (provide the services) under this Contract is the payment agreed with PREPA's authorized representative. The total amount of this invoice is fair and correct. The (works) were completed, (the products) were delivered or (the services) were provided and no payment has been received for said concept.

Contractor's Signature"

Article 4: Commencement and Completion of Work

- 4.1) Pickup and Inspection at Contractor's facilities
 - a) Contractor must complete the inspection of all components, including the pickup, within a maximum of 28 consecutive days.
- 4.2) Repair and delivery of Components at site
 - a) Stage 1, 2 and 3 Nozzles: Contractor shall complete all the components repairs (after Engineer's approval of the work scope) and deliver each stage at site within 70 consecutive days.

4.3) Schedule of Proposed Progress

The Contractor, within five (5) days after receipt of the equipment at the shop, must file with the Engineer a time chart or schedule of proposed progress of the work and the proposed detailed method of carrying on the work including a full statement of equipment and equipment layout for the job. This progress chart and statement of operations must show the dates of commencement and completion of each item of the work.

If said progress chart and/or statement of operations are not satisfactory to the Engineer, they must be revised by the Contractor to provide for the use of adequate and sufficient equipment and force, and a method of operations, which will assure the completion of the work within the Contract time. This information, when the Engineer has approved it all, become a part of this Contract.

Article 5: Suspension of Work

- 5.1) PREPA may, at any time, suspend the whole or any portion of the work under this Contract, by providing Contractor with a written notice stating the reasons for suspension at least 5 (five) days in advance of the day the suspension must take effect. The right of PREPA to suspend the work must not be construed as denying the Contractor all actual, reasonable and necessary costs and expenses due to the delays caused by such suspension.
- 5.2) Either Party may suspend the whole or any portion of the work under this Order by reason of the occurrence of a Force Majeure event as described in Article 11 herein. For the avoidance of doubt, PREPA shall not be required to pay for such costs and expenses if the suspension is requested by PREPA by reason of a Force Majeure Event, as defined in Force Majeure Article 11, herein.
- 5.3) In case of suspension of the work by PREPA for any reason, or in case the work is suspended in whole or in part due to the occurrence of a Force Majeure event, Contractor's obligations must be extended for a period of time reasonably necessary to overcome the effects of any such suspension.
- 5.4) If the suspension extends for more than 90 days, the Contractor must have the right to terminate the contract in accordance with these terms and conditions.

Article 6: Specifications and Drawings

- 6.1) PREPA reserves the right to review and approve all drawings, specifications, methods and data, which the Contractor develops hereunder. Such review or approval shall in no way relieve the Contractor from its responsibilities, obligations or liabilities under this Contract. The Contractor must obtain such reviews or approval in writing from PREPA.
- 6.2) The Contractor must keep at the working area a copy of the Contract, its supplementary documents, specifications and drawings and must, at all times, give the Engineer access thereto. Anything called for in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications must be of like effect as if called for or shown on both. In case of discrepancy in the specifications and drawings, the matter must be immediately submitted to the Engineer, without whose decision said discrepancy must not be adjusted by the Contractor, and the Contractor must not proceed with the work so affected until it has received written order from the Engineer. The Engineer will furnish, from time to

time, such additional detail drawings and other information as he may consider necessary for the conduction of the work.

Article 7: Equipment to be Furnished and Installed by the Contractor

- 7.1) All equipment called for in the Specifications and/or shown on the drawings to be furnished and installed by the Contractor must be furnished and installed in strict accordance with the technical requirements of the Specifications.

Article 8: Changes and/or Extra Work

- 8.1) PREPA may, at any time, make changes or order extra work within the Scope of Work contracted, subject to previous written acceptance by PREPA's Contracting Officer. If such changes or extra work require a price and/or schedule revision, such revision(s) shall be negotiated and agreed in writing by both parties before the commencement.
- 8.2) Changes and/or Extra Work must be approved by the appropriate official pursuant to the general authorization for approval in order for payment of such change or extra work to be made.

Article 9: Time Extensions

- 9.1) Contractor must apply for time extensions for construction changes, unforeseeable causes, changed conditions, etc., as indicated throughout the Specification only if the schedule of proposed progress is affected, under no circumstances must the Engineer consider applications for extra time if the master schedule is not clearly affected.

Article 10: Inspection

10.1) Periodic Inspection

- a) All material and workmanship (if not otherwise designated by the specifications) must be subject to inspection, examination, and test by the Engineer at all reasonable times, during manufacture and/or construction. PREPA must have the right to reject defective material, equipment or workmanship or require its correction. Rejected workmanship must be satisfactorily corrected and rejected material and equipment furnished by the Contractor must be satisfactorily replaced with proper material, and equipment without charge to PREPA. The Contractor must promptly remove rejected material from the premises. The Contractor must furnish promptly all reasonable facilities, labor, materials, and equipment necessary for the safe and convenient inspection and tests that may be performed in such manners as not to unnecessarily delay the work.

10.2) Final Inspection at Contractor's facilities

- a) Whenever all the materials have been furnished and all work has been performed, all in accordance with the drawings and specifications, the Contractor must notify the Engineer that said work is completed and ready for final inspection.

- b) If all contracted work provided for and contemplated by the Contract is found completed in accordance with the specifications, this inspection must constitute the final inspection and the date of completion must be established as the date of receipt of the notice of the Contractor that the work was completed and ready for final inspection. If, however, upon inspection by the Engineer it is found that any work, in whole or in part, is unsatisfactory, the Engineer must give the Contractor the necessary instructions as to replacement of material and performance of work necessary to final completion and acceptance and the Contractor must immediately comply with and execute such instructions.
- c) Upon satisfactory replacement and performance of such work, the Contractor must notify the Engineer, and another inspection must be made which will constitute the final inspection if the said material is found to have been acceptably replaced and the work completed satisfactorily. In such event, the date of receipt of this last notice of the Contractor will be established as the date of completion of the work or any separable part thereof under the Contract. The date of completion, thus established, must be used in calculating the actual time of performance of the work.
- d) Final inspection must occur within a thirty (30) day period after the Engineer has received notice from the Contractor of the satisfactory completion of the installation of the equipment.

Article 11: Access to Work

- 11.1) The Contractor must permit all persons appointed or authorized by PREPA to visit and inspect the work or any part thereof at all times and places during the progress of same.

Article 12: Force Majeure

- 12.1) The parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform, or are prevented from performing by a Force Majeure event. For purposes of this Order, Force Majeure means any event not caused by the fault or negligence of, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event.
- 12.2) Force Majeure may include, but not be limited to, the following: Acts of God, industrial disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections, epidemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a Force Majeure event, and/or its effects, are beyond the reasonable control and were not caused by the fault or negligence of the party claiming the Force Majeure event, and that such party, within ten (10) days after the occurrence of the alleged Force Majeure, gives the other party written notice describing the particulars of the occurrence and its estimated duration.

The burden of proof as to whether a Force Majeure has occurred must be on the party claiming the Force Majeure.

Article 13: Penalty for Delays

- 13.1) If Contractor is delayed in completing the work, or any separable part thereof, within the timeframe established in Article, Commencement and Completion of Work, Contractor pay to PREPA an amount equal to \$1,000.00 USD for each day of delay in completing the work or separable part thereof, up to a maximum of ten percent (10%) of the price of the relevant Service Order that was delayed, and the Contractor and any of its subcontractors shall be jointly and severally liable for said amount. The amounts payable for delay established in this Article are the sole and exclusive remedies for all delay claims and shall be paid as liquidated damages and not as penalty.
- 13.2) In case of delay, the Contractor must within ten (10) days from the beginning of any such delay notify the Engineer in writing of the causes of delay, who must ascertain the facts and the extent of the delay and extend the time for completing the work when in his judgment the findings of facts justify such an extension, and his findings of facts thereon must be final and conclusive on the parties hereto, subject only to appeal by the Contractor as provided in the Article herein provided on Disputes hereof; provided that, no claim made by Contractor against PREPA, its agents, contractors, subcontractors, employees, successors, assignees, for any cause whatsoever, during the progress of any portion of the work embraced in the Contract must relieve any of the parties from the performance of its obligations and of the work under this Contract, which must not suffer any delay by reason of a claim being ascertained by either Party under this Contract. Any damages caused by delays or hindrances exclusively caused by PREPA must be considered as fully compensated for by the extensions of time as provided above, except in the event of suspension of the work by PREPA as per Article 5 of this Contract.
- 13.3) If PREPA does not terminate the right of the Contractor to proceed, the Contractor must continue the work, in which event must pay to PREPA the amounts set forth above for each calendar day of delay; provided that, the right of the Contractor to proceed must not be terminated and the Contractor must not be charged for any amounts in relation to any delays in the completion of the work due to Force Majeure events or situations, or failures on the part of PREPA or any of its other contractors to carry out its obligations.
- 13.4) PREPA must have the right to the payment or to the withholding of Contractor's payments in case of Contractor's delay in completion of the work

Article 14: Liabilities

- 14.1) The total liability of the Contractor for all claims, whether a claim is based in contract, warranty, indemnity, tort / extra contractual liability (including negligence), strict liability or otherwise, shall not exceed the (i) Contract Price, or (ii) if PREPA places

multiple order(s) under the Contract, the price of each particular order for all claims arising from or related to that order.

DEFINITION OF CONTRACTOR UNDER THIS ARTICLE ON LIABILITIES:

For purposes of this Article on "Liabilities", the term "Contractor" means Contractor, its affiliates, subcontractors and suppliers of any tier, and their respective employees.

INTENT OF PARTIES TO HAVE THIS ARTICLE ON LIABILITIES APPLY IN ALL CASES:

This Article shall apply whether a claim is based in contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise, and shall prevail over any conflicting terms. The parties agree that their respective responsibilities for damages under this Contract will be governed by the terms of this Contract, and shall be each Party's sole and exclusive remedies.

TERMINATION OF CONTRACTOR'S LIABILITY:

Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable, under the Article on Disputes, before the expiration of the applicable statute of limitations but not later than one (1) year after the expiration of the warranty period.

This clause does not place a limit or restriction on the indemnity obligations of Contractor with respect to third party personal injury or death claims or third party property damages claims as defined under the Indemnity clause.

Indirect or Consequential Damages NOT COVERED:

The Contractor shall not be liable or responsible for any special, indirect, incidental or consequential damages, loss of profits or revenue, loss of business, loss or costs because of a plant shutdown, downtime costs, cost of capital, claims of customers of PREPA, or costs of replacement power, or any other such special, indirect, incidental or consequential types of damages that may be claimed in relation to the work performed, under any legal theory which may be invoked for such claims or damages.

INDEMNITY for Third Party Claims:

The Contractor agrees to save and hold harmless and to indemnify PREPA for all expenses and costs of any nature (including attorneys' fees) incurred by PREPA arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by the Contractor, to the extent of Contractor's negligence in the performance of its obligations under the Contract. For purposes of Contractor's indemnity responsibility under this Article, no portion of the Covered Unit(s), Facility or the Site is considered third party property.

PREPA agrees to save and hold harmless and to indemnify Contractor for all expenses and costs of any nature (including attorneys' fees) incurred by Contractor arising out

of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by PREPA, to the extent of PREPA's negligence in the performance of its obligations under the Contract.

Provision on the Operation of PREPA's Equipment

It is hereby provided that Contractor is NOT allowed to operate PREPA's equipment at any time and that the Scope of Work does not provide for Contractor to operate any pf PREPA's equipment. Therefore, PREPA is responsible for the operation of its own equipment at all times.

Article 15: Independent Contractor

- 15.1) The Contractor shall be considered as an independent contractor, for all material purposes under this Contract, and all persons engaged or contracted by the Contractor for the performance of its obligations herein, shall not be considered as employees or agents of PREPA. In consequence, the Contractor is not entitled to any fringe benefits, such as, but not limited to vacations, sick leave, and other.

Article 16: Termination

- 16.1) PREPA may terminate this Contract (or any portion thereof) for any cause if Contractor (i) becomes insolvent, or (ii) substantially breaches a material obligation, which does not otherwise have a specified contractual remedy, and fails to cure the breach within thirty (30) days of notice from PREPA; or fails to commence to cure the breach and diligently proceed with the cure if it is not possible to cure within thirty (30) days of such notice. If PREPA terminates the Contract, PREPA must pay to the Contractor all portions of the work completed.
- 16.2) If this Contract is so terminated, the Contractor must be compensated for actual, reasonable, and necessary expenses caused by such termination. The exercise of its right to terminate, cancel or rescind the Contract must not be understood as a waiver by PREPA to any other remedy it may have under this Contract or under the law for delays or breach incurred by the Contractor in the performance of its obligations under the Contract.
- 16.3) If PREPA terminates the Contract in accordance with this Article 18, PREPA may take possession of the premises, and of all materials, tools, and appliances thereon, and finish the work by whatever method it may deem expedient. In such a case, the Contractor must not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess must be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor must pay the difference to PREPA of the expenses incurred by PREPA as herein provided. The remedies established in this Article 15, Termination, shall be each Party's sole and exclusive remedies by reason of such termination.

Article 17: Insurance, Bonds, and Indemnities

Not applicable

Article 18: Permits and Licenses

- 18.1) The Contractor must obtain and maintain all the licenses, permits, and authorizations required to perform all services and tasks under this Contract, and must send all notices, pay all fees and related costs, and will comply and will have its subcontractors and agents comply with all laws, ordinances, rules, and regulations applicable to the work, in accordance with the drawings and specifications. Should the Contractor find any discrepancy between the drawings and specifications and the permits, laws, ordinances, rules, and regulations referred to herein, the
- 18.2) Contractor must proceed immediately to notify PREPA of the discrepancy and must not continue with the work until PREPA issues and notifies an order informing the Contractor what changes are necessary and when to proceed with the work as changed.

Article 19: Minimum Wage Rates

Not applicable

Article 20: Contingent Fees

- 20.1) The Contractor guarantees that he has not employed any person to solicit or secure this Contract upon any agreement for a commission percentage, brokerage or contingent fee. Breach of this guarantee must give PREPA the right to annul the Contract or, at its discretion to deduct from the Contract price or consideration the amount of such commission, percentage, brokerage or contingent fees. This warranty must not apply to commission's payable by contractors upon contract or sales secured or made through bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business.

Article 21: Other Contracts

Not applicable

Article 22: Official not to benefit

- 22.1) No officer, employee or agent of PREPA, or of the Government of the Commonwealth of Puerto Rico or Municipal Governments, shall be admitted to any share or part of this Contract or to any benefit that may arise there from, but this provision must not be construed to extend to this Contract if made with a corporation for its general benefit.

- 22.2) In addition to the restrictions and limitations established under the provisions of Act of July 24, 1985, No. 12, as amended, retired or former officers or employees of PREPA, whose work was in any way related to the award or management of contracts, shall in no way benefit from any contract with PREPA for a period of two (2) years after leaving employment with or ceasing services to PREPA.

Article 23: Conflict of Interest

- 23.1) The Contractor certifies that he does not receive payment or benefit of any nature for services rendered regularly through an appointment to a governmental agency, body, public corporation or municipality of Puerto Rico. The Contractor also certifies that he may have consulting services contracts with other governmental agencies or bodies, but such condition does not constitute a conflict of interest for the Contractor.
- 23.2) The Contractor represents conflicting interests when on behalf of a client he must contend for that which it is his duty to oppose to comply with its obligations with another previous, present or potential client. Also, the Contractor represents conflicting interests when his conduct is described as such in the canons of ethic applicable to the Contractor and his personnel or in the laws or regulations of the Commonwealth of Puerto Rico.
- 23.3) In contracts with partnerships or firms, in the event that any of the partners, directors or employees of the Contractor shall incur in the conduct described herein, said conduct shall constitute a violation to the prohibitions provided herein. The Contractor shall avoid even the appearance of the existence of conflicting interests.
- 23.4) The Contractor acknowledges that the Executive Director of PREPA must have the power to intervene the acts of the Contractor and/or its agents, employees, and subcontractors regarding the enforcement of the prohibitions contained herein. In the event that PREPA discover the existence of adverse interests with the Contractor, the Executive Director must inform the Contractor, in writing, of PREPA's intention to terminate this Contract within a thirty (30) day period. During said period, the Contractor may request a meeting with the Executive Director to present his arguments regarding the alleged conflict of interests, which meeting must be granted by PREPA in every case of alleged conflict of interests. In the event that the Contractor does not request such a meeting during the specified thirty (30) day period or the controversy is not satisfactorily settled during the meeting, this Contract must be cancelled.
- 23.5) The Contractor certifies that, at the time of award of this Contract, it does not have any other contractual relation that can enter in a conflict of interest with this Contract. The Contractor also certifies that no public employee has any personal or economical interest in this Contract.

Article 24: Claims for Labor and Materials

- 24.1) The Contractor must, at his own expense, assume the defense of and save harmless PREPA from claims for labor and materials and not suffer any mechanics or other liens

to remain outstanding against any of the property used in connection with the work; and must, on request, furnish satisfactory evidence that all persons who have done work or furnished materials have been fully paid. If the Contractor fails to comply with his obligations in this respect, PREPA may take such liens or claims and may withhold from any monies due to the Contractor such amounts as may be necessary to satisfy and discharge any such claims and any cost and expenses incidental thereto.

Article 25: Unfair Labor Practice

- 25.1) In the event that the Contractor or any of his subcontractors or agents do not comply with an order issued by the Puerto Rico Labor Relations Board and/or the National Labor Relations Board upon their finding that the Contractor or any of his subcontractors or agents have committed an unfair labor practice, no further payments must be made by PREPA to the Contractor after the date of said order. In addition, the Contract may be terminated by PREPA, in which case PREPA may take possession of the materials, tools, and appliances on the job site and finish the work by whatever method it may deem expedient.
- 25.2) Any declaration by the Puerto Rico Labor Relations Board and/or by the National Labor Relation Board that the contractors or agents have not complied with an order issued by the Board relating to any unfair labor practice, must be binding, final and conclusive unless such order is reversed or set aside by a Court of competent jurisdiction.

Article 26: Assignment

- 26.1) This Contract or any interest therein or any monies due or to become due there under shall not be assigned, hypothecated or otherwise disposed of without the previous consent in writing of the Contracting Officer. Contractor is only allowed to internally assign to any of its company affiliates for its accounts receivables under this Contract without PREPA's consent. If Contractor decides to assign any due or payables, to which he is entitled for services rendered or goods provided during the term of this Contract to a different Company Affiliate or any third party, provisions in Article, Transfer of Funds, must apply

Article 27: Novation

- 27.1) The Contractor and PREPA expressly agree that no amendment or change order which could be made to this Contract, during its term, must be understood as a contractual novation, unless both parties agree to the contrary, specifically and in writing. This previous provision must be equally applicable in such other cases where PREPA gives the Contractor a time extension for the compliance of any of its obligations under the Contract or where PREPA dispenses the claim or demand of any of its credits or rights under this Contract.

Article 28: Patents and Copyrights

- 28.1) The Contractor agrees to indemnify and hold harmless PREPA from any rightful suit and/or claim of any third party that any Parts manufactured by the Contractor and

furnished hereunder infringes any patent and/ or copyright of the United States. If PREPA notifies Contractor promptly of the receipt of any claim, and does not take any position adverse to Contractor regarding such Claim and gives Contractor information, assistance and exclusive authority to settle and defend the claim, Contractor must at its own expense and option either (i) settle or defend the claim or any suit or proceeding and pay all damages and costs awarded in it against PREPA, or (ii) procure for Contractor royalty – free, irrevocable, non – transferable the right to continue using the Part, or (iii) modify the Part so that it becomes non – infringing, or (iv) replace the Part with non-infringing Parts; or (v) if mutually acceptable to the Parties, remove the infringing Part and refund and/or reduce the price allocable to such part. The foregoing states the entire liability of Contractor for patent and/or copyright infringement of any Parts.

- 28.2) This must not apply to any Part which is altered, modified or manufactured exclusively to PREPA's design. With respect to any Part furnished under the Contract which is not manufactured by Contractor, only the patent and /or copyright indemnity of the manufacturer, if any, must apply. This IP Indemnity must be the sole and exclusive remedy for any claim based on patent, trademark or copyright infringement for product or services.
- 28.3) Each party must retain ownership of all Confidential Information and intellectual property it had prior to the Contract. All new intellectual property conceived or created by Contractor in the performance of this Contract, whether alone or with any contribution from PREPA, must be owned exclusively by Contractor. PREPA agrees to deliver assignment documentation as necessary to achieve that result.

Article 29: Waivers

- 29.1) No waiver of any breach of this Contract must be held to be a waiver of any other subsequent breach.

Article 30: Disputes

- 30.1) All disputes concerning questions of fact arising under this Contract must be decided by PREPA's Generation Director within ten (10) days from the submission of the dispute by Contractor, subject to written appeal by Contractor to the Executive Director within thirty (30) days. Within 10 days thereafter, the Executive Director must inform each party hereto of his decision regarding the dispute. Contractor, at its option, may elect to accept such decision or pursue remedies at law or equity. Contractor may pursue directly the remedies at law or equity for all other disputes other than questions of fact. Notwithstanding the terms above, each party has the right at any time, at its option and where legally available, to commence an action or proceeding in a court of competent jurisdiction to apply for interim or conservatory measures, but not monetary damages.

- 30.2) In the event of a dispute arising during the warranty period, Contractor must ensure that the Performance Bond remains in full force and effect until such dispute is resolved and all obligations of Contractor under the agreement are duly performed.

Article 31: Payment to Contractor

- 31.1) Upon completion and acceptance of all work required hereunder, the amount due to the Contractor under this Contract will be paid upon the presentation of a properly executed and duly certified voucher therefore, after the Contractor must have furnished PREPA with a release, if required, or all claims against PREPA arising under and by virtue of this Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release in stated amounts to be set forth therein; provided that, the amount of such excepted claims is not included in the voucher for final payment.
- 31.2) All invoices submitted by the Contractor must be subject to PREPA's approval before being paid, and its payment must be done within sixty (60) days after the date of its approval by PREPA. All invoices submitted by the Contractor must include the Certification established in Article, Consideration, in order to proceed with its payments.

Article 32: Correction of Work after Final Payment

- 32.1) The final certificate for payment must not relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, Contractor must remedy any defects due thereto in accordance with the Warranty provisions of this Order; PREPA must give notice of observed defects with reasonable promptness. All questions arising under this Section must be decided by the Engineer, subject to appeal by the Contractor, as provided in Article, Disputes, of this Contract.

Article 33: Laws to be Observed

- 33.1) The Contractor must observe and comply with any and all Federal, Commonwealth and Municipal Laws, by-laws, ordinances, and regulations in any manner affecting the work, the equipment or the materials used in the proposed rehabilitation and/or installation or construction, and those employed on the work or the conduct of the work, and with all such orders and decrees as exist at present or may be enacted prior to the completion of the work by bodies or courts having any jurisdiction or authority over the work. The Contractor must save harmless and indemnify PREPA and its representatives officers, agents, and servants for fines, attorney's fees and penalties paid by PREPA, to governmental authorities as sole result of Contractor's violation of any such law, by-law, ordinance, regulation, order or decree, whether by himself or his employees subject to the limits of liability in Article 14.

Article 34: Change in Law

- 34.1) During the term of this Contract, any change in law, including, but not limited to changes in applicable tax law, which causes an increase in Contractor's costs when supplying the products or services to be acquired by PREPA, must be of Contractor's responsibility and PREPA must not be obliged to make additional payments nor to pay additional sums to the price or canon originally agreed for those products or services.

Article 35: Choice of Law

- 35.1) This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico. Also, the contracting parties expressly agree that only the state courts of Puerto Rico will be the courts of competent and exclusive jurisdiction to decide over the judicial controversies that the appearing parties may have among them regarding the terms and conditions of this Contract.

Article 36: Separability

- 36.1) If a court of competent jurisdiction declares any of the Contract provisions as null or invalid, such holding will not affect the validity and effectiveness of the remaining provisions of the Contract and the parties agree to comply with their respective obligations under such provisions not included by the judicial declaration.

Article 37: Warranty

- 37.1) The Contractor warrants to PREPA that the products must be shipped free from defects in material, workmanship and title and the services must be performed in a competent, diligent manner in accordance with any mutually agreed specifications. The foregoing warranty for Parts shall expire eighteen (18) months after the date of delivery or one (1) year after the first use of the Part, whichever occurs first, and the warranty for Services shall expire one (1) year after performance of the Service, provided that all warranties of Parts and Services shall expire no later than one (1) year after the expiration or termination of this Contract. No warranty claim shall extend the applicable warranty period.
- 37.2) If Products or Services do not meet the above warranties, PREPA must promptly notify the Contractor in writing prior to expiration of the warranty period. The Contractor must (i) at its option, repair or replace defective Products and (ii) re-perform defective Services. If despite The Contractor's reasonable efforts, a non-conforming Product cannot be repaired or replaced or non-conforming Services cannot be re-performed, the Contractor must refund or credit monies paid by PREPA for such non-conforming Products and Services. Warranty repair, replacement or re-performance by the Contractor shall not extend or renew the applicable warranty period. PREPA must obtain Contractor's agreement on the specifications of any tests it plans to conduct to determine whether a non-conformance exists.

- 37.3) The warranties and remedies are conditioned upon (a) proper storage, installation, use, operation, and maintenance of Products, (b) PREPA keeping accurate and complete records of operation and maintenance during the warranty period and providing Contractor with access to those records, and (c) modification or repair of Products or Services only as authorized by the Contractor in writing. Failure to meet any such conditions renders the warranty null and void. The Contractor is not responsible for normal wear and tear. This Article provides the exclusive remedies for all claims based on failure of or defect in Products or Services, regardless of when the failure or defect arises, and whether a claim, however described, is based on contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise. The warranties provided in this Article are exclusive and are in lieu of all other warranties, conditions and guarantees whether written, oral, implied or statutory. NO IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.

Article 38: Correlation of Documents

- 38.1) In case of discrepancy or in the event of conflict among the different Contract documents such as: The Contract, Special Conditions, Technical Specifications, Proposal Forms, and the Contractors Bidding Proposal, these must take precedence in the order given. The terms and conditions contained in the Contract must prevail over any conflictive terms and conditions contained in the Contractor's Bidding Proposal.

Article 39: Notice

- 39.1) PREPA agrees to give the Contractor immediate notice of any and all claims for which the Contractor may be liable, and the Contractor agrees to give PREPA immediate notice of any and all claims for which PREPA may be liable.
- 39.2) Any notice to be given hereunder must be in writing and will be sufficiently served when delivered in person or properly mailed to the following addresses:

To PREPA: Puerto Rico Electric Power Authority
PO Box 364267
San Juan, Puerto Rico 00936-4267
Attention: Eng. Jorge Cotto Lopez, Generation Division Director

Article 40: Income Tax Withholding

- 40.1) PREPA will deduct and withhold at source to the Contractor the equivalent of seven percent (7%) from payments for services rendered under this Contract, in compliance with the 1994 Puerto Rico Internal Revenue Code, section 1143, as amended. Notwithstanding, the withholding to be done by PREPA as herein stated could be increased to twenty percent (20%) in the event that the Contractor is a nonresident individual, which is a U.S. citizen, as provided by the 1994 Puerto Rico Internal Revenue Code, section 1147; or twenty nine percent (29%) in the event that the Contractor is a nonresident and non U.S. citizen individual; or a foreign corporation or

partnership which is not dedicated to industry or business in Puerto Rico, as provided by the 1994 Puerto Rico Internal Revenue Code, sections 1147 and 1150.

- 40.2) If a Release Letter has been issued to the Contractor by the Treasury Department, the Contractor must be responsible to submit a copy of said Release Letter to PREPA for every calendar year, otherwise, payments under the Contract must remain subject to withholding at source. All invoices must be segregated by concepts (services, materials, equipment, etc.), to identify the amounts subject to withholding, and avoid undue deductions.

Article 41: Discrimination

- 41.1) The Contractor certifies that it is an equal opportunity employer, and does not discriminate by reason of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be victim or domestic violence, sexual aggression or harassment; for physical or mental disability or veteran status.

Article 42: Other Taxes

- 42.1) All unemployment, retirement, and other Social Security contributions and taxes; all sales, use and excise, privilege, business and occupational taxes, and any other taxes or fees payable by the Contractor are and must be included as part of his prices.

Article 43: Use of Completed Portions

- 43.1) PREPA must have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the fact that the time for completion of the entire work may not have expired, but such taking possession and use must not be deemed an acceptance of the work so taken or used or any part thereof. PREPA may require the Contractor to expedite the completion of any part of the work for provisional use by PREPA and the Contractor must comply with such request. If such order of completion or prior use increases the cost of the work or delays the work, the Contractor must be entitled to such extra compensation or extension of time as agreed by the parties.

Article 44: Quality Assurance

- 44.1) The Contractor must establish an adequate quality control program to satisfy all applicable regulation and requirements specified in the procurement documents. The program must contain all those measures necessary to assure that all basic technical requisites are fulfilled.
- 44.2) PREPA reserves the right to conduct audits and inspections to the facilities, activities, and/or documents; limited to inspection and quality control documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract; when estimated necessary in order to assure that the quality control program is adequate and is being properly implemented. The Contractor must provide

PREPA access to its facilities and documents; limited to inspection and quality control documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract; so that PREPA, through audits and inspections can verify the quality of the purchased products or services. PREPA is responsible for all expenses incurred in connection with any such review or audit. PREPA must not have the right to audit the derivation of any lump sum amounts.

- 44.3) In every case in which the materials or services to be furnished to PREPA are subcontracted partially or totally by the Contractor, the Contractor must request the subcontractor to accept and comply with all the requirements of this Quality Assurance Clause.

Article 45: Code of Ethics

- 45.1) Contractor agrees to comply with the provisions of Act of June 18, 2002, No. 84, which establishes a Code of Ethics for the Contractors, Suppliers and Economic Incentive Applicants of the Executive Agencies of the Commonwealth of Puerto Rico.

Article 46: Complete Agreement

- 46.1) This document, together with all attachments referenced herein, constitutes the complete Agreement between the parties.

Article 47: Transfer of Funds

- 47.1) PREPA has no legal obligation to accept Transfer of Funds Agreements between its contractors and thirds parties by reason of the goods or services rendered under this Agreement. However, the Contractor may request PREPA, in writing, the acknowledgment and acceptance of a Transfer of Funds Agreement between the Contractor and a third party, by submitting said Agreement for evaluation pursuant to the rules and procedures in force at PREPA. PREPA reserves the right to accept or not the application for the acknowledgement of the Transfer. The Assigner will pay PREPA two hundred dollars (\$200) per annum to be discounted from the first payment of the Transfer, for administrative expenses.
- 47.2) The Contractor accepts that the acknowledgment of the Transfer of Funds by PREPA will be subject to the following terms and conditions: (a) PREPA keeps its preferential right to retain and discount, from all payments owed under this Agreement, all and any sum owed by the Assigner to PREPA, all and every sum owed by the Assigner to PREPA, whether under this Agreement or under any other contract or Contract or by a right of compensation (set off) that PREPA has against the Assigner, and to apply the amount of the sum retained and discounted to its claim against the Assigner; (b) PREPA keeps its preferential right to retain and discount, from all payment due under the Agreement and payable to the Assignee, all and any sum owed to PREPA by the Assigner, including, but not limited to, any right of compensation (set off) PREPA may have against the Assigner, and apply the amount of the retained and discounted sum from its claim against the Assigner; (c) PREPA keeps its unlimited right to retain the payments in cases where:

- a) the Assignee does not comply with all the contractual obligations and responsibilities that it may have toward PREPA;
 - b) that there are in existence claims of any kind or nature from PREPA against the Assignee arising in relation to said Contract or Contract and/or in relation to any other contract between the Assigner and PREPA, including, but not limited to warranty claims of products sold or because of defects or vices on said products and/or of construction and irrespective of whether said obligations of the Assigner toward PREPA may or not be liquid and capable of being demanded.
- 47.3) The Assigner and the Assignee acknowledge and accept that it will be the Assigner's responsibility to pay the Assignee any amount of money object of the Transfer that may be received by PREPA while the debt object of the same is not covered by the Assigner. Moreover, the Assigner and the Assignee release PREPA from any claim related with said payment. The Assigner and the Assignee acknowledge and accept that in order to comply with said acknowledgment, PREPA will issue all the payments, regardless of whether said payments had been transferred or not, to the name of the Assigner and the Assignee.
- 47.4) The Assigner and Assignee acknowledge and accept that PREPA will automatically cease from having any obligation of any nature whatsoever under the transfer, in any of the following circumstances:
- a) as soon as the debt of the Assigner in favor of the Assignee has been paid by the Assigner or collected from him, even when it has not been paid in full with the transferred funds;
 - b) as soon as PREPA has paid the sums owed under the contract or change of order object of this transfer;
 - c) as soon as PREPA has made payments up to the amount owed under the contract or change of order object of this Transfer;
 - d) as soon as a year has transpired from the due and/or payment date of any of the accounts receivable transferred by the Assigner to the Assignee, provided that within said year, the Assigner has not formulated a written statement with acknowledge receipt to PREPA claiming the payment.
- 47.5) The Assigner and the Assignee acknowledge and accept that it will be entirely their responsibility to request PREPA, by means of a document signed by both, to discontinue the payments to the Transfer. The Assigner and the Assignee release PREPA from any claim arising from a breach to this obligation.

Article 48: Deliveries; Title Transfer; Risk of Loss; Storage

- 48.1) For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Contractor must deliver Products to PREPA FCA Contractor's facility or warehouse (Incoterms 2010). For export shipments, Contractor must deliver Products to PREPA FCA Port of Export (Incoterms 2010). PREPA must pay all delivery costs and charges or pay Contractor's standard shipping charges plus up to twenty-five (25%) percent. Partial deliveries are

- permitted. Contractor may deliver Products in advance of the delivery schedule. Delivery times are approximate and are dependent upon prompt receipt by Contractor of all information necessary to proceed with the work without interruption. If Products delivered do not correspond in quantity, type or price to those itemized in the shipping invoice or documentation, PREPA must so notify Contractor within ten (10) days after receipt.
- 48.2) For shipments that do not involve export, title to Products must pass to PREPA upon delivery in accordance with Section 49.1. For export shipments from a Contractor's facility or warehouse outside the U.S., title must pass to PREPA upon delivery in accordance with Section 49.1. For shipments from the U.S. to another country, title must pass to PREPA immediately after each item departs from the territorial land, seas and overlying airspace of the U.S. The 1982 United Nations Convention of the law of the Sea must apply to determine the U.S. territorial seas. For all other shipments, title to Products must pass to PREPA the earlier of (i) the port of export immediately after Products have been cleared for export or (ii) immediately after each item departs from the territorial land, seas and overlying airspace of the sending country. When PREPA arranges the export or intercommunity shipment, PREPA will provide Contractor evidence of exportation or intercommunity shipment acceptable to the relevant tax and custom authorities.
- 48.3) Risk of loss must pass to PREPA upon delivery pursuant to Section 49.1, except that for export shipments from the U.S., risk of loss must transfer to PREPA upon title passage.
- 48.4) If any Products to be delivered under this Contract or if any PREPA equipment repaired at Contractor's facilities cannot be shipped to or received by PREPA when ready due to any cause attributable to PREPA or its other contractors, Contractor may ship the Products and equipment to a storage facility, including storage at the place of manufacture or repair, or to an agreed freight forwarder. If Contractor places Products or equipment into storage, the following apply: (i) title and risk of loss immediately pass to PREPA, if they have not already passed, and delivery must be deemed to have occurred; (ii) any amounts otherwise payable to Contractor upon delivery or shipment must be due; (iii) all expenses and charges incurred by Contractor related to the storage must be payable by PREPA upon submission of Contractor's invoices; and (iv) when conditions permit and upon payment of all amounts due, Contractor must make Products and repaired equipment available to PREPA for delivery.
- 48.5) If repair Services are to be performed on PREPA's equipment at Contractor's facility, PREPA must be responsible for, and must retain risk of loss of, such equipment at all times, except that Contractor shall be responsible for damage to the equipment while at Contractor's facility to the extent such damage is caused by Contractor's negligence.

Article 49: Confidentiality

- 49.1) Contractor and PREPA (as to information disclosed, the "Disclosing Party") may each provide the other party (as to information received, the "Receiving Party") with Confidential Information in connection with this Contract. "Confidential Information"

- means (a) information that is designated in writing as "confidential" or "proprietary" by Disclosing Party at the time of written disclosure, and (b) information that is orally designated as "confidential" or "proprietary" by Disclosing Party at the time of oral or visual disclosure and is confirmed to be "confidential" or "proprietary" in writing within twenty (20) days after the oral or visual disclosure. In addition, prices for Products and Services shall be considered Contractor's Confidential Information.
- 49.2) Receiving Party agrees: (i) to use the Confidential Information only in connection with the Contract and use of Products and Services, (ii) to take reasonable measures to prevent disclosure of the Confidential Information to third parties, and (iii) not to disclose the Confidential Information to a competitor of Disclosing Party. Notwithstanding these restrictions, (a) Contractor may disclose Confidential Information to its affiliates and subcontractors in connection with performance of the Contract, (b) a Receiving Party may disclose Confidential Information to its auditors, (c) PREPA may disclose Confidential Information to lenders as necessary for PREPA to secure or retain financing needed to perform its obligations under the Contract, and (d) a Receiving Party may disclose Confidential Information to any other third party with the prior written permission of Disclosing Party, and in each case, only so long as the Receiving Party obtains a non-disclosure commitment from any such subcontractors, auditors, lenders or other permitted third party that prohibits disclosure of the Confidential Information and provided further that the Receiving Party remains responsible for any unauthorized use or disclosure of the Confidential Information. Receiving Party must upon request return to Disclosing Party or destroy all copies of Confidential Information except to the extent that a specific provision of the Contract entitles Receiving Party to retain an item of Confidential Information. Contractor may also retain one archive copy of PREPA's Confidential Information.
- 49.3) The obligations under this Article shall not apply to any portion of the Confidential Information that: (i) is or becomes generally available to the public other than as a result of disclosure by Receiving Party, its representatives or its affiliates; (ii) is or becomes available to Receiving Party on a non-confidential basis from a source other than Disclosing Party when the source is not, to the best of Receiving Party's knowledge, subject to a confidentiality obligation to Disclosing Party; (iii) is independently developed by Receiving Party, its representatives or affiliates, without reference to the Confidential Information; (iv) is required to be disclosed by law or valid legal process provided that the Receiving Party intending to make disclosure in response to such requirements or process must promptly notify the Disclosing Party in advance of such disclosure and reasonably cooperate in attempts to maintain the confidentiality of the Confidential Information.
- 49.4) Each Disclosing Party warrants that it has the right to disclose the information that it discloses. Neither PREPA nor Contractor must make any public announcement about the Contract without prior written approval of the other party. As to any individual item of Confidential Information, the restrictions under this Article must expire five (5) years after the date of disclosure. This Article does not supersede any separate confidentiality or nondisclosure agreement signed by the parties.

12 de enero de 2022

Mario E. Miranda Sánchez, Jefe
División de Suministros

Alexis Cruz Figueroa, Jefe
División Central Aguirre

William Ríos Mera
Jefe de Central Auxiliar
Central Ciclo Combinado

**SOLICITUD DE PRECIO, INSPECCIÓN Y REPARACIÓN SET DE PIEZAS DE TRANSICIÓN,
INSPECCIÓN MAYOR UNIDAD A GAS 1-3, CENTRAL CICLO COMBINADO DE AGUIRRE (CR 254742)**

Solicitud de precio por un estimado de \$100,000, para suplir todos los recursos, equipo e ingeniería para la inspección y reparación de un set de piezas de transición, a removerse de la Unidad a Gas 1-3, en la Central Ciclo Combinado de Aguirre. La unidad está programada para salir de servicio en enero para una inspección mayor del turbogenerador. Todo de acuerdo a las especificaciones, términos y condiciones de la requisición 254742.

Los fondos para el proceso están disponibles bajo la cuenta 01-1071-33101-555-304 y el estimado 107506 del programa de Gastos de Mantenimiento Necesarios (GMN) para el año fiscal 2021-22.

Como parte del alcance de trabajo en una inspección mayor, las piezas de transición del sistema de combustión son removidas. La Central generó la requisición del asunto para inspeccionar y reparar el set de piezas de transición de la Unidad 1-3. El costo de rehabilitación de estos componentes es una fracción al compararlo con el costo de adquirirlos nuevos.

Aprobado

Jorge L. Cotto Pérez
Director Interino de Generación



**Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant**

Technical Specifications

CR #: 254742
Equipment: GT Combustion System
Specification: Inspection and Repair Transition Piece Set

Article 1: Scope of Supply

- 1.1) This specification covers the minimum requirements for the inspection and weld repair and heat treat of a General Electric's Gas Turbine MS7001EA Transition Piece set, manufactured from Nimonic 263 Alloy. Parts repaired to these requirements should provide service life approaching that of new components for one complete operation cycle, according to OEM guidelines.
- 1.2) Contractor is responsible to repair the indicated parts and meet all the requirements specified below. Contractor shall furnish all work, materials, supervision, tools, and the necessary equipment, required for the repair works, all in strict accordance with the provisions of this Service Order, including the Technical Specifications, Terms and Conditions and Contractor's Bidding Proposal, all of which are hereby made a part hereof.

Article 2: Parts information

- 2.1) Transition Piece set
 - a) OEM: GE Energy Power
 - b) TP part #: 943E0236G031
 - c) Model: Nimonic 263 alloy, 7001N transition piece
 - d) Fired hours: 32,000 at 1840 F firing temp, on distillate #2 fuel
 - e) Previous repairs: none
 - f) Weight: 5 boxes (500 lbs. each)
 - g) Replace cost: \$200,000
 - h) Repair scope: heavy: expected localized weld repair

- 2.1) Combustion Liners set

Article 3: Scope of Work

The specifications included below are provided to the Contractor as guidelines to establish the minimum requirements required for the job. They're not intended to be a detailed procedure to the Contractor. Inspection and repair shall include but not limited to the following scope of work. Contractor shall submit a report with findings and recommendations after each phase. All dimensions and results shall be record on appropriate forms. All findings and recommendations shall be discussed with the Engineer before taking any further steps.

3.1) Pickup

- a) Pickup components at site. Receive and check for shipping damage. Check purchase order, material and shipping papers to verify that the parts received are correctly identified and fully accounted for. Advise Engineer immediately of any shipping damage.

3.2) Inspection requirements

- a) Record drawing and serial numbers of full set.
- b) Clean all parts and remove all coating with 220 grit aluminum oxide or finer, avoiding excessive blasting.
- c) Dimensionally inspect each part for the following:
 - Inlet and exit end openings dimensions
 - Bull horn fit up dimensions
 - Side seal gap
 - FWS end wear and FWD end bracket wear
 - Aft end distortion and Aft bracket sag
 - Seal and seal retainer wear
- d) FPI all parts following industry standards procedures. Document the location and extent of all cracks, dents, wear, corrosion/erosion and missing material.
- e) Prepare a detailed report scope outlining the repairs, heat treatment cycles, and procedures to be used. Contractor shall obtain written approval from Engineer for any proposed changes to this specification and to proceed with the repair scope.

3.3) Repair Requirements

- a) All repaired parts shall comply with OEM specifications and provide maximum performance without affecting gas turbine output and efficiency.
- b) All parts shall be heat treated by solution annealing before any weld repairs.
- c) All indications to be repaired shall be prepared by grinding out the existing cracks and defects and performing FPI to ensure the cracks are completely removed. Areas to be repaired include but not limited to body, wear areas, inlet, picture frame, floating seal areas and side seal area.
- d) Weld and/or blend indications using gas tungsten arc or plasma transferred arc welding methods. Areas to be welded must be free of oxide, grease, dirt or chemicals, and must be welded using full penetration welds through the section being repaired. All repaired areas shall be grinded and polished to restore the original contours and dimensions.

- e) After all repairs are finished, blast clean and NDT each piece.
- f) An age heat treatment shall be performed at the end of the repair process. Follow with blast clean and NDT.
- g) Supply and install new inner and outer floating seal for each transition piece.
- h) Test the complete Transition Piece set against a nozzle simulator fixture. Record all critical dimensional data.
- i) Coating: all transition pieces shall be coated after repairs are completed, according to the following requirements:
 - A high temperature TBC, consisting of a MCrAlY type bondcoat with Yttria stabilized topcoat shall be applied to full interior of each piece. Average thicknesses of TBC must be between .010" to .018".
 - A chrome carbide coating shall be applied to picture frame of each piece. carbide Average thickness must be between .004" to .006".
 - The microstructure of the bond and top coating shall be tested on each part for cracks, integrity, and thickness. To maintain critical dimensions of the throat area no manual coating application is allowed. Only HVOF controlled robotic application is permitted.

3.4) Supply the following installation hardware:

- Bull horn brackets 143D7407G002. armored with FX-414 plates (10 ea.)
- Bolt 5/8 x 1 1/2", part # 219B6733P003 (20 ea.)
- Lockplate (finger type), part # 224B9719P001 (10 ea.)
- Lockplate (finger type), part # 224B9719P002 (10 ea.)
- End Seal Retainer, part # 315A4045G001 (10 ea.)
- End Seal, part # 197C3155G002 (10 ea.)
- Hex Bolt, part # 293A0910P006 (10 ea.)
- Lockplate, part # 294A0151P022 (10 ea.)
- Bolt 5/8" Guide Pin, part # 219B6731P001 (10 ea.)

Article 4: Shipment

4.1) Arrange a pre-shipment inspection with Engineer to:

- a) Review all documentation
- b) Mapping of repairs
- c) Perform visual inspection
- d) Deliver copies of the documentation

- 4.2) Package and ship parts in appropriate containers that will prevent component damage. All parts that are lost or damaged beyond repair may be back charged up to the cost of replacement by original OEM parts.
- 4.3) Advise Engineer of the shipping date, route and carrier for each component or equipment.

Article 5: Documentation and Certifications

- 5.1) Certificate of Compliance: A document certifying that all aspects of this order and specification have been met shall be signed by the Contractor representative and shall be submitted to PREPA along with the final report.
- 5.2) At completion of the repair process, a final report shall be issued. Failure to comply with report will result in final payment hold, and shall contain:
 - a) Description of the complete repair process
 - b) Mapping of all defects identified and repair locations
 - c) All incoming, in-process and final dimensional inspection forms
 - d) Final FPI reports
 - e) Certificate of Compliance
 - f) Coating process and certification

Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant

Terms and Conditions

CR #: 254742
Equipment: GT Combustion System
Specification: Inspection and Repair Transition Piece Set

Article 1: Definitions

Whenever the words defined in this article or pronouns used instead are mentioned in this Contract, they shall have the meanings here given:

- 1.1) PREPA – shall mean the Puerto Rico Electrical Power Authority and all his corresponding Divisions.
- 1.2) Engineer - shall mean the Generation Director of PREPA, acting directly or through his properly authorized representatives.
- 1.3) Contracting Officer - shall mean the Head Materials Management Division, acting directly or through his properly authorized representatives.
- 1.4) Bidder – shall mean the company that submit the proposal based on the Technical Specifications, Terms and Conditions and other documents required by PREPA.
- 1.5) Contractor - designates the company that will perform all works as defined in the Scope of Work in the Technical Specifications.
- 1.6) Contract / Order - shall mean collectively, all the covenants, terms, and stipulations in these articles of agreement and in all supplementary documents hereto attached which constitute essential parts of the Contract and are hereby made part thereof, to wit:
 - a) Contract
 - b) Invitation to Bid and Advertisement for Bids
 - c) Contractor's Bid Including Bid Data and Schedules
 - d) Technical Specifications and Drawings enumerated therein
 - e) Terms and Conditions
 - f) Proposal Forms
 - g) Bid, Performance, and Payment Bonds
 - h) Letter of Award

Article 2: Quality Requirements

2.1) Qualification

- a) Contractor Audits. Prior to placing a component repair order of any sort with a specific Contractor, its facilities, quality control system, and general operation can be audited for capability to adequately perform turbine component repair by representative(s) from PREPA's purchasing, quality control and engineering organizations. Approval must be granted for a period specified by PREPA, but may be removed by PREPA for inadequate Contractor performance at any time.
- b) Bidders must provide evidence about its capacity and experience in the field of gas turbine parts repair with a successful track record of five (5) years or more. Provide name of the company, telephone and contact person for evaluation by PREPA on similar projects been constructed in the United States and its territories.
- c) For each specific process (e.g. inspection, grinding, welding, coating), the Contractor will be required to submit a description of the process to the Engineer for review.
- d) Contractor can also be required to process components (and/or other sample material identified by the Engineer) through the entire process for non-destructive and destructive examination. Based on the results, the Engineer will approve the process for use. Contractor must obtain written approval by the Engineer for any change to the process.

2.2) Schedule

- a) Before beginning any work on any of the components, Contractor must develop a schedule of activities in connection with the work of the Contract and submit it for the approval of the Engineer. All work must be carried out on a continuous schedule following the date established by PREPA and Contractor.

2.3) Documentation & Certification

- a) All work performed under this Specification must be done in a safe and workmanlike manner and in strict conformance with all rules, regulations and ordinances, etc., of government agencies having jurisdiction over the class of work involved. Includes the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), the American Welding Society (AWS), the National Board of Inspection Codes (NBIC), the Environmental Protection Agency (EPA), the Occupational Safety and Health Office (OSHO) requirements, (CTI) and the latest

- b) Quality Control Tests: In-process and final Quality Control tests must be performed. Results of all required testing must be recorded by serial number. A certified copy must be given to PREPA's representative at the pre-shipment inspection.
- c) Processing Records: Processing records must be maintained in sufficient detail to indicate compliance with this specification and to allow traceability by lot. A copy of these records must be given to PREPA's representative at the pre-shipment inspection.
- d) Certificate of Compliance: All processing and quality control records must be reviewed by the Contractor to verify compliance with this specification and the Contract. Any deviations must be reported immediately to PREPA and may be cause for rejection. A document certifying that all aspects of this specification and the Contract have been met, must be signed by the responsible Contractor's representative and must be presented to PREPA with the repair report.
- e) Records: All process control records and quality control test results must be maintained on file by the Contractor's for a period of five years. This information must be made available to PREPA upon request.

Article 3: Consideration

- 3.1) The Agreement price quoted in the Proposal shall constitute full compensation for pick-up, transportation, inspection, repair, supplies, labor, tools, equipment, other accessories, cost of all insurance, profit, Contractor's overhead, and all other work satisfactorily in accordance with this Contract.
- 3.2) In accordance with the terms and conditions contained herein, PREPA agrees to pay and the Contractor accepts, as full payment for the complete performance of this Contract, the final agreement price, plus any additional amount to be paid due to extra work ordered and accepted by the Engineer and approved by the Contracting Officer, according to Article, Changes and/or Extra Work, below.
- 3.3) The Contractor must submit its invoices for work already done according to the payment schedule as provided herein, under Payment to Contractor, together with the technical supporting documents of required tests.
- 3.4) During the life of the Contract, invoices for partial payments can be made based on initial inspection, equipment delivered and accepted.
- 3.5) In preparing estimates, the material delivered on the site may be taken into consideration; provided that, the Contractor submits evidence that the materials have been paid for by him and that said materials have been properly housed or stored at the job site in a manner which will insure the preservation of their quality and fitness for the work and that the Contractor shall not withdraw said material for any purpose other than incorporation into the work.

- 3.6) After the terms of the Contract have been fully complied, the final payment of the Contract will be paid upon the presentation of a properly executed and duly certified invoice, therefore, after the Contractor must have furnished PREPA with a release of all claims against PREPA arising under and by virtue of this Contract.
- 3.7) All invoices submitted by the Contractor must be subject to PREPA's approval before being paid, and its payment must be done within sixty (60) days after the date of its approval by PREPA.
- 3.8) All invoices submitted by the Contractor must include the following Certification in Contract to proceed with its payment. This is an essential requirement and those invoices without this Certification will not be processed for payment.

"Under penalty of absolute nullity, I hereby certify that no employee, official or director of PREPA is a party or has any interest in the profits or benefits to be obtained under this Contract, or if any employee, official or director of PREPA has any interest in the profits or benefits under this contract a waiver has been previously obtained. I, also certify that the only consideration to (furnish the goods) or (provide the services) under this Contract is the payment agreed with PREPA's authorized representative. The total amount of this invoice is fair and correct. The (works) were completed, (the products) were delivered or (the services) were provided and no payment has been received for said concept.

Contractor's Signature"

Article 4: Commencement and Completion of Work

- 4.1) Pickup, Repair and Delivery of Parts

Contractor shall complete all the components repairs and deliver all parts (FOB), within seventy-five (75) consecutive days.

- 4.2) Schedule of Proposed Progress

The Contractor, within five (5) days after receipt of the equipment at the shop, must file with the Engineer a time chart or schedule of proposed progress of the work and the proposed detailed method of carrying on the work including a full statement of equipment and equipment layout for the job. This progress chart and statement of operations must show the dates of commencement and completion of each item of the work. If said progress chart and/or statement of operations are not satisfactory to the Engineer, they must be revised by the Contractor to provide for the use of adequate and sufficient equipment and force, and a method of operations, which will assure the completion of the work within the Contract time. This information, when the Engineer has approved it all, become a part of this Contract.

Article 5: Suspension of Work

- 5.1) PREPA may, at any time, suspend the whole or any portion of the work under this Contract, by providing Contractor with a written notice stating the reasons for suspension at least 5 (five) days in advance of the day the suspension must take effect. The right of PREPA to suspend the work must not be construed as denying the Contractor all actual, reasonable and necessary costs and expenses due to the delays caused by such suspension.
- 5.2) Either Party may suspend the whole or any portion of the work under this Order by reason of the occurrence of a Force Majeure event as described in Article 11 herein. For the avoidance of doubt, PREPA shall not be required to pay for such costs and expenses if the suspension is requested by PREPA by reason of a Force Majeure Event, as defined in Force Majeure Article, herein.
- 5.3) In case of suspension of the work by PREPA for any reason, or in case the work is suspended in whole or in part due to the occurrence of a Force Majeure event, Contractor's obligations must be extended for a period of time reasonably necessary to overcome the effects of any such suspension.
- 5.4) If the suspension extends for more than 90 days, the Contractor must have the right to terminate the contract in accordance with these terms and conditions.

Article 6: Specifications and Drawings

- 6.1) PREPA reserves the right to review and approve all drawings, specifications, methods and data, which the Contractor develops hereunder. Such review or approval shall in no way relieve the Contractor from its responsibilities, obligations or liabilities under this Contract. The Contractor must obtain such reviews or approval in writing from PREPA.
- 6.2) The Contractor must keep at the working area a copy of the Contract, its supplementary documents, specifications and drawings and must, at all times, give the Engineer access thereto. Anything called for in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications must be of like effect as if called for or shown on both. In case of discrepancy in the specifications and drawings, the matter must be immediately submitted to the Engineer, without whose decision said discrepancy must not be adjusted by the Contractor, and the Contractor must not proceed with the work so affected until it has received written order from the Engineer. The Engineer will furnish, from time to time, such additional detail drawings and other information as he may consider necessary for the conduction of the work.

Article 7: Equipment to be Furnished and Installed by the Contractor

- 7.1) All equipment called for in the Specifications and/or shown on the drawings to be furnished and installed by the Contractor must be furnished and installed in strict accordance with the technical requirements of the Specifications.

Article 8: Changes and/or Extra Work

- 8.1) PREPA may, at any time, make changes or order extra work within the Scope of Work contracted, subject to previous written acceptance by PREPA's Contracting Officer. If such changes or extra work require a price and/or schedule revision, such revision(s) shall be negotiated and agreed in writing by both parties before the commencement.
- 8.2) Changes and/or Extra Work must be approved by the appropriate official pursuant to the general authorization for approval in order for payment of such change or extra work to be made.

Article 9: Time Extensions

- 9.1) Contractor must apply for time extensions for construction changes, unforeseeable causes, changed conditions, etc., as indicated throughout the Specification only if the schedule of proposed progress is affected, under no circumstances must the Engineer consider applications for extra time if the master schedule is not clearly affected.

Article 10: Inspection

10.1) Periodic Inspection

- a) All material and workmanship (if not otherwise designated by the specifications) must be subject to inspection, examination, and test by the Engineer at all reasonable times, during manufacture and/or construction. PREPA must have the right to reject defective material, equipment or workmanship or require its correction. Rejected workmanship must be satisfactorily corrected and rejected material and equipment furnished by the Contractor must be satisfactorily replaced with proper material, and equipment without charge to PREPA. The Contractor must promptly remove rejected material from the premises. The Contractor must furnish promptly all reasonable facilities, labor, materials, and equipment necessary for the safe and convenient inspection and tests that may be performed in such manners as not to unnecessarily delay the work.

10.2) Final Inspection at Contractor's facilities

- a) Whenever all the materials have been furnished and all work has been performed, all in accordance with the drawings and specifications, the Contractor must notify the Engineer that said work is completed and ready for final inspection.
- b) If all contracted work provided for and contemplated by the Contract is found completed in accordance with the specifications, this inspection must constitute the final inspection and the date of completion must be established as the date of receipt of the notice of the Contractor that the work was completed and ready for final inspection. If, however, upon inspection by the Engineer it is found that any work, in whole or in part, is unsatisfactory, the Engineer must give the Contractor the necessary instructions as to replacement of material and performance of work

necessary to final completion and acceptance and the Contractor must immediately comply with and execute such instructions.

- c) Upon satisfactory replacement and performance of such work, the Contractor must notify the Engineer, and another inspection must be made which will constitute the final inspection if the said material is found to have been acceptably replaced and the work completed satisfactorily. In such event, the date of receipt of this last notice of the Contractor will be established as the date of completion of the work or any separable part thereof under the Contract. The date of completion, thus established, must be used in calculating the actual time of performance of the work.
- d) Final inspection must occur within a thirty (30) day period after the Engineer has received notice from the Contractor of the satisfactory completion of the installation of the equipment.

Article 11: Access to Work

- 11.1) The Contractor must permit all persons appointed or authorized by PREPA to visit and inspect the work or any part thereof at all times and places during the progress of same.

Article 12: Force Majeure

- 12.1) The parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform, or are prevented from performing by a Force Majeure event. For purposes of this Order, Force Majeure means any event not caused by the fault or negligence of, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event.
- 12.2) Force Majeure may include, but not be limited to, the following: Acts of God, industrial disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections, epidemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a Force Majeure event, and/or its effects, are beyond the reasonable control and were not caused by the fault or negligence of the party claiming the Force Majeure event, and that such party, within ten (10) days after the occurrence of the alleged Force Majeure, gives the other party written notice describing the particulars of the occurrence and its estimated duration. The burden of proof as to whether a Force Majeure has occurred must be on the party claiming the Force Majeure.

Article 13: Penalty for Delays

- 13.1) If Contractor is delayed in completing the work, or any separable part thereof, within the timeframe established in Article, Commencement and Completion of Work, Contractor pay to PREPA an amount equal to \$1,000.00 USD for each day of delay in

completing the work or separable part thereof, up to a maximum of ten percent (10%) of the price of the relevant Service Order that was delayed, and the Contractor and any of its subcontractors shall be jointly and severally liable for said amount. The amounts payable for delay established in this Article are the sole and exclusive remedies for all delay claims and shall be paid as liquidated damages and not as penalty.

- 13.2) In case of delay, the Contractor must within ten (10) days from the beginning of any such delay notify the Engineer in writing of the causes of delay, who must ascertain the facts and the extent of the delay and extend the time for completing the work when in his judgment the findings of facts justify such an extension, and his findings of facts thereon must be final and conclusive on the parties hereto, subject only to appeal by the Contractor as provided in the Article herein provided on Disputes hereof; provided that, no claim made by Contractor against PREPA, its agents, contractors, subcontractors, employees, successors, assignees, for any cause whatsoever, during the progress of any portion of the work embraced in the Contract must relieve any of the parties from the performance of its obligations and of the work under this Contract, which must not suffer any delay by reason of a claim being ascertained by either Party under this Contract. Any damages caused by delays or hindrances exclusively caused by PREPA must be considered as fully compensated for by the extensions of time as provided above, except in the event of suspension of the work by PREPA as per Article 5 of this Contract.
- 13.3) If PREPA does not terminate the right of the Contractor to proceed, the Contractor must continue the work, in which event must pay to PREPA the amounts set forth above for each calendar day of delay; provided that, the right of the Contractor to proceed must not be terminated and the Contractor must not be charged for any amounts in relation to any delays in the completion of the work due to Force Majeure events or situations, or failures on the part of PREPA or any of its other contractors to carry out its obligations.
- 13.4) PREPA must have the right to the payment or to the withholding of Contractor's payments in case of Contractor's delay in completion of the work

Article 14: Liabilities

- 14.1) The total liability of the Contractor for all claims, whether a claim is based in contract, warranty, indemnity, tort / extra contractual liability (including negligence), strict liability or otherwise, shall not exceed the (i) Contract Price, or (ii) if PREPA places multiple order(s) under the Contract, the price of each particular order for all claims arising from or related to that order.

DEFINITION OF CONTRACTOR UNDER THIS ARTICLE ON LIABILITIES:

For purposes of this Article on "Liabilities", the term "Contractor" means Contractor, its affiliates, subcontractors and suppliers of any tier, and their respective employees.

INTENT OF PARTIES TO HAVE THIS ARTICLE ON LIABILITIES APPLY IN ALL CASES:

This Article shall apply whether a claim is based in contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise, and shall prevail over any conflicting terms. The parties agree that their respective responsibilities for damages under this Contract will be governed by the terms of this Contract, and shall be each Party's sole and exclusive remedies.

TERMINATION OF CONTRACTOR'S LIABILITY:

Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable, under the Article on Disputes, before the expiration of the applicable statute of limitations but not later than one (1) year after the expiration of the warranty period.

This clause does not place a limit or restriction on the indemnity obligations of Contractor with respect to third party personal injury or death claims or third party property damages claims as defined under the Indemnity clause.

Indirect or Consequential Damages NOT COVERED:

The Contractor shall not be liable or responsible for any special, indirect, incidental or consequential damages, loss of profits or revenue, loss of business, loss or costs because of a plant shutdown, downtime costs, cost of capital, claims of customers of PREPA, or costs of replacement power, or any other such special, indirect, incidental or consequential types of damages that may be claimed in relation to the work performed, under any legal theory which may be invoked for such claims or damages.

INDEMNITY for Third Party Claims:

The Contractor agrees to save and hold harmless and to indemnify PREPA for all expenses and costs of any nature (including attorneys' fees) incurred by PREPA arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by the Contractor, to the extent of Contractor's negligence in the performance of its obligations under the Contract. For purposes of Contractor's indemnity responsibility under this Article, no portion of the Covered Unit(s), Facility or the Site is considered third party property.

PREPA agrees to save and hold harmless and to indemnify Contractor for all expenses and costs of any nature (including attorneys' fees) incurred by Contractor arising out of any claim made by any third party for personal injuries, including death, or for physical damage to third party property, caused by PREPA, to the extent of PREPA's negligence in the performance of its obligations under the Contract.

Provision on the Operation of PREPA's Equipment

It is hereby provided that Contractor is NOT allowed to operate PREPA's equipment at any time and that the Scope of Work does not provide for Contractor to operate any

pf PREPA's equipment. Therefore, PREPA is responsible for the operation of its own equipment at all times.

Article 15: Independent Contractor

- 15.1) The Contractor shall be considered as an independent contractor, for all material purposes under this Contract, and all persons engaged or contracted by the Contractor for the performance of its obligations herein, shall not be considered as employees or agents of PREPA. In consequence, the Contractor is not entitled to any fringe benefits, such as, but not limited to vacations, sick leave, and other.

Article 16: Termination

- 16.1) PREPA may terminate this Contract (or any portion thereof) for any cause if Contractor (i) becomes insolvent, or (ii) substantially breaches a material obligation, which does not otherwise have a specified contractual remedy, and fails to cure the breach within thirty (30) days of notice from PREPA; or fails to commence to cure the breach and diligently proceed with the cure if it is not possible to cure within thirty (30) days of such notice. If PREPA terminates the Contract, PREPA must pay to the Contractor all portions of the work completed.
- 16.2) If this Contract is so terminated, the Contractor must be compensated for actual, reasonable, and necessary expenses caused by such termination. The exercise of its right to terminate, cancel or rescind the Contract must not be understood as a waiver by PREPA to any other remedy it may have under this Contract or under the law for delays or breach incurred by the Contractor in the performance of its obligations under the Contract.
- 16.3) If PREPA terminates the Contract in accordance with this Article 18, PREPA may take possession of the premises, and of all materials, tools, and appliances thereon, and finish the work by whatever method it may deem expedient. In such a case, the Contractor must not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess must be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor must pay the difference to PREPA of the expenses incurred by PREPA as herein provided. The remedies established in this Article 15, Termination, shall be each Party's sole and exclusive remedies by reason of such termination.

Article 17: Permits and Licenses

- 17.1) The Contractor must obtain and maintain all the licenses, permits, and authorizations required to perform all services and tasks under this Contract, and must send all notices, pay all fees and related costs, and will comply and will have its subcontractors and agents comply with all laws, ordinances, rules, and regulations applicable to the work, in accordance with the drawings and specifications. Should the Contractor find

any discrepancy between the drawings and specifications and the permits, laws, ordinances, rules, and regulations referred to herein, the

- 17.2) Contractor must proceed immediately to notify PREPA of the discrepancy and must not continue with the work until PREPA issues and notifies an order informing the Contractor what changes are necessary and when to proceed with the work as changed.

Article 18: Contingent Fees

- 18.1) The Contractor guarantees that he has not employed any person to solicit or secure this Contract upon any agreement for a commission percentage, brokerage or contingent fee. Breach of this guarantee must give PREPA the right to annul the Contract or, at its discretion to deduct from the Contract price or consideration the amount of such commission, percentage, brokerage or contingent fees. This warranty must not apply to commission's payable by contractors upon contract or sales secured or made through bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business.

Article 19: Official not to benefit

- 19.1) No officer, employee or agent of PREPA, or of the Government of the Commonwealth of Puerto Rico or Municipal Governments, shall be admitted to any share or part of this Contract or to any benefit that may arise there from, but this provision must not be construed to extend to this Contract if made with a corporation for its general benefit.
- 19.2) In addition to the restrictions and limitations established under the provisions of Act of July 24, 1985, No. 12, as amended, retired or former officers or employees of PREPA, whose work was in any way related to the award or management of contracts, shall in no way benefit from any contract with PREPA for a period of two (2) years after leaving employment with or ceasing services to PREPA.

Article 20: Conflict of Interest

- 20.1) The Contractor certifies that he does not receive payment or benefit of any nature for services rendered regularly through an appointment to a governmental agency, body, public corporation or municipality of Puerto Rico. The Contractor also certifies that he may have consulting services contracts with other governmental agencies or bodies, but such condition does not constitute a conflict of interest for the Contractor.
- 20.2) The Contractor represents conflicting interests when on behalf of a client he must contend for that which it is his duty to oppose to comply with its obligations with another previous, present or potential client. Also, the Contractor represents conflicting interests when his conduct is described as such in the canons of ethic applicable to the Contractor and his personnel or in the laws or regulations of the Commonwealth of Puerto Rico.

- 20.3) In contracts with partnerships or firms, in the event that any of the partners, directors or employees of the Contractor shall incur in the conduct described herein, said conduct shall constitute a violation to the prohibitions provided herein. The Contractor shall avoid even the appearance of the existence of conflicting interests.
- 20.4) The Contractor acknowledges that the Executive Director of PREPA must have the power to intervene the acts of the Contractor and/or its agents, employees, and subcontractors regarding the enforcement of the prohibitions contained herein. In the event that PREPA discover the existence of adverse interests with the Contractor, the Executive Director must inform the Contractor, in writing, of PREPA's intention to terminate this Contract within a thirty (30) day period. During said period, the Contractor may request a meeting with the Executive Director to present his arguments regarding the alleged conflict of interests, which meeting must be granted by PREPA in every case of alleged conflict of interests. In the event that the Contractor does not request such a meeting during the specified thirty (30) day period or the controversy is not satisfactorily settled during the meeting, this Contract must be cancelled.
- 20.5) The Contractor certifies that, at the time of award of this Contract, it does not have any other contractual relation that can enter in a conflict of interest with this Contract. The Contractor also certifies that no public employee has any personal or economical interest in this Contract.

Article 21: Claims for Labor and Materials

- 21.1) The Contractor must, at his own expense, assume the defense of and save harmless PREPA from claims for labor and materials and not suffer any mechanics or other liens to remain outstanding against any of the property used in connection with the work; and must, on request, furnish satisfactory evidence that all persons who have done work or furnished materials have been fully paid. If the Contractor fails to comply with his obligations in this respect, PREPA may take such liens or claims and may withhold from any monies due to the Contractor such amounts as may be necessary to satisfy and discharge any such claims and any cost and expenses incidental thereto.

Article 22: Unfair Labor Practice

- 22.1) In the event that the Contractor or any of his subcontractors or agents do not comply with an order issued by the Puerto Rico Labor Relations Board and/or the National Labor Relations Board upon their finding that the Contractor or any of his subcontractors or agents have committed an unfair labor practice, no further payments must be made by PREPA to the Contractor after the date of said order. In addition, the Contract may be terminated by PREPA, in which case PREPA may take possession of the materials, tools, and appliances on the job site and finish the work by whatever method it may deem expedient.

- 22.2) Any declaration by the Puerto Rico Labor Relations Board and/or by the National Labor Relation Board that the contractors or agents have not complied with an order issued by the Board relating to any unfair labor practice, must be binding, final and conclusive unless such order is reversed or set aside by a Court of competent jurisdiction.

Article 23: Assignment

- 23.1) This Contract or any interest therein or any monies due or to become due there under shall not be assigned, hypothecated or otherwise disposed of without the previous consent in writing of the Contracting Officer. Contractor is only allowed to internally assign to any of its company affiliates for its accounts receivables under this Contract without PREPA's consent. If Contractor decides to assign any due or payables, to which he is entitled for services rendered or goods provided during the term of this Contract to a different Company Affiliate or any third party, provisions in Article, Transfer of Funds, must apply

Article 24: Novation

- 24.1) The Contractor and PREPA expressly agree that no amendment or change order which could be made to this Contract, during its term, must be understood as a contractual novation, unless both parties agree to the contrary, specifically and in writing. This previous provision must be equally applicable in such other cases where PREPA gives the Contractor a time extension for the compliance of any of its obligations under the Contract or where PREPA dispenses the claim or demand of any of its credits or rights under this Contract.

Article 25: Patents and Copyrights

- 25.1) The Contractor agrees to indemnify and hold harmless PREPA from any rightful suit and/or claim of any third party that any Parts manufactured by the Contractor and furnished hereunder infringes any patent and/ or copyright of the United States. If PREPA notifies Contractor promptly of the receipt of any claim, and does not take any position adverse to Contractor regarding such Claim and gives Contractor information, assistance and exclusive authority to settle and defend the claim, Contractor must at its own expense and option either (i) settle or defend the claim or any suit or proceeding and pay all damages and costs awarded in it against PREPA, or (ii) procure for Contractor royalty – free, irrevocable, non – transferable the right to continue using the Part, or (iii) modify the Part so that it becomes non – infringing, or (iv) replace the Part with non-infringing Parts; or (v) if mutually acceptable to the Parties, remove the infringing Part and refund and/or reduce the price allocable to such part. The foregoing states the entire liability of Contractor for patent and/or copyright infringement of any Parts.
- 25.2) This must not apply to any Part which is altered, modified or manufactured exclusively to PREPA's design. With respect to any Part furnished under the Contract which is not manufactured by Contractor, only the patent and /or copyright indemnity of the manufacturer, if any, must apply. This IP Indemnity must be the sole and exclusive

remedy for any claim based on patent, trademark or copyright infringement for product or services.

- 25.3) Each party must retain ownership of all Confidential Information and intellectual property it had prior to the Contract. All new intellectual property conceived or created by Contractor in the performance of this Contract, whether alone or with any contribution from PREPA, must be owned exclusively by Contractor. PREPA agrees to deliver assignment documentation as necessary to achieve that result.

Article 26: Waivers

- 26.1) No waiver of any breach of this Contract must be held to be a waiver of any other subsequent breach.

Article 27: Disputes

- 27.1) All disputes concerning questions of fact arising under this Contract must be decided by PREPA's Generation Director within ten (10) days from the submission of the dispute by Contractor, subject to written appeal by Contractor to the Executive Director within thirty (30) days. Within 10 days thereafter, the Executive Director must inform each party hereto of his decision regarding the dispute. Contractor, at its option, may elect to accept such decision or pursue remedies at law or equity. Contractor may pursue directly the remedies at law or equity for all other disputes other than questions of fact. Notwithstanding the terms above, each party has the right at any time, at its option and where legally available, to commence an action or proceeding in a court of competent jurisdiction to apply for interim or conservatory measures, but not monetary damages.
- 27.2) In the event of a dispute arising during the warranty period, Contractor must ensure that the Performance Bond remains in full force and effect until such dispute is resolved and all obligations of Contractor under the agreement are duly performed.

Article 28: Payment to Contractor

- 28.1) Upon completion and acceptance of all work required hereunder, the amount due to the Contractor under this Contract will be paid upon the presentation of a properly executed and duly certified voucher therefore, after the Contractor must have furnished PREPA with a release, if required, or all claims against PREPA arising under and by virtue of this Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release in stated amounts to be set forth therein; provided that, the amount of such excepted claims is not included in the voucher for final payment.
- 28.2) All invoices submitted by the Contractor must be subject to PREPA's approval before being paid, and its payment must be done within sixty (60) days after the date of its approval by PREPA. All invoices submitted by the Contractor must include the Certification established in Article, Consideration, in order to proceed with its payments.

Article 29: Correction of Work after Final Payment

- 29.1) The final certificate for payment must not relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, Contractor must remedy any defects due thereto in accordance with the Warranty provisions of this Order; PREPA must give notice of observed defects with reasonable promptness. All questions arising under this Section must be decided by the Engineer, subject to appeal by the Contractor, as provided in Article, Disputes, of this Contract.

Article 30: Laws to be Observed

- 30.1) The Contractor must observe and comply with any and all Federal, Commonwealth and Municipal Laws, by-laws, ordinances, and regulations in any manner affecting the work, the equipment or the materials used in the proposed rehabilitation and/or installation or construction, and those employed on the work or the conduct of the work, and with all such orders and decrees as exist at present or may be enacted prior to the completion of the work by bodies or courts having any jurisdiction or authority over the work. The Contractor must save harmless and indemnify PREPA and its representatives officers, agents, and servants for fines, attorney's fees and penalties paid by PREPA, to governmental authorities as sole result of Contractor's violation of any such law, by-law, ordinance, regulation, order or decree, whether by himself or his employees subject to the limits of liability in Article 14.

Article 31: Change in Law

- 31.1) During the term of this Contract, any change in law, including, but not limited to changes in applicable tax law, which causes an increase in Contractor's costs when supplying the products or services to be acquired by PREPA, must be of Contractor's responsibility and PREPA must not be obliged to make additional payments nor to pay additional sums to the price or canon originally agreed for those products or services.

Article 32: Choice of Law

- 32.1) This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Puerto Rico. Also, the contracting parties expressly agree that only the state courts of Puerto Rico will be the courts of competent and exclusive jurisdiction to decide over the judicial controversies that the appearing parties may have among them regarding the terms and conditions of this Contract.

Article 33: Separability

- 33.1) If a court of competent jurisdiction declares any of the Contract provisions as null or invalid, such holding will not affect the validity and effectiveness of the remaining provisions of the Contract and the parties agree to comply with their respective obligations under such provisions not included by the judicial declaration.

Article 34: Warranty

- 34.1) The Contractor warrants to PREPA that the products must be shipped free from defects in material, workmanship and title and the services must be performed in a competent, diligent manner in accordance with any mutually agreed specifications. The foregoing warranty for Parts shall expire eighteen (18) months after the date of delivery or one (1) year after the first use of the Part, whichever occurs first, and the warranty for Services shall expire one (1) year after performance of the Service, provided that all warranties of Parts and Services shall expire no later than one (1) year after the expiration or termination of this Contract. No warranty claim shall extend the applicable warranty period.
- 34.2) If Products or Services do not meet the above warranties, PREPA must promptly notify the Contractor in writing prior to expiration of the warranty period. The Contractor must (i) at its option, repair or replace defective Products and (ii) re-perform defective Services. If despite The Contractor's reasonable efforts, a non-conforming Product cannot be repaired or replaced or non-conforming Services cannot be re-performed, the Contractor must refund or credit monies paid by PREPA for such non-conforming Products and Services. Warranty repair, replacement or re-performance by the Contractor shall not extend or renew the applicable warranty period. PREPA must obtain Contractor's agreement on the specifications of any tests it plans to conduct to determine whether a non-conformance exists.
- 34.3) The warranties and remedies are conditioned upon (a) proper storage, installation, use, operation, and maintenance of Products, (b) PREPA keeping accurate and complete records of operation and maintenance during the warranty period and providing Contractor with access to those records, and (c) modification or repair of Products or Services only as authorized by the Contractor in writing. Failure to meet any such conditions renders the warranty null and void. The Contractor is not responsible for normal wear and tear. This Article provides the exclusive remedies for all claims based on failure of or defect in Products or Services, regardless of when the failure or defect arises, and whether a claim, however described, is based on contract, warranty, indemnity, tort/extra-contractual liability (including negligence), strict liability or otherwise. The warranties provided in this Article are exclusive and are in lieu of all other warranties, conditions and guarantees whether written, oral, implied or statutory. NO IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLIES.

Article 35: Correlation of Documents

- 35.1) In case of discrepancy or in the event of conflict among the different Contract documents such as: The Contract, Special Conditions, Technical Specifications, Proposal Forms, and the Contractors Bidding Proposal, these must take precedence in the order given. The terms and conditions contained in the Contract must prevail over any conflictive terms and conditions contained in the Contractor's Bidding Proposal.

Article 36: Notice

- 36.1) PREPA agrees to give the Contractor immediate notice of any and all claims for which the Contractor may be liable, and the Contractor agrees to give PREPA immediate notice of any and all claims for which PREPA may be liable.
- 36.2) Any notice to be given hereunder must be in writing and will be sufficiently served when delivered in person or properly mailed to the following addresses:

To PREPA: Puerto Rico Electric Power Authority
PO Box 364267
San Juan, Puerto Rico 00936-4267
Attention: Eng. Daniel Hernandez Morales, Generation Division Director

Article 37: Income Tax Withholding

- 37.1) PREPA will deduct and withhold at source to the Contractor the equivalent of seven percent (7%) from payments for services rendered under this Contract, in compliance with the 1994 Puerto Rico Internal Revenue Code, section 1143, as amended. Notwithstanding, the withholding to be done by PREPA as herein stated could be increased to twenty percent (20%) in the event that the Contractor is a nonresident individual, which is a U.S. citizen, as provided by the 1994 Puerto Rico Internal Revenue Code, section 1147; or twenty nine percent (29%) in the event that the Contractor is a nonresident and non U.S. citizen individual; or a foreign corporation or partnership which is not dedicated to industry or business in Puerto Rico, as provided by the 1994 Puerto Rico Internal Revenue Code, sections 1147 and 1150.
- 37.2) If a Release Letter has been issued to the Contractor by the Treasury Department, the Contractor must be responsible to submit a copy of said Release Letter to PREPA for every calendar year, otherwise, payments under the Contract must remain subject to withholding at source. All invoices must be segregated by concepts (services, materials, equipment, etc.), to identify the amounts subject to withholding, and avoid undue deductions.

Article 38: Discrimination

- 38.1) The Contractor certifies that it is an equal opportunity employer, and does not discriminate by reason of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be victim or domestic violence, sexual aggression or harassment; for physical or mental disability or veteran status.

Article 39: Other Taxes

- 39.1) All unemployment, retirement, and other Social Security contributions and taxes; all sales, use and excise, privilege, business and occupational taxes, and any other taxes or fees payable by the Contractor are and must be included as part of his prices.

Article 40: Use of Completed Portions

- 40.1) PREPA must have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the fact that the time for completion of the entire work may not have expired, but such taking possession and use must not be deemed an acceptance of the work so taken or used or any part thereof. PREPA may require the Contractor to expedite the completion of any part of the work for provisional use by PREPA and the Contractor must comply with such request. If such order of completion or prior use increases the cost of the work or delays the work, the Contractor must be entitled to such extra compensation or extension of time as agreed by the parties.

Article 41: Quality Assurance

- 41.1) The Contractor must establish an adequate quality control program to satisfy all applicable regulation and requirements specified in the procurement documents. The program must contain all those measures necessary to assure that all basic technical requisites are fulfilled.
- 41.2) PREPA reserves the right to conduct audits and inspections to the facilities, activities, and/or documents; limited to inspection and quality control documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract; when estimated necessary in order to assure that the quality control program is adequate and is being properly implemented. The Contractor must provide PREPA access to its facilities and documents; limited to inspection and quality control documents that are strictly related to and relevant to the performance of Contractor's activities under this Contract; so that PREPA, through audits and inspections can verify the quality of the purchased products or services. PREPA is responsible for all expenses incurred in connection with any such review or audit. PREPA must not have the right to audit the derivation of any lump sum amounts.
- 41.3) In every case in which the materials or services to be furnished to PREPA are subcontracted partially or totally by the Contractor, the Contractor must request the subcontractor to accept and comply with all the requirements of this Quality Assurance Clause.

Article 42: Code of Ethics

- 42.1) Contractor agrees to comply with the provisions of Act of June 18, 2002, No. 84, which establishes a Code of Ethics for the Contractors, Suppliers and Economic Incentive Applicants of the Executive Agencies of the Commonwealth of Puerto Rico.

Article 43: Complete Agreement

- 43.1) This document, together with all attachments referenced herein, constitutes the complete Agreement between the parties.

Article 44: Transfer of Funds

- 44.1) PREPA has no legal obligation to accept Transfer of Funds Agreements between its contractors and thirds parties by reason of the goods or services rendered under this Agreement. However, the Contractor may request PREPA, in writing, the acknowledgment and acceptance of a Transfer of Funds Agreement between the Contractor and a third party, by submitting said Agreement for evaluation pursuant to the rules and procedures in force at PREPA. PREPA reserves the right to accept or not the application for the acknowledgement of the Transfer. The Assigner will pay PREPA two hundred dollars (\$200) per annum to be discounted from the first payment of the Transfer, for administrative expenses.
- 44.2) The Contractor accepts that the acknowledgment of the Transfer of Funds by PREPA will be subject to the following terms and conditions: (a) PREPA keeps its preferential right to retain and discount, from all payments owed under this Agreement, all and any sum owed by the Assigner to PREPA, all and every sum owed by the Assigner to PREPA, whether under this Agreement or under any other contract or Contract or by a right of compensation (set off) that PREPA has against the Assigner, and to apply the amount of the sum retained and discounted to its claim against the Assigner; (b) PREPA keeps its preferential right to retain and discount, from all payment due under the Agreement and payable to the Assignee, all and any sum owed to PREPA by the Assigner, including, but not limited to, any right of compensation (set off) PREPA may have against the Assigner, and apply the amount of the retained and discounted sum from its claim against the Assigner; (c) PREPA keeps its unlimited right to retain the payments in cases where:
- a) the Assignee does not comply with all the contractual obligations and responsibilities that it may have toward PREPA;
 - b) that there are in existence claims of any kind or nature from PREPA against the Assignee arising in relation to said Contract or Contract and/or in relation to any other contract between the Assigner and PREPA, including, but not limited to warranty claims of products sold or because of defects or vices on said products and/or of construction and irrespective of whether said obligations of the Assigner toward PREPA may or not be liquid and capable of being demanded.
- 44.3) The Assigner and the Assignee acknowledge and accept that it will be the Assigner's responsibility to pay the Assignee any amount of money object of the Transfer that may be received by PREPA while the debt object of the same is not covered by the Assigner. Moreover, the Assigner and the Assignee release PREPA from any claim related with said payment. The Assigner and the Assignee acknowledge and accept that in order to comply with said acknowledgment, PREPA will issue all the payments, regardless of whether said payments had been transferred or not, to the name of the Assigner and the Assignee.
- 44.4) The Assigner and Assignee acknowledge and accept that PREPA will automatically cease from having any obligation of any nature whatsoever under the transfer, in any of the following circumstances:

- a) as soon as the debt of the Assigner in favor of the Assignee has been paid by the Assigner or collected from him, even when it has not been paid in full with the transferred funds;
- b) as soon as PREPA has paid the sums owed under the contract or change of order object of this transfer;
- c) as soon as PREPA has made payments up to the amount owed under the contract or change of order object of this Transfer;
- d) as soon as a year has transpired from the due and/or payment date of any of the accounts receivable transferred by the Assigner to the Assignee, provided that within said year, the Assigner has not formulated a written statement with acknowledge receipt to PREPA claiming the payment.

44.5) The Assigner and the Assignee acknowledge and accept that it will be entirely their responsibility to request PREPA, by means of a document signed by both, to discontinue the payments to the Transfer. The Assigner and the Assignee release PREPA from any claim arising from a breach to this obligation.

Article 45: Deliveries; Title Transfer; Risk of Loss; Storage

- 45.1) For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Contractor must deliver Products to PREPA FCA Contractor's facility or warehouse (Incoterms 2010). For export shipments, Contractor must deliver Products to PREPA FCA Port of Export (Incoterms 2010). PREPA must pay all delivery costs and charges or pay Contractor's standard shipping charges plus up to twenty-five (25%) percent. Partial deliveries are permitted. Contractor may deliver Products in advance of the delivery schedule. Delivery times are approximate and are dependent upon prompt receipt by Contractor of all information necessary to proceed with the work without interruption. If Products delivered do not correspond in quantity, type or price to those itemized in the shipping invoice or documentation, PREPA must so notify Contractor within ten (10) days after receipt.
- 45.2) For shipments that do not involve export, title to Products must pass to PREPA upon delivery in accordance with Section 49.1. For export shipments from a Contractor's facility or warehouse outside the U.S., title must pass to PREPA upon delivery in accordance with Section 49.1. For shipments from the U.S. to another country, title must pass to PREPA immediately after each item departs from the territorial land, seas and overlying airspace of the U.S. The 1982 United Nations Convention of the law of the Sea must apply to determine the U.S. territorial seas. For all other shipments, title to Products must pass to PREPA the earlier of (i) the port of export immediately after Products have been cleared for export or (ii) immediately after each item departs from the territorial land, seas and overlying airspace of the sending country. When PREPA arranges the export or intercommunity shipment, PREPA will provide Contractor evidence of exportation or intercommunity shipment acceptable to the relevant tax and custom authorities.

- 45.3) Risk of loss must pass to PREPA upon delivery pursuant to Section 49.1, except that for export shipments from the U.S., risk of loss must transfer to PREPA upon title passage.
- 45.4) If any Products to be delivered under this Contract or if any PREPA equipment repaired at Contractor's facilities cannot be shipped to or received by PREPA when ready due to any cause attributable to PREPA or its other contractors, Contractor may ship the Products and equipment to a storage facility, including storage at the place of manufacture or repair, or to an agreed freight forwarder. If Contractor places Products or equipment into storage, the following apply: (i) title and risk of loss immediately pass to PREPA, if they have not already passed, and delivery must be deemed to have occurred; (ii) any amounts otherwise payable to Contractor upon delivery or shipment must be due; (iii) all expenses and charges incurred by Contractor related to the storage must be payable by PREPA upon submission of Contractor's invoices; and (iv) when conditions permit and upon payment of all amounts due, Contractor must make Products and repaired equipment available to PREPA for delivery.
- 45.5) If repair Services are to be performed on PREPA's equipment at Contractor's facility, PREPA must be responsible for, and must retain risk of loss of, such equipment at all times, except that Contractor shall be responsible for damage to the equipment while at Contractor's facility to the extent such damage is caused by Contractor's negligence.

Article 46: Confidentiality

- 46.1) Contractor and PREPA (as to information disclosed, the "Disclosing Party") may each provide the other party (as to information received, the "Receiving Party") with Confidential Information in connection with this Contract. "Confidential Information" means (a) information that is designated in writing as "confidential" or "proprietary" by Disclosing Party at the time of written disclosure, and (b) information that is orally designated as "confidential" or "proprietary" by Disclosing Party at the time of oral or visual disclosure and is confirmed to be "confidential" or "proprietary" in writing within twenty (20) days after the oral or visual disclosure. In addition, prices for Products and Services shall be considered Contractor's Confidential Information.
- 46.2) Receiving Party agrees: (i) to use the Confidential Information only in connection with the Contract and use of Products and Services, (ii) to take reasonable measures to prevent disclosure of the Confidential Information to third parties, and (iii) not to disclose the Confidential Information to a competitor of Disclosing Party. Notwithstanding these restrictions, (a) Contractor may disclose Confidential Information to its affiliates and subcontractors in connection with performance of the Contract, (b) a Receiving Party may disclose Confidential Information to its auditors, (c) PREPA may disclose Confidential Information to lenders as necessary for PREPA to secure or retain financing needed to perform its obligations under the Contract, and (d) a Receiving Party may disclose Confidential Information to any other third party with the prior written permission of Disclosing Party, and in each case, only so long as the Receiving Party obtains a non-disclosure commitment from any such subcontractors, auditors, lenders or other permitted third party that prohibits disclosure of the Confidential Information and provided further that the Receiving

Party remains responsible for any unauthorized use or disclosure of the Confidential Information. Receiving Party must upon request return to Disclosing Party or destroy all copies of Confidential Information except to the extent that a specific provision of the Contract entitles Receiving Party to retain an item of Confidential Information. Contractor may also retain one archive copy of PREPA's Confidential Information.

- 46.3) The obligations under this Article shall not apply to any portion of the Confidential Information that: (i) is or becomes generally available to the public other than as a result of disclosure by Receiving Party, its representatives or its affiliates; (ii) is or becomes available to Receiving Party on a non-confidential basis from a source other than Disclosing Party when the source is not, to the best of Receiving Party's knowledge, subject to a confidentiality obligation to Disclosing Party; (iii) is independently developed by Receiving Party, its representatives or affiliates, without reference to the Confidential Information; (iv) is required to be disclosed by law or valid legal process provided that the Receiving Party intending to make disclosure in response to such requirements or process must promptly notify the Disclosing Party in advance of such disclosure and reasonably cooperate in attempts to maintain the confidentiality of the Confidential Information.
- 46.4) Each Disclosing Party warrants that it has the right to disclose the information that it discloses. Neither PREPA nor Contractor must make any public announcement about the Contract without prior written approval of the other party. As to any individual item of Confidential Information, the restrictions under this Article must expire five (5) years after the date of disclosure. This Article does not supersede any separate confidentiality or nondisclosure agreement signed by the parties.



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

21 de diciembre de 2020

Neftalí González Cruz, Jefe
División de Suministros

Alexis Cruz Figueroa, Jefe
División Central Aguirre

Harry E. Velázquez Plaza
Jefe de Central Auxiliar, Interino
Central Ciclo Combinado

SOLICITUD ORDEN DIRECTA, PHOENIX INDUSTRIAL SALES, BOMBA DE COMBUSTIBLE WARREN UNIDAD A GAS, CENTRAL CICLO COMBINADO (MR 675959)

Solicitamos se adjudique una orden directa por \$ 102,000, sujeta a negociación, a favor de la compañía Phoenix Industrial Sales para suplir una bomba de combustible, marca Warren, a utilizarse como repuesto de una de las unidades a gas, en la Central Ciclo Combinado de Aguirre. Phoenix es el representante en Puerto Rico de Warren Pumps, fabricante de esta bomba. Todo en conformidad con el artículo 15, inciso 2c de la Ley Núm. 83 de 2 de mayo de 1941, según enmendada, las especificaciones y los términos y condiciones de la requisición 675959 y la propuesta incluida.

Los fondos para el proceso están disponibles bajo la cuenta 01-1071-35401-200-304 y el estimado 107417 del programa de Gastos de Mantenimiento Necesarios (GMN) para el año fiscal 2020-21.

La compra de este equipo es necesaria para garantizar la confiabilidad y disponibilidad de las unidades de la Central. El sistema de combustible de cada unidad cuenta con una bomba Warren para mantener la unidad en servicio. Debido al uso continuo de las unidades, en especial en horas pico, el mantenimiento de la bomba es más frecuente (e.g. cambios de aceite). Esto es indicativo de desgaste interno de los componentes, lo que podría en caso de una falla dejar la unidad no disponible por varios días. La Central no cuenta en inventario con una bomba de repuesto y la entrega de una nueva es de 20 a 22 semanas, por lo solicitamos proceder con la compra de esta lo antes posible.

APROBADO

Daniel Hernández Morales
Director de Generación





The Woodlands, Texas 8 de Enero de 2021

Ing. Harry E. Velázquez Plaza
Jefe de Central Auxiliar
Central Ciclo Combinado de Aguirre
Autoridad de Energía Eléctrica de Puerto Rico

REF.: Suministro de Equipos, Repuestos Originales de Bombas Warren Pumps

Sirva la presente para hacer de su conocimiento que la empresa Phoenix Industrial domiciliada en Puerto Rico, es nuestro unico distribuidor autorizado para la venta de partes y piezas originales, así como equipos originales de la marca Warren pumps en Puerto Rico.

Circor Industrial es dueño de la marca indicada en el párrafo anterior y Phoenix Industrial la distribuye en Puerto Rico. Las partes y piezas son fabricadas en nuestras fabricas en USA, Alemania o India. Nosotros como fabricantes solo recomendamos el uso de repuestos originales en los equipos. Phoenix Industrial es además nuestro agente autorizado para dar servicio a nuestros productos.

Les agradecemos se comuniquen con nosotros para cualquier información o cualquier asunto de interés.

Sin más a que hacer referencia,

Atentamente,

A handwritten signature in blue ink, appearing to read "Riccardo Trevisiol". The signature is stylized with a large, looped "R" and a long horizontal stroke at the end.

Ing. Riccardo Trevisiol
Director de Ventas para Latino America
México, Panamá, Venezuela y el Caribe
riccardo.trevisiol@circor.com

CIRCOR INDUSTRIAL – PUMPS

1710 Airport Road, Monroe, NC 28110-5020, USA, Tel.: 704.289.6511, www.circorpt.com

ALLWEILER® HOUTTUIN™ IMO® ROSSCOR® TUSHACO® ZENITH® WARREN®

**PHOENIX INDUSTRIAL SALES**

Po Box 363336
San Juan, Puerto Rico, USA
phone: 787-720-3322 - fax: 787-720-5960
www.phoenixindustrial.com
phoenix@phoenixindustrial.com

QUOTE

QUOTE # CG010821-PREPA-CC

Date: January 8, 2021

TO: Prepa
Planta Ciclo Combinado
Aguirre, PR
Email: HVELAZQUEZ9171@aeepr.com

ATTENTION: Harry E. Velazquez Plaza

Reference: Warren 2300 Series Model 1250 FSXA

QTY	DESCRIPTION	UNIT PRICE	LINE TOTAL
1	Warren 2300 Series Model 1250 FSXA - Bare Fuel Pump per drawing # B-2216A - GE Part # 298A7644P005	\$ 103,971.00	\$ 103,971.00
			\$ 103,971.00

Notes:

1. IVU Tax not included in above prices, please confirm Tax Exemption Certificate when ordering.
2. SC-2919 AND SC-2916 will only be accepted for exemption, please include a copy with your order.
3. For new purchase order entry use our new email: order@phoenixindustrial.com
4. For PO follow up or any PO related issue, please email to: status@phoenixindustrial.com

VALID FOR	PRICING TERMS	SHIPPING TIME	PAYMENT TERMS
30 Days	Delivered Jobsite	28-30 Weeks	Net 30 Days

Quotation prepared by: Carlos A. Garcia
Vice-President, Sales

**Puerto Rico Electric Power Authority
Aguirre Combined Cycle Plant**

**Technical Specifications
Terms and Conditions**

MR #: 675959
Equipment: Fuel Oil Warren Pump for MS7001B Gas Turbine
Specification: New Pump

Article 1: Scope of Work

- 1.1) This specification covers the minimum requirements for the design and manufacture of **one (1) new Warren Fuel Oil Pump** to be used on a MS7001B General Electric's Gas Turbine. It's the Contractor's responsibility to supply the indicated parts to meet all the requirements specified below, all in strict accordance with the provisions of this Order, including the attached notes, terms, conditions, specifications and Contractor's Proposal, all of which are hereby made a part hereof.
- 1.2) Contractor's Scope includes:
 - a) Design, manufacture and deliver in the specified time the indicated equipment.
- 1.3) Pump Data
 - a) Type: Screw Pump, Positive Displacement
 - b) Model: Warren Model B-2216A-1250 (No substitution permitted)
 - c) Suction Lift: Flooded
 - d) Discharge Pressure: 1000 Psig
 - e) Flow (GPM): 166
 - f) RPM: 1206

Article 2: Definitions

Whenever the words defined in this article or pronouns used instead are mentioned in this Order, they shall have the meanings here given:

- 2.1) The word "PREPA" shall mean the Puerto Rico Electrical Power Authority and all his corresponding Divisions.
- 2.2) The word "Engineer" shall mean the Head of Maintenance of Combined Cycle, PREPA, acting directly or through his properly authorized representatives.
- 2.3) The word "Contracting Officer" shall mean the Head Materials Management Division, acting directly or through his properly authorized representatives.
- 2.4) The word "Order" shall mean, collectively, all the covenants, terms, and stipulations in these articles of agreement and in all supplementary documents hereto attached

Specifications, Terms and Conditions

MR # 675959

Page 2 of 5

which constitute essential parts of the Order and are hereby made part thereof, to wit:

- a) Purchase Order
- b) Terms and Conditions
- c) Technical Specifications

- 2.5) The word "Contractor" designates the company that will perform all works as defined in the Order and the Special Conditions and Specifications contained in it.

Article 3: Consideration

- 3.1) This Order is a lump sum price and the price quoted in the Proposal shall constitute full compensation for all engineering, manufacturing, cost of all insurance, profit, Contractor's overhead, and all other work satisfactorily in accordance with this Order.
- 3.2) In accordance with the terms and conditions contained herein, PREPA agrees to pay and the Contractor accepts, as full payment for the complete performance of this Order, plus any additional amount to be paid due to extra work ordered and accepted by the Contracting Officer and the Engineer, according to Changes and/or Extra Work Article, below.
- 3.3) Contractor shall submit its invoices for work already done according to the payment schedule approved by the Engineer, together with the technical supporting documents of required tests. Invoices for payment shall be submitted in triplicate, and are payable within sixty (60) days after receipt of invoice.

Article 4: Commencement and Completion of Work

- 4.1) Delivery time preferred by PREPA to manufacture and deliver the equipment is within 20 to 22 consecutive weeks.

Article 5: Suspension of Work

- 5.1) The Contracting Officer or the Engineer may, at any time, suspend the whole or any portion of the work under this Order, but this right to suspend the work shall not be construed as denying Contractor actual reasonable, and necessary expenses due to delays, caused by such suspension, it being understood that expenses will not be allowed for such suspension when ordered by the Contracting Officer or the Engineer on account of a Force Majeure Event, as defined in Force Majeure Article, herein.

Specifications, Terms and Conditions

MR # 675959

Page 3 of 5

- 5.2) The cause of such suspension shall be put in writing by the Contracting Officer or the Engineer within two (2) working days after the suspension or as soon as practicable.

Article 6: Changes and/or Extra Work

- 6.1) PREPA may, at any time, make changes or order extra work within the Scope of Work contracted, subject to previous written acceptance by PREPA's Engineer. If such changes or extra work require a price and/or schedule revision, such revision(s) shall be negotiated and agree in writing by both parties before the commencement.

Article 7: Time Extensions

- 7.1) Contractor shall apply for time extensions for construction changes, unforeseeable causes, changed conditions, etc., as indicated throughout the Specification only if the schedule of proposed progress is affected, under no circumstances shall the Engineer consider applications for extra time if the master schedule is not clearly affected.

Article 8: Force Majeure

- 8.1) The parties hereto shall be excused from performing hereunder and shall not be liable in damages or otherwise, if and only to the extent that they shall be unable to perform, or are prevented from performing by a Force Majeure event. For purposes of this Order, Force Majeure means any cause without the fault or negligence, and beyond the reasonable control of, the party claiming the occurrence of a Force Majeure event.
- 8.2) Force Majeure may include, but not be limited to, the following: Acts of God, industrial disturbances, acts of the public enemy, war, blockages, boycotts, riots, insurrections, epidemics, earthquakes, storms, floods, civil disturbances, lockouts, fires, explosions, interruptions of services due to the acts or failure to act of any governmental authority, provided that these events, or any other claimed as a Force Majeure event, and/or its effects, are beyond the reasonable control and without the fault or negligence of the party claiming the Force Majeure, and that such party, within ten (10) days after the occurrence of the alleged Force Majeure, gives the other party written notice describing the particulars of the occurrence and its estimated duration. The burden of proof as to whether a Force Majeure has occurred shall be on the party claiming the Force Majeure.

Article 9: Termination

- 9.1) Notwithstanding anything to the contrary in this Order regarding its term, PREPA may, at any moment, terminate, cancel or accelerate its expiration, after giving

Specifications, Terms and Conditions

MR # 675959

Page 4 of 5

Contractor a not less than thirty (30) days prior notice, when in PREPA's judgment such action responds to PREPA's best interest. Provided that, in the event Contractor fails to comply with any of its obligations under the Order, PREPA may declare an immediate Order termination, cancellation or rescission, without prior notice to Contractor. The exercise of its right to terminate, cancel or rescind the Order shall not be understood as a waiver by PREPA to any other remedy it may have under this Order or under the law for delays or breach incurred by Contractor in the performance of its obligations under the Order.

- 9.2) If PREPA terminate the Order and take possession of the premises, and of all materials, tools, and appliances thereon, and finish the work by whatever method it may deem expedient. In such a case, Contractor shall no be entitled to receive any further payment until the work is finished. If the unpaid balance of the Order price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor shall pay the difference to PREPA. The expense incurred by PREPA as herein provided, and the Engineer shall certify the damage incurred through Contractor's default.

Article 10: Liabilities

10.1) Civil Responsibility

The appearing Parties agree that their responsibilities for damages under this Order will be governed by the Puerto Rico Civil Code and its case law, as dictated by the Supreme Court of Puerto Rico. Notwithstanding, the total liability of the Contractor for all claims arising out of or relating to the performance or breach of the Contract or use of any Parts, Products or Services or any order **shall not exceed the Order price.** Contractor's liability shall terminate upon the expiration of the applicable warranty period, provided that PREPA may enforce a claim that accrued prior to that date by commencing an action, as applicable under Article 12, Disputes, before the expiration of the applicable statute of limitations or repose, but not later than one (1) year after the expiration of such warranty period.

The Contractor shall not be responsible for loss of profits or revenues, indirect or consequential damages that may occur in relation to the work performed under this Contract.

Article 11: Disputes

- 11.1) Except as otherwise specifically provided in this Order, all disputes concerning questions of fact arising under this Order shall be decided by the Engineer, subject to written appeal by the Contractor within thirty (30) days to the Contracting Officer. As soon as practicable thereafter, the Contracting Officer shall inform each party

Specifications, Terms and Conditions

MR # 675959

Page 5 of 5

hereto of his decision regarding the dispute, which decision shall be final and conclusive upon the parties hereto, unless such decision is challenged on the basis of being arbitrary, malicious or capricious. If such challenge is made, either party may pursue its remedy at law or equity. In the meantime, the Contractor shall diligently proceed with the work as directed.

Article 12: Warranty

- 12.1) The Contractor warrants that all materials, parts, equipment used, and work performed under this Order comply in all respect with its terms and conditions; that they are free from any and all latent and patent defects in design, materials, and workmanship; that they are suitable and adequate for the purposes for which they were designed and for such other purposes, if any, as are specified in the Order, and that the services provided under this Order will conform with the highest standards of care and practice appropriate to their nature.
- 12.2) The warranty period will begin the date once PREPA accepts the service and/or installation of the contracted product within 60 calendar days, and will continue for a period of eighteen months in storage or one year in operation.
- 12.3) For those materials, parts, equipment, which proves defective or deficient during the warranty period, the Contractor shall, at his own expense, repair or replace, transport-in, from Contractor's facilities to PREPA's site, and transport-out, from PREPA's site to Contractor's facilities, such materials, parts, and/or equipment.



GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

SF. 312466

DE-312281

11 de febrero de 2021

Neftalí González Cruz, Jefe
División de Suministros

Alexis Cruz Figueroa, Jefe
Complejo Generatriz Aguirre

Harry E. Velázquez Plaza
Jefe de Central Auxiliar, Interino
Central Ciclo Combinado de Aguirre

CERTIFICACIÓN DE FONDOS ORDEN 89287, PHOENIX INDUSTRIAL SALES INC.,
BOMBA DE COMBUSTIBLE WARREN UNIDAD A GAS, CENTRAL CICLO COMBINADO
DE AGUIRRE

Adjudicamos mediante negociación directa la orden 89287 a Phoenix Industrial Sales por \$99,971. Esto, para suplir una bomba de combustible Warren, que utilizaremos como repuesto de una de las unidades a gas de la Central Ciclo Combinado de Aguirre. Phoenix es el representante en Puerto Rico de Warren Pumps, manufacturero de esta bomba.

La compra de este equipo es necesaria para garantizar la confiabilidad y disponibilidad de las unidades de la Central. El sistema de combustible de cada unidad cuenta con una bomba para mantenerla en servicio y no contamos en inventario con una bomba de repuesto. Debido al uso continuo de las unidades, en especial en horas pico, el mantenimiento de la bomba es más frecuente, como por ejemplo el cambio de aceite. Esto es indicativo del desgaste interno de los componentes, lo que en caso de una falla podría dejar la unidad no disponible por un tiempo indefinido.

Incluimos la Certificación de Fondos bajo la cuenta 01-1071-34501-200-304 y el estimado 107417 del Programa de Gastos de Mantenimiento Necesarios (GMN) de la Central para el año fiscal 2020-21.

De necesitar información adicional, puede comunicarse por el 3728.

Coordinado

Daniel Hernández Morales
Director de Generación





Autoridad de Energía Eléctrica de Puerto Rico

CERTIFICACIÓN DE FONDOS DE
CONTRATOS POR SERVICIOS PROFESIONALES

SF- 312466

2021 FEB 18 PM 4:05

PRE. Y MED. UNAS CAP.

Número de Responsabilidad: 304 Nombre de Responsabilidad: Central Ciclo Combinado de Aguirre

Se incluye copia del Contrato descrito a continuación:

Nombre del Contratista o Compañía: Phoenix Industrial Sales Inc.

Número del Contrato: 89287 Número de Cuenta: 01-1071-34501-200-304 Año Fiscal: 2020-21
Número de Estimado: 107417

Cantidad: \$99,971 Fecha de Comienzo: aprobación orden Fecha de Terminación: 6/30/2021

Certificamos que no se proyectó sobregiro presupuestario y se posee capacidad financiera para cubrir esta transacción. Este contrato está en cumplimiento con el Inciso G de la Carta Circular de la Oficina de Gerencia y Presupuesto Núm. 117-14 del 1 de julio de 2014.

1. Requerido por:

Firma:

Nombre: Harry E. Velázquez Plaza

Título: Jefe de Central Auxiliar, Int.
Central Ciclo Combinado de Aguirre

Fecha: 2/12/21

2. Aprobado por el Director Correspondiente:

Firma:

Nombre: Daniel Hernández Morales

Título: Director de Generación

Fecha: 25/2/21

3. Recomendado por el Departamento de Presupuesto:

Firma:

Nombre: Lizzandra Matias Varela

Título: Contralora, Interina

Fecha: 1 de marzo de 2021

4. Aprobado por el Director de Finanzas:

Firma: _____

Nombre: Nelson Morales Rivera

Fecha: _____

Todo contrato por servicios profesionales con una cuantía sobre cien mil dólares (\$100,000), debe presentarse para la aprobación de la Junta de Gobierno, según la Norma Sobre Niveles de Aprobación de Documentos de la Autoridad de Energía Eléctrica de Puerto Rico.

Aprobado por la Junta de Gobierno:

Firma: _____

Nombre: _____

Fecha: _____



16-312281



**SOLICITUD DE AUTORIZACIÓN DEL DIRECTOR EJECUTIVO PARA OTORGAR
CONTRATOS/ÓRDENES DE COMPRA/ÓRDENES DE SERVICIO DE \$10,000 O MÁS**

1. Fecha de la solicitud: 3 de marzo de 2021
2. Directorado u Oficina: Directorado de Generación, Central Ciclo Combinado de Aguirre
3. Director o Administrador: Daniel Hernández Morales
4. Tipo de Contrato: (Ej. Servicios Legales) Compra material no codificado
5. Naturaleza del Contrato: ☒ Nuevo ☐ Enmienda ☐ Renovación
6. Contratista: Phoenix Industrial Sales, Inc.
7. Representante Autorizado del contratista: Carlos García
8. Método de selección del contratista: Adjudicación Directa / Único Suplidor / Distribuidor Exclusivo
9. Cuantía solicitada: \$99,971.00
10. Ámbito de servicios y justificación del contrato: Orden de Compra 00089287 para adquirir una bomba de combustible, marca Warren, a utilizarse como repuesto de una de las unidades a gas, en la Central Ciclo Combinado de Aguirre.
11. Favor de completar los encasillados 11(a, b, c y d) únicamente en caso de que esta solicitud sea para una enmienda al contrato que conlleve un aumento en cuantía:
 - a. ¿Esta solicitud corresponde a la primera petición de enmienda al contrato original? ☐ Sí ☐ No
 - b. Justificación para la solicitud de aumento en cuantía incluida en esta solicitud: N/A
 - c. Historial del contrato (En los siguientes tres encasillados, no incluir la cuantía solicitada):
 - (1) Cuantía del contrato original: \$ N/A
 - (2) Cuantía total de enmiendas autorizadas previamente: \$ N/A
 - (3) Total autorizado (Suma de los dos encasillados anteriores): \$ N/A
 - d. Número del contrato original: N/A
12. Partida presupuestaria: 01.1071.34501.200.304.100000107417
13. Procedencia de los fondos: ☐ Estatales ☐ Federales ☐ Fondos Mixtos ☒ Ingresos Propios
14. Vigencia del contrato: Desde su adjudicación, hasta el 06.30.2021
15. ¿La Autoridad tiene otro contrato vigente con el contratista incluido en esta solicitud? ☒ Sí ☐ No
16. De tener otro contrato, favor de especificar:
Núm.: Ver documento adjunto Cuantía: \$ Vigencia: Desde: Hasta:
Tipo de servicios: Ver documento adjunto
17. Se incluye Certificación de Fondos aprobada por el Directorado de Finanzas el 1 de marzo de 2021

Recomendado:

Fernando Padilla 3.4.21
Subdirector Ejecutivo

Aprobado:

Efran Paredes Maisonet
Director Ejecutivo

CERTIFICACIÓN

Yo, Daniel Hernández Morales (nombre del Director o Administrador), de la Autoridad de Energía Eléctrica de Puerto Rico, certifico que he revisado los documentos y detalles del contrato cuya autorización solicito. Por lo tanto, certifico:

1. Que el contrato cuya autorización solicito es cónsono con la política pública de control de gastos y buen uso de fondos públicos establecida por el Gobernador de Puerto Rico, honorable Pedro R. Pierluisi Urrutia;
2. Que el Directorado u Oficina que dirijo cuenta con disponibilidad de fondos para el otorgamiento del contrato cuya autorización solicito;
3. Que la contratación cuya autorización solicito no representará sobregiro presupuestario para el Directorado u Oficina que dirijo;
4. Que el servicio o producto objeto del contrato cuya autorización solicito representa una actividad y un gasto permisible dentro de las normativas locales y federales;
5. Que las cuantías del contrato cuya autorización solicito son razonables tomando en cuenta el servicio o la industria;
6. Que el contrato cuya autorización solicito no representa duplicidad innecesaria;
7. Que el contrato cuya autorización solicito no representa un servicio para el cual la entidad que dirijo cuenta con personal en nómina disponible para realizar el trabajo que intereso contratar;
8. Que el otorgamiento del contrato cuya autorización solicito cumple con las disposiciones de la Ley Pública Número 187 de 30 de junio de 2016, conocida como "Ley de Supervisión, Administración y Estabilidad Económica de Puerto Rico" (PROMESA, por sus siglas en inglés), y la reglamentación y procesos establecidos por la Junta de Supervisión y Administración Financiera para Puerto Rico respecto a la contratación gubernamental, de ser aplicable;
9. Que, durante el proceso previo al otorgamiento del contrato, cumplimos con las normativas internas aplicables y cumpliremos con los procedimientos y normativas correspondientes para su otorgamiento;
10. Que se verificó el estatus del contratista en el "System for Award Management", en caso de ser una contratación con fondos federales;
11. Que, conforme a mi mejor conocimiento, entiendo que ningún funcionario o empleado público del Directorado u Oficina que dirijo tiene interés pecuniario alguno, directo o indirecto, sobre las ganancias o beneficios producto del contrato cuya autorización solicito;
12. Que la Solicitud de Autorización responde única y exclusivamente a la necesidad del servicio en el Directorado u Oficina que dirijo y no a intereses ajenos a esta, al fin público o a presiones o solicitudes por parte de alguna persona dentro o fuera del Gobierno de Puerto Rico;
13. Que he leído y conozco las disposiciones de la Ley Núm. 1-2012, según enmendada, conocida como "Ley de Ética Gubernamental de Puerto Rico de 2011", y que el otorgamiento del contrato cuya autorización solicito no representa una contravención a alguna de sus disposiciones;
14. Que he leído y conozco las disposiciones de la Ley Núm. 2-2018, según enmendada, conocida como "Código Anticorrupción para un Nuevo Puerto Rico", y que el otorgamiento del contrato cuya autorización solicito no representa una contravención a alguna de sus disposiciones;
15. Que al momento no cuento con información o creencia relacionada con la persona natural o jurídica parte del contrato cuya autorización solicito que demuestre o brinde algún indicio de actividad ilegal o antiética, conforme a la normativa estatal o federal;
16. Que la contratación cuya autorización solicito cumple con todas las leyes, órdenes, reglamentos, cartas circulares y demás normativas aplicables a la contratación gubernamental en Puerto Rico;
17. Que toda la información incluida en la Solicitud de Autorización y certificada mediante mi firma es una condición esencial para la autorización de la contratación que solicito y que, de no ser correcta, en todo o en parte, tal circunstancia será suficiente para dejar sin efecto su autorización;
18. Que cuento con un documento (ej. certificación, declaración jurada) en el que la persona natural o jurídica parte del contrato cuya autorización solicito consigna que ella o él, o alguno de los oficiales de la persona jurídica, no ha sido convicta a nivel estatal o federal por atentar contra el interés público y que, al momento de emitir el referido documento, no tiene conocimiento de que esté siendo investigada por alguna entidad estatal o federal;
19. Que entiendo cabalmente y reconozco las consecuencias jurídicas, éticas, penales o administrativas de esta Certificación en caso de que su contenido sea falso.

Y para que así conste firmo hoy, 3/3/2024.



(Director o Administrador)



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00089287**Revision :****Release :****Printed :** 03/16/2021**Page :** 1**Please Direct Inquiries to:**

YADIRA L. LUGO-CORDERO
Y-LUGO@AEEPR.COM

Title: PROCUREMENT SUPV**Phone:** (787) 521-3235**Vendor:**

CARLOS GARCÍA
PHOENIX INDUSTRIAL SALES INC
PO BOX 363336
SAN JUAN PR 00936-3336

Payment Terms	%	Days	Net	30 Days	Transit Type
ERS N	Reference Contract				Carrier Name
	FOB	DELIVERED	DUTY	PA	FOB Point
					MECÁNICA, CICLO AG

Primary Ship To: CENTRAL AGUIRRE
BO. MONTESORIA KM. 152.3
APARTADO 137
AGUIRRE PR 00704

Attention: JEFE SECCION MECANICA

Instructions: WARREN PUMP MODEL 1250 FSXA
SE ADJUDICA ORDEN DIRECTA DE ACUERDO A
NUESTRAS ESPECIFICACIONES, TÉRMINOS Y
CONDICIONES SOLICITADOS, NEGOCIADOS Y
ACEPTADOS POR LA COMPAÑÍA EN EL RFQ
53890 REQ. NÚM: 224469 MR: 599925

SE INCLUYE ANEJO A - CLÁUSULAS SEGÚN
ORDEN EJECUTIVA OE 2021-003 Y CARTA
CIRCULAR 001-2021 DE LA OGP

LUGAR DE ENTREGA: SECCIÓN MECÁNICA
CENTRAL AGUIRRE
PERSONA CONTACTO: HIRAM BERNIER
SUPERVISOR DE ALMACÉN
TELÉFONO: 787.521.3952 / 3854

ISTRUCCIONES DE ENTREGA
HORARIO DE ENTREGA:



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00089287**Revision :****Release :****Printed :** 03/16/2021**Page :** 2

LUNES A VIERNES

7:30A A 11:00A Y 12:30P A 3:30P

SUPLIDOR: PHOENIX INDUSTRIAL SALES INC
TELÉFONO: 787.720.3322

COMPRADORA: YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
EMAIL: YADIRA.LUGO@AEEPR.COM

Fac	Standard Name	Rev	S/P	Text	Header	Terms and Conditions	-	Text at End
	PH000001	004	S	Y	EQUAL OPPORTUNITY			
	PH000003	001	S	Y	PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS			
	PH000007	004	S	Y	APPLICABLE LAW			
	PH000032	009	S	Y	DELIVERY			
	PH000039	008	S	Y	PRICE & PAYMENT			
	PH000056	008	S	Y	TAXES AND DUTIES			
	PH000079	001	S	Y	QUALITY STANDARDS AND WARRANTIES 1			

Line	Quantity	UP	Item Description	Unit Price	Extension
------	----------	----	------------------	------------	-----------

0001	1	EA	Catalog ID:	\$99,971.000000	\$99,971.00
------	---	----	-------------	-----------------	-------------

TAXABLE

Schedule:	Quantity	1	Delivery Date	09/09/2021
	Transit Type		Carrier Name	
	FOB	DELIVERED DUTY PA	FOB Point	MECÁNICA, CICLO AG

Description: GT MS7001B FUEL PUMP, WARREN 2300
SERIES MODEL 1250 FSXA ALL
ACCORDING TO INCLUDED SPECIFICATIONS
AND TERMS
SPECIFICATIONS AND REQUIREMENTS:
1) COMPRESSOR TO BE INSTALLED ON MS7001B
GENERAL ELECTRIC GAS TURBINE
2) ORIGINAL GE PN 302A1537P005, ASSEMBLY
0806993G07 (ATLAS COPCO SCF-6 MODEL)
DIRECT REPLACEMENT ACCEPTED
NO MODIFICATIONS TO EXISTING PIPING
OR CONNECTIONS ALLOWED
3) CAPACITY: 558 ACFM



PURCHASE ORDER

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Purchase Order : 00089287

Revision :

Release :

Printed : 03/16/2021

Page : 3

- 4) INLET PRESSURE: 149 PSIA
 - 5) DISCHARGE PRESSURE: 261 PSIA
 - 6) INLET TEMPERATURE: 225 DEG F
- ONLY NEW EQUIPMENTS ACCEPTED,
NO REFURBISHED

Purchase Order Total Amount

TOTAL THIS PO: \$99,971.00

AUTHORIZED SIGNATURE

Yadira L. Lugo Cordero
Yadira L. Lugo Cordero
Supervisora de Compras

03.16.2021

Fac Standard Name Rev Terms and Conditions
PH000001 004 EQUAL OPPORTUNITY
EQUAL OPPORTUNITY.

By accepting this Purchase Order, the Seller certifies that it will not discriminate on the basis of race, color, national origin, sex, religion, age, disability, veteran status or in any way otherwise prohibited by law and will indemnify Buyer against any claims arising from such unlawful discrimination by Seller.

PH000003 001 PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS
PACKAGING, SHIPPING AND INVOICING INSTRUCTIONS

1. Receiving Documentation must be included with all Purchase Order deliverables.

2. All Receiving Documentation and shipping notices must include reference to the Purchase Order number and any applicable item number(s).

3. Each invoice must include the Purchase Order number and any applicable item number, receipted expense bill, and description shown on this Purchase Order. Delays in receiving invoices and errors or omissions on invoices shall be just cause for Buyer's withholding of payment, without loss of cash discount privilege.

PH000007 004 APPLICABLE LAW



GOBIERNO DE PUERTO RICO

Autoridad de Energía Eléctrica de Puerto Rico

ANEJO A / ANNEX A

ORDEN EJECUTIVA OE-2021-003 / CARTA CIRCULAR NÚM. 001-2021 OGP EXECUTIVE ORDER OE-2021-003 / CIRCULAR LETTER NO. 001-2021 OGP

CLÁUSULAS PARA TODA ORDEN DE COMPRA / SERVICIOS / CONTRATOS

CLÁUSULA DE SERVICIOS INTERAGENCIALES / INTERAGENCY SERVICES CLAUSE

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARÍA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARÁN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO.

BOTH PARTIES ACKNOWLEDGE AND AGREE THAT THE CONTRACTED SERVICES HEREIN MAY BE PROVIDED TO ANY ENTITY OF THE EXECUTIVE BRANCH WHICH ENTERS INTO AN INTERAGENCY AGREEMENT WITH THE CONTRACTING ENTITY (PREPA)- OR BY DIRECT PROVISION OF THE OFFICE OF THE CHIEF OF STAFF OF THE GOVERNOR OF PUERTO RICO (SECRETARÍA DE LA GOBERNACIÓN). THESE SERVICES WILL BE PERFORMED UNDER THE SAME TERMS AND CONDITIONS REGARDING HOURS OF WORK AND COMPENSATION SET FORTH IN THIS CONTRACT.

CLÁUSULA DE TERMINACIÓN / TERMINATION CLAUSE

LA SECRETARÍA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTATO EN CUALQUIER MOMENTO.

THE CHIEF OF STAFF HAS THE AUTHORITY TO TERMINATE THIS CONTRACT AT ANY TIME.

POLÍTICA DE REVISIÓN DE CONTRATOS DE LA JUNTA DE SUPERVISIÓN Y ADMINISTRACIÓN FINANCIERA PARA PUERTO RICO / CONTRACT REVIEW POLICY OF THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO

LAS PARTES RECONOCEN QUE EL CONTRATISTA A HA PRESENTADO LA CERTIFICACIÓN TITULADA "REQUISITO DE CERTIFICACIÓN DEL CONTRATISTA" REQUERIDA DE CONFORMIDAD CON LA POLÍTICA DE REVISIÓN DE CONTRATOS DE LA JUNTA DE SUPERVISIÓN Y ADMINISTRACIÓN FINANCIERA PARA PUERTO RICO, VIGENTE A PARTIR DEL 6 DE NOVIEMBRE DE 2017 Y SEGÚN ENMENDADA EL 30 DE OCTUBRE DE 2020, FIRMADA POR EL DIRECTOR EJECUTIVO DEL CONTRATISTA (U OTRO FUNCIONARIO CON UNA POSICIÓN O AUTORIDAD EQUIVALENTE PARA EMITIR TALES CERTIFICACIONES). SE INCLUYE COMO ANEJO A ESTE CONTRATO, COPIA FIRMADA DEL "REQUISITO DE CERTIFICACIÓN DEL CONTRATISTA".

THE PARTIES ACKNOWLEDGE THAT THE CONTRACTOR HAS SUBMITTED THE CERTIFICATION TITLED "CONTRACTOR CERTIFICATION REQUIREMENT" REQUIRED IN ACCORDANCE WITH THE CONTRACT REVIEW POLICY OF THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO, EFFECTIVE AS OF NOVEMBER 6, 2017 AND AMENDED ON OCTOBER 30, 2020, SIGNED BY THE CONTRACTOR'S EXECUTIVE DIRECTOR (OR ANOTHER OFFICIAL WITH AN EQUIVALENT POSITION OR AUTHORITY TO ISSUE SUCH CERTIFICATIONS). A SIGNED COPY OF THE "CONTRACTOR CERTIFICATION REQUIREMENT" IS INCLUDED AS AN ANNEX TO THIS CONTRACT.



GOVERNMENT OF PUERTO RICO
PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU

CASE NO. NEPR-MI-2021-0002

Attachment B
Works Approved by the Energy Bureau for the Aguirre Combined Cycle Permanent Repairs

No.	File (pdf)	Work Name	Work Description	Estimated cost	Status	Order or Contract	Supplier	Amount	FY 2021-22	FY 2022-23
36	36	Procurement of Stages 1, 2, 3 Turbine Rotor Bucket Set	Buy rotor buckets for spare turbine rotor at Allied Power Group facilities in Houston, TX. Complete rotor is necessary in case replacement is needed during 2022 HGP inspections (Units 1-1 or 1-2)	\$ 750,000.00	PO awarded to supply Stage 2 and 3 refurbished rotor buckets. PREPA has a Stage 1 set on stock. Delivery for mid february.	91906	Serpaga Inc. / Trinity Turbine Technologies	\$ 497,267.00	\$ 497,267.00	0
37	37	New Water Condensate Tank	Removal of existing steel water condensate storage tank. Design and Build of a new 287,000 gallons steel water condensate storage tank, including interior and exterior coating application, instrumentation system for reading water levels and improvements to the existing tank's concrete base.	\$ 1,000,000.00	CR 208719 in process with an estimate of \$400,000. Pre-bid for RFP-2996 opened on 1/21/21. Bidders submitted their questions. Project on hold due to budget constraints			\$ 1,000,000.00	\$ -	\$ 1,000,000.00
38		Major inspection Unit 1-3		\$ 2,599,971.00						
	38.1		Remove turbine rotor for repair and balance, including rotor buckets	\$ 340,000.00	Contract Requisition (CR) 246552 direct negotiation with OEM completed	pending	Caribe GE Energy	\$ 340,000.00	\$ 187,000.00	\$ 153,000.00
			Supply new turbine casing shrouds	\$ 320,000.00	Waiting for proposal for new shrouds (direct)		Caribe GE Energy	320,000.00	320,000.00	-
	38.3		Remove, inspect & repair turbine nozzles Replace with refurbished components (available on stock)	\$ 350,000.00	RFP for CR 254698 in process			350,000.00	-	350,000.00
	38.4		Remove & repair transition pieces set	\$ 100,000.00	RFP for CR 254742 in process			100,000.00	100,000.00	-
	38.5		Supply new fuel oil pump	99,971.00	Equipment received on Jan 2022	89287	Phoenix Industrial / Warren Pumps	99,971.00	99,971.00	-
			Inspect & repair (includes coating) of compressor rotor	\$ 340,000.00	Waiting for proposal for new shrouds (direct)		Caribe GE Energy	340,000.00	187,000.00	153,000.00
			Inspect & repair (includes coating on site) of compressor stator	\$ 300,000.00	Waiting for proposal for work on site (direct)		ARG Precision / Praxair Surface Tech.	300,000.00	300,000.00	-
			Supply resources and equipment to remove, inspect, repair & reinstall generator rotor	\$ 350,000.00	CR in process			350,000.00	175,000.00	175,000.00
			Supply resources & equipment for GT assembly	\$ 400,000.00	CR in process			400,000.00	-	400,000.00

CASE NO. NEPR-MI-2021-0002

Attachment B
Works Approved by the Energy Bureau for the Aguirre Combined Cycle Permanent Repairs

No.	File (pdf)	Work Name	Work Description	Estimated cost	Status	Order or Contract	Supplier	Amount	FY 2021-22	FY 2022-23
39		Hot Gas Path Inspection Works Unit 2-4		\$ 775,250.00						
	39.1		Supply resources & supervison for HGPI	\$ 330,000.00	Completed on 12/17/21	90566	Pro-Energy Corp.	\$ 330,000.00	\$ 330,000.00	-
	39.2		Repair transition pieces set	89,896.00	Component installed on Nov 2021	89529	Mechanical Dynamic & Analysis (MD&A)	89,896.00	89,896.00	-
	39.3		Repair Stage 1 Nozzle	116,179.00	Component installed on Nov 2021	88564	EthosEnergy	116,179.00	116,179.00	-
	39.4		Repair combustion liners sets (4)	159,175.00	Sets received (3 of 4)	89307	Allied Power / PSM	159,175.00	159,175.00	-
	39.5		Supply MCC Transformer: 500KVA, 13.8KV/480V	80,000.00	RFQ for MR pending			80,000.00	-	80,000.00
40		Hot Gas Path Inspection Works Unit 1-1		\$ 585,000.00						
			Supply resources & supervison for HGPI	\$ 360,000.00	RFP for CR in process			\$ 360,000.00	\$ 360,000.00	-
	40.1		Repair transition pieces set	71,000.00	PO awarded, delivery expected february 2022	91119	Mechanical Dynamic & Analysis (MD&A)	71,501.00	71,501.00	-
	40.2		Repair Stage 1 Nozzle	154,000.00	PO awarded, delivery expected april 2022	91662	Allied Power / GT Bars	154,000.00	154,000.00	-
40		Hot Gas Path Inspection Works Unit 1-2		\$ 675,000.00						
			Supply resources & supervison for HGPI	\$ 400,000.00	RFP for CR on hold			\$ 400,000.00	\$ -	\$ 400,000.00
			Repair transition pieces set	100,000.00	RFP for CR on hold			100,000.00	-	100,000.00
			Repair Stage 1 Nozzle	175,000.00	RFP for CR on hold			175,000.00	-	175,000.00

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



Aguirre Steam Plant
Permanent Repairs

12/24/2021



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Purchase and Installation of Breakers 480v for Central Aguirre U.2
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Aguirre Steam Plant, Unit 2	[REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

After an inspection of Central Aguirre unit 2 equipment, it was determined that the existent Allis Chalmers breakers should be replaced for 480v breakers. These breakers are used for the protection of auxiliary equipment in unit 2.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the acquisition and installation of 480v breakers in unit 2 of Aguirre Steam Plant will consist of the following:

- Supply the replacement breakers for the Allis Chalmers LA type breakers on 480v Normal Bus.



- Breakers models to supply:
 - (1) LA600-AR600NM (E/O) 520MC LSI (ARMS CAPABLE) --- 12 EA
 - (2) LA1600-AR160M (E/O) 520MC LSI (ARMS CAPABLE) -- 1 EA
- Each breaker includes the following:
 - (1) A new door and cassette is included
 - (2) 520 LSI trip unit or the 520MC LSI (ARMS Capable) and are Mechanically Operated(M/O)
- Complete turnkey installation services or supervisory services.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?



4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE 7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Purchase and Installation	\$350,115.05
Total Project Estimated Cost	\$350,115.05



Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature



Section 10. Attachments

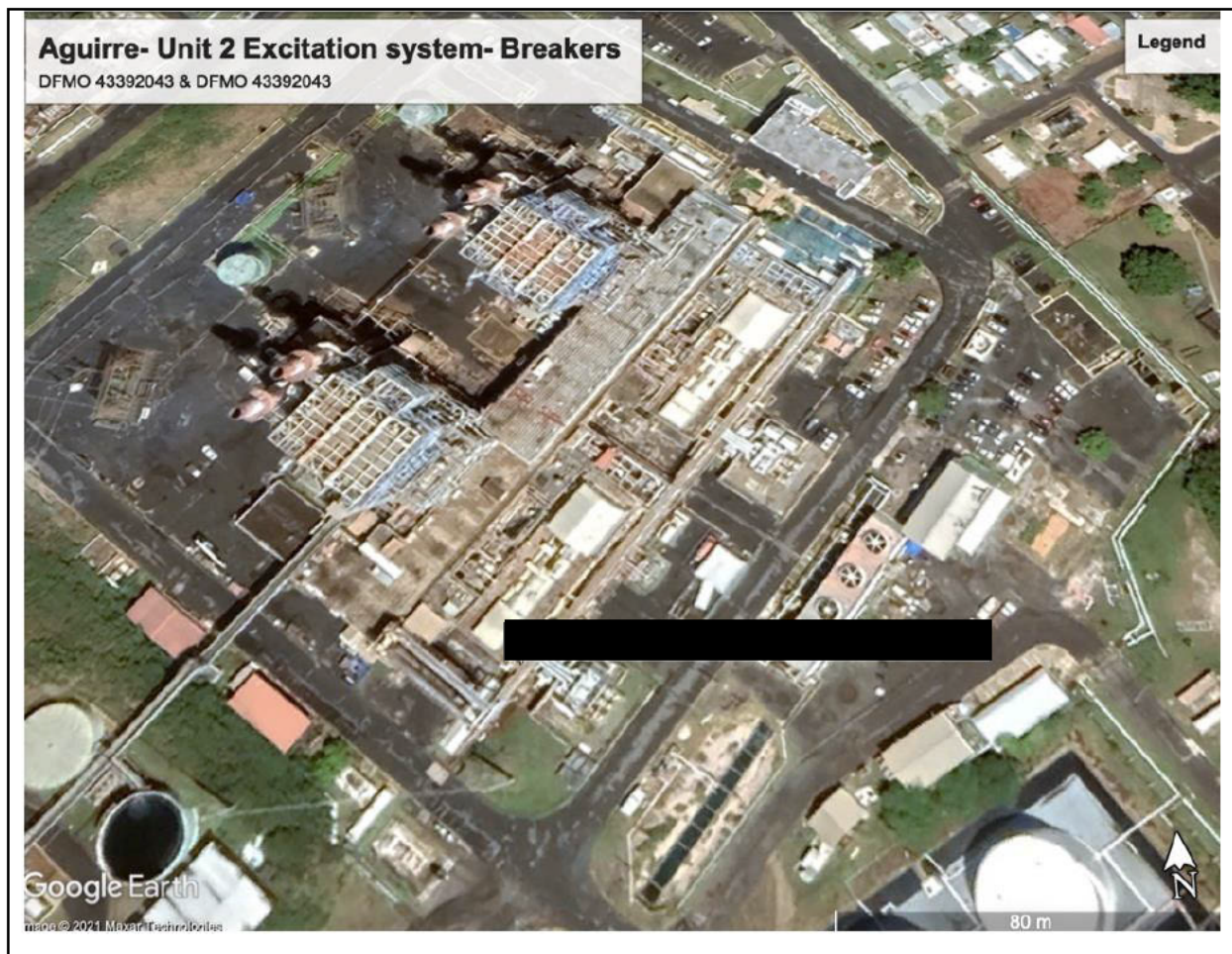
10.1. Project Detailed Cost Estimates

- Please see attached contract 84361, RFP 2032, and Scope of Work with Technical Specifications.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



Contract

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract: 00084361
Release :
Executed: 09/30/2019
Printed : 09/30/2019
Page : 1

Mail Invoice To:

AUTORIDAD DE ENERGIA ELECTRICA
DIVISION DE TESORERIA
P.O. BOX 70253
SAN JUAN PR 00936-8253

Vendor:

AIDA RODRÍGUEZ
R G ENGINEERING INC
605 CONDADO STREET
SAN ALBERTO BLDG STE 322
SAN JUAN PR 00907

Please Direct Inquiries to:

YADIRA L. LUGO-CORDERO
Y-LUGO@AEEPR.COM

Title: PROCUREMENT SUPV

Phone: (787) 521-3235

Ext:

Fax :

Work Location:

JEFE CONSV CENTRAL AGUIRRE
CENTRAL AGUIRRE
BO. MONTESORIA KM. 152.3
APARTADO 137
AGUIRRE PR 00704

Title: COMPRA E INSTALACIÓN BREAKERS 480V, CENTRAL AGUIRRE

Total Value : \$350,115.05 USD

** NOT TO EXCEED **


Pricing Method: ESTIMATE

Contract Type : TECHNICAL SERVICES

Start Date: 07/26/2019

Project : 100000106433

End Date :


Vendor Authorized Signature
Jose M. Robles Rivera

Printed Name/Title

10/1/19

787-723-4623

Date Signed

Phone


Authorized Signature

Printed Name/Title

9/30/19

787-521-3260

Date Signed

Phone

Terms and Conditions - Text at End

Fac Standard
PH000009

Rev S/P Text Title
019 S Y INSTRUCCIONES PARA SUBASTAS FORMALES



Contract

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract: 00084361
Release :
Executed: 09/30/2019
Printed : 09/30/2019
Page : 2

Scope of Work

COMPRA E INSTALACIÓN DE BREAKERS DE 480V, U. 2 CENTRAL AGUIRRE

SE ADJUDICA ORDEN DE SERVICIO DE ACUERDO A NUESTRAS ESPECIFICACIONES, TÉRMINOS Y CONDICIONES SOLICITADOS Y ACEPTADOS POR LA COMPAÑÍA EN EL RFP 0002032, REQ. NUM.: 182868 Y SEGÚN DISPOSICIONES DE LAS CARTAS CIRCULARES NÚM. 141-17 Y 144-17 DE LA OFICINA DE GERENCIA Y PRESUPUESTO.

ITINERARIO DE PAGOS

1. 20% CON LA EVIDENCIA DE LA COMPRA DE MATERIALES PARA MANUFACTURA.
2. 20% CON LA FINALIZACIÓN DE LA MANUFACTURA DE TODOS LOS EQUIPOS.
3. 40% AL RECIBIR LOS EQUIPOS EN LA CENTRAL.
4. 20% AL COMPLETAR LA INSTALACIÓN, START UP DE TODOS LOS EQUIPOS Y ACEPTACIÓN FINAL POR PARTE DE LA AUTORIDAD.

TÉRMINOS DE PAGO

NETO 60 DÍAS, LUEGO DE APROBADA LA FACTURA POR PARTE DE LA AUTORIDAD. LOS LICITADORES DESGLOZARÁN SU PRECIO ENTRE LO QUE ES LABOR Y MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 % BAJO LA LEY NUM. 48-2013. DE NO DESGLOZAR EL PRECIO SE APLICARÁ LA APORTACIÓN A LA TOTALIDAD COTIZADA.

GARANTÍA

LA GARANTÍA MÍNIMA REQUERIDA ES DE UN (1) AÑO A PARTIR DE COMPLETADA LA INSTALACIÓN DE LOS EQUIPOS O DIEZ Y OCHO (18) MESES LUEGO DE LA ENTREGA, LO QUE OCURRA PRIMERO.

TIEMPO DE ENTREGA Y PENALIDAD

EL TIEMPO MÁXIMO REQUERIDO PARA ENTREGA E INSTALACIÓN ES DE VEINTE (20) SEMANAS, LUEGO DE APROBADA LA ORDEN DE COMPRA. APLICARÁ UNA PENALIDAD POR CADA DÍA DE ATRASO DE QUINIENTOS DÓLARES (\$500.00) HASTA UN MÁXIMO DE DIEZ POR CIENTO (10%) DEL TOTAL DE LA ORDEN DE COMPRA.

ALCANCE DE TRABAJO

1. SUPLIR TODOS LOS MATERIALES, HERRAMIENTAS, EQUIPOS, MANO DE OBRA, SUPERVISIÓN Y TODO LO NECESARIO PARA LA COMPRA E INSTALACIÓN DE BREAKERS DE 480V PARA EL REEMPLAZO DE LOS BREAKERS ALLIS CHALMERS EXISTENTES. ESTOS BREAKERS SE UTILIZAN PARA LA PROTECCIÓN DE EQUIPOS AUXILIARES DE LA UNIDAD 2 DE LA CENTRAL AGUIRRE.

2. EQUIPOS A SUPLIR:

A. 12EA. EATON BREAKERS MOD. LA600-AR600NM (E/O) 520MC LSI (ARMS CAPABLE)



Contract

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract: 00084361
Release :
Executed: 09/30/2019
Printed : 09/30/2019
Page : 3

- B. 1EA. EATON BREAKER MOD. LA1600-AR1600M (E/O) 520MC LSI (ARMS CAPABLE)
 - C. CADA BREAKER INCLUIRÁ "A NEW DOOR AND CASSETTE".
 - D. REPLACEMENT BREAKERS ARE 100% RATED, UL LISTED, BUILT AND TESTED IN AN ISO9001 AND 14001 CERTIFIED FACILITY.
 - E. BREAKER AND CASSETTE CONVERSION ARE BOTH CERTIFIED TO UL 1006 (BREAKER CONVERSION SPECIFIC).
 - F. 520 LSI TRIP UNIT OR THE 520MC LSI (ARMS CAPABLE) AND ARE MECHANICALLY OPERATED (M/O).
 - G. DESIGNATED TO BE ELECTRICAL AND MECHANICAL EQUIVALENTS OF THE BREAKERS TO REPLACE.
3. SE REQUIERE QUE LOS BREAKERS SEAN NUEVOS (BRAND NEW), NO SE ACEPTARÁN EQUIPOS O PIEZAS REMANUFACTURADAS O USADAS.
4. PROVEER INSTALACIÓN, SUPERVISIÓN PARA LA INSTALACIÓN Y DEJAR LOS EQUIPOS LISTOS PARA OPERAR (COMPLETE TURNKEY INSTALLATION AND SUPERVISORY SERVICES). EL PERSONAL PARA INSTALAR Y/O SUPERVISAR LA INSTALACIÓN ESTARÁ AUTORIZADO / CAPACITADO POR EATON PARA ESTOS SERVICIOS.

INSTRUCCIONES GENERALES

- 1. LOS TRABAJOS SE REGISTRARÁN POR LOS CÓDIGOS CORRESPONDIENTES EN LA INDUSTRIA.
- 2. EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.
- 3. EL CONTRATISTA PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:
 - A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO
 - B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00
 - C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
 - D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - POR EMPLEADO Y POR ACCIDENTE
 - E. FIANZAS DE EJECUCIÓN Y PAGO POR EL 100% DEL TOTAL DEL CONTRATO.

PERSONA CONTACTO AEE
BENNY ALBARRÁN
JEFE ADMINISTRADOR
TELÉFONO: 787.521.3906



Contract

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract: 00084361
Release :
Executed: 09/30/2019
Printed : 09/30/2019
Page : 4

SUPLIDOR: RG ENGINEERING
TELÉFONO: 787.723.4623

COMPRADORA AEE
YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
TELÉFONO: 787.521.3235
EMAIL: YADIRA.LUGO@AEEPR.COM

CLÁUSULA DE SERVICIOS INTERAGENCIALES

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARÍA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARÁN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASÍ COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

CLÁUSULA DE TERMINACIÓN

LA SECRETARÍA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

Terms and Conditions - Text

PH000009 019 INSTRUCCIONES PARA SUBASTAS FORMALES
INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.
3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.



Contract

PUERTO RICO ELECTRIC POWER AUTHORITY

Contract: 00084361
Release :
Executed: 09/30/2019
Printed : 09/30/2019
Page : 5

4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACCÍMIL O MEDIOS ELECTRÓNICOS.

5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

* * * End of Contract * * *

PROPOSAL

January 11th, 2018

PREPA AGUIRRE
Salinas, Puerto Rico

Attention: Eng. Edwin Leon
Phone: 787-315-9218

Subject: Allis Chalmer Low Voltage Breakers Replacement Normal Bus 1A
EESS Negotiation #: DG180108-02

Dear Eng. Leon :

Eaton's Electrical Engineering Services & Systems (EESS) is pleased to provide this proposal to supply the replacement breakers for Allis Chalmers LA type breakers on 480v Normal Bus 1A.

Scope Of Supply

EESS is pleased to provide the Low Voltage Air Replacement (AR-Series) as the solution to replace the existing Allis Chalmer breakers.

Eaton's Low Voltage Power Air Circuit Breakers (LVAR) is designed to interface with the existing manufacturer's LV Power Circuit Breaker cell. All AR series breakers are brand new from the ground up. They are designed to be electrical and mechanical equivalents of the breakers they replace. These breakers are **not** "retrofits" and no parts are reused from other original breakers. AR-Series breakers correctly interface with compartment cell switches and safety interlocks are maintained or improved.

Benefits of Eaton's LVAR breakers include:

- Old breaker parts availability issue resolved
- Reduced maintenance cost and downtime with reliable Magnum DS Breaker technology
- Innovative Arc Running System provides higher interrupting capacity in less space.
- Designed and tested to IEEE/ANSI standards
- Installation savings and robust interface
- Designed for easy access, inspection, and minimal maintenance.

Distinct advantages over the competition:

- **Certifications:** AR Replacement breakers are 100% rated, **UL listed**, built and tested in an **ISO9001 and 14001 certified facility**. **Breaker and cassette conversion are both certified to UL 1006 (breaker conversion specific).**



- **Pass through design:** The AR breakers are “pass through” design which limits the number of primary disconnects to the **original (6) points**. Our competition created a “**cradle in cradle**” approach which unnecessarily increases the main contacts to (12) current carrying points.

Eaton's Arc-flash Reduction Maintenance System™

A circuit breaker equipped with an Arcflash Reduction Maintenance System™ can improve safety by providing a simple and reliable method to reduce fault clearing time. The Arcflash Reduction Maintenance System™ unit utilizes a separate analog trip circuit that provides faster interruption times than the standard (digital) "instantaneous" protection. Work locations downstream of a circuit breaker with an Arcflash Reduction Maintenance System™ unit can have a significantly lower incident energy level.



The table below shows how incident energy varies with fault duration times where the bolted fault level is 40 kA.

BOLTED FAULT (kA)	ARCING FAULT (kA)	FAULT DURATION (SECONDS)	INCIDENT ENERGY (cal/cm2)	HAZARD RISK CATEGORY
40	20	2	89	>4
40	20	0.5	22	3
40	20	0.3	13	3
40	20	0.1	4.4	2
40	20	0.05	2.2	1
40	20	0.04	1.8	1

Note for the table above:

1. Incident energy values shown in this table were calculated using the IEEE STD 1584™-2002 method for a 480 Vac system with a working distance of 24 inches. Other parameters are: Grounding type = solid grounded and Equipment type = Switchgear.

Manufacturing: The Eaton LVAR solution utilizes the standard production Magnum DS air power circuit breaker. The replacement solution (including cassette and accessories) is designed, tested and assembled at the Eaton Power Breaker Center near **Asheville North Carolina**. The PBC is a dedicated breaker manufacturing site, manufacturing breakers in the same location since 1998.



Local Field Engineering And Support

The Puerto Rico District Operations Center (DOC) will be successfully executing and supporting this project. This office will also be lead all communications and support for PREPA with the backing of the vast resources EESS has to offer.

The EESS Puerto Rico DOC is located at:

Bo. Torrecilla Alta
Carr. 874, Km. 1.1
Canóvanas PR 00729
Phone: 939-292-2719
24 Hour Emergency: (800) 498-2678

Experience:

Eaton has been manufacturing its LVAR replacement breakers since 1999 and has several hundred units of installed base. We have included some past project experience data via attachment at the end of this proposal.

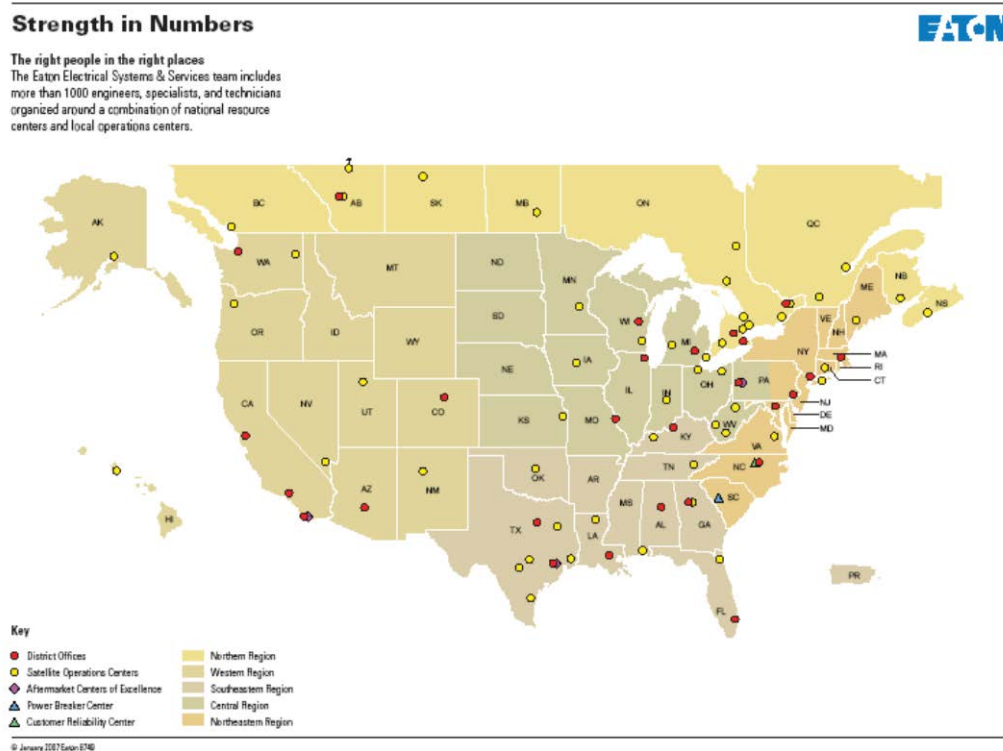
Installation and Supervision Capabilities: EESS can provide complete turnkey installation services or supervisory services using internal Field Service personnel from our Puerto Rico Operations Center.

EESS is one of the largest and most experienced industrial service organizations in North America. With more than 650 highly trained professionals in 80 engineering service locations throughout the U.S. and Canada, EESS has complete local, national, and international capabilities, to provide a full range of electrical and mechanical equipment services. This broad

range of service capabilities has established EESS as the leader in the engineering service industry.

Our division organization, with technical and professional experts on utility and industrial power systems, provides a vast resource from which to draw on in staffing your project. Years of division experience as an electrical equipment manufacturer and engineering service provider in industrial plant environments uniquely qualifies EESS to handle turnkey projects where it is imperative to provide an efficient cost-effective installation while meeting or exceeding design requirements.

In our Field Engineering work force, we have an average of 10 years experience covering all areas and aspects of the power system and associated equipment. Shown below is our national coverage map.



Benefits of Buying from Eaton

Although you certainly have choices in selecting a supplier to accomplish this work, there is no supplier choice better than Eaton. Reasons supporting this claim for your consideration include:

Eaton is a known supplier with a proven track record with many plants and other types of facilities around the country. Our company has unparalleled experience in this specified work scope and engineering expertise across the continent.

EESS is one of the largest and most experienced industrial service organizations in North America. With more than 650 highly trained professionals in 80 Engineering Services locations throughout the U.S. and Canada, EESS has complete local, national, and international capabilities to provide a full range of electrical and mechanical equipment services. This broad range of service capabilities has established EESS as the leader in the engineering and service industry. Frost & Sullivan presented Eaton Corporation with the Power Quality Company of the Year Award at the 2004 and 2005 Excellence in

Industrial Technologies in recognition of its worldwide leadership in power distribution, power protection, and power equipment maintenance.

Eaton is a one-stop shop for electrical systems. Eaton is strong on the customer service side where its customers can rely on the depth of knowledge and dependability of its service professionals, expert engineering services and systems group, and world-class 24x7 customer service centers

Eaton has the solutions for greater reliability, increased production, and significant cost savings. We are a single source supplier and industry leader of microprocessor-based industrial control and power distribution components. Eaton can now provide engineering service on Cutler-Hammer and all other manufacturers of electrical equipment.

Scope of Work:

Eaton is proposing the following breaker models for this solution:

- **LA600-AR600NM (E/O) 520MC LSI(ARMS Capable)**
- **LA1600-AR1600M (E/O) 520MC LSI(ARMS Capable)**

Each Breaker Pricing Includes the Following:

- A new door and cassette is included
- 520 LSI trip unit or the 520MC LSI(ARMS Capable) and are Mechanically Operated (M/O).
- Mobilization to Prepa Aguirre to Replace the existing Allis Chalmers Breakers
 - Field Service Engineer
 - Travel Time
 - Assistance on the removal of existing breakers
 - Assistance on the installation of Replacement Breakers
 - Start-Up of Breaker
 - All site labor on regular time and no more than 8 hrs/breaker
- Shipping Delivered in Costa Sur
- Protection Settings Equivalent Study, Coordination Evaluation And Arc Flash Calculation plus Data Gathering for these evaluations. This study would:
 - Determine the dial trip unit protection settings that would perform closest to the existing protection settings
 - Evaluate whether those setting currently coordinate with upstream and downstream devices, point out any issues and present them graphically in TCC Curves.
 - Determine arc flash hazards and install arc flash labels at load end of each branch derived through the replacement breakers.
- **Not Included on Pricing**
 - **Standby time** -When service personnel are on the job site but are unable to perform services requested due to circumstances beyond EESS control, the customer will be billed at applicable rates.
 - **Overtime** - \$350 per OT Hour and \$467 DT Hour
 - Extra Regular Day - \$1968.00

Breaker Type	Quantity	Price
LA600-AR600NM (E/O) 520MC LSI(ARMS Capable)	12	\$ 260,198.32
LA1600-AR1600M (E/O) 520MC LSI(ARMS Capable)	4	\$ 110,561.34
Total	16	\$ 370,759.66

Total Price for Normal Bus 1A = \$ 370,759.66

Clarifications on Pricing:

- The Total Price includes a Protection Settings Equivalent Study, Coordination Evaluation and Arc Flash Calculation plus Data Gathering for these evaluations. This applies only if the complete Bill of Material is purchased.

Delivery: Delivery is 12-14 weeks after receipt of valid purchase order

Warranty and Extended Warranty options:

Our products are warranted for a period of one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first. Service contracts covering parts and labor out to sixty months from date of shipment can be provided for an additional fee.

Switchgear Outage Requirements: To ensure the safety of the installing contractor complete shutdown of the energize components within the breaker cubicle is required.

Terms and Conditions

Our proposal is offered under the terms and conditions of Eaton Corporation standard selling Policy 25-000 (copy attached).

This offer is valid for 30 days unless otherwise extended, modified, or withdrawn in writing by Eaton. Payments terms are net 30 days.

To Place an Order

Please reference negotiation number DG180108-02 on your purchase order issued in response to this proposal. To place your PO send it to DavidGomez2@Eaton.com.

Thank you for the opportunity to submit this proposal, and we look forward to providing proficient engineering services to support your efforts. If you have any questions please contact David Gomez at (787)366-7083.

Sincerely,

David Gómez Colón, PE
Field Service Engineer / Project Engineer
Central America and Caribbean
Eaton Electrical Services and Supply

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 1

Return RFP to:

YADIRA L. LUGO-CORDERO

Vendor: 001505

RG Engineering, Inc
605 Calle Condado Suite 322
Edificio San Alberto
Santurce, P.R. 00907
(787) 723-4623



Y-LUGO@AEEPR.COM

Phone: (787) 521-3235

Fax :

Start Date:

End Date :

Work Location:

CENTRAL AGUIRRE

BO. MONTESORIA KM. 152.3

APARTADO 137

AGUIRRE PR 00704

Title: APÉNDICE III - COMPRA E INSTALACIÓN BREAKERS 480V, AGUIRRE

Price will be divided in Labor: \$10,657.50 and Equipment \$339,457.55

Bid Value: \$350,115.05**

Currency: USD

Not to Exceed?

Bid Pricing Method:

ESTIMATE

Bid Expiration Date:

As required by PREPA

Delivery Time: As required by PREPA

Payment Terms: As required by PREPA

Vendor Authorized Signature
Mrs. Aida Rodriguez - Accounts Receivable

Printed Name/Title
3-26-2019 787-723-4623

Date Signed

Phone

Authorized Signature
YADIRA L. LUGO CORDERO - SUPERVISORA DE COMPRAS

Printed Name/Title
03.19.2019

Date Signed

Phone

Terms and Conditions - Text at End

Fac	Standard	Rev S/P Text	Title
PH000009	019 S Y		INSTRUCCIONES PARA SUBASTAS FORMALES

Scope of Work and Terms & Conditions Text follow as attachments

APÉNDICE NÚM. III (03.19.2019 YLC)

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 2

SUBASTA FORMAL NÚM: RFP 0002032

REQUISICIÓN NÚM.: 182868

TÍTULO: PROVEER TODO MATERIAL, HERRAMIENTA, EQUIPO, MANO DE OBRA,
SUPERVISIÓN Y TODO LO NECESARIO PARA:

COMPRA E INSTALACIÓN DE BREAKERS DE 480V, U. 2 CENTRAL AGUIRRE

SEGÚN NUESTRA PUBLICACIÓN DE SUBASTA FORMAL DEL 02.06.2019

REUNIÓN PRE SUBASTA COMPULSORIA DEL 02.13.2019

APÉNDICE NÚM. I DEL 02.14.2019

APÉNDICE NÚM. II DEL 03.05.2019

SE INFORMA A LOS LICITADORES LO SIGUIENTE:

1. SE POSPONE APERTURA PARA LA SIGUIENTE FECHA:

DÍA: MARTES, 26 DE MARZO DE 2019

HORA: 10:00 AM

LUGAR: SALÓN DE SUBASTAS, EDIF. NEOS, 3ER PISO, SANTURCE

LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL
REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE,
ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE
SU LICITACIÓN CON DOS COPIAS IDÉNTICAS.

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y
PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

APÉNDICE NÚM. II (03.05.2019 YLC)

1. SE PROGRAMA APERTURA PARA LA SIGUIENTE FECHA:

DÍA: MARTES, 19 DE MARZO DE 2019

HORA: 10:00 AM

LUGAR: SALÓN DE SUBASTAS, EDIF. NEOS, 3ER PISO, SANTURCE

LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL
REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE,
ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE
SU LICITACIÓN CON DOS COPIAS IDÉNTICAS.

2. SE INCLUYE DOCUMENTO DE PREGUNTAS Y RESPUESTAS (2 PÁGINAS).

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 3

PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

APÉNDICE NÚM. I (02.14.2019 YLC)

1. SE ESTABLECE PERÍODO PARA RECIBIR PREGUNTAS HASTA EL MIÉRCOLES, 20 DE FEBRERO DE 2019, MEDIANTE CORREO ELECTRÓNICO A YADIRA.LUGO@AEEPR.COM O A TRAVÉS DE POWER ADVOCATE. FAVOR ENVIAR LAS PREGUNTAS EN FORMATOS WORD Y PDF.
2. SE INCLUYE HOJA DE ASISTENCIA CON LOS LICITADORES PARTICIPANTES DE LA REUNIÓN PRE SUBASTA COMPULSORIA (1 PÁGINA).
3. SE INCLUYE FIANZA DE LICITACIÓN (BID BOND) FORMA AEE 500.0.368 EN IDIOMAS INGLÉS Y ESPAÑOL (2 PÁGINAS).

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

ITINERARIO DE PAGOS

1. 20% CON LA EVIDENCIA DE LA COMPRA DE MATERIALES PARA MANUFACTURA.
2. 20% CON LA FINALIZACIÓN DE LA MANUFACTURA DE TODOS LOS EQUIPOS.
3. 40% AL RECIBIR LOS EQUIPOS EN LA CENTRAL.
4. 20% AL COMPLETAR LA INSTALACIÓN; START UP DE TODOS LOS EQUIPOS Y ACEPTACIÓN FINAL POR PARTE DE LA AUTORIDAD.

TÉRMINOS DE PAGO

NETO 60 DÍAS, LUEGO DE APROBADA LA FACTURA POR PARTE DE LA AUTORIDAD. LOS LICITADORES DESGLOZARÁN SU PRECIO ENTRE LO QUE ES LABOR Y MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 % BAJO LA LEY NUM. 48-2013. DE NO DESGLOZAR EL PRECIO SE APLICARÁ LA APORTACIÓN A LA TOTALIDAD COTIZADA.

GARANTÍA

LA GARANTÍA MÍNIMA REQUERIDA ES DE UN (1) AÑO A PARTIR DE COMPLETADA LA INSTALACIÓN DE LOS EQUIPOS O DIEZ Y OCHO (18) MESES LUEGO DE LA ENTREGA, LO QUE OCURRA PRIMERO.

TIEMPO DE ENTREGA Y PENALIDAD

EL TIEMPO MÁXIMO REQUERIDO PARA ENTREGA E INSTALACIÓN ES DE VEINTE (20) SEMANAS, LUEGO DE APROBADA LA ORDEN DE COMPRA. APLICARÁ UNA PENALIDAD POR CADA DÍA DE ATRASO DE QUINIENTOS DÓLARES (\$500.00)

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 4

HASTA UN MÁXIMO DE DIEZ POR CIENTO (10%) DEL TOTAL DE LA ORDEN DE COMPRA.

ALCANCE DE TRABAJO

1. SUPLIR TODOS LOS MATERIALES, HERRAMIENTAS, EQUIPOS, MANO DE OBRA, SUPERVISIÓN Y TODO LO NECESARIO PARA LA COMPRA E INSTALACIÓN DE BREAKERS DE 480V PARA EL REEMPLAZO DE LOS BREAKERS ALLIS CHALMERS EXISTENTES. ESTOS BREAKERS SE UTILIZAN PARA LA PROTECCIÓN DE EQUIPOS AUXILIARES DE LA UNIDAD 2 DE LA CENTRAL AGUIRRE.

2. EQUIPOS A SUPLIR:

- A. 12EA. EATON BREAKERS MOD. LA600-AR600NM (E/O) 520MC LSI (ARMS CAPABLE)
- B. 1EA. EATON BREAKER MOD. LA1600-AR1600M (E/O) 520MC LSI (ARMS CAPABLE)
- C. CADA BREAKER INCLUIRÁ "A NEW DOOR AND CASSETTE".
- D. REPLACEMENT BREAKERS ARE 100% RATED, UL LISTED, BUILT AND TESTED IN AN ISO9001 AND 14001 CERTIFIED FACILITY.
- E. BREAKER AND CASSETTE CONVERSION ARE BOTH CERTIFIED TO UL 1006 (BREAKER CONVERSION SPECIFIC).
- F. 520 LSI TRIP UNIT OR THE 520MC LSI (ARMS CAPABLE) AND ARE MECHANICALLY OPERATED (M/O).
- G. DESIGNATED TO BE ELECTRICAL AND MECHANICAL EQUIVALENTS OF THE BREAKERS TO REPLACE.

3. SE REQUIERE QUE LOS BREAKERS SEAN NUEVOS (BRAND NEW), NO SE ACEPTARÁN EQUIPOS O PIEZAS REMANUFACTURADAS O USADAS.

4. PROVEER INSTALACIÓN, SUPERVISIÓN PARA LA INSTALACIÓN Y DEJAR LOS EQUIPOS LISTOS PARA OPERAR (COMPLETE TURNKEY INSTALLATION AND SUPERVISORY SERVICES). EL PERSONAL PARA INSTALAR Y/O SUPERVISAR LA INSTALACIÓN ESTARÁ AUTORIZADO / CAPACITADO POR EATON PARA ESTOS SERVICIOS.

INSTRUCCIONES GENERALES

1. PARA ESTA SUBASTA LA AUTORIDAD REQUIERE QUE LOS LICITADORES INCLUYAN CON SU PROPUESTA UNA FIANZA DE LICITACIÓN INDIVIDUAL POR EL DIEZ POR CIENTO (10%) DEL PRECIO TOTAL DE SU PROPUESTA. TAMBIÉN, SE ACEPTARÁ LA FIANZA DE LICITACIÓN ANUAL VIGENTE, PREVIAMENTE ENTREGADA EN NUESTRO REGISTRO DE PROVEEDORES Y CON CAPACIDAD PARA CUBRIR EL DIEZ POR CIENTO (10%) DEL TOTAL DE SU PROPUESTA. ESTAS FIANZAS TIENEN QUE VENIR ACOMPAÑADAS CON EL DOCUMENTO POWER OF ATTORNEY. ESTOS DOCUMENTOS TIENEN QUE SER PREPARADOS POR UNA COMPAÑÍA AUTORIZADA A HACER NEGOCIOS EN PUERTO RICO. OFERTAS QUE INCUMPLAN CON ESTE REQUERIMIENTO SERÁN RECHAZADAS.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 5

2. PARA ESTA SUBASTA, LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE, ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE SU LICITACIÓN CON DOS COPIAS IDÉNTICAS.
3. LUEGO DE LA APERTURA DE LA SUBASTA, LOS LICITADORES, SUS REPRESENTANTES Y OTRAS PARTES NO PUEDEN COMUNICARSE EN FORMA ALGUNA CON EMPLEADOS DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA PARA ASUNTOS RELACIONADOS CON LAS PROPUESTAS BAJO ESTUDIO, SALVO LO DISPUESTO POR LEY NÚM. 170, DEL 12 DE AGOSTO DE 1988, SEGÚN ENMENDADA Y LA REGLAMENTACIÓN PROMULGADA A SU AMPARO. REGLAMENTO DE SUBASTAS, CAPÍTULO IV, SECCIÓN VI, ARTÍCULO C, INCISO 2.
4. LOS LICITADORES TIENEN QUE COTIZAR ENTREGADO EN SITIO. LA AEE ESTÁ EXENTA DEL PAGO DE IVU.
5. SERÁ REQUISITO PARA ADJUDICACIÓN ESTAR ACTIVO EN EL REGISTRO DE PROVEEDORES DE LA AEE.
6. LOS TRABAJOS SE REGISTRÁN POR LOS CÓDIGOS CORRESPONDIENTES EN LA INDUSTRIA.
7. EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.
8. EL CONTRATISTA AGRACIADO PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:
 - A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO
 - B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00
 - C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
 - D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - POR EMPLEADO Y POR ACCIDENTE
 - E. FIANZAS DE EJECUCIÓN Y PAGO POR EL 100% DEL TOTAL DEL CONTRATO.

CUALQUIER PREGUNTA RELACIONADA A ESTA PUBLICACIÓN, SE PUEDEN COMUNICAR CON:

YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
TELÉFONO: 787.521.3235

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 6

EMAIL: YADIRA.LUGO@AEEPR.COM

CLÁUSULA DE SERVICIOS INTERAGENCIALES

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARÍA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARÁN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASÍ COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

**CLÁUSULA DE TERMINACIÓN**

LA SECRETARÍA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.
3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.
4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACCIÓN O MEDIOS ELECTRÓNICOS.
5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

*****Not Included on Pricing:**

Standby Time: When service personnel are on the job site but are unable to perform services required due to circumstances beyond EESS Control, PREPA will be billed at applicable rates.

Overtime - \$438.00 per OT hour and \$584.00 DT Hour

Extra regular day - \$2,460.00 each

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 03/26/2019
Due Time: 10:00 AST
Printed : 03/19/2019
Page : 7

* * * End of Request For Proposal * * *

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 03/19/2019
Due Time: 10:00 AST
Printed : 03/05/2019
Page : 1

Return RFP to:

YADIRA L. LUGO-CORDERO

Vendor: 001505

RG Engineering, Inc
605 Calle Condado Suite 322
Edificio San Alberto
Santurce P.R. 00907



Y-LUGO@AEEPR.COM

Phone: (787) 521-3235

Fax :

Work Location:

CENTRAL AGUIRRE

BO. MONTESORIA KM. 152.3

APARTADO 137

AGUIRRE PR 00704

Start Date:

End Date :

Title: APÉNDICE II - COMPRA E INSTALACIÓN BREAKERS 480V, CENTRAL AGUIRRE

Price will be divided in Labor : \$10,657.50 and Equipment \$339,457.55

Bid Value: \$350,115.05**

Currency: USD

Not to Exceed? ☐

Bid Pricing Method:

ESTIMATE

Bid Expiration Date:

As required by PREPA

Delivery Time: As required by PREPA

Payment Terms: As required by PREPA

Vendor Authorized Signature

Mrs. Aida Rodriguez - Accounts receivable

Printed Name/Title

3-26-2019

787-723-4623

Date Signed

Phone

Authorized Signature

YADIRA LUGO CORDERO

Supervisora de Compras

Printed Name/Title

03.05.2019

Date Signed

Phone

Terms and Conditions - Text at End

Fac	Standard	Rev S/P Text	Title
	PH000009	019 S Y	INSTRUCCIONES PARA SUBASTAS FORMALES

Scope of Work and Terms & Conditions Text follow as attachments

APÉNDICE NÚM. II (03.05.2019 YLC)

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/19/2019
Due Time: 10:00 AST
Printed : 03/05/2019
Page : 2

SUBASTA FORMAL NÚM: RFP 0002032
REQUISICIÓN NÚM.: 182868

TÍTULO: PROVEER TODO MATERIAL, HERRAMIENTA, EQUIPO, MANO DE OBRA,
SUPERVISIÓN Y TODO LO NECESARIO PARA:

COMPRA E INSTALACIÓN DE BREAKERS DE 480V, U. 2 CENTRAL AGUIRRE

SEGÚN NUESTRA PUBLICACIÓN DE SUBASTA FORMAL DEL 02.06.2019
REUNIÓN PRE SUBASTA COMPULSORIA DEL 02.13.2019
APÉNDICE NÚM. I DEL 02.14.2019

SE INFORMA A LOS LICITADORES LO SIGUIENTE:

1. SE PROGRAMA APERTURA PARA LA SIGUIENTE FECHA:
DÍA: MARTES, 19 DE MARZO DE 2019
HORA: 10:00 AM
LUGAR: SALÓN DE SUBASTAS, EDIF. NEOS, 3ER PISO, SANTURCE

LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE, ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE SU LICITACIÓN CON DOS COPIAS IDÉNTICAS.

2. SE INCLUYE DOCUMENTO DE PREGUNTAS Y RESPUESTAS (2 PÁGINAS).

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

APÉNDICE NÚM. I (02.14.2019 YLC)

1. SE ESTABLECE PERÍODO PARA RECIBIR PREGUNTAS HASTA EL MIÉRCOLES, 20 DE FEBRERO DE 2019, MEDIANTE CORREO ELECTRÓNICO A YADIRA.LUGO@AEEPR.COM O A TRAVÉS DE POWER ADVOCATE. FAVOR ENVIAR LAS PREGUNTAS EN FORMATOS WORD Y PDF.
2. SE INCLUYE HOJA DE ASISTENCIA CON LOS LICITADORES PARTICIPANTES DE LA REUNIÓN PRE SUBASTA COMPULSORIA (1 PÁGINA).
3. SE INCLUYE FIANZA DE LICITACIÓN (BID BOND) FORMA AEE 500.0.368 EN IDIOMAS INGLÉS Y ESPAÑOL (2 PÁGINAS).

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 03/19/2019
Due Time: 10:00 AST
Printed : 03/05/2019
Page : 3

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y
PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

ITINERARIO DE PAGOS

1. 20% CON LA EVIDENCIA DE LA COMPRA DE MATERIALES PARA MANUFACTURA.
2. 20% CON LA FINALIZACIÓN DE LA MANUFACTURA DE TODOS LOS EQUIPOS.
3. 40% AL RECIBIR LOS EQUIPOS EN LA CENTRAL.
4. 20% AL COMPLETAR LA INSTALACIÓN, START UP DE TODOS LOS EQUIPOS Y ACEPTACIÓN FINAL POR PARTE DE LA AUTORIDAD.

TÉRMINOS DE PAGO

NETO 60 DÍAS, LUEGO DE APROBADA LA FACTURA POR PARTE DE LA AUTORIDAD. LOS LICITADORES DESGLOZARÁN SU PRECIO ENTRE LO QUE ES LABOR Y MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 % BAJO LA LEY NUM. 48-2013. DE NO DESGLOZAR EL PRECIO SE APLICARÁ LA APORTACIÓN A LA TOTALIDAD COTIZADA.

GARANTÍA

LA GARANTÍA MÍNIMA REQUERIDA ES DE UN (1) AÑO A PARTIR DE COMPLETADA LA INSTALACIÓN DE LOS EQUIPOS O DIEZ Y OCHO (18) MESES LUEGO DE LA ENTREGA, LO QUE OCURRA PRIMERO.

TIEMPO DE ENTREGA Y PENALIDAD

EL TIEMPO MÁXIMO REQUERIDO PARA ENTREGA E INSTALACIÓN ES DE VEINTE (20) SEMANAS, LUEGO DE APROBADA LA ORDEN DE COMPRA. APLICARÁ UNA PENALIDAD POR CADA DÍA DE ATRASO DE QUINIENTOS DÓLARES (\$500.00) HASTA UN MÁXIMO DE DIEZ POR CIENTO (10%) DEL TOTAL DE LA ORDEN DE COMPRA.

ALCANCE DE TRABAJO

1. SUPLIR TODOS LOS MATERIALES, HERRAMIENTAS, EQUIPOS, MANO DE OBRA, SUPERVISIÓN Y TODO LO NECESARIO PARA LA COMPRA E INSTALACIÓN DE BREAKERS DE 480V PARA EL REEMPLAZO DE LOS BREAKERS ALLIS CHALMERS EXISTENTES. ESTOS BREAKERS SE UTILIZAN PARA LA PROTECCIÓN DE EQUIPOS AUXILIARES DE LA UNIDAD 2 DE LA CENTRAL AGUIRRE.

2. EQUIPOS A SUPLIR:

- A. 12EA. EATON BREAKERS MOD. LA600-AR600NM (E/O) 520MC LSI (ARMS CAPABLE)
- B. 1EA. EATON BREAKER MOD. LA1600-AR1600M (E/O) 520MC LSI (ARMS CAPABLE)
- C. CADA BREAKER INCLUIRÁ "A NEW DOOR AND CASSETTE".
- D. REPLACEMENT BREAKERS ARE 100% RATED, UL LISTED, BUILT AND

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/19/2019
Due Time: 10:00 AST
Printed : 03/05/2019
Page : 4

TESTED IN AN ISO9001 AND 14001 CERTIFIED FACILITY.

E. BREAKER AND CASSETTE CONVERSION ARE BOTH CERTIFIED TO UL 1006 (BREAKER CONVERSION SPECIFIC).

F. 520 LSI TRIP UNIT OR THE 520MC LSI (ARMS CAPABLE) AND ARE MECHANICALLY OPERATED (M/O).

G. DESIGNATED TO BE ELECTRICAL AND MECHANICAL EQUIVALENTS OF THE BREAKERS TO REPLACE.

3. SE REQUIERE QUE LOS BREAKERS SEAN NUEVOS (BRAND NEW), NO SE ACEPTARÁN EQUIPOS O PIEZAS REMANUFACTURADAS O USADAS.

4. PROVEER INSTALACIÓN, SUPERVISIÓN PARA LA INSTALACIÓN Y DEJAR LOS EQUIPOS LISTOS PARA OPERAR (COMPLETE TURNKEY INSTALLATION AND SUPERVISORY SERVICES). EL PERSONAL PARA INSTALAR Y/O SUPERVISAR LA INSTALACIÓN ESTARÁ AUTORIZADO / CAPACITADO POR EATON PARA ESTOS SERVICIOS.

INSTRUCCIONES GENERALES

1. PARA ESTA SUBASTA LA AUTORIDAD REQUIERE QUE LOS LICITADORES INCLUYAN CON SU PROPUESTA UNA FIANZA DE LICITACIÓN INDIVIDUAL POR EL DIEZ POR CIENTO (10%) DEL PRECIO TOTAL DE SU PROPUESTA. TAMBIÉN, SE ACEPTARÁ LA FIANZA DE LICITACIÓN ANUAL VIGENTE, PREVIAMENTE ENTREGADA EN NUESTRO REGISTRO DE PROVEEDORES Y CON CAPACIDAD PARA CUBRIR EL DIEZ POR CIENTO (10%) DEL TOTAL DE SU PROPUESTA. ESTAS FIANZAS TIENEN QUE VENIR ACOMPAÑADAS CON EL DOCUMENTO POWER OF ATTORNEY. ESTOS DOCUMENTOS TIENEN QUE SER PREPARADOS POR UNA COMPAÑÍA AUTORIZADA A HACER NEGOCIOS EN PUERTO RICO. OFERTAS QUE INCUMPLAN CON ESTE REQUERIMIENTO SERÁN RECHAZADAS.

2. PARA ESTA SUBASTA, LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE, ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE SU LICITACIÓN CON DOS COPIAS IDÉNTICAS.

3. LUEGO DE LA APERTURA DE LA SUBASTA, LOS LICITADORES, SUS REPRESENTANTES Y OTRAS PARTES NO PUEDEN COMUNICARSE EN FORMA ALGUNA CON EMPLEADOS DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA PARA ASUNTOS RELACIONADOS CON LAS PROPUESTAS BAJO ESTUDIO, SALVO LO DISPUESTO POR LEY NÚM. 170, DEL 12 DE AGOSTO DE 1988, SEGÚN ENMENDADA Y LA REGLAMENTACIÓN PROMULGADA A SU AMPARO. REGLAMENTO DE SUBASTAS, CAPÍTULO IV, SECCIÓN VI, ARTÍCULO C, INCISO 2.

4. LOS LICITADORES TIENEN QUE COTIZAR ENTREGADO EN SITIO. LA AEE ESTÁ EXENTA DEL PAGO DE IVU.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 03/19/2019
Due Time: 10:00 AST
Printed : 03/05/2019
Page : 5

5. SERÁ REQUISITO PARA ADJUDICACIÓN ESTAR ACTIVO EN EL REGISTRO DE PROVEEDORES DE LA AEE.

6. LOS TRABAJOS SE REGISTRÁN POR LOS CÓDIGOS CORRESPONDIENTES EN LA INDUSTRIA.

7. EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.

8. EL CONTRATISTA AGRACIADO PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

- A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO
- B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00
- C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
- D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - POR EMPLEADO Y POR ACCIDENTE
- E. FIANZAS DE EJECUCIÓN Y PAGO POR EL 100% DEL TOTAL DEL CONTRATO.

CUALQUIER PREGUNTA RELACIONADA A ESTA PUBLICACIÓN, SE PUEDEN COMUNICAR CON:

YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
TELÉFONO: 787.521.3235
EMAIL: YADIRA.LUGO@AEEPR.COM

CLÁUSULA DE SERVICIOS INTERAGENCIALES

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARÍA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARÁN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASÍ COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

CLÁUSULA DE TERMINACIÓN

LA SECRETARÍA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 03/19/2019
Due Time: 10:00 AST
Printed : 03/05/2019
Page : 6

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.
3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.
4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACCÍMIL O MEDIOS ELECTRÓNICOS.
5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

*****Not Included on Pricing:**

Standby Time: When service personnel are on the job site but are unable to perform services required due to circumstances beyond EESS Control, PREPA will be billed at applicable rates.

Overtime - \$438.00 per OT hour and \$584.00 DT Hour
Extra regular day - \$2,460.00 each



* * * End of Request For Proposal * * *

**Autoridad de Energía Eléctrica de Puerto Rico
Complejo Generatriz de Aguirre**

Subasta Formal Núm.: RFP 0002032

Requisición: 182868

Alcance: Compra e instalación Breakers 480V

Preguntas y Respuestas

I. Allied Power Technologies, Inc.

1) Revisión Itinerario de Pagos:

Según mencionáramos en la reunión pre-subasta para los efectos una vez entregados los interruptores en la planta, habremos facturado apenas el 60% del costo de cada interruptor, cuando hasta ese momento hemos tenido que pagarle al fabricante el 100% del equipo. Sugerimos que el 30% que ustedes están considerando pagar al completar la instalación, sea distribuido entre los primeros tres renglones en el itinerario de pagos, con tal de poder facturar el 90% hasta el momento de entrega, y dejar el restante 10% como parte de la instalación y start-up, ya que una vez instalado, se completa la prueba de start-up y se deja en servicio al mismo tiempo. En adición, no es 100% seguro que los interruptores van a poder ser instalados tan pronto se entreguen.

Nuevo Itinerario de pagos

20% - con la evidencia de la compra de materiales para manufactura

20% - con la finalización de la manufactura de todos los equipos

40% - al recibir los equipos en la Central

20% - al completar la instalación, start-up de todos los equipos y aceptación final por parte de la Autoridad

2) Tiempo de entrega

De acuerdo con el fabricante, se solicita que el tiempo de entrega sea extendido a veinte (20) semanas.

La Autoridad no tiene inconveniente en extender el tiempo de entrega. El tiempo máximo para entrega e instalación será de veinte (20) semanas consecutivas, luego de aprobada la orden de compra.

3) Equipo a suplir

La Central Costa Sur está estandarizando en LSIA + Arcflash. Entendemos que es recomendable que la Central Aguirre cambie el requisito a este tipo, ya que de ese modo hace compatible sus interruptores a los de la Central Costa Sur.

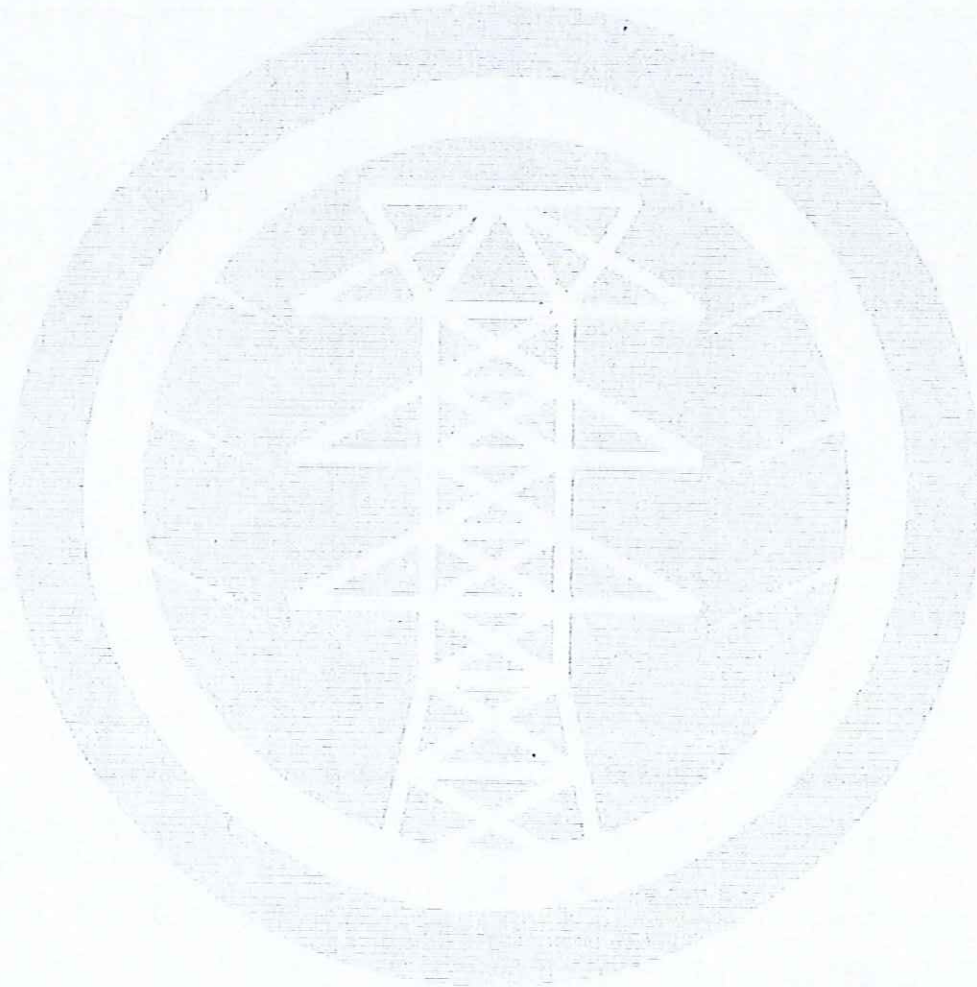
En miras de estandarización y tener igualdad de equipo entre ambas Centrales se enmienda el requerimiento de los equipos para solicitar el sistema LSIA + Arcflash.

4) Instrucciones Generales

La Autoridad requiere una fianza de licitación individual de un 10%. Solicitamos se acepte para esta subasta, el "Annual Bid Bond".

La Autoridad aceptará para esta subasta una fianza de licitación individual por el diez por ciento (10%) del precio total de su propuesta en el formulario AEE 500.0-368. También se aceptará la fianza de licitación anual vigente, previamente entregada en nuestro Registro de Proveedores y con capacidad para cubrir el diez por ciento (10%) del total de su propuesta. Estas fianzas tienen que venir acompañadas con el documento Power of Attorney. Estos documentos tienen que ser preparados por una compañía autorizada a hacer negocios en Puerto Rico.

FIN DE LAS PREGUNTAS Y RESPUESTAS



REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/20/2019
Due Time: AST
Printed : 02/14/2019
Page : 1

Return RFP to:

YADIRA L. LUGO-CORDERO

Vendor: 001505

RG Engineering, Inc
605 Calle Condado Suite 322
Edificio San Alberto
Santurce P.R. 00907



Y-LUGO@AEEPR.COM

Phone: (787) 521-3235

Fax :

Start Date: 04/02/2018

End Date :

Work Location:

CENTRAL AGUIRRE

BO. MONTESORIA KM. 152.3

APARTADO 137

AGUIRRE PR 00704

Title: APÉNDICE I - COMPRA E INSTALACIÓN BREAKERS 480V, CENTRAL AGUIRRE

Price will be divided in: Labor \$10,657.50 and Equipment \$339,457.55

Bid Value: \$350,115.05***

Currency: USD

Not to Exceed?

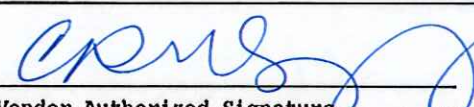
Bid Pricing Method:

ESTIMATE

Bid Expiration Date: As required by PREPA

Delivery Time: As required by PREPA

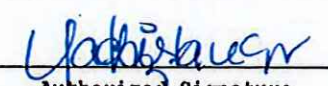
Payment Terms: As required by PREPA


Vendor Authorized Signature
Mrs. Aida Rodriguez - Accounts Receivable

Printed Name/Title
3-26-2019 787-723-4623

Date Signed

Phone


Authorized Signature
YADIRA LUGO CORDERO
Supervisor de Compras

02.14.2019

Date Signed

Phone

Terms and Conditions - Text at End

Fac	Standard	Rev S/P Text	Title
PH000009	019 S Y	INSTRUCCIONES PARA SUBASTAS FORMALES	

Scope of Work and Terms & Conditions Text follow as attachments

APÉNDICE NÚM. I (02.14.2019 YLC)

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/20/2019
Due Time: AST
Printed : 02/14/2019
Page : 2

SUBASTA FORMAL NÚM: RFP 0002032
REQUISICIÓN NÚM.: 182868

TÍTULO: PROVEER TODO MATERIAL, HERRAMIENTA, EQUIPO, MANO DE OBRA,
SUPERVISIÓN Y TODO LO NECESARIO PARA:

COMPRA E INSTALACIÓN DE BREAKERS DE 480V, U. 2 CENTRAL AGUIRRE

SEGÚN NUESTRA PUBLICACIÓN DE SUBASTA FORMAL DEL 02.06.2019 Y REUNIÓN
PRE SUBASTA COMPULSORIA DEL 02.13.2019, SE INFORMA A LOS LICITADORES
LO SIGUIENTE:

1. SE ESTABLECE PERÍODO PARA RECIBIR PREGUNTAS HASTA EL MIÉRCOLES,
20 DE FEBRERO DE 2019, MEDIANTE CORREO ELECTRÓNICO A
YADIRA.LUGO@AEEPR.COM O A TRAVÉS DE POWER ADVOCATE. FAVOR ENVIAR LAS
PREGUNTAS EN FORMATOS WORD Y PDF.
2. SE INCLUYE HOJA DE ASISTENCIA CON LOS LICITADORES PARTICIPANTES
DE LA REUNIÓN PRE SUBASTA COMPULSORIA (1 PÁGINA).
3. SE INCLUYE FIANZA DE LICITACIÓN (BID BOND) FORMA AEE 500.0.368
EN IDIOMAS INGLÉS Y ESPAÑOL (2 PÁGINAS).

TODOS LOS DEMÁS REQUERIMIENTOS NO MENCIONADOS EN ESTE APÉNDICE Y
PREVIAMENTE NOTIFICADOS, PERMANECEN INALTERADOS.

ITINERARIO DE PAGOS

1. 10% CON LA EVIDENCIA DE LA COMPRA DE MATERIALES PARA
MANUFACTURA.
2. 20% CON LA FINALIZACIÓN DE LA MANUFACTURA DE TODOS LOS EQUIPOS.
3. 30% AL RECIBIR LOS EQUIPOS EN LA CENTRAL.
4. 30% AL COMPLETAR LA INSTALACIÓN DE TODOS LOS EQUIPOS.
5. 10% AL COMPLETAR EL START UP DE TODOS LOS EQUIPOS Y ACEPTACIÓN
FINAL POR PARTE DE LA AUTORIDAD.

TÉRMINOS DE PAGO

NETO 60 DÍAS, LUEGO DE APROBADA LA FACTURA POR PARTE DE LA AUTORIDAD.
LOS LICITADORES DESGLOZARÁN SU PRECIO ENTRE LO QUE ES LABOR Y
MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 %
BAJO LA LEY NUM. 48-2013. DE NO DESGLOZAR EL PRECIO SE APLICARÁ LA
APORTACIÓN A LA TOTALIDAD COTIZADA.

GARANTÍA

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/20/2019
Due Time: AST
Printed : 02/14/2019
Page : 3

LA GARANTÍA MÍNIMA REQUERIDA ES DE UN (1) AÑO A PARTIR DE COMPLETADA LA INSTALACIÓN DE LOS EQUIPOS O DIEZ Y OCHO (18) MESES LUEGO DE LA ENTREGA, LO QUE OCURRA PRIMERO.

TIEMPO DE ENTREGA Y PENALIDAD

EL TIEMPO MÁXIMO REQUERIDO PARA ENTREGA E INSTALACIÓN ES DE DIEZ Y SEIS (16) SEMANAS, LUEGO DE APROBADA LA ORDEN DE COMPRA. APLICARÁ UNA PENALIDAD POR CADA DÍA DE ATRASO DE QUINIENTOS DÓLARES (\$500.00) HASTA UN MÁXIMO DE DIEZ POR CIENTO (10%) DEL TOTAL DE LA ORDEN DE COMPRA.

ALCANCE DE TRABAJO

1. SUPLIR TODOS LOS MATERIALES, HERRAMIENTAS, EQUIPOS, MANO DE OBRA, SUPERVISIÓN Y TODO LO NECESARIO PARA LA COMPRA E INSTALACIÓN DE BREAKERS DE 480V PARA EL REEMPLAZO DE LOS BREAKERS ALLIS CHALMERS EXISTENTES. ESTOS BREAKERS SE UTILIZAN PARA LA PROTECCIÓN DE EQUIPOS AUXILIARES DE LA UNIDAD 2 DE LA CENTRAL AGUIRRE.

2. EQUIPOS A SUPLIR:

- A. 12EA. EATON BREAKERS MOD. LA600-AR600NM (E/O) 520MC LSI (ARMS CAPABLE)
- B. 1EA. EATON BREAKER MOD. LA1600-AR1600M (E/O) 520MC LSI (ARMS CAPABLE)
- C. CADA BREAKER INCLUIRÁ "A NEW DOOR AND CASSETTE".
- D. REPLACEMENT BREAKERS ARE 100% RATED, UL LISTED, BUILT AND TESTED IN AN ISO9001 AND 14001 CERTIFIED FACILITY.
- E. BREAKER AND CASSETTE CONVERSION ARE BOTH CERTIFIED TO UL 1006 (BREAKER CONVERSION SPECIFIC).
- F. 520 LSI TRIP UNIT OR THE 520MC LSI (ARMS CAPABLE) AND ARE MECHANICALLY OPERATED (M/O).
- G. DESIGNATED TO BE ELECTRICAL AND MECHANICAL EQUIVALENTS OF THE BREAKERS TO REPLACE.

3. SE REQUIERE QUE LOS BREAKERS SEAN NUEVOS (BRAND NEW), NO SE ACEPTARÁN EQUIPOS O PIEZAS REMANUFACTURADAS O USADAS.

4. PROVEER INSTALACIÓN, SUPERVISIÓN PARA LA INSTALACIÓN Y DEJAR LOS EQUIPOS LISTOS PARA OPERAR (COMPLETE TURNKEY INSTALLATION AND SUPERVISORY SERVICES). EL PERSONAL PARA INSTALAR Y/O SUPERVISAR LA INSTALACIÓN ESTARÁ AUTORIZADO / CAPACITADO POR EATON PARA ESTOS SERVICIOS.

INSTRUCCIONES GENERALES

1. PARA ESTA SUBASTA LA AUTORIDAD REQUIERE QUE LOS LICITADORES INCLUYAN CON SU PROPUESTA UNA FIANZA DE LICITACIÓN INDIVIDUAL POR EL

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 02/20/2019
Due Time: AST
Printed : 02/14/2019
Page : 4

DIEZ POR CIENTO (10%) DEL PRECIO TOTAL DE SU PROPUESTA. LA FIANZA TIENE QUE VENIR ACOMPAÑADA CON EL DOCUMENTO POWER OF ATTORNEY. ESTOS DOCUMENTOS TIENEN QUE SER PREPARADOS POR UNA COMPAÑÍA AUTORIZADA A HACER NEGOCIOS EN PUERTO RICO. OFERTAS QUE INCUMPLAN CON ESTE REQUERIMIENTO SERÁN RECHAZADAS.

2. PARA ESTA SUBASTA, LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE, ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE SU LICITACIÓN CON DOS COPIAS IDÉNTICAS.

3. LUEGO DE LA APERTURA DE LA SUBASTA, LOS LICITADORES, SUS REPRESENTANTES Y OTRAS PARTES NO PUEDEN COMUNICARSE EN FORMA ALGUNA CON EMPLEADOS DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA PARA ASUNTOS RELACIONADOS CON LAS PROPUESTAS BAJO ESTUDIO, SALVO LO DISPUESTO POR LEY NÚM. 170, DEL 12 DE AGOSTO DE 1988, SEGÚN ENMENDADA Y LA REGLAMENTACIÓN PROMULGADA A SU AMPARO. REGLAMENTO DE SUBASTAS, CAPÍTULO IV, SECCIÓN VI, ARTÍCULO C, INCISO 2.

4. LOS LICITADORES TIENEN QUE COTIZAR ENTREGADO EN SITIO. LA AEE ESTÁ EXENTA DEL PAGO DE IVU.

5. SERÁ REQUISITO PARA ADJUDICACIÓN ESTAR ACTIVO EN EL REGISTRO DE PROVEEDORES DE LA AEE.

6. LOS TRABAJOS SE REGISTRAN POR LOS CÓDIGOS CORRESPONDIENTES EN LA INDUSTRIA.

7. EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.

8. EL CONTRATISTA AGRACIADO PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

- A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO
- B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00
- C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
- D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - POR EMPLEADO Y POR ACCIDENTE
- E. FIANZAS DE EJECUCIÓN Y PAGO POR EL 100% DEL TOTAL DEL CONTRATO.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/20/2019
Due Time: AST
Printed : 02/14/2019
Page : 5

CUALQUIER PREGUNTA RELACIONADA A ESTA PUBLICACIÓN, SE PUEDEN COMUNICAR CON:

YADIRA L. LUGO CORDERO
SUPERVISORA DE COMPRAS
TELÉFONO: 787.521.3235
EMAIL: YADIRA.LUGO@AEEPR.COM

CLÁUSULA DE SERVICIOS INTERAGENCIALES

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARÍA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARÁN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASÍ COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

CLÁUSULA DE TERMINACIÓN

LA SECRETARÍA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.
3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.
4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACCÍMIL O MEDIOS ELECTRÓNICOS.
5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/20/2019
Due Time: AST
Printed : 02/14/2019
Page : 6

PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

*** Not included on Pricing:

Standby time - when service personnel are on the job site but are unable to perform services requested due to circumstances beyond EESS control, PREPA will be billed at applicable rates

Overtime - \$438.00 per OT hour and \$584.00 DT hour

Extra regular day - \$2,460.00 each



* * * End of Request For Proposal * * *

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/13/2019
Due Time: 10:00 AST
Printed : 02/06/2019
Page : 1

Return RFP to:

YADIRA L. LUGO-CORDERO

Vendor: 001505

RG Engineering, Inc
605 Calle Condado Suite 322
Edificio San Alberto
Santurce P.R. 00907



Y-LUGO@AEEPR.COM

Phone: (787) 521-3235

Fax :

Start Date: 04/02/2018

End Date :

Work Location:

CENTRAL AGUIRRE

BO. MONTESORIA KM. 152.3

APARTADO 137

AGUIRRE PR 00704

Title: COMPRA E INSTALACIÓN DE BREAKERS 480V, CENTRAL AGUIRRE

Price will be divided in: Labor \$10,657.50 and equipment \$339,457.55

Bid Value: \$350,115.05***

Currency: USD

Not to Exceed?

Bid Pricing Method:

ESTIMATE

Bid Expiration Date:

As required by PREPA

Delivery Time: As required by PREPA

Payment Terms: As required by PREPA

Vendor Authorized Signature
Mrs. Aida Rodriguez - Accounts Receivable

Printed Name/Title

3-26-2019 787-723-4623

Date Signed

Phone

YADIRA LUGO CORDERO
Supervisora de Compras

Printed Name/Title

02.06.2019

Date Signed

Phone

Terms and Conditions - Text at End

Fac	Standard	Rev S/P Text	Title
PH000009		019 S Y	INSTRUCCIONES PARA SUBASTAS FORMALES

Scope of Work and Terms & Conditions Text follow as attachments

SUBASTA FORMAL NÚM: RFP 0002032

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/13/2019
Due Time: 10:00 AST
Printed : 02/06/2019
Page : 2

REQUISICIÓN NÚM.: 182868

TÍTULO: PROVEER TODO MATERIAL, HERRAMIENTA, EQUIPO, MANO DE OBRA,
SUPERVISIÓN Y TODO LO NECESARIO PARA:

COMPRA E INSTALACIÓN DE BREAKERS DE 480V, U. 2 CENTRAL AGUIRRE

REUNIÓN PRE-SUBASTA COMPULSORIA

FECHA: 13 DE FEBRERO DE 2018

HORA: 10:00 AM

LUGAR: SALÓN DE CONFERENCIAS, 2DO PISO, EDIF. ADMINISTRATIVO, CENTRAL
AGUIRRE

ES RESPONSABILIDAD DE LOS SUPLIDORES UTILIZAR CAPACETE, GAFAS Y
CALZADO DE SEGURIDAD PARA LA VISITA AL ÁREA. LA REUNIÓN PRE SUBASTA
CULMINA LUEGO DE LA VISITA AL ÁREA. SUPLIDOR QUE NO VISITE EL ÁREA
NO SE CONSIDERARÁ COMO PARTICIPANTE DE LA REUNIÓN.

ITINERARIO DE PAGOS

1. 10% CON LA EVIDENCIA DE LA COMPRA DE MATERIALES PARA MANUFACTURA.
2. 20% CON LA FINALIZACIÓN DE LA MANUFACTURA DE TODOS LOS EQUIPOS.
3. 30% AL RECIBIR LOS EQUIPOS EN LA CENTRAL.
4. 30% AL COMPLETAR LA INSTALACIÓN DE TODOS LOS EQUIPOS.
5. 10% AL COMPLETAR EL START UP DE TODOS LOS EQUIPOS Y ACEPTACIÓN FINAL POR PARTE DE LA AUTORIDAD.

TÉRMINOS DE PAGO

NETO 60 DÍAS, LUEGO DE APROBADA LA FACTURA POR PARTE DE LA AUTORIDAD.
LOS LICITADORES DESGLOZARÁN SU PRECIO ENTRE LO QUE ES LABOR Y
MATERIALES, PARA LA APLICACIÓN DE LA APORTACIÓN ESPECIAL DE 1.5 %
BAJO LA LEY NUM. 48-2013. DE NO DESGLOZAR EL PRECIO SE APLICARÁ LA
APORTACIÓN A LA TOTALIDAD COTIZADA.

GARANTÍA

LA GARANTÍA MÍNIMA REQUERIDA ES DE UN (1) AÑO A PARTIR DE COMPLETADA
LA INSTALACIÓN DE LOS EQUIPOS O DIEZ Y OCHO (18) MESES LUEGO DE LA
ENTREGA, LO QUE OCURRA PRIMERO.

TIEMPO DE ENTREGA Y PENALIDAD

EL TIEMPO MÁXIMO REQUERIDO PARA ENTREGA E INSTALACIÓN ES DE DIEZ Y
SEIS (16) SEMANAS, LUEGO DE APROBADA LA ORDEN DE COMPRA. APLICARÁ
UNA PENALIDAD POR CADA DÍA DE ATRASO DE QUINIENTOS DÓLARES (\$500.00)
HASTA UN MÁXIMO DE DIEZ POR CIENTO (10%) DEL TOTAL DE LA ORDEN DE
COMPRA.

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER



PUERTO RICO ELECTRIC POWER AUTHORITY

RFP : 00002032
Due Date: 02/13/2019
Due Time: 10:00 AST
Printed : 02/06/2019
Page : 3

ALCANCE DE TRABAJO

1. SUPLIR TODOS LOS MATERIALES, HERRAMIENTAS, EQUIPOS, MANO DE OBRA, SUPERVISIÓN Y TODO LO NECESARIO PARA LA COMPRA E INSTALACIÓN DE BREAKERS DE 480V PARA EL REEMPLAZO DE LOS BREAKERS ALLIS CHALMERS EXISTENTES. ESTOS BREAKERS SE UTILIZAN PARA LA PROTECCIÓN DE EQUIPOS AUXILIARES DE LA UNIDAD 2 DE LA CENTRAL AGUIRRE.
2. EQUIPOS A SUPLIR:
 - A. 12EA. EATON BREAKERS MOD. LA600-AR600NM (E/O) 520MC LSI (ARMS CAPABLE)
 - B. 1EA. EATON BREAKER MOD. LA1600-AR1600M (E/O) 520MC LSI (ARMS CAPABLE)
 - C. CADA BREAKER INCLUIRÁ "A NEW DOOR AND CASSETTE".
 - D. REPLACEMENT BREAKERS ARE 100% RATED, UL LISTED, BUILT AND TESTED IN AN ISO9001 AND 14001 CERTIFIED FACILITY.
 - E. BREAKER AND CASSETTE CONVERSION ARE BOTH CERTIFIED TO UL 1006 (BREAKER CONVERSION SPECIFIC).
 - F. 520 LSI TRIP UNIT OR THE 520MC LSI (ARMS CAPABLE) AND ARE MECHANICALLY OPERATED (M/O).
 - G. DESIGNATED TO BE ELECTRICAL AND MECHANICAL EQUIVALENTS OF THE BREAKERS TO REPLACE.
3. SE REQUIERE QUE LOS BREAKERS SEAN NUEVOS (BRAND NEW), NO SE ACEPTARÁN EQUIPOS O PIEZAS REMANUFACTURADAS O USADAS.
4. PROVEER INSTALACIÓN, SUPERVISIÓN PARA LA INSTALACIÓN Y DEJAR LOS EQUIPOS LISTOS PARA OPERAR (COMPLETE TURNKEY INSTALLATION AND SUPERVISORY SERVICES). EL PERSONAL PARA INSTALAR Y/O SUPERVISAR LA INSTALACIÓN ESTARÁ AUTORIZADO / CAPACITADO POR EATON PARA ESTOS SERVICIOS.

INSTRUCCIONES GENERALES

1. PARA ESTA SUBASTA LA AUTORIDAD REQUIERE QUE LOS LICITADORES INCLUYAN CON SU PROPUESTA UNA FIANZA DE LICITACIÓN INDIVIDUAL POR EL DIEZ POR CIENTO (10%) DEL PRECIO TOTAL DE SU PROPUESTA. LA FIANZA TIENE QUE VENIR ACOMPAÑADA CON EL DOCUMENTO POWER OF ATTORNEY. ESTOS DOCUMENTOS TIENEN QUE SER PREPARADOS POR UNA COMPAÑÍA AUTORIZADA A HACER NEGOCIOS EN PUERTO RICO. OFERTAS QUE INCUMPLAN CON ESTE REQUERIMIENTO SERÁN RECHAZADAS.
2. PARA ESTA SUBASTA, LA AUTORIDAD ACEPTARÁ PROPUESTAS EN SOBRE SELLADO ENTREGADO EN EL REGISTRO DE PROVEEDORES, EDIF. NEOS, 3ER PISO, OFIC. 301, SANTURCE, ANTES DE LA FECHA Y HORA ASIGNADA DE APERTURA. ACOMPAÑAR ORIGINAL DE SU LICITACIÓN CON DOS COPIAS

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 02/13/2019
Due Time: 10:00 AST
Printed : 02/06/2019
Page : 4

IDÉNTICAS.

3. LUEGO DE LA APERTURA DE LA SUBASTA, LOS LICITADORES, SUS REPRESENTANTES Y OTRAS PARTES NO PUEDEN COMUNICARSE EN FORMA ALGUNA CON EMPLEADOS DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA PARA ASUNTOS RELACIONADOS CON LAS PROPUESTAS BAJO ESTUDIO, SALVO LO DISPUESTO POR LEY NÚM. 170, DEL 12 DE AGOSTO DE 1988, SEGÚN ENMENDADA Y LA REGLAMENTACIÓN PROMULGADA A SU AMPARO. REGLAMENTO DE SUBASTAS, CAPÍTULO IV, SECCIÓN VI, ARTÍCULO C, INCISO 2.

4. LOS LICITADORES TIENEN QUE COTIZAR ENTREGADO EN SITIO. LA AEE ESTÁ EXENTA DEL PAGO DE IVU.

5. SERÁ REQUISITO PARA ADJUDICACIÓN ESTAR ACTIVO EN EL REGISTRO DE PROVEEDORES DE LA AEE.

6. LOS TRABAJOS SE REGISTRÁN POR LOS CÓDIGOS CORRESPONDIENTES EN LA INDUSTRIA.

7. EL CONTRATISTA ACUERDA LLEVAR A CABO TODOS LOS TRABAJOS CONTRATADOS EN CUMPLIMIENTO CON TODAS LAS LEYES, REGLAMENTACIONES U ORDENANZAS FEDERALES, ESTATALES Y MUNICIPALES DE SALUD Y SEGURIDAD.

8. EL CONTRATISTA AGRACIADO PROVEERÁ UN CERTIFICADO EN ORIGINAL FIRMADO POR UN REPRESENTANTE AUTORIZADO DE UNA COMPAÑÍA EN PUERTO RICO QUE DESCRIBA LA CUBIERTA DE LOS SIGUIENTES SEGUROS:

- A. CORPORACIÓN DEL FONDO DEL SEGURO DEL ESTADO
- B. SEGURO DE RESPONSABILIDAD PÚBLICA GENERAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00
- C. SEGURO DE RESPONSABILIDAD PÚBLICA DE AUTOMOVIL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - LIMITE SENCILLO COMBINADO
- D. SEGURO DE RESPONSABILIDAD PATRONAL - CON UNA CUBIERTA MÍNIMA DE \$1,000,000.00 - POR EMPLEADO Y POR ACCIDENTE
- E. FIANZAS DE EJECUCIÓN Y PAGO POR EL 100% DEL TOTAL DEL CONTRATO.

CUALQUIER PREGUNTA RELACIONADA A ESTA PUBLICACIÓN, SE PUEDEN COMUNICAR CON:

YADIRA L. LUGO CORDERO

SUPERVISORA DE COMPRAS

TELÉFONO: 787.521.3235

EMAIL: YADIRA.LUGO@AEEPR.COM

CLÁUSULA DE SERVICIOS INTERAGENCIALES

AMBAS PARTES CONTRATANTES RECONOCEN Y ACCEDEN A QUE LOS SERVICIOS CONTRATADOS PODRÁN SER BRINDADOS A CUALQUIER ENTIDAD DE LA RAMA

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

**PUERTO RICO ELECTRIC POWER AUTHORITY**

RFP : 00002032
Due Date: 02/13/2019
Due Time: 10:00 AST
Printed : 02/06/2019
Page : 5

EJECUTIVA CON LA CUAL LA ENTIDAD CONTRATANTE REALICE UN ACUERDO INTERAGENCIAL O POR DISPOSICIÓN DIRECTA DE LA SECRETARÍA DE LA GOBERNACIÓN. ESTOS SERVICIOS SE REALIZARÁN BAJO LOS MISMOS TÉRMINOS Y CONDICIONES EN CUANTO A HORAS DE TRABAJO Y COMPENSACIÓN CONSIGNADOS EN ESTE CONTRATO. PARA EFECTOS DE ESTA CLÁUSULA, EL TÉRMINO "ENTIDAD DE LA RAMA EJECUTIVA" INCLUYE A TODAS LAS AGENCIAS DEL GOBIERNO DE PUERTO RICO, ASÍ COMO A LAS INSTRUMENTALIDADES Y CORPORACIONES PÚBLICAS Y A LA OFICINA DEL GOBERNADOR.

CLÁUSULA DE TERMINACIÓN

LA SECRETARÍA DE LA GOBERNACIÓN TENDRÁ LA FACULTAD PARA DAR POR TERMINADO EL PRESENTE CONTRATO EN CUALQUIER MOMENTO.

**INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL**

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.
2. LOS LICITADORES QUE INCLUYAN EN LA COTIZACIÓN TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO DIFERENTES A LOS ESTABLECIDOS EN LOS DOCUMENTOS DE TÉRMINOS, CONDICIONES Y ESPECIFICACIONES ESTABLECIDOS PARA ESTA SUBASTA PODRÁN SER DECLARADOS NO RESPONDIENTE.
3. GARANTÍA DE LA PROPUESTA- PARA ESTA SUBASTA SE REQUIERE UNA GARANTÍA DE LICITACIÓN (BID BOND) O SU EQUIVALENTE PARA GARANTIZAR EL 10 PORCIENTO DEL TOTAL DE LA PROPUESTA A PRESENTARSE. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.
4. PARA ESTA SUBASTA LA AUTORIDAD DE ENERGÍA ELÉCTRICA NO ACEPTARÁ PROPUESTAS POR FACCÍMIL O MEDIOS ELECTRÓNICOS.
5. ES RESPONSABILIDAD DEL LICITADOR TENER DISPONIBLE UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA SU ESTATUS SOBRE EL PAGO DE CONTRIBUCIONES O PARA LOS CASOS DE DEUDAS PENDIENTES, SI POSEE ALGÚN PLAN DE PAGO; ESTO EN CASO DE ASÍ REQUERIRSE.

***** Not included on Pricing:

Standby time - when service personnel are on the job site but are unable to perform services requested due to circumstances beyond EESS control, PREPA will be billed at applicable rates

Overtime - \$438.00 per OT hour and \$584.00 DT hour

Extra regular day - \$2,460.00 each

*** End of Request For Proposal ***



26 de marzo de 2019

Sra. Yadira L. Lugo-Cordero
Gerente de Compras
AUTORIDAD DE ENERGIA ELECTRICA
GPO Box 4267
San Juan, PR 00936

ASUNTO: Invitación a Subasta # 00002032

Estimada señora Lugo:

Por este medio certifico que **RG ENGINEERING, INC.**, ha radicado sus planillas de contribuciones durante los últimos cinco (5) años y hemos efectuado el pago correspondiente según Orden Ejecutiva OE-1991-24.

Sin otro particular, quedo.

Cordialmente,

RG ENGINEERING, INC.

Sra. Carmen Aída Rodríguez

Certific.bid

Número de Invitación a

Fecha: 26 de marzo de 2019

1. CLÁUSULA DE ACEPTACIÓN

Para cumplir con esta Invitación a Subasta y sus condiciones, el licitador ofrece suplir todos los servicios o vender y entregar los materiales mencionados en todos o algunos de los renglones a los precios cotizados, si esta cotización se acepta dentro de 60 días desde la fecha de apertura.

2. CLAUSULA DE PRECIO

a. Si esta cotización se acepta dentro del periodo establecido en la cláusula de aceptación, el licitador deberá establecer si el precio o precios cotizados son:

XXX (1) Fijos

_____(2) Sujeto a aumento que no excedan un máximo de
_____% del precio por artículo (precio por unidad).

Se evaluarán las licitaciones sujetas a ajustes en aumento de precios indicados en la selección #2, sumando el precio cotizado y el porcentaje máximo señalado a cada uno de los renglones. En la alternativa en que los precios cotizados estén sujetos a ajustes escalonados, éstos deben basarse en los índices aplicables del Negociado de Estadísticas del Trabajo del Departamento del Trabajo de Estados Unidos y deberá incluir la base y fórmula usada para calcular los cambios en precios. Si no se indica el (1) ó (2) se considerará una licitación con precios fijos, no sujeta a ajustes de precios.

b. Las licitaciones que indiquen PRECIO EFECTIVO AL MOMENTO DE EMBARQUE son no correspondientes y no se considerarán.

3. CLAUSULA DE ENTREGA

Las licitaciones que indiquen entregas de INVENTARIO SUJETO A VENTA PREVIA también serán consideradas no correspondientes.

ESTO ES UNA SOLICITUD DE PRECIO

Someta sus cotizaciones en original y copia incluyendo y excluyendo el embalaje de exportaciones. Los licitadores extranjeros deberán cotizar a base de Costo, Seguro y Fletes (CIF), San Juan, incluyendo impuestos de Aduana.

NOTA: Es importante que se complete este formulario.

RG Engineering, Inc

Nombre del licitador

Firma

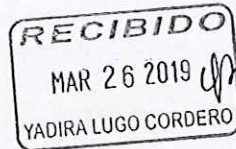


Sra. Carmen Aida Rodriguez
Nombre en Letra de Molde



PUERTO RICO ELECTRIC POWER AUTHORITY

BOND NO. 9096353



BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we RG ENGINEERING, INC. (hereinafter called the Principal) and, FIDELITY AND DEPOSIT COMPANY OF MARYLAND, having its principal offices at MARYLAND, a corporation duly organized and existing under the Laws of the COMMONWEALTH OF PUERTO RICO and authorized to transact business in Puerto Rico (hereinafter called the Surety) are held and firmly bound unto the PUERTO RICO ELECTRIC POWER AUTHORITY, a public corporation and governmental instrumentality of the Commonwealth of Puerto Rico, (hereinafter called the Oblige), in the penal sum of TEN PERCENT OF THE BID PRICE (10%), lawful money of the United States of America, for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, and successors, jointly and severally firmly by these presents.

WHEREAS, the Principal has submitted a bid for:

RFP 0002032 – SUPPLY AND INSTALL BREAKERS 480V AT AEE AGUIRRE POWER PLANT.

NOW, THEREFORE, if the Oblige shall accept the bid of the Principal and the Principal shall enter into a contract with the Oblige in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or contract documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such contract and give such bond or bonds, if the Principal shall pay to the Oblige the different not to exceed the penalty hereof between the amount specified in said bid and such larger amount of which the Oblige may in a good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

IT IS hereby understood and agreed that this bond will be effect for a maximum period of ninety (90) days after the bid date, unless its obligation is fulfilled prior to such date.

IN WITNESS WHEREOF, the above jointly and in solid bound parties have executed this instrument under their several seals this 13TH day of MARCH 2019 the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representatives pursuant to authority of its governing body.

RG ENGINEERING, INC.

PRINCIPAL

TITLE

FIDELITY & DEPOSIT COMPANY
OF MARYLAND

SURETY

ZENE J. IRIZARRY ALICEA

ATTORNEY IN FACT



**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**



KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **DAVID MCVICKER, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Jose M. DEL AMO MOJICA** and **Zene J. IRIZARRY ALICEA**, both of Guaynabo, Puerto Rico, **EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 19th day of May, A.D. 2017.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: *Dawn E. Brown*
Assistant Secretary
Dawn E. Brown

David D. McVicker
Vice President
David McVicker

State of Maryland
County of Baltimore

On this 19th day of May, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **DAVID MCVICKER, Vice President, and DAWN E. BROWN, Assistant Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Constance A. Dunn

Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019



Zene Javier Irizarry Alicea
GOLDEN GATE
160 CALLE ZAFIRO
GUAYNABO PR 00968

License No: 24935	Commonwealth of Puerto Rico	NPN: 10386551		
OFFICE OF THE COMMISSIONER OF INSURANCE				
Zene Javier Irizarry Alicea TRIPLE-S PLAZA 8TH FLOOR 1510 FD ROOSEVELT AVE. GUAYNABO PR 00968				
This is to certify that pursuant to requirements of the Insurance Code of Puerto Rico the above named is qualified to do business in Puerto Rico with the authority listed below.				
POWER OF ATTORNEY	EFFECTIVE DATE	EXPIRATION DATE	MAXIMUM AMOUNT	DATE OF POWER
Triple-S Propiedad, Inc.	05/31/2012	05/31/2020	UNLIMITED	10/11/2006
Travelers Casualty and Surety Company	05/24/2012	05/31/2020	UNLIMITED	05/02/2012
Travelers Casualty and Surety Company of America	05/31/2016	05/31/2020	UNLIMITED	05/02/2012
Fidelity And Deposit Company of Maryland	08/17/2017	05/31/2020	UNLIMITED	08/31/2016
Zurich American Insurance Company	08/17/2017	05/31/2020	UNLIMITED	08/31/2016
Endurance Assurance Corporation	10/26/2017	05/31/2020	\$ 5,000,000.00	08/11/2017
This qualification shall remain in effect until the expiration date, when applicable, unless previously suspended, revoked or terminated pursuant to the law and regulations in force.				
To validate the accuracy of this license you may review the same at https://sbs.naic.org/solar-external-lookup/				 Javier Rivera Rios Commissioner of Insurance

License No: 24935

Commonwealth of Puerto Rico

NPN: 10386551

OFFICE OF THE COMMISSIONER OF INSURANCE

Zene Javier Irizarry Alicea

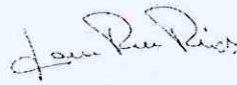
TRIPLE-S PLAZA
8TH FLOOR
1510 FD ROOSEVELT AVE.
GUAYNABO PR 00968

This is to certify that pursuant to requirements of the Insurance Code of Puerto Rico the above named is qualified to do business in Puerto Rico with the authority listed below.

POWER OF ATTORNEY	EFFECTIVE DATE	EXPIRATION DATE	MAXIMUM AMOUNT	DATE OF POWER
Triple-S Propiedad, Inc.	05/31/2012	05/31/2020	UNLIMITED	10/11/2006
Travelers Casualty and Surety Company	05/24/2012	05/31/2020	UNLIMITED	05/02/2012
Travelers Casualty and Surety Company of America	05/31/2016	05/31/2020	UNLIMITED	05/02/2012
Fidelity And Deposit Company of Maryland	08/17/2017	05/31/2020	UNLIMITED	08/31/2016
Zurich American Insurance Company	08/17/2017	05/31/2020	UNLIMITED	08/31/2016
Endurance Assurance Corporation	10/26/2017	05/31/2020	\$ 5,000,000.00	08/11/2017

This qualification shall remain in effect until the expiration date, when applicable, unless previously suspended, revoked or terminated pursuant to the law and regulations in force.

To validate the accuracy of this license you may review the same at
<https://sbs.naic.org/solar-external-lookup/>


Javier Rivera Rios
Commissioner of Insurance



Estado Libre Asociado de Puerto Rico

Administración de Servicios Generales

Registro Único de Licitadores

CERTIFICADO DE ELEGIBILIDAD

Fecha de Expedición

21-Marzo-2019

Número de Certificado

201900430

Fecha de Vencimiento

21-Marzo-2020

Nombre del Licitador: **RG ENGINEERING, INC.**

Seguro Social: **660397006**

Número de Licitador: **3509**

Dirección Postal: **605 CONDADO ST. SUITE 322 , SAN JUAN PR, 00907**

Teléfono: **7877234623 /**

Fax: **7877216678**

Email: **joseramon.camino@rgepr.com**

* Persona Autorizada a Firmar Oferta	Título que Ostenta
CARMEN AIDA RODRIGUEZ	REPRESENTANTE
HÉCTOR PUJOLS	REPRESENTANTE
JOSÉ M. ROBLES RIVERA	REPRESENTANTE

*Este Licitador tiene otras personas autorizadas a firmar ofertas. Favor de consultar la página de Internet del Registro Único de Licitadores o contactar al Licitador para más información.

La vigencia de la elegibilidad está sujeta a que en 21-Septiembre-2019 el licitador evidencie su cumplimiento con el inciso E del Artículo 24 Plan de Reorganización Núm. 3 del 21 de noviembre de 2011 presentando la Declaración Jurada requerida por ley. Será responsabilidad de cada Agencia Ejecutiva, Corporación Pública o Municipio validar la elegibilidad del licitador antes de adjudicar cualquier procedimiento de adquisición, órdenes de compra u otorgar contratos.

ADVERTENCIA: Cualquier alteración anula este certificado y podría ser sancionado criminalmente conforme a las disposiciones aplicables del Código Penal de Puerto Rico. Para validar la información en este certificado, favor de acceder al portal <https://serviciosonlinea.gobierno.pr/validacionelectronica/> y usar el número de certificado como código de validación.



ESTADO LIBRE ASOCIADO DE
PUERTO RICO
Administración de Servicios
Generales



SAN JUAN, PUERTO RICO



ACEPTACIÓN SOLICITUD DE INGRESO

Yo, **Ydsa M. Álvarez Cepeda**, Supervisora Oficina del Registro Licitadores de la Autoridad de Energía Eléctrica.

Certifico: Que **"R G ENGINEERING INC"** número de suplidor **001505**, forma parte de nuestro registro como Proveedor Registrado efectivo el **3 de octubre de 1989**.

Que su compañía será invitada a participar en el(los) renglón(es) dentro de lo(s) cual(es) está registrado.

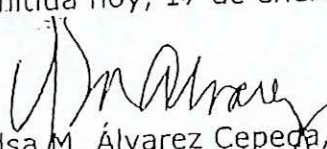
Que puede participar en subastas y contratos de bienes y productos.

Que las obligaciones y derechos de las compañías y personas incluidas en el Registro de Licitadores están expresados en nuestro Reglamento de Subastas.

Que todo proveedor tiene la obligación continua con la Autoridad de mantener al día toda la información y documentos necesarios sobre su negocio.

Que la Autoridad tiene el derecho de referir a su compañía al Comité de Evaluación de Proveedores Registrados para evaluar y recomendar la aprobación de equipos, productos o servicios especializados para cualificarse como Proveedores Evaluados.

Emitida hoy, 17 de enero de 2008


Ydsa M. Álvarez Cepeda, Supervisora
(Registro de Licitadores)

18 DEC 13 AM 10: 57

1. Que mis circunstancias personales son las antes descritas.
2. Que ocupo el cargo de VICEPRESIDENTE en la compañía antes mencionada.
(Título)
3. Escoja una de las siguientes:

Que ni RG ENGINEERING, INC., ni ninguna de sus afiliadas, subsidiarias, compañía matriz o áter ego, ha sido convicto o se ha declarado culpable, o está bajo investigación judicial, legislativa o administrativa en Puerto Rico, en los Estados Unidos de América o cualquier otro país por cualesquiera de los delitos enumerados en la Ley Núm. 458 del 29 de diciembre de 2000, según enmendada, 3 L.P.R.A. §928-928i, o su equivalente para propósitos de dicha Ley 458.

Que _____ o _____
(Individuo/nombre de la compañía) (Nombre de una subsidiaria, compañía matriz, afiliada o áller ego)
la cual es o fue subsidiaria, compañía matriz, afiliada o áller ego, de
_____, se ha declarado culpable o ha sido convicto por, o esta
(Individuo/nombre de la compañía)
bajo investigación judicial, legislativa o administrativa en Puerto Rico, en los Estados Unidos de
América o cualquier otro país por uno o más de los dellos según se establecen en la Ley
Núm. 458 del 29 de diciembre de 2000, según enmendada, 3 L.P.R.A. §928-928i, o su
equivalente para propósitos de dicha Ley Núm. 458. _____
(Individuo/nombre de la compañía)
o _____, se declaró culpable, fue convicto por, o
(Nombre de una subsidiaria, compañía matriz, afiliada o áller ego)
está bajo investigación judicial, legislativa o administrativa por _____
(del/lo)
en _____ ante _____. La convicción o la
(país/jurisdicción) (organismo o tribunal)
declaración de culpabilidad fue el _____.
(Fecha de la convicción o declaración de culpabilidad, lo que sucedió primero)

4/27/20

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Travelling Screens Replacement,
Costa Sur Power Plant – Units 5 & 6***

1/25/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Costa Sur Power Plant, units 5 & 6 – Travelling Screens
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Costa Sur Power Plant, units 5 and 6	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Costa Sur Power Plant needs to replace the five (5) travelling screens of units 5 & 6 by new ones, to add both reliability and efficiency, and to avoid unit limitations. The new travelling screens will be capable to operate continuously according to the latest environmental regulations.

The travelling screen is the secondary filtering equipment of the Condenser Circulating Water Pump (CCWP). This pump delivers sea water to the condenser to cool down the steam from the turbine to be reused in the thermodynamic cycle. For a full load unit operation, two CCWPs are required. The loss of a pump will limit the unit from 50MW to 100 MW depending of the condenser's cleanness factor. The actual travelling screens are not in a good condition since their parts and the main frame exhibit wear due to operation beyond the useful years. From 5 travelling screens, only 4 are in use in a limited operation to avoid damages in their main components. Furthermore, the actual travelling screens do not are in compliance with the Section 316 (b) of the Clean Water Act.



Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Travelling Screens Replacement of Costa Sur Power Plant units 5 and 6 will consist of the following:

- Removal and replacement of five (5) galvanized steel Travelling Screens, with its auxiliary equipment of the Power Plant's sea water intake for the cooling of units 5 and 6 condensers.
- The work shall include an infrastructure to protect the fish and other marine life, in compliance with Section 316 (b) of the Clean Water Act.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.



Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$M)
Purchase and Delivery (5 x \$800k/ea)	4,000,000.00
Installation and Labor (5 x \$200k/ea)	1,000,000.00
Total Project Estimated Cost	\$5,000,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature



Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

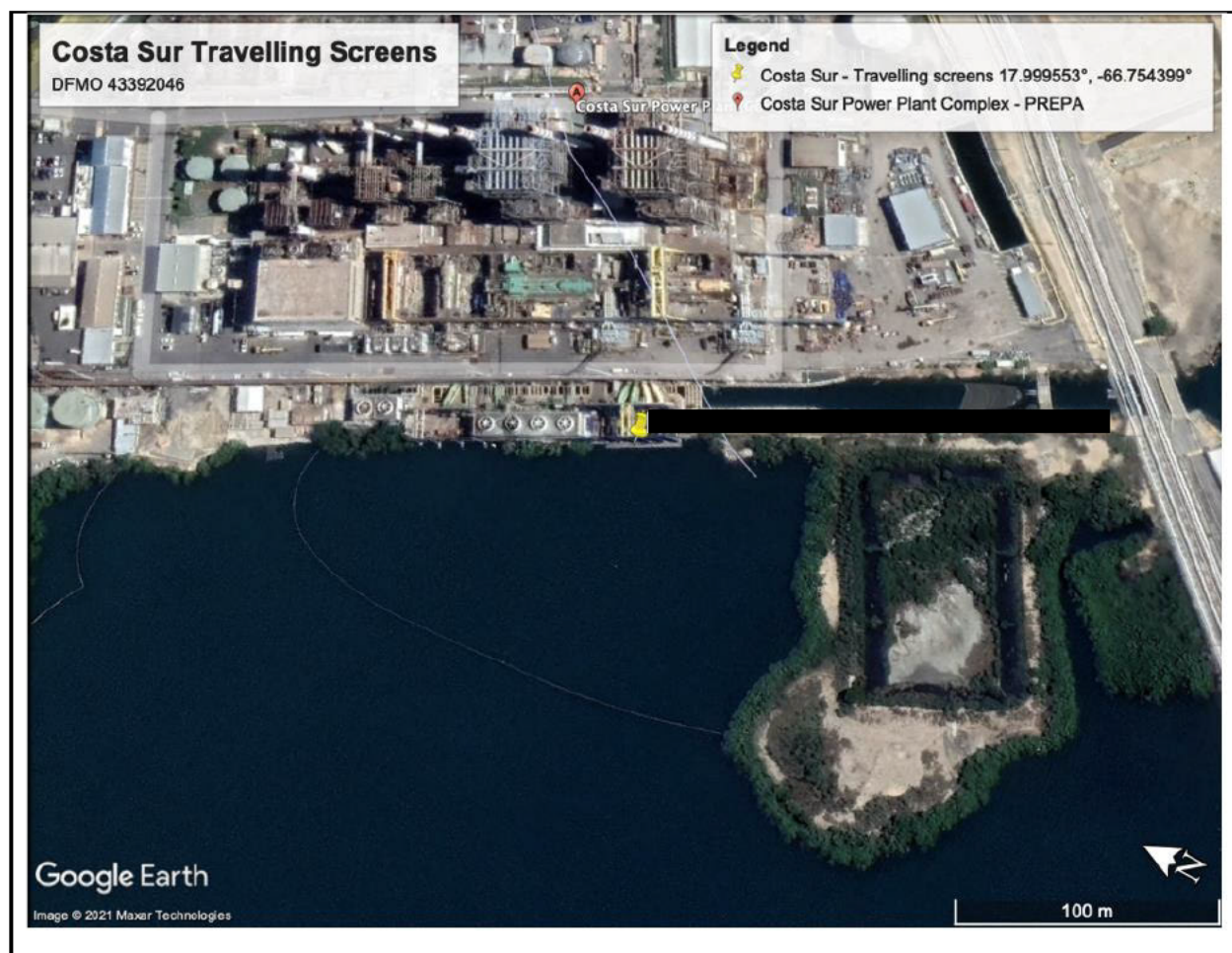
10.1. Project Detailed Cost Estimates

<p>Please see attached the following:</p> <ul style="list-style-type: none">• Justification_SOW and Estimated Cost.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)



N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 46

Project name: Travelling screens replacement

Estimated cost: \$5,000,000

Scope of work

The travelling screen is the secondary filtering equipment of the Condenser Circulating Water Pump (CCWP). This pump delivers sea water to the condenser to cooldown the steam from the turbine to be reused in the thermodynamic cycle. For a full load unit operation, two CCWPs are required. The loss of a pump will limit the unit from 50MW to 100 MW depending of the condenser's cleanness factor. The actual travelling screens are not in a good condition since their parts and the main frame exhibit wear due to operation beyond the useful years. From 5 travelling screens, only 4 are in use in a limited operation to avoid damages in their main components. Furthermore, the actual travelling screens do not are in compliance with the Section 316 (b) of the Clean Water Act.

The project consists in the replacement of the five (5) travelling screens for South Coast units 5 & 6 by new ones to add both reliability and efficiency and to avoid unit limitations. The new travelling screens will be capable to operate continuously according to the latest environmental regulations.

Purchase and delivery of 5 travelling screens \$4,000,000 (\$800,000.00 each)

Installation and labor associated- \$1,000,000 (\$200,000.00 each)



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion, or being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status, or physical or mental disability, or veteran status or genetic information."

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



Costa Sur Power Plant

***Procurement and Replacement of Regulator Valves for
Boiler Feed Water Units 5 & 6***

11/29/2021



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Procurement and Replacement of Regulator Valves for Boiler Feed Water Units 5 & 6
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>


PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
<i>Costa Sur Regulator Valves</i>	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

The Regulator Valves of Units 5 and 6 of the Central Costa Sur (Reguladora Grande de Alimentación) require periodic maintenance to maintain reliable generation. The operation of this valve is of utmost importance since it controls the level of the boiler so that it can produce steam and use that energy to move the turbine and generator. Because the current regulator is virtually obsolete, response parts have doubled in price in recent years, as has delivery time. Besides the parts or "Trim" are replaced monthly. As can be seen in fig. 1 answer piece prices hovered around \$67k as of 2014, currently it is \$98k. Since 2014 the "trim" has been requisitioned three times, and three times they have had to be repaired locally with TMG personnel because the warehouse did not have the parts at the time of repair. This is due to the time it takes from the new request, manufacturing and delivery. In addition to the inconveniences already mentioned, when the valve is repaired locally, the repair or replacement of parts leads to a day delay. Due to these inconveniences, the purchase of a new Fisher brand regulator is requested, which is modern, more resilient and economical.



Asset Suite

TIMI321 - PURCHASES/RECEIPTS USAGE STATISTICS

Production

☐

☒ Select to view transaction details.

Catalog ID

Date

Thru

<input type="checkbox"/>	Date	Purchase Order	Release	Line	Qty	UI	Unit Price	Vendor
<input type="checkbox"/>	10/19/2020	00088497		0001		1 EA	\$98,000.000000	106398
<input type="checkbox"/>	08/23/2017	00078608		0001		1 EA	\$66,233.000000	106398
<input type="checkbox"/>	02/12/2014	00068807		0001		1 EA	\$67,076.250000	106398
<input type="checkbox"/>	10/01/2012	00064124		0001		1 EA	\$51,816.800000	106398
<input type="checkbox"/>	09/26/2011	00059750		0001		1 EA	\$51,870.750000	106398
<input type="checkbox"/>								

Section 3. Scope of Work

3.1. Scope of Work Description

The boiler is one of the main components in a Rankine Cycle. This equipment is where the steam is generated to drive the turbine and the electrical generator. Its steam storage capacity allows the generator to respond to load changes of the electrical grid. Thus, the boiler generates up to 2,600,000 k#/hr. of steam at 2400 psig and 1000°F to provide 410MW to the system. The water to feed the boiler is controlled by a butt weld regulator that reduces the pressure from 3900 psig to 2500 psig allowing a smooth operation at the different loads. This regulator is often inspected and their major components are replaced since the main body presents wear due to exceedance of use beyond its useful life (installed in 1973). The price of a typical repair is about \$130,000 taking in account both material and labor.

The scope of this project is to replace the regulators in units 5 & 6 by new ones built with the latest valves technology and material selection. This will improve the reliability and availability of the unit to control load and reduce operational cost since a forced outage to repair it can be avoided.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)



Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

**Yes/No. If yes, describe how incorporated below.**

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$M)
<p>2 NEW Fisher OEM Equipment – “Reguladora Grande de Alimentación U5 & U6 Central Costa Sur” (\$150,832 per unit)</p> <ol style="list-style-type: none"> 1. Fisher Type HPT, CL2500, NPS 8" Control Valve Assembly, WC9, Class V Shut Off, EQ%, BW ends, SCH XXS, Stellite Trim 2. Fisher Type 685 Double Acting actuator, Fail Last, Type 377 Trip Valve for Lock-in-Last, with Side Mounted Handwheel, 3. Fisher FIELDVUE DVC6200 Smart Positioner with PD-Performance Diagnostics, Valve Signature Testing, HART Protocol, Input 4-20 mA, FM Explosion Proof, Linkage-less travel feedback, 4-20 mA Position Feedback 4. Fisher Signature Testing Level 3 Report 5. ASCO 120VAC 4-way solenoid 6. Topworx DXP limit switches 7. Type 67DFR air filter regulator 8. Processing Level 3 testing and certs: <ol style="list-style-type: none"> a. Hydrostatic test b. Drawings c. C of C Manufacturer Data Report per ASME Sec VIII d. C of C & Trim Material Spec e. Certified Material Test Report (CMRT): Pressure Boundary Parts 9. Includes 3-year Performance Diagnostic testing for valve health monitoring and certified report. 10. To replace existing Fisher Type HSV control valves in Costa Sur Units 5 & 6 that have been in operation since 6/1970 and are currently obsolete. 	\$301,664.00
Total Project Estimated Cost	\$301,664.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate



There are no costs associated with hazard mitigation.

Note: *If available, detailed engineering cost estimates will be included as an attachment.*

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates



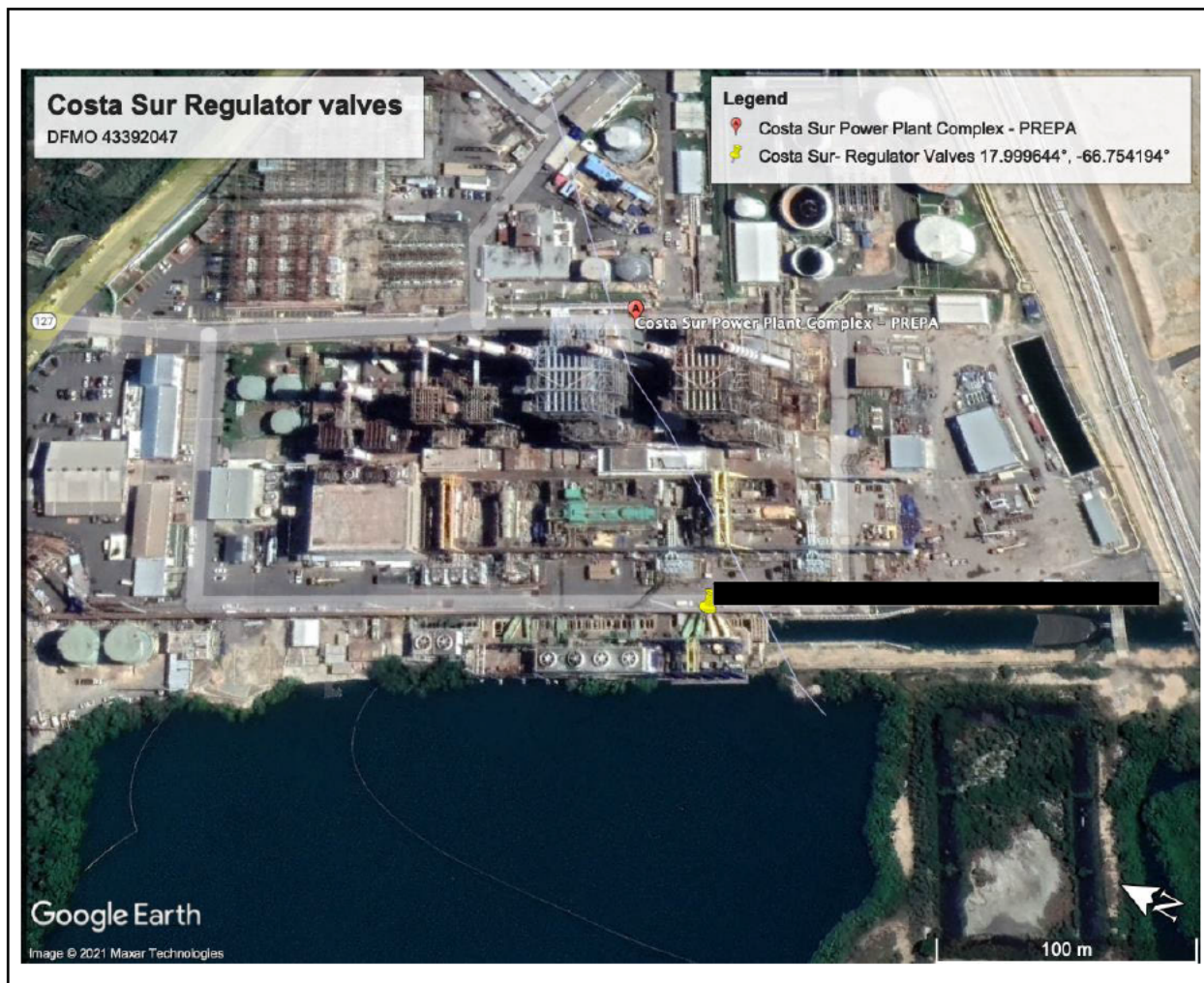
Please see attached the following supporting documentation:

- Memo_Justificación_PREB_3047
- Proyectos_2022_Angel_Perez_Rev_IJR (scope of work)
- Quote_138017

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 46

Project name: Travelling screens replacement

Estimated cost: \$5,000,000

Scope of work

The travelling screen is the secondary filtering equipment of the Condenser Circulating Water Pump (CCWP). This pump delivers sea water to the condenser to cooldown the steam from the turbine to be reused in the thermodynamic cycle. For a full load unit operation, two CCWPs are required. The loss of a pump will limit the unit from 50MW to 100 MW depending of the condenser's cleanness factor. The actual travelling screens are not in a good condition since their parts and the main frame exhibit wear due to operation beyond the useful years. From 5 travelling screens, only 4 are in use in a limited operation to avoid damages in their main components. Furthermore, the actual travelling screens do not are in compliance with the Section 316 (b) of the Clean Water Act.

The project consists in the replacement of the five (5) travelling screens for South Coast units 5 & 6 by new ones to add both reliability and efficiency and to avoid unit limitations. The new travelling screens will be capable to operate continuously according to the latest environmental regulations.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 47

Project name: Procurement and replacement of Regulator valves for Boiler Feed Water Units 5&6

Estimated cost: \$500,000 (two valves)

Material Request: MR 688578

Scope of work

The boiler is one of the main components in a Rankine Cycle. This equipment is where the steam is generated to drive the turbine and the electrical generator. Its steam storage capacity allow the generator to respond to load changes of the electrical grid. Thus, the boiler generates up to 2,600,000 k#/hr. of steam at 2400 psig and 1000°F to provide 410MW to the system. The water to feed the boiler is controlled by a butt weld regulator that reduce the pressure from 3900 psig to 2500 psig allowing a smooth operation at the different loads. This regulator is often inspected and their major components are replaced since the main body presents wear due to exceedance of use beyond its useful life (installed in 1973). The price of a typical repair is about \$130,000 taking in account both material and labor.

The scope of this project is to replace the regulators in units 5 & 6 by new ones built with the latest valve technology and material selection. This will improve the reliability and availability of the unit to control load and reduce operational cost since a forced outage to repair it can be avoided.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 48

Project name: Low pressure water heater 3 repair work

Estimated cost: \$400,000

Scope of work

In a thermodynamic process, the feed water heat exchanger improves the efficiency of the unit. The heat exchanger uses steam extracted from the turbine to increase the feed water temperature. This reduces the heat input required in the boiler to generate steam at proper conditions. A typical high pressure heat exchanger out of service can cost as high as 1.5% of its heat rate. The most common heat exchanger is the shell and tube one. The feed water flows into the tubes and the steam from the turbine extraction flows in the shell side. The steam heat the tubes and the energy pass from the tubes to the feed water. The feed water pressure is higher than the steam pressure so the heat exchangers should be carefully operated and observed to avoid water induction to the turbines. A water induction can cause catastrophic damages to the turbine like the one that occurred in August 22, 2021 in unit 6 of South Coast.

The scope of this project is to replace the tubes of the feed water heater#3 of unit 6. The tube replacement is necessary because the heater already has more than 10% of the tubes plugged and the recommendation of the Heat Exchanger Institute (HEI) is to replace them to avoid further damage of the equipment or the turbine. The heater #3 is directly below the turbine and by design, its extraction pipe do not has and isolating valve so it cannot be isolated. This repair will ensure the proper operation of the unit without any potential risk of water induction to the turbine.

Design, manufacture and delivery--- \$320,000.00

Installation -Labor----- \$80,000.00



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

Project number: 49

Project name: Procurement of Water heater 5 (Deaerator) spare pump

Estimated cost: \$400,000

Scope of work

In a Rankine Thermodynamic Cycle, the deaerator is the equipment where the dissolved oxygen of the feed water is removed to avoid corrosion into de boiler tubes. This open feed water heater is also the storage tank for the boiler water feed pump which pumps the water at 4000 psig to the boiler. The deaerator pump is the auxiliary equipment which pump the feed water to this open heat exchanger. It delivers water at 350 psig to keep a proper level in the deaerator for a continuous operation of the system. Each unit (5 & 6) of South Coast steam plant have two deaerator pumps and both are necessary for full load operation (410MW). Those pumps are inspected according to the preventive maintenance schedule but it is necessary to have a spare pump and motor since these equipment is the original one and have more than 50 years of use. Emphasizing in this issue, an overhaul was performed in one of the pumps in unit 6 and the casing of the pump was found in bad conditions so a mayor repair will be required. To avoid risks of unit limitations or forced outages a spare deaerator pump is required. With the pump available, a maintenance program can be initiated to refurbish all the pumps without any unit limitations or derating. The scope of this project is to purchase and install one spare deaerator pump for both units 5 & 6.





GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 50

Project name: Procurement of Air preheater baskets unit 5

Estimated cost: \$1,000,000

RFQ: 0054345

Scope of work

In order to improve the thermal efficiency in a boiler, the entering air for combustion is heated using the flue gases from the furnace. This heat exchange process occurs in the air preheaters. Each air preheater consist of two set of baskets (cold side set and hot side set) contained in a rotating drum. The baskets are compose of corrugated metal plates arranged in parallel. As the drum rotates, the plates are heated by the flue gases and cooled by the entering air. The air raise its temperature over 400°F before entering the furnace of the boiler. This saves fuel consumption and help to control stacks emissions to the environment. A set of seals (circumferential, radial and axial seals) prevents leakage from the air side of the air preheater to de gas side, providing a continuous operation. Due to the corrosive nature of the flue gases and the operational temperature, the baskets and seals has an expected useful life of approximately 7 years. The baskets of the air preheaters of unit 5 of South Coast exceed this time and a high grade of deterioration is observed in the equipment. The corroded plates clog the air and gas pass and the unit is limited to maintain an appropriate heat balance to overheating of the pressure parts of the boiler. The most reliable indicator of the air preheater performance is the differential pressure across the hot and cold side, a normal value is 7 to 9 psi at full load. Actually the differential pressure exceed 15 psi so the baskets and seals should be replaced during the next programed outage on October 2022.

The scope of this project is to acquire the whole sets of baskets and seals for both air preheaters of unit 5 before next outage taking in account that the construction and delivering time is about 5 months.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 51

Project name: Replacement of air preheater's baskets unit 5

Estimated cost: \$700,000

Scope of work

The scope of work for this project include the removal of the damaged baskets of the air preheater of unit 5 of South Coast and install the baskets described in the project 50. The installation includes the repair of the drum casing, replacement of the seals (circumferential, radial and axial seals), adjustment of the sector plates. The contractor shall provide all the necessary equipment (cranes, welding machines, pulleys, scaffolds, etc.), manpower including supervision and labor and consumable materials (welding rods, bolts, etc.) to make the replacement. PREPA shall provide the dumpsters and transportation to dispose the baskets to be removed in the industrial landfill.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 52

Project name: Procurement of Condenser Circulating Water Pump (CCWP) and Boiler Circulating water pump (BCWP) spare motors for units 5 & 6

Estimated cost: \$620,000

Contract Request: CR252637

Contract Request: CR252638

Scope of work

The Condenser Circulating Water Pump (CCWP) delivers sea water to the condenser to cool down the steam from the turbine and to condense it to be reuse in the thermodynamic cycle. For a full load unit operation two CCWPs are required. The loss of a pump will limit the unit from 50 MW to 100 MW depending of the condenser cleanness factor. Actually there is not a spare motor in South Coast so the procedure in case of a failure of a motor is to limit the unit base of its condenser vacuum. It takes about two to three months to refurbish a motor so the scope of this project is to acquire a spare motor to avoid this risky operation. In a long term preventive maintenance program, the acquisition of the spare motor (1000hp) can give the flexibility to fully inspect/repair the remaining motors without unit limitations.

In the boiler The Boiler Circulating water pump (BCWP) delivers water from the boiler drum to the water walls where the evaporation process to generate the steam is initiated. For a full load operation, three BCWPs are required. In the case of loss of a BCWP, the unit should be limited to 325 MW. With two BCWPs out of service, the unit should be retired from service to avoid damages in the pressure parts since there's not an adequate water flow in the waterwalls. Spare pumps are refurbished and available but there is a lack of spare motors. Thus, the scope of work is to purchase a spare motor (700 hp) to reduce the unit's forced outage or limitation downtime taking in account that the time to refurbish a motor, including the procurement process, is about three months.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 53

Project name: Procurement of Induced Draft Fan (IDF) and Forced Draft Fan (FDF) spare motors for units 5 & 6

Estimated cost: \$870,000

Contract Request: 252642

Contract Request: 252640

Scope of work

In a boiler, the Force Draft Fan (FDF) is the auxiliary equipment that delivers air to the furnace for the combustion process. In the other hand, the Induced Draft Fan (IDF) retrieves the flue gases from the furnace, keeping the furnace at a negative pressure to avoid flue gas leakage through the enclosure and ports. Two FDFs and two IDFs are required for a full load operation. The loss of any of them redounds in a unit limitation of 50% of the load. Since there is not a suitable spare motor for those Fans and considering the extensive downtime period to refurbish a damaged motor (over three months) it is cost effective to purchase a spare motor for each fan. Thus, the scope of this project is to purchase two motors: one for the IDF (4500hp) and one for the FDF (1750hp).



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 54

Project name: Procurement of Condensate Pump (CP) spare motor for units 5 & 6

Estimated cost: \$870,000

Material Request:

Scope of work

As a key component of the Rankine thermodynamic process, the Condensate pump delivers water from the unit's condenser to the suction header of the Deaerator pumps. By doing this operation, an adequate water level is maintained in the condenser for a continuous operation of the cycle. Two pumps are required for full load. The loss of one of them will reduce the capacity by 100 MW and since there is not a spare motor for this pump it is cost effective to purchase a spare motor considering the extensive downtime period to refurbish a damaged motor (over three months). Thus, the scope of this project is to purchase a spare motor (500hp) for this pump for units 5 & 6.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 55

Project name: Replacement of unit 5 Electric load center

Estimated cost: \$1,000,000

Contract Requisition: CR252647

Contract Requisition: CR252646

Scope of work

To supply the electrical demand of its auxiliary equipment, the unit 5 has switchgears and load centers at different voltage levels (4160v, 480v, 208v). The breakers of the switchgears already have been changed but the load centers should be totally replaced since obsolescence of its components. Furthermore, most of the breakers of the load centers do not have the interruptive capacity in case of an equipment failure since internal parts are obsolete spare parts are not available in the market. Thus, the scope of this project is to change the primary load centers of unit 5 of South Coast. The work is divided in 4 stages: procurement, design and drawings approval, construction and validation, and installation and commissioning. The time frame to perform this replacement will be programmed outage on October, 2022.



P O B o x 3 6 4 2 6 7 S a n J u a n , P u e r t o R i c o 0 0 9 3 6 - 4 2 6 7

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 56

Project name: Replacement of Excitation System unit 5 & 6

Estimated cost: \$1,500,000

Contract Requisition: CR 252643

Contract Requisition: CR 252645

Scope of work

One of the most important components in a Powerplant is the Generator. This equipment is where the mechanical energy is transformed into electrical energy to be dispatched to the electrical grid. To perform that energy conversion it is necessary to create a rotational electromagnetic field the rotor of the generator in order to induce the voltage and current in its stator. This rotational magnetic field is created by controlling a direct current flow from the carbon brushes to the rotor of the generator. Thus, as the DC current increase, the magnetic field will get stronger and more electric power will be induced in the generator stator. The DC current is controlled by the excitation system which is an AC/DC current rectifier. This dedicated equipment keeps the proper level of DC current and voltage for a continuous operation of the generator. The excitation systems of unit 5 & 6 have been installed in the early 2000th's and the manufacturer ceases the production of their spare parts are not available in the market. Actually the performance of the excitation systems of units 5 & 6 is fair since malfunctions have been experienced during the start-ups and normal operation.

The scope of this project is to purchase and install an upgraded excitation system with the latest available technology. An upgrade is preferred since the external wiring will remain untouched to warrantee the reliable operation of the units. The lead time for the exciters is about 6 months and the installation process will take three weeks. The planning is to install the system in the programmed outage of unit 5 and the environmental outage of unit 6.





GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 57

Project name: Replacement of 4160V electric cable of Normal Transformers (NSST) 5A & 5B

Estimated cost: \$250,000

Contract Requisition: 254191

Scope of work

The Normal Service Station Transformers (NSST) provide electrical power to all the auxiliary equipment of the generating unit. These step-down transformers supply 4160v to the switchgears by using three (3) underground cables for a total of nine (9) cables (1500Kcmil Insulation XLPE 5kv). The total length for both NSST is 6000 ft. The cable haven't been change since their original installation in the 1970ths so the expected useful life is overdue. In 2017 the cables of NSST 6B were changed after a failure of two of them and in 2020 the ones of the NSST 6A were replaced too. In both NSSTs, the cable's insulation were in bad condition.

The scope of this project is to purchase and install the cables during the programmed outage of unit 5 on October 2022. The delivery time is about 4 months for the cables and the installation time is 6 weeks. The replacement will bring reliability to the unit for a long term period.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 58

Project name: CS 5 Major Inspection Unit 5 HP/IP/LP Turbine Rotor Replacement

Estimated cost: \$6,000,000

Contract Requisition:

Scope of work

The scope of this project is to full inspect and refurbish the spare turbine rotors and their stationary parts (diaphragms), previously removed from unit 6 in 2020 after 10 years of use, in order to install them in the turbine of unit 5 during the programmed outage on October 2022. The project will cover HP/IP rotor, LPA rotor and the LPB rotor that was damaged on August 22, 2021. The rotor's inspections will be performed in the United States and a recommendation report will be submitted for PREPA's staff evaluation. After the evaluation of the recommendations and the proper procurement procedure, a refurbish process of about 4 month will be initiated. The refurbishing process will include a high speed balance of the three rotors. The rotors and diaphragms will be shipped to the plant and properly being storage at the facility. The installation costs are not part of the scope of this project.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 59

Project name: CS Major Outage Unit 5 Boiler Sections Replacement and Repairs & Auxiliary Equipment Repairs

Estimated cost: \$9,000,000

Contract Requisition:

Scope of work

During the programmed outage of unit 5 (October 2022), the boiler's main components and the associated auxiliary equipment will be inspected and repaired. The scope of work includes the procurement of services and materials purchase for the following tasks:

Hydrostatic testing – 300,000

Internal chemical cleaning – 450,000

External Boiler Wash – 750,000

Soot blower – 600,000

Burners Repair Works - 750,000

Inspection/repair of control valves – 600,000

Nondestructive testing of high energy piping – 500,000

Hanger's inspections – 300,000

Fuel lines inspection /maintenance – 350,000

Boiler assessment – 500,000

Forced Air Draft fans inspection/ maintenance – 250,000

Induced Draft fan inspection/ maintenance – 250,000

Boiler Circulating Water Pumps inspections/ maintenance – 300,000

Ducts inspection/repair – 750,000

Insulation works – 750,000

Scaffolds – 800,000

Inspection/repair of motorized and manual line valves – 300,000

Miscellaneous equipment repair – 600,000



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 60

Project name: Water Heater Replacement Works

Estimated cost: \$2,000,000

Scope of work

In a thermodynamic process, the feed water heat exchanger improves the efficiency of the unit. The heat exchanger uses steam extracted from the turbine to increase the feed water temperature. This reduces the heat input required in the boiler to generate steam at proper conditions. A typical high pressure heat exchanger out of service can cost as high as 1.5% of its heat rate. The most common heat exchanger is the shell and tube one. The feed water flows into the tubes and the steam from the turbine extraction flows in the shell side. The steam heats the tubes and the energy passes from the tubes to the feed water. The feed water pressure is higher than the steam pressure so the heat exchangers should be carefully operated and observed to avoid water induction to the turbines. A water induction can cause catastrophic damages to the turbine like the one that occurred in August 22, 2021 in unit 6 of South Coast.

The scope of this project is to replace the feed water heater#6 of unit 5. The replacement is necessary because the heater already has more than 10% of the tubes plugged and the recommendation of the Heat Exchanger Institute (HEI) is to replace them to avoid further damage of the equipment or the turbine. After the procurement process, the lead time for the construction and shipping of the Heater is about 8 months and the installation process is about 6 weeks. The replacement is scheduled for the next outage on October 2022.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 61

Project name: Caustic Soda and Acid Tanks Replacement Works

Estimated cost: \$750,000

Scope of work

Caustic soda and sulfuric acid are widely used for water treatment processes in the powerplant industry. Both are used to control water's PH levels and to regenerate the resin of the water polishers system of the demi plant. There are one reserve tank and one service tank for each chemical compound for a total of four (4) tanks. The tanks are the original ones carbon steel (1973) and are highly corroded and in the last year there were at least two spills of these products caused by this situation.

The scope of work for this project is to purchase the four tanks, upgraded to stainless steel, and to install them by the end of year 2022. The process is divided in 4 stages: Design (1 month), drawing approval (two weeks), construction & shipping (6 months) and installation (1 month).



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 62

Project name: Unit 6 – HP/IP/LP Inspection (failure)

Estimated cost: \$945,000

Contract Requisition:

Scope of work

The scope of this project is to full inspect the turbine LPB rotor and their stationary parts (diaphragms) that was removed from unit 6 on the outage of October 2020. The inspection will include nondestructive tests. The rotor and diaphragms will be shipped from the plant to a shop in EUA. After the inspection a report with the repair recommendations will be generated to be evaluated by PREPA. Neither the repair nor installation costs are part of the scope of this project. Regarding the HP/IP and LPA rotors, they will be inspected on site by PREPA personnel since no damage was experienced on them. Thrust bearing inspection, oil flushing, boroscopic inspection and bump check procedure will be performed on these rotors to ensure proper operation.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 63

Project name: BFWP Inner Barrel Bundle

Estimated cost: \$1,700,000

Contract Requisition: 244323

Scope of work

In an operating unit, the boiler feed pump delivers water to the boiler for the steam generation. Two BFP's are required for full load operation. The BFP 5-2 was reported by the maintenance and operation crews to be running in low performance and high vibrations. Although this pump was refurbished in the past, it is necessary to perform an extended overhaul on it. The cost of this overhaul can exceed the cost of a new pump barrel assembly. In the other hand, there is not a spare pump barrel assembly in case of failure of any pump in units 5 & 6 so it is necessary to purchase a new barrel assembly to keep a spare one once the overhaul be performed in the one of BFP 5-2. The scope of this work is to purchase a new barrel assembly (lead time of 8 months including shipping) and install it on BFP 5-2 during the Programmed outage of unit 5 on October 2022.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 64

Project name: Unit 6 – LPB Repair work (failure)

Estimated cost: \$1,917,000

Contract Requisition:

Scope of work

The scope of this project is to repair the turbine LPB rotor and their stationary parts (diaphragms) that was removed from unit 6 on October 2020, in order to replace the damaged LPB rotor from the failure of August 22, 2021. High speed balance will be performed on the rotor to ensure a smooth operation. The installation costs aren't part of the scope of this project. The repair process takes 6 weeks and its shipment to the plant is included.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 65

Project name: Unit 6 – LPB Installation work (failure)

Estimated cost: \$2,000,000

Contract Requisition:

Scope of work

The scope of this project is to install the turbine LPB rotor and their stationary parts (diaphragms) that was removed from unit 6 on October 2020, in order to replace the damaged LPB rotor from the failure of August 22, 2021. The installation include the alignment of the LPB rotor with the LPA rotor and the generator, couplings installation, hydrogen seals, bearings and balance analysis and support during the startup process. The installation process takes 3 weeks.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 66

Project name: AGC Replacement

Estimated cost: \$400,000

Contract Requisition:

Scope of work

In the electrical grid, one of the most important issues is the frequency control. The generating units should be able to change load to keep the frequency in a proper level (60 HZ). Also the generating units should be loaded in accord of an economic dispatch program. Thus, a controller located in Monacillos send a signal through SCADA to all the plants to position the units at the required load. The AGC is a specialized equipment located in the powerplant which receives the signal from SCADA. The AGC of units 5 & 6 where installed in 1973 and their spare parts are not longer available. Actually, the AGC of unit 5 is not in service and the AGC of unit 6 works intermittently. The scope of this project is to purchase and install two AGC's for a proper load regulation of units 5 & 6. The systems will be installed by August 2022.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

Project number: 67

Project name: Fuel Igniters Replacement Work

Estimated cost: \$2,000,000

Contract Requisition: 243382

Scope of work

The principal component of a boiler are its burners. The burner is where the fuel, liquid or gas, is supplied to the furnace for the water evaporation and steam generation into the waterwalls. In order to lightoff a burner, its respective ignitor (pilot torch), should be turned on to initiate the flame development and stabilization. In unit 5 & 6, the ignitor system has more than 25 years and their principal components and spare parts are no longer available in the market. Since two years, the functionality of this system has been reduced although the maintenance given to it. On the other hand, the system is no longer reliable and is not in compliance with latest NFPA 87 code (Boiler explosions code).

The scope of this project is to purchase two ignitor systems for boilers 5 & 6 and to install them in the next programmed outage of unit 5 and environmental outage of unit 6. The proposal include all the hardware for both boilers (40 ignitors in total) and their respective control equipment to communicate the system with the actual Burner Management System (BMS- Foxboro). After the drawings approval (by PREPA), the lead time for the equipment is about 4 months. The mechanical installation will be done by PREPA and the electrical connections to the BMS will be done by the contractor. A commissioning process of one week will be performed to warrantee its operation.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 68

Project name: Upgrade to Foxboro Simulation System

Estimated cost: \$500,000

Contract Requisition:

Scope of work

South Coast steam plant have installed a high definition Simulator (Scheinner/Foxboro) to be used as the training center for the Operators of the unit's control room. With the simulator many abnormal operations and scenarios can be reproduced to allow the operator to develop his skills in the Distributed Control System (DCS), Burner Management System (BMS) and the Reverse Osmosis Demi Plant. This tool is very important in the industry and contributes to a reliable and continuous operation and a fast and secure learning process for the new personnel. During the past three years many controls and processes have been added to these systems and it is required to update the Simulator. Important changes like the Turbine Water Induction for the turbine protection should be incorporated to assure a proper operation. Thus, the scope of this project is to make an upgrade of the simulator to include the new control systems added to the DCS, BMS and RO Demi plant. The benefit of this upgrade will be a faster learning curve for the new operators and a reliable operation of the generating units.



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion; for being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status; for physical or mental disability, for veteran status or genetic information."

ESTADO LIBRE ASOCIADO DE PUERTO RICO
AUTORIDAD DE ENERGÍA ELÉCTRICA DE PUERTO RICO

SAN JUAN, PUERTO RICO

www.aeepr.com



APARTADO 364267
CORREO GENERAL
SAN JUAN, PR 00936-4267

Oficina del Jefe de Conservación

25 de febrero de 2021

Mario Miranda E. Miranda
División de Suministros

Miguel A. Beauchamp Ramos, Jefe Interino
Central Generatriz Central Costa Sur

Daritz Sepulveda
Jefe de Instrumentación

MANTENIMIENTO A LAS REGULADORA GRANDE DE ALIMENTAR (FCV-1)

Las reguladoras Grande de Alimentar de las Unidades 5 y 6 de la Central Costa Sur necesitan mantenimiento periódico para mantener una generación confiable. La operación de esta válvula es de suma importancia ya que esta controla el nivel del calderín para que así este pueda producir vapor y utilizar dicha energía para mover la turbina y al generador. Debido a que la reguladora actual es prácticamente obsoleta las piezas de respuesta se han duplicado en precio en los últimos años como también el tiempo de entrega. A parte las piezas o "Trim" se reemplazan mensualmente. Como se puede notar en la fig. 1 los precios de las piezas de respuestas rondaban en los \$67k desde el 2014, actualmente está en los \$98K. Desde el 2014 el "trim" se ha requisado tres veces, y tres veces se han tenido que reparar localmente con el personal del TMG debido a que el almacén no ha tenido las piezas al momento de la reparación. Esto debido al tiempo que toma desde la nueva requisición, fabricación y entrega. En adición a los inconvenientes ya mencionado, cuando la válvula se repara localmente, la reparación o remplazo de las piezas conlleva un día de atraso. Debido a estos inconvenientes se solicita la compra de una nueva reguladora marca Fisher la cual es moderna, más resiliente y económica.

La compañía Control Associate Caribe es el representante exclusivo del fabricante Fisher. Solicitamos se adjudique este orden como único proveedor a la compañía Control Associate Caribe. De esta manera podremos atender esta situación.

De necesitar más información, puede comunicarse al 8093, 8018.

Asset Suite

TIMI321 - PURCHASES/RECEIPTS USAGE STATISTICS

Production

☐

☒ Select to view transaction details.

Facility

A59

Catalog ID

0000059965

0

Date

Thru

<

Fig. 1 Precios del "trim" de la Reg. de Alimentar FCV-1

Quotation

Date: 3/17/2021
Attention: Ing. Angel Pérez
Company: PREPA Central Costa Sur
Phone:
Fax:
Email: aperez9655@prepa.com
Address: Almacén Central Costa Sur 059
Guayanilla, PR 00656

Quote#: 138017
Rev: 0
Please reference our Quote # on your PO
From: Rafael Vales
Phone: 787-705-0345

Reference: Propuesta Fisher Reemplazo Directo - Reguladora Grande de Alimentación U5/U6

We are pleased to offer the following quotation for your consideration.

Item	Description	Qty	Unit Price	Net Extended	Lead Time
1	NEW Fisher OEM Equipment – Direct Replacement to “Reguladora Grande de Alimentación U5 & U6 Central Costa Sur” 1. Fisher Type HPT, CL2500, NPS 8" Control Valve Assembly, WC9, Class V Shut Off, EQ%, BW ends, SCH XXS, Stellite Trim 2. Fisher Type 685 Double Acting actuator, Fail Last, Type 377 Trip Valve for Lock-in-Last, with Side Mounted Handwheel, 3. Fisher FIELDVUE DVC6200 Smart Positioner with PD-Performance Diagnostics, Valve Signature Testing, HART Protocol, Input 4-20 mA, FM Explosion Proof, Linkage-less travel feedback, 4-20 mA Position Feedback 4. Fisher Signature Testing Level 3 Report 5. ASCO 120VAC 4-way solenoid 6. Topworx DXP limit switches 7. Type 67DFR air filter regulator 8. Processing Level 3 testing and certs: a. Hydrostatic test b. Drawings c. C of C Manufacturer Data Report per ASME Sec VIII d. C of C & Trim Material Spec e. Certified Material Test Report (CMRT): Pressure Boundary Parts 9. Includes 3-year Performance Diagnostic testing for valve health monitoring and certified report. 10. To replace existing Fisher Type HSV control valves in Costa Sur Units 5 & 6 that have been in operation since 6/1970 and are currently obsolete. “MUST BE FISHER NEW GENUINE EQUIPMENT, ACCEPT NO SUBSTITUTE”	2.00	\$150,832.00	\$301,664.00	TBA
			Total:	\$301,664.00	

Quotation

Shipping: Jobsite – PREPA Costa Sur

Payment Terms: Net 30

Pricing Valid: 30 Days

Please address your order to: Control Associates Caribe
475 Calle C - Suite 503
Guaynabo, PR 00969

Prices quoted are firm for thirty days and are based upon the quantities requested. Cancellation or construction changes made after order entry may be subject to additional charges. Minimum billing is \$200.00. Standard terms of payment are net thirty days. All orders are subject to credit approval. Control Associates Caribe's Standard Terms and Conditions for Sale of Goods and Services (Rev: August 2019), a copy of which is attached to this proposal, is an essential component of the proposal. By accepting this proposal and issuing a purchase order to Control Associates Caribe, you accept and agree to the Standard Terms & Conditions and they shall form a part of the contract.

This quotation does not include any taxes. If your order is tax exempt, please provide a state sales tax exemption certificate based upon the ultimate equipment destination. For orders whose ultimate destination is outside the United States, a written statement of ultimate destination and end use will be required prior to processing. We look forward to receipt of your order.

CONTROL ASSOCIATES CARIBE

STANDARD TERMS AND CONDITIONS FOR SALE OF GOODS AND SERVICES

These terms and conditions, the attendant proposal, quotation or acknowledgment, and all documents incorporated by reference therein (collectively, the "Agreement"), bind Control Associates of Puerto Rico, LLC d/b/a Control Associates Caribe (the "Seller") and each person or entity that buys goods or services from Seller (each, a "Buyer"). The Agreement constitutes the entire agreement between Buyer and Seller for the provision of services (the "Services") and/or the sale of goods (the "Goods") by Seller to Buyer.

1. **PRICES:** Proposals and quotations for possible Buyer orders from Seller are subject to the terms and conditions established herein. Seller's prices for Goods and/or Services shall remain in effect for thirty (30) calendar days from the date of the corresponding proposal or quotation, unless otherwise specified therein, or from the date the order for the Goods and/or Services is accepted by Seller, whichever occurs first, and shall automatically expire thereafter unless an unconditional and complete authorization for the immediate manufacture and shipment of the Goods and/or the provision of the Services pursuant to Seller's standard order processing procedures is received and accepted by Seller within such thirty (30) day period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods and/or Services to Seller's price in effect for the Goods and/or Services at the time the order is accepted by Seller. Unless expressly stated in Seller's proposal or quotation, quoted prices do not include the storage, installation, start-up or maintenance of purchased Goods. Notwithstanding the provisions of this section, the price for Goods and/or Services sold by Seller, but manufactured or provided by third-parties, shall be Seller's price in effect at the time of the shipment of the Goods or the provision of the Services to the Buyer.

2. **DELIVERY, ORDER ACCEPTANCE AND DOCUMENTATION:** All shipping dates are approximate and are based upon Seller's prompt receipt of all necessary information from Buyer to properly process the order. Notwithstanding any provision to the contrary in this or other documents related to this transaction and regardless of how a price was quoted (whether freight on board ("FOB"), free along side, cost insured freight or otherwise), legal title to the Goods and risk of loss thereto shall transfer to Buyer as follows: (i) for sales in which the end destination of the Goods is within the United States, upon delivery to the freight carrier at the shipping point and (ii) for sales in which the end destination of the Goods is outside of the United States, immediately after the Goods have passed beyond the territorial limits of the United States. Acceptance of all orders placed by Buyer pursuant to this Agreement shall take place exclusively in San Juan, Puerto Rico. Seller shall provide Buyer with such data/documentation that is specifically identified in the quotation. If additional copies of data/documentation or non-standard data/documentation are to be provided by Seller, they shall be provided to Buyer at Seller's price then in effect. Data/documentation marked as confidential or proprietary may not be reproduced or used for any purpose other than the purpose for which it was provided and may not be disclosed to third parties without the prior written permission of Seller.

3. **EXCUSE OF PERFORMANCE:** Seller shall not be liable for delays in performance or for non-performance due to failure or interruption of computer or telecommunication systems, acts of God, war, riot, fire, terrorism, labor trouble, unavailability of materials or components, explosion, accident, compliance with governmental requests, laws, regulations, orders or actions, or other unforeseen circumstances or causes beyond Seller's reasonable control. In the event of such delay, the time for performance or delivery shall be extended by a period of time reasonably necessary to overcome the effect of the delay.

4. **TERMINATION AND SUSPENSION BY BUYER:** Buyer may terminate or suspend its order for any or all of the Goods/Services covered by the Agreement only upon Seller's written consent.

5. **LIMITED WARRANTY:** Subject to the limitations contained in Section 6 herein, Services shall be performed by qualified personnel using proper equipment for the particular service provided, and Goods supplied by Seller to Buyer will be free from defects in materials or workmanship under normal use and care. The foregoing warranties will apply until the expiration of the applicable warranty period. Except as specified below, Goods (other than software) are warranted for twelve (12) months from the date of shipment. Consumables and Services are warranted for a period of 90 days from the date of shipment of Goods or completion of Services by Seller. Software developed by Seller for Buyer is warranted for a period of six (6) months from the date of installation by Buyer or on Buyer's behalf. Products (including software) purchased by Seller from a third-party (including affiliates of Seller) for resale to Buyer ("Resale Products") carry only the warranty extended by such third-party. Buyer agrees that Seller has no liability for Resale Products beyond making a reasonable commercial effort to arrange for procurement and shipping of the Resale Products. If Buyer discovers any warranty defects and notifies Seller thereof in writing during the applicable warranty period, Seller shall, at its option, correct any errors that are found by Seller with the Goods or repair or replace FOB point of manufacture that portion of the Goods found by Seller to be defective, or refund the purchase price of the defective portion of the Goods. Seller assumes no responsibility for the unloading, rigging or installation of Goods. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, corrosion, erosion, improper cleaning or flushing, unsuitable power sources or environmental conditions, accident, misuse, improper installation, modification, repair, use of unauthorized replacement parts, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense. Seller shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon in writing in advance by Seller. All costs of rigging, dismantling, reinstallation and freight and the time and expenses of Seller's personnel and factory representatives for site travel and diagnosis under this warranty clause shall be borne by Buyer unless accepted in writing by Seller. Goods repaired and parts replaced by Seller during the warranty period shall be in warranty for the remainder of the warranty period or ninety (90) days, whichever is longer. This limited warranty is the only warranty made by Seller and can be amended only in a writing signed by Seller. THE WARRANTIES AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE. THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE GOODS OR SERVICES.

6. **LIMITATION OF REMEDY AND LIABILITY:** SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE. THE REMEDIES OF BUYER SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE TO BUYER OF THE SPECIFIC GOODS MANUFACTURED OR SERVICES PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN NO EVENT SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, REVENUE OR USE AND COSTS INCURRED INCLUDING WITHOUT LIMITATION FOR CAPITAL, FUEL AND POWER, AND CLAIMS OF BUYER'S CUSTOMERS

7. **TAXES:** Any tax or governmental charge payable by the Seller because of the manufacture, sale or delivery of the Goods, or provision of Services, may at Seller's option be added to the price specified in the Agreement. The foregoing shall not apply to taxes based upon Seller's net income.

8. **TERMS OF PAYMENT:** Unless otherwise agreed by Seller, and subject to the approval of Seller's Credit Department, terms are FOB shipping point, net 30 days from date of Seller's invoice in U.S. currency, except for applicable milestone payments or export shipments for which Seller may require other arrangements. Freight charges may include shipping and handling charges, and Buyer shall pay all such charges. If any payment owed to Seller hereunder is not paid when due, it shall bear interest at an annual rate of 8%, from the date on which it is due until it is received. Seller shall have the right, among other remedies, either to terminate the Agreement or to suspend further deliveries under this and/or other agreements with Buyer in the event Buyer fails to make any payment hereunder when due. Buyer shall be liable for all expenses attendant to collection of past due amounts, including attorneys' fees.

9. **SOFTWARE AND FIRMWARE:** Notwithstanding any other provision herein to the contrary, Seller or the applicable third-party owner shall retain all rights of ownership and title in its respective firmware and software, including all copyrights relating to such firmware and software and all copies of such firmware and software. Except as otherwise provided herein, Buyer is hereby granted a non-exclusive, royalty free license to use firmware and software, and copies of firmware and software, incorporated into the Goods only in conjunction with such Goods and only at the Buyer's plant site where the Goods are first used. Buyer's use of certain firmware (as specified by Seller) and all other software shall be governed exclusively by Seller's and/or the third-party owner's applicable license terms. Buyer may not prepare derivative works of any firmware or software incorporated into the Goods, resell any such firmware or software, sublicense the limited license granted herein for such firmware or software, or otherwise assign Buyer's rights under this Section 9 to any third-party, in each case without the consent of Seller or the applicable third-party owner of the firmware or software. As used in this Agreement, the term "software" includes control strategies, any configuration of a process control software program or any software application developed to work in conjunction with a third-party process control system.

10. **FEEDBACK:** Notwithstanding any provisions to the contrary in this or other documents related to this transaction, if Buyer suggests to Seller, Seller's suppliers (direct or indirect) or customers of Seller's products or services, uses of or changes to Seller's products or services, then Seller may use such suggestions in connection with Seller's products and services without restriction following the delivery of all Goods and/or Services hereunder, including incorporating such suggestions into the products or services Seller sells to third parties, and may extend such right (including retroactively) to such suppliers and customers.

11. **STORAGE:** If Goods are not shipped within five (5) working days after written notification has been made to Buyer that they are ready for shipping, Seller may elect to store the Goods at Buyer's risk in a warehouse or upon Seller's premises, and Buyer shall pay all handling, transportation, and storage costs at the prevailing commercial rates upon submission of invoices thereof.

12. **BUYER SUPPLIED DATA:** To the extent that Seller has relied upon any data or information supplied by Buyer to Seller ("Data") in the selection or design of the Goods, the provision of the Services and/or the preparation of Seller's proposal or quotation, and any such Data is inadequate or inaccurate, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

13. **EXPORT/IMPORT:** Buyer agrees to comply with all applicable import and export control laws, regulations, orders and requirements, including without limitation those of the United States and the European Union, and the jurisdictions in which the Seller and Buyer are established or from which items may be supplied.

Quotation

14. **HIRING OF EMPLOYEES:** Buyer agrees that during the performance of any Services by Seller, and for a period of twelve (12) months following the last day Seller performed any Services, Buyer shall not hire any employees of Seller or members of Seller's project team that provided Services to Buyer, and Buyer shall not entice or encourage any such employee or project team member to terminate his or her employment relationship with Seller. Buyer agrees that this covenant shall extend to its agents and affiliates. In the event that any employee of Seller or member of its project team is hired or leaves the employ of Seller in such circumstances, Buyer shall pay Seller, as liquidated damages for the breach of this Paragraph 13 to compensate Seller for the costs incurred by Seller in connection with the loss of such employee, including recruiting and training costs, the sum equivalent to twelve (12) months salary for such employee or team member.

15. **GENERAL PROVISIONS:** (a) Buyer shall not, directly or indirectly (by operation of law or otherwise), assign its rights or obligations under the Agreement without Seller's prior written consent. A change in control of Buyer shall be deemed to be an assignment for purposes of this paragraph. (b) There are no understandings, agreements or representations, express or implied, not specified in the Agreement. (c) No action, regardless of form, arising out of transactions under the Agreement, may be brought by either party after the earlier of (i) two 2 years after the cause of action has accrued and (ii) the applicable statute of limitations. (d) Any modification of these terms and conditions must be set forth in a written instrument signed by a duly authorized representative of Seller. (e) As used in this Agreement, the terms "include[s]" and "including" mean "including but not limited to"; that is, in each case the example or enumeration which follows the use of either term is illustrative, but not exclusive or exhaustive. (f) The Agreement shall be governed by, and construed under, the laws of Commonwealth of Puerto Rico. Buyer agrees that any action at law or in equity relating to the Agreement shall be filed only in the state and federal courts located in San Juan, Puerto Rico, and Buyer irrevocably and unconditionally consents and submits to the exclusive jurisdiction of such courts over any suit, action or proceeding relating to the Agreement. (g) UNLESS OTHERWISE SPECIFICALLY PROVIDED IN SELLER'S PROPOSAL OR QUOTATION, GOODS AND SERVICES HEREUNDER ARE NOT INTENDED FOR USE IN ANY NUCLEAR OR NUCLEAR RELATED APPLICATIONS. Buyer (i) accepts Goods and Services in accordance with the restriction set forth in the immediately preceding sentence, (ii) agrees to communicate such restriction in writing to any and all subsequent purchasers or users and (iii) agrees to defend, indemnify and hold harmless Seller from any and all claims, losses, liabilities, suits, judgments and damages, including incidental and consequential damages, arising from use of Goods and Services in any nuclear or nuclear related applications, whether the cause of action be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability. (h) The 1980 United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement. (i) If any provision of the Agreement is invalid under any statute or rule of law, such provision, to that extent only, shall be deemed to be omitted without affecting the validity of the remainder of the Agreement (j) Seller specifically objects to the application of any Federal Acquisition Regulation ("FAR") provision or clause to the Agreement.

Rev: August 2019

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Low Pressure Water Heater 3 Repair Work,
Costa Sur Power Plant – Unit 6***

1/25/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Costa Sur Power Plant, unit 6 – Low Pressure Water Heater 3
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Costa Sur Power Plant, unit 6	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Costa Sur Power Plant needs to replace the tubes of the feed water heater #3 of unit 6. The tube replacement is necessary because the heater already has more than 10% of the tubes plugged, and the recommendation of the Heat Exchanger Institute (HEI) is to replace them to avoid further damage of the equipment or the turbine. The heater #3 is directly below the turbine and by design, its extraction pipe does not have an isolating valve, so it cannot be isolated. This repair will ensure the proper operation of the unit without any potential risk of water induction to the turbine.

Section 3. Scope of Work

3.1. Scope of Work Description



The scope of work for the Low Pressure Water Heater 3 of Costa Sur Power Plant unit 6 will consist of the following:

- Replace the tubes of the feed water heater #3 of unit 6, including design, manufacture, delivery and installation.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)
<i>If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.</i>
Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?



4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Design, Manufacture and Delivery	320,000.00
Installation and Labor	80,000.00
Total Project Estimated Cost	\$400,000.00



Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature



Section 10. Attachments

10.1. Project Detailed Cost Estimates

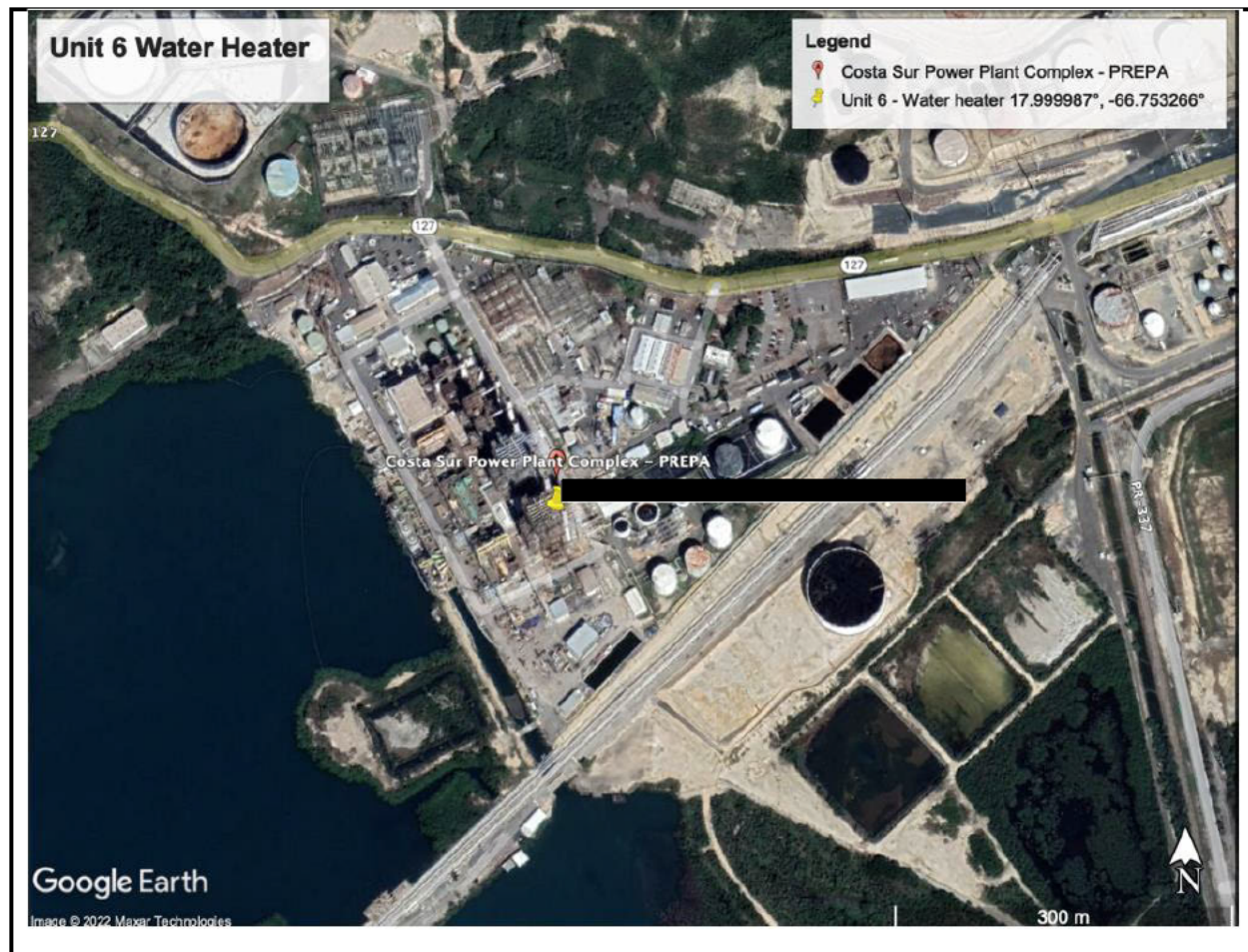
Please see attached the following:

- Justification_SOW and Estimated Cost.

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A



GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

Project number: 48

Project name: Low pressure water heater 3 repair work

Estimated cost: \$400,000

Scope of work

In a thermodynamic process, the feed water heat exchanger improves the efficiency of the unit. The heat exchanger uses steam extracted from the turbine to increase the feed water temperature. This reduces the heat input required in the boiler to generate steam at proper conditions. A typical high pressure heat exchanger out of service can cost as high as 1.5% of its heat rate. The most common heat exchanger is the shell and tube one. The feed water flows into the tubes and the steam from the turbine extraction flows in the shell side. The steam heat the tubes and the energy pass from the tubes to the feed water. The feed water pressure is higher than the steam pressure so the heat exchangers should be carefully operated and observed to avoid water induction to the turbines. A water induction can cause catastrophic damages to the turbine like the one that occurred in August 22, 2021 in unit 6 of South Coast.

The scope of this project is to replace the tubes of the feed water heater#3 of unit 6. The tube replacement is necessary because the heater already has more than 10% of the tubes plugged and the recommendation of the Heat Exchanger Institute (HEI) is to replace them to avoid further damage of the equipment or the turbine. The heater #3 is directly below the turbine and by design, its extraction pipe do not has and isolating valve so it cannot be isolated. This repair will ensure the proper operation of the unit without any potential risk of water induction to the turbine.

Design, manufacture and delivery--- \$320,000.00

Installation -Labor----- \$80,000.00



PO Box 364267 San Juan, Puerto Rico 00936-4267

"We are an equal opportunity employer and do not discriminate on the basis of race, color, gender, age, national or social origin, social status, political ideas or affiliation, religion, or being or perceived to be a victim of domestic violence, sexual aggression or harassment, regardless of marital status, sexual orientation, gender identity or immigration status, or physical or mental disability, or veteran status or genetic information."

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Costa Sur Unit 5 Boiler Sections
Replacement, Repairs & Auxiliary
Equipment Repairs***

11/29/2021



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Unit 5 Boiler Sections Replacement and Repairs & Auxiliary Equipment Repairs
PREPA Project Number	3059

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASSt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Central Costa Sur Unit 5	

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

Currently, unit 5 of the Central de Costa Sur has a limitation in the production of energy of 350 MW due to a high-pressure differential in the combustion air of the boiler. This is because the air preheaters are in poor condition from a long time of use. For this reason, we need to change the seals and the baskets.

The Costa Sur unit 5 will have a scheduled departure for a major repair in October 2022. The replacement and repairs to the unit boiler sections will significantly improve the efficiency, reliability of this unit.

Unit 5 of Costa Sur generates 410 MW with natural gas, which is a more economical fuel and regulates what gives the island's electrical system greater stability.



Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the replacement and repairs of Unit 5 boiler sections consist on the following:

During the programmed outage of unit 5 (October 2022), the boiler's main components and the associated auxiliary equipment will be inspected and repaired. The scope of work includes the procurement of services and materials purchase for the following tasks:

- Hydrostatic testing
- Internal chemical cleaning
- External Boiler Wash
- Soot blower
- Burners Repair Works
- Inspection and repair of control valves
- Nondestructive testing of high energy piping
- Hanger's inspections
- Fuel lines inspection and maintenance repairs
- Boiler assessment
- Forced Air Draft fans inspection and maintenance repairs
- Induced Draft fan inspection and maintenance repairs
- Boiler Circulating Water Pumps inspections and maintenance repairs
- Ducts inspection and repair
- Insulation works to be performed
- Scaffolds installation for repairs
- Inspection/repair of motorized and manual line valves
- Miscellaneous equipment repair

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)


Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?

4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.

- (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE)
- (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE)
- Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730-B2 - U.S. Department of Agriculture Rural Electric Service (RUS)
- International Building Code (IBC) - International Code Council (ICC)
- International Energy Conservation Code (IECC) - International Code Council (ICC)
- International Existing Building Code (IEBC) - International Code Council (ICC)
- National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers
- National Electrical Code (NEC) - National Fire Protection Association (NFPA)
- FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)



4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.

- 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA)
- 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA)
- ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE)
- International Building Code (IBC) - International Code Council (ICC)
- Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA)
- Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA)
- RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS)
- Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.



Cost Type	Amount (\$M)
Hydrostatic testing	\$300,000.00
Internal chemical washing	\$450,000.00
External Boiler wash	\$750,000.00
<i>Soot Blower</i>	\$600,000.00
Burners repair works	\$750,000.00
Inspections and repair of control valves	\$600,000.00
Nondestructive testing of high energy piping	\$500,000.00
Hangers inspections	\$300,000.00
Fuel Lines inspection and maintenance repairs	\$350,000.00
Boiler assessments	\$500,000.00
Forced Air Draft fans inspection and maintenance repairs	\$250,000.00
Induced Draft Fan inspection and maintenance repairs	\$250,000.00
Boiler Circulating Water Pumps inspections/ Maintenance	\$300,000.00
Ducts inspection and repairs	\$750,000.00
Insulation works	\$750,000.00
Scaffolds	\$800,000.00
Inspection and repairs of motorized and manual line valves	\$300,000.00
Miscellaneous equipment repair	\$600,000.00
Total	\$9,000,000.00

Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.



Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

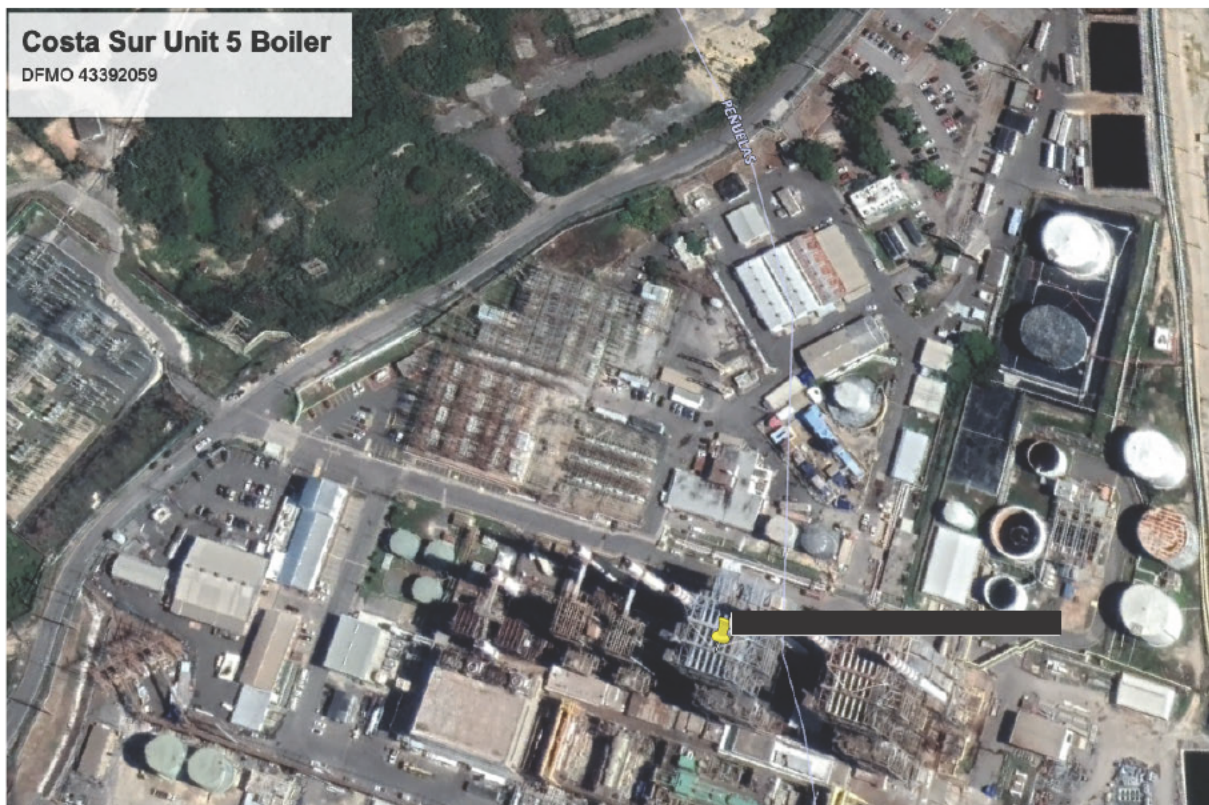


- Estimates amount provided on SOW

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures





10.4. Other: (Please Describe)

N/A

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Water Heater 6 Replacement Work,
Costa Sur Power Plant – Unit 5***

1/26/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Costa Sur Power Plant, unit 5 – Water Heater 6 Replacement Work
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAAS Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Costa Sur Power Plant, unit 5	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Costa Sur Power Plant needs to replace the feedwater heater #6 of unit 5. The replacement is necessary because the heater already has more than 10% of the tubes plugged, and the recommendation of the Heat Exchanger Institute (HEI) is to replace them to avoid further damage of the equipment or the turbine. In a thermodynamic process, the feedwater heat exchanger improves the efficiency of the unit. The heat exchanger uses steam extracted from the turbine to increase the feedwater temperature. This reduces the heat input required in the boiler to generate steam at proper conditions.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Water Heater 6 Replacement Work in Costa Sur Power Plant unit 5 will consist of the following:



- Design, manufacture, delivery and unload one (1) new High Pressure Feedwater Heater 6.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)
<i>If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.</i>
Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?



4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$M)
Design, manufacture, delivery and unload	\$2,000,000.00
Total Project Estimated Cost	\$2,000,000.00

Section 6. 406 Hazard Mitigation Proposal



6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: If available, detailed engineering cost estimates will be included as an attachment.

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature

Section 9. PREPA Project Sponsor Comments

Comments
<Insert any comments here>

PREPA Project Sponsor's Printed Name

Date

Title

Signature



Section 10. Attachments

10.1. Project Detailed Cost Estimates

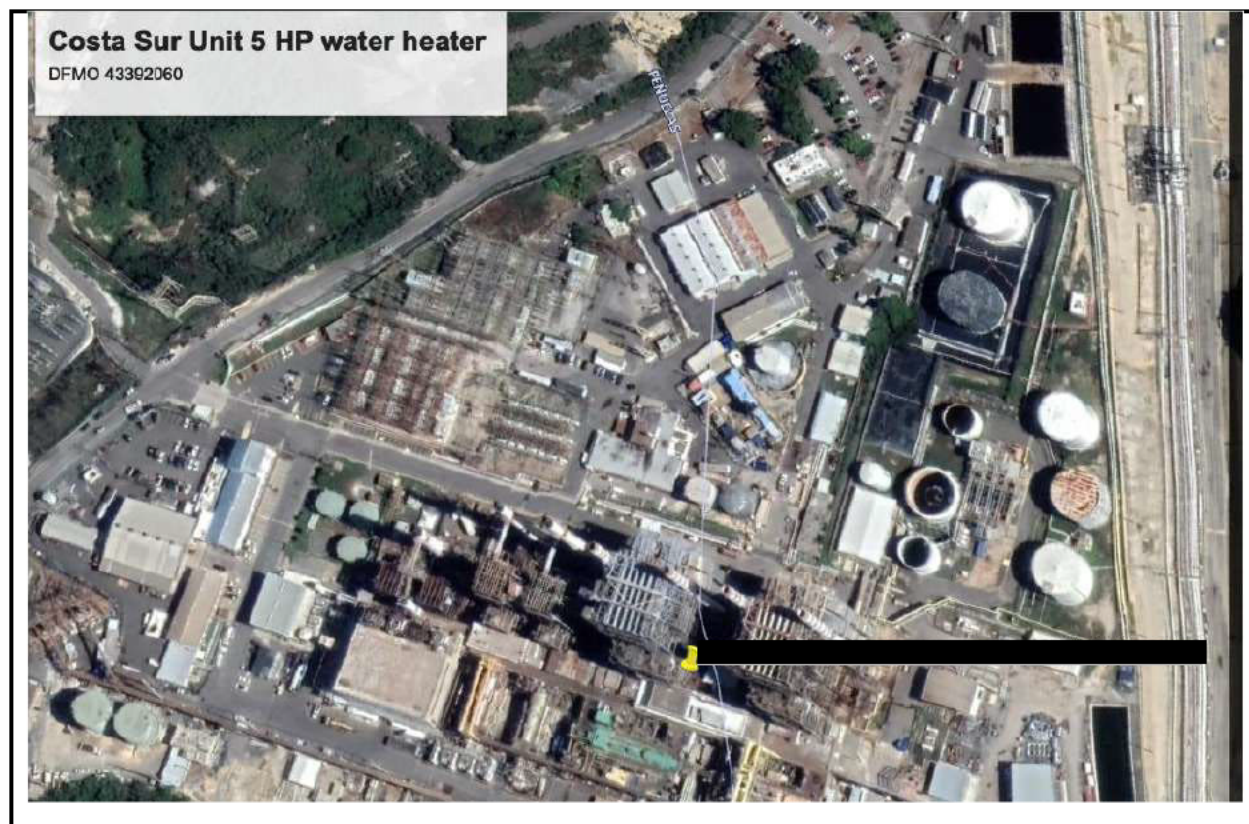
Please see attached the following:

- Special Conditions and Technical Specifications_Rev 4

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

SPECIAL CONDITIONS AND TECHNICAL SPECIFICATIONS, Rev 4

PURCHASE ORDER TS-M18-14

ARTICLE 1. The Requirements

- 1.1 The Heater Manufacturer shall furnish evidence of at least ten (10) years about their capacity, technology and experience in performing Feedwater Heaters design and manufacturing works for Utilities. **Provide name of the companies, telephone, contact person and project synopsis for evaluation by PREPA on similar projects.** Bidders shall be in PREPA's Register of Qualified Suppliers. **Proposals not complying with this requirement shall be rejected and declared nonresponsive.**
- 1.2 The Contractor is required to *design, manufacture, delivery and unload* one new high pressure feedwater heater, No. 6, for South Coast Steam Plant Unit 5, as requested by PREPA and to the entire satisfaction of the Engineer. The equipment shall be designed and manufactured in accordance with this specification, as directed by the Engineer and as described in Article 2 - Scope of Work.
- 1.3 The new in kind (three zones) feedwater heater shall be designed in accordance with the provided specifications and operation data. The new feedwater heater shall be designed in order that no other alteration or deviation shall be done to the existing principal nozzle connection (water in, water out, condensate in, condensate out and steam). The maximum allowable heater length (height) is 32'-7". Any other recommendation shall be indicated by the designer before the bid process begins. Any alterations or deviations that affect the heater installation to existing base and connections shall be corrected by the Contractor at his own expenses. The Heater dimensions shall appear in the Preliminary Design Drawing **and in the Design Specifications Data Sheet to be included as part of the bidder's proposal.** The required Design Specifications Data Sheet shall contain, but not limited to, heater weights (Shell and Bundle, Bundle, and Flooded); Flow Velocity; Pressure Drop; Construction Materials of all components; Design Pressure; Test Pressure; Design and Test temp; Heater's Dimensions; Nozzles Sizes; Quantity of Nozzles; Tube Material; Tubes and Tubesheet Specs; Method of Tube to Tubesheet Connection; Steam Flow; Feedwater Flow; Inlet/Outlet Enthalpies; Inlet/Outlet Temperatures; Inlet/Outlet Pressures; Surface Area; Surface per Shell; Effective Surface Area per Shell; Number of Zones; Performance; Codes and Standards; etc. All units shall be US Customary.

Proposals not complying with this requirement shall be rejected and declared nonresponsive.
- 1.4 Is required that, prior to submitting a proposal, the Bidder and the heater manufacturer representative, with the previous coordination of Contracting Officer and the Engineer, shall visit, survey and take all necessary measurements of the existing feedwater heater site location, nozzle orientation, distances, inspect, identify and understand all the details required under this scope of work. The bidder and its subcontractor are responsible of the require instrumentation and equipment needed to successfully perform the survey. The designer shall have a better understanding that the design shall be done in order to provide in kind (three zones) feedwater heater 6 for Unit 5.

- 1.5 Preliminary Design Drawings, **Design Specifications Data Sheet**, and other pertinent Technical documentation shall be submitted by the Bidder with the proposal. **These drawings and documents should be presented in professional manner with all details and clear dimensions in US Customary units. Proposals not complying with this requirement shall be rejected and declared nonresponsive.**
- 1.6 All work performed under this Specifications shall be done in a safe and workmanlike manner and in strict conformance with the latest rules, regulations, codes, standards, ordinances, editions, case rulings etc. of authorities having jurisdiction over the class of work involved, including and not limited to the American National Standards Institute (ANSI); American Society of Mechanical Engineers (ASME); Tubular Exchanger Manufacturers Association (TEMA); the Heat Exchange Institute (HEI); American Welding Society (AWS); Environmental Protection Agency (EPA); Occupational Safety and Health Administration (OSHA).
- 1.7 Heater construction shall conformed ASME Boiler Vessel Code, HEI Standards, **and with the tube to tubesheet connection as specified in this Special Conditions and Technical Specifications, Rev 4. Heater shall be of three zones, “in kind”, as specified on the Feedwater Heater Design Specification Data Sheet.**
- 1.8 The weight of the heater is limited to gantry crane capacity and existing heater mounting structure. If the weight of the proposed heater is greater than that of the existing heater, it is the Contractor's responsibility to verify that all supporting members and elements are sufficient for the new installation. Reinforcing designs and modifications, if any, are under Contractor's responsibility and at its own expenses. **The heater weight shall appear in the Heater's Design Specifications Data Sheet. Proposals not complying with this requirement shall be rejected and declared nonresponsive.**
- 1.9 Heater manufacturer's quality system shall be in accordance with ISO 9001 and shall hold a valid 9001 certificate issued by the certified ISO 9000 certification organization. **Bidder shall include such certificate with the proposal. Proposals not complying with this requirement shall be rejected and declared nonresponsive.**
- 1.10 **Including the above requirements, manufacturers outside of the United States shall hold a manufacturer license and certificates, as follow:**
 - a. Heaters manufactured in the People's Republic of China: license issued by the Center of Boiler and Pressure Vessel Inspection and Research (CBPVI) under General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China(AQSIQ), ASME Boiler and Pressure Vessel Code, HEI, and The National Board of Boiler and Pressure Vessel Inspectors.
 - b. Heaters manufactured in South Korea: certifications issued by KEPIC (Korea Electric Power Industry Code), HEI, The National Board of Boiler and Pressure Vessel Inspectors, ASME Boiler and Pressure Vessel Code, and for the quality assurance

system compliance according to the Pressure Equipment Directive (PED) 97/23/EC and Module H of the Directive.

- c. Heaters manufactured in Europe: license issued by the European Commission Pressure Equipment Directive (PED), HEI, ASME Boiler and Pressure Vessel Code, and The National Board of Boiler and Pressure Vessel Inspectors.
- d. Heaters manufactured in United Kingdom (UK): license issued by the UK Pressure Equipment Regulations, HEI, ASME Boiler and Pressure Vessel Code and The National Board of Boiler and Pressure Vessel Inspectors.

Note: The quality certificates and quality inspection documents shall bear the official stamp of the respective license. Proposals of heater manufacturers from USA, Mexico or Canada shall include valid HEI certification. HEI certification applies only for manufacturers from USA, Mexico and Canada. Others shall follow HEI standards.

All possible manufacturers shall follow aftermentioned codes and standards and those on section 2.7 of these specifications for the feedwater heater design and construction.

Proposals without the above mentioned certifications shall be rejected and considered nonresponsive.

- 1.11 Heater shall be furnished as an ASME Code Stamped vessel, already registered with the National Boiler and Pressure Vessel Inspectors, and suitable documentation provided for PREPA's reference.
- 1.12 **Bidders shall include proposal for the following tube material option:**
 - 70-30 Copper-Nickel HR 50 Stress Relieved (ASME SB-395, UNS C71500 (SMLS) specifications

Proposals with an "HR" classification number different to the specified in this section are considered non responsive and shall be rejected.

- 1.13 The Contractor, after being awarded, shall develop a schedule of the activities to be performed in connection with the work of the Purchase Order and shall submit to PREPA for the approval of the Engineer.
- 1.14 All work on a particular heater shall be carried out on a continuous schedule following the commencement date specified by PREPA and the proposed work schedule submitted by the Contractor and accepted by PREPA.
- 1.15 The Contractor shall furnish the Engineer summary monthly progress reports of the various the work performed under the Purchase Order, whether in the shop or in the field, stating the existing status, rate of progress, estimated time of completion and cause of delays, if any.

- 1.16 The Feedwater Heater shall be constructed in accordance with the latest edition of ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, including applicable addenda and case ruling. All welding performed under this Purchase Order shall be in accordance with welding procedures, which have been qualified with the latest edition of section IX of the ASME Boiler and Pressure Vessel Code and ANSI B31.1 (as amended> Para. 127). All welders engaged in work under this Purchase Order shall be qualified in accordance with the test requirements of Section IX of the ASME Boiler and Pressure Vessel Code, welding and brazing qualifications. The Contractor shall submit the welding procedures and welder's qualifications before commencement of the work. Each welder's certification shall be on file at the prefabrication shop and available to PREPA's inspector upon request. Welding records shall be kept according to ANSI B 31.1, Para. 127.6. Roots passes in piping shall be made by the GTAW (Gas Tungsten Arc Welding) process. The balance of the welds may be completed by the SMAW (Shield Metal Arc Welding) process. Backing rings are not allowed. Preheat and post-heat treatments shall be in accordance with ANSI B3 1.1, Sections 131 and 132, latest addenda. Structural steel welding shall be performed by the SMAW method. Preparation of the welds and weld design shall be according to ANSI B 31.1, Section 127. To the extent that they apply, the Contractor shall impose on each of his sub suppliers/subcontractors the complete requirements of the technical specifications under this Purchase Order.

The Contractor shall be directly responsible to see that the sub-suppliers/sub-contractors are completely aware of these requirements and those they abide thereby.

- 1.17 **Bidders shall include in his proposal the Heater's Design Specification Data Sheet. All units shall be presented in US Customary System. Proposals without this requirement shall be considered nonresponsive and rejected.**
- 1.18 **Bidders shall include an annex in their proposal with Time & Material (T&M) Rates for start-up and performance test onsite after installation.** Installation will be done by others. PREPA reserves the right in contracting such services. T&M Rates are not to be considered for the award of this bid. **Proposals without this requirement shall be considered nonresponsive and rejected.**

ARTICLE 2. Scope of Work

- 2.1 These technical specifications cover the work required under this Purchase Order to design, manufacture, deliver and unload of one new high pressure feedwater heater, No. 6, for South Coast Steam Plant Unit 5, all shall be performed as specified in:
- a. The Terms and Conditions
 - b. As described and defined in the Special Conditions and Technical Specifications,
 - c. Contractors Proposal / Quotations for Parts and or equipment (hereinafter "Proposal")
- 2.2. The equipment shall be as follows:

- a. One new high pressure feedwater heater No. 6 for South Coast Unit 5

2.3 Transportation and unloading of feedwater heater at plant site as identified by the Engineer.

The successful bidder and / or subcontractor shall be responsible for the transportation, delivery and unloading from transportation platform at the site designated by the Engineer. The Contractor shall provide the required crane and suitable equipment for the unloading operations. Prior to execute the unloading operation, PREPA shall inspect and approve all required equipment to unload the heaters. The crane and the required unloading equipment shall be certified inspected and suitable for the unloading operation, all in accordance with the governing applicable codes for this type of equipment. Certifications shall be submitted to the Engineer for acceptance. Crane, load lifters and trucks with oil leaks are not permitted and shall be removed from PREPA premises and replaced immediately.

The heater is heavy load equipment. The Contractor shall be responsible to choose the means of transportation, road route, and in obtaining the transporting authorizations from the Puerto Rico Highway Authority, Puerto Rico Public Service Commission, and other applicable agencies.

2.4 Operating Conditions for Unit 5

- a. 410 MW General Electric Turbine Generator

This steam generating unit is nominally rated at 3,000,000 pounds of steam per hour at 2,400 psig and 1000°F total temperature. This unit should be considered base loaded. However, infrequent five percent over pressure and cyclic operations are to be anticipated. Therefore, the heater shall be designed to cycle each day from a maximum load of 410 MW to a minimum load 250 MW.

- b. A gantry crane 90/15 tons will be used for installing and maintaining the new feedwater heaters. The hook is limited in travel to approximately 73'-0" and 74'- 0" respectively above the floor level on which the new feedwater heaters will be installed. Bidders and / or subcontractors shall consider this information in the design of the proposed heaters in order that PREPA can use this crane during the installation of the new heaters. This gantry crane is used for outdoor service.

- c. The feedwater analysis is as follows:

- 1) During start-up

Oxygen - High concentration until deaerator heater has enough steam for its proper operation.

Chloride - Zero (0) ppb in the Feedwater, may be high in the condensate water.

pH - 8.5 minimum, 9.2 maximum

2) Normal operation

	<u>Feedwater</u>	<u>Condensate</u>
pH	8.8 TO 9.1	8.8 TO 9.1
Oxygen	5 ppb max.	10 ppb max.
Hydrazine	10 to 20 ppb	-
Chloride	Zero (0) ppb	Zero (0) ppb
Silica	0.1 ppm max.	0.1 ppm max.
Ammonia	0.3 ppm max.	0.3 ppm max.
Iron	5 ppb max.	5 ppb max.
Copper	5 ppb max.	5 ppb max.

2.5 Overall Feedwater Heater Requirements

- a. The heater shall have removable shells with suitable lifting lugs on side and provision for bracket supporting lugs on channel. Lugs (lifting trunions) shall be provided suitable for lifting the total weight of the heaters during installation.
- b. **The proposed heater shall be designed to match existing heaters and shell and feedwater connections (with respect to orientation, size, length, rating, etc.), the existing steam, condensate drains, drips, feedwater inlet and outlet and all instrumentation piping.** PREPA should be able to install the proposed heater in the existing location and perform all connections without modifications to the existing structure and piping. Any modification required for proper installation shall be under the Awarded Bidder responsibility.
- c. Bidder and its subcontractor shall verify at the site, all piping dimensions, orientations, and connections, structure of the existing heaters that guaranteed the replacement without major modifications. If during the installation of the new feedwater heaters, PREPA or heaters installer find interferences and/or mismatching with piping connections and/or existing support base, the Contractor (as defined in Terms and Conditions) shall be responsible for all modification costs, or rework of heater; whatever PREPA's request. **Drawings and documents shall be submitted with all numerical values in English Units.**
- d. Contractor shall furnished with the equipment the following: Final Plan Drawings; Final Detail Drawings; Assembly Drawings; Illustrated Parts Breakdown; Final Customary QA/QC Documentations; Final Instruction Manuals for the Receiving Inspection, Handling, Unloading, Short and Long Term Storage Instructions, Installation, Cold Start – Up, Operation, Inspections and Trouble Shootings, and Maintenance Guides and Schedules.

- e. Factory Acceptance Test and Performance Test protocols shall be submitted for PREPA's acceptance prior performing such tests. Performance Test protocol shall be in accordance to ASME PTC 12.1.
- f. Feedwater Heater furnished under this specification shall be hydro tested to not less than 1.3 times the design pressure requirement. This requirement shall take precedence over any code requirements that are less stringent.
- g. Modifications, if any, shall be in accordance with the term and conditions of the order. PREPA will show to the successful bidder the drawing of the existing heaters and all dimensions, connections and orientations that are not fully detailed in the sketches, included herein, shall be verified by the manufacturer at the plant site. The visit to South Coast Steam Plant must be coordinated with the Plant Division Head or his delegated representative.
- h. The proposed equipment shall withstand the following conditions:
 - 1. High humidity
 - 2. Outdoor and indoor service
 - 3. Wind pressure 50 lbs/ sqft
 - 4. Corrosive environment (salt mist ambient)
 - 5. Dust
- i. The heaters shall be capable of safe, proper and continuous operation under all load conditions (including partial load operation) without undue strain, corrosion, deterioration, leakage or other operating trouble.
- j. Mechanical construction of the heaters shall be such that +20% over load above the specified operating conditions can be carried without any type of damage to the heaters (tube erosion, flow induced vibrations, steam and water conditions, tube wastage, high thermal stress, thermal strain, etc.).
- k. Parts subject to wear, erosion, corrosion or other deterioration, or requiring adjustment inspection, or repair shall be accessible and capable of reasonably convenient removal, easy replacement, and repair. PREPA requires that the manufacturer of the proposed heaters, in the fabrication of the tubes spacers, tie rods and impingement plates, to follow the Material Design Standards of HEI, 8th Edition, 2009. The steam and drips inlets shall be baffled internally to prevent direct impingement on heater tubes. Shell and channel drain nozzles shall be designed in such a way that the heaters (if applicable by design) could be drained completely. Pass partition plate shall be of the bolted type. Pass partition plate nuts shall be locked using the best method in the industry to prevent unthreading during normal operation or at the worst possible situation. Single piece covers should weight a maximum of 50 lbs. and shall be provided with handling devices.
- l. Manufacturer shall avoid the use of welding rods containing chlorides or fluorides to anchor the heaters stainless steel impingement baffle plates. Also, those

baffles shall be designed to have an adequate strength and thickness in order that they resist the unit overload and any abnormal operating condition that can be detected from the analysis of the different load conditions through which the Unit has to work.

- m. All parts shall be made of suitable and compatible materials in order to keep maintenance at a minimum. All close fitting interchangeable parts shall be machined to gage. The shell, channels and nozzles shall be of steel. Welded construction shall be used. The heaters shall be designed for uniform distribution of steam to the entire surface of each baffle pass to assure high rate of heat transfer from the steam to the water. Heater's venting shall also be well designed with critical orifices in the continuous vent connections, to avoid missing excessive amounts of steam which can have serious impact on the heat rate. Heater's shell cover shall not be of the flat type, and a shell vent shall be located in that area.
- n. All parts subjected to temperature changes shall be designed and supported to permit free expansion and contraction without causing excessive strains resulting in leakage or harmful distortion.
- o. Designed for tube bundle vibration (flexural and axial mode); either caused by the feedwater flow (tube side) and/or steam flow (shell side) at any load condition or abnormal condition through the load range of the unit. The supports in the shell should be spaced in such a manner that the tubes will be adequately supported to prevent vibration and chaffing.
- p. All flanges, nozzles and related parts for connection to Purchaser's piping shall be sufficiently strong to withstand reasonable strains from properly designed connecting piping without resort to expansion joints of any kind. Flanges, if any, shall be faced and drilled in accordance with the American National Standards Institute (ANSI). Type of flanges, and the location of inlet and outlet connections and the direction in which those connections face, shall be subject to approval of the Engineer. All other external piping connections shall be of types appropriate to the respective services, and shall conform to the Standards of the American National Standards Institute (ANSI).
- q. The Unit in which the proposed new heater will be installed controls the feedwater flow to the boiler with control valves. The possibility of rapid valve closing or valve opening due to a control failure needs to be considered in the heater's design as one of the abnormal conditions that can affect the heaters during the normal operation of the Unit.
- r. All exposed castings and all other steel except bright parts shall be sandblasted and painted with two coats of an adequate primer to protect from corrosion under conditions and location in which the equipment will operate. Paints and primers shall be Lead-Free. Machined parts shall be carefully protected against corrosion and damage in handling and shipment. At the time of packing, the

Feedwater heater shall be filled and sealed with Nitrogen (N₂) and with a dial indicator.

- s. Shop drawings shall include description and specification of the shop applied coating systems.
- t. The separate pieces of apparatus shall be marked with suitable reference number or symbols, both on the pieces themselves and on the assembly or erection drawings.
- u. The design shall be in such a way that ample clearances shall be provided to permit maintenance of the unit without disturbing adjacent equipment. Suitable handling facilities and ample space shall be provided for the removal of covers and shells and for the re-tightening of all bolted joints. For heaters with welded joints, space shall be provided as required for the disassembly and rewelds of joints.
- v. Bolts, nuts, studs, and screws shall have threads conforming to ANSI Standards, as required, and shall be finished in accordance with the latest approved practice for the particular duties involved. Only hexagonal nuts shall be used. Through-bolts shall be used wherever possible.
- w. All gaskets shall be fully restrained and shall be manufactured with no asbestos materials.
- x. Lifting eye bolts or lugs are to be provided to aid in handling heavy parts. Lugs are to be provided suitable for lifting the total weight of the assembled heaters were applicable by design.
- y. The connection of the shell to the shell skirt shall be of the welded type and shall be arranged for easy flame cutting for maintenance purposes.
- z. The feedwater heaters channel connections and steam connection shall be of the welded nozzle type. These nozzles connections shall be with ends beveled for field welding.
- aa. The heaters shall be designed and fabricated in such a way that the water level controllers of heater's drip operate efficiently and prevent flooding over the normal water level of the new heaters.
- bb. Heaters shall be provided with suitable connection for vents, drains, gauge, thermometers, relief valves, liquid level control and any other miscellaneous connection as required.
- cc. Heat Balances are included herein, as part of this specification, in such a way that the manufacturer performs the best sizing of the heaters at partial, nominal, maximum, minimum and abnormal load condition. **Bidder's proposal shall**

include the Heat Balance form (included in Appendix) completed in all its area based on the proposed heater and Unit 5 Heat Balances at different loads. The Heat Balance Form shall be done for loads at MCR, 450MW, 427MW, 410MW, 317MW, 212MW, and 100MW. Proposals without this requirement shall be considered nonresponsive and will be rejected.

- dd. Manufacturer Quality Control Program shall establish the inspection and verification of all bolts and nuts tightening in the different stages of heater assembly, in order to prevent and avoid loose parts that may cause damage to the heater or other components in the water path. Such Quality Control Program shall be submitted to PREPA for evaluation and approval prior execution.
- ee. The new heater shall be provided with a nameplate for the ASME Code Stamping and National Board Registration. The nameplate shall be unpainted stainless steel and shall be permanently attached to the heater on a raised bracket to clear the insulation. Bracket details, location, and nameplate data shall be indicated on the drawings.
- ff. The new heater shall be designed for continuous operation under specified thermal conditions. The heater thermal performance specified on the Feedwater Heater Specifications Sheet shall be guaranteed by the Contractor and shall match existing heater performance as new. Performance tests shall be conducted using calibrated instrumentation to determine compliance with guarantee. Tests shall be conducted at the specified design conditions. Contractor's manufacture representative shall witness performance tests at Contractor's responsibility for all expenses. If tests fails to comply with the performance guarantee, the Contractor shall modify and retest the heater as required to obtain the guarantee performance at Contractor's expenses.

2.6 Feedwater Heater 6 for Unit 5

- a. Unit 5 has two heaters, identified as heater no. 6 and heater no. 7. Heater 7 is the top heater preceded by Heater 6. Heater 6 will be located in the discharge line of the boiler feed pump. Steam for these heaters will be extracted from the turbine.
- b. Condensate drain from the heater 7 is cascaded to heater 6 during normal operation. An additional drain line known as emergency drain line is attached for emergency operations only and is connected to the condenser. The shell side of the heaters will be subjected to vacuum pressure at reduced loads.
- c. After PREPA's evaluation and approval the new feedwater heater shall be provided with tube material of the following option:
 - 70-30 Copper-Nickel HR 50 Stress Relieved (ASME SB-395, UNS C71500 (SMLS)) specifications.

Proposals without this requirement will be considered nonresponsive and will be rejected.

- d. The tube material shall be evaluated and approved by PREPA before the issue of the approved Purchase Order. Mills certificates shall be submitted for PREPA approval.
- e. OD eddy current NDE test shall be performed after the tubing is installed, rolled, seal welded and other surroundings manufacturing processes are completed. Detailed test information such as frequencies, probe speeds, phase angles, repetidibility of readings, and other parameters need to be documented as well as probe descriptions and model numbers.
- f. **Tube to Tubesheet Attachment shall be a combination of Welding and Hybrid Expanded. The Tube to Tubesheet Attachment method shall appeared in the Heater Design Specification Data Sheet. Proposals without this requirement shall be considered nonresponsive and shall be rejected.**
- g. U-bends and tubes end shall be stress-relieved. Tubes-holes shall be groove to assure strong or tight joints.
- h. Manufacturer shall avoid the use of flanges in the feedwater inlet and outlet. Therefore, the flanges faces in the existing feedwater heater 6 shall be the reference line for the length of the nozzles connections.
- i. Operating Condition of Heater 6 and Heater 7
 - 1) The maximum operating condition at which these heater 6 and heater 7 are operating according to data sheet of existing heaters without over pressure is as shown in Annex A.
 - 2) The proposed new heaters shall be capable to operate at maximum load of 410 MW without any adverse operating condition including all those covered in this specification.
 - 3) At stated design condition on feedwater side of heaters, the maximum permissible velocity shall be as per Heat Exchange Institute (HEI) standard for close feedwater heaters latest edition. The maximum permissible drop pressure shall be ten (10) psig. Maximum permissible velocity shall be determined at the feedwater average temperature.

Maximum permissible velocity and maximum permissible pressure drop of 10psig shall appear in the Heater Design Specification Data Sheet. Bidder's proposal without this requirement and showing a value exceeding the maximum permissible drop pressure of 10 psig shall be considered nonresponsive and will be rejected.

- 4) The heaters shall have internal drain coolers. The shell side of the heaters will be subjected to vacuum at reduced loads.

2.7. Codes and Standards, latest edition

- a. 2013 (or latest) ASME Boiler and Pressure Vessel Code Section VIII, Division 1 and 2 and Section IX, including applicable addenda and case ruling.
- b. ASME Performance Test Code PTC 12.1 for Closed Feedwater Heaters
- c. Heat Exchange Institute (HEI) Standard for Closed Feedwater Heaters, 8th Edition, 2009, or latest.
- d. Heat Exchange Institute (HEI) Standard for Power Plant Heat Exchangers, 5th Edition, 2013, or latest.
- e. TEMA Mechanical Standards (TEMA Standards) Class R for Closed Feedwater Heaters, 9th Edition or latest..
- f. American Welding Society (AWS)
- g. American Standard Testing Material (ASTM)
- h. American National Standards Institute (ANSI)

NOTE: Manufacturer shall apply as required, the abovementioned codes and standards in the design and construction of the heaters. If conflicts and differences appeared between codes, standards **and with these specifications**, the most stringent will apply. The heaters shall be ASME code stamped by the manufacturer.

2.8. Hold Points

- a. PREPA requires the following hold points for inspection at the vendors shop.
 - 1) Air test
 - 2) Weld and expand tubes
 - 3) Hydrostatic test
- c. Thirty (30) consecutive days before the manufacturer perform the aforementioned tasks; PREPA requests a detail production schedule in such a way that our personnel do all arrangements necessary to witness the tasks at vendors shop.
- d. Manufacturer shall make sure is ready for hold points witnessing by PREPA. He shall immediately notify PREPA of any change in hold points scheduled dates.

- d. PREPA may decide, previous notification to manufacturer, not to witness any or all hold points and waiver him of this requirement.

2.9. Dimensions, Heat Balances and Drawings

- a. (See Annex A)

ARTICLE 3. To be Furnished by Contractor

- 3.1. The Contractor shall furnish all accessories, safekeeping instructions and recommendations, installation instructions, connections and details not specifically mentioned or fully detailed, but which he deems necessary, or which are reasonably required to make complete and well-integrated operating unit within the scope of this specification, except, however, items listed elsewhere herein to be provided by others. Documents related to instructions of Safekeeping for long and short storage period, recommendations, installation; drawings; details; bill of materials and specifications shall be supplied electronically in its original format and pdf in 3 CD, and five hard copies.
- 3.2. The equipment are to be erected by others, in accordance with instructions which shall be furnished by the supplier.
- 3.3. The Contractor shall furnish the following miscellaneous and supplementary items per proposed heater:
 - a) One suitable safety valve for steam side.
 - b) One sentinel type relief valve (no less than 3/4 inch valve) for water side.
 - c) Suitable vents and drains valves for the steam and water side.
 - d) Supporting brackets.
 - e) Float connections for water level control, control of extraction steam check valves and levels alarms.
 - f) Liquid level gage glasses assemblies with drains valves.
 - g) 3/4 inch tapped openings (plugged) for pressure gages at water inlet and outlet, and steam inlet and condensate drains.
 - h) Factory clips for insulation support.
 - i) One inch tapped holes (plugged) for thermometer wells at water inlet and outlet, steam inlet and condensate drain.
 - j) All connections required for the above safety, relief, vent and drain valves, etc.

- k) One complete and unused set of all special tools required for maintenance and adjustment of the equipment, bearing in mind that the equipment will be erected abroad.
- l) All connections (nozzle, drains, instruments, level control, level gage, etc., etc.) shall be properly identified by the manufacturer, using red paint. All identification letters and or numbers shall be 1" in size.

NOTE: The Contractor shall submit PREPA calibration certificates for each one of the heaters' safety valves.

ARTICLE 4. To be Furnished by PREPA

- 4.1 Foundations and supports with hold-down bolts, wedges, etc., in accordance to contractor's requirements.
- 4.2 Erection of heaters.
- 4.3 Piping between the equipment and the respective services on the Purchaser's Station.
- 4.4 Non Asbestos Heat insulation of standard character necessary on heater shells and head, exposed flanges or other accessible parts.
- 4.5 Thermometers and pressure gages.

ARTICLE 5. Information Required to the Successful Bidder after Awarding the Purchase Order

5.1 Instructions Manuals and Training Material

- a. Successful Bidder shall provide ten complete sets of equipment manuals and interactive CD's prepared in English for the purpose of providing information on the operation, maintenance and parts breakdown of the Real Property Equipment. The successful bidder shall supply a typical manual and the final manuals within 30 days after shipment with all the completed data and records performed during the inspections at the factory.
- b. These specifications are intended to cover the submittals of Instruction Manuals covering all equipment furnished by Contractor and/or its subcontractor.
- c. These specifications shall not be construed as limiting the information that may be furnished in the Instruction Manual.
- d. The manual should contain at least, description of the equipment, performance specifications, operating and maintenance instructions, and parts breakdown list(s).

- 1) The Operation Section should contain at least instructions for start-up, shutdown, and normal operation of the equipment. **It shall include also instructions for long term storage.**
- 2) The Performance Section should include equipment specifications such as fluid circulated, temperature, enthalpy pressure, construction, etc.
- 3) The Maintenance Section should contain at least the following:
 - a) Installation, disassembling and assembling instructions.
 - b) Maintenance instructions.
 - c) Settings, clearance and adjustment data.
- 4) The Parts Breakdown Section should include at least the following:
 - a) Replacement parts, drawing and lists, **price** list.
 - b) Instructions for ordering replacement parts.

5.2 Other Information

Within thirty (30) consecutive days after receipt of an order for the specified equipment, the Successful Bidder shall send to the Engineer design and engineering information as required, including the following:

- a. Three sets of 24"x36" drawings for approval. After approval by the Engineer, five final sets four plus one cloth transparency) of drawings certified as "Correct for Construction" and with separate pieces of apparatus adequately marked as described elsewhere herein.

In no way the Successful Bidder shall start the manufacture of the equipment until the drawings are already approved by stamping the correspondent seal, and this will be the final authorization in order to proceed with the heaters fabrication. If the real time for evaluation and approval of drawings exceeds the time previously established in Section II.1, the Proposal, PREPA will grant an equivalent time extension for delivery.

The submittal of revised drawing(s) after PREPA approval for manufacture will not be considered unless the Successful Bidder shows, to full satisfaction of PREPA, a detail description of how such revision(s) affect or correct the design, improve efficiency, performance and construction of the new equipment; furthermore, how this revision(s) may affect the installation, performance and heat balance of the unit. Approval(s) of revised drawing(s), after PREPA release for construction by stamping the correspondent seal duly signed by representatives of PREPA, will be rejected if the aforementioned information is not submitted, completed and/or in compliance with PREPA's requirement. All additional cost associated with such revision(s) are the sole responsibility of the

Successful Bidder. In case those changes result in cost reduction, the benefit shall be credited to PREPA, if any.

- b. Ten sets of bills of materials showing reference markings used on apparatus pieces and erection drawings.
- c. Necessary information for connecting piping, weights to be provided for, etc.
- e. Ten sets of certified test data.
- f. All quality management system documentations, certifications, documentations, WPQ, PQR, WPS, etc.
- g. In ten consecutive days PREPA notify to the Contractor the results of the preliminary drawings evaluations.
- h. Contractor shall deliver PREPA in ten consecutive days the final drawings and specifications after this section item "g" has been completed.

ARTICLE 6. Additional Definitions

Owner or "PREPA"

Puerto Rico Electric Power Authority
GPO Box 364267
San Juan, Puerto Rico 00936-4267

Any reference in any document, drawing or part of this Specification to the "Puerto Rico Water Resources Authority" shall be construed to be "Puerto Rico Electric Power Authority".

ARTICLE 7. Commencement, Prosecution and Completion

The Contractor shall start his work at the time indicated in PREPA's notice to proceed and shall at all times during the continuance of the Purchase Order, prosecute the work with such force and equipment as, in the judgment of the Engineer, are necessary to complete it within the time specified in *ARTICLE 4 Commencement and Completion of Work*, of the Terms and Conditions. The Contractor's work program and operation shall be subject at all times to the approval of the Engineer.

ARTICLE 8. Shipment

8.1 Packing

Packing shall be suitable for export to a tropical climate and for ocean transportation, and shall include the following measures:

- a. Use only packages constructed of sound new lumber of dimensions proportioned to the size and weight of contents. The Contractor shall not use second hand packing material. All packages must be steel strapped with at least two straps on each package to ensure a solid package and to prevent pilferage. Bundled material must be rigidly steel strapped.
- b. Contractor shall protect the equipment and materials from damage in transit and shall be responsible for any damage due to improper preparation for shipment.
- c. Heavy parts or machines shall be skid mounted or crated. All parts shall be prepared for ready handling with slings unless it is unsafe to attach slings to the packing. In such cases, the packed equipment or parts shall be provided with slings coming out to the outside of the boxes.
- c. Fragile material must be securely braced within the containers or otherwise amply fastened and packed to prevent shifting or rattling.
- d. The shipping containers should be fully lined with strong and durable waterproof paper in order to protect the contents from the elements while in transit or stored without cover.
- e. The Contractor shall not use straw, rice or chaff for packing materials.
- f. Machined parts must be protected against rust-forming and corrosive elements.
- g. The Contractor shall not use open-type crates or fiberboard cartons without prior permission of the Engineer.
- h. The Contractor shall not forward any articles without packing as specified herein without obtaining prior approval of the Engineer.
- j. Spare parts must be boxed separately. Under no circumstances are they to be included in the containers with the related commodity.

8.2. Marking

- a. All external marking must be legibly and durably applied on two sides and both ends of containers in CURSIVE at least one and one-half inches high. This same condition applies to bare material such as, but not limited to, pipe and structural steel.
- b. Packages must be numbered consecutively for all shipments under the same contract, whether the package is large or small. The metal tags on bundled

material must show the number of pieces contained in the bundle and no two packages shipped under one contract shall carry the same package number.

- c. Net, tare, gross weight in pounds and the correct outside measurements in terms of length, width and height in feet and inches must be shown on each package, shipping tags and bare pieces.
- d. The packages containing delicate and fragile material should be marked in black block letter "FRAGILE, DO NOT DROP".
- e. Marks indicating where to "SLING" should be put on containers with an arrow.
- f. All packages shall be properly marked and such marks shall include the following information:
CONSIGNED TO PREPA
WAREHOUSE NO. 059
SOUTH COAST STEAM PLANT
GUAYANILLA, PUERTO RICO
ATTENTION: ENG. RAUL CARRERA
Head, South Coast Steam Plant Division
PREPA ORDER: XXXXXXXX
PREPA REQUISITION: XXXXXXXX

8.3. Shipping Instructions and Packing List

- a. Unless otherwise established, before proceeding with shipment of the materials or equipment under this Terms and Conditions, the Contractor shall request shipping instructions from PREPA.
- b. At the same time the above shipping instructions are requested, the Contractor shall forward to the Engineer of PREPA, Via Air Mail, and duplicate copies of said request for shipping instructions accompanied by detailed packing lists in English, of all equipment and materials to be shipped. The prompt compliance with these instructions will serve to expedite payment of invoices.
- c. Three signed copies of packing lists (one packing list for each separate shipment) are required and the following information must be shown therein:
 - 1) Order number, item number, marks, and package numbers. (Packing list should indicate the number of pieces of each and every item contained in a case or bundle by package number.)
 - 2) Net, tare and gross weights in pounds.

- 3) Outside dimensions of each package specified in terms of length, width and height. All drawings and data shall be shown in English Units.
- 4) Total cubic footage of each package.
- 5) Type of container must be correctly stated, i.e., box, bundle, drum, reel, bare piece, plate, etc.
- 6) Total of gross and net weights of entire packing list shown in pounds.
- 7) Total cubic footage of entire packing list.
- 8) Number(s) of package(s) making the complete contract. Numbers should not be duplicated. Any break in continuity must be explained.
- 9) Export marks
- 10) Two copies of list of contents and description must be enclosed in each container.

ARTICLE 9. Transportation of Materials and/or Equipment

The Contractor shall be responsible for picking up and loading the materials and/or equipment from the delivery point and for transporting, unloading, uncaging and handling the same at the site. The Contractor shall unload all materials and/or equipment within forty eight (48) hours after arrival at South Coast Steam Plant. The contractor shall dispose of the salvage materials, dunnage, and scrap resulting from such work. In the event, the rehandling or relocating of materials will be deemed necessary by the Engineer and in the best interest of the job as a whole, the Contractor shall, under the direction of the Engineer, do such rehandling at no extra charge.

ARTICLE 10. Existing Facilities Protection

- 10.1 The Contractor's operations shall be carried out with extreme care at all times to avoid damages to structures and facilities, and interference with units in operation at the site. The Contractor shall be responsible for any interference with the operation that is attributable to his negligence or fault in the performance of the work.
- 10.2. The Contractor shall protect, to the satisfaction of the Engineer, all existing site structures and equipment from damage. The Contractor at his own expense shall immediately repair any damage to these structures or equipment.

ARTICLE 11. Subcontracts

It shall be Contractor's responsibility to supervise the work of his subcontractors at all times. For additional information, refer to instructions for bidders.

ARTICLE 12. Billings by the Contractor

- 12.1 All billings by the Contractor must meet Engineer's approval prior to invoices processing for payment.
- 12.2 All billings must be accompanied by the supporting documents, each showing PREPA's authorized representatives acceptance.
- 12.3 Vendor's and subcontractors' invoices and subcontractors' and contractors' time sheets must show Engineer's approval. The documents shall be submitted in original form.
- 12.4 Monthly requisitions for payment shall be submitted in triplicate and payable within forty five (45) days after the date of its approval by the Engineer.

ARTICLE 13. Manufacturer's Information

For expediting purposes, if materials are manufactured by a third party, the Contractor shall indicate the name, address, and telephone number of the manufacturer. In addition, within ten (10) days after award of the Purchase Order, the Contractor shall submit the factory job order number(s) of the different materials included in the order. Tubes and shells mills certificates shall be submitted for PREPA's approval before proceeding heater manufacturing.

ARTICLE 14. Changes

All changes or deviations from plans and specifications whether or not they result in a cost change shall be approved by the Engineer prior to proceeding with change.

ARTICLE 15. Progress Reports

- 15.1. The Contractor shall furnish the Engineer summary monthly reports of the various divisions of the work under the Purchase Order, whether in the shop or in the field, stating the existing status, rate of progress, estimated time of completion and cause of delays, if any. Concurrent to all work, a written report of conditions as found, work performed, clearances and test data recorded should be submitted. An updated works schedule shall be submitted with each monthly report. A final report should be submitted within three (3) weeks after completion of all work.

- 15.2 The Contractor shall submit to the Engineer his Purchase Order numbers, dates, description of the materials involved and the delivery dates specified. Such information is to be submitted at monthly intervals so that the Engineer will be cognizant of the current progress being made by the Contractor in the placing of orders.
- 15.3 The Contractor shall be solely responsible for expediting the delivery of all material and equipment to be furnished by him so that fabrication progress shall be maintained according to the schedule in force.

ARTICLE 16. Overtime

When and if overtime is ordered by the Engineer, the Contractor shall be reimbursed for such authorized overtime only on the basis of the increase in the hourly rate of labor over the straight time rate during such overtime, plus actual insurance and payroll taxes for the overtime period. No overhead or profit will be allowed on such overtime, No reimbursement will be made for overtime payment to persons engaged in the work higher than foreman. No reimbursement shall be made to the Contractor for overtime payment if ordered because of failure to meet contract commitments.

ARTICLE 17. Engineer Supervision and Inspection

The Engineer's supervision and inspection is for the purpose of assuring him that the work is being properly executed in accordance with the drawings and specifications. The fact that the Project Manager is instructed to give the Contractor all desired assistance in interpreting shall not relieve the Contractor of any responsibility for the work as intended by the Contract documents.

ARTICLE 18. Testing

- 18.1 Upon completion of the installation, or at such time as designated by the Engineer, all equipment and systems shall be field tested by the Contractor at his own expense. Such tests shall be witnessed by the Engineer and shall be subject to his approval. The Contractor shall furnish the necessary labor, field supervision, test instruments, material and test connections required for checking, setting, adjusting and testing the installation. These include performance tests after installations have been completed.
- 18.2 The Contractor shall maintain records of all tests performed and shall submit the records to the Engineer on a monthly basis, prior to delivery of the equipment.
- 18.3 All deficiencies discovered during the tests shall be corrected as directed by the Engineer at the Contractor's expense.

ARTICLE 19. Substitutions

Bidders shall base their bids on the specified materials and equipment. If substitutions are proposed the Bidders shall state so in each particular case and submit the names of the manufacturer, type of material or equipment offered, and the difference in price between the specified and the proposed material or equipment.

ARTICLE 20. Schedule of Proposed Progress

- 20.1. In accordance to Article 4.3 of Schedule of Proposed Progress of the Terms and Conditions.
- 20.2. The Contractor's Construction Progress Schedule shall meet the approval of the Engineer.
- 20.3. Contractor's engineering schedule shall allow a minimum of two (2) weeks for mailing, processing, review of submittals, drawings and data by Owner.

ARTICLE 21. Time Extensions

The Contractor shall apply for time extensions for construction changes, unforeseeable causes, changed conditions, etc., as indicated throughout the Specification only if the schedule of proposed progress is affected. Under no circumstances shall the Engineer consider applications for extra time if the master schedule is not clearly affected. Written application shall be submitted for evaluation and consideration to the attention of the Engineer. The engineer shall response back his decision in no more than five business days.

ARTICLE 22. Copies Furnished

The Contractor will be furnished free of charge with five (5) sets of specifications and ten (10) sets of drawings in 24"x 36", as applicable. Additional sets as requested will be furnished at actual cost of reproduction. Specifications and each drawing shall be signed and certified by the designer professional engineer.

ARTICLE 23. Executive Order 4385 dated January 3, 1985

In compliance with Executive Order 4385 dated January 3, 1985 and in accordance with Article 105 of this order, the Contractor shall submit the following information to PREPA:

- 23.1 Trimestral reports (at least one report for Purchase Orders of less than three months duration) containing the following information:
 - a. The names, ages and titles of all persons hired during the period covered by the report.

- b. The names and ages of all persons dismissed or terminated during the period covered by the report, as well as the reason in each particular case.

23.2 A relation of all job positions available, specifying in addition, its requirements.

END OF SPECIAL CONDITIONS AND TECHNICAL SPECIFICATIONS

Government of Puerto Rico

Puerto Rico Electric Power Authority



Hurricane Maria DR-PR-4339

PROJECT SCOPE OF WORK WITH COST ESTIMATES
Submittal to COR3 and FEMA



***Upgrade to Mark VI,
Palo Seco Power Plant – Units 3 & 4***

1/26/2022



Introduction

The purpose of this document is to present and update a Project Scope of Work (SOW) with Cost Estimates to be submitted to COR3 and FEMA for projects under DR-4339-PR Public Assistance. The completed document will be reviewed by COR3 and FEMA to create and version a specific project worksheet and post fixed-cost estimates to repair, restore, or replace eligible facilities including Section 406 hazard mitigation for a specific project.

Puerto Rico Electric Power Authority (PREPA) is the agency that provides the electric service to the entire island of Puerto Rico. As such, the facilities, sites, and systems identified in this Scope of Work are eligible as critical services facilities as defined in the PAAP (Section 428) and BBA 2018 guidance documents. Additional details may be found in Sections 3 and 4, respectively.

This document will be updated with information developed during the initial design and engineering phase through the construction phase.

The sections included in this document are:

- *Project Information*
- *Facilities*
- *Scope of Work*
- *Codes and Standards*
- *Cost Estimate*
- *406 Hazard Mitigation Proposal*
- *Environmental and Historic Preservation (EHP) Requirements*
- *Program Manager Certification*
- *PREPA Project Sponsor Comments*
- *Attachments*

Document Revision History

Version	Date	Summary of Changes



Section 1. Project Information

General Information

Recipient	Central Office for Recovery, Reconstruction and Resiliency (COR3)
Sub-Recipient	Puerto Rico Electric Power Authority (PREPA)
Project Title	Palo Seco Power Plant, units 3 & 4 – Travelling Screens
PREPA Project Number	<to be entered by PREPA>

Federal Information

(provided by FEMA)

Damage Number(s)	250040
Damaged Inventory/Asset Category	Island Wide Generation Plants
FEMA Project Number (Formerly Project Worksheet)	136271 - MEPA078 PREPA Island Wide FAASt Project, Hurricane Maria 4339DR-PR
Amendment Number	

Program Manager: <Name>

<Insert title here>

PREPA Project Sponsor: <Name >

<Insert title here>



Section 2. Facilities

2.1. Facilities List

Name	GPS Location
Palo Seco Power Plant, units 3 and 4	[REDACTED] [REDACTED]

Note: GPS coordinates are required for all facilities.

2.2. Facilities Description

On September 20, 2017 the entire island of Puerto Rico was ravaged by Hurricane Maria, making landfall as high-end category 4 hurricane. As a result of severe winds, wind-driven debris, salt spray, storm surge, mudslides, flooding, and rain, all essential electrical delivery services including power generation were damaged or destroyed, resulting in a complete loss of power and the longest blackout in U.S. history.

Furthermore, PREPA needs to perform constantly works of conservation, repairs, and retrofitting of its generation units and their auxiliary equipment, including, without limitation, boilers, turbines, rotors, generators, motors, pumps, breakers, and control systems. These works are of the utmost importance as it has become more evident by the recent forced outages.

To improve the generation asset's reliability, increasing their availability, and provide continuous generation service to the People of Puerto Rico, it is crucial to keep these assets operational and in the best possible condition. Therefore, the prioritization of conservation, repairs, and retrofitting works projects is at the top priority list.

Palo Seco Power Plant needs to upgrade its actual Distributed Control System (DCS) "Mark VI", installed in units 3 and 4, since it has more than ten (10) years. The system controls all the operations of the steam turbine and generator. The network switch upgrade will modernize the existing network utilizing current technology, improving network performance, enhancing cyber security features, and allowing a longer product life cycle.

Section 3. Scope of Work

3.1. Scope of Work Description

The scope of work for the Upgrade to Mark VI of Palo Seco Power Plant units 3 and 4 will consist of the following:



- Contractor shall supply and install new Human Machine Interphase (HMI), an upgrade to turbine/generator DCS control system that include software last edition.
- Also, Upgrade shall include automatic synchronization of generator to grid.

3.2. Type of Project

Indicate whether the intended plan is a(n):

1. **Restoration to Codes/Standards:** Restores the facility(s) to pre-disaster function and to approved codes/standards
2. **Improved Project:** Restores the pre-disaster function of the facility(s) and incorporates improvements including any:
 - a. Other improvements, not required by codes and standards
 - b. Changes in facility size, capacity, dimension, or footprint
3. **Alternate Project:** Does not restore the pre-disaster function of the damaged facility(s)

Choose One (Restoration, Improved or Alternate)

If improved, provide the changes in facility size, capacity, dimension, or footprint. If alternate, provide rationale for recommendation.

Restores to Codes/Standards

Note: If preliminary Architectural and Engineering (A&E) work has not been completed, the type of work designation is considered initial and is based on currently available information. The type of work designation may be revised based on the results of the completed preliminary A&E work.

3.3. Preliminary Architectural and Engineering (A&E)

Is architectural and engineering funding required to help define the intended scope of work?

No

Project complexity does not require Architecture and/or Engineering services for design.

Section 4. Codes and Standards

Which of the following types of codes, specifications, and standards apply to the restoration, replacement, relocation, or alternate scope of work?



4.1. Codes, Specifications, and Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • (ASCE MOP 74) Guidelines for Electrical Transmission Line Structural Loading, Third Edition - American Society of Civil Engineers (ASCE) • (ASCE/SEI 7-16) Minimum Design Loads and Associated Criteria for Buildings and Other Structure - American Society of Civil Engineers (ASCE) • Distribution – 50-4, 1724D-106, 1724E-150, 1724E-151, 1724E-152, 1724E-153, 1725E-154, 1728F-700, 1728F-803, 1728F-804, 1728F-806, 1730B-121, 1730B-2 - U.S. Department of Agriculture Rural Electric Service (RUS) • International Building Code (IBC) - International Code Council (ICC) • International Energy Conservation Code (IECC) - International Code Council (ICC) • International Existing Building Code (IEBC) - International Code Council (ICC) • National Electric Safety Code (NESC) - Institute of Electrical and Electronics Engineers • National Electrical Code (NEC) - National Fire Protection Association (NFPA) • FM 4470 for Class 1 Roof Constructions - National Roofing Contractors Association (NRCA)

4.2. Industry Standards

Yes/No. If yes, describe how incorporated below.
<ul style="list-style-type: none"> • 2018 NFPA 101 Life Safety Code - National Fire Protection Association (NFPA) • 2010 NFPA 72 Fire Alarm and Signaling Code - National Fire Protection Association (NFPA) • ASCE.7 Section C 6.0 Wind Loads - American Society of Civil Engineers (ASCE) • International Building Code (IBC) - International Code Council (ICC) • Page 10 PREPA Standards and Specifications - Puerto Rico Electric Power Authority (PREPA) • Pattern Distribution Systems Manual - Puerto Rico Electric Power Authority (PREPA) • RUS - Applicable Bulletins for Electrical and Electronic Installations - US Department of Agriculture, Rural Utilities Service (RUS) • Underground Distribution Patterns Manual - Puerto Rico Electric Power Authority (PREPA)

Section 5. Cost Estimate

The estimate includes materials, construction labor and equipment, engineering, permitting, management, and contingencies. Cost is based historical pricing.

Cost Type	Amount (\$)
Engineering, Design, Installation and Testing	\$500,000.00
Total Project Estimated Cost	\$500,000.00



Section 6. 406 Hazard Mitigation Proposal

6.1. 406 Mitigation Opportunity Scope of Work

Hazard mitigation scope was not identified for this work.

6.2. 406 Mitigation Opportunity Cost Estimate

There are no costs associated with hazard mitigation.

Note: *If available, detailed engineering cost estimates will be included as an attachment.*

Section 7. EHP Requirements

EHP considerations will be detailed in PREPA's EHP scoping document and EHP Checklist. Review will be performed under FEMA's project formulation review.

Section 8. Program Manager Lead Certification

Based on my knowledge and information available to date, I certify that the contents of this document accurately reflect the project scope of work and cost estimates.

Program Manager's Printed Name

Date

Title

Signature



Section 9. PREPA Project Sponsor Comments

Comments
<i><Insert any comments here></i>

PREPA Project Sponsor's Printed Name

Date

Title

Signature

Section 10. Attachments

10.1. Project Detailed Cost Estimates

<p>Please see attached the following:</p> <ul style="list-style-type: none">• Proposal DM1924943 Rev 5_Quote by Nexus Controls
--

10.2. Engineering Studies and Designs

N/A

10.3. Location Maps and Site Pictures



10.4. Other: (Please Describe)

N/A

Scope of Work

Mark VI is the actual Distributed Control System (DCS) installed on Palo Seco units 3 and 4, has more than ten years. The system control all the operation of the steam turbine and generator. Contractor shall supply and install Human Machine Interphase (HMI), an upgrade to turbine/generator DCS control system that include software last edition. Also Upgrade shall include automatic synchronization of generator to grid.

**Budgetary Price Quotation
For
PUERTO RICO ELECTRIC POWER AUTHORITY
At
Palo Seco
For a
HMI – HMI and Network Switch Upgrade**

Proposal Number: DM1924943 Rev 5

Date: June 1, 2021



This document, all related and derivative information, whether written or oral is submitted in confidence for evaluation by the Buyer. As such, its contents are proprietary and confidential to the Seller. In taking receipt of this document, Buyer agrees not to reveal its contents, to third parties or otherwise, except to those who must evaluate it. Upon written request of Seller, Buyer will return all copies of this document to Seller. The equipment listed in this document is based on preliminary information and is subject to change.

Date: June 1, 2021
PUERTO RICO ELECTRIC POWER AUTHORITY
1110 AVE PONCE DE LEON
PO BOX 364267
SAN JUAN, PUERTO RICO 00907-3802

Nexus Controls LLC
Brent Vild
Baker Hughes Puerto Rico, Inc.
383 Franklin D Roosevelt Ave
San Juan, PR 00918
brent.vild@bakerhughes.com

Attention:

Subject: PREPA - Palo Seco - DM1924943 - HMI Upgrade

Proposal Number: DM1924943 Rev 5

Unit/ Serial No: Unit 3 / S/N: 813739; Unit 4 / S/N: 813741

Reference: Verbal

Dear ,

Nexus Controls LLC, a Baker Hughes business, is pleased to offer PUERTO RICO ELECTRIC POWER AUTHORITY a financially and technically attractive Budgetary Price quotation for PREPA - Palo Seco - DM1924943 - HMI Upgrade.

- a. The total quantity of industrial Human Machine Interfaces ("HMI") to be upgraded is 2.
- b. The total quantity of new Human Machine Interfaces ("HMI") to be provided is 3

As this is a budgetary estimate, Nexus Controls will not accept a purchase order until the project scope and schedule are defined and agreed upon between the parties.

We offer this Revision 5 to our earlier Proposal DM1924943 Revision 4, dated August 13, 2020. Seller entity name is updated, and pricing adjusted to reflect delivery and installation in 2022. Revisions to the scope offered in this revision is detailed below:

Base Scope:

- a) Move Auto Sync Functionality to optional scope
- b) Removed Processor Upgrade to UCVH

Optional Scope:

- a) Auto Sync Functionality
- b) Spare Cisco 2960X Network Switch
- c) OT Armor Cyber Security with Remote Client (VM) HMI

We look forward to the opportunity to discuss the proposed solution. Should you have any questions or require any additional information please do not hesitate to contact the undersigned.

Yours sincerely,

Brent Vild
Sales Manager
Nexus Controls LLC

Table of Contents

1	Executive Summary	6
1.1	Overview	6
1.1.1	HMI – HMI Upgrade	6
1.1.2	Network Switch Upgrade Details and Benefits	6
1.2	Quality	7
1.3	Project Management	7
1.4	Base Price Summary	7
2	Base Scope of Supply	8
2.1	HMIs Proposed Changes/Solution	8
2.1.1	HMI System Architecture	8
2.1.2	Bill of Material.....	9
2.1.3	Proposed HMI External Communication	9
2.1.4	Engineering Design, Testing and Meetings	9
2.1.5	Human Machine Interface ("HMI")	10
2.1.6	Network Switches.....	11
2.2	Documentation	11
2.2.1	Electronic Media Documentation	11
2.2.2	Hardcopy Media Documentation	11
2.2.3	Documentation List.....	12
3	Optional Scope of Supply	13
3.1	Auto Sync Functionality Modification.....	13
3.2	Network Switch.....	13
3.3	OTArmor Compact CSMS.....	13
3.3.1	Available features of OTArmor Compact include:	13
3.3.2	Centralized Account/Policy Management: Active Directory	14
3.3.3	Local Patching, Back-Up, and AV	14
3.3.4	Certificate Authority Server and Enhanced Controller Protections	14
3.3.5	Centralized Anti-Virus (AV)/Data Loss Prevention (DLP) VM.....	14
3.3.6	Centralized Patching – a VM.....	15
3.3.7	Centralized Backup and Disaster Recovery Capability – VM	15
3.3.8	Identity and Access Management Solution	15
3.3.9	Virtual HMIs Functionality – VM	15
3.3.10	HMI System Architecture	16
3.3.11	Proposed HMI External Communication	17
3.3.12	Copy of current site Network Topology	17
3.3.13	OTArmor Compact Bill of Materials.....	17
3.4	CAP Software Update Subscription Program	18
3.4.1	Cyber Asset Protection ("CAP")	18
3.4.2	Patch and Signature Management.....	18
3.4.3	Validation Lab Testing.....	19
3.4.4	Scripting	19
3.4.5	Secure Transmittal	19
4	Installation Site Services	20
4.1	Site Services Division of Responsibility.....	20
5	Proposal Basis and Buyer Responsibilities.....	21
5.1	General Assumptions and Clarifications.....	21
5.2	Application/ Product Specific Buyer/ End-user Responsibilities	23
5.2.1	HMI	23
5.3	Documentation Related Buyer/End-User Responsibilities	25
6	Commercial	26
6.1	Price Summary	26
6.1.1	Base Scope Summary.....	26
6.1.2	Optional Scope Summary	26
6.1.3	Pricing Limitations and Considerations	26
6.2	Schedule	27
6.2.1	Equipment (Hardware and Software) Schedule.....	27

6.2.2	Equipment Schedule Limitations	27
6.2.3	Site Services Schedule Limitations	28
6.3	Delivery, Title Transfer, and Risk of Loss	29
6.3.1	Offsite Work (Equipment and Engineering).....	29
6.3.2	Onsite Work (Site Services, Training, Support agreements)	29
6.4	Payment Terms.....	29
6.4.1	Invoicing Schedule	29
6.4.2	Termination Schedule	29
6.5	Terms and Conditions	30
6.6	Purchase Order Address Details	30
7	Appendices	31
7.1	HMI PC Features.....	31
7.1.1	Hardware Uptime Enhancement – Industrial PC's Solid-State Hard Drives	31
7.1.2	Backup Software Capabilities:	31
7.1.3	Network Topology Review	32
7.1.4	HMI Screens.....	32
8	Appendices	33
8.1	Baker Hughes LLC Terms and Conditions.....	33
8.2	Baker Hughes LLC Terms and Conditions.....	42
8.3	2021 Services Rate Sheet.....	47

Notice

2019 Copyright © All rights reserved.

The information contained in this document is subject to change without notice.

† Registered trademark of Baker Hughes in one or more countries. Other names may be trademarks of the respective owners and are used herein for identification purposes only. Use of any names or marks owned by a third party does not imply endorsement by or a relationship with the third party.

Defined Terms

The following terms shall have the meanings set forth below as used throughout this document.

1. **"Buyer"** means the Legal Entity ("LE") to which Seller's proposal is directed and the source of any subsequent order/contract, namely **"PUERTO RICO ELECTRIC POWER AUTHORITY"**.
2. **"Buyer/End-User's Equipment"** or "Unit(s)" means equipment into which the Seller's Equipment(s) system will be installed and for which the Services will be performed.
3. **"Contract"** means the contract between Seller and Buyer resulting from this Document.
4. **"Contract Price"** or "Proposal Price" means the price to be paid by the Buyer to the Seller under this Proposal or any resulting Contract for the Parts and Services.
5. **"End-User"** means the entity to which will be the ultimate recipient of the Seller's scope of supply, namely **"PUERTO RICO ELECTRIC POWER AUTHORITY"**.
6. **"Services"** means such planning, management, technical advisory services, site services and engineering necessary to install the System identified herein.
7. **"Seller"** means the LE issuing this proposal, providing the equipment and collecting the Purchase Order, namely **"BAKER HUGHES PUERTO RICO, INC."**.
8. **"Site"** means the location or Plant where the System or Parts will be installed and commissioned, namely **"PUERTO RICO ELECTRIC POWER AUTHORITY"** located at **"Palo Seco"**.
9. **"System"** means the equipment, parts, materials, supplies, components and other goods, supplied as part of the offer/proposal/quotation.

Revision History

Revision	Date	Description of Revision
Rev 0	January 1, 2019	Original Distribution
Rev 1	January 2, 2019	Minor Edits
Rev 2	November 14, 2019	Auto Sync functionality
Rev 3	May 1, 2020	Refreshed proposal date
Rev 4	August 13, 2020	Refreshed proposal date, Seller/Buyer entity names, and adjusted pricing for 2021 installation
Rev 5	June 1, 2021	Updated proposal for validity, added Optional Scope

1 Executive Summary

1.1 Overview

The Seller is pleased to submit this Firm Fixed Quotation to Puerto Rico Electric Power Authority for the ["Mark VI-TMR"] Windows® 10 HMI Upgrade and modification to add Auto Synchronization to Units 3 and 4 at the Palo Seco facility.

The Seller's latest HMI technology provides the most current software and hardware technology available from the Seller for the turbine control operator interface. The latest software packages provide improved features and protection functions as compared to previous versions.

Current HMIs being built today are Windows® 10 IOT Enterprise operating system and the HMIs have CIMPLICITY* Advanced Viewer. All original HMIs on the same network must be upgraded at the same time to allow proper interface between the equipment and the software packages.

The benefits of this retrofit include:

- a. Industry standard operating system and software.
- b. Integration of various systems and devices (as needed) to reduce resources required for operating and maintaining the units.
- c. The ability to find and eliminate problems before they become critical.
- d. CIMPLICITY Graphical User Interface (GUI) software on HMIs is for industrial controls.
- e. Solid State hard drives for increased uptime on some PC models.
- f. Optional RAID hard drives for increased uptime on other PC models.

1.1.1 HMI – HMI Upgrade

This HMI upgrade will consist of replacing 2 and adding 1 HMI operator interface PC(s) at the PREPA plant, located in the same locations with similar functionality. This proposal is for the site's Steam Turbine Generators S3 and S4, which are equipped with ["Mark VI-TMR"] controllers. The units are identified as turbine serial numbers ["813739", "813741"].

As part of the upgrades and enhancements, the Seller is offering the following;

- a. Upgrade the existing HMIs Industrial Server(s).
- b. Adding one HMI Industrial Server.
- c. Upgrades to the ["Mark VI-TMR"] UCV* processor cards flash card to 128MB to accommodate larger M6B files.
- d. Field Service to install and commission the new HMIs.

1.1.2 Network Switch Upgrade Details and Benefits

Seller's Network switch upgrade modernizes the existing network utilizing current technology, improving network performance, enhancing Cyber Security features, and allowing a longer product life cycle.

- a) Network performance and reliability benefits include:
 - i. Stacking technology that enables a stacked pair to act as one switch.
 - ii. Built-in failover and Recovery in the event of a switch failover,
 - iii. An un-configured switch can be used to replace a failed switch in a stacked pair.
 - iv. Automatic upload of the running configuration from the surviving switch in the stack.
 - v. Gigabyte uplink speeds.
 - vi. Enhanced Quality of Service (QoS). Ensures UDH (controls traffic) always has priority over PDH network (generally supervisory traffic only)
 - vii. Network Switches are 802.1x compliant.

1.2 Quality

Nexus Controls LLC is dedicated to Customer Focus, Compliance, Risk Management, Flawless Execution, and Improvement. Our Quality Policy issued by the CEO of Baker Hughes is codified in our Quality Policy (BHGE-QUA-001) and directs the Nexus Controls Quality Management System (QMS) to ensure that we are delivering the best quality and safest products, services, processes, and technologies in the industry. Our passion for Quality is demonstrated by the successful delivery of over 250 Controls Upgrades Globally per year.

- a. Our Quality System Rigor is scalable ensuring quality from small HMI or DCS upgrades to Multiunit Oil and Gas or Nuclear Projects.
- b. Our Continuous Improvement, Root Cause analysis processes and Six Sigma programs can demonstrate clear tie in from Lessons Learned on over 250 projects globally per year to specific process and product improvements to benefit you.
- c. Our global design and manufacturing locations (USA, Brazil, Hungary, Bahrain/Saudi/UAE, Korea, Singapore, China and India) are ISO-9001 Certified by a leading Auditor such as LRQA or BSI. All operate under a single globally consistent QMS.

1.3 Project Management

Upon receipt of an order, the Seller will assign a Project Manager who will be the Buyer/End-user's single point of contact to ensure that the scope and delivery requirements are satisfied. The Project Manager's responsibilities will include:

- a. Project scheduling and tracking for the project activities associated with the equipment delivery.
- b. Procurement and expediting of all equipment and services included in this proposal to insure a smooth project.
- c. Coordination of engineering, test, and startup activities (if included) for the equipment upgrade.

1.4 Base Price Summary

The following price summary table is for the base work scope and is Firm Fixed priced. A detailed breakdown of the scope of supply and associated pricing is provided in the Commercial Section of this document.

Item	Qty	Description	Price
1	1 Lot	HMI – HMI (3 industrial) Includes installation and commission services	\$123,226
2	1 Lot	2960 X Cisco Network Switch Pair Includes installation and commissioning services (valid pricing if purchased with HMI or OT Armor scope)	\$21,199
Base Scope Price			\$144,425

2 Base Scope of Supply

2.1 HMIs Proposed Changes/Solution

This project will consist of replacing (2) two HMI operator interface PC's and adding (1) one HMI at the PREPA Paolo Seco for a total of (3) three new HMIs, located in the same locations with similar functionality. This proposal is for the site's Unit 3 and 4, which are equipped with MARK VI controllers. The units are identified as turbine serial numbers 813739 and 813741.

Upgrades to the MARK VI UCV* processor cards and software will also be provided as required.

The current UDH and PDH networks will be used as currently configured with no changes unless otherwise stated.

The final configuration of the new HMIs cannot be accomplished in the factory. The final site-specific configuration will be completed during installation. It is recommended that the Seller's field service employees perform the installing and system/controller configuration to maintain system integrity and robustness.

New ControlST site software is included with the HMI as part of the base scope offering. Installation of the controller software based on the upgrade is included as part of the installation activities.

2.1.1 HMI System Architecture

HMIs will be supplied in the quantities and with the functionality described in words and in the configuration tables below.

The existing UDH/PDH networks links will be modified for the additional HMI provided. Changes to the Ethernet network is required to support proposed HMI capabilities. Ethernet switches are provided by this quote, but others supply cables, connectors, and installation.

Proposed HMI Capability Table

<u>TURBINE UNIT #</u>	HMI #1 Control Room	HMI #2 Control Room	HMI #3 Control Room
ST#3 813739	Server	Server	Server
ST#4 813741	Server	Server	Server
<u>HMI FUNCTIONALITY</u>	HMI #1 Control Room	HMI #2 Control Room	HMI #3 Control Room
PC Style	Industrial PC	Industrial PC	Industrial PC
Industrial– uptime enhancement	Solid State hard drives	Solid State hard drives	Solid State hard drives
PC orientation	Desktop	Desktop	Desktop
Widescreen Formatting	Yes	Yes	Yes
IRIG-B/GPS time synch server*	*	*	*
Audible alarm with speakers	No	No	No
Generator Capability Curves	Reapply	Reapply	Reapply
Parallel port support for dot matrix printer	NO	NO	No

* - A Time Synch Server is used for MARK VI applications. The Time Server connects to the MARK VI UDH/PDH and provides an NTP time reference that is used by the MARK VI and HMIs to sync their time.

2.1.2 Bill of Material

The base scope of material and work detailed in the proposal will be as follows:

Qty.	Description
3	Industrial Grade for HMI upgrade: PC details are typical. Seller will provide an HMI that meets the specific requirements of the project, details of which will be provided during project execution: Industrial grade desktop PC: <ul style="list-style-type: none"> a. Windows 10 IOT Enterprise (64bit) b. Tabletop (optional rack mounting available) c. 3U Dimensions: 133.40mm (H) x 482.60mm (W) x 431.80mm (D) d. Intel® 3rd Generation Core™ i7-3770 Processor e. QTY two 480GB SATA Solid State Drives – first for operating system, second for data f. DVD±RW Optical Kit g. Four 60 x 25mm Cooling Fans h. Dual Monitor Video Outputs (dual DVI or VGA) i. 32 GB RAM, built in audio, 8 USB ports j. External speakers k. Dual UDH/PDH (4) RJ45 Ethernet ports l. 6 external USB ports m. 1 RS-232 serial port n. 1 RS-232/422/485 serial port o. Keyboard (USB) p. Mouse (USB) q. 4 - PCI Slots available for optional cards r. 2 – PCIe Slots available for optional cards s. Temp/humidity rating: Operating: 5° to 50° C (40° to 122° F) / 15 to 80% RH
Per site	An equipment network topology (4108 drawing) in support of an HMI upgrade. The topology provided would be based on the current site information that is provided to the Seller from the Buyer.
Per HMI	Implement operator selectable desktop ICONS to allow two different turbine units to be viewed on dual monitor Industrial grade HMI applications only when dual monitor hardware is ordered.
2	22" Widescreen LED monitors to be provided for additional HMI. Existing monitors will be reused for replacement HMIs.
Per HMI	Widescreen engineering
Per HMI	Re-apply existing active Generator Capability curve display on the HMI – Per Generator size
Per powered device	Power Cords supplied per powered device for use in the USA
6	FLASH MEMORY CARDS <ul style="list-style-type: none"> • 128mb flash card to update UCVE/F with larger flash • Required to replace the existing flash memory on each UCVE card (three per MARK VI panel) • Required to accommodate the new ControlST CD software
1	USB Flash drive programmer <ul style="list-style-type: none"> • To program new flash on the UCVE/F
1	Spare 480GB SATA solid state hard drive. For use to replace a hard drive in the Industrial PC configuration

2.1.3 Proposed HMI External Communication

Seller will not modify the Buyer supplied external equipment/foreign devices or other sub-systems for communication interface with the Mark VIe. Buyer/End-User is responsible for any additional hardware or programming required for the interfacing of Seller supplied equipment to Buyer/End-User supplied external equipment/foreign devices. The Seller expects the Buyer, or his vendor will be needed to help with the communication on his Equipment. The Seller will work on their equipment to help support commissioning the communication link(s).

2.1.4 Engineering Design, Testing and Meetings

As part of the project, the Sellers Engineering Design will include the following:

- Controls Software – Firmware upgrade only; as needed to support the HMI and Historian Upgrade. Changes to the sequencing and fuel control logic are not performed and will remain as it exists at the time of collecting the As-Running software files.
- Development of HMI Operator Graphic Screens (per Seller standard design).
- Configuration of the Historian to receive list of data points.
- Create or update the network topology drawing (aka the 4108 drawing).
- Kickoff Meeting:** A Buyer/Seller kickoff meeting will be held per conference call. Attendees from the Seller's team will include, at a minimum, the project manager and a project engineer. During the phone conference kickoff meeting, the project scope and schedule will be reviewed and agreed upon between the parties.
- Software Witness Acceptance Test (SWAT):** The SWAT is a one (1)-day customer review at the Seller's Facility. The site-specific software is loaded onto the new HMIs and Historian in the lab. For the customer's review, the operator screens are reviewed. During the SWAT, there is data displayed on the screens but there is not true turbine operation simulation and therefore the data is not correlated to real turbine operation on the screens. The layout of each screen and its data points can be reviewed as well as the location of control buttons, menu selections, alarm page, etc. The functionality of the Historian will also be proven. During the SWAT, an acceptance document will be used to document the review.

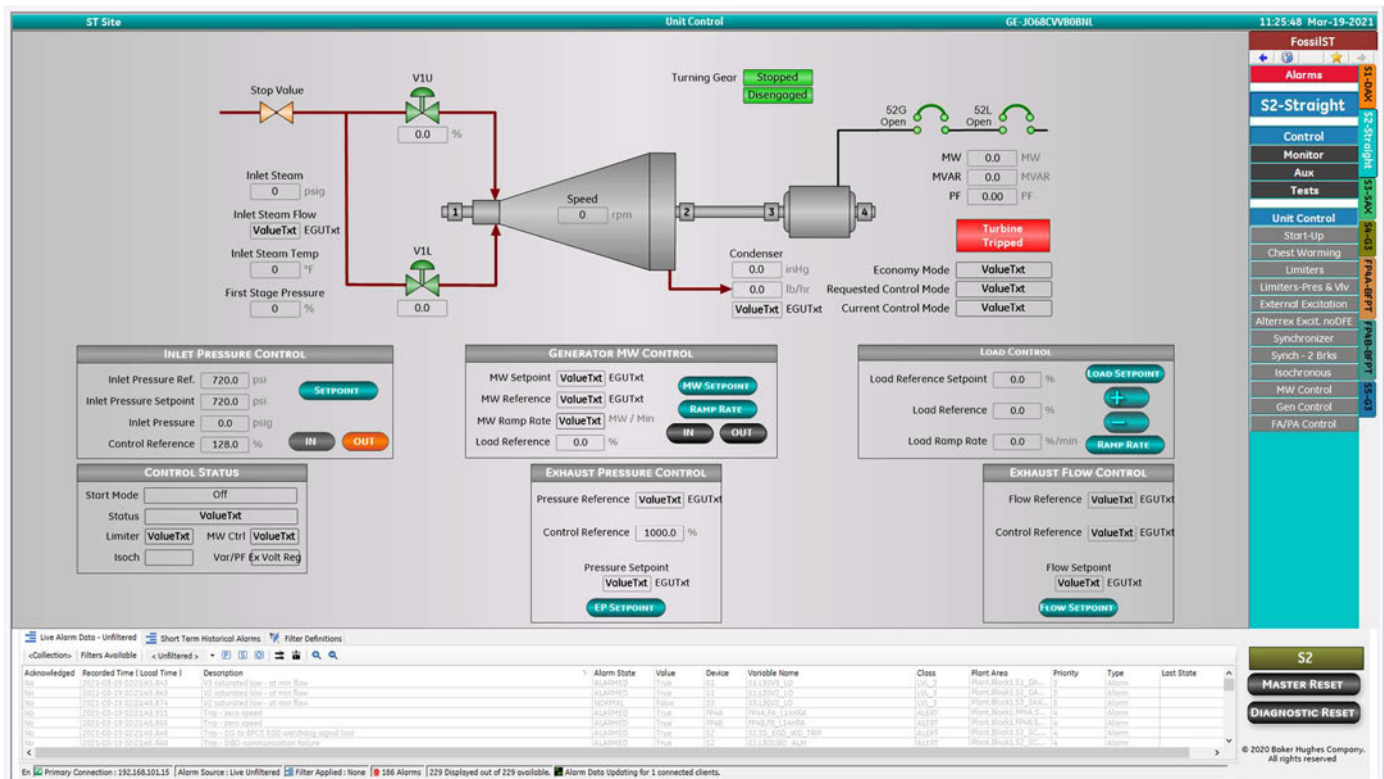
Software Witness Acceptance Test (SWAT): A one-day SWAT at the Seller's Facility is **not** included in this proposal.

- Integration with (Switches, Historian, SecurityST, etc.)
- Communications to other buyer's device includes an Ethernet Modbus protocol interface to another buyer's equipment. We propose to reapply the same point list that is currently in use for applications.

2.1.5 Human Machine Interface ("HMI")

2.1.5.1 Operator Interface HMI

The operator interfaces will be replaced with modern HMIs in the same locations. This new operator interface has a Proficy HMI/SCADA CIMPLICITY graphics package with accurate turbine screens, convenient navigation, superior alarm management, and tools for editors, trending, data analysis, and exporting data. New Trip History handles significantly more points with better time resolution and stores the data for 30 trips.



Example HMI CIMPLICITY Steam Graphics

2.1.5.2 Operator Interface

The HMI is the operator interface. It is a PC with a Microsoft® Windows®-based operating system, client/server capability, CIMPLICITY® Graphical User Interface (GUI) and software maintenance tools (ToolboxST®). It can be applied as:

- Primary operator station for one unit or the entire plant
- Maintenance station gateway
- Engineers station
- Gateway for communications

The HMI communicates with the main processor board in the Mark VIe controller(s) through the Unit Data Highway (UDH) and to third party control and monitoring systems via the Plant Data Highway (PDH). All control and protection is resident in the Mark VIe controller, which allows the HMI to be a non-essential component. With the turbine running, the HMI can be reinitialized or replaced with no impact on the controller.

System (process) alarms for fault conditions are time tagged at frame rate in the controller(s) and transmitted to the HMI alarm management system. System events are time tagged at frame rate, and sequence of events (SOE) for contact inputs are time tagged at 1ms in the IO packs. Alarms can be sorted according to ID, resource, device, time, and priority. Operators can add comments to alarm messages or link specific alarm messages to supporting graphics. A standard alarm/event log stores data for 30 days and can be sorted in chronological order or according to the frequency of occurrence.

A trip history function stores key control parameters, alarms, and events for the last 30 trips. A configurable set of data is collected continuously in the controller and saved automatically for upload and analysis. Data is displayed in English or Metric engineering units with a one second update rate and one second to repaint a typical display graphic. Operator commands can be issued to increment/decrement a setpoint or a numerical value can be entered for a new setpoint.

Gas turbine control screens display a diagram of the turbine with the primary control parameters. The diagram is repeated on most of the screens to provide a visual image of the turbine's performance while changing screens.

2.1.6 Network Switches

The Seller is proposing an upgrade of existing network Switches. Seller will replace existing network technology with our current/latest network switch technology. New switches will be placed in the same location as the current ones. Units within the same plant site will be networked together as the units are upgraded.

Factory engineering will configure the network switches before shipment, but final configuration and commissioning will be done during site installation.

The Seller will provide the following network switches and associated hardware that is listed below in the Bill of Material section. Please refer to the site's Network (4108) topographical drawing.

Each Cisco 2960-X Root switch is equipped with four (4) LC fiber ports and 24 RJ45 Ethernet (copper) ports

Qty.	Description
1 pair	Redundant pair - Cisco 2960-X Root Switches; each with 4 LC Fiber ports and 24 RJ45 ports
2	Power Cords
1 Lot	Engineering Hours – Switch configuration.

2.2 Documentation

Unless otherwise indicated, all electronic (softcopy) & hardcopy documentation, control screens, panel labels and wiring identification will be provided in the English language only. The Seller will provide the following product documentation in quantities and media type listed below.

2.2.1 Electronic Media Documentation

One (1) softcopy of the project documentation will be provided on a CD-ROM. The file types will be Adobe Acrobat PDF, or the native file type received by the Seller's third-party vendor supplying its documents.

2.2.2 Hardcopy Media Documentation

Note that HMI only projects will not include hardcopy documentation.

2.2.3 Documentation List

The following table shows the description of the project documentation that the Seller will be providing as part of the deliverables for the contract.

Document Description	
Item	Generic List
1	ToolboxST Guide for the WorkstationST Application
2	Instruction Manuals/Publications, including Maintenance & User Guides; Ex: GEH, GEK
Item	Application Specific List
1	Network Topology Diagram
2	Field Modification Instructions ("FMI") (where applicable)
3	SWAT Report

3 Optional Scope of Supply

3.1 Auto Sync Functionality Modification

The Auto Sync functionality modification will enable both Unit 3 and Unit 4 to synchronize and close the Generator Breaker automatically. The current functionality only allows the control systems to be synchronized manually. The following describes the synchronization feature of the control system.

Synchronization consists of three functions: manual synchronization, automatic synchronization, and synchronization of check protection. Manual synchronization can be initiated by way of a raise/lower switch with synch scope on the generator panel or from the Mark V operator interface. Automatic synchronizing is used in the Mark VI to automatically speed match, voltage match, and command the generator breaker to close within a predefined band of positive slips. The primary synchronization function is contained in the <P> controller in the <X><Y><Z> cards, while synchronization check protection is performed in the <R><S><T> controllers for maximum protection. A monitor mode is included that allows automatic speed matching and voltage matching but inhibits closing the breaker to facilitate operator inspection.

Note: The scope of supply for this modification is only modification of the existing software. NO field devices or wiring or installation of those devices are included. Only the uploading the modified software and checkout of the functionality is included. The buyer will provide any craft labor and support to implement this modified functionality.

3.2 Network Switch

The seller is offering an optional Cisco 2960x network switch to be used as a replacement if a failure. The switch will need to be configured the same as the failed switch. This may require a field service engineer to program the spare switch.

3.3 OTArmor Compact CSMS

OTArmor Compact provides defense-in-depth protection with a simplified configuration to meet the basic needs of cyber security. OTArmor Compact base features include built-in, local, role-based access control as well as secure mode connection between the controller and the HMI ensuring communication is authenticated and encrypted. The OTArmor Compact solution provides Disaster Recovery for the VMs on the OTArmor Compact server, a local implementation of Anti-Virus software, and the ability for local patching. Additional optional offerings are available to assist in centralizing many common management activities. The OTArmor compact platform utilizes the power of software and virtualization technology on server hardware for increased lifecycle and scalability. Virtualization benefits include increased recovery speed, a smaller hardware footprint, less power consumption, and the capability to easily expand to additional Virtual Machine hosted technology. Seller's security solutions are designed to support compliance to cyber security standards and guidelines including NERC CIP, NEI 08-09, IEC 62443-2-4 and the Center for Internet Security Critical Security Controls (CIS Controls).

The following Assets will be managed by the OTArmor CSMS platform:

Item	Quantity	Device
1	1	OTArmor CSMS
2	1	Virtual Machines (Es. EWSs, Historian, OSM etc.) 1 to 1 VMs ONLY
3	2	Virtual Machines (Es Generic HMIs, Viewers, etc.) 1 to Many VMs ONLY

3.3.1 Available features of OTArmor Compact include:

1. Centralized Account/Policy Management: Active Directory.
 - a. Role-based access control
2. Certificate Authority Server.
 - a. Enhanced Controller Protection, "Secure Mode" (only with Mark VIe type controllers)
3. Includes a standard HMI workstation as a redundancy when the Virtual HMI(s) Functionality is selected. See section below for details.
4. Centralized Anti-Virus (AV) / Data Loss Prevention (DLP) VM.
5. Centralized Patching VM.

6. Centralized Back-Up Server VM.
7. Identity and Access Management, Yubico, Yubikey.
8. Virtual HMI(s) Functionality VM.

3.3.2 Centralized Account/Policy Management: Active Directory

The Centralized Account/Policy Management VM is the management point for users and computers in the domain. It provides a role-based access control system to manage access to resources and applications based on the identity and privileges assigned to the user by the administrator. It also centrally updates security policies for access to Seller's Windows-Based Machines and Active Directory Users. OTArmor CSMS uses an industry accepted, best-in-class Active Directory to easily integrate into plant-wide, computer and user account management. The system replicates data provided here to the Backup Domain Controller to assist with emergency operations or Recovery as needed (OTArmor Standard and Pro Only).

The Centralized Account/Policy Management VM also maintains and distributes Group Policy Objects for the Seller's Windows based computers and servers. The Group Policy objects enforce the Seller's validated cyber security best practices on managed Microsoft Windows endpoints within the managed control system. Examples of actions performed by Group Policy Objects include disabling non-required services, enforcing user rights assignment, and enforcing security options.

MS Radius Server (A component of Active Directory) Integrates with Active Directory to extend centralized account management to Network Switches and Firewalls. Note: Extended centralized account management network switches requires Seller's configured: Cisco or Hirschmann managed switches. Contact your direct Sales Representative for additional information.

3.3.3 Local Patching, Back-Up, and AV

The base offering for the OTArmor system includes support for backup of the OTArmor Virtual Machines, local Anti-Virus, and local patching. The local backup option allows users to manage and maintain backups for the Virtual Machines hosted on the OTArmor server. This includes the ability to schedule backups, locally store the backups, and monitor the status of backup activities. As part of the baseline offering, a local Anti-Virus solution is installed on each Virtual Machine hosted on the OTArmor. The locally managed Anti-Virus software provides detection and prevention of malware and viruses on each individual system. When CAP is purchased, each Virtual Machine on the OTArmor solution supports local installation of patches and updates using the CAP update disks.

3.3.4 Certificate Authority Server and Enhanced Controller Protections

Certificate Authority Server

A Certificate Authority Server works with Active Directory to handle certificate requests and certificate validation. It is a trusted entity that issues electronic documents that verify a digital entity's identity on the Network. The electronic documents, which are called digital certificates, are an essential part of secure communication and play an important part in the public key infrastructure (PKI). Certificates can also be used to enable encrypted communication with a device such as controllers, that are not member of the domain but still require proof of identity. Certificates from the server are also used in the Domain Controllers and Application Servers for the Remote Desktop subsystem to verify the identity of the computer before providing it with a username and password.

3.3.5 Centralized Anti-Virus (AV)/Data Loss Prevention (DLP) VM

The OTArmor CSMS solution provides the base platform for centralization of anti-malware and ransomware protection using McAfee the centralized management console provides a single point of entry into the management of policies and identification of events of interest within the software. As a component of the McAfee application, Seller utilizes a Data Loss Prevention (DLP) function managed by the centralized server. The DLP component provides the ability to block portable media and devices (i.e. USB, CD/DVD), while allowing authorized devices to connect to the system. The centralized server provides the ability to quickly assess the security posture of managed systems from a central location. Views available from the management console include the status of managed endpoints, current protection levels (e.g. virus database version), threat detection alerts (e.g. virus detected, unauthorized USB detected), and the overall status of the endpoints. Based on their access level users will have the ability to navigate through the console data for additional details or to run reports as needed. The system will have the ability to be updated without connection to the Internet.

3.3.6 Centralized Patching – a VM

The OTArmor CSMS solution provides the base platform for centralization of Patching and Patch Management. The centralized management console provides a single point of entry into the monitoring and deployment of Patches within the managed network. The patch management solution allows system administrators the ability to quickly assess the current patch compliance of the system and then deploy patches as necessary to remediate managed devices. The central management feature enables organizations to:

- a. Reduce manpower and dedicated resources;
- b. Choose which patch to deploy and when;
- c. Prioritize needed patches and create deployment plans;
- d. Generate reports to be used for auditing or tracking purposes;

To maintain a high level of security and isolation, the system has the ability to be updated without connection to the Internet (using Baker Hughes CAP Program). The centralized patching solution assists organizations in reducing costs associated with the time spent configuring, deploying, and rebooting systems.

3.3.7 Centralized Backup and Disaster Recovery Capability – VM

The OTArmor CSMS solution provides the base platform for centralization of backup and Disaster Recovery activities. The centralized Backup Server provides backup and Recovery features and storage for computers and supported network devices in the Buyer's network. This solution provides automatic, centralized backup and Recovery of the process control domain, saving time and money through assurance of a quick Disaster Recovery plan with minimal downtime. The system is sized to include the cyber security system servers and the number of servers/computers which support backup function on the Buyer's network. The system provides a dashboard with information on backup status, including errors or warnings related to backup or Recovery tasks. The centralized system supports the ability to schedule backup activities to be performed during non-peak times, along with managing the network utilization during backup activities. The system will allow recovering a failed computer/server from the centralized backup management storage. Scheduling backup sessions is to be planned and agreed upon during engineering phase.

OTArmor CSMS provides documentation for the backup/restore of computers, networking devices, and other components, including scheduling of backups, customizing backup configurations, and creating additional backup plans. Backup capabilities are designed to operate during normal plant operations and set to minimize network resources.

3.3.8 Identity and Access Management Solution

The Yubico, YubiKey combines hardware-based authentication and public key cryptography to ensure strong authentication and eliminate account takeovers. Capabilities include U2F, an open authentication standard supported by the FIDO Alliance, as well as Smart Card functionality based on the PIV interface specified in NIST SP 800-73.

A smart card is a secure USB device that is typically used for storing cryptographic keys. This device provides users with a tool that will be used for the purpose of authentication. A user will connect his unique smart card to a host computer, where software on the host computer interacts with the key's material and other secrets stored on the smart card to authenticate the user. YubiKey provides baseline functionality to authenticate as a PIV-compliant smart card out-of-the-box on Microsoft Windows Server 2008 R2 and later servers, and Microsoft Windows 7 and later clients. Using Native Windows Server Certificate Authority certificate templates and Group Policy settings to manage Smart Card authentication with Yubikey's, we are able to provide a 2FA solution for all users.

3.3.9 Virtual HMIs Functionality – VM

A Virtual HMI will be operating on a Thin Client, which is a stateless, finless desktop terminal that has no hard drive. All features typically found on the desktop PC, including applications, sensitive data, memory, etc., are stored back in the data center when using a thin client.

A Thin client is a lightweight computer built to connect to a server from a remote location. The server does most of the work, which can include crunching numbers and storing information for the Virtual HMI(s). In contrast, a conventional desktop PC (thick client) does most of the work but can communicate with and run programs on a server.

Simplicity

The Thin Client computing is known to simplify the desktop endpoints by reducing the client-side software footprint. With a lightweight OS (operating system), client-side setup and administration are greatly reduced. Intranet access is the primary role of a thin client which eliminates the need for a large suite of local user applications, data storage, and utilities. This

architecture shifts most of the software execution burden from the endpoint to the data center. User assets are centralized for greater visibility. Data Recovery and desktop repurposing tasks are also centralized for faster service and greater scalability.

Hardware

While the server must be robust enough to handle several client sessions at once, thin client hardware requirements are minimal compared to that of a traditional PC desktop. Most thin clients have low energy processors, flash storage, memory, and no moving parts. This reduces the cost and power consumption, making them affordable to own and easy to replace or deploy. Since thin clients consist of fewer hardware components than a traditional desktop PC, they can operate in more hostile environments. And because they typically don't store critical data locally, risk of theft is minimized because there is little or no user data to be compromised.

Example of hardware resource optimization: Cabling, bussing and I/O can be minimized while idle memory and processing power can be applied to user's sessions that most need it.

Example of reduced software maintenance: Software patching, security updates, application/OS updates, and OS migrations can be applied, tested, and activated for all users in one instance to accelerate roll-out and improve administrative efficiency.

Example of improved security: Software assets are centralized and easily fire-walled, monitored and protected. Sensitive data is uncompromised in cases of desktop loss or theft.

3.3.10 HMI System Architecture

Virtual HMIs and related Thin Client devices will be supplied in the quantities and with the functionality described in words and in the configuration tables below

No changes to the existing UDH/PDH networks are provided. The Thin Clients devices will be a HP t730 type Terminal(s) or latest technology approved by seller.

Proposed HMI Capability Table

TURBINE UNIT #	V HMI #1	V HMI #2	V HMI #3
HMI FUNCTIONALITY	V HMI #1	V HMI #2	V HMI #3
TURBINE UNIT #			
GT#1	Server	Server	Server
GT#2	Server	Server	Server
PC Style	Virtual HMI(s) (Remote-Client)	Virtual HMI(s) (Remote-Client)	Virtual HMI(s) (Remote-Client)
Commercial – uptime enhancement	Solid State hard drives	Solid State hard drives	Solid State hard drives
Industrial– uptime enhancement	Solid State hard drives	Solid State hard drives	Solid State hard drives
Widescreen Formatting	YES	YES	YES
IRIG-B/GPS time synch server*	*	*	*
Audible alarm with speakers	NO	NO	NO
Generator Capability Curves	Reapply	Reapply	Reapply
Expanded Serial Ports	NO	NO	NO
Parallel port support for dot matrix printer	NO/YES	NO/YES	NO/YES
Remote interface software	Reapply/New/NO	Reapply/New/NO	Reapply/New/NO

TURBINE UNIT #	V HMI #1	V HMI #2	V HMI #3
IFAT (HMI & OTArmor Longmont, CO	NO	NO	NO

* - A Time Synch Server is used for GE network applications. The Time Server connects to the GE UDH & PDH networks and provides an NTP time reference that is used by the network devices to sync their time to the high-resolution time signal.

3.3.11 Proposed HMI External Communication

Our offering includes an Ethernet Modbus protocol interface to the Buyer/End-User equipment. We propose to reapply the same point list that is currently in use for applications.

Seller will not modify the Buyer supplied external (Non-Seller) equipment/foreign devices or other sub-systems for communication interface with the Mark VIe. Buyer/End-User is responsible for any additional hardware or programming required for the interfacing of Seller supplied equipment to Buyer/End-User supplied external equipment/foreign devices. The Seller expects the Buyer, or his vendor will be needed to help with the communication on his Equipment. The Seller will work on Buyer equipment to help support commissioning the communication link(s).

3.3.12 Copy of current site Network Topology

Please include a copy of the current as-running site network topology for engineering review.

3.3.13 OTArmor Compact Bill of Materials

Item	Qty.	Description
1	1	OTArmor CSMS Server, Hardware - Compact (with Virtual HMI(s) Functionality); Includes One (1) HP-DL380 Gen 10 Server (or latest technology) that provides a single location from which the VM hosts can be managed. Includes One (1) Commercial Grade HMI that provides a risk-free redundancy in a configuration where all HMIs are converted to Virtual Machines and are running in the OTArmor CSMS Server.
2	1	Identity and Access Management – Yubico, Yubikey; Qty.1 equals to One (1) Cryptographic key that will be assigned to One(1) user; Update this quantity based on the number of users that will require a cryptographic Key; Qty. 1 Always included with OTArmor Appliance.
3	1	VM (Virtual Machine) Centralized Account/Policy Management: Active Directory & Group Policy Objects.
4	1	VM (Virtual Machine) Certificate Authority Server & Enhanced Controller Protection (Secure Mode only with Mark VIe controllers).
5	1	VM (Virtual Machine) Centralized Anti-Virus (AV) /Data Loss Prevention (DLP).
6	1	VM (Virtual Machine) Centralized Patching.
7	1 Lot	Optional - VM (Virtual Machine) Virtual HMI(s) Functionality Hosting to replace the existing Physical machines: With Thin Client Box HP T730 or latest.
		1 Engineering Workstation(s) "One to One" VM(s)
		2 Generic HMI(s) (Es. CRM1_SVR, CRM2_SVR) "One to Many" VM(s)
		HMIs VM considered 1 VM (1 to 1 Ratio) for: Engineering Workstation, Comm Gateway, Historian, OSM. HMIs VM considered Multiple VMs (1 to Many Ratio) for: any other Baker Hughes HMI type.
8	2	HP t740 Thin Client(s) Terminal(s) w/Four(4) Display Ports; Also includes a standard keyboard and mouse.
9	2	Monitor 22 in Desktop 16-9 (for additional Remote Client, existing monitors will be reused)
10	1	KVM console with pull out combined monitor, trackball, and keyboard.
11	1	Standard HP USB Keyboard US and 2-Button USB Optical Scroll Mouse.
12	1	Security Cabinet Rack - KVM Equipment ONLY (Console Kit: Integrated Monitor, Keyboard, with Trackball/Console Switch/USB Interface Adapter).
13	1 Lot	Factory Engineering to configure the OTArmor to the proposal's specifications.

Item	Qty.	Description
14	Lot	OTArmor Maintenance: Manufacturer's Hardware Support Service contract for selected Term of one (1) year.
15	Lot	OTArmor CSMS Updates: Vulnerability review and updated prior to shipment; Patch Update Subscription (CAP) for the duration of the Term of one (1) year.

3.4 CAP Software Update Subscription Program

The CAP Software Update Subscription supports patch management, updated virus signatures, and a backup and recovery strategy to support continuity of operations for the turbine, generator, plant controls and their associated networks. CAP subscriptions can be purchased for a term of one (1) to five (5) years as required by the Buyer/End-user. Updates provided from the CAP subscription can be applied either locally, as updates on each HMI/Historian or across the network in a user acknowledged and automated fashion via the Nexus OTArmor CSMS.

Item	Description
1.	Subscription Update Service for the following devices: <ul style="list-style-type: none"> a. Nexus OTArmor Server(s) and HMI/computer devices total 4 <ul style="list-style-type: none"> i. 1 - Nexus OTArmor Server(s) ii. 2 - RDSx (Remote Desktop Session) Virtual Machines iii. 1 - EWSx Virtual Machines b. Patch Tested and Validated every month on representative Hardware and Software Platforms (Seller has almost 80 different hardware/software configurations in the validation lab.) c. Secure Website¹ Patch Download Access for the duration of the agreement
2.	Subscription Duration 1 Year and Renewable
3.	McAfee Antivirus Software
4.	Seller's Support² <ul style="list-style-type: none"> a. 24/7 Phone Support with Cyber Security Support Team: Up to Twenty (20) Hours/Year b. Cyber Security Service Site Contacts: Three (3) Site Contact/Year (Telecon or onsite)
5.	Additional Benefits Refer to the "Additional Benefits" section of this proposal for

¹**Access to CAP Software Update Subscription Web Portal (Secure login):** The portal provides the latest list of updates, product documentation, and Frequently Asked Questions.

²**Support:** Access to Seller's Cyber Security support team, with CAP related phone support. Seller's CAP Service Managers will contact the site to monitor the program and provide any additional assistance that is required.

3.4.1 Cyber Asset Protection ("CAP")

The CAP program is designed around power generation customers who are required to comply with NERC CIP, NEI, or other governmental or industry cyber security standards. It is a program for customers that want the highest level of support from the Seller on their cyber assets.

3.4.2 Patch and Signature Management

The CAP Software Update Subscription includes the provision of tested, documented and securely delivered updates that support the site's patch management activities through applicability assessment, cumulative updates, and update status documentation. If provided in concert with the optional Nexus OTArmor CSMS, the application of updates and completion of backups can be automated, with required operator acknowledgement, for a significant time savings.

3.4.3 Validation Lab Testing

The Seller maintains a validation lab in which updates are tested in a controlled, representative environment emulating the Buyer/End-user's control system, Operating System(OS), and control system platform major platform software revision. Testing demonstrates functional operation of the control and related interfaces as well as system communication is not adversely impacted by the updates. Any updates identified to potentially impact operations are excluded. These updates are then documented, and a mitigation strategy is developed to compensate for this security update. Any false positive identified by new signatures, which would quarantine files needed for "Normal and Emergency" operations are noted and instruction on how to allow "whitelisting" of these files is included.

3.4.4 Scripting

The updates are scripted into a single file the operator can load manually onto each computer/device or can be deployed centrally via the Nexus OTArmor. Either deployed at the host or network level, scripted update actions must be acknowledged by the operator before being deployed.

3.4.5 Secure Transmittal

The updates are transmitted to the site via secure customer portal or optional sealed shipping envelope, whereby the chain of custody is maintained from creation through delivery to site.

4 Installation Site Services

4.1 Site Services Division of Responsibility

This DOR (Division of Responsibility) represents the responsibilities for projects where the Seller is providing only a field engineer(s) to support the installation of the Seller supplied equipment.

Legend: B=Buyer, E=End-user, S=Seller

Item	Description	Responsibility	Comments
1	Labor and material shall be supplied in sufficient quantity and capability such that the installation and startup of the Seller supplied equipment scope can be completed within the schedule identified herein.	B/E	
2	Provide all required installation tools and materials	B/E	
3	Provide any specialized test equipment, if required	B/E	
4	Schedule and manage allotted hours for best utilization in overall project schedule. Additional hours or wait time will be considered extra work.	B/E	
5	Provide qualified personnel for instrument calibration, and to assist Seller's personnel in checkout and commissioning of the new equipment.	B/E	
6	Provide qualified personnel and proper test equipment for the setup and commissioning of any specialty protective relays and/or equipment (such as Multilin, SEL, Beckwith, etc.), if supplied.	B/E	
7	Provide qualified operators for duration of start-up commissioning.	B/E	
8	Buyer/End-user shall provide a desk or workspace for Seller's Controls Specialist to work and a telephone with outside plant access. Access to Site facilities such as washrooms, toilets, drinking water, etc. shall be provided.	B/E	
9	Checkout of the communications to a DCS or other site devices will include only basic assurance that separate modes are functional. Complete point-to-point testing can be provided at additional cost. Operational control will be tested and commissioned only from the Seller HMI's.	S	
10	Includes installation of base scope only. Installation and commissioning of options and/or additional hardware, software, functionality, TILs, etc. (unless specified) will be evaluated for a change in scope, and the site services price will be adjusted accordingly.	S	
11	Lock Out Tag Out ("LOTO") of all equipment related to Seller's work, prior mobilization.	B/E	Seller to verify
12	Health, Safety, Emergency Response and Security Procedures.	B/E	
13	Regulatory Requirements and permits (Air, welding, work, etc.).	B/E	
14	Temporary Utilities (electric, light, air, water, and internet).	B/E	
15	Provide Seller's personnel with: Office space, internet access, sanitary facilities, drinking water, parking etc.	B/E	
16	First Aid facilities	B/E	
17	Manage and direct all craft labor working on the project. Seller personnel will act in an advisory position only.	B/E	

5 Proposal Basis and Buyer Responsibilities

This section lists those items which are provided by the Buyer or End-User and not part of the Seller's scope of supply. It also lists the Seller's assumptions, comments to Buyer/End-user's requirements, and the breakdown of Buyer/End-User responsibilities.

5.1 General Assumptions and Clarifications

Below represents the Seller's Clarifications, Assumptions and Exceptions related to the Seller supplied equipment and services.

- a. Seller believes that this proposal/quote meets the intent of the Buyer/End-User's request and will be the document of reference in any resulting contract.
- b. Seller assumes multiple units onsite (included in this proposal) are similar except for the Unit number designators and tag names as they relate to the Seller supplied equipment (Hardware, Software), engineering, documentation and control logic functionality. IE: Pricing for unique hardware, software or engineering is not included, when the scope of work is applied to multiple units onsite, which are assumed to be similar.
- c. Firewall and Routing changes are not part of the Seller's scope. They are expected to be performed by the Buyer prior to the Seller's arrival.
- d. Unless specifically identified in this proposal, the Seller is not supplying any cables (copper, Ethernet, or fiber optic), networking equipment, field devices, instrumentation, cabinets, housings, solenoids, actuation devices, or installation materials.
- e. It is assumed that any existing equipment, including but not limited to cabling, wiring, sensors, field devices, terminal boards, communication networks, etc., that are not being replaced as part of this work scope are in a good working order. Replacement of non-functioning or faulty equipment is not included in the scope of this document, unless otherwise specified. If a site survey and Seller's engineering results in the need for additional equipment, cabling and field devices, this will result in a contract change order where pricing and delivery cycle relief will be afforded to the Seller.
- f. All machine components are in satisfactory condition and will operate with the new controls. This includes, but is not limited to, the existing metering, generator protection/control, lubrication, cooling, gas, fuel, steam and hydraulics systems.
- g. If an RFQ or technical specification is presented by the Buyer/End-User during the project's execution (contract term), that were not initially brought to the attention of the Seller during the proposal development stage and said specifications/requirements subsequently increase the cost of the project for the Seller, this will be treated as a Contract Change Order and billed accordingly.
- h. Seller reserves the right to substitute suitable and equivalent third-party hardware in place of those proposed, should such items become obsolete prior to final delivery of those products. If during the warranty period, a third-party hardware item becomes defective and requires replacement, such item may be replaced by a substitute item if the third-party item has been obsoleted. Buyer/End-User shall receive notification of substitution prior to shipment of the items.
- i. No provisions for a separate, integrated FAT or communication testing with a foreign device or other sub-systems (DCS, SCADA, Historian, etc.) are included in this proposal. Simple communication testing with Buyer/End-User's foreign devices or other sub-systems can be conducted and verified by the Seller's field engineer carrying out the commissioning onsite. Should Buyer/End-User decide to have a separate communication test with other systems at Buyer/End-User's facility, Seller will provide a quotation upon Buyer's/End-User's request and detailed definition.
- j. No modifications to any Buyer/End-User DCS or third-party equipment are included in this proposal. The new Seller supplied equipment may require modification to DCS signals to maintain compatibility. Modification of these DCS signals is the responsibility of Buyer/End-User.
- k. Relevant OEM Technical Information Letters ("TIL") related to equipment being provided, have been performed.
- l. Buyer/End-User is responsible to adhere to the timetable of critical project data exchange and execution milestones as identified in the detailed project schedule agreed to at the kick-off meeting.
- m. As the project, must incorporate Buyer/End-User specific requirements, Buyer/End-User must support all project activities.

- i. Support Site kick-off meeting, site visits, design reviews, status meetings, etc.
 - ii. Participate in Buyer/End-User Witnessed Factory (if included) and Site Acceptance Tests
 - iii. Respond to Seller inquiries and requests for documentation in a timely manner.
 - iv. Direct all communications through Seller's assigned Project Manager.
 - v. Document, in writing, approvals for all change orders.
- n. Non-Seller Engineering Design Package: As part of our base offer the Seller will provide unit specific equipment design drawings for the equipment we are providing, which will show termination points/locations. A plant specific Engineering Design Package (EDP) is typically required, which takes the Seller's equipment specific drawings and the existing plant drawings and integrates them into a seamless EDP for the Site Services and Craft Labor teams to execute against. If the EDP is not provided by the Seller (as Base or Optional), and a Non-Seller third party provides this EDP, the Seller assumes that the third parties EDP is accurate and without errors. Should errors in this third party EDP result in re-work or delays, on the part of the Seller, these delays/additional work will be treated as a contract change order.
- o. Any Seller HMI and Historian equipment provided with the Windows 7 or SERVER 2008R2 operating system will be supported by Seller for any needed warranty support during the warranty coverage period. If Microsoft® software utilized on the HMI and Historian reaches the end of support from Microsoft during the Seller's warranty period, Seller will continue to support HMI and Historian functionality for these systems for warranty concerns excluding updates that may no longer be available from Microsoft. If End-User upgrades the devices covered by CAP during the CAP Term of the agreement, i.e. upgrade HMIs and Historians from Windows-7 to Windows-10, Seller will upgrade the Win-7 CAP subscription to Win-10 for the remainder of the original agreement Term. This quote does not include an upgrade from the current proposed operating system to any newer operating system in the future.
- i. Microsoft currently states that Windows® 7 operating system has an "Extended Support End Date" of January 14, 2020
 - ii. Microsoft currently states that Microsoft® SERVER 2008 R2 operating system has an "Extended Support End Date" of January 14, 2020
 - iii. HMI & Historian upgrades to new hardware with the latest Microsoft operating system available from Seller would have to be quoted separately in the future, if not included in this proposal.
 - iv. Windows NT, 2000 and XP are at End of Life and no Microsoft support is available.
- p. Services pricing included assumes all units/machines associated with this HMI upgrade will be offline.
- q. Formal training on the new equipment is not included.
- r. The HMI hardware and software packages are tested as an integrated system. Extensive qualification and verification is performed to ensure compatibility of the hardware and software components. For warranty and support reasons removal of any of the Seller's provided software or addition of any third-party software/hardware packages (not previously approved by the Seller) will result in Seller's inability service and maintain the equipment and will void Seller's warranty on these products.
- s. Seller does not support connecting different Cimplicity versions of HMIs to the same network. The older versions of HMI can be identified by the version of CIMPLICITY present on the HMI. It will be either "3.22", "4.01", "5.5", "6.1", "7.5", "8.2", "9.0" or "9.5". There are major configuration differences between HMI versions, creating a high potential for corruption of the HMI core-load by manipulating multiple versions at the same time. There is also a potential for unforeseen conflicts, which Seller has not fully documented or discovered. Any issues created by intermixing different CIMPLICITY version HMIs, will be treated as out of warranty expenses. Support can be made available at site to restore HMIs using customer/site generated backup media and this assistance will be billed on a time and material basis.
- t. New HMIs are supplied with sufficient NIC (Network Interface Card) ports to support dual PDH/UDH networks. This does not imply that the new or existing site network has a redundant PDH/UDH network.
- u. The current screens and alarms will be copied to the new HMIs. This proposal does not include a change in language or additional screens being added. Significant customization of screens may require additional engineering time and hence a change in pricing.
- v. It is assumed that the current HMIs are not interfaced to or providing data to any existing DCS.

- w. Seller offers a Spare HMI computer consistent preloaded with a base configuration as well as all peripheral equipment (excluding monitor) as shown in the base scope. This PC does not include ControlST, CIMPLICITY or specific site software configuration. This Spare HMI computer is intended to be used as a replacement for a failed HMI computer. To replace a failed HMI computer with this Spare unit, a site created backup image from the failed HMI computer must be available to load onto the spare computer. The ControlST and CIMPLICITY licenses from the failed HMI will be transferred on to this Spare PC making it a fully functional HMI to replace the failed HMI.
 - i. We highly recommend one or more optional Spare HMI computer(s) to extent the useful life of the site-specific HMI configuration to delay obsolescence issues.
 - ii. The Spare HMI cannot be connected to the site PDH/UDH network and used as an operator interface until it has been loaded with the ControlST, CIMPLICITY and site software for the HMI that it is replacing.
 - iii. The Spare HMI does not support being used as an Additional HMI for a site since it does not have the applicable software licenses to operate as a Seller's HMI.
- x. Existing Network wiring (power, networking, etc.) will be reused unless otherwise indicated. Additional Ethernet cabling or changes to the current design will/may constitute a contract change order and will need to be quoted at the time of the work. All cabling, connections, or installation associated with relocating or networking the HMIs and Historian PCs, such as hubs or converters, are out of the scope of this proposal.
- y. If there is an existing OSM (Onsite monitor) computer at site, and it is interfaced with the HMI being upgraded as part of this proposal, the Seller will need to be made aware of this condition. If so, the Seller must then include modification to the HMI to allow for it to interface with OSM computer. The Seller has not included scope/price to interface the HMI with any OSM computer.
- z. If the existing equipment onsite incorporates GE's DLN Remote Tuning option, then the Seller's project manager (for the HMI and Historian project) and the DLN contract manager will need to be made aware of this condition. It is the requirement of the Buyer/End-User to make the Seller aware of this condition at the time the Purchase Order is placed. Support for the DLN tuning application and possible changes to this service may be required.
- aa. In an application where a FANUC PLC, whether originally installed by Seller or installed by others, communicates with the Seller's HMI equipment, any upgrades that may be required to these PLC's to allow them to continue to communicate with the new HMIs and Historian being installed are not included in this quote. Please contact your local FANUC PLC representative to discuss if updates will be required to allow communication with the new HMIs and Historian.

5.2 Application/ Product Specific Buyer/ End-user Responsibilities

The following represents the Buyer/End-user responsibilities which are specific to the product being supplied by the Seller.

5.2.1 HMI

- a. Site information/data related to the current HMI installation. This data will be required prior to order acknowledgement and prior to the Seller building/designing the new system. This data will also be used to update the Network Topology (4108) drawing associated with this site/installation. The Site data shall include:
 - i. Existing as-running topology drawings: The Seller assumes that a 4108 Network Topology drawing is available today. The Seller has included the cost to update the 4108 Drawing.
 - ii. Other Network Information; Include any devices, communications and other items that are not shown on the current topology drawings.
 - iii. As Running software (must run software gathering tool). It is important that current data be collected from the equipment to avoid issues with the new equipment not arriving with current control constants, unit software updates or screen updates. The Buyer/End-user is responsible for additional engineering or installation time required to update outdated information after it is originally supplied.
 - iv. If the Buyer/End-user cannot provide the Seller with the above site data, the Seller will be obligated to retrieve the data. All time and related expenses associated with collecting the site information/data will be billed to the Buyer/End-User at actuals, per the Seller's Standard Services Rate Schedule in effect at the time of the work.
- b. Considerations for the purchase of new or additional network switches: The Buyer/End-User will be required to install and verify new Ethernet cabling prior to the arrival of the Seller's field engineer.

- c. Services pricing included assumes all units/machines associated with this HMI upgrade will be offline concurrently.
- d. The Seller's HMI hardware and software package is a tested integrated system. Extensive qualification and verification is performed to ensure 100% compatibility of the components of the HMI core-load and hardware. For warranty and support reasons removal of any of the Seller's provided software or addition of any third-party software packages/hardware packages will result in Seller's inability to properly service and maintain the equipment and thus voids the Seller's warranty on these products.
- e. Network Analysis and Troubleshooting software (Non-Seller supplied software): Network analysis software is permitted to be installed (by the Buyer/End-user) on a Seller supplied computer for network analysis and troubleshooting physical network nodes connected to the Seller's Plant Data Highway, Seller's Unit Data Highway and third party interface protocol communications, e.g., Modbus, IEC-60870, OPC, DNP3, IEC-61850. This permission assumes that this software does not directly interface or disrupt the process of the Seller's turbine/generator control software and associated communication and that it will not interfere with the operation of the Seller's supplied computer in any way. This practice will not void the Seller's software warranty, provided as part of the software license/Addendum, if the malfunction was not caused by the installation of the Network analysis software by the Buyer/End-user.
- f. New HMIs are supplied with sufficient NIC (Network Interface Card) ports to support dual PDH. This does not imply that the new or existing site network is a redundant PDH network.
- g. The current screens and alarms will be copied to the new HMIs. This proposal does not include a change in language or additional screens being added. Significant customization of screens may require additional engineering time and hence a change in pricing.
- h. Existing Network wiring (power, networking, etc.) will be reused unless otherwise indicated. Additional Ethernet cabling or changes to the current design will/may constitute a contract change order and will need to be quoted at the time of the work. All cabling, connections, or installation associated with relocating or networking the HMI operator interface computers, such as hubs or converters, are out of the scope of this proposal.
- i. Monitors
 - i. The HMIs are quoted without a monitor assuming the Buyer might reapply the existing monitors. However, the Seller does not guarantee the existing monitors will work with the new HMIs.
- j. If there is an existing OSM (Onsite monitor) computer at site, and it is interfaced with the HMI being upgraded as part of this proposal, the Seller will need to be made aware of this condition. If so, the Seller must then include modification to the HMI to allow for it to interface with OSM computer. The Seller has not included scope/price to interface the HMI with any OSM computer.
- k. If the existing equipment onsite incorporates GE's DLN Remote Tuning option, then the Seller project manager (for the HMI job) and the DLN contract manager will need to be made aware of this condition. It is the requirement of the Buyer/End-user to make the Seller aware of this condition at the time the Purchase Order is placed. Support for the DLN tuning application and possible changes to this service may be required.
- l. In an application where a GE FANUC PLC, whether originally installed by GE or installed by others, communicates with the GE HMI equipment, any upgrades that may be required to these PLC's to allow them to continue to communicate with the new GE HMIs being installed are not included in this quote. Please contact your local GE FANUC PLC representative to discuss if updates will be required to allow communication with the new GE HMIs.
- m. Our records of the equipment on site may not be complete or accurate. Please review the HMI scopes carefully and select options that you require for your implementation.
- a. The Seller's HMI CIMPLICITY screens are supplied standard as 4:3 aspect ratio screens. Therefore, if a widescreen monitor is used with the HMI there will be "blank bars" on either side of the screen when displayed. The Seller can provide an optional price to provide HMI screens in a widescreen format that would fill a wide-screen monitor presentation.
- b. Printers
 - i. The Windows 7/10 64-bit operating system provided with the HMI/Historian products may not be able to interface to some existing devices currently used at site. For example, existing printers may not have Windows 7/10 64-bit compatible drivers to allow them to be used. Researching the existing peripheral devices in use at site to determine if Windows 7/10 64 bit drivers are available for updating these devices

is not included in this quotation. The Seller can offer Optional new printers/devices that are compatible with the Windows 7/10 64-bit operating system.

5.3 Documentation Related Buyer/End-User Responsibilities

- a. Except where stated herein, all documentation and computer screens will be in English.
- b. It is assumed that Seller will be furnished, upon request, with full drawings and information concerning the state of the existing installation including wiring information to the existing terminations including process and instrumentation diagrams ("P&ID's"). If such information is not available Seller will charge for the work involved in obtaining this information.
- c. It is assumed the Seller will be furnished recorded baseline operational and performance data no later than two weeks after receipt of an acceptable Purchase Order. If data was recorded longer than six (6) months before receipt of a Purchase Order, updated/recent data will need to be capture and provided to the Seller. The data should demonstrate successful starting, loading, base load and peak load (if applicable) operation.
- d. Overall project cycle time is dependent upon receipt of current "Site data". It is Buyer/End-user's responsibility to provide the relevant Site Data in a timely manner. Seller's Project Manager will be assigned after receipt of order and will provide instructions for the download and transfer of site data as necessary. Site services to obtain the site data are not included in this offering but can be provided for an additional cost. Site Data includes, but is not limited to, 1) as running software and 2) design/engineering/P&ID drawings.
- e. If this Site Data is not provided within two weeks upon placement of order, the possibility exists that the hardware/software may be engineered using default, generic data and a delay in delivery and/or an extended startup time may result.
- f. Unless explicitly identified above, Seller is not supplying interconnect wiring or loop diagrams.
- g. This proposal does not include Plant Operation manual updates, or any other site documentation modifications.
- h. To initiate and complete the engineering the following (including but not limited to) documentation shall be provided in a timely manner:
 - i. As-running Turbine, Generator, and Motor Control Center controls elementary diagrams
 - ii. As-running device summary diagram
 - iii. As-running controls specifications
 - iv. As-running connection diagram
 - v. Electrical One Line diagram
 - vi. As-running piping schematic diagrams
- i. Delays in receiving i) current/as running drawings/software or ii) incomplete, inaccurate or poor-quality drawings, which contain errors could result in a contract change order (with schedule and price relief) to overcome drawing/documentation issues which may hinder Seller from completing its engineering within the agreed upon schedule.

6 Commercial

6.1 Price Summary

The price for the offering is Firm Fixed for the scope of work in the proposal.

6.1.1 Base Scope Summary

Item	Qty	Description	Price
1	1 Lot	HMI – HMI (3 industrial) Includes installation and commission services	\$123,226
2	1 Lot	2960 X Cisco Network Switch Pair Includes installation and commissioning services (valid pricing if purchased with HMI or OT Armor scope)	\$21,199
Base Scope Price			\$144,425

6.1.2 Optional Scope Summary

Item	Qty	Description	Price
1	1 Lot	Auto Sync Software Modification Includes installation and commissioning services (valid pricing if purchased with HMI or OT Armor scope)	\$33,712
2	1	Cisco 2960-X Root Switch; each with 4 LC Fiber ports and 24 RJ45 ports	\$6,589
3	1 Lot	OT Armor with Remote Client HMI and CAP update subscription Includes installation and commission services	\$192,343
4	1 Lot	Site walk down. One Control Field Service Engineer to visit site to collect required data files and walk down the network architecture. One (1) 8-hour day maximum at site.	\$9,056
5	1	Add RAID 1 capability to the Industrial Historian. This adds a 480GB SATA solid state hard drive and RAID1 Per Industrial	\$1,560
6	1	Spare 480GB SATA solid state hard drive. For use to replace a hard drive in the Industrial PC configuration Per Hard Drive	\$515
7	1	Convert Industrial Grade (Desktop) HMI for Installation in a 19-inch rack. This option includes a side rail kit. Per HMI	\$150*
8	1	Spare Windows 10 HMI or Historian (no unit-specific software, ControlST or Cimplicity software) See note in General Assumptions and Clarifications section above. Industrial Grade Each	\$17,230
9	1	Audible alarm on the HMI - software activation Each	\$420
10	1	22" Widescreen LED Desk Top Monitor – not touch screen. Note that until recently the Seller's HMI screens were 4:3 aspect ratio and will not fill this screen. Please see limitations associated with the CIMPPLICITY screens in General Assumptions and Clarifications section above. Each	\$605

The above prices are in US dollars, and do not include taxes or duties.

Asterisk (*) by Prices in the options table above require additional Field Services hours that are not included in the above Base Field Services pricing. These hours will be charged per the current year's Service Rate Schedule, Tier 5 - Critical Services, in affect at the time of the work. Refer to Appendices Section for the current rate schedule.

6.1.3 Pricing Limitations and Considerations

- As this is a budgetary estimate, Nexus Controls LLC will not accept a purchase order until the project scope and schedule are defined and agreed upon between the parties.
- Unless otherwise indicated, the prices quoted herein are valid for the delivery of equipment in **2022** and performance of services in **2022**. Delivery of equipment or performance of services in years subsequent to these shall be subject to a price escalation fee equal to 4% per year of the contract price for the undelivered equipment or un-performed services.

- c. This proposal will remain valid for **60 days** from the date indicated in the cover page and may be modified or withdrawn at any time by the Seller prior to receipt of Buyer's acceptance
- d. Prices quoted are based on the Assumptions and Clarifications as described in the Proposal Basis Section and performed per the Terms and Conditions referenced or provided herein.
- e. The prices quoted herein are in United States Dollars, **USD**
- f. Seller reserves the right to review and re-quote this job if there is a discrepancy between this proposal and the purchase order. If Seller receives a specification between the issuance date of this proposal and receipt of the purchase order, Seller reserves the right to re-evaluate this proposal.
- g. Seller will evaluate changes to the specification, drawings, services or existing equipment. Seller will evaluate if these changes constitute a change in the quoted work scope or schedule. Seller will quote the changes and a change order must be received before work is to proceed.
- h. The pricing breakouts outlined in this proposal are for accounting purposes only and are not to be considered as standalone prices.
- i. The prices quoted herein exclude taxes or other regulatory fees.
- j. The prices quoted herein exclude duties.
- k. The prices quoted herein exclude import customs.
- l. Travel and Lodging/Living ("T&L") expenses for Site Services are included.

6.2 Schedule

6.2.1 Equipment (Hardware and Software) Schedule

The After Receipt of Order ("ARO") date will be the date that the Seller **acknowledges** the Purchase Order, not the initial date that the Seller receives that PO.

The estimated timescale from acknowledgement of PO/contract to the Delivery (Incoterms) of the equipment is **20 24 weeks** and is based on current factory loading and lead times offered by the Seller and other vendors, if any.

6.2.2 Equipment Schedule Limitations

Delivery dates can vary depending on factory workload and should be confirmed before issue of order. Delays in receiving vital information from the Buyer/End-User or delays in receiving "review" drawings back from the Buyer/End-User will impact the ARO delivery dates. These delays may result in a day for day slip in the delivery schedule or a complete shift the delivery dates indicated herein.

When detailed drawings representing the Buyer/End-user's current (as-running), installed equipment cannot be made available to the Seller, it is critical that the Seller has sufficient time and physical access to the Buyer/End-user's equipment while in a Lock-out/Tag-out condition. This will allow the Seller to take measurements, design, manufacture, and **Field Fit** these portions of the total scope of supply. Some examples of this may include fuel valve/actuator/solenoid mounting plates, blanking plates, speed probe brackets, etc.

Seller's proposed schedule with milestone dates will be presented at the Project Kick-Off Meeting. This project schedule will illustrate the various activities from purchase order/contract receipt, through design, manufacture, testing, shipment and site services (if in work scope).

The overall price and cycle quoted herein requires full cooperation between the Seller and the Buyer/End-User, and adherence to key milestones dates specified as part of a project implementation plan. The specific milestone dates will normally be set during the Project kick-off meeting and will normally include, but may not be limited to, the following key project control points.

- a. Project Kick-Off Meeting (Buyer/End-user and Seller)
- b. Site survey and/or supply of applicable site data (Buyer/End-user and Seller)
 - i. Site data (Buyer/End-user)
 - ii. Drawings and documentation (Buyer/End-user)
 - iii. Logistics Data (Buyer/End-user and Seller)
- c. Drawing submittals (Seller)

- d. Design review and approval (Buyer/End-user)
- e. Design freeze (Buyer/End-user and Seller)
- f. Factory acceptance test/Buyer witness test (Buyer/End-user and Seller)
- g. Supply of documentation for shipment (Buyer/End-user)
- h. Support commissioning, start-up, site acceptance testing and handoff (Buyer/End-user and Seller)
- i. Delivery of documentation (Seller)

Unless otherwise agreed upon in advance, the work shall be executed in an uninterrupted and sequential fashion. If the work is interrupted by or for the convenience of the Buyer/End-user, or cannot be performed according to the schedule, the Seller has the right to submit a change order for incremental charges (for example multiple site trips or additional design review cycles, etc.). The Buyer/End-user shall be provided drawings of sufficient quality and thoroughness early in the project and be given one review cycle, to submit comments and request changes. The review cycle is typically three weeks long but depends on the project schedule and will be reviewed and agreed upon at the Kick Off Meeting. After the review cycle the design will be considered frozen and the cost and schedule impact of requested changes will increase.

6.2.3 Site Services Schedule Limitations

The Seller's Services Schedule is based on the following:

- a. Seller's Holidays, standby time or second/night shift work are not included, unless indicated otherwise.
- b. The Seller's onsite time includes **up to a maximum of two (2) hours** of site access/safety orientation training for the Seller's personnel. Site safety or access training which exceeds this allotment will be billed to the Buyer/End-User, as a change order, per the Seller's Standard Services Rate Schedule Tier 5 (Critical Services Rates) in effect at the time of the work.
- c. Assumes work scope can be accomplished in an uninterrupted and sequential fashion per the agreed upon schedule.
- d. The Seller has included a fixed quantity of onsite time (and trip/s to site) to perform the site services work. These fixed quantities are based on the Seller's past experience for similar Work scope and installations on similar equipment and recognizes the Buyer/End-User's outage schedule.
- e. Additional trips or onsite time not specifically identified i) above, ii) in this proposal or iii) not agreed to between the parties, prior to providing the additional services, will be billed to the Buyer/End-User, as a change order to the contract/purchase order, per the Seller's Standard Services Rate Schedule Tier 5 (Critical Services Rates) in effect at the time of the work
- f. Delays in the performance of work beyond the reasonable control of Seller, or delays caused by acts of the Buyer or prerequisite work by others, shall entitle Seller to an adjustment of time and price for completion of its work and expenses resulting therefrom.
- g. To ensure safe and alert personnel, the Seller's EHS policy requires a rest period of 36 consecutive hours every 19 days. As such, Seller's schedule will implement one rest day for all personnel on site, at a minimum 19-day interval. By adding a lay-over day, our base offering does not include extra personnel for the rest period; safety is always a priority with both Seller and our Buyer/End-users. Seller can accommodate alternative schedules by adding personnel to site, these alternate schedules will be billed as an extra charge using the mutually agreed to change order process.
- h. The Seller will provide a field engineer to perform the following related to the HMI upgrade. These tasks will be performed on a per HMI and basis;
 - HMI Client setup
 - Power up verification
 - Software installation, setup and verification
- i. In general, the Seller includes one (1) each ten (10) hour work day per HMI for the onsite work. A week at site is defined as Monday – Saturday on non-Holiday weeks. Additionally, the Seller includes two (2) each eight (8) hour days for travel to/from the jobsite. For projects with up to four (4) expected days at site the Seller will travel to site on Monday, start performing the services on Tuesday and travel home on or before Saturday. Sites/installations

with greater than six (6) days at site or five (5) days if not working Saturdays will result in carry-over time for the non-worked weekend. Carry-over time is included in the pricing.

6.3 Delivery, Title Transfer, and Risk of Loss

6.3.1 Offsite Work (Equipment and Engineering)

For shipments that do not involve export, including shipments from one European Union ("EU") country to another EU country, Seller shall deliver Products to Buyer FCA Seller's Factory (Incoterms 2010). Title and Risk of loss shall pass to Buyer at Delivery.

6.3.2 Onsite Work (Site Services, Training, Support agreements)

Title to Services shall pass to Buyer as performed.

6.4 Payment Terms

Our Firm Fixed Proposal is based upon the following invoicing schedule and terms:

- a. Payment Terms are **Net 30** days
- b. Pricing is in United States Dollars (**USD**)
- c. Please send your remittances to Remit@bakerhughes.com
- d. As the Seller would like to make doing business easier, please take advantage of our Wire Transfer or ACH payment options by remitting payment using the following instructions:

Account Name: Baker Hughes Puerto Rico, Inc. (US Federal Tax ID: 66-0877495)

Account Number: 352846304

Bank Name: J.P. Morgan Chase Bank N.A.

Bank Address: 1 Chase Manhattan Plaza, New York, United States, 10005

ACH routing number: 021000021

Wire routing number: 021000021

SWIFT: CHASUS33

D&B DUNS Number: 00-570-7769

Please note that check payments are no longer accepted.

6.4.1 Invoicing Schedule

Our proposal is based upon the following invoicing schedule:

Invoicing Milestone	Invoice Amount
Seller's Acknowledgement of PO	20%
Submittal of Eng. Designs	15%
Delivery (Per Contract Delivery Term)	45%
Services - Mobilization	10%
Services - De-Mobilization	10%
Total	100 %

6.4.2 Termination Schedule

For Contracts not utilizing the Seller's standard Termination Article, the following termination for convenience table shall apply:

Weeks from order date:	% of Contract Price
< 2	20%
< 6	60%
< 8	85%

Weeks from order date:	% of Contract Price
> 8	100%

6.5 Terms and Conditions

This quotation is an offer to sell between the Buyer and Seller, and subject to the terms and conditions listed below, which by reference are incorporated herein. To the extent there are conflicts or inconsistencies between this set of Terms and Conditions and the preceding information provided in this document, the preceding information shall prevail.

- Baker Hughes Company Terms & Conditions for Sale/Licensing of Products, Parts, and/or Services – Digital Solutions.
- Baker Hughes Company Software License and Security Addendum to Terms & Conditions for Sale/Licensing of Products, Parts, and/or Services – Digital Solutions.

Notwithstanding anything else, Seller shall not have any liability for delays resulting directly from governmental actions, supply chain shortages, or any other consequences attributable to the widespread impact of the pandemic known as Covid-19 or other similar strains or Coronavirus pandemics.

Seller will generally consider the following precedence for any quotation, Contract or set of Terms and Conditions documents in resolving any conflict, error, or discrepancy:

- Fully executed Change Orders or contract Amendments
- Seller's terms and conditions
- Seller's quotation document
- Buyer's Specification/bid document
- Buyer's purchase order

6.6 Purchase Order Address Details

This proposal/quotation is contingent on the full disclosure of the End User location, before the acceptance of any Purchase Order. Seller will issue Acknowledgement to Buyer Purchase order with in seven (7) business days from receipt of 'acceptable' Purchase order. The execution period of this contract starts from Seller's Order Acknowledgement date.

Upon the Buyer's decision to submit a purchase order, please address the Purchase order to the following Seller's Legal Entity:

BAKER HUGHES PUERTO RICO, INC
 383 Franklin D Roosevelt Avenue
 El Mundo Office Building
 San Juan, PR 00918
 Attention: Brent Vild

- Purchase Order must conform to and reference this document.
- Deviations between the Buyers Purchase Order and that proposed in this document, including i) Scope of work, ii) Price or iii) Schedule/s, or iv) Terms and Conditions may cause delays or non-acceptance of Purchase Order.
- Please provide a physical address for invoice delivery.

7 Appendices

7.1 HMI PC Features

7.1.1 Hardware Uptime Enhancement – Industrial PC's Solid-State Hard Drives

The Industrial PC's use two solid state hard drives as standard. It does not utilize RAID software as standard. Solid state hard drives have a longer MTBF than spinning hard disk drives but cost more. Boot up time and copy/write functions are faster. In the rare event of a failure the new solid state hard drive and the still functional hard drive would be reloaded from the last ACRONIS backup software file. The two hard drives are utilized as follows:

- a. First drive: Operating system
- b. Second drive: Data

CONFIGURATION FOR INDUSTRIAL PC's:

- a. Disk 1: C:\ (Operating System) and X:\ (Backup Image)
 - i. ACRONIS backup that includes C:\, E:\ and X:\ partitions
 - 1. Manual ACRONIS backup
 - ii. Disk 2: E:\ (data)

Optionally a partial RAID 1 configuration can be provided on the Industrial PC's by adding RAID hardware. This partial RAID 1 solution in combination with the use of ACRONIS backup provides needed data backup. Please see the OPTIONAL SCOPE PRICING section below.

CONFIGURATION FOR OPTIONAL RAID 1 Industrial PC's:

- a. Disk 1 and Disk 3 in RAID 1 Configuration: C:\ (Operating System) and X:\ (Backup Image)
- b. ACRONIS backup that includes C:\, E:\ and X:\ partitions
- c. Manual ACRONIS backup
- d. Disk 2: E:\ (data)

7.1.2 Backup Software Capabilities:

ACRONIS backup software is provided. To utilize this software the user must manually initiate ACRONIS. The data saved by ACRONIS is copied to the hard drive and then the RAID 5 drives. No backup is performed without the user's manual actions.

- a. **STANDARD SUPPLY: The user will perform a manual initiation of the ACRONIS software. With the RAID 5 capability for the HMI and Historian the ACRONIS data saved to the hard drive during the manual initiation will also be saved on the RAID 5 drive.**
- b. **OPTION 1:** Purchase the optional RAID 1 capability. The user will perform a manual initiation of the ACRONIS software. With the optional RAID 1 capability for the PC the ACRONIS data saved to the hard drive during the manual initiation will also be saved on the RAID 1 drive.
- c. **OPTION 2:** Purchase the optional Cyber Security product with the Seller's OTArmor option. With OTArmor, ACRONIS runs on a dedicated OTArmor Server in a centralized fashion. With OTArmor, backups can be configured to automatically store backups from each individual HMI and Historian. The backup will be stored on the OTArmor RAID 5 data array (not the HMI or Historian). Options include setting the automated backup schedule, backup type (Full, Differential, and Incremental type backups), encrypting the backup archive, and bandwidth throttling.

Spare Hard Drive: Please note: **It is strongly recommended to purchase additional spare hard drive(s)** in the OPTIONAL SCOPE PRICING section below. With the spare hard drive available at site, it can be installed in a HMI or Historian and reloaded with the ACRONIS backup. Note that the ACRONIS backup should be copied to external memory external to the HMI and Historian when RAID 1 option is not selected. The hard drive provided by the Seller has been tested and is supported by Seller. While hard drives from other sources may work as a replacement, the Seller cannot verify other hard drive suppliers will function in the HMI or Historian and cannot warrant their operation.

7.1.3 Network Topology Review

For HMI and Historian upgrades, we suggest the Buyer/End-User review the new network topology (4108) being generated by the Seller prior to the completion of the Seller's engineering process. This review will be scheduled by the Project Manager and generally takes place 4 weeks after we have received completed HMI and Historian site data. Also, during the same meeting, the Seller will ask questions concerning the HMI screens to determine if there is a need for an **additional** HMI screen review meeting.

7.1.4 HMI Screens

The Seller will upgrade and translate the existing screens to the new HMIs with minimal changes to the graphics. The Seller will verify any updates required to allow these screens to work properly with the existing controller code.

If a screen review meeting is needed, it can be made based on inputs from the network topology review meeting or at the Buyer/End-user's request. The review of the proposed HMI screens will be no later than a week after a .pdf copy of the screens have been submitted to the Buyer/End-user for review to meet the ship dates agreed to in the contract. Corrections and minor changes can be accommodated. Significant changes or additional screens would require a cost and cycle quote. The Seller requires that screen changes be frozen after any scheduled screen review. Any screen changes not reported, or files not submitted at the time of the screen review will not be included on the upgraded HMIs. The Seller is not responsible for the resulting data gaps.

8 Appendices

8.1 Baker Hughes LLC Terms and Conditions

The following Terms and Conditions shall apply for this quote/contract document.



GENERAL TERMS & CONDITIONS FOR SALE/LICENSING OF PRODUCTS, PARTS, AND/OR SERVICES – DIGITAL SOLUTIONS

NOTICE: Any sale/licensing of Products, Parts, and/or Services by Seller to Buyer is subject to and expressly made conditional on these Terms and Conditions. Any additional or different terms proposed by Buyer are expressly objected to and shall not be binding upon Seller unless expressly accepted in writing by Seller's authorized representative. Any order for Products, Parts, and/or Services shall constitute acceptance of these Terms and Conditions.

1. DEFINITIONS – Capitalized terms not otherwise defined herein shall have the meanings set forth below. The following terms are applicable to both the singular and the plural and shall mean:

"Affiliate" means for either party an entity (including without limitation any individual, corporation, partnership, limited liability company, association, or trust) that directly or indirectly controls, is controlled by, or is under common control with, such party. As used in this definition, "control" (including, with its correlative meanings, "controlled by" and "under common control with") means: (a) ownership, directly or indirectly, of 50% or more of voting shares of the subject entity; or (b) the right to appoint a majority of the board of directors of the subject entity.

"Applicable Data Protection Laws" means all data protection laws and regulations that apply to this Contract including but not limited to the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). For the purposes of this Contract the words "controller", "data subject", "personal data", "personal data breach", "processing", "processor" have the meanings given in the Applicable Data Protection Laws.

"Applicable Law" means any law, statute, order, decree, rule, injunction, license, permit, consent, approval, agreement, regulation, interpretation, treaty, judgment, or legislative or administrative action of a competent governmental authority, which applies to the sale or provision of Products, Parts, and/or Services.

"Buyer" means the entity, its successors and permitted assigns purchasing any Products, Parts, and/or Services and/or licensing software from Seller.

"Buyer Taxes" means all existing and future taxes, duties, fees, and other charges of any nature (including, but not limited to, ad valorem, consumption, excise, franchise, gross receipts, import, export, license, property, sales and use, stamp, storage, tariffs, transfer, turnover, value-added taxes ("VAT"), or other similar taxes, and any and all items of deficiency, penalty, addition to tax, interest, or assessment related thereto), imposed or assessed by any governmental authority in connection with the execution of the Contract or performance of or payment for work hereunder, but excluding Seller Taxes.

"Claims" means any and all claims, demands, causes of action, liabilities, damages, judgments, fines, penalties, awards, losses, costs, and expenses (including, without limitation, attorneys' fees and litigation costs) of any kind or character.

"Consequential Loss" means, whether direct or indirect, whether or not foreseeable at the time of entering into the Contract or at the time of commencing performance, and any loss, delay or interruption of business, profits, revenue, production or opportunity; loss of product, use, or equipment; standby time; rig, vessel, or other facility or equipment downtime; cost of capital; cost of substitute goods, equipment, software, facilities, services, or replacement power; overhead; loss of data; loss of goodwill; any special, punitive, exemplary, incidental, and/or consequential damages or losses; and/or claims of a party's customers for any of the above losses, costs, or damages.

"Contract" means either the contract agreement signed by both parties or the purchase order signed by Buyer and expressly accepted by Seller in writing, together with these Terms and Conditions, addendums to these Terms and Conditions and any other documents incorporated by reference, Seller's Proposal, and any agreed scope of work for the sale of Products, Parts, and/or Services, and/or licensing of software.

"Contract Price" means the aggregate amount to be paid by Buyer to Seller for the purchase of Products, Parts, and/or Services, and/or licensing of software, including but not limited to any amounts to be paid by Buyer to Seller for the license of software, as stated in the Contract, and any agreed adjustments to the same.

"Delivery" means when the Products/Parts have been delivered according to Article 2.1 of these Terms and Conditions or as provided in the Software Addendum. "Deliver" and "Delivered" shall be construed accordingly.

"Derivative Works" means: (a) any work based upon one or more pre-existing works, including, but not limited to, a revision, enhancement, modification, translation, abridgement, condensation, expansion, extension or any other form in which such pre-existing works may be published, recast, transformed, or adapted, and that if prepared without the authorization of the owner of the copyright to such pre-existing works, would constitute a copyright infringement, and/or (b) any compilation that incorporates such pre-existing works. For software, Documentation, and third-party software, Derivative Works also includes any and all corrections, bug fixes, and updates to the (i) software, (ii) Documentation, (iii) third-party software, and (iv) Derivative Works.

"Documentation" means all product manuals, technical specifications, and user instructions regarding the capabilities, operation, installation, and use of the Products, Part, Services, software and/or third-party software, whether in printed, on-line, or electronic form (except training materials), as may be made available or updated by Seller from time to time.

"EU Model Clauses" means the Standard Contractual Clauses (SCC) for data transfers from data controllers in the EU to data controllers established outside the EU or European Economic Area (EEA) (decisions 2001/497/EC, 2004/915/EC) and for data transfers from controllers in the EU to processors established outside the EU or EEA (decision 2010/87/EU) as published by the European Commission on the Europa website.

"Group" means with respect to either party, such party (either Buyer or Seller, as applicable), as well as its Affiliates, and in connection with the project to which the Products, Parts, and/or Services relate, its joint venture partners, joint interest owners, co-lessees, consortium members, and/or other partners, and, in respect of Buyer only, the Site owner, end user, and/or Site operator; and for all of the above, also its and their contractors and subcontractors of any tier in connection with said project, as well as the shareholders, officers, directors, employees, invitees, agents, and consultants of all of the foregoing. "Buyer Group" and "Seller Group" shall be construed accordingly. Seller Group does not include any member of Buyer Group; Buyer Group does not include any member of Seller Group.

"Hazardous Materials" means any chemical, substance, material, waste, or emission defined, classified, or regulated as hazardous or toxic, or as a pollutant, contaminant, or threat or potential threat to human health, safety, or the environment under Applicable Law, including but not limited to naturally occurring radioactive material, hydrocarbons, asbestos, lead, hydrogen sulphide, or polychlorinated hydrocarbons, including biphenyls and biphenols.

"Indemnify" means release, defend, indemnify, and hold harmless.

"Parts" means the spare or repaired parts required in relation to the Product, identified by Seller in the Contract.



"Products" means all equipment, materials, supplies, software, third-party software, products, and other goods (excluding Parts) sold, leased, or licensed under the Contract, as applicable.

"Proposal" means Seller's formal written offer to provide Products, Parts, and/or Services, and any mutually agreed written amendments thereto.

"REGARDLESS OF CAUSE OR ACTION" MEANS (TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW), REGARDLESS OF: CAUSE, FAULT, DEFAULT, NEGLIGENCE IN ANY FORM OR DEGREE, STRICT OR ABSOLUTE LIABILITY, BREACH OF DUTY (STATUTORY OR OTHERWISE) OF ANY PERSON, INCLUDING OF THE INDEMNIFIED PERSON, UNSEAWORTHINESS OF ANY VESSEL, AND/OR ANY DEFECT IN ANY PREMISES/VESSEL; FOR ALL OF THE ABOVE, WHETHER PRE-EXISTING OR NOT AND WHETHER THE DAMAGES, LIABILITIES, OR CLAIMS OF ANY KIND RESULT FROM CONTRACT, WARRANTY, INDEMNITY, TORT/EXTRA-CONTRACTUAL, OR STRICT LIABILITY, QUASI CONTRACT, LAW, OR OTHERWISE.

"Seller" means the named Baker Hughes Company entity signing the Contract and its successors and permitted assigns.

"Seller Taxes" means all corporate income taxes imposed on Seller and any taxes imposed on Seller's employees in connection with the execution of the Contract or the performance of or payment for work hereunder by Applicable Law.

"Services" means all the services, including, without limitation, technical assistance and guidance, training, repairs, hosted services, and remote diagnostics, to be provided by Seller under the Contract.

"Site" means the premises where Parts or Products are used or meant to be used and/or Services are performed or meant to be performed, not including any Seller Group's premises.

"Software Addendum" means the Software License and Security Addendum attached to these Terms and Conditions, which is incorporated herein by reference and made a part hereof.

2. DELIVERY, TRANSFER OF TITLE & RISK, STORAGE

2.1. Unless otherwise provided in the Contract and in accordance with Incoterms 2020: (a) for all shipments where the Seller is arranging transportation (for all modes), Seller shall deliver the Products/Parts CPT - carriage paid to named place of destination (risk of loss transfers at location where goods are loaded on the first means of transport); (b) for shipments where Buyer is arranging transportation: (i) via ocean/sea from port of export; Seller shall deliver Products/Parts to Buyer FOB at specified port of export (Buyer's Service Provider / Freight Forwarder shall provide the Seller a copy of the shipment Bill of Lading ("BOL"), and (ii) for all other, FCA seller's facility or named place (Buyer's Service Provider/Freight Forwarder shall provide the Seller a copy of the shipment BOL). The "Delivery Date" for any item of the Products/Parts is defined as the date on which such item is Delivered in accordance with this Article 2.1 or, for software, in accordance with the Software Addendum. Partial Delivery and Delivery in advance of the Delivery schedule shall be permitted, unless the Contract states otherwise.

2.2. Subject to Article 2.3, title and risk of loss to Products and/or Parts shall pass upon Delivery as provided in Article 2.1, with the exception that title and risk of loss to: (a) Products and/or Parts shipped from the United States of America ("U.S.") shall pass from Seller to Buyer immediately after each item departs from the U.S. territorial land, seas, and overlying airspace, which the parties acknowledge extend to twelve (12) nautical miles from the baseline of the country, determined in accordance with the 1982 United Nations Convention of the Law of the Sea; and (b) Products and/or Parts to be shipped to a Delivery destination directly from countries different from Seller's country of formation (drop shipment), shall pass immediately after each item departs from the territorial land, seas, and overlying airspace of the sending country. For the avoidance of doubt, and notwithstanding anything to the contrary herein: (a) Seller or its relevant Group member shall retain title to any equipment leased to Buyer Group; and (b) Seller or its relevant Group member or

third-party licensor shall retain title to any software, Documentation, and third-party software furnished by Seller Group to Buyer Group. No title to the software, Documentation, or third-party software, including any software embedded in or included with Products, is transferred to Buyer Group. Any software, Documentation, and third-party software provided under the Contract is licensed pursuant to the Software Addendum and is not sold.

2.3. If any of the Products and/or Parts cannot be shipped to Buyer in accordance with the agreed upon Delivery terms due to any cause not attributable to Seller Group, upon written notice to Buyer, Seller may store the Products and/or Parts or ship them to an outside storage facility, in which case: (i) any amounts otherwise payable to Seller upon Delivery or shipment shall become payable upon presentation of a certification specifying the cause and place of storage (any payment security shall allow payments upon presentation of notice to storage instead of transport documents); (ii) all and any expenses incurred by Seller Group, including for the preparation and placement into storage, transportation, insurance, handling, inspection, preservation, removal charges, interest, and any VAT or other taxes imposed directly or indirectly under Applicable Law shall be reimbursed or paid by Buyer immediately upon submission of Seller's invoice(s); and (iii) when reasonably possible and upon payment of all amounts due hereunder, but no later than the lesser of (a) the statutory period provided to receive VAT or similar tax export or discharge exemption, or (b) sixty (60) days, Seller shall be entitled to resume Delivery of the Products and/or Parts to the agreed point of Delivery as provided in Article 2.1. Title and risk of loss to Products and/or Parts shall pass as provided in Article 2.2. The terms of this Article 2.3 shall apply also in the event any Buyer equipment repaired at Seller Group's facilities cannot be shipped due to any cause not attributable to Seller Group, or received by Buyer for any reason in accordance with the agreed upon terms, provided that, in the case of Buyer equipment to be repaired at Seller Group's facilities, Buyer shall retain title to, and risk of loss for, any such equipment at all times.

3. EXCUSABLE DELAYS

3.1. Neither party shall be liable to the other for nor considered in breach or default of its obligations under the Contract to the extent performance of such obligations is delayed or prevented, directly or indirectly, due to causes beyond the impacted party's reasonable control, including but not limited to: (a) natural or man-made disasters, acts of God, acts or omissions of governmental authorities, fire, severe weather conditions, earthquake, strikes or other labor disturbances, flood, serious risk of kidnapping, war (declared or undeclared), armed conflict, acts or threats of terrorism, pandemics, epidemics, quarantines, regional, national or international calamities, civil unrest, riot, severe delay in transportation, severe car shortage, or inability to obtain necessary materials, components or services; (b) in the case of Seller, acts or omissions of Buyer Group, including failure to timely provide Seller Group with any access, information, tools, material, and approvals necessary to permit Seller Group to timely perform the required activities, and including, without limitation, unknown physical conditions at the Site of an unusual nature and differing materially from those ordinarily encountered and generally recognized as occurring in the work of the character provided for in the Contract. The impacted party shall promptly notify the other party in the event of a delay under this Article 3. The Delivery or performance dates shall be extended for a period equal to the time lost by reason of such delay, plus such additional time as may be reasonably necessary to overcome the effect of such delay. If Seller is delayed by acts or omissions of Buyer Group, or by the prerequisite work of Buyer's other contractors, Seller shall also be entitled to an equitable price adjustment. Under no circumstances shall Buyer's payment obligation be deemed excusable under this Article 3.

3.2. If a delay excused by this Article 3 extends for more than 90 days and the parties have not agreed upon a revised basis for resuming work, including an equitable price adjustment, then either party (except where such delay is caused by Buyer Group,

in which event only Seller), upon 30 days' written notice may terminate the Contract with respect to the unexecuted portion of the work. In the event of a delay under Article 3.1(b), the terms of Article 10.2 shall apply in full. In the event of a delay under Article 3.1(a), Buyer shall pay Seller the pro-rated Contract Price for all work performed before the effective date of termination.

4. LIMITED WARRANTY

4.1. Subject to the limitations set forth in the Contract and in this Article 4, and except with regard to the warranties set forth in the relevant Addendum, Seller warrants to Buyer that: (i) the Products and/or Parts shall be Delivered free from defects in material, workmanship and title; and (ii) the Services shall be performed in a competent and diligent manner in accordance with any mutually agreed specifications. Unless Seller expressly agrees otherwise in writing and except for Products/Parts provided by Seller's Affiliates, any Parts not manufactured by Seller (including incidental materials and consumables used in the Services) shall carry only the warranty provided by the original manufacturers, and Seller gives no warranty for such Parts.

4.2. Unless otherwise stated in the Contract, the warranty period ("Warranty Period") shall be as follows:

(i) for Products and Parts (except software): (a) as set forth in the table below, or (b) if not in the table, the Warranty Period ends the earlier of one (1) year from first use or eighteen (18) months from shipment:

Products & Parts Warranty Period Table (excluding software)	
Product Line	Warranty Period Ends
Bently Nevada	36 months from shipment
Druck	12 months from shipment
Nexus Controls	Per Article 4.2(i)(b)
Panometrics	Per Article 4.2(i)(b)
Reuter-Stokes	Per Article 4.2(i)(b)
Waygate Technologies	12 months from shipment

(ii) for all Services, including without limitation Software Services and Repair Services: Warranty Period ends ninety (90) days from performance or completion of Services, with the following exceptions:

- (a) Training Services (all Product Lines): Warranty Period ends on the date of training completion;
- (b) Nexus Controls Parts Repair Services: Warranty Period ends twenty-four (24) months from completion of repair;
- (c) Panometrics Moisture Probe Calibrations: Warranty Period ends six (6) months from calibration date;
- (d) Bently Nevada and Nexus Controls Services (but excluding Training, Repair, and Software Services): Warranty Period ends twelve (12) months from date of performance of Services.

4.3. If Products, Parts, or Services do not meet the above warranties during the applicable Warranty Period, Seller's sole and exclusive liability shall be to either re-perform the defective Services, or repair or replace the defective component of the Products/Parts, as applicable, at Seller's option, provided that Seller shall not be obligated to re-perform the defective Services, or repair or replace the defective component of the Products or Parts, as applicable, unless Buyer informs Seller in writing within fifteen (15) days of discovery of such defects. Warranty repair, replacement, or re-performance by Seller shall not extend or renew the applicable Warranty Period. If despite Seller's reasonable efforts, a non-conforming Product or Part cannot be repaired or replaced, or non-conforming Services cannot be re-performed, Seller shall refund or credit monies paid by Buyer for such non-conforming Products, Parts, and/or Services. Seller Group shall under no circumstances be liable for defects that arise or are discovered after expiration of the Warranty Period.

4.4. Seller shall not be liable for accessing, retrieving, removing, or decontaminating defective Products or Parts, or for reinstalling repaired or replacement Products or Parts, or for any costs, damages, or losses incurred in connection with any of the above operations. If repair Services are to be performed on Buyer's

equipment at a Seller Group's facility, Buyer shall be responsible for transporting the equipment to and from Seller Group's facility and Buyer shall retain title and risk of loss at all times. Buyer shall be responsible for all customs formalities, costs, duties and taxes connected with any export to Seller or import of goods sent back to Buyer. Failure to meet any such conditions renders the warranty null and void.

4.5. Seller does not warrant the Products, Parts, or any repaired or replacement item against normal wear and tear. The warranties and remedies set forth herein are conditioned upon: (i) proper storage, installation, use, operation, maintenance of the Products/Parts, and conformance with the operation instruction and installation manuals (including revisions thereto) provided by Seller Group; (ii) Buyer keeping accurate and complete records of operation and maintenance during the Warranty Period and providing Seller access to those records; and (iii) repair or modification only as performed by Seller or when authorized by Seller in writing. FAILURE TO MEET ANY CONDITIONS IN THIS ARTICLE 4.5 RENDERS THE WARRANTY PROVIDED BY SELLER NULL AND VOID.

4.6. THE REMEDIES SET FORTH IN THIS ARTICLE 4 (EXCEPT WITH REGARD TO SOFTWARE, FOR WHICH REMEDIES ARE SET FORTH IN The Software Addendum) CONSTITUTE THE SOLE AND EXCLUSIVE REMEDIES FOR ALL CLAIMS ARISING OUT OF OR RELATING TO ANY FAILURE OF, OR ANY DEFECT, OR NON CONFORMITY IN, THE PRODUCTS, PARTS, OR SERVICES, REGARDLESS OF WHEN THE FAILURE, DEFECT, OR NON CONFORMITY ARISES AND REGARDLESS OF CAUSE OR ACTION. TO THE FULL EXTENT PERMITTED BY APPLICABLE LAW, THE WARRANTIES SET FORTH IN THIS ARTICLE 4 AND The Software Addendum ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, AND GUARANTEES, WHETHER WRITTEN, ORAL, IMPLIED, OR STATUTORY. NO IMPLIED OR STATUTORY WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.

5. INSPECTION AND FACTORY TESTS – The quality control exercised by Seller in its manufacture of Products and Parts shall be in accordance with Seller's normal quality control policies, procedures, and practices. Unless otherwise expressly agreed in the Contract, Seller shall attempt to accommodate Buyer's requests to witness Seller's factory tests of Products and/or Parts, as applicable, but only if such witnessing can be arranged without delaying the work. Access to Seller Group's premises shall be limited to areas directly concerned with the Products and/or Parts, as applicable, excluding in all cases areas where work of a proprietary or confidential nature is conducted.

6. CHANGES – Each party may at any time propose changes in the schedule or scope of Parts, Products, or Services in the form of a draft change order. Neither party is obligated to proceed with the changed schedule or scope until both parties agree to such change in writing. Unless otherwise agreed by the parties, pricing for additional work arising from such changes shall be at Seller's then-current time and material rates.

7. PAYMENT

7.1. Buyer shall pay Seller all invoiced amounts against one or more irrevocable, unconditional, letters of credit payable at sight ("Payment Security"), without any set-off, and in the currency agreed in the Contract. If not agreed in the Contract, payment shall be made in the currency set forth in the Proposal on 30-day terms from the date of the relevant invoice. Payment milestones, if any, shall be as agreed in the Contract.

7.2. In addition to other Contract remedies, Buyer shall pay interest to Seller at the rate of 1.5% per month (or fraction thereof), not to exceed the lesser of 18% per annum or the maximum amount permitted by Applicable Law, on all amounts not timely paid in accordance with the Contract.

7.3. Each Payment Security shall be irrevocable and unconditional, and allow for *pro-rata* payments for partial Deliveries, other charges (e.g., storage, export shipments, cancellations, and adjustments), and all other payments due to Seller under the Contract. Each Payment Security shall be: (i)



issued or confirmed by a primary international bank that is reasonably acceptable to Seller; (ii) payable at the counters of such bank; (iii) opened thirty (30) days from the Contract effective date; and (iv) remain in effect until the latest of ninety (90) days after the latest scheduled Products and/or Parts shipment, or completion of Services, or receipt by Seller of final payment. Buyer shall make relevant adjustments in the Payment Security (including increasing amounts or validity period and including in accordance with the changes agreed in the Contract) as required to fulfill its payment obligations under the Contract, within fifteen (15) business days of Seller's notification that such adjustment is necessary. Seller will not have an obligation to begin performance until the Payment Security, or the required adjustment thereof, has become operative.

8. TAXES AND DUTIES

8.1. Seller shall be responsible for and shall pay when due and payable all Seller Taxes, and Buyer shall be responsible for and shall pay all Buyer Taxes. The Contract Price does not include any Buyer Taxes. Therefore, if any such taxes are applicable, they will be added to the Contract Price. For U.S. sales and use tax, and in other jurisdictions where applicable, Buyer may report/remit sales or similar taxes directly if Buyer timely provides a direct pay or exemption certificate to Seller.

8.2. If Applicable Laws, other than for Seller's country of incorporation, require the Contract to be subject to stamp duty, fee, or registration, Buyer shall be responsible for the required formalities and bear the related costs. Buyer shall furnish to Seller a copy of the registration certificate or a registered copy of the Contract within ten (10) days from the due date required by said Applicable Laws to register or pay for such stamp duty, fee, or registration. According to the Applicable Laws of the country in which Buyer has requested Seller to provide Services, Seller may be required to be registered locally, in which case Seller shall perform the Services and invoice for them with the intervention of its relevant branch and/or permanent establishment.

8.3. If Buyer is required to deduct or withhold any Seller Taxes from the Contract Price, Buyer shall: (a) give at least thirty (30) days prior written notice to Seller that Buyer intends to withhold; (b) make all reasonable efforts to minimize any withholding tax from payments to Seller, in accordance with Applicable Laws, and any applicable tax convention; and (c) provide Seller, within thirty (30) days from payment, the official receipt issued by the competent government authority to which the Seller Taxes have been paid, or a document acceptable to the relevant tax authorities. If Buyer requires tax residence certificates from Seller to apply for any exempted or reduced tax regime, Seller shall submit the appropriate certificates upon Buyer's written request. If Buyer, under the Applicable Laws of any country other than Seller's country of incorporation or in which Seller has a branch, deducts or withholds Seller Taxes or fails to comply with the requirements of this Article 8.3, Buyer shall pay additional amounts to Seller so Seller receives the full amount of the Contract Price, as if no such Seller Taxes were deducted or withheld.

8.4. If Buyer benefits from any tax, fee, or duty exemption which is applicable to Seller or Seller Group, Buyer agrees to provide Seller (without charge and before the following as applicable: (a) entering into the Contract, (b) invoicing, or (c) any other relevant event) documentation acceptable to the competent tax or customs authorities supporting the exemption, together with instructions on the exemption procedure. Buyer shall promptly inform Seller in writing about the revocation, expiration, or other change of the exemption. If Seller is denied the exemption due to a failure of the Buyer, Seller shall be entitled to invoice and Buyer shall pay promptly the applicable taxes, fees, duties, fines, penalties, interest, and court costs.

8.5. When Buyer arranges the export or intra-European Union ("EU") community shipment, Buyer will provide to Seller, free of charge, evidence that such exportation or intra EU community shipment was made within the statutory deadlines of the country of exportation or dispatch as required to qualify for a VAT, sales

tax, or similar tax export exemption. Such evidence must be in a form that is acceptable to the competent tax and customs authorities. Failing the above, Seller shall be entitled to invoice Buyer the applicable VAT, U.S. sales and use tax, or similar taxes. When Buyer arranges the transport and importation of Products and/or Parts, Buyer will provide, within thirty (30) days of Seller's request, documentation for such Buyer's transport and import and similar documents as required by the relevant tax authorities.

8.6. If either party does not comply with the tax legislation of the country where Products and/or Parts are manufactured or Delivered, or Services are rendered, such party ("Faulty Party") hereby agrees to Indemnify the other party ("Affected Party") for any Claims, cost, risk and responsibility including, but not limited to, fees, taxes, duties, charges, penalties, legal expenses, and interest which the Affected Party suffers as a result of Faulty Party's noncompliance. Buyer and Seller shall make commercially reasonable efforts to cooperate with each other to minimize the tax liability of any of the parties, to the extent legally permissible (but with no obligation to increase such party's tax liability), including separately stating taxable charges on Seller's invoices and supplying resale and exemption certificates, if applicable, and any other non-confidential information as reasonably requested.

8.7. Buyer warrants, represents and undertakes for itself and on behalf of Buyer Group, that neither Buyer nor any member of Buyer Group shall: (i) engage in any activity, practice or conduct which would constitute either a UK or a foreign tax evasion facilitation offence under Part 3 of the Criminal Finances Act 2017 (the "Act") and any associated guidance notes issued or similar legislation introduced elsewhere; (ii) have and shall maintain in place throughout the term of the Contract, such policies and procedures that are both reasonable to prevent the facilitation of tax evasion by any associated person as defined in the Act, and to require compliance with this Article 8.7; and (iii) promptly report to Seller any request or demand from a third party to facilitate evasion of tax within the meaning of Part 3 of the Act, in connection with the performance of the Contract. Where reasonable evidence is obtained that there has been a breach of this Article 8.7, Seller shall have the right, with no less than thirty (30) days prior written notice, to request the relevant records of the Buyer which relate directly to the Contract to enable the Seller to confirm whether a breach has occurred. If a breach of this Article 8.7 is subsequently confirmed, this shall be considered a material breach and Seller shall have the right to terminate the Contract.

9. ASSIGNMENT, NOVATION & SUBCONTRACTING – Buyer may assign or novate the Contract, in full or in part, including through change of ownership, only with the prior written consent of Seller, which consent shall not be unreasonably delayed or withheld, provided that Seller shall be entitled to withhold such consent for demonstrable reasons if the assignee/novatee lacks adequate financial capability, is a competitor or potential competitor of Seller or its Affiliates, causes Seller Group to be in breach of Applicable Law, and/or does not meet Seller's code of ethics. Seller may assign or novate the Contract, in full or in part, only with prior written consent of Buyer, which consent shall not be unreasonably delayed or withheld, provided that Seller may, without Buyer's consent assign or novate the Contract, in full or in part, to one or more Affiliates of Seller. The parties agree to execute such documents as may be necessary to effect the permitted assignments or novations. In the event of a novation or assignment by Buyer, Buyer shall cause the novatee/assignee to provide additional payment security at Seller's reasonable request. Any assignment or novation in violation of the above shall be void and without effect for the other party. Nothing herein shall restrict Seller from subcontracting portions of its work, provided that Seller remains responsible to Buyer for performance of such work.

10. TERMINATION AND SUSPENSION

10.1. Either party may terminate the Contract for default if: (a) any proceeding is brought against the other party, voluntarily or involuntarily, under applicable bankruptcy or insolvency laws, or if the other party is unable to pay its debts when due, to the

extent permitted by Applicable Law; or (b) the other party commits a material breach of the Contract, which does not otherwise have a specified contractual remedy, and fails to cure the breach within thirty (30) days of notice from the non-breaching party, or if it is not possible to cure such breach within thirty (30) days, fails to commence to cure the breach within thirty (30) days of such notice or fails to thereafter continue diligent efforts to complete the cure as soon as reasonably possible. In the event of a termination by Buyer under this Article 10.1, Seller shall reimburse Buyer the difference between that portion of the Contract Price allocable to the terminated scope and the actual amounts reasonably incurred by Buyer to complete such terminated scope; and Buyer shall pay to Seller the portion of the Contract Price allocable to Products/Parts purchased and/or completed, and amounts for Services performed, before the effective date of termination. Said amounts shall be calculated using the applicable Contract rates, or in the absence of such rates, at Seller's then-current standard time and material rates. In the event there are agreed-upon Contract milestones, said amounts shall be calculated according to the milestone schedule for completed milestones, and the Contract rates for work toward milestones not yet achieved.

10.2. The terms set forth in this Article 10.2 shall not apply if the Contract is for provision of software or third-party software. Buyer may terminate the Contract (even in part) upon twenty (20) days prior written notice for reasons other than those set forth in Article 10.1. If the Contract (or any portion thereof) is terminated for any reason other than Seller's default under Article 10.1, Buyer shall pay Seller in accordance with the cancellation/termination schedule set forth in the Contract. Where no cancellation/termination schedule exists, Buyer shall pay Seller: (a) for Contracts based on milestone billing, the amount due in accordance with the milestone schedule (for completed milestones) and 15% of the Contract Price applicable to all other uncompleted milestones; or (b) for Contracts not based on milestone billing, the pro-rated Contract Price for all work performed before the effective date of termination, plus 15% of the Contract Price applicable to all other work that has not been performed; the amount due for Service work shall be in accordance with Seller's then-current standard time and material rates. In addition to both (a) and (b), Buyer shall also pay Seller all costs and expenses incurred by Seller as a direct result of the termination, including the costs associated with vendor disputes or Claims. The parties acknowledge and agree that the liquidated damages set forth in this Article 10.2 are a reasonable estimate of the damages that would result from any such early termination, that actual damages would be difficult to ascertain, and that the liquidated damages are an alternative to performance and not a penalty.

10.3. If Buyer fails to pay any outstanding undisputed invoice as set forth in the Contract or fails to issue the Payment Security within the time agreed, Seller may provide notice to Buyer of its intent to suspend performance and Delivery and/or terminate the Contract. If Buyer fails to make payment or issue Payment Security within thirty (30) days of such notice, Seller may suspend performance and Delivery and/or terminate the Contract. Any cost incurred by Seller as a result of such suspension or termination (including storage, stand-by costs, demobilization, and re-mobilization costs) shall be payable by Buyer upon submission of Seller's invoices. Performance of Seller's obligations shall be extended for a period equaling the period of Buyer's failure to meet its payment obligations, plus such additional time as may be reasonably necessary to overcome the effect of such payment delay.

10.4. With a twenty (20) day written prior notice, Buyer may elect to suspend performance of the Contract for a maximum cumulative period of ninety (90) days, after which Seller may terminate the Contract and Article 10.2 shall apply. In the event of suspension under this Article 10.4, Buyer shall also pay all reasonable expenses incurred by Seller in connection with the suspension, including without limitation, expenses for repossession, fee collection, stand-by costs, demobilization/remobilization, and costs of storage. The schedule for Seller's

obligations shall be extended for a period of time reasonably necessary to overcome the effects of such suspension.

11. COMPLIANCE WITH LAWS, CODES, AND STANDARDS

11.1. The Contract Price is based on Seller Group's design, manufacture, testing, and Delivery of the Products, Parts, and Services pursuant to: (i) its design criteria, manufacturing processes, and procedures and quality assurance program; (ii) those portions of industry specifications, codes, and standards in effect as of the date of entering into the Contract as are specified in the Contract; (iii) Applicable Law; and (iv) any mutually agreed upon written terms and specifications set forth in the Contract.

11.2. Notwithstanding any other provision of the Contract, the parties shall at all times comply with all Applicable Law in the performance of the Contract, except for Seller to the extent that such compliance is penalized under or otherwise violates the laws of the U.S. or EU.

11.3. The Contract Price, Delivery and performance dates and any performance guarantees are based upon the terms of the Contract and Applicable Laws, standards, and regulations in effect on the date of Seller's proposal or quotation and will be equitably adjusted to reflect additional costs or obligations incurred by Seller Group resulting from any change in, or change in interpretation of, the Contract terms as proposed by Seller, Applicable Laws, or Buyer's or Site owner's cyber policies and procedures agreed by Seller in writing after the date of Seller's proposal or quotation. In the event any such change prevents Seller Group from executing its obligations without breaching Applicable Law or makes Seller's execution of its obligations unreasonably burdensome or unbalanced, Seller shall also have the right to withdraw the Proposal or terminate the Contract without any liability.

11.4. Unless otherwise agreed in the Contract, Seller shall be responsible for timely obtaining the permits, licenses, and authorizations required for Seller Group to meet the requirements of the Contract, except that Buyer shall be responsible for timely obtaining any required permits, licenses, and authorizations that can only be obtained by Buyer Group. Buyer and Seller shall provide each other reasonable assistance in obtaining such required authorizations.

11.5. Buyer agrees to comply with all applicable export laws and regulations, including those of the United States, to ensure Products, Parts, and technology provided by Seller under the Contract are not used, sold, disclosed, released, transferred, or re-exported in violation of such laws and regulations. Buyer shall not directly or indirectly export, reexport, or transfer any items or technology provided by Seller under the Contract to: (a) any country or region comprehensively sanctioned by the U.S. government, including for the purposes of the Contract, North Korea, Iran, Cuba, Syria and the Crimea region or to a resident or national of any such countries; (b) any person or entity listed on the "Entity List" or "Denied Persons List" maintained by the U.S. Department of Commerce, the list of "Specifically Designated Nationals and Blocked Persons" maintained by the U.S. Department of Treasury, or any other applicable prohibited party list of the U.S. Government; or (c) an end-user engaged in any nuclear, chemical, or biological weapons activities. If Products or Parts to be exported outside the U.S. and/or EU are considered or likely to be considered as "dual use", Buyer shall (or shall cause the end user of the Products/Parts to) provide to Seller, promptly upon its request, an "End User Statement" in accordance with the applicable legal requirements. Seller shall not be liable to Buyer for any delay and shall not be in breach of its obligations in the event of Buyer's failure or delay in providing such statement.

11.6. The parties agree to comply with all Applicable Data Protection Laws. The parties commit to enter into a Data Processing Agreement (DPA) when needed. Further, the parties agree to enter into EU Model Clauses when required by EU law or ensure that equivalent safeguards are in place. If intended actions by one or more parties require further agreements and/or other actions to comply with the Applicable Data Protection Laws,

the parties agree to mutually collaborate and sign them and/or take actions as required.

12. ENVIRONMENT, HEALTH, SAFETY AND SECURITY (EHSS)

12.1. Buyer shall take all actions necessary to provide a safe, healthy, and secure work environment, including transportation and accommodation if applicable, for Seller Group personnel. Buyer shall inform Seller of any known risks, hazards, or changed conditions impacting worker health, safety, or the environment, including the presence or potential presence of Hazardous Materials, and provide relevant information, including safety data sheets, Site security plans, risk assessments, and job hazard analyses.

12.2. To evaluate risks associated with the provision of Services and performance under the Contract, Buyer shall provide Seller Group with reasonable access to review the Site and related equipment. If Seller's work at the Site is subject to local, state, or national EHS legal requirements that are not reasonably available, Buyer shall notify and provide copies to Seller.

12.3. If Seller or Seller's representative believes in good faith that Site conditions, Seller transportation, or accommodation provisions, or the actions of others threaten the health, safety, or security of Seller Group personnel or the environment, Seller or its representatives may, in addition to other rights or remedies available, STOP WORK, evacuate some or all of its personnel, suspend performance of all or any part of the Contract, and/or remotely perform or supervise work. If Seller exercises its rights under this Article 12.3, it shall give prompt notice to Buyer, and the parties shall work cooperatively to correct the conditions or actions prompting the STOP WORK. The parties agree there shall be no retaliation taken against any person who invokes their right under this provision to STOP WORK. Any delay resulting from Seller Group's exercise of its rights under this Article 12.3 constitute an excusable delay and Article 3 shall apply.

12.4. To the full extent permitted by Applicable Law, Buyer agrees that it is the generator, and shall be solely responsible for the storage, transportation, disposal, and remediation of all Hazardous Materials or waste related to or arising from the performance of Services at Buyer Group Sites, including (without limitation) any removed from Seller's equipment. Prior to the transportation and disposal of waste materials by Buyer, Seller shall properly manage and collect on site all Hazardous Materials resulting from the Services in accordance with Applicable Law and Buyer's written requirements. If Seller Group encounters any Hazardous Materials, it may suspend work pending Buyer elimination of the hazardous condition. If any Seller equipment or Buyer equipment destined for a Seller facility is contaminated with Hazardous Materials, Buyer shall assume sole responsibility for decontaminating such equipment and returning it in the same condition received to allow for safe handling and transportation in compliance with Applicable Law. If any such Hazardous Materials cause an increase in Seller's cost or time, Seller shall be entitled to an equitable adjustment in price and schedule.

13. ADDITIONAL EHSS PROVISIONS APPLICABLE TO SERVICES

13.1. Seller Group personnel shall not be required to work in excess of any time restriction under Applicable Law. Seller Group personnel will have at least one day of rest in any seven consecutive days; provided, the parties may agree upon exceptions consistent with Seller's working time policy.

13.2. Buyer shall provide medical care and facilities at the Site consistent with international industry standards. If Seller Group's personnel require urgent medical attention, Buyer shall make its medical facilities available to such persons as necessary. To the extent Buyer cannot supply necessary urgent medical attention at the Site, any Buyer Group's site, or while working offshore, Buyer shall provide for transport of Seller Group's personnel and access of such personnel to the nearest suitable urgent care facility. For offshore or remote work, Buyer shall be responsible for medical evacuation of Seller Group's personnel from the Site to the departure point on the mainland or Buyer's designated medical services provider.

13.3. Buyer shall transport Seller Group's personnel, equipment, and materials, including medi-vac, to and from all offshore locations and to such other job Sites as agreed, in compliance with Applicable Law and international industry standards regarding qualified personnel, safe operation, and maintenance. Buyer agrees to make, and shall procure that Buyer Group makes, such equipment and information relating to its operation and maintenance available to Seller. Buyer shall provide personal protective equipment required during use of Buyer provided transportation to and from the offshore work and such other specialized equipment as agreed between the parties.

13.4. Buyer shall provide, at no cost to Seller, accommodation for Seller Group's personnel, which offers a reasonable degree of comfort, is consistent with international industry standards, and is at least comparable to that furnished to Buyer's management and technical personnel. Buyer shall provide telephone and computer internet connectivity to Seller Group's personnel at said accommodations.

14. CONFIDENTIALITY

14.1. "Confidential Information" means pricing for Products, Parts and Services, and/or any information that is designated in writing as "confidential" or "proprietary" at the time of disclosure, or orally designated as "confidential" or "proprietary" and confirmed in writing within ten (10) days after oral disclosure. All information concerning or embedded in the software (including but not limited to source code, object code, and training materials), Documentation, and third-party software is confidential and the property of Seller (or its suppliers) and shall be considered Seller's (or its suppliers') Confidential Information whether or not the information is marked as such.

In granting cyber and/or unescorted physical access to Products and/or Parts, Seller may provide log-on codes, log-on identifications, passwords, and/or other individualized explicit access permissions (collectively "Access Codes"). Access Codes are subject to the confidentiality provisions of the Contract and shall not be disclosed or shared with any other person other than authorized users.

Confidential Information shall not include information that: (i) is or becomes generally available to the public other than from disclosure by the receiving party's Group; (ii) is or becomes available to the receiving party's Group on a non-confidential basis from a source other than the disclosing party and, after due inquiry, that source is not subject to a confidentiality obligation to the disclosing party; or (iii) is independently developed by the receiving party's Group without reference to the disclosing party's Confidential Information, as evidenced by written documents.

14.2. The parties shall: (a) use, reproduce, or disclose the other party's Confidential Information only in connection with the Contract and permitted use(s) and maintenance of Products, Parts, and Services; (b) take reasonable measures to protect the confidentiality, and prevent disclosure and unauthorized use of the Confidential Information; and (c) not disclose Confidential Information to the other party's competitors.

14.3. A party may disclose Confidential Information: (a) to any member of its Group who has a need to know such information to perform the Contract or use and maintain any Products, Parts, or Services; provided that such member is bound in writing to confidentiality obligations and use restrictions at least as restrictive as in the Contract; and (b) to comply with a legal obligation, but only after promptly notifying the disclosing party of its disclosure obligation so that the disclosing party may seek an appropriate protective order. Buyer shall not disclose Confidential Information to Seller unless required for Seller to perform under the Contract. Buyer warrants that it has the right to disclose any such information and shall Indemnify Seller Group from any Claims resulting from improper or unauthorized disclosure.

14.4. Neither party shall make any public announcement about any aspect of the Contract or related documents or information without prior written approval of the other party.

14.5. The confidentiality and use restrictions of this Article 14 shall survive any termination of the Contract for ten (10) years. Each party shall Indemnify the other for failure to comply with this Article 14.

15. INTELLECTUAL PROPERTY

15.1. Seller shall Indemnify Buyer from any rightful Claims of third parties that: (a) the software infringes such third party's U.S. or EU patent; or (b) the Products or Parts manufactured by Seller or its Affiliates (excluding software and third-party software) infringe any utility patent of the U.S., EU, or the country of initial installation (if set forth in the Contract), provided that in any such case of subsection (a) and/or (b) above: (1) Buyer promptly notifies Seller in writing of any such claim; (2) Buyer makes no admission of liability and does not take any position adverse to Seller regarding such claim and gives Seller sole authority, at Seller's expense, to direct and control all defense, settlement, and compromise negotiations; and (3) Buyer provides Seller with full disclosure and assistance that may be reasonably required to defend any claim and conduct any related negotiations.

15.2. Article 15.1 shall not apply, and Seller shall have no obligation or liability with respect to any claim based upon: (a) any Products, Parts, or Services that have been altered, modified, or revised; (b) the combination, operation, or use of any Products, Parts, or Services with other products, services, systems, or data when such combination is part of any allegedly infringing subject matter; (c) failure of Buyer Group to implement any update provided by Seller Group that would have prevented the claim; (d) unauthorized use of Products, Parts, or Services, including without limitation a breach of the provisions of the Contract; (e) Products, Parts, or Services made or performed to Buyer Group's specifications or design; or (f) any Buyer Group data.

15.3. If any Products, Parts, or Services (excluding, for purposes of this Article 15.3, any third-party software) become the subject of a claim or, in Seller's sole judgment, are likely to become the subject of a claim, Seller may at its option: (a) procure for Buyer the right to continue using the Product, Part, or Service, or portion thereof; or (b) modify or replace it in whole or in part to make it non-infringing; provided, that if the alternatives described in subsection (a) and/or (b) are not commercially reasonable, then Seller may take back Products or Parts, discontinue Services, terminate the license to any affected software, and refund to Buyer a pro-rated portion of any unearned pre-paid fees received by Seller attributable to the infringing Product, Part, or Service (using a five-year straight-line depreciation schedule beginning on the effective date of the Contract).

15.4. THE FOREGOING ARTICLES 15.1, 15.2, AND 15.3 STATE SELLER GROUP'S ENTIRE AND EXCLUSIVE LIABILITY, AND BUYER GROUP'S ENTIRE AND EXCLUSIVE REMEDY, FOR ANY INTELLECTUAL AND INDUSTRIAL PROPERTY RIGHTS INFRINGEMENT.

15.5. Each party shall retain ownership of all Confidential Information and intellectual property it had prior to the negotiations of the Contract. Any and all new intellectual property conceived, created, or provided by Seller Group under the Contract, whether alone or with any contribution from Buyer Group, shall be owned exclusively by Seller or other members of Seller Group, as the case may be. Without limiting the foregoing, Buyer agrees that Seller Group or its suppliers own all proprietary rights, including but not limited to any patent, copyright, trade secret, trademark, and other intellectual property rights, in and to the software, Documentation, and third-party software, including any Derivative Works thereof regardless of the source of development, including but not limited to cases where Buyer engages a third party to perform such development. Buyer hereby (a) agrees that all such rights are automatically vested in Seller (or its Affiliates, in Seller's sole discretion) or in the owner of third-party software, as applicable, and may be used by Seller Group (or the owner of the third-party software, as the case may be) without limitation and without any obligation to Buyer on behalf of Seller Group and/or such other relevant owner; and (b)

irrevocably transfers and assigns, and agrees to transfer and assign and/or cause other members of Buyer Group or a third party to transfer and assign, as instructed by Seller all rights, title, and interests throughout the world in and to such new intellectual property and Derivative Works, including but not limited to all rights in and to any inventions and designs embodied in such new intellectual property and Derivative Works or its associated technology. If by operation of law such rights are not automatically transferred and assigned as provided above, Buyer shall, and shall cause other members of Buyer Group and any third party (as applicable) to, timely execute and deliver to Seller such assignments and other documentation, and take such other action as may be requested by Seller to perfect and protect Seller's (or the third-party software owner's) rights in and to any such new intellectual property and Derivative Works and to carry out the assignments effected by this Article 15.5 at no cost to Seller. To the extent that this Article 15.5 does not provide Seller with full intellectual property rights, moral rights, or any other rights, title, and interests in and to any such new intellectual property, Derivative Works, or associated technology, Buyer hereby grants Seller Group a perpetual, irrevocable, fully paid, royalty free worldwide license to reproduce, modify, adapt, enhance, improve, create Derivative Works from, distribute, publicly display, publicly perform, use, make, have made, offer for sale, sell or otherwise dispose of, import, and practice any method or process relating to any such new intellectual property, Derivative Works, and associated technology, by all means now known or later developed, with the right to sublicense (through multiple tiers) each and every such right. Buyer shall procure that, to the extent permissible by Applicable Law, Buyer Group waives any moral rights it acquires in any such new intellectual property and Derivative Works and agrees and forever waives any right to assert any claim contrary to this Article 15.5. Seller shall grant Buyer use rights in accordance with the terms and conditions of the Software Addendum to utilize Seller's intellectual property embedded in the Products or Parts furnished by Seller Group, solely for standard internal use, operation, and maintenance of the Products and/or Parts, as applicable, by Buyer. Such license shall not give Buyer the right to manufacture and/or have manufactured such Products and/or Parts. Notwithstanding this Article 15.5, Buyer's rights to software, including embedded software, licensed to Buyer are subject to and limited by the terms of the Software Addendum.

15.6. Buyer agrees that Seller may create, receive, maintain, transmit, process and otherwise have access to machine, technical, system, usage, and related information and data, including, but not limited to, information and data about Buyer's products, services, systems, and software, that is gathered periodically to facilitate the provision of Products, Parts, Services, support, consulting, training, and other services to Buyer (if any), and to verify compliance with the terms of the Contract. Seller and its Affiliates may use such information and data to provide, develop, or improve their Products, Parts or Services.

16. INDEMNITY AND LIMITATION OF LIABILITY

16.1. The provisions of this Article 16 shall apply to the maximum extent permitted by Applicable Law and, unless otherwise expressly stated, prevail over any conflicting terms of the Contract.

16.2. (a) Seller agrees to Indemnify Buyer Group from and against any and all Claims for bodily injury, illness, or death suffered by any Seller Group's personnel, and/or for damage to or loss of any property of any Seller Group member (whether owned, hired, or leased, but excluding property leased to Buyer Group) arising out of or in connection with the Contract, REGARDLESS OF CAUSE OR ACTION.

(b) Buyer agrees to Indemnify Seller Group from and against any and all Claims for bodily injury, illness, or death suffered by any Buyer Group's personnel, and/or for damage to or loss of any property of any Buyer Group member (whether owned, hired, or leased, and including the Products and Parts (after Delivery), the Site, and any facilities or property thereon), arising out of or in



connection with the Contract, REGARDLESS OF CAUSE OR ACTION.

16.3. (a) Seller agrees to Indemnify Buyer Group from and against any rightful Claims of third parties on account of bodily injury, illness or death, or damage to or loss of property, to the extent resulting directly from the negligence of Seller Group in connection with performance of the Contract, which indemnity is subject to and limited by the terms of the Contract, including but not limited to Articles 15, 16, and 17 of these Terms and Conditions, and Article 9 of the Software Addendum.

(b) Buyer agrees to Indemnify Seller Group from and against any rightful Claims of third parties on account of bodily injury, illness or death, or damage to or loss of property, to the extent resulting directly from the negligence of Buyer Group in connection with performance of the Contract.

(c) In the event the injury or damage to third parties is caused by the joint or concurrent negligence of the parties or their respective Groups, each party shall bear the liability of such injury or damage proportionally to its Group's negligence. For the avoidance of doubt, no members of either party's Group shall be considered third parties and, for purposes of Seller's indemnity obligation in Article 16.3(a), no part of the Site or any property or facilities thereon shall be considered third-party property, and the Site owner and its partners, Affiliates, and contractors/subcontractors shall not be considered third parties. The reciprocal indemnities in this Article 16.3 shall apply only if the indemnified party: (1) promptly notifies the other party in writing of the third party Claim; (2) makes no admission of liability, does not take any position adverse to the other party and gives the other party sole authority to direct and control all defense, settlement, and compromise negotiations; and (3) provides the other party with full disclosure and assistance reasonably required to defend such Claim.

16.4. Except only as provided in Article 16.2(a) but notwithstanding anything to the contrary herein, in the event the Site is offshore, Buyer assumes sole responsibility for and shall Indemnify the Seller Group (to the maximum extent permitted under Applicable Law) from and against any and all Claims asserted by or in favor of any person or party resulting from pollution, contamination, or blow-out of any kind, including costs of pollution control, removal, spills, leakage, and clean-up. The above indemnity applies REGARDLESS OF CAUSE OR ACTION and even if the Claim is on account of any defect in the Products, Parts, or Services; but it shall not apply to surface pollution or spillage of fuels, lubricants, sewage, or garbage to the extent such surface pollution or spillage originates from Seller Group's property while such property is in Seller Group's sole care, custody, and control.

16.5. EXCEPT ONLY FOR SELLER'S OBLIGATIONS IN ARTICLE 11.2 (TO THE EXTENT OF FINES AND PENALTIES IMPOSED BY A GOVERNMENT AUTHORITY AS A RESULT OF SELLER'S VIOLATION OF APPLICABLE LAW) AND EXCEPT AS OTHERWISE SET FORTH IN THE SOFTWARE ADDENDUM, AND TO THE EXTENT PERMITTED UNDER APPLICABLE LAW, SELLER GROUP'S TOTAL LIABILITY FOR ANY AND ALL CLAIMS OF ANY KIND, REGARDLESS OF CAUSE OR ACTION (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE CONTRACT, OR ITS PERFORMANCE OR BREACH, INCLUDING WITHOUT LIMITATION WARRANTY AND TERMINATION, SHALL NOT UNDER ANY CIRCUMSTANCES EXCEED (a) THE CONTRACT PRICE, OR (b) IF BUYER PLACES MULTIPLE ORDERS UNDER THE CONTRACT, THE PRICE OF EACH PARTICULAR ORDER FOR ALL CLAIMS ARISING FROM OR RELATED TO THAT ORDER, AND TEN THOUSAND U.S. DOLLARS (USD \$10,000) FOR ALL CLAIMS NOT PART OF ANY PARTICULAR ORDER. SELLER GROUP SHALL HAVE NO LIABILITY FOR ADVICE OR ASSISTANCE GRATUITOUSLY PROVIDED BY SELLER GROUP BUT NOT REQUIRED PURSUANT TO THE CONTRACT. ALL OF SELLER GROUP'S LIABILITIES SHALL TERMINATE AT THE END OF THE RELEVANT WARRANTY PERIOD, EXCEPT FOR CLAIMS TIMELY COMMENCED BY BUYER IN ACCORDANCE WITH THE CONTRACT.

16.6. NOTWITHSTANDING ANYTHING TO THE CONTRARY, AND EXCEPT ONLY TO THE EXTENT OF AGREED LIQUIDATED DAMAGES, ANY PREDETERMINED TERMINATION FEES DUE TO SELLER UNDER THE CONTRACT, OR IN THE EVENT OF BUYER'S BREACH OF ITS CONFIDENTIALITY OBLIGATIONS OR LICENSE RIGHTS AND RESTRICTIONS UNDER THIS CONTRACT, SELLER SHALL INDEMNIFY BUYER GROUP FROM AND AGAINST ANY AND ALL CLAIMS FOR CONSEQUENTIAL LOSS OF SELLER GROUP; AND BUYER SHALL INDEMNIFY SELLER GROUP FROM AND AGAINST ANY AND ALL CLAIMS FOR CONSEQUENTIAL LOSS OF BUYER GROUP REGARDLESS OF CAUSE OR ACTION.

16.7. NOTWITHSTANDING ARTICLE 16.3(a), IN THE EVENT BUYER GROUP PROVIDES PRODUCTS, PARTS OR SERVICES USING SELLER'S PRODUCTS AND/OR PARTS TO A THIRD PARTY OR USES SELLER'S PRODUCTS AND/OR PARTS AT A FACILITY OR SITE NOT OWNED BY BUYER, OR THE SELLER'S SERVICES ARE PERFORMED AT A FACILITY OR SITE NOT OWNED BY BUYER, BUYER SHALL INDEMNIFY SELLER GROUP FOR AND AGAINST ANY CLAIMS MADE IN EXCESS OF THE LIMITATIONS AND EXCLUSIONS SET FORTH IN THE CONTRACT, REGARDLESS OF CAUSE OR ACTION. IN THE EVENT BUYER ASSIGNS OR NOVATES THE CONTRACT, IN WHOLE OR IN PART, BUYER SHALL PROCURE THAT SUCH ASSIGNEE OR NOVATEE SHALL BE BOUND BY THE SAME TERMS OF THIS CONTRACT, AND BUYER HEREBY WAIVES ANY RIGHT TO CLAIM, WHETHER IN TORT (INCLUDING NEGLIGENCE), AT LAW, OR OTHERWISE, DAMAGES OR LIABILITIES OF ANY KIND IN EXCESS OF THE LIMITATIONS AND EXCLUSIONS SET FORTH IN THE CONTRACT.

16.8. Buyer and Seller each covenant and agree to support their mutual indemnity obligations under Article 16 by procuring and maintaining, at the indemnifying party's sole expense, insurance policies meeting the following requirements: (i) Workers Compensation/Employer's Liability as per Applicable Law; (ii) Comprehensive General Liability: Combined Single Limits for Bodily Injury and Property Damage \$2,500,000.00 (two and a half million) per occurrence and \$10,000,000.00 (ten million) in the aggregate (or its equivalent in another relevant currency), which may be satisfied through a combination of underlying and excess coverages. The parties agree that, to the extent of the indemnifying party's liability and indemnity obligations under this Contract, the indemnifying party's General Liability policies shall include the indemnified party Group as additional insured, be primary, and receive no contribution from any insurance policies maintained by or on behalf of the indemnified party. Each party, on request, shall provide to the other party insurance certificates evidencing the aforementioned limits and terms of insurance. Buyer and Seller shall each arrange for any of their respective insurance policies hereunder to contain provisions whereby, to the extent of each party's liability and indemnity obligations under this Contract, their insurers waive their rights of subrogation against the other party's Group, as well as the other party's respective insurers.

17. **NO NUCLEAR USE** – The Products, Parts, and/or Services are not intended or authorized for use in connection with any nuclear facility or activity, and Buyer warrants that it shall not use, or permit others to use, Products, Parts, and/or Services in connection with or for any such purposes without the advance written consent of Seller. If, in breach of the foregoing, any such use occurs, Seller hereby disclaims any and all liability for any nuclear or other damage, injury, or contamination REGARDLESS OF CAUSE OR ACTION. In addition to any other rights of Seller and to the maximum extent permitted under Applicable Law, Buyer assumes sole responsibility for, and shall Indemnify Seller Group from and against, any and all Claims asserted by or in favor of any person or party resulting from any nuclear or other damage, injury, or contamination REGARDLESS OF CAUSE OR ACTION. Consent of Seller to any use in connection with any nuclear facility or activity, if any, will be conditioned upon additional terms and conditions that Seller determines to be acceptable for protection against nuclear liability.

18. **ADDENDA** – If any Products or Parts include executable binary code or Seller provides any Products that are hosted

services, software, software as a service or software that is installed on Buyer Group's equipment, the terms of the annexed Software Addendum shall apply. If Seller is providing hosted services or software as a service, the annexed Hosted Services Addendum shall also apply. If Seller provides rental equipment, the terms of the annexed Rental Equipment Addendum shall apply. If there is any conflict between these Terms and Conditions and the terms of any applicable addendum, the terms of the addendum shall prevail unless otherwise agreed in writing.

19. GOVERNING LAW – The Contract shall be governed by and construed in accordance with the laws of (a) the State of New York, if Seller is incorporated in the U.S.; or (b) England and Wales, if Seller is incorporated outside the U.S., excluding in any case conflict of law rules. The parties acknowledge and agree that the United Nations Convention on Contracts for the International Sale of Goods and Uniform Computer Information Transactions Act as enacted by any state, will not apply to the Contract.

20. DISPUTE RESOLUTION – Any dispute arising out of or in connection with the Contract shall be referred to settlement proceedings under the International Chamber of Commerce (ICC) Mediation Rules, without prejudice to either party's right to seek emergency, injunctive, or conservatory measures of protection at any time. If any such dispute has not been settled within sixty (60) days following the filing of a Request for Mediation (or such other period of time as may be reasonable under the circumstances or agreed in writing), the dispute shall be finally settled in accordance with the ICC Rules of Arbitration by one or more arbitrators appointed under said Rules. The seat, or legal place, of arbitration shall be (a) New York, N.Y., if Buyer is incorporated in the U.S.; or (b) Geneva, Switzerland, if Buyer is incorporated outside the U.S. Mediation and Arbitration proceedings shall be conducted in English.

21. GENERAL CLAUSES

21.1. Except as otherwise expressly provided with regard to the members of each party's Group, none of the terms herein are intended to be enforced by third parties under the United Kingdom Contracts (Rights of Third Parties) Act (1999), where applicable, or any other law. Buyer and Seller shall be entitled to modify, vary, amend, and/or extinguish such rights without the consent of any third parties or member of either party's Group.

21.2. The Contract represents the entire agreement between the parties and no modification, amendment, rescission, waiver, or other change shall be binding on either party unless agreed to in writing by their authorized representatives. Each party agrees that it has not relied on or been induced by any representations of the other party not contained in the Contract.

21.3. The invalidity in whole or in part of any part of the Contract shall not affect the validity of the remainder of the Contract. In the event any provision of the Contract is held invalid or unenforceable, only the invalid or unenforceable part of the provision shall be severed, leaving intact and in full force and effect the remainder of the sentence, clause, and provision to the extent not held invalid or unenforceable.

22. U.S. GOVERNMENT CONTRACTS

22.1. This Article 22 applies only if the Contract is for the direct or indirect sale to any agency of the U.S. government and/or is funded in whole or in part by any agency of the U.S. government. Buyer agrees that all Products, Parts, and Services provided by Seller meet the definition of "commercial-off-the-shelf" ("COTS") or "commercial item" as those terms are defined in Federal Acquisition Regulation ("FAR") 2.101. To the extent the Buy American Act, Trade Agreements Act, or other domestic preference requirements are applicable to the Contract, the country of origin of Products/Parts is unknown unless otherwise specifically stated by Seller in the Contract. Buyer agrees any Services offered by Seller are exempt from the Service Contract Act of 1965 (FAR 52.222-41). The version of any applicable FAR clause listed in this Article 22 shall be the one in effect on the effective date of the Contract.

22.2. If Buyer is an agency of the U.S. government, then as permitted by FAR 12.302, Buyer agrees that all paragraphs of FAR 52.212-4 (except those listed in 12.302(b)) are replaced with these Terms and Conditions. Buyer further agrees the subparagraphs of FAR 52.212-5 apply only to the extent applicable for sale of COTS and/or commercial items and as appropriate for the Contract Price.

22.3. If Buyer is procuring the Products, Parts, or Services as a contractor, or subcontractor at any tier, on behalf of any agency of the U.S. government, then Buyer agrees that FAR 52.212-5(e) or 52.244-6 (whichever is applicable) applies only to the extent applicable for sale of COTS and/or commercial items and as appropriate for the Contract Price. If the reasonableness of the price cannot be established through adequate price competition, or if cost or pricing data should be required for any other reason, or if a Product, Part, or Service cannot be considered a "commercial item", Seller may terminate the Contract without penalty and shall be reimbursed for work performed before the effective date of termination.

22.4. Seller reserves the right to reject any order from a Buyer listed on any denied party list.

8.2 Baker Hughes LLC Terms and Conditions



SOFTWARE LICENSE AND SECURITY ADDENDUM

TO THE GENERAL TERMS & CONDITIONS FOR SALE/LICENSING OF PRODUCTS, PARTS, AND/OR SERVICES – **DIGITAL SOLUTIONS**

NOTICE: This Software License and Security Addendum ("Addendum") is incorporated by reference into and made a part of the Contract between the Buyer and Seller. Any additional or different terms proposed by Buyer are expressly objected to and shall not be binding upon Seller unless expressly accepted in writing by Seller's authorized representative.

1. DEFINITIONS. Any capitalized terms used but not otherwise defined herein shall have the meaning ascribed to them below or in the Terms and Conditions, as the case may be. The following terms are applicable to both the singular and the plural and shall mean:

"Contract" means either the contract agreement signed by both parties or the purchase order signed by Buyer and expressly accepted by Seller in writing, together with the applicable Terms and Conditions, addendums to the Terms and Conditions and any other documents incorporated by reference, Seller's Proposal, and any agreed scope of work for the sale of Products, Parts, and/or Services, and/or licensing of Software.

"Designated Hardware" means the computer equipment specified in the Contract or such additional equipment as the parties may from time to time designate in writing.

"Derivative Works" means: (a) any work based upon one or more pre-existing works, including, but not limited to, a revision, enhancement, modification, translation, abridgement, condensation, expansion, extension or any other form in which such pre-existing works may be published, recast, transformed, or adapted, and that if prepared without the authorization of the owner of the copyright to such pre-existing works, would constitute a copyright infringement, and/or (b) any compilation that incorporates such pre-existing works. For Software, Documentation, and Third-Party Software, Derivative Works also includes any and all corrections, bug fixes, and updates to the (i) Software, (ii) Documentation, (iii) Third-Party Software, and (iv) Derivative Works, but does not include Licensee Developments.

"Documentation" means all product manuals, technical specifications, and user instructions regarding the capabilities, operation, installation, and use of the Products, Part, Services, software and/or third-party software, whether in printed, on-line, or electronic form (except training materials), as may be made available or updated by Seller from time to time.

"Error" means a material failure of the Software to perform substantially in accordance with its Documentation, which failure is demonstrable in the environment for which the Software was designed.

"License Term" means the duration of the License (as defined in Article 2.1 of this Addendum) for a particular item of Software, as specified in the applicable purchase order accepted by Licensor in writing, unless otherwise terminated earlier pursuant to this Addendum or the Contract.

"Licensee" means the Buyer defined in the Terms and Conditions. The terms "Licensee" and "Buyer" are used interchangeably hereunder.

"Licensee Developments" means any software code created by Licensee (i) to improve the usability of the Software, Third Party Software or Derivative Works, as may be permitted in the Documentation, or (ii) as a software patch. Licensee Developments are not Derivative Works as defined in the Terms and Conditions.

"Licensor" means the Seller defined in the Terms and Conditions. The terms "Licensor" and "Seller" are used interchangeably hereunder.

"Monitoring Software" means Software designed for the remote, real-time performance, health, failure, tracking, and/or up-time monitoring and management of field equipment and related systems.

"Open Source Software" means any software that is distributed as "free software", "open source software", or under a similar licensing or distribution model, including without limitation the GNU General Public License (GPL), GNU Affero GPL License, GNU Lesser General Public License (LGPL), Mozilla Public License (MPL), BSD licenses, the Artistic License, the Netscape Public

License, the Sun Community Source License (SCSL), the Sun Industry Standards License (SISL), and the Apache License.

"Software" means Licensor's proprietary computer software and software security devices licensed by Licensor under the Contract but excludes any Third-Party Software.

"Terms and Conditions" means the Baker Hughes Company General Terms & Conditions for Sale/Licensing of Products, Parts and/or Services, or other terms and conditions mutually agreed to by Licensee and Licensor, to which this Addendum is attached, referenced or incorporated into.

"Third-Party Software" means any computer software owned or licensed by a third party that Licensor may provide to Licensee under the Contract, which may include but is not limited to Open Source Software.

"Workstation" means any configuration of computer equipment at which a single operator works.

2. SOFTWARE LICENSE GRANT

2.1. Subject to the terms of the Contract, Licensor hereby grants to Licensee a non-transferrable, non-sublicensable, nonexclusive limited license during the License Term for Licensee to use the Software set forth in the applicable purchase order accepted by Licensor in writing and its associated Documentation, including upgraded, modified, or enhanced versions as may be furnished to Licensee by Licensor, and to use any Third-Party Software included therewith or therein, solely for Licensee's internal business purposes ("License").

2.2. Licensee agrees it shall not, and shall not permit or enable any other party to (a) modify or create Derivative Works of the Software, Software Documentation, or Third-Party Software; (b) lease, rent, transfer, distribute, sublicense, timeshare, or allow third parties to access Software, Software Documentation, or Third-Party Software, nor assign any rights hereunder to a third party without Licensor's prior written agreement; (c) disassemble, decompile, reverse engineer, or otherwise attempt to reconstruct or discover the source code of the Software or Third-Party Software, unless such a right is explicitly granted by any explicit license referred to in Article 2.3 below or as a matter of law, and then only to the extent explicitly permitted; (d) pledge Software or Third-Party Software as collateral or otherwise, or encumber such Software or Third-Party Software with any lien or security interest; (e) access or use the Software or Third-Party Software in a way intended to avoid incurring fees or exceeding usage limits or quotas; or (f) remove, alter, or obscure any product identification, copyright, trademark, or other notice from Software, Documentation, or Third-Party Software. If Licensee believes that it is entitled to reverse engineer Software as a matter of local law, Licensee agrees that it shall first request technical information from Licensor. Licensee shall use any technical information delivered by Licensor only for purposes of ensuring "interoperability" and compatibility and shall treat such technical information as Confidential Information of Licensor. Any reverse engineering or unauthorized modification of Software shall void any warranties or indemnification obligations of Licensor and shall automatically release Licensor from any obligation to provide support services under this or any separate agreement.

2.3. Certain software Licensor provides to Licensee may contain Open Source Software or other Third-Party Software. Open Source Software and Third-Party Software may be supplied to Licensee under a separate license agreement, which shall govern Licensee's use thereof. Licensee shall not modify or combine Software and/or any Open Source Software or Third-Party Software in any manner that could cause, or could be interpreted or asserted to cause, Software or any modifications thereto to become subject to the terms of any license applicable to Open Source Software or Third-Party Software. All Third-Party Software

provided hereunder is bundled with Software and licensed for use only with such Software. If and to the extent there is a conflict between the Contract and the license terms for any Open Source Software, the Open Source Software license terms control as to the software covered by those terms.

2.4. The specific types and physical location of monitored equipment, and numbers of licenses granted to Licensee, are designated in the applicable proposal or purchase order document as follows:

- **Seat License.** A license corresponding to an individual Workstation.
- **Site License.** A license corresponding to a designated Site regardless of the number of Workstations therein.
- **Enterprise License.** A license corresponding to an entire Buyer Group organization regardless of the number of Sites or Workstations.
- **Processor License.** A license corresponding to a number of processors in the Designated Hardware regardless of the number of end users.

2.5. Licensee may make one copy of Software, Documentation, and Third-Party Software for backup purposes only. Licensee must reproduce and include all proprietary rights and copyright notices on any such backup copies. Except as authorized under this Addendum, no copies of Software, Documentation, or Third-Party Software may be made by Licensee or any third party; provided, however, Licensee may print on-line Documentation for its own internal use, provided the maximum number of copies may not exceed the number of users licensed hereunder.

2.6. During the License Term and for three (3) years thereafter, Licensor may upon reasonable notice require that an independent audit of the use of Software and Third-Party Software be conducted during Licensee's normal business hours. Upon such notice, Licensee shall provide Licensor's independent auditor Site access and the right to inspect relevant portions of Buyer Group's computer systems on which Software and Third-Party Software resides. Licensee agrees to pay promptly: (a) all underpaid license fees and (b) if the underpayment is more than 5% of the license fees, all audit costs and expenses.

2.7. IF LICENSEE TRANSFERS POSSESSION OF ANY COPY OF THE SOFTWARE, DOCUMENTATION, OR THIRD-PARTY SOFTWARE TO ANOTHER PARTY WITHOUT WRITTEN CONSENT OF LICENSOR, THIS LICENSE IS AUTOMATICALLY TERMINATED. Any attempt otherwise to sublicense, assign, or transfer any of the rights, duties, or obligations under this Addendum is void.

2.8. This Contract does not obligate Licensor to provide maintenance and support for any Software or Third-Party Software licensed hereunder. Support services are available, as applicable, under separate agreement or as set forth in an applicable purchase order accepted by Licensor in writing. If Software is an upgrade of a previous version, Licensee may use the upgraded Software only in accordance with the Contract.

3. DELIVERY AND TRANSFER OF TITLE

3.1. With regard to Software, Software Documentation, and Third-Party Software, unless otherwise specified in the applicable purchase order: (a) such items will be made available online and/or for electronic download by Licensee; and (b) Licensor shall be deemed to have delivered such items when Licensor first makes them available for Licensee to access or download. Delivery shall not be determined by the date when Licensor makes available any upgraded, modified, or enhanced versions of the Software, Documentation, or Third-Party Software as may be furnished to Licensee. If the Contract specifies that any Software, Documentation, or Third-Party Software is to be delivered to Licensee on physical media, then delivery of physical media will be made CPT Licensee's facility (Incoterms 2020). Delivery of Software that is embedded in or included with Products shall be according to the Delivery terms for the applicable Product.

3.2. Software, Documentation, and Third-Party Software shall be considered accepted by Licensee upon Delivery.

3.3. Licensor or its relevant Group member or third-party licensor shall retain title to any Software, Documentation, and Third-Party Software furnished by Seller Group to Buyer Group. No title to the Software, Documentation, or Third-Party Software, including any Software embedded in or included with Products, is transferred to Buyer Group.

4. OWNERSHIP

4.1. All Software, Documentation, and Third-Party Software are licensed and not sold. Licensee agrees that Licensor or its suppliers own all proprietary rights, including, but not limited to any patent, copyright, trade secret, trademark, and other proprietary rights, in and to Software, Documentation, and Third-Party Software, including any Derivative Works thereof regardless of the source of development, including but not limited to cases where Licensee engages a third party to perform such development and any corrections, bug fixes, and updates to such Software, Documentation, Third-Party Software, or Derivative Works.

4.2. To the extent that any Derivative Works of the Software or Third-Party Software are developed, Licensee hereby (a) agrees that the intellectual property rights to such Derivative Works are automatically vested in Licensor (or its Affiliates, in Licensor's sole discretion) or in the owner of Third-Party Software, as applicable, and may be used by Licensor (or the owner of any Third-Party Software Derivative Works) without limitation and without any obligation to Licensee on behalf of Licensor and/or such other relevant owner; (b) irrevocably transfers and assigns, and agrees to transfer and assign, to Licensor all intellectual property rights, moral rights, title, and interest throughout the world in and to any such Derivative Works, including, but not limited to, all rights in and to any inventions and designs embodied in such Derivative Works or its associated technology; (c) agrees and forever waives any right to assert any claim contrary to (a) and (b) in this Article 4.2; and (d) agrees to take all steps necessary to fulfill the requirements as set forth in this Article 4.2 for any such Derivative Works whether developed by Licensee or by any third party under Licensee's direction. If by operation of law such rights are not automatically transferred and assigned as provided above, Licensee shall timely execute and deliver such instruments and take such other action as may be requested by Licensor to perfect and protect Licensor's (or Third-Party Software owner's) rights in any Derivative Works and to carry out the assignments effected by this Article 4 at no cost to Licensor.

4.3. Notwithstanding the foregoing, Licensor grants Licensee a "right to use" license to any Derivative Works created by Licensee or a third party under Licensee's direction, but solely for Licensee's internal business purposes only under the same terms and conditions that apply to Software, Documentation, or Third-Party Software under Article 2 herein.

4.4. Licensee may voluntarily, from time to time, provide suggestions, techniques, know-how, comments, feedback or other input to Licensor with respect to the Software (collectively, "Feedback"). Licensor will be free to use, disclose, reproduce, license or otherwise distribute and exploit all Feedback as it sees fit, without obligation or restriction based on intellectual property rights, confidentiality or otherwise. Licensee will not give any Feedback that is subject to license terms or restrictions that purport to require any Software, Documentation, service or product incorporating or derived from such Feedback, or any Licensor intellectual property, to be licensed or otherwise shared with Licensee or any third party. For the avoidance of doubt, this paragraph does not grant to Licensor any intellectual property rights in Licensee's preexisting technology.

4.5. For the purposes of this Article 4, the term "Licensor" shall mean Licensor, its Affiliates, and their successors or assigns.

5. LIMITED SOFTWARE WARRANTIES; DISCLAIMERS

5.1. Licensor warrants, for Licensee's benefit alone, that for a period of 90 days from the Delivery Date of the original Software ("Software Warranty Period"), the Software will perform substantially in accordance with its Documentation. If, during the

Software Warranty Period, an Error occurs, Licensor will use commercially reasonable efforts to correct such Error, provided Licensee furnishes Licensor with the following: (a) written notice of the Error during the Software Warranty Period, including a description of the failure to perform in accordance with the Documentation and a specific description of the operating conditions (including the specific software/hardware configuration) under which the Error occurred, and (b) to the extent feasible, a representative sample of inputs for repeating and analyzing the Error. If Licensor is unable, after commercially reasonable efforts, to correct the Error during the Software Warranty Period, Licensee's sole remedy shall be termination of the License and a refund of a pro-rated portion of the license fees allocable to the specific nonconforming Software that have been paid by Licensee to Licensor under the Contract; provided, however, that such termination right must be exercised by Licensee, if at all, within 30 days after expiration of the Software Warranty Period or shall thereafter be deemed to have been waived by Licensee. Notwithstanding anything to the contrary herein, under no circumstance will any warranty granted herein cover and Licensor shall not be responsible under the Contract for: (a) any Error that results from Licensee's breach of the Contract; (b) any Error that results from any unauthorized use, alteration, revision, change, enhancement, or modification of any nature of the Software, or from any design defect in any configuration of the Software performed by any party other than Licensor; (c) any Error that results from errors, defects, or modifications in any hardware, software, system, or data used by Licensee, in each case that was not provided by Licensor; (d) any Error that results from use of the Software in combination with any hardware, software, or system not provided or authorized by Licensor; (e) any Error that results from cyber-attacks, viruses, worms, malware, Trojan horses, or other harmful surreptitious computer code, files, scripts, agents, or programs; or (f) Errors or vulnerabilities that would have been obviated had Licensee implemented a recommended update or upgrade made available at no additional charge from Licensor.

5.2. This Article 5 provides the sole and exclusive remedies for all Claims based on or relating to any failure of, or any defect or non-conformity in, Software and Documentation, whether the Error, failure, defect, or non-conformity arises before, during, or after the applicable Software Warranty Period and REGARDLESS OF CAUSE OR ACTION (INCLUDING NEGLIGENCE). THE WARRANTIES PROVIDED IN THIS ARTICLE 5 ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS, AND GUARANTEES PERTAINING TO THE SOFTWARE. LICENSOR MAKES NO, AND HEREBY DISCLAIMS ANY, IMPLIED OR STATUTORY WARRANTY, OR WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, OR NON-INFRINGEMENT, OR TO THE ACCURACY, CURRENCY, COMPLETENESS, RELIABILITY, OR USEFULNESS OF ANY OUTPUT OF THE SOFTWARE. LICENSOR DOES NOT MAKE ANY WARRANTY THAT THE SOFTWARE WILL MEET LICENSEE'S REQUIREMENTS, OR THAT THE SOFTWARE WILL BE UNINTERRUPTED, TIMELY, SECURE, OR ERROR FREE, OR THAT DEFECTS, IF ANY, WILL BE CORRECTED. NOR DOES LICENSOR MAKE ANY WARRANTY AS TO THE RESULTS THAT MAY BE OBTAINED FROM USE OF THE SOFTWARE. LICENSOR ASSUMES NO RESPONSIBILITY FOR ANY DAMAGES SUFFERED BY LICENSEE, INCLUDING, BUT NOT LIMITED TO, LOSS OF DATA FROM DELAYS, NONDELIVERIES OF CONTENT OR EMAIL, ERRORS, SYSTEM DOWNTIME, MISDELIVERIES OF CONTENT OR EMAIL, NETWORK OR SYSTEM OUTAGES, FILE CORRUPTION, OR SERVICE INTERRUPTIONS CAUSED BY THE NEGLIGENCE OF LICENSOR, ITS AFFILIATES, ITS LICENSORS, OR AN END USER'S OWN ERRORS AND/OR OMISSIONS.

5.3. Additional Warranty Disclaimer for Monitoring Software. While the Monitoring Software provides advisory information regarding equipment condition, it is virtually impossible to guarantee that each and every fault condition can be foreseen or detected. THEREFORE, LICENSOR EXPRESSLY DISCLAIMS ANY WARRANTY THAT THE MONITORING SOFTWARE WILL DETECT ANY PARTICULAR FAILURE OR PROVIDE ANY PARTICULAR

AMOUNT OF ADVANCE WARNING OF AN IMPENDING FAILURE OR CONDITION OF THE MONITORED EQUIPMENT.

5.4. Additional Warranty Disclaimer with Respect to Cyber Security. PRODUCTS, PARTS, AND SERVICES ARE PROVIDED "AS IS AND WITH ALL FAULTS" WITH RESPECT TO CYBER SECURITY, AND WITHOUT ANY REPRESENTATIONS, WARRANTIES, CONDITIONS, OR GUARANTEES OF ANY NATURE OR KIND WHATSOEVER, INCLUDING ANY REPRESENTATIONS, WARRANTIES, CONDITIONS, OR GUARANTEES OF OR RELATING TO DURABILITY, FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, PERFORMANCE, QUALITY, RESULTS, SUITABILITY, TIMELINESS; ALL OF WHICH ARE HEREBY DISCLAIMED TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW. LICENSEE IS SOLELY RESPONSIBLE AND LIABLE FOR THE SELECTION AND USE OF PRODUCTS, PARTS AND SERVICES TO ACHIEVE LICENSEE'S DESIRED RESULTS. REMEDIATION OF VULNERABILITIES SHALL NOT OBLIGATE LICENSOR TO PROVIDE LICENSEE ANY UPDATES OR UPGRADES, BUT LICENSEE MAY PURCHASE SUCH ENHANCEMENTS.

5.5. Any remedial steps taken by Licensor hereunder shall not extend or renew the applicable Software Warranty Period.

5.6. Except as expressly authorized by Licensor in writing, and subject to the following in this Article 5.6, all Third-Party Software shall carry only the warranties (if any) provided by the owners thereof and Licensor gives no warranties for such Third-Party Software. Except as expressly authorized by Licensor in writing, any Open Source Software is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED.

5.7. Licensee acknowledges that Licensor may, but is not obligated to, offer upgraded or optional Software that provides additional functionality and security, which may be subject to additional fees in Licensor's discretion.

5.8. Except as expressly provided in Article 5.1 above or as otherwise expressly provided in the Contract, all amounts payable in connection herewith are non-refundable.

6. CONFIDENTIALITY; EQUITABLE RELIEF

6.1. The Software, Documentation and Third Party Software, and all information concerning or embedded in the Software (including but not limited to source code, object code, and training materials), Documentation, and Third-Party Software is confidential and the property of Licensor (or its suppliers) and shall be considered Licensor's (or its suppliers') Confidential Information, whether or not the information is marked as such. In granting cyber and/or unescorted physical access to Products and/or Parts, Seller may provide log-on codes, log-on identifications, passwords, and/or other individualized explicit access permissions (collectively "Access Codes"). Access Codes are subject to the confidentiality provisions of the Contract and shall not be disclosed or shared with any other person other than authorized users.

6.2. Licensee shall take all reasonable steps to safeguard the Software, Documentation and Third-Party Software so as to ensure that no unauthorized person shall have access to it, and that no persons authorized to have access shall make any unauthorized copy. Licensee shall promptly report to Licensor any unauthorized disclosure or any unauthorized use of any Software, Documentation or Third-Party Software of which it becomes aware and shall take such further steps as may reasonably be requested by Licensor to prevent unauthorized use.

6.3. Licensee acknowledges: (a) any use of Software, Documentation, or Third-Party Software in a manner inconsistent with the Contract or (b) any other misuse of Confidential Information of Licensor (or its suppliers), will cause immediate irreparable harm to Licensor (or its suppliers) for which there is no adequate remedy at law. Licensee agrees that Licensor (or its suppliers) shall be entitled to immediate and permanent injunctive relief from a court of competent jurisdiction in the event of any such misuse or threatened misuse by Licensee. The parties agree and stipulate that Licensor shall be entitled to such injunctive relief without posting of a bond or other security;

provided, however, that if the posting of a bond is a prerequisite to obtaining injunctive relief, then a bond in an amount equivalent to USD \$1,000 shall be sufficient. Nothing contained herein shall limit Licensor's right to any remedies at law, including the recovery of damages from Licensee for breach of the Contract or Addendum.

7. TERM AND TERMINATION – The License provided under this Addendum is effective until terminated or expiration of the License Term, whichever occurs first. Licensor may terminate the Contract and/or Addendum immediately if Licensee fails to comply with any of the terms and conditions herein or in the Contract. The License for any Software or Third-Party Software provided with leased equipment shall terminate concurrently with termination of the lease, unless earlier terminated hereunder. Immediately upon termination, Licensee shall (a) cease using Software, Documentation, and Third-Party Software and (b) certify to Licensor within one (1) month of the termination that Licensee has destroyed or returned to Licensor the Software, Documentation, and Third-Party Software, and all copies thereof. Termination will not relieve Licensee of the obligation to pay any fees and other charges accrued or payable to Licensor prior to the effective date of termination.

8. CYBER SECURITY

8.1. This Article 8 shall apply if (a) any Products supplied under the Contract contain Software and/or are designed to be operated in a networked environment, and/or (b) any Services (including Hosted Services) supplied under the Contract include a software or networked component. In the event of any inconsistency or conflict between this Article 8 and any other provision of the Contract or Addendum with respect to a subject covered by this Article 8, the provision requiring the more stringent requirement shall prevail.

8.2. LICENSEE ACKNOWLEDGES AND AGREES THAT: (a) CYBER SECURITY IS A DYNAMIC AND CHANGING AREA; AND (b) PRODUCTS, PARTS AND SERVICES, WHEN CONFIGURED AND USED IN ACCORDANCE WITH APPLICABLE DOCUMENTATION, ARE DESIGNED TO DETECT AND PREVENT ONLY CERTAIN VULNERABILITIES AND UNAUTHORIZED INTRUSIONS BASED UPON A FINITE SET OF TEST CASES, AND DO NOT PROVIDE COMPLETE OR COMPREHENSIVE PROTECTION AGAINST ALL POSSIBLE SECURITY VULNERABILITIES OR UNAUTHORIZED INTRUSIONS.

8.3. Without limiting any of the obligations under Articles 8.5 and 8.6 below, Licensee shall and shall cause the rest of the Buyer Group (including the Site owner, if not part of the Buyer Group) to: safeguard the Products and Parts so as to ensure that no unauthorized person shall have access to them; and ensure that any Buyer Group employees or agents who may come in contact with the Products or Parts is made aware of the obligations described herein and abide by them. Seller Group shall have a right to access the Products or Parts at the Site at all reasonable times to verify such requirements.

8.4. The Products and/or Parts may be partially or wholly configured by Licensor at the time of Delivery to minimize known cyber security risk as of the effective date of the Contract. To the extent that Licensee or its Group alters the hardware, Software, connections, or configuration of the Products and/or Parts in a way not recommended by Seller Group, it does so at its own risk. In the event that Buyer Group acts in violation of this Article 8, or inconsistently with the recommendations of Seller Group, Seller Group shall not be liable, whether in contract, warranty, tort (including negligence), strict liability, or otherwise, for any damages or costs incurred by Buyer Group; and Licensee shall indemnify Seller Group from any and all Claims, including without limitation costs related to credit monitoring, arising out of or related to any occurrence that may arise out of a violation of this Article 8.

8.5. Licensee is responsible for protecting Buyer Group's managed infrastructure, including computer systems and equipment used in interactions with Seller Group, with such tools as anti-virus software, firewall, and up to date operation systems.

Licensee is responsible for the operation, control, and maintenance of any monitored equipment and ensuring that Buyer Group's computer systems and monitored equipment meet the current technical requirements as may be specified by Licensor for the Products, Parts, and Services. Licensee shall, and shall procure that Buyer Group shall, comply with Seller Group's secure deployment guidelines applicable to the Products, Parts, and/or Services. Licensee shall procure that neither Buyer Group nor its users will take any action to circumvent any security feature or attempt to exceed authorized access to the Products, Parts, or Services or its related systems or networks; interfere with or disrupt the integrity or performance of the Products or Services or the data contained therein; or send or store material containing software viruses, worms, Trojan horses or other harmful computer code, files, scripts, agents or programs. If Buyer Group becomes aware of any violation of the Contract by a user, Licensee will procure that Buyer Group will immediately terminate such user's access to the Products and/or Services and notify Licensor. Licensee shall, and shall procure that Buyer Group shall, report to Baker Hughes any unauthorized accesses to and/or disclosure of Licensor information, and any known or reasonably suspected breaches of the Licensor's Software, systems, and/or Services ("Licensor Security Incident") by calling the following numbers:

- +1 281 209 7658 (Western Hemisphere)
- +60 2786 7658 (Eastern Hemisphere)

Notifications shall be made within seventy-two (72) hours of Buyer Group's knowledge of such Licensor Security Incident. Licensee shall, and shall procure that Buyer Group will, promptly conduct a forensic investigation of such Licensor Security Incident and provide a summary of the Licensor Security Incident and explanation of its response as soon as reasonably practicable.

8.6. Buyer Group's credentials (which may include username, passwords, tokens, certificates, Access Codes, keys, and pins) issued by Seller or selected by Buyer Group for accessing the Products or Services are for Buyer Group's internal use only and Buyer Group shall not sell, transfer, disclose, or sublicense them to any other entity or person, except that Buyer Group may disclose Buyer Group's credentials to Buyer Group's agents and subcontractors performing work on Buyer Group's behalf. Licensee is responsible for any use of Buyer Group's credentials and for notifying Licensor immediately of any breach of security related to Buyer Group's credentials. Buyer Group shall be responsible for the actions of any user or any other person or entity in relation to the Contract, Buyer Group's information, or the Products or Services to the extent that any such action was permitted, assisted, or facilitated by Buyer Group.

9. SUPPLEMENTAL LIMITATIONS OF LIABILITY FOR SOFTWARE AND CYBER SECURITY. The following limitations of Licensor's liability are in addition to those set forth herein above and elsewhere in the Contract. To the extent they conflict, this Article 9 shall take precedence over the Terms and Conditions and any Addendums thereto with respect to Software, Third-Party Software and Cyber Security.

9.1. WITH REGARD TO SOFTWARE AND THIRD-PARTY SOFTWARE, IN NO EVENT SHALL SELLER GROUP'S TOTAL LIABILITY FOR ANY AND ALL CLAIMS OF ANY KIND, REGARDLESS OF CAUSE OR ACTION, ARISING OUT OF OR RELATED TO THE CONTRACT, OR ITS PERFORMANCE OR BREACH, INCLUDING WITHOUT LIMITATION WARRANTY AND TERMINATION, UNDER ANY CIRCUMSTANCES EXCEED THE LESSER OF THE LIMITS SET FORTH IN THE TERMS AND CONDITIONS OR THE LICENSE FEES PAID BY LICENSEE TO LICENSOR WITH RESPECT TO THE SOFTWARE AND THIRD-PARTY SOFTWARE GIVING RISE TO THE CLAIM WITHIN 90 DAYS PRECEDING THE EVENT GIVING RISE TO THE LIABILITY.

9.2. Unless otherwise agreed by the parties in writing, the Licensee has sole responsibility for designing and implementing a solution that includes the Software and Products which will meet all appropriate requirements and/or standards. Licensor disclaims all liability for any damages arising as a result of any

non-conformance of Licensee's solution to requirements and/or standards.

9.3. Licensee acknowledges that the Monitoring Software generates advisory information but does not perform any automated control, and Licensor has no control over decisions made or actions taken on the basis of any such generated information. Licensee assumes total responsibility for its use of the advisory information generated by the Monitoring Software. TO THE EXTENT THE SOFTWARE INCLUDES MONITORING SOFTWARE, LICENSEE BEARS THE ENTIRE RISK OF ANY LIABILITY ARISING OUT OF OR RELATING TO THE USE OF THE SOFTWARE.

9.4. SELLER SHALL HAVE NO LIABILITY WHATSOEVER, WHETHER IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, FOR (I) ANY DAMAGE (INCLUDING, BUT NOT LIMITED TO LOSS OF DATA AND VIRUSES) TO THE BUYER GROUP'S OR SITE OWNER'S NETWORK, NETWORK CONNECTIVITY, CONNECTIVITY DEVICES, ANY PRODUCTS OR EQUIPMENT, AND/OR SYSTEMS OR PART THEREOF; (II) ANY UNAUTHORIZED ACCESS BY THIRD PARTIES TO THE BUYER GROUP'S NETWORK; (III) ANY PRODUCTS, PARTS SOFTWARE OR SERVICES THAT WERE NOT MANUFACTURED OR PERFORMED BY SELLER OR ITS AFFILIATES OR THAT HAVE BEEN ALTERED, MODIFIED, OR REVISED; (IV) THE COMBINATION, OPERATION, OR USE OF ANY PRODUCTS, PARTS SOFTWARE OR SERVICES WITH OTHER PRODUCTS, EQUIPMENT OR SERVICES WHEN SUCH COMBINATION IS PART OF ANY VULNERABILITY; (V) FAILURE OF BUYER GROUP OR SITE OWNER TO PURCHASE OR IMPLEMENT ANY UPDATE OR UPGRADE PROVIDED BY SELLER GROUP THAT WOULD HAVE PREVENTED THE VULNERABILITY; (VI) UNAUTHORIZED USE OF PRODUCTS, PARTS, SOFTWARE, OR SERVICES, INCLUDING, WITHOUT LIMITATION, A BREACH OF THE PROVISIONS OF THE CONTRACT; OR (VII) PRODUCTS, PARTS, SOFTWARE OR SERVICES MADE OR PERFORMED TO BUYER GROUP'S OR SITE OWNER'S SPECIFICATIONS; DIRECTLY OR INDIRECTLY ATTRIBUTABLE (IN WHOLE OR PART) TO (A) THE BUYER GROUP'S OR SITE OWNER'S NETWORK'S OR CONNECTIVITY DEVICES VULNERABILITY; OR (B) ANY ACTION OR OMISSION OF THE BUYER GROUP OR SITE OWNER, ITS EMPLOYEES, CONSULTANTS, AGENTS, REPRESENTATIVES; OR (C) ANY ACTION OR OMISSION OF A THIRD PARTY (INCLUDING, BUT NOT LIMITED TO, HOSTILE NETWORK ATTACKS BY ANY THIRD PARTY).

8.3 2021 Services Rate Sheet



Service rates applicable for work performed in:

Puerto Rico & US Virgin Islands

Baker Hughes Puerto Rico, Inc.
 El Mundo Office Bldg. 383
 F.D. Roosevelt Ave, Suite 205
 San Juan, Puerto Rico 00918
 Tax ID 66-087-7495

Rates Effective January 2021 to December 2021

THIS RATE SCHEDULE PERTAINS ONLY TO THE SERVICES OFFERED IN THE FOLLOWING CONTRACT AND/OR QUOTATION, AND IS SUBJECT TO THE TERMS AND CONDITIONS THEREIN

THIS RATE SCHEDULE PERTAINS ONLY TO THE SERVICES OFFERED IN THE FOLLOWING CONTRACT AND/OR QUOTATION, AND IS SUBJECT TO THE TERMS AND CONDITIONS THEREIN

		Contract Number	Quotation Number
HOURLY RATES			Published Rates
	Tier 5	Controls Technical Advisor (TA) (Fossil, Aero, and Nuclear) – A field advisor trained in the installation, operation, troubleshooting, and commissioning of Turbine and/or Generator Control Systems Cyber Security Technical Advisor – A field advisor trained in the installation, operation, troubleshooting, and commissioning of Network Cyber Security Systems	USD 380.00
	Tier 4	Training Instructor – A professional training instructor for Turbine Controls, Generator Controls, or Network Cyber Security	USD 303.00
	Tier 3	Site Project Manager (SPM) – Onsite manager for project planning, organization, integration, and monitoring of resources (labor, supervisors, and tools)	USD 285.00
	Tier 2	Controls Technical Advisor (Hydro, DCS, and Industrial) – A field advisor trained in the installation, operation, troubleshooting, and commissioning of Turbine and/or Generator Control Systems Field Installation Technician – An installation technician trained in the installation of Turbine and/or Generator Controls Systems, and craft labor supervision	USD 225.00
	Tier 1	Craft Labor Supervisor (DCS and Industrial)	USD 180.00
MULTIPLIERS	Normal Monday-Friday (non-holidays) for first 8 hours		1.0 x Base Rate
	Overtime 1 Saturdays; daily other than normal, but less than 12 consecutive hours		1.5 x Base Rate
	Overtime 2 Sundays; Public Holidays; or after 12 consecutive hours		2.0 x Base Rate
PREMIUM	Emergency Response When response is required within 48 hours and a support agreement is not in force		USD 1,300.00 per event
	Special Working Conditions: Work on offshore platforms / vessels or work above the Arctic Circle / work in critical countries		USD 1,300.00 per day per employee
EXPENSES	Travel Expenses (T&E)- PER DIEM For any portion of day worked, by representative responsible for providing services, includes hotel, meals, or mileage.	64 Km or Less	USD 200.00 per day per employee
		More than 64 Km	USD 450.00 per day per employee
	Commercial Transportation: Air travel, rental car & train		cost + 20% admin expense
Freight: includes Shipping, and Excess Baggage		cost + 30% admin expense	
FEES	Minimum Charge		Eight (8) hours labor and T&L

Terms and Conditions:

- This rate sheet along with the quotation to which it is attached constitute an offer to sell and is based exclusively upon the items contain within and the terms and conditions referenced in the quotation.
- Hourly rates are subject to Rate Multipliers, Expense and Special Premiums.
- Workweek shall consist of five (5) eight (8) hour days, forty (40) hours per week, typically from 8:00 to 17:00 hrs, but may fall between 6:00 and 18:00 hrs depending on the customer's normal workweek.
- Weekends or holidays not worked but carried over, shall carry four (4) hours labor per day (no rate multiplier), plus expenses.
- Standby for any 24 hours day or part thereof will be charged at 8 hours + applicable rate multiplier.
- Due to safety reasons, the maximum work period including travel hours shall not exceed 12 hours in any 24 hours period.
- Travel time, and per diem expenses, will be charged at the applicable rate from the Field Service Representative's point of origin to the job site and return.
- Purchased Labor and Material (PL&M) will be billed at cost plus 25%, including contract labor.
- IVA taxes are not included and will be invoiced separately.
- For services in countries other than Puerto Rico or US Virgin Islands, the customer will pay all taxes and retentions.
- Critical countries defined at the discretion of BH and subject to change without notification.
- Rates provided herein are valid in the Puerto Rico & US Virgin Islands and are subject to change without notice.
- Administrative fees for special complicated time intense invoicing preparation. Invoicing requiring special text, special documentation, authorization codes, and/or portal uploads are subject to an administrative fee per invoice.

2021 Rev_0 Data subject to change without notice

2021 Digital Solutions, a Baker Hughes Company - BakerHughesDS.com

We would like to thank you for the opportunity to participate in your offer for Tender and we consider this opportunity of strategic importance to Baker Hughes. We look forward to partnering with you on this project and demonstrating our expanded portfolio and increased value proposition.

At Baker Hughes we are committed to "doing the right thing" which means Health Safety and Environment (HSE), Quality and Compliance are the foundation for all our actions and all our processes. We ensure that everything we do is safe, honest, and takes care of our people, our customers, the communities we operate in, and the environment. This means that HSE and Quality are built into everything we do, from how we design our products, to the way we plan and execute for our customers. We are proud of our track record and our first priority is always to HSE, Quality and Compliance.

Baker Hughes aims to provide our customers the best commercial and technical proposal possible. We asked our teams to access the entire Baker Hughes organization and leverage our unique position in the supply chain to provide a solution that will provide improved operational efficiency and results.



Attachment B

SOW	FACILITY NAME	PROJECT NAME	PROPOSED SCOPE OF WORK
1002	San Juan Power Plant	Units 5 & 6 New High-Pressure Pumps	Procurement and delivery of two high pressure water centrifugal pumps with a capacity of 276.6 cubic meter per hour and technical assistance to PREPA for the installation.
1007	San Juan Power Plant	Unit 7 Air Preheater Maintenance and Replacement	Removal and replacement of the existing air-preheaters cold and hot section's baskets, sector plates, adjusters, static seal, axial plates among other components and repair air heater out casing.
1008	San Juan Power Plant	Repairs to Nautilus Water Treatment System	Structural repair of steel floor, walls, application of interior and exterior anti-corrosive coating.
1010	San Juan Power Plant	Replacement of Two Uninterruptible Power Supply Systems for Units 7 and 8	Replacement of Two Uninterruptible Power Supply Systems for Units 7 and 8 - Replacement of 480 Vac Cables from emergency UPS - Replacement of 130 Vac Cables from emergency UPS - Installation of external electrical piping for UPS Cables - Training on UPS operation - Parts: UPS Cyberex PowerBuilt (ABB) Model: CW2U015-4833-121-1-6-21T0D & CW2U020-4833-121-1-6-T0D
1011	San Juan Power Plant	Units 7-10 New Raw Water Tank	Removal of existing steel raw water storage tank. Design and Build of a new 173,000 gallons steel raw water storage tanks, including interior and exterior coating application, instrumentation system for reading water levels and improvements to the existing tank's concrete base.
1014	San Juan Power Plant	Units 5-10 Heavy Equipment Rental Services	Service of heavy equipment such as 30 Ton, 50 Ton, 70 Ton, 100 Ton and 350 Ton cranes, including mobilization for the performance of repairs and major maintenance works of the main and auxiliary components of Units 5 through 10.

SOW	FACILITY NAME	PROJECT NAME	PROPOSED SCOPE OF WORK
1015	San Juan Power Plant	Water Treatment and Technical Assistance Cooling Water System	Service of operation and maintenance of a water treatment system for the cooling towers of power plant's auxiliary equipment. The treatment will protect the infrastructure of the cooling towers.
1023	San Juan Power Plant	Unit 6 - Major Overhaul (CT Repairs)	Inspection, repairs, and replacements of essential parts of the combustion turbine.
1026	San Juan Power Plant	Unit 6 - Major Overhaul (Steam Turbine)	Inspection, repairs, and replacements of essential parts of the Steam turbine.
2029 ⁵	Aguirre Power Plant	Unit 1 South Wall Boiler Tubing Replacement and Boilers Repairs	Partial rehabilitation of the south water wall between third and fourth floor on Unit 1 consisting of Boiler Tube Panels replacement.
2036	Aguirre Combined Cycle	Procurement of Stages 1, 2, 3 Turbine Rotor Bucket Set, Aguirre Combined Cycle	Buy rotor buckets for spare turbine rotor located at Allied Power Group facilities in Houston, TX. Complete rotor is necessary in case replacement is needed during 2022 HGP inspections (Units 1-1 or 1-2).
2037	Aguirre Combined Cycle	New Water Condensate Tank for the Aguirre Combined Cycle	Removal of existing steel water condensate storage tank. Design and Build of a new 287,000 gallons steel water condensate storage tank, including interior and exterior coating application, instrumentation system for reading water levels and improvements to the existing tank's concrete base.
2038	Aguirre Combined Cycle	Major inspection Unit 1-3	Remove Turbine Rotor for repair and balance, including rotor buckets. Replace turbine casing shrouds. Replace turbine nozzles, transition pieces and combustion liners with refurbished components. Inspect Compressor (rotor and stator). Inspect Generator (rotor and stator). Repair HRSG casing and exhaust duct.

⁵ Deferred project.

SOW	FACILITY NAME	PROJECT NAME	PROPOSED SCOPE OF WORK
2044	Aguirre Power Plant	Purchase and Installation Breakers 480 V	Procurement and installation of 12 - 600 A, 480 V Breakers and 4 - 1,600 A, 480 V Breakers for Normal Bus 1A EESS.
3046	Costa Sur Power Plant	Travelling Screens Replacement Costa Sur Power Plant – Unit 5 & 6	Removal and replacement of five galvanized steel travelling screens, with its auxiliary equipment of the power plant's sea water intake for the cooling of the condensers of Units 5 and 6. The work shall include an infrastructure to protect the fish and other marine, in compliance with Section 316 (b) of the Clean Water Act.
3047	Costa Sur Power Plant	Procurement and Replacement of Regulator Valves for Boiler Feed Water Units 5 & 6	Replace the regulators in units 5 & 6 by new ones built with the latest valves technology and material selection. This will improve the reliability and availability of the unit to control load and reduce operational cost since a forced outage to repair it can be avoided.
3048	Costa Sur Power Plant	Low Pressure Water Heater 3 Repair Work Costa Sur Power Plant – Unit 6	Design, manufacture, provide, deliver, and install new tubes for the Low-pressure heater 3 for Unit 6.
3059	Costa Sur Power Plant	CS 5 Major Outage Unit 5 - Boiler Sections Replacement and Repairs & Auxiliary Equipment Repairs	Procurement and delivery of materials and equipment for the October 2022 programmed outage.
3060	Costa Sur Power Plant	Water Heater 6 Replacement Work	Procurement and installation of the High-pressure Heater 6 for unit 5.
4079	Palo Seco Steam Plant	Upgrade to Mark VI, Palo Seco Power Plant – Units 3 & 4	Supply and installation of new Human Machine Interphase for operational and turbine control for both units 3 and 4.