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GOBIERNO DE PUERTO RICO
JUNTA REGLAMENTADORA DEL SERVICIO PÚBLICO
NEGOCIADO DE ENERGÍA DE PUERTO RICO

IN RE: TARIFA PERMANENTE DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA DE PUERTO RICO	**CASO NÚM.:** NEPR-MI-2020-0001 **ASUNTO:** Moción Para Presentar Informe de Reclamaciones, Reiterando Solicitud de Cambio de Cadencia Para Presentar Informe y Determinación de Confidencialidad

MOCIÓN PARA PRESENTAR INFORME DE RECLAMACIONES, REITERANDO SOLICITUD DE CAMBIO DE CADENCIA PARA PRESENTAR INFORME Y DETERMINACIÓN DE CONFIDENCIALIDAD

AL HONORABLE NEGOCIADO DE ENERGÍA:

COMPARECE la Autoridad de Energía Eléctrica de Puerto Rico (la "Autoridad"), a través de su representación legal, y muy respetuosamente expone, alega y solicita:

I. INFORME DE RECLAMACIONES

El pasado 24 de septiembre de 2020, el Negociado de Energía de la Junta Reglamentadora de Servicio Público ("Negociado de Energía") notificó una *Resolución y Orden* ("Orden del 24 de septiembre") que, en la parte aquí relevante, indica:

> 1. Presentar ante el Negociado de Energía un Informe semanal de Reclamaciones ("Informe de Reclamaciones"), en o antes de las 5:00 pm, de cada viernes. La Autoridad debe presentar el primer informe el 25 de septiembre de 2020. Dicho informe debe incluir las gestiones realizadas con relación a las reclamaciones presentadas por la Autoridad ante FEMA y la(s) compañía(s) de seguro(s). Dicho informe deberá estar acompañado de cualquier documento relacionado *(e.g.,* cartas, solicitudes, correos electrónicos). Este requisito permanecerá en vigor hasta tanto el Negociado de Energía determine lo contrario y es independiente y separado de cualquier solicitud de información establecida por el Negociado de Energía en algún otro proceso.
>
> …

> Adicional a la orden anterior, el Negociado de Energía añade los siguientes requerimientos:
>
> 1. La Autoridad debe incluir, en el primer Informe de Reclamaciones, un recuento de todas las reclamaciones hechas a la(s) compañía(s) de seguro privadas por concepto de "Extra Expense" a causa de los eventos sísmicos del pasado mes de enero [de 2020]. Incluyendo, pero sin limitarse a, el análisis utilizado para calcular los costos incrementales reclamados.
>
> 2. Asegurarse que las mociones utilizadas en futuras radicaciones incluyan una clara explicación de lo solicitado y la documentación de apoyo pertinente, de manera que los consumidores reciban información de una forma efectiva sobre los procedimientos de la Autoridad ante el Negociado de Energía y se minimice la necesidad de solicitar información adicional.
>
> 3. Cualquier desviación de las proyecciones sometidas en un periodo anterior debe ser claramente explicada en las mociones futuras de la Autoridad y representada de forma comparativa (proyección/estimado anterior vs. dato/evento real) mediante la utilización de graficas. Además, los documentos presentados en formato Excel también deberán ser presentados en formato PDF. La versión en formato PDF debe tener un tamaño de hoja que los datos sean legibles y utilizar márgenes predefinidos que minimicen el número de hojas del documento. Todo ello para facilitar la revisión de la información para los consumidores.

Orden del 24 de septiembre en pp. 3-4.

El 31 de julio de 2022, el Negociado notificó una *Resolución y Orden* ("Orden del 31 de julio") relacionada al Informe de Reclamaciones en la cual ordena a la Autoridad, entre otras cosas, a:

> incluir en los informes semanales información detallada debidamente actualizada de los esfuerzos realizados a tales efectos e incluir en dichos informes copia de cualquier documento, comunicación o trámite (*i.e.*, por la vía digital o impresa) entre la Autoridad y las agencias concernidas, incluyendo los tramites realizados ante la EPA con relación a los mega-generadores.

Orden del 31 de julio en p. 15.

En cumplimiento con las órdenes citadas arriba, la Autoridad presenta el Informe de Reclamaciones correspondiente al periodo del 29 de julio al 4 de agosto de 2022. Anejo A.

En relación con la Orden del 31 de julio, la Autoridad informa respetuosamente que se producen en respuesta a la misma un total de cuarenta y ocho (48) archivos que la Autoridad entiende son responsivos. Sin embargo, ya que el Negociado no estableció en su orden la fecha de inicio de producción de las comunicaciones, la Autoridad continúa haciendo un análisis de los archivos para continuar la producción de información responsiva adicional. Algunas de estas comunicaciones y documentos comenzaron a producirse en el año 2017 y, por lo tanto, la Autoridad entiende que en sus archivos (y los de sus consultores) debe haber más comunicaciones y documentos responsivos. Sin embargo, el tiempo entre la notificación de la Orden del 31 de julio y la fecha límite para la presentación de este informe no ha dado la oportunidad para recopilar y producir toda la información y, además, evaluar si existe causa para reclamar confidencialidad sobre esta. Por lo tanto, la Autoridad producirá las comunicaciones y documentos que se identifiquen entre el día de hoy y la semana próxima con el Informe de Reclamaciones que se presentará el 12 de agosto de 2022.

II. SOLICITUD DE CAMBIO DE CADENCIA PARA PRESENTAR INFORME DE RECLAMACIONES PRESENTADA POR LA AUTORIDAD EL 29 DE JULIO DE 2022

El pasado 29 de julio de 2022, la Autoridad presentó un documento titulado *Moción Para Presentar Informe de Reclamaciones, Producción de Certificación Emitida por COR3 al Negociado de Energía y Solicitud de Cambio de Cadencia Para Presentar Informe de Reclamaciones y Determinación de Confidencialidad* ("Moción del 29 de julio"). En la Moción del 29 de julio, la Autoridad solicitó al Negociado que enmiende la cadencia para presentar el Informe de Reclamaciones a una presentación bimensual, la primera siendo el día 15 del mes y la segunda siendo el último de cada mes y, además, informó que la Autoridad entiende que esto no alteraría los propósitos para los cuales pudiera servir el referido informe. La Autoridad incorpora

por referencia y adopta todos los argumentos presentados en la Moción del 29 de julio a esta moción y reitera su solicitud para que se cambie la cadencia de presentación del Informe semanal a bimensual.

La Autoridad reitera que la solicitud para que se enmiende la cadencia y se reduzca la frecuencia para presentar el Informe de Reclamaciones se hace de buena fe. Además, se solicita respetuosamente al Negociado que al evaluar la solicitud de la Autoridad considere la limitación de personal y presupuesto de la Autoridad. La preparación del Informe de Reclamaciones, aunque parezca un reporte repetitivo de semana en semana, conlleva coordinación entre personal de la Autoridad, el cual, como tiene conocimiento el Negociado, hoy día es limitado y en ocasiones un funcionario realiza tareas que anteriormente realizaban tres. La participación de los oficiales de la Autoridad en la preparación y validación del Informe de Reclamaciones conlleva coordinación con distintas áreas de la Autoridad y también corroboración de información que se produce a otras partes interesadas u agencias del Gobierno de Puerto Rico. Además, la Autoridad utiliza y depende de consultores externos para la validación y preparación de ciertos datos del Informe de Reclamaciones y esto significa un gasto para la Autoridad que, de reducirse la frecuencia de la radicación del referido informe, se reduciría.

Por todo lo antes expresado, la Autoridad reitera la solicitud realizada en la Moción del 29 de julio y solicita al Negociado que enmiende la Orden del 24 de septiembre determinando que la Autoridad dejando sin efecto la directriz de presentar el Informe de Reclamaciones todos los viernes y ordene que el Informe de Reclamaciones sea presentado los días 15 y el último día del mes.

III. SOLICITUD DE DETERMINACIÓN DE CONFIDENCIALIDAD

El Anejo A-1 adjunto al Informe de Reclamaciones incluye varias comunicaciones entre la Autoridad, las compañías de seguros y los ajustadores de las compañías de seguros, relacionadas con los reclamos de seguros realizados por los daños a las unidades 5 y 6 de la Planta Costa Sur y el arrendamiento de generación de emergencia. De conformidad con el Reglamento 8543[1] del Negociado de Energía, la Autoridad afirma que las comunicaciones con las aseguradoras y los ajustadores son confidenciales y, por lo tanto, han sido presentadas selladas y se le solicita al Negociado que ordene que así permanezcan.

Las comunicaciones entre la Autoridad y sus aseguradoras y ajustadores sobre el reclamo del pago por concepto de la cubierta de seguros de la Autoridad por pérdidas relacionadas con el terremoto en la Planta Costa Sur contienen información confidencial sobre los esfuerzos de la Autoridad para negociar y obtener pagos por adelantado de sus aseguradoras mientras las aseguradoras continúan ajustando la pérdida de la Autoridad bajo las pólizas. Estas comunicaciones también contienen interpretaciones sobre el alcance de la cobertura potencial bajo las pólizas de seguros de la Autoridad, solicitudes de información de las aseguradoras sobre la Planta Costa Sur y otras instalaciones de generación en Puerto Rico que puedan ser relevantes para sus determinaciones de cobertura de seguros, y comentarios y sugerencias, sobre las formas en que la Autoridad podría tratar de mitigar sus pérdidas aseguradas bajo las pólizas de seguro de la Autoridad. Las negociaciones de ajuste de reclamos son un proceso iterativo, y las declaraciones de la Autoridad y sus aseguradoras en comunicaciones relacionadas con reclamos por su naturaleza no son definitivas. Hacer público este tipo de información en este momento interferiría con la

[1] Negociado de Energía, *Reglamento de Procedimientos Adjudicativos, Avisos de Incumplimiento, Revisión de Tarifas e Investigaciones*, Núm. 8543 (18 de diciembre del 2014) (el "Reglamento 8543"), Sec. 1.15.

discusión de buena fe y las negociaciones entre la Autoridad y las aseguradoras, resultará en un deterioro del libre intercambio de ideas necesario para un proceso de negociación de reclamos oportuno y productivo y comprometerá la capacidad de la Autoridad para asegurar anticipos de sus aseguradoras que son necesarios para financiar reparaciones y mitigar pérdidas adicionales. Una vez el proceso de reclamación de a las aseguradoras concluya se puede considerar publicar las mismas, por el momento sería perjudicial para la Autoridad y, en consecuencia, para los consumidores.

Además, el Anejo A-3 contiene cuarenta y ocho (48) archivos con sus correspondientes anejos (se acceden presionando donde dice "Attachments") con comunicaciones entre la Autoridad, sus consultores y las agencias concernidas, sobre los trámites realizados ante la Agencia de Protección Ambiental de Estados Unidos (EPA, por sus siglas en inglés) con relación a los mega-generadores ("mega-gens")

Como parte de las comunicaciones antes mencionados, existen veintiséis (26) reproducciones de comunicaciones que contienen información que debe permanecer sellada por ser aún parte de un proceso deliberativo de la Autoridad y por lo tanto, su publicación poder afectar negativamente el proceso de negociación que se persigue con dichas comunicaciones (Anejo A-3(b)). A continuación, el fundamento para la petición de determinación de confidencialidad de los documentos incluidos como Anejo A-3(b).

Entre las categorías fundamentales de información oficial privilegiada se encuentra la utilizada por funcionarios públicos durante los procesos deliberativos relacionados al desarrollo de política pública. Chiesa Aponte, *Tratado de derecho probatorio*, *op. cit.*, págs. 292-293. Esta categoría del privilegio de información oficial busca "promover la más franca comunicación entre los

funcionarios gubernamentales encargados de decidir y hacer valer la política pública del Estado". *Id*. Este privilegio evita que se afecte la calidad de las decisiones gubernamentales y de las funciones consultivas de las agencias. P.F. Rothstein y S.W. Crump, *Federal Testimonial Privileges: Evidentiary Privileges Relating to Witnesses & Documents in Federal Law Cases*, 2da ed., West, 2012, Sec. 5:3, págs. 431-432. En esa línea, se ha reconocido que "[…] existe un interés sustancial público en asegurar y mantener el intercambio de ideas de manera amplia, franca y completa entre miembros de la agencia, sus asesores y el que toma las decisiones". (Traducción nuestra). *Id*. en p. 433. Además, el restringir el acceso a este tipo de comunicaciones protege "contra la divulgación prematura de decisiones y políticas propuestas antes de que estas hayan sido formuladas o aprobadas formalmente" (Traducción nuestra). *Id.* en p. 436.

De igual forma, para que se active el privilegio, el gobierno debe demostrar que el documento en cuestión es "deliberativo" y "pre-decisional". *Moore's Federal Practice*, supra, pág. 26-412.8. Un documento es "pre-decisional" cuando es preparado para asistir en la toma de decisiones del gobierno, es decir, previo a tomar las mismas. *Moore's Federal Practice* supra, págs. 26-412.8 y 26-412.9.

En estos momentos las negociaciones entre la Autoridad, y las agencias concernidas se encuentran en proceso (*ongoing*) ya que no se ha tomado una determinación final sobre el asunto en cuestión y, por lo tanto, las comunicaciones y documentos en forma de borrador que incluyen el Anejo A-3(b) son aún objeto de negociaciones. Ante lo informado, la Autoridad reclama el privilegio de proceso deliberativo solicitando que se mantengan selladas las comunicaciones contenidas en el Anejo A-3(b). Según establecido anteriormente para la información de reclamaciones a las aseguradoras y el Anejo A-1, una vez el proceso de negociación concluya, las comunicaciones y demás documentos se podrían considerar públicas y, por lo tanto, es en ese

momento que las mismas se podrían divulgar. Sin embargo, en este momento sería perjudicial para la Autoridad, y en consecuencia sus consumidores, su publicación.

IV. CONCLUSIÓN

POR TODO LO CUAL, se solicita respetuosamente al Negociado de Energía que (1) anote el cumplimiento de la Autoridad con las órdenes, (2) resuelva que los documentos incluidos con los anejos A-1 y A-3(b) son confidenciales y (3) ordene que se mantengan sellados.

RESPETUOSAMENTE SOMETIDO.

En San Juan, Puerto Rico a 5 de agosto de 2022.

f/ Katiuska Bolaños Lugo
Katiuska Bolaños Lugo
TSPR 18,888
kbolanos@diazvaz.law

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

CERTIFICADO DE NOTIFICACIÓN

Certifico que este escrito ha sido presentado a la Secretaria del Negociado de Energía a través del sistema electrónico de radicación https://radicacion.energia.pr.gov/ y, además, copia del mismo ha sido notificado a la Oficina de Protección al Consumidor por conducto de la Lic. Hannia Rivera a hrivera@oipc.pr.gov y a LUMA Energy ServCo, LLC y LUMA Energy, LLC por conducto de la Lic. Margarita Mercado a margarita.mercado@us.dlapiper.com.

En San Juan, Puerto Rico, hoy 5 de agosto de 2022.

f/ Katiuska Bolaños Lugo
Katiuska Bolaños Lugo

Anejo A

GOVERNMENT OF PUERTO RICO
PUERTO RICO ELECTRIC POWER AUTHORITY

CLAIMS REPORT

Updated on August 4, 2022

I. Claim to Insurers

The Authority continues to work diligently to recover from its insurance companies the costs of losses and damages resulting from the earthquake that occurred on January 7, 2020. The Authority has filed a claim for additional fuel expenses (extra expense) until January 31, 2021, for a total of $130,861,001 and has provided evidence of the cost of property damage over $50,000,000. The preparation, submission, and adjustment of insurance claims are ongoing, and the claim amounts submitted herein are subject to update and revision.

For the easy reference of the Energy Bureau and the consumers of the Authority, a summary of the claim as of August 3, 2022, is included below.

CLAIM ELEMENT	RTS CURRENT VIEW OF UNDISPUTED CLAIM AMOUNTS [1]	PREPA's CURRENT VIEW OF CLAIM [2] (AS OF 8/3/2022)			
		INCURRED	ADDITIONAL AMOUNTS COMMITTED	ESTIMATE TO COMPLETE	TOTAL
PROPERTY DAMAGE [3]	$ 35,500,000	$ 38,802,323	$ 16,428,273	$ 12,966,615	$ 68,197,211
EXTRA EXPENSE (Net of 30-day waiting period)	61,000,000	130,681,001			130,681,001
BUSINESS INTERRUPTION	TBD	TBD	TBD	TBD	TBD
TOTAL	$ 96,500,000	$ 169,483,324	$ 16,428,273	$ 12,966,615	$ 198,878,212
LESS:					
- Deductible	(25,000,000)	(25,000,000)			(25,000,000)
- Advance Payments (collected)	(70,000,000)	(70,000,000)			(70,000,000)
CURRENT ESTIMATED CLAIM BALANCE	$ 1,500,000	$ 74,483,324	$ 16,428,273	$ 12,966,615	$ 103,878,212

NOTES

[1] Figures reflect analysis by the insurer adjustment team as of 4/21/2022 and are subject to change and further adjustment.
[2] All figures contained herein are preliminary and subject to material revision or change.
[3] Property Damage figure includes $3.8MM for miscellaneous extra expense and professional fees.

Likewise, the Authority continues to work with insurers to advance in the adjustment process as follows:

1. Maintain regular communication with insurance adjusters, consultants, and accountants.
2. Provide information, documents, and analyses on time.
3. Coordinate inspections and analyses to support the development and adjustment of the Authority's claim.

"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."

4. Collaborate with all the dependencies and offices of the Authority to ensure coordination in recovery efforts with the Federal Emergency Management Agency (FEMA) and insurers.
5. Respond to correspondence regarding coverage from insurers and technical reports and analyses from Adjuster consultants.
6. Request additional support from LUMA Energy, LLC., operator of the Puerto Rico transmission and distribution system and provider of PREPA insurance claims services, to continue processing claims.

The Authority continues to direct its efforts to negotiations to obtain additional payments. Payments received by insurers to date are listed below:

SUMS RECEIVED

Date	Payment Method	Deposited in Bank	Payer	Amount
6/17/2020	Wire Transfer	June 2020	Willis Towers Watson	$ 8,000,000.00
6/17/2020	Check	June 2020	Multinational Insurance Company	2,625,000.00
6/17/2020	Check	June 2020	MAPFRE	12,500,000.00
6/23/2020	Wire Transfer	June 2020	Willis Towers Watson	1,250,000.00
7/17/2020	Check	July 2020	Multinational Insurance Company	625,000.00
10/30/2020	Wire Transfer	October 2020	Willis Towers Watson	3,562,500.00
11/4/2020	Wire Transfer	November 2020	Willis Towers Watson	1,875,000.00
11/10/2020	Wire Transfer	November 2020	Willis Towers Watson	750,000.00
11/10/2020	Check	November 2020	MAPFRE	12,500,000.00
11/25/2020	Check	November 2020	Multinational Insurance Company	6,312,500.00
8/4/2021	Check	August 2021	MAPFRE	10,000,000.00
9/7/2021	Wire Transfer	September 2021	Lockton Specialties, LLC.	3,350,000.00
9/17/2021	Wire Transfer (US)	September 2021	Lockton Specialties, LLC.	1,100,000.00
9/23/2021	Wire Transfer (UK)	September 2021	Lockton Specialties, LLC.	600,000.00
10/12/2021	Wire Transfer (UK)	October 2021	Multinational Insurance Company	4,050,000.00
10/14/2021	Check	Oct-21	Multinational Insurance Company	900,000.00
Total				**70,000,000.00**

In compliance with the Orders, the Authority attaches as Annex A-1 a report with additional details of communications between the Authority, the adjusters, the insurance companies and, in addition, a compendium of the communications and related documents.

II. RECLAMACIÓN A FEMA

La Autoridad, como sub-recipiente, ha continuado los esfuerzos y los trabajos en conjunto con la Agencia Federal para el Manejo de Emergencias (FEMA, por sus siglas en inglés) y la Oficina Central de Recuperación, Reconstrucción y Resiliencia (COR3) para así continuar la reclamación y la aprobación de los daños causados. El 3 de febrero de 2022, la Autoridad le informó a FEMA los esfuerzos de las reclamaciones de seguro actualizando la reclamación de *"extra-expense*" a un total $130,681,001, la cual incluye sólo gastos de combustible. El detalle de la reclamación se incluye como Anejo A-2.

A la fecha de este informe, la reclamación incluye un total de gastos incurridos de aproximadamente $515,911,965, de los cuales se ha reclamado al seguro de la Autoridad la cantidad de $130,681,001, reduciendo la cantidad del proyecto reclamado a FEMA a $385,230,964. La aportación federal de 90% de esta reclamación asciende a $346,707,868.

Concepto de Costos	**Total**	
Combustible:	$	375,006,183
O & M:		140,905,782
Total	**$**	**515,911,965**
Seguro	$	130,681,001
Porcion a Reembolso Federal		385,230,964
Pareo Federal (90%)	**$**	**346,707,868**

Por tanto, los costos estimados asociados a combustible a ser reembolsados por las aseguradoras y FEMA aumentan a un total de $350,573,665.

"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."

Reducción por concepto de Seguro por combustible:

	SEGURO	FEMA		TOTAL
Combustible:	130,681,001.00	244,325,182.32 D	$	375,006,183.32
O & M:	-	140,905,782.07	$	140,905,782.07
Total	**130,681,001.00**	**385,230,964.39**	**$**	**515,911,965.39**

Reducción por Pareo Local

	100%	90%		TOTAL
Total de Combustible a recibirse:	130,681,001.00	219,892,664.09	$	350,573,665.09
		D x 90%		

El 11 de marzo de 2022, FEMA y COR3 formalizaron un acuerdo para incrementar la aportación federal de un 75% a un 90%. Dicho incremento se refleja en la reclamación a través de enmiendas efectuadas directamente entre FEMA y COR3 y que no requiere acción de la Autoridad.

Sin embargo, el incremento en la aportación federal no ha tomado efecto aún en el proyecto ya que la enmienda por razón de la extensión de tiempo presentada el 11 de diciembre de 2020 aún se mantiene bajo la evaluación de FEMA.

El 26 de julio de 2022, COR3 envió una comunicación a la Autoridad en la cual incluyen copia de una carta dirigida al Presidente del Negociado de Energía de Puerto Rico, en la que indican que FEMA notificó al Gobierno de Puerto Rico que se realizaría un aumento en el proyecto de los terremotos para reflejar un incremento del 75% al 90%, aumentando así la obligación corriente por $47,604,606, de $238,023,030 (75%) a un nuevo total $285,627,636 (90%). Dicho incremento no refleja la enmienda sometida el 11 de diciembre que incorpora los costos incurridos para el periodo del 16 de julio de 2020 al 31 de enero de 2021. La carta de COR3 explica que el reembolso de esta diferencia está sujeta a que la Autoridad finalice el cumplimiento con los requerimientos de la Agencia Federal de Protección Ambiental (EPA, por sus siglas en inglés) y el área Ambiental y de Preservación Histórica (EHP, por sus siglas en inglés) de FEMA. Este cumplimiento está relacionado con los tres (3) mega-generadores instalados en la Central Palo Seco, los cuales se encuentran bajo un proceso de pruebas de emisiones que debe finalizar entre agosto y septiembre de 2022.

Se incluyen como Anejo A-3[1] de este reporte copias de documentos, comunicaciones y evidencia de trámites entre la Autoridad y las agencias concernidas, incluyendo la EPA, con relación a los mega-generadores.

[1] El Anejo A-3 incluye información sobre la cual la Autoridad reclama confidencialidad y que se mantenga sellada. Por lo tanto, el Anejo A-3 se divide en Anejo A-3(a), en el cual obran las comunicaciones y

El 1 de agosto de 2022, en una reunión realizada con FEMA, la Autoridad advino en conocimiento que EHP determinó proceder con la enmienda sujeto a una evaluación subsiguiente del cumplimiento de las unidades de Palo Seco. Por tanto, la Autoridad espera que la aprobación sobre los costos incurridos desde agosto 2020 hasta enero 2021, incluyendo la reducción por $10,090,052.10 notificada el 21 de julio de 2022, sea aprobada por FEMA la semana entrante.

El 21 de julio de 2022, la Autoridad fue notificada por COR3 que FEMA, a través de un análisis de razonabilidad de costos, determinó que bajo la evaluación de la revisión sometida el 11 de diciembre de 2020, que aumentó la reclamación por $131,761,553, un total de $10,090,052.10 no son considerados como elegibles. La determinación alude que dicha cantidad excedía la opción más costo efectiva y práctica en proveer energía sin hacer determinación sobre la porción de combustible, operación y mantenimiento.

Aunque la Autoridad tiene derecho a apelar dicha determinación y la misma no goza de finalidad, se realizó el siguiente análisis para determinar el impacto en los reembolsos de combustibles.

Porción de Combustible sobre Proyecto de FEMA:

	Total FEMA		*Ajuste DM*	**Pendiente Aprobación**	
Total de Combustible a recibirse	244,325,182	63%	(6,399,418)	237,925,765	G
Porción de O&M	140,905,782	37%	(3,690,634)	137,215,148	
Total	385,230,964	F	(10,090,052)	375,140,912	

		G x 90%		
	100%	90%	TOTAL	
Combustible a recibirse luego de DM:	130,681,001	214,133,188	344,814,189	H

Resolución y Orden emitida por el NEPR - 31 de marzo de 2021	316,548,997	
Resolución y Orden emitida por el NEPR - 31 de julio de 2022	34,024,668	
Total Diferido	350,573,665	
Nuevo total de Combustible	344,814,189	H
	5,759,476	***Exceso diferido***

Como previamente expuesto, el costo de combustible a ser reclamado por FEMA totaliza $244,325,182 representando un 63% del total de $385,230,964.

Por tanto, se le confiere la misma proporción a la determinación de $10,090,052 reduciendo la porción de combustible por $6,399,418 resultando en un total de $237,925,765. Luego de la reducción de aportación local (10%) se estima que la porción

documentos públicos; y el Anejo A-3(b), en el cual obran las comunicaciones y documentos responsivos que la Autoridad reclama son confidenciales y ha presentado al Negociado sellados.

de combustible a recibirse por FEMA ($214,133,188) y las aseguradoras ($130,681,001) seria $344,814,189.

Por tanto, considerando los balances diferidos al 31 de marzo de 2021 por $316,548,997 e incluyendo la nueva determinación efectuada el 31 de julio de 2022 por $34,024,668, el total diferido aumenta a $350,573,665. De la Autoridad no ser exitosa en la apelación sobre la determinación realizada por FEMA que reduce la reclamación por $10,090,052, el balance diferido en exceso se estima totalizaría en $5,759,476.

A la fecha de este informe la Autoridad ha recibido un total de $238,023,030.75, límite obligado, basado en el estimado inicial de $384,150,412 del cual $302,372,077 son por concepto de combustible y un total de $81,778,335 por operación y mantenimiento. El total obligado y recibido corresponde al 75% de $317,364,041, que es la diferencia entre el total de $384,150,412 y la reclamación al seguro de $66,786,371. Del total obligado y recibido de $238,023,030.75, unos $176,689,279.73 corresponden a reembolso por combustible.

Es importante recalcar que la porción de combustible mantiene conceptos de reducción de seguro que hoy día se estiman en $130,681,001. De dicha reclamación materializarse por parte de las aseguradoras la porción atribuida a combustible se reduciría por la misma cuantía dejando un total de costos estimados menor al reportado. Por tanto, la porción recibida y a recibirse de los rembolsos de la agencia federal se podrán certificar cuando la Autoridad finalice su reclamación al seguro y se materialice la enmienda de revisión de costos para los periodos no aprobados. Las cantidades reclamadas al seguro y FEMA son estimadas, las cuales se revisan y validan continuamente durante la evaluación de las reclamaciones que realizan estas entidades. Se reitera el que los diferidos de los cargos de la compra de combustible facturado a los consumidores debe realizarse cuando la Autoridad ha recibido el reembolso o cuando hay certeza de que se recibirá dicho reembolso.

Annex A-1

(*Filed under seal*)

Anejo A-2

[*Versión nativa enviada por correo electrónico el NEPR para que lo suba a su página web*]

Reclamación DR-4473-007 Resumen

Periodo Enero 2020 - Enero 2021

Concepto de Costos	Obligado (Enero a Junio 2020)		Enmienda (Julio 2020 a Enero 2021)		Total	
Combustible:	$ 302,372,077		$ 72,634,106		$ 375,006,183	C
O & M:	81,778,335		59,127,447		140,905,782	
Total	**$ 384,150,412**		**$ 131,761,553**		**$ 515,911,965**	
Seguro	$ 66,786,371		$ 63,894,630		$ 130,681,001	
Porción a Reembolso Federal	317,364,041		67,866,923		385,230,964	F
Pareo Federal (75%)[A]	**$ 238,023,031**	A	**$ 50,900,193**		**$ 288,923,223**	
Pareo Federal (90%)[B]	**$ 285,627,637**	B	**$ 61,080,231**		**$ 346,707,868**	
Diferencia entre Pareo Federal [(B-A)]	**$ 47,604,606**		**$ 10,180,039**		**$ 57,784,645**	

A La porción federal calculada en el proyecto obligado fue 75%.

B De conformidad con la enmienda al acuerdo entre la Agencia Federal para el Manejo de Emergencias y la Oficina Central de Recuperación, Reconstrucción y Resiliencia el pasado 11 de marzo de 2022 para las subvenciones bajo FEMA-4473-DR.

C El gasto total de combustible en el periodo de la reclamación.

Reducción por concepto de Seguro por combustible:

	SEGURO	FEMA		TOTAL	
Combustible:	130,681,001.00	244,325,182.32	D	$ 375,006,183.32	C
O & M:	-	140,905,782.07		$ 140,905,782.07	
Total	**130,681,001.00**	**385,230,964.39**		**$ 515,911,965.39**	

Reducción por Pareo Local

	100%	90%	TOTAL
Total de Combustible a recibirse:	130,681,001.00	219,892,664.09	$ 350,573,665.09
		D x 90% = E	

	TOTAL	Recibido	Pendiente
Combustible Rembolsable por FEMA	219,892,664.09	176,689,279.73	43,203,384.36
Combustible Rembolsable por Seguro	130,681,001.00	61,000,000.00	69,681,001.00
	$ 350,573,665.09	$ 237,689,279.73	$ 112,884,385.36

Porción de Combustible sobre Proyecto de FEMA:

	Total FEMA		*Ajuste DM*	Pendiente Aprobación	
Total de Combustible a recibirse	244,325,182	63%	(6,399,418)	237,925,765	G
Porción de O&M	140,905,782	37%	(3,690,634)	137,215,148	
Total	385,230,964	F	(10,090,052)	375,140,912	

		G x 90%		
	100%	90%	TOTAL	
Combustible a recibirse luego de DM:	130,681,001	214,133,188	344,814,189	H

Resolución y Orden emitida por el NEPR - 31 de marzo de 2021	316,548,997
Resolución y Orden emitida por el NEPR - 31 de julio de 2022	34,024,668
Total Diferido	350,573,665
Nuevo total de Combustible	344,814,189 H
	5,759,476 ***Exceso diferido***

PREPA - Peaking Generator Analysis for Earthquakes
For the period - January 2020 to January 2021

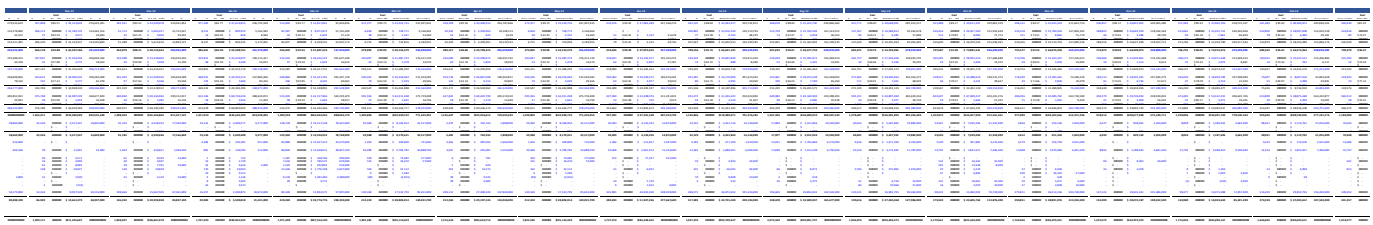
Plant	Description	January 1/1 - 1/31	February 2/1 - 2/29	March 3/1 - 3/31	April 4/1 - 4/30	May 5/1 - 5/31	June 6/1 - 6/30	July 7/1 - 7/31	August 8/1 - 8/31	September 9/1 - 9/30	October 10/1 - 10/31	November 11/1 - 11/30	December 12/1 - 12/31	January 1/1 - 1/31
Aguirre	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	21,348,823	26,999,051	18,514,408	19,344,681	14,531,076	14,989,949	18,334,185	16,556,865	10,230,439	15,916,144	9,820,679	8,328,859	5,303,920
	Variable and Fixed O&M Costs	4,942,896	6,661,903	5,847,063	6,924,269	7,183,800	6,715,873	6,853,948	6,171,985	4,666,167	6,048,366	4,609,120	4,324,864	3,358,984
	Subtotal	**$ 26,291,719**	**$ 33,660,954**	**$ 24,361,471**	**$ 26,268,949**	**$ 21,714,876**	**$ 21,705,822**	**$ 25,188,133**	**$ 22,728,850**	**$ 14,896,606**	**$ 21,964,510**	**$ 14,429,799**	**$ 12,653,724**	**$ 8,662,903**
Cambalache	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	9,265,852	8,303,337	2,993,363	2,876,842	4,391,252	1,838,459	3,224,628	3,091,888	2,098,700	2,295,778	1,458,977	1,362,144	524,655
	Variable and Fixed O&M Costs	391,086	413,167	267,627	279,313	364,540	258,465	317,961	305,203	262,551	271,371	227,653	228,592	189,867
	Subtotal	**$ 9,656,937**	**$ 8,716,504**	**$ 3,260,989**	**$ 3,156,155**	**$ 4,755,792**	**$ 2,096,924**	**$ 3,542,589**	**$ 3,397,091**	**$ 2,361,251**	**$ 2,567,149**	**$ 1,686,631**	**$ 1,590,736**	**$ 714,522**
Mayaguez	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	3,548,543	3,873,558	2,078,296	2,501,147	2,958,331	3,244,355	4,240,479	3,795,098	2,063,490	2,337,797	604,452	1,372,298	399,417
	Variable and Fixed O&M Costs	394,547	474,678	381,603	442,266	543,100	624,085	689,434	651,785	468,006	503,798	267,207	351,689	237,344
	Subtotal	**$ 3,943,090**	**$ 4,348,235**	**$ 2,459,900**	**$ 2,943,412**	**$ 3,501,432**	**$ 3,868,440**	**$ 4,929,914**	**$ 4,446,883**	**$ 2,531,496**	**$ 2,841,596**	**$ 871,660**	**$ 1,723,986**	**$ 636,761**
Daguao	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	2,062,683	1,352,815	310,681	892,165	978,944	475,052	769,616	645,785	698,753	641,279	431,056	294,199	90,951
	Variable and Fixed O&M Costs	238,106	202,560	118,290	166,211	175,763	134,870	190,908	172,613	180,832	177,358	144,664	127,661	101,004
	Subtotal	**$ 2,300,789**	**$ 1,555,375**	**$ 428,971**	**$ 1,058,376**	**$ 1,154,707**	**$ 609,922**	**$ 960,524**	**$ 818,398**	**$ 879,585**	**$ 818,637**	**$ 575,720**	**$ 421,860**	**$ 191,955**
Vega Baja	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	6,281	598,449	254,138	369,058	144,295	81,386	166,250	106,424	291,060	477,032	160,905	173,799	102,451
	Variable and Fixed O&M Costs	75,153	137,535	116,311	129,014	123,400	109,163	112,979	106,437	137,899	153,872	115,423	115,423	106,174
	Subtotal	**$ 81,433**	**$ 735,984**	**$ 370,450**	**$ 498,072**	**$ 267,694**	**$ 190,549**	**$ 279,229**	**$ 212,861**	**$ 428,959**	**$ 630,904**	**$ 276,328**	**$ 289,222**	**$ 208,625**
Yabucoa	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	1,186,242	613,218	210,793	396,158	360,424	304,428	295,894	181,365	391,892	376,050	93,673	303,511	12,810
	Variable and Fixed O&M Costs	170,765	144,846	111,984	130,871	129,741	126,732	126,631	116,392	132,648	143,614	104,094	128,388	94,360
	Subtotal	**$ 1,357,007**	**$ 758,064**	**$ 322,776**	**$ 527,030**	**$ 490,164**	**$ 431,160**	**$ 422,524**	**$ 297,757**	**$ 524,540**	**$ 519,664**	**$ 197,767**	**$ 431,898**	**$ 107,170**
Palo Seco	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	10,425,840	10,034,776	9,838,835	8,828,660	7,788,148	7,408,959	9,076,020	5,192,992	1,419,381	2,381,514	1,097,884	471,000	336,245
	Variable and Fixed O&M Costs	4,136,587	4,891,279	6,201,735	4,826,395	5,562,713	5,693,637	5,561,016	3,585,931	1,919,778	2,300,859	1,784,134	1,553,861	1,488,310
	Subtotal	**$ 14,562,427**	**$ 14,926,055**	**$ 16,040,570**	**$ 13,655,055**	**$ 13,350,860**	**$ 13,102,596**	**$ 14,637,037**	**$ 8,778,923**	**$ 3,339,159**	**$ 4,682,373**	**$ 2,882,018**	**$ 2,024,861**	**$ 1,824,556**
Jobos	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	1,118,285	763,956	286,520	394,900	717,960	390,247	415,301	361,386	664,711	991,421	118,437	180,531	38,096
	Variable and Fixed O&M Costs	170,423	167,867	120,956	139,514	189,515	148,844	147,762	141,958	179,782	224,087	108,557	116,089	97,329
	Subtotal	**$ 1,288,709**	**$ 931,823**	**$ 407,476**	**$ 534,415**	**$ 907,475**	**$ 539,091**	**$ 563,063**	**$ 503,344**	**$ 844,493**	**$ 1,215,508**	**$ 226,994**	**$ 296,620**	**$ 135,425**
Total Period Costs	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Fuel Costs	48,962,550	52,539,158	34,487,033	35,603,610	31,870,430	28,732,836	36,522,374	29,931,803	17,858,426	25,417,015	13,786,064	12,486,341	6,808,545
	Variable and Fixed O&M Costs	10,519,562	13,093,835	13,165,570	13,037,853	14,272,571	13,811,669	14,000,640	11,252,303	7,947,662	9,823,327	7,360,852	6,946,566	5,673,372
	Total	**$ 59,482,111**	**$ 65,632,994**	**$ 47,652,603**	**$ 48,641,463**	**$ 46,143,001**	**$ 42,544,505**	**$ 50,523,013**	**$ 41,184,106**	**$ 25,806,088**	**$ 35,240,342**	**$ 21,146,916**	**$ 19,432,907**	**$ 12,481,917**
		36,721,912.15	39,404,368.73	25,865,274.82	26,702,707.81	23,902,822.32	21,549,627.16	27,391,780.22	22,448,851.99	13,393,819.19	19,062,761.14	10,339,547.66	9,364,755.62	5,106,408.69

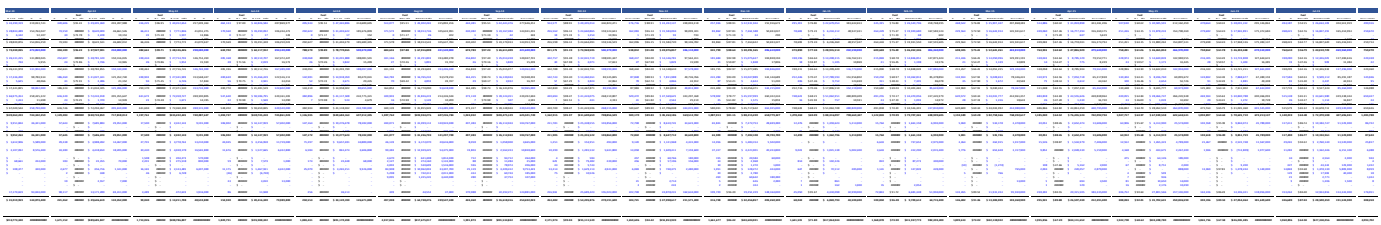
Notes:
Based on reimbursements approved by FEMA in the prior PW submitted
following Hurricane Maria, PREPA is not seeking reimbursement for depreciation.

21,549,627

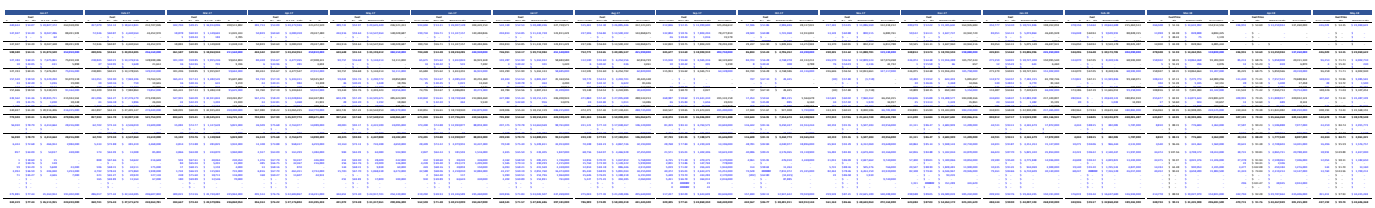


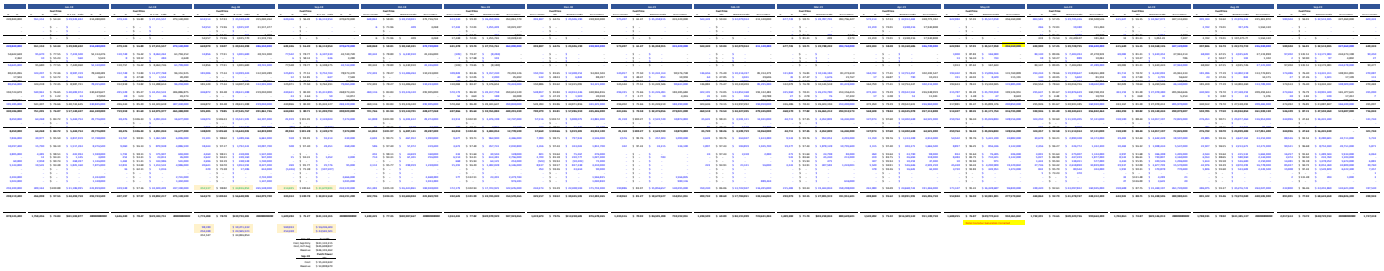
Note: EIR Reliability Reporting provided by Integrating Powerful Forces of TEPCO/Hitachi/Toshiba/ GE/Hitachi
Note: Data as of 2021/3/31
Fukushima Daiichi Nuclear Accident Summary URL: http://www.tepco.co.jp/en/nu/fukushima-np/index-e.html

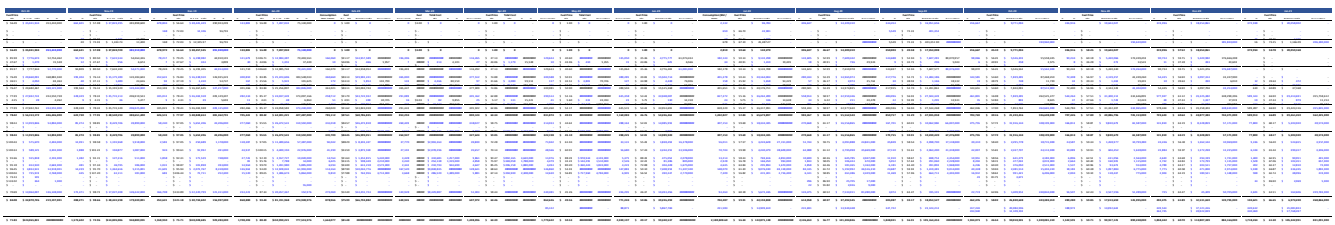












Agency Review	Fuel Type	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Year 7				Year 8				Year 9				Year 10			
		Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement	Procurement Mix	Fuel Price ($)	Total Cost ($)	Abatement
	Light Desiccate	277,284	$ 94.05	$ 26,077,042	119,256,000	315,709	$ 83.57	$ 26,387,818	123,816,000	294,440	$ 89.79	$ 26,440,007	142,488,000	319,637	$ 98.75	$ 31,556,337	130,896,000	319,559	$ 48.40	$ 15,518,979	156,702,000	268,255	$ 53.05	$ 12,588,165	127,362,000	367,155	$ 53.69	$ 19,354,395	150,600,000	270,098	$ 61.37	$ 16,580,865	117,288,000	197,791	$ 69.63	$ 13,636,164	100,740,000	270,794	$ 67.73	$ 18,616,143	100,740,000	184,919	$ 58.87	$ 10,924,979	80,397,000	131,918	$ 62.19	$ 8,124,849	67,077,000	77,650	$ 68.17	$ 5,293,928	28,974,000
	Canola 4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Power-Kinetic	4,992	$ 78.61	$ 392,303	2,023,200	4,257	$ 78.15	$ 332,621	2,196,000	8,997	$ 88.81	$ 799,019	3,447,000	9,189	$ 69.79	$ 641,435	3,060,000	83	$ 73.75	$ 6,098	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AgriTrix	Silenz	277,992	$ 93.65	$ 26,472,345	119,892,000	319,709	$ 84.48	$ 26,999,051	126,264,192	294,967	$ 89.88	$ 26,514,488	142,488,000	327,824	$ 99.68	$ 32,668,337	134,172,000	322,198	$ 49.10	$ 15,820,978	161,814,000	268,225	$ 53.81	$ 14,308,949	127,362,000	367,192	$ 54.69	$ 20,084,166	152,040,000	270,098	$ 61.37	$ 16,580,865	117,288,000	197,791	$ 69.63	$ 13,636,164	100,740,000	270,794	$ 67.73	$ 18,616,143	100,740,000	184,919	$ 58.87	$ 10,924,979	80,397,000	131,918	$ 62.19	$ 8,124,849	67,077,000	77,650	$ 68.17	$ 5,293,928	28,974,000
	Light Desiccate	277,284	$ 94.05	$ 26,077,042	119,256,000	315,709	$ 83.57	$ 26,387,818	123,816,000	294,440	$ 89.79	$ 26,440,007	142,488,000	319,637	$ 98.75	$ 31,556,337	130,896,000	319,559	$ 48.40	$ 15,518,979	156,702,000	268,255	$ 53.05	$ 12,588,165	127,362,000	367,155	$ 53.69	$ 19,354,395	150,600,000	270,098	$ 61.37	$ 16,580,865	117,288,000	197,791	$ 69.63	$ 13,636,164	100,740,000	270,794	$ 67.73	$ 18,616,143	100,740,000	184,919	$ 58.87	$ 10,924,979	80,397,000	131,918	$ 62.19	$ 8,124,849	67,077,000	77,650	$ 68.17	$ 5,293,928	28,974,000
	Special Cycle	43,567	$ 100.51	$ 4,499,154	22,878,000	41,260	$ 93.09	$ 3,973,938	21,438,000	37,153	$ 78.48	$ 2,979,298	16,977,000	39,657	$ 75.24	$ 2,931,167	15,336,000	49,968	$ 60.81	$ 3,198,232	27,183,000	59,997	$ 57.28	$ 3,334,355	33,660,000	76,754	$ 59.98	$ 4,264,978	36,684,000	62,088	$ 63.12	$ 3,760,998	30,648,000	42,807	$ 72.45	$ 2,953,240	21,216,000	62,807	$ 70.61	$ 3,837,757	24,113,000	53,289	$ 59.91	$ 3,552,452	9,438,000	22,850	$ 59.87	$ 1,372,248	12,236,000	8,154	$ 65.44	$ 508,417	5,568,000
	Diagnum	27,793	$ 92.35	$ 2,567,737	10,629,000	14,764	$ 91.65	$ 1,352,815	6,432,000	3,228	$ 90.65	$ 310,661	1,257,000	9,861	$ 90.47	$ 892,108	3,930,000	11,976	$ 89.39	$ 978,946	4,153,000	5,370	$ 88.36	$ 479,052	2,979,000	13,214	$ 58.24	$ 769,610	4,863,000	10,999	$ 63.56	$ 699,789	3,847,000	11,910	$ 58.67	$ 698,753	4,164,000	10,961	$ 58.56	$ 641,879	4,163,000	4,966	$ 63.51	$ 431,956	2,340,000	4,620	$ 65.68	$ 284,199	1,731,000	1,632	$ 64.95	$ 90,991	651,000
	Light Desiccate	277,284	$ 94.05	$ 26,077,042	119,256,000	315,709	$ 83.57	$ 26,387,818	123,816,000	294,440	$ 89.79	$ 26,440,007	142,488,000	319,637	$ 98.75	$ 31,556,337	130,896,000	319,559	$ 48.40	$ 15,518,979	156,702,000	268,255	$ 53.05	$ 12,588,165	127,362,000	367,155	$ 53.69	$ 19,354,395	150,600,000	270,098	$ 61.37	$ 16,580,865	117,288,000	197,791	$ 69.63	$ 13,636,164	100,740,000	270,794	$ 67.73	$ 18,616,143	100,740,000	184,919	$ 58.87	$ 10,924,979	80,397,000	131,918	$ 62.19	$ 8,124,849	67,077,000	77,650	$ 68.17	$ 5,293,928	28,974,000
	Light Desiccate	14,963	$ 99.30	$ 1,270,500	5,850,000	6,264	$ 97.23	$ 612,218	3,312,000	2,342	$ 90.60	$ 212,703	942,000	3,647	$ 95.24	$ 346,138	1,560,000	4,454	$ 86.33	$ 384,430	1,674,000	4,223	$ 72.86	$ 307,636	1,674,000	4,436	$ 63.84	$ 283,182	1,674,000	3,898	$ 64.46	$ 251,283	1,449,000	4,291	$ 59.80	$ 256,622	1,611,000	4,256	$ 69.06	$ 293,872	336,000	4,749	$ 60.87	$ 289,017	1,797,000	332	$ 66.87	$ 22,410	72,000
	Light Desiccate	156,963	$ 94.09	$ 12,928,043	61,950,000	114,164	$ 87.60	$ 10,534,776	56,082,000	107,520	$ 58.75	$ 9,638,626	79,656,000	129,651	$ 68.45	$ 8,838,685	56,958,000	146,960	$ 53.93	$ 7,798,146	89,166,000	127,883	$ 50.30	$ 7,688,998	71,367,000	148,076	$ 51.30	$ 9,076,005	89,118,000	84,738	$ 61.72	$ 6,160,982	36,516,010	23,087	$ 59.92	$ 1,818,381	9,414,000	40,358	$ 59.04	$ 2,581,514	15,354,010	18,782	$ 60.36	$ 1,097,864	6,779,990	7,779	$ 60.54	$ 471,000	2,976,000	9,039	$ 66.87	$ 336,240	1,862,000
	Light Desiccate	15,320	$ 89.55	$ 1,396,874	5,850,000	9,810	$ 77.66	$ 762,068	3,712,000	3,668	$ 78.12	$ 286,529	1,389,000	9,861	$ 67.14	$ 392,555	2,358,000	12,630	$ 56.80	$ 717,560	4,782,000	6,940	$ 56.53	$ 392,247	2,770,000	7,398	$ 54.82	$ 405,561	2,718,000	8,147	$ 58.85	$ 361,384	2,229,000	11,489	$ 57.66	$ 662,711	4,302,000	10,913	$ 58.63	$ 651,421	6,498,000	2,354	$ 59.10	$ 118,437	779,000	2,903	$ 62.29	$ 180,931	1,188,000	998	$ 65.74	$ 38,096	219,000

FINANCIAL – Building Construction Analysis Pro Forma Projection
Five Year Income – January 2026 to January 2031

Account Name		August	September	October	November	December	January
Total Office / Commercial Rent	(1)	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587
Plus 1 Month		—	—	—	—	—	—
Plus 2 Month		—	—	—	—	—	—
Total Rental Income		$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587
Utility							
Utility of Fuel (2000)	----	34,215	34,587	49,145	50,000	5,771	5,000
Plus 1 Month		—	—	—	—	—	—
Plus 2 Month		—	—	—	—	—	—
Fuel of Fuel (2000)		—	—	—	—	—	—
Rental Fuel Price Logistics		$ 34,215	$ 34,587	$ 49,145	$ 50,000	$ 5,771	$ 5,000
Other							
Plus 1 Month	----	44,512	34,587	41,232	34,715	4,512	1,882
Plus 2 Month		—	—	—	—	—	—
Plus 3 Month		—	—	—	—	—	—
Income Rental (Lease)		$ 44,512	$ 34,587	$ 41,232	$ 34,715	$ 4,512	$ 1,882
Rental Income Distribution		1,874	1,874	1,874	1,874	1,874	1,874
Capacity (MW)		24	24	24	24	24	24
Plus 1 Month		—	—	—	—	—	—
Plus 2 Month		—	—	—	—	—	—
Total Capacity (MW)		24	24	24	24	24	24
Rental Rent Distribution		$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000
Summary							
Total Income Only							
Total Income Only		$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587
Total Rent		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376
Income Rent (Lease)		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376
Total Rent Income		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376
Total Rental Income Projected		$ 1,419,804	$ 1,419,196	$ 1,387,514	$ 1,387,369	$ 377,945	$ 339,376
Total Income Projected Per Building Unit	(2)						
Total Rent		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376
Income Rent (Lease)		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376
Total Rent Income		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376
Total Rental Income Projected		$ 1,419,804	$ 1,419,196	$ 1,387,514	$ 1,387,369	$ 377,945	$ 339,376

Account Name		January	February	March	April	May	June	July	August	September	October	November	December	January
Total Office / Commercial Rent	(1)	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587
Plus 1 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Plus 2 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Total Rental Income		$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587
Utility														
Utility of Fuel (2000)	----	34,215	34,587	49,145	50,000	5,771	5,000	12,215	9,852	4,000	5,000	12,215	11,512	5,000
Plus 1 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Plus 2 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Fuel of Fuel (2000)		—	—	—	—	—	—	—	—	—	—	—	—	—
Rental Fuel Price Logistics		$ 34,215	$ 34,587	$ 49,145	$ 50,000	$ 5,771	$ 5,000	$ 12,215	$ 9,852	$ 4,000	$ 5,000	$ 12,215	$ 11,512	$ 5,000
Other														
Plus 1 Month	----	44,512	34,587	41,232	34,715	4,512	1,882	5,882	4,715	1,882	4,000	4,512	4,882	715
Plus 2 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Plus 3 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Income Rental (Lease)		$ 44,512	$ 34,587	$ 41,232	$ 34,715	$ 4,512	$ 1,882	$ 5,882	$ 4,715	$ 1,882	$ 4,000	$ 4,512	$ 4,882	$ 715
Rental Income Distribution		1,874	1,874	1,874	1,874	1,874	1,874	1,874	1,874	1,874	1,874	1,874	1,874	1,874
Capacity (MW)		24	24	24	24	24	24	24	24	24	24	24	24	24
Plus 1 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Plus 2 Month		—	—	—	—	—	—	—	—	—	—	—	—	—
Total Capacity (MW)		24	24	24	24	24	24	24	24	24	24	24	24	24
Rental Rent Distribution		$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000	$ 1,874,000
Summary														
Total Income Only														
Total Income Only		$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587	$ 84,587
Total Rent		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376	1,419,804	754,196	803,343	858,369	717,944	858,457	870,343
Income Rent (Lease)		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376	1,419,804	754,196	803,343	858,369	717,944	858,457	870,343
Total Rent Income		1,419,804	1,419,196	1,387,514	1,387,369	377,945	339,376	1,419,804	754,196	803,343	858,369	717,944	858,457	870,343
Total Rental Income Projected		$ 1,419,804	$ 1,419,196	$ 1,387,514	$ 1,387,369	$ 377,945	$ 339,376	$ 1,419,804	$ 754,196	$ 803,343	$ 858,369	$ 717,944	$ 858,457	$ 870,343

Notes:
(1) Total FINANCIAL Quality control totals.
(2) Total FINANCIAL Fund Service Logistics Report Ownership Report
Total Income Projected Per Building Unit Report Ownership Report

(3) Total Rental Income Projected Report
Total Income Projected Per Building Unit Report
Based on monthly contracts, approved by FINANCIAL Inc.

Income Rental (Lease) Report
Income Rental (Lease) Report
Income Rental (Lease) Report

Anejo A-3(a)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

September 27, 2017

Amended No Action Assurance for Mobile Power Generators for Hurricane Recovery Efforts in Puerto Rico

The United States Environmental Protection Agency (EPA) will exercise its discretion not to pursue enforcement for certain violations of the Clean Air Act (CAA) concerning the importation, sale, donation or distribution of mobile power generators in Puerto Rico to increase the number of generators available for use during the recovery from the devastation of Hurricane Maria. The generators covered by this No Action Assurance (NAA), and the scope and conditions of this NAA, are detailed below. In short, under Category A, this NAA allows for the import and sale of mobile power generators that, while not legal for import and sale in Puerto Rico, satisfy air pollution emissions standards that are similar to current EPA standards. Under Category B, this NAA allows for the import and use of other mobile power generators that do not meet standards similar to current EPA standards, but only if they are removed from Puerto Rico as provided below.

EPA has determined that this NAA, which amends the NAA issued on September 22, 2017, is in the public interest given currently reported conditions in Puerto Rico. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by recent hurricanes, especially Hurricane Maria. Available information indicates extreme damage to Puerto Rico's power grid, including near-total destruction to power transmission infrastructure.

The units covered by this NAA include only those units meeting all of the following criteria, referred to hereafter as "Mobile Power Generators":

1. The unit is an internal combustion engine (subject to 40 C.F.R. Parts 1039, 1048, or 1054) that is used in or on a piece of equipment (this does not include loose engines, that is, those not already used in or on a piece of equipment);
2. The unit is designed to and is capable of generating electricity;
3. The unit is portable or transportable, meaning designed to be and capable of being carried to or moved from one location to another; and
4. The unit is not used to power any vehicle or vessel, and is not stationary (that is, regulated under 40 C.F.R. Part 60 or otherwise subject to New Source Performance Standards promulgated under section 111 of the CAA, 42 U.S.C. § 7411).

This NAA arises under Part A of Title II of the CAA, §§ 202–219, 42 U.S.C. §§ 7521–7554, and the regulations promulgated thereunder. These laws aim to reduce emissions from mobile sources of air pollution, including Mobile Power Generators. Sections 203(a) and 213(d) of the CAA, 42 U.S.C. §§ 7522(a) and7547(d), and 40 C.F.R. § 1068.101(a)(1) prohibit manufacturers

from selling, offering for sale, introducing into commerce, delivering for introduction into commerce (or causing any of the foregoing with respect to) non-compliant Mobile Power Generators. These laws also prohibit any person from importing or causing the import of non-compliant Mobile Power Generators. Here, "non-compliant" means Mobile Power Generators that are not covered by an EPA-issued Certificate of Conformity (for both exhaust and evaporative emission standards) and labeled accordingly, and which are neither exempted nor excluded from the certification and labeling requirements.

The EPA will exercise its discretion not to pursue enforcement for the following violations concerning Mobile Power Generators. This NAA provides only the relief specified below. The scope of this NAA, as well as the various conditions imposed below, are designed to facilitate the importation and use of Mobile Power Generators to aid in hurricane relief, but also to prevent excess air pollution from the continued use of non-compliant Mobile Power Generators once emergency conditions in Puerto Rico have subsided.

Category A: Mobile Power Generators that satisfy emissions standards similar to current EPA standards, and are labeled accordingly

The EPA will exercise its discretion not to pursue enforcement for the sale, offering for sale, introduction into commerce (including lease), delivery for introduction into commerce (including lease), importation of (or causing the foregoing with respect to) the following Category A Mobile Power Generators in Puerto Rico, but only if the following Category A Conditions are satisfied.

Category A Mobile Power Generators include only those which satisfy exhaust emissions standards that are similar to the currently applicable EPA standards set by 40 C.F.R. Parts 1039, 1048, or 1054. This includes only those Mobile Power Generators currently legal for sale in Canada and the European Union, as identified in the Table in Attachment A.

The Category A Conditions are:

1. Each Mobile Power Generator is imported no later than January 31, 2018;
2. Each Mobile Power Generator is sold, leased, donated, or otherwise transferred—and is in fact delivered—to its ultimate purchaser, or the person who places it into service, no later than March 31, 2018;
3. The person acting in reliance upon this NAA (e.g., the importer, seller, lessor, or donor) must report all the following information, as soon as practicable but no later than April 30, 2018.
    a. name, address, and contact information for the person submitting the report;
    b. the serial number, manufacturer, model, model year, and date of manufacture for each Mobile Power Generator;
    c. the emission standards (stated in the terms of the table above) to which each Mobile Power Generator is manufactured;
    d. if applicable, a picture of the label (or a representative picture or drawing of the label) on each Mobile Power Generator stating the emission standards (stated in the terms of the table above) to which it is manufactured;

e. the date of importation, the importer of record, the entry number for the importation; and
f. a description (including name, address and contact information) of who received each Mobile Power Generator, and the nature of the transaction (e.g., donation, sale, lease).

Category B: Mobile Power Generators that do not meet current EPA standards

The EPA will exercise its discretion not to pursue enforcement for the import and lease or donation (to the Commonwealth of Puerto Rico or a nonprofit organization for use in matters of public health or safety in Puerto Rico) of the following Category B Mobile Power Generators in Puerto Rico, but only if the following Category B Conditions are satisfied.

Category B Mobile Power Generators are all Mobile Power Generators, as defined above, regardless of emission performance and regulatory status.

The Category B Conditions are:

1. Each Mobile Power Generator is imported no later than January 31, 2018;
2. Each Mobile Power Generator is removed from service and not operated whatsoever in Puerto Rico, after March 31, 2018.
3. Except in the case of donated units, each Mobile Power Generator is exported from Puerto Rico, or destroyed, no later than April 30, 2018.
4. Each Mobile Power Generator is placed into service only by the person who owns it, or pursuant to a lease or similar time-limited transfer of possession, or by the entity to whom it was donated;
5. No Mobile Power Generator is ever sold, or otherwise has its title or ownership transferred in Puerto Rico. However, Mobile Power Generators may be donated to the Commonwealth of Puerto Rico or a nonprofit organization for use in matters of public health or safety, but in the case of any such donation, the recipient must not sell or lease the units in Puerto Rico;
6. The person acting in reliance upon this NAA (e.g., the importer, seller, lessor, or donor) must report all the following information, as soon as possible but no later than May 31, 2018. Where that person donates the Mobile Power Generator, the report must include the following information insofar as it is available.
    a. name, address, and contact information for the person submitting the report;
    b. the serial number, manufacturer, model, model year, and date of manufacture for each Mobile Power Generator;
    c. the emission standards to which each Mobile Power Generator is manufactured;
    d. if applicable, a picture of the label (or a representative picture or drawing of the label) on each Mobile Power Generator stating the emission standards to which it is manufactured;
    e. the date of importation, the importer of record, the entry number for the importation;
    f. the date of destruction or exportation from Puerto Rico, the exporter of record, and destination for each Mobile Power Generator;

g. a description of who (including name, address and contact information) leased or used (or both) each Mobile Power Generator, or to whom it was donated; and
h. a description of where and how each Mobile Power Generator was used, including total hours of operation and the type of fuel used.

7. Recipients of donated Mobile Power Generators, as described above, must report as soon as possible but no later than May 31, 2018, affirming that the units have been taken out of service in Puerto Rico, and providing a statement of how such units will be permanently taken out of service in Puerto Rico (e.g., exportation or destruction).

The reports for Category A and/or B Generators, referenced above, must be sent by email to Mario Jorquera, Senior Engineer within EPA's Air Enforcement Division, at jorquera.mario@epa.gov. All reports must be presented as a singular file in portable document format (PDF), and be clearly labeled as "Report for Category [A or B, as applicable] Mobile Power Generators Pursuant to EPA's No Action Assurance for Hurricane Relief in Puerto Rico." Where the information for these reports is not available due to the emergency circumstances, the EPA will accept instead as much of the required information that could be obtained if the reporting entity provides a reasonable explanation of why all the information cannot be provided. In addition to the information specified above, each report must include a certification that the information provided is, based on knowledge and belief, true and complete.

EPA will work with Customs and Border Protection personnel on any importation questions arising in connection with this NAA. The EPA reserves the right to extend, revoke or modify the NAA if the EPA believes that such action is necessary to protect public health and the environment. This NAA does not apply to any other federal requirements that may apply to Mobile Power Generation other than the prohibition on importing and introducing the generators in to commerce. Nothing in this NAA is intended to override state or local authorities. Nothing in this exercise of enforcement discretion relieves any person from other obligations under law, if any, concerning these generators.

This NAA does not expire on a particular date because Category A engines should have no significant emission impacts and Category B engines are already required to be exported or destroyed by April 30, 2018.

Please contact Evan Belser, Chief, Vehicle and Engine Enforcement Branch, with questions and information that may inform the EPA as it considers future similar actions that may best serve the public interest. Mr. Belser can be reached at (202) 564-6850 or belser.evan@epa.gov.

Sincerely,

Lawrence Starfield
Acting Assistant Administrator

Attachment A
September 27, 2017 Amended No Action Assurance for Mobile Power Generators
for Hurricane Recovery Efforts in Puerto Rico

Engine Type	**Foreign Standards**	**Power Range**	**Designated Standard**
Diesel-fueled and other compression-ignition engines	Canada	All	Tier 4 or TPEM*
	European Union	0 – 560 kW	Stage III A
	South Korea	<19 kW	Phase 3 (in 2018) / Phase 2 now
Gasoline-fueled and other spark-ignition engines	Canada	<56 kW	Phase 2
	European Union	All	Stage III A

* Canadian TPEM allows interim Tier 4 until 12/31/2018 (under delayed availability time frame) for generators between 19 – 56kWe. For generators between 56 and 130kWe, Canada's TPEM program allows Tier 3 until 12/31/2018 (under general availability timeframe).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

September 27, 2017

Amended No Action Assurance for Mobile Power Generators for Hurricane Recovery Efforts in Puerto Rico

The United States Environmental Protection Agency (EPA) will exercise its discretion not to pursue enforcement for certain violations of the Clean Air Act (CAA) concerning the importation, sale, donation or distribution of mobile power generators in Puerto Rico to increase the number of generators available for use during the recovery from the devastation of Hurricane Maria. The generators covered by this No Action Assurance (NAA), and the scope and conditions of this NAA, are detailed below. In short, under Category A, this NAA allows for the import and sale of mobile power generators that, while not legal for import and sale in Puerto Rico, satisfy air pollution emissions standards that are similar to current EPA standards. Under Category B, this NAA allows for the import and use of other mobile power generators that do not meet standards similar to current EPA standards, but only if they are removed from Puerto Rico as provided below.

EPA has determined that this NAA, which amends the NAA issued on September 22, 2017, is in the public interest given currently reported conditions in Puerto Rico. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by recent hurricanes, especially Hurricane Maria. Available information indicates extreme damage to Puerto Rico's power grid, including near-total destruction to power transmission infrastructure.

The units covered by this NAA include only those units meeting all of the following criteria, referred to hereafter as "Mobile Power Generators":

1. The unit is an internal combustion engine (subject to 40 C.F.R. Parts 1039, 1048, or 1054) that is used in or on a piece of equipment (this does not include loose engines, that is, those not already used in or on a piece of equipment);
2. The unit is designed to and is capable of generating electricity;
3. The unit is portable or transportable, meaning designed to be and capable of being carried to or moved from one location to another; and
4. The unit is not used to power any vehicle or vessel, and is not stationary (that is, regulated under 40 C.F.R. Part 60 or otherwise subject to New Source Performance Standards promulgated under section 111 of the CAA, 42 U.S.C. § 7411).

This NAA arises under Part A of Title II of the CAA, §§ 202–219, 42 U.S.C. §§ 7521–7554, and the regulations promulgated thereunder. These laws aim to reduce emissions from mobile sources of air pollution, including Mobile Power Generators. Sections 203(a) and 213(d) of the CAA, 42 U.S.C. §§ 7522(a) and7547(d), and 40 C.F.R. § 1068.101(a)(1) prohibit manufacturers

from selling, offering for sale, introducing into commerce, delivering for introduction into commerce (or causing any of the foregoing with respect to) non-compliant Mobile Power Generators. These laws also prohibit any person from importing or causing the import of non-compliant Mobile Power Generators. Here, "non-compliant" means Mobile Power Generators that are not covered by an EPA-issued Certificate of Conformity (for both exhaust and evaporative emission standards) and labeled accordingly, and which are neither exempted nor excluded from the certification and labeling requirements.

The EPA will exercise its discretion not to pursue enforcement for the following violations concerning Mobile Power Generators. This NAA provides only the relief specified below. The scope of this NAA, as well as the various conditions imposed below, are designed to facilitate the importation and use of Mobile Power Generators to aid in hurricane relief, but also to prevent excess air pollution from the continued use of non-compliant Mobile Power Generators once emergency conditions in Puerto Rico have subsided.

Category A: Mobile Power Generators that satisfy emissions standards similar to current EPA standards, and are labeled accordingly

The EPA will exercise its discretion not to pursue enforcement for the sale, offering for sale, introduction into commerce (including lease), delivery for introduction into commerce (including lease), importation of (or causing the foregoing with respect to) the following Category A Mobile Power Generators in Puerto Rico, but only if the following Category A Conditions are satisfied.

Category A Mobile Power Generators include only those which satisfy exhaust emissions standards that are similar to the currently applicable EPA standards set by 40 C.F.R. Parts 1039, 1048, or 1054. This includes only those Mobile Power Generators currently legal for sale in Canada and the European Union, as identified in the Table in Attachment A.

The Category A Conditions are:

1. Each Mobile Power Generator is imported no later than January 31, 2018;
2. Each Mobile Power Generator is sold, leased, donated, or otherwise transferred—and is in fact delivered—to its ultimate purchaser, or the person who places it into service, no later than March 31, 2018;
3. The person acting in reliance upon this NAA (e.g., the importer, seller, lessor, or donor) must report all the following information, as soon as practicable but no later than April 30, 2018.
    a. name, address, and contact information for the person submitting the report;
    b. the serial number, manufacturer, model, model year, and date of manufacture for each Mobile Power Generator;
    c. the emission standards (stated in the terms of the table above) to which each Mobile Power Generator is manufactured;
    d. if applicable, a picture of the label (or a representative picture or drawing of the label) on each Mobile Power Generator stating the emission standards (stated in the terms of the table above) to which it is manufactured;

e. the date of importation, the importer of record, the entry number for the importation; and
f. a description (including name, address and contact information) of who received each Mobile Power Generator, and the nature of the transaction (e.g., donation, sale, lease).

Category B: Mobile Power Generators that do not meet current EPA standards

The EPA will exercise its discretion not to pursue enforcement for the import and lease or donation (to the Commonwealth of Puerto Rico or a nonprofit organization for use in matters of public health or safety in Puerto Rico) of the following Category B Mobile Power Generators in Puerto Rico, but only if the following Category B Conditions are satisfied.

Category B Mobile Power Generators are all Mobile Power Generators, as defined above, regardless of emission performance and regulatory status.

The Category B Conditions are:

1. Each Mobile Power Generator is imported no later than January 31, 2018;
2. Each Mobile Power Generator is removed from service and not operated whatsoever in Puerto Rico, after March 31, 2018.
3. Except in the case of donated units, each Mobile Power Generator is exported from Puerto Rico, or destroyed, no later than April 30, 2018.
4. Each Mobile Power Generator is placed into service only by the person who owns it, or pursuant to a lease or similar time-limited transfer of possession, or by the entity to whom it was donated;
5. No Mobile Power Generator is ever sold, or otherwise has its title or ownership transferred in Puerto Rico. However, Mobile Power Generators may be donated to the Commonwealth of Puerto Rico or a nonprofit organization for use in matters of public health or safety, but in the case of any such donation, the recipient must not sell or lease the units in Puerto Rico;
6. The person acting in reliance upon this NAA (e.g., the importer, seller, lessor, or donor) must report all the following information, as soon as possible but no later than May 31, 2018. Where that person donates the Mobile Power Generator, the report must include the following information insofar as it is available.
    a. name, address, and contact information for the person submitting the report;
    b. the serial number, manufacturer, model, model year, and date of manufacture for each Mobile Power Generator;
    c. the emission standards to which each Mobile Power Generator is manufactured;
    d. if applicable, a picture of the label (or a representative picture or drawing of the label) on each Mobile Power Generator stating the emission standards to which it is manufactured;
    e. the date of importation, the importer of record, the entry number for the importation;
    f. the date of destruction or exportation from Puerto Rico, the exporter of record, and destination for each Mobile Power Generator;

g. a description of who (including name, address and contact information) leased or used (or both) each Mobile Power Generator, or to whom it was donated; and
h. a description of where and how each Mobile Power Generator was used, including total hours of operation and the type of fuel used.

7. Recipients of donated Mobile Power Generators, as described above, must report as soon as possible but no later than May 31, 2018, affirming that the units have been taken out of service in Puerto Rico, and providing a statement of how such units will be permanently taken out of service in Puerto Rico (e.g., exportation or destruction).

The reports for Category A and/or B Generators, referenced above, must be sent by email to Mario Jorquera, Senior Engineer within EPA's Air Enforcement Division, at jorquera.mario@epa.gov. All reports must be presented as a singular file in portable document format (PDF), and be clearly labeled as "Report for Category [A or B, as applicable] Mobile Power Generators Pursuant to EPA's No Action Assurance for Hurricane Relief in Puerto Rico." Where the information for these reports is not available due to the emergency circumstances, the EPA will accept instead as much of the required information that could be obtained if the reporting entity provides a reasonable explanation of why all the information cannot be provided. In addition to the information specified above, each report must include a certification that the information provided is, based on knowledge and belief, true and complete.

EPA will work with Customs and Border Protection personnel on any importation questions arising in connection with this NAA. The EPA reserves the right to extend, revoke or modify the NAA if the EPA believes that such action is necessary to protect public health and the environment. This NAA does not apply to any other federal requirements that may apply to Mobile Power Generation other than the prohibition on importing and introducing the generators in to commerce. Nothing in this NAA is intended to override state or local authorities. Nothing in this exercise of enforcement discretion relieves any person from other obligations under law, if any, concerning these generators.

This NAA does not expire on a particular date because Category A engines should have no significant emission impacts and Category B engines are already required to be exported or destroyed by April 30, 2018.

Please contact Evan Belser, Chief, Vehicle and Engine Enforcement Branch, with questions and information that may inform the EPA as it considers future similar actions that may best serve the public interest. Mr. Belser can be reached at (202) 564-6850 or belser.evan@epa.gov.

Sincerely,

Lawrence Starfield
Acting Assistant Administrator

Attachment A
September 27, 2017 Amended No Action Assurance for Mobile Power Generators
for Hurricane Recovery Efforts in Puerto Rico

Engine Type	**Foreign Standards**	**Power Range**	**Designated Standard**
Diesel-fueled and other compression-ignition engines	Canada	All	Tier 4 or TPEM*
	European Union	0 – 560 kW	Stage III A
	South Korea	<19 kW	Phase 3 (in 2018) / Phase 2 now
Gasoline-fueled and other spark-ignition engines	Canada	<56 kW	Phase 2
	European Union	All	Stage III A

* Canadian TPEM allows interim Tier 4 until 12/31/2018 (under delayed availability time frame) for generators between 19 – 56kWe. For generators between 56 and 130kWe, Canada's TPEM program allows Tier 3 until 12/31/2018 (under general availability timeframe).

CN 078-04479
Rev. 11-19

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

11 de octubre de 2019

Ing. Luis R. Sierra Torres
Gerente Área de Calidad de Aire
Junta de Calidad Ambiental
PO Box 11488
San Juan, Puerto Rico 00910

Estimado ingeniero Sierra Torres:

Dispensa Emergencia para Instalación de Turbinas de Gas en la Central Palo Seco para Proporcionar Energía de Respaldo de Emergencia

La Autoridad de Energía Eléctrica (Autoridad) interesa instalar tres turbinas de gas de aproximadamente 23 MW cada una en la Central Palo Seco. Estas turbinas estarán disponibles para proveer generación de emergencia (*backup*) como parte del plan de contingencia que desarrolló la Autoridad durante la temporada de huracanes y que, a su vez, nos permitirá asegurar el mantenimiento de un servicio de energía eléctrica confiable en la Isla y que servirá para reforzar la resistencia del sistema de la Autoridad, que se requiere en este momento. Dado que nos encontramos en la temporada de huracanes, la Autoridad pretende comenzar la instalación y condicionamiento de estas tres unidades inmediatamente. Por consiguiente, la Autoridad solicita que se otorgue una dispensa conforme lo dispone la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica de la Junta de Calidad Ambiental, vigente. De esta manera estas unidades estarán disponibles para su uso desde octubre de 2019.

Necesidad inmediata de energía para asegurar confiabilidad y resiliencia del sistema eléctrico

Actualmente, la Autoridad tiene varias unidades de carga base que están fuera de servicio por mantenimiento o reparación, o se limitan a solo una parte de su capacidad. Como ejemplo de lo anterior podemos mencionar; que la Unidad 2 de Aguirre se encuentra fuera de servicio (probablemente hasta febrero del 2020) debido a una falla del transformador principal de la unidad. En la Central San Juan, la Unidad 10 está fuera de servicio desde el 2016, la unidad de Ciclo Combinado San Juan 5 saldrá de servicio para la conversión a quema dual de combustible y la Unidad 6 tiene limitaciones de carga por alta presión del condensador.

"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."

En Palo Seco la Unidad 2 se encuentra fuera de servicio, y las Unidades 3 y 4 tienen limitada su capacidad.

Al mismo tiempo, otras unidades base deben someterse a mantenimientos o salidas ambientales obligatorias. Otras unidades están limitadas en cuanto a sus operaciones porque son unidades de uso limitado bajo el *Mercury and Air Toxic Standard* (MATS, por sus siglas en inglés) aprobado por la Agencia Federal de Protección Ambiental (EPA, por sus siglas en ingles). De otra parte, en San Juan la unidad 6 tiene salida programada en noviembre de 2019, la Unidad 8 estará fuera de servicio hasta comienzos de noviembre, además de ser una unidad de uso limitado por MATS. La Unidad 1 de Palo Seco se someterá a su salida ambiental y estará fuera de servicio hasta comienzos de noviembre, además de ser una unidad de uso limitado bajo la regulación MATS. En Costa Sur la unidad 6 tiene una salida programada desde finales de octubre hasta principio de diciembre. Por lo que, la falta de unidades podría resultar en una incapacidad para proveer la demanda de energía necesaria, lo que podría ocasionar interrupciones del servicio.

Por las razones antes expuestas y ante la necesidad de poder satisfacer de manera confiable la demanda eléctrica y como parte del plan de contingencia que establecimos para cubrir incidencias que puedan ocurrir, la Autoridad propone instalar estas tres turbinas de gas en Palo Seco. La disponibilidad de estas tres nuevas turbinas de gas ayudará a restaurar la energía de forma rápida en caso de emergencia y a asegurar la estabilidad y la resiliencia del sistema de la Autoridad. Estas nuevas turbinas se ubicarán estratégicamente en Palo Seco, en el área metropolitana de San Juan, donde la demanda de energía eléctrica es mayor. Además, el lugar se encuentra preparado ya que se ubicarán las mismas en el área donde se instalaron los generadores de emergencia que proveyó el Cuerpo de Ingenieros luego de los huracanes Irma y María, los cuales proporcionaron la estabilidad que requería el sistema de electricidad en ese momento. La destrucción por los huracanes Irma y María de las líneas de transmisión más importantes de la Autoridad creó restricciones de transmisión grave que retrasó la capacidad de la Autoridad para restaurar completamente la energía en la Isla.

Descripción de la Central Palo Seco

La Central Palo Seco se encuentra en 56.3 hectáreas en una zona industrial en la carretera PR-165 km 30.8 en el municipio de Toa Baja. Palo Seco consiste de diez unidades generadoras existentes distribuidas en dos áreas de la central: la termoeléctrica que consiste en cuatro calderas de vapor con una capacidad de generación combinada de 602 MW y la porción del bloque de alimentación de la planta (*powerblock*) que consiste en seis turbinas de gas con una capacidad de generación combinada de 126 MW. Cada turbina de gas existente es de 21 MW cada una. También en Palo Seco se encuentran tres generadores de electricidad de emergencia y una bomba de contra incendio con motor diésel. Palo Seco es una fuente mayor bajo un permiso Título V. Palo Seco no tiene un permiso de prevención del deterioro significativo ("PSD" por sus siglas en ingles).

Descripción de las Turbinas de Gas a ser instaladas en Palo Seco

La Autoridad propone instalar tres paquetes de turbinas de gas MOBILEPAC® con motores FT8® con una capacidad de aproximadamente 23 MW cada una. El MOBILEPAC® ofrece 22.5 MW (Diésel) / 23.8 MW (Gas Natural) de energía. Utilizando la probada tecnología de turbina de gas SWIFTPAC®, este paquete está diseñado para proporcionar energía rápida, confiable y es especialmente útil en situaciones de emergencia. Cada MOBILEPAC® comprende de dos vagones de arrastre. El primero contiene la turbina de gas, generador eléctrico, motor, colector de escape y difusor de sistema de aceite lubricación. El segundo vagón lleva el sistema de control, panel de operación, relés de protección, baterías y cargador, centro control de motores y el paquete de arranque hidráulico.

Se estima que la instalación de estas unidades no conlleva un aumento significativo en la capacidad de generación de la Central. Estas nuevas unidades tienen la capacidad de usar diésel o gas natural como combustible (*dual fuel*). La instalación de estas unidades tiene el potencial de facilitar un cambio en el perfil del combustible de la Autoridad a gas natural de una combustión más limpia. Sin embargo, en estos momentos se utilizará diésel de bajo contenido de azufre. Para la operación del equipo propuesto, se utilizarán los tanques existentes en la planta para almacenar combustible y que están provistos de un dique para control de derrames de combustible.

Las turbinas de gas ya se encuentran en las facilidades de la Central Palo Seco y se instalarán en la parte sur de la Central, al sureste de donde está situado el *powerblock* actual. Para asegurar la disponibilidad durante la temporada de huracanes, la Autoridad interesa completar la instalación durante el mes de octubre de 2019. No se prevén mayores trabajos de construcción que no sean aquellos requeridos para la estabilización de las bases de los equipos, las debidas conexiones eléctricas y a los tanques de combustible.

La Autoridad identificó los fondos necesarios para la instalación de un sistema de inyección de agua desmineralizada para el control de emisiones de las turbinas. Actualmente, estamos en un proceso competitivo para seleccionar al contratista que completará dicha instalación, se espera que en las próximas dos semanas se concrete la selección. El sistema debe estar en servicio antes de 4 meses.

Durante el proceso de instalación y condicionamiento parcial de las turbinas se requiere la operación de las mismas. Como parte de su instalación y condicionamiento se realizarán pruebas para verificar el encendido de la turbina, condiciones del generador y sus protecciones eléctricas, ajustes de control y pruebas de sincronización eléctrica entre otros. El consumo de combustible No.2 (.05 % azufre por peso) para las pruebas será de aproximadamente 135,000 galones.

La puesta en marcha de las unidades se espera que sea entre mediados o cerca de finales de octubre de 2019. Las operaciones continuas de las unidades deben comenzar durante las primeras semanas de noviembre de 2019.

En la Tabla 1 y 2, a continuación, la Autoridad proporciona los factores de emisiones esperados para las turbinas de gas y el estimado de emisiones durante la operación de las unidades en el período cubierto por la dispensa. Información de respaldo se incluye en los Apéndices A, B, C y D que acompañan esta solicitud:

Tabla 1: Factores de Emisión para las Turbinas PW FT8 Mobilepac:

PALO SECO TURBINAS FT-8 MOBILEPAC [1]					
OPERACION EN DIESEL - DRY			OPERACION EN GAS NATURAL - DRY		
CONTAMINANTE	FACTOR DE EMISION	UNIDADES	CONTAMINANTE	FACTOR DE EMISION	UNIDADES
PM	0.0773	Lbs/MMBtu	**PM**	0.0233	Lbs/MMBtu
PM10	0.0773	Lbs/MMBtu	**PM10**	0.0233	Lbs/MMBtu
PM2.5	0.0773	Lbs/MMBtu	**PM2.5**	0.0233	Lbs/MMBtu
SOx	0.0554	Lbs/MMBtu	**SOx (Mass Bal.)**	0.0152	Lbs/MMBtu
NOx	2.2060	Lbs/MMBtu	**NOx**	0.8373	Lbs/MMBtu
VOC	0.0072	Lbs/MMBtu	**VOC**	0.0013	Lbs/MMBtu
CO	0.0352	Lbs/MMBtu	**CO**	0.0210	Lbs/MMBtu
HEAT INPUT	233	MMBtu/Hr	**HEAT INPUT**	252	MMBtu/Hr

[1] NOTES:

1) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
2) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
3) Natural Gas Sulfur Content 5.0 gr/100 dscf
4) Fuel Oil Sulfur Content .05 % per wt
5) SO2 emissions based upon fuel sulfur content limits
6) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
7) Heating Value Fuel Oil .138 MMBtu/Gal
8) Heating Value Natural Gas .00102 MMBtu/SCF
9) NOx PSD Limiting Pollutant

Tabla 2: Estimado de Emisiones - Turbinas PW FT8 Mobilepac, período de dispensa:

PALO SECO TURBINAS FT-8 MOBILEPAC (3 UNIDADES) - DRY - BAJO LIMITE SIGNIFICATIVO DE PSD[1]			
CONTAMINANTE	PW FT8 EMISIONES PERMISIBLES (tons) PSD	PW FT8 COMBUSTIBLE PERMISIBLE - GAS (SCF)	PW FT8 COMBUSTIBLE PERMISIBLE - DIESEL (GAL)
NOx	**39**	**91,329,802**	**256,217**
PM	24	2,016,806,723	4,502,415
PM10	14	1,176,470,588	2,626,409
PM2.5	9	756,302,521	1,688,406
SO2	39	5,044,656,606	10,201,057
VOC	39	56,678,200,692	78,390,269
CO	99	9,229,744,728	40,768,823

Aunque la necesidad inmediata de las tres turbinas de gas es servir como fuente de energía durante la temporada de huracanes, o absorber cualquier tipo de incidencia que se pueda registrar ante la falta de capacidad de generación por la que atravesamos, eventualmente la Autoridad interesa mantener estas unidades para sus operaciones regulares. Para ello considera comenzar con el proceso de los trámites correspondientes para licenciar las mismas y de esta forma proceder con el reemplazo de tres de las unidades existentes de 21 MW GE 5000 en la Central Palo Seco, toda vez que resultan más eficientes. La Autoridad espera que el gas natural esté disponible en la Central Palo Seco en un futuro cercano.

La Autoridad no puede precisar cuándo exactamente las tres unidades existentes puedan ser retiradas, pero se espera que esto ocurra después de la actual temporada de huracanes. La razón de esto es que la Autoridad tiene que mantener cierta redundancia en sus activos de generación durante la temporada de huracanes para promover la resiliencia y para garantizar la suficiente energía en el caso de otro desastre. Como señalamos anteriormente, esto es especialmente cierto para la generación de unidades ubicadas en la parte norte de la Isla, que se encuentran cerca de la demanda y no son tan vulnerables a las posibles restricciones de transmisión que pueden resultar de las condiciones del tiempo.

Conclusión

Dada la necesidad de mayor resiliencia frente a la actual temporada de huracanes, y tomando en consideración la necesidad de absorber la demanda de energía que se requiere la Autoridad solicita que basado en las disposiciones de la Regla 302 del RCCA se nos permita la instalación de las tres turbinas de gas en octubre de 2019 en la Central

Palo Seco. Esto le permite a la Autoridad tener estas unidades disponibles para su uso a principios de noviembre de 2019. De igual forma le permite determinar los pasos a seguir para que estas unidades puedan utilizarse a mayor capacidad para reemplazar unidades existentes.

De necesitar información adicional, puede comunicarse con la señora Luisette X. Ríos, Jefa de la División Protección Ambiental y Confiabilidad de Calidad, por el (787) 521-4960.

Cordialmente,

Efran Paredes Maisonet, Director
Planificación y Protección Ambiental

LXRC/MVM/JAS/yba

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE II - PROCESO DE LA PLANTA Y DESCRIPCIÓN DE EMISIONES

I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3/min.$

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: 3 Turbinas de Combustión PWPS FT-8 Mobilepac (DRY): 252 MMBtu/Hr per Unit Nat.Gas; 233 MMBtu/Hr per Unit Fuel Oil ó __
(Tipo) (BTU/hr) (HP)

2. Combustible:

Tipo	Gal/hr	ó Lb/hr	% azufre
Diesel	1,680		.05
Gas Natural	242,932 Scf/Hr		5.0 gr/100 dscf

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
N/A Diesel	
N/A Gas Natural	

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
33.89 pies	120.95" x 97.08" pulg.	793 °F	142.8 pies/seg.
33.89 pies	120.95" x 97.08" pulg.	790 °F	146.6 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día))
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar:

Tipo	Gal/hr	ó Lb/hr	% azufre

6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

Certifico que estoy registrado y autorizado para practicar mi profesión en Puerto Rico; que el equipo y medidas para el control de emisiones son adecuadas y cumplen con las disposiciones del Reglamento de Control de Contaminantes Atmosféricos de la Junta de Calidad Ambiental de Puerto Rico y que, de acuerdo a mis mejores conocimientos y creencias, la información suministrada es veraz, completa y exacta.

17776-PE (Número de Licencia) — Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) — _____ (Firma)

EFRAN PAREDES MAISONET INGENIERO LICENCIADO LIC. #17776 PUERTO RICO

Fecha: _____. Número de solicitud: _____.

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

HOJA DE PAGO

Número de Solicitud: _____
Nombre del Oficial Responsable: Ing. Daniel Hernández
Título: Director de Generación
Nombre del Proyecto o Fuente de Emisión: Turbinas Palo Seco FT8 Mobilepac
Dirección Postal: _____

I. Pago por Solicitud de Permiso:
1. Pago por Radicación ($100.00): (X) Construcción ( ) Operación
( ) Escuela de Adiestramiento de Asbesto $100.00
2. (X) Pago por Permiso 3. ( ) Pago por Renovación 4. ( ) Pago por Modificación

($25.00 por toneladas por Contaminante - Dispensa)

CONTAMINANTE	EMISIONES (Ton/año)	CARGO TOTAL
Material Particulado (PM, PM_{10}, $PM_{2.5}$)	50	$1,250
Dióxido de Azufre (SO_x)	40	$1,000
Oxido de Nitrógeno (NO_x)	40	$1,000
Compuestos Orgánicos Volátiles (VOC) e Hidrocarburos (HC)	40	$1,000
Plomo (Pb)		
Otros (Favor de identificar) CO	100	$2,500
TOTAL		$6,850

CERTIFICACIONES DE ASBESTO

1. Escuela de Adiestramiento de Asbesto	$600.00		N/A
2. Registro de Asbesto ($40.00 por categoría) ( ) Especialista en Muestreo de Aire ( ) Diseñador de proyecto ( ) Planificador de proyecto ( ) Inspector ( ) Supervisor ( ) Trabajador			

OTROS CARGOS

1. Cambio de dueño o localización	(50% del cargo por radicación)	N/A
2. Pago por Revisión	(50% del cargo por radicación)	N/A
3. Duplicados de Permisos	$10.00	N/A
4. Pago por Exceso de Emisiones:		
A. Dispensas	($25.00/ton/contaminante)	$6,750
B. Pequeños Negocios	($12.50/ton/cantaminante)	N/A

PAGO TOTAL DE LA SOLICITUD:

II. Pago anual (pago por un año)	N/A
III. Pago por cuatro (4) años extras (pago por 4 años)	N/A
IV. TOTAL (**cheque # 470934**)	$6,850

PARA COMPLETARSE EN LA OFICINA DEL ÁREA DE CALIDAD DE AIRE

Cantidad a pagar: _____ Fecha: _____ Recibido por: _____

Número de cheque: _____ Número de recibo: _____

_____ _____
Firma del Representante autorizado JCA Firma División de Finanzas

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

THIS IS WATERMARK PAPER - DO NOT ACCEPT WITHOUT NOTING WATERMARK - HOLD TO LIGHT TO VERIFY WATERMARK

Puerto Rico Electric Power Authority
CITIBANK, N.A. –CSMG
GENERAL FUND

CHECK NO. **470934**
DATE 25–SEP–19

PAY Six Thousand Eight Hundred Fifty And NO/100 Dollars **********$6,850.00
TO THE ORDER OF

SECRETARIO DE HACIENDA
JUNTA DE CALIDAD AMBIENTAL
PO BOX 11488
SAN JUAN, PR 00910-1488

NOT VALID AFTER THREE MONTHS FROM DATE OF ISSUE

⑈00470934⑈ ⑆021502040⑆ 040001501 5⑈

Puerto Rico Electric Power Authority

CITIBANK CSMG – GENERAL FUND

Vendor Number	Date	Check No.
00498715	25–SEP–19	470934

Date	Invoice	Description	Gross	Withheld Amount	Discount	Net
24–JUN–19	19–06–SR–118	DISPENSA PALO SECO MEGA GENERADORES	6,850.00	0.00	0.00	6,850.00
THE ATTACHED CHECK IS IN PAYMENT FOR ITEMS DESCRIBED ABOVE		**TOTAL**	6,850.00	0.00	0.00	6,850.00

RENOVACIÓN APROBADA: 16 de noviembre, 2015

RENEWAL APPROVED ON: November 16, 2015

NÚM. EMP. 11964

Estado Libre Asociado de Puerto Rico
Commonwealth of Puerto Rico

DEPARTAMENTO DE ESTADO
Department of State

Secretaría Auxiliar de Juntas Examinadoras
Office of the Assistant Secretary of State for Examining Boards

La Junta Examinadora de Ingenieros y Agrimensores
The Examining Board of Engineers and Land Surveyors

por la presente certifica que
hereby certifies that

Efran Paredes Maisonet

habiendo cumplido todos los requisitos de Ley, se ha inscrito en el Registro de esta Junta como
having met all the requirements of law, has been registered as:

Ingeniero Licenciado
Licensed Engineer

16 FEB 15 AM 9:08

En testimonio de lo cual, se expide esta licencia para el ejercicio de dicha profesión, bajo el sello de la Junta Examinadora.
In testimony whereof, this license is issued to practice this profession, under the seal of the Board of Examiners.

En San Juan, Puerto Rico, efectivo 15 de diciembre de 2015
In San Juan, Puerto Rico, effective December 15, 2015.

Número de Licencia: 17776
License Number

Vencimiento: 15 de diciembre de 2020
Expires: December 15, 2020

JUNTA EXAMINADORA DE INGENIEROS Y AGRIMENSORES
ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE ESTADO

Presidente

Secretario Auxiliar Lcdo. Francisco Rodríguez Bernier
Under Secretary

Certifico que es copia fiel y exacta del original.

Sonia Miranda Vega, Directora
Planificación y Protección Ambiental
Núm. Emp. 9218, Tel. 4884

COPY

#empleado 11964

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Mónica A. del Playa 14/nov/2018

FIRMA FECHA


G
EFRAN
PAREDES MAISONET
11964

APENDICE B

ESPECIFICACIONES DEL MANUFACTURERO (PWPS/ARG)



PERFORMANCE CURVES & EMISSION RATES

Following find FT8 Guaranteed Performance for this proposal. Performance tables and curves are shown for dry and water injection burning with diesel or natural gas

Guaranteed net unit output (diesel) @ specified conditions without water or steam injection	MW 22.563
Guaranteed net unit output (NG) @ specified conditions without water or steam injection	MW 23.842
Unit minimum load for continuous operation	MW 1
Time from shutdown to guaranteed net unit output	**Minutes 10**
Unit Heat Rate (NG – LHV) Assume 21,414 BTU/Lb energy content @ guar net unit output	BTU/KW-hr 9574
Unit Heat Rate (diesel – LHV) Assume 18,646 BTU/Lb energy content @ guar net unit output	BTU/KW-hr 9759

(1) If energy price varies with output, provide data related to this variation. Provide output vs. Energy Price curves if applicable.

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FT8® GAS TURBINE MOBILEPAC®
Notes Applicable to Performance and Emissions Data
PREPA - ARG

Prf_CustCpy_PREPA-ARG_FT8-MP_60Hz_138_AS_R0_091418.xlsm

WARNING -- This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems (PWPS), is prohibited without prior written approval from PWPS and authorization under applicable export control laws.
EAR Export Classification: ECCN EAR99

Notes:

1. All Performance/Emissions Data submitted are subject to the sum of the following notes, and the most recent version of PWPS "Factory and Field Tests" at the time of the proposal offering. Guaranteed values are indicated by the following designations, (G) or bold/boxed, all other data are estimates.
2. The MOBILEPAC® (MP) consists of one turbine (1-GT) driving one generator. Rates are shown as per GT, and per MOBILEPAC® (MP), which are equivalent for this configuration.
3. Gaseous fuel supplied to gas turbines must meet PWPS fuel specification FR-2, liquid fuel supplied to gas turbines must meet PWPS fuel specification FR-1.
4. Data shown is based on standard combustor without water injection.
5. All data supplied based on 0m/0ft Alt. and 70% relative humidity.
6. Inlet loss estimated at 63.5mm/2.5in W.C. with 2-stage inlet filter. No correction of test results for inlet loss.
7. Exhaust loss for all cases estimated at 25.4mm/1in W.C. for standard exhaust stack. There will be no correction of test results for exhaust loss in simple-cycle.
8. Stack exhaust velocity is based on exhaust gas vol flow rate and exhaust exit area (4.63sq m/49.8sq ft).
9. Secondary (enclosure) cooling air is mixed with primary exhaust flow, before stack exit.
10. Data designated as "primary exhaust" is referenced to the GT exhaust and does not include secondary (enclosure) cooling air.
11. All data submitted is based upon a generator operating at 60Hz, 0.9 power factor @ 13.8kV.
12. Net Power = Power measured at the generator terminals, minus auxiliary load for power island and 200 kW BOP.
13. GSU losses and gas compression loads are not included in Net Power output or Net Heat Rate determinations.
14. Performance Acceptance Test for GT Net Power Output and GT Net Heat Rates to be conducted per PWPS test procedures, instrumentation, and calculations; all being in general accordance with ASME PTC-22 (2005) and PTC-19.1.
15. Performance acceptance testing for GT Net Power Output and GT Net Heat Rate shall be furnished by PWPS through third party contractor.
16. Test boundary shall be Ambient Temperature as defined by the average dry bulb temperature at the inlet filter face.
17. Site performance to be corrected for changes in ambient temperature, pressure, relative/specific humidity and power factor.
18. Thermal performance tests must be conducted in "New & Clean" condition, with less than 100 fired-hours. If Units are dispatched for Commercial Operation, or operated by Purchaser for more than 100 fired-hours, then thermal performance will have been deemed to have been met, and any thermal performance testing would be conducted and reported as "Information Only".
19. Approximately 30 days prior to performance testing of the units, Purchaser will be provided with correction curves for the GT power and heat rate, as well as draft performance acceptance test procedures. Curves and procedures will not be issued with RFQ responses.
20. Emission data is representative of steady-state operation, and may not be indicative of emissions during transient operation. Demonstration of emission concentrations for NOx, CO and VOC's are based on 1-hour averages, after operation under steady-state conditions for 1-hour. "Steady state" shall be defined as less than +/-1.3% variation from the average for power output, which is in alignment for the PTC-22 (2005) gas turbine code for steady state conditions. Compliance with shall be based on the average of stack traverse's.
21. Applications that utilize CEM systems, must use a multi-point, multiple probe system to read emissions concentrations in the backpass. This averaging system is required to prevent emission compliance issues related to diluent stratification associated with the addition of secondary (enclosure) cooling air, and the use of noise attenuation baffles in the stack.
22. Performance and emissions are based upon assumed fuel compositions shown on Sheet - 2, and significant changes from these assumed characteristics can change the quoted performance and emissions.
23. SO2 data is estimated from Sulfur contents stated on Sheet - 2, which PWPS does not control and therefore can't guarantee.
24. All emission measurements to be by US EPA methods. All emissions measurements for engine tuning, demonstration of emissions levels and/or Air Permit compliance (and related procedures), to be furnished by Purchaser, and shall conform to PWPS Quality Assurance procedure: "McHale PWPS EmissionsTuningQAProcedure 0001ETQAR3.pdf"
25. Volatile Organic Compounds (VOC) are defined as non methane, non ethane, with > 85% of the composition being ethene. Values shown are based upon PWPS experience and measurement using EPA Method 25A (total UHC) on liquid fuel, and/or Method 18 (w/Tedlar bag samples) if UHC exceeds VOC levels on gaseous fuel.
26. Testing for PM10 shall conform to PWPS Quality Assurance documentation in addition to EPA Reference Method 5 (filterable) and R/M 202 (condensable/back half) fractions. Volumetric flow rate for determination of PM10 to be per EPA Method 19, which utilized fuel flow, O2%, and F-factors.
27. Particulate samples shall be drawn isokinetically, with a minimum of 3-hour sample duration and are to consist of 3-tests. sample results are outside of specification, any suspect PM10 test shall be rejected and retested at the expense of the customer.
28. In the event that the customer does not provide emissions measurements for tuning of water injection systems which meet the requirements of the PWPS Emissions Quality Assurance document, then PWPS reserves the right to tune water/fuel ratios in accordance with our default levels.
29. In the event that the customer does not conduct emissions testing for the verification of compliance with PWPS emissions levels, or if such testing is not in accordance with PWPS Emissions Quality Assurance document, the achievement of substantial completion of the project by PWPS shall not be delayed.
30. If future emissions tuning or testing are required after the initial commissioning period when staffed by PWPS personnel and/or contractors, the additional mobilizations/demobilizations and provision of technical teams for the tuning and/or testing shall be at the customers expense.
31. Tested NOx concentrations shall be corrected lower for liquid fuel bound nitrogen (FBN) in excess of 0.015% by weight.

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FT8® GAS TURBINE MOBILEPAC®

EAR Export Classification: ECCN EAR99

Assumed Fuel Properties

PREPA - ARG

The following fuel properties are assumed as representative of site fuels, based on specified data.

Specified Natural Gas				
	Volume - Mol %		Units	
Methane	96.33	Hydrogen to Carbon Ratio	$H_{(mw)} / C_{(mw)}$	0.330
Ethane	3.08	Hydrocarbon Molecular Weight		16.535
Propane	0.16	Gas Molar Weight		16.635
N-Butane	0.01	Higher Heating Value	Btu/lb	23,748
Isobutane	0.01		kJ/kg	55,238
N-Pentane	0.00		Btu/SCF	1,036
Isopentane	0.00		kJ/Nm3	38,593
N-Hexane	0.00	Lower Heating Value	Btu/lb	21,414
Nitrogen	0.26		kJ/kg	49,809
CO2	0.14		Btu/SCF	934.0
Total	100.0		kJ/Nm3	34,800
		Ratio HHV/LHV		1.109
		Specific Gravity		0.5743
		Assumed Max Sulfur in gas fuel	grains/100 scf	5.0
		Assumed Max Sulfur in gas fuel	mg/Nm3	121

Standard No. 2 Fuel Oil				
	Weight %		Units	
Carbon	87.12	Hydrogen to Carbon Ratio		0.1470
Hydrogen	12.80	Higher Heating Value	Btu/lb	19,858
Nitrogen	0.015		kJ/kg	46,189
Oxygen	0.010	Lower Heating Value	Btu/lb	18,646
Sulfur Max	0.050		kJ/kg	43,371
Total	100.0	Ratio HHV/LHV		1.065
		Specific Gravity		0.816

Prf_CustCpy_PREPA-ARG_FT8-MP_60Hz_138_AS_R0_091418.xlsm

Sheet - 2

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EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC®

Performance and Emissions

PREPA - ARG

Configuration: Dual Fuel Std. Combustor Dry, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																		
Fuel Type		Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Burner Water Injection In-Service	Yes / No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Fuel LHV	Btu/lb	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	
Ratio of HHV to LHV		1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	
Gross Power Output per MP, ref Gen Term	MWe	29.742	30.365	30.610	30.950	30.934	30.929	30.102	28.885	28.255	27.260	25.988	24.723	24.111	23.529	22.446	21.433	
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,608	8,686	8,720	8,780	8,806	8,850	8,876	8,951	9,002	9,083	9,211	9,340	9,411	9,482	9,635	9,796	
Power Isle and BOP Aux Load, per MP	kW	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	
Net Power Output, per MP	MWe	29.473	30.096	30.341	30.681	30.665	30.660	29.833	28.616	27.986	26.991	25.719	24.454	23.842	23.260	22.177	21.164	
Net Heat Rate, LHV	Btu/kWhr	8,686	8,764	8,797	8,857	8,883	8,927	8,956	9,036	9,088	9,174	9,307	9,442	9,574	9,592	9,752	9,920	
Fuel Flow, per GT	lbs/hr	11,955	12,317	12,465	12,690	12,720	12,782	12,477	12,074	11,877	11,563	11,178	10,783	10,596	10,419	10,100	9,804	
Gaseous Fuel Flow, per GT	SCF/hr	274,097	282,398	285,789	290,952	291,642	293,054	286,061	276,832	272,314	265,116	256,274	247,221	242,932	238,883	231,558	224,785	
Calc Heat Input, HHV, per GT	MMBtu/hr	284	293	296	301	302	304	296	287	282	275	265	256	252	247	240	233	
Burner Water Injection Flow, per GT	gal/min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																		
NOx	ppmvd	156	174	181	194	199	207	207	208	210	211	213	214	214	214	216	217	
NOx, as NO2, per GT	lbs/hr	174	200	211	230	237	247	241	235	233	228	222	215	211	208	203	198	
CO	ppmvd	14.7	12.3	11.5	10.1	9.6	9.1	9.1	9.1	9.0	9.0	8.9	8.9	8.8	8.8	8.8	8.7	
CO, per GT	lbs/hr	10.0	8.6	8.1	7.3	7.0	6.7	6.5	6.2	6.1	5.9	5.6	5.4	5.3	5.2	5.0	4.8	
VOC as C1	ppmvd	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
VOC as C1, per GT	lbs/hr	0.47	0.46	0.45	0.45	0.46	0.45	0.44	0.41	0.40	0.38	0.36	0.35	0.34	0.34	0.33	0.32	
SO2	ppmvd	2.77	2.77	2.77	2.76	2.76	2.76	2.76	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.78	2.78	
SO2, per GT	lbs/hr	4.31	4.44	4.49	4.57	4.58	4.60	4.49	4.35	4.28	4.17	4.03	3.88	3.82	3.75	3.64	3.53	
TSP/PM10, Filterable and Cond, per MP	lbs/hr	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	
Exhaust Gas Mass Flow, per GT **	lbs/sec	290.4	281.7	278.5	273.4	271.0	267.1	261.9	254.9	250.9	245.2	237.8	230.5	227.1	223.6	217.0	210.3	
Exhaust Gas Temperature **	Deg F	577	634	656	693	706	729	735	747	755	764	776	785	790	795	806	816	
Exhaust Gas Molecular Weight, Wet		28.71	28.69	28.68	28.67	28.66	28.65	28.63	28.61	28.58	28.55	28.49	28.42	28.38	28.33	28.20	28.04	
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,654	7,838	7,911	8,025	8,048	8,090	7,981	7,852	7,784	7,672	7,530	7,371	7,299	7,229	7,106	6,985	
Stack Exhaust Exit Velocity **	ft/sec	153.7	157.4	158.9	161.2	161.6	162.5	160.3	157.7	156.3	154.1	151.2	148.0	146.6	145.2	142.7	140.3	
H2O **	% Vol wet	4.02	4.29	4.40	4.62	4.71	4.88	5.00	5.23	5.41	5.71	6.22	6.85	7.24	7.70	8.83	10.32	
O2 **	% Vol wet	16.49	16.22	16.10	15.91	15.85	15.73	15.73	15.71	15.68	15.64	15.56	15.46	15.40	15.32	15.11	14.82	
CO2 **	% Vol wet	2.07	2.19	2.24	2.33	2.35	2.39	2.38	2.37	2.36	2.35	2.34	2.32	2.31	2.31	2.29	2.28	
A **	% Vol wet	0.91	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90	0.89	0.89	0.88	0.88	0.87	0.85	
N2 **	% Vol wet	76.50	76.38	76.33	76.22	76.17	76.07	75.97	75.77	75.62	75.38	74.97	74.46	74.15	73.78	72.88	71.71	

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

Guaranteed values are indicated by (G), or value

All other data are estimates.

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EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC®

Performance and Emissions

PREPA - ARG

Configuration: Dual Fuel Std. Combustor Dry, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																		
Fuel Type		Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Burner Water Injection In-Service	Yes / No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Fuel LHV	Btu/lb	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	
Ratio of HHV to LHV		1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	
Gross Power Output per MP, ref Gen Term	MWe	27.255	27.841	27.835	27.845	27.836	27.832	27.834	27.808	27.094	25.961	24.758	23.468	22.857	22.271	21.249	20.286	
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,691	8,759	8,795	8,856	8,883	8,930	8,979	9,045	9,110	9,218	9,349	9,497	9,576	9,657	9,815	9,982	
Power Isle and BOP Aux Load, per MP	kW	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	
Net Power Output, per MP	MWe	26.961	27.547	27.541	27.551	27.542	27.538	27.540	27.514	26.800	25.667	24.464	23.174	22.563	21.977	20.955	19.992	
Net Heat Rate, LHV	Btu/kWhr	8,786	8,853	8,889	8,950	8,977	9,025	9,074	9,142	9,210	9,323	9,461	9,618	9,759	9,786	9,953	10,129	
Fuel Flow, per GT	lbs/hr	12,704	13,079	13,129	13,224	13,260	13,329	13,403	13,490	13,237	12,834	12,413	11,953	11,739	11,534	11,185	10,860	
Liquid Fuel Flow, per GT	gal/min	30	31	31	31	31	31	32	32	31	30	29	28	28	27	26	26	
Calc Heat Input, HHV, per GT	MMBtu/hr	252	260	261	263	263	265	266	268	263	255	246	237	233	229	222	216	
Burner Water Injection Flow, per GT	gal/min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																		
NOx	ppmvd	265	322	342	378	396	428	460	504	510	517	526	529	531	534	541	546	
NOx, as NO2, per GT	lbs/hr	278	347	371	413	434	472	510	562	559	548	539	521	514	508	498	488	
CO	ppmvd	40.1	30.2	27.3	23.6	22.0	19.4	17.4	15.1	14.8	14.6	14.2	14.1	14.0	13.9	13.6	13.4	
CO, per GT	lbs/hr	25.5	19.9	18.0	15.7	14.7	13.0	11.7	10.2	9.9	9.4	8.8	8.4	8.2	8.0	7.6	7.3	
VOC as C1	ppmvd	8.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
VOC as C1, per GT	lbs/hr	3.26	1.88	1.88	1.90	1.91	1.92	1.93	1.94	1.90	1.84	1.78	1.71	1.68	1.65	1.60	1.55	
SO2	ppmvd	9.57	9.55	9.54	9.54	9.54	9.54	9.54	9.54	9.55	9.57	9.57	9.58	9.59	9.59	9.60	9.60	
SO2, per GT	lbs/hr	13.97	14.39	14.44	14.55	14.59	14.66	14.74	14.84	14.56	14.12	13.65	13.15	12.91	12.69	12.30	11.95	
TSP/PM10, Filterable and Cond, per MP	lbs/hr	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	
Exhaust Gas Mass Flow, per GT **	lbs/sec	286.5	277.9	274.1	268.2	265.7	261.6	257.8	252.8	248.3	241.6	234.2	226.8	223.2	219.6	213.1	206.7	
Exhaust Gas Temperature **	Deg F	553	608	627	659	673	696	719	748	757	766	779	788	793	798	809	820	
Exhaust Gas Molecular Weight, Wet		28.99	28.99	28.99	28.99	28.98	28.98	28.96	28.93	28.91	28.88	28.82	28.75	28.70	28.65	28.52	28.35	
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,305	7,472	7,502	7,557	7,578	7,617	7,657	7,706	7,624	7,487	7,346	7,186	7,112	7,040	6,920	6,809	
Stack Exhaust Exit Velocity **	ft/sec	146.7	150.0	150.7	151.8	152.2	153.0	153.8	154.8	153.1	150.4	147.5	144.3	142.8	141.4	139.0	136.7	
H2O **	% Vol wet	2.28	2.44	2.51	2.64	2.70	2.85	3.04	3.37	3.55	3.86	4.39	5.04	5.44	5.91	7.07	8.57	
O2 **	% Vol wet	17.00	16.75	16.67	16.53	16.47	16.36	16.24	16.07	16.04	16.01	15.91	15.81	15.75	15.67	15.44	15.15	
CO2 **	% Vol wet	2.62	2.78	2.83	2.91	2.95	3.00	3.06	3.14	3.13	3.11	3.10	3.08	3.06	3.05	3.04	3.03	
A **	% Vol wet	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.90	0.89	0.89	0.89	0.87	0.86	
N2 **	% Vol wet	77.17	77.09	77.06	76.98	76.94	76.85	76.71	76.48	76.33	76.08	75.66	75.14	74.82	74.45	73.54	72.35	

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

Guaranteed values are indicated by (G), or value

All other data are estimates.



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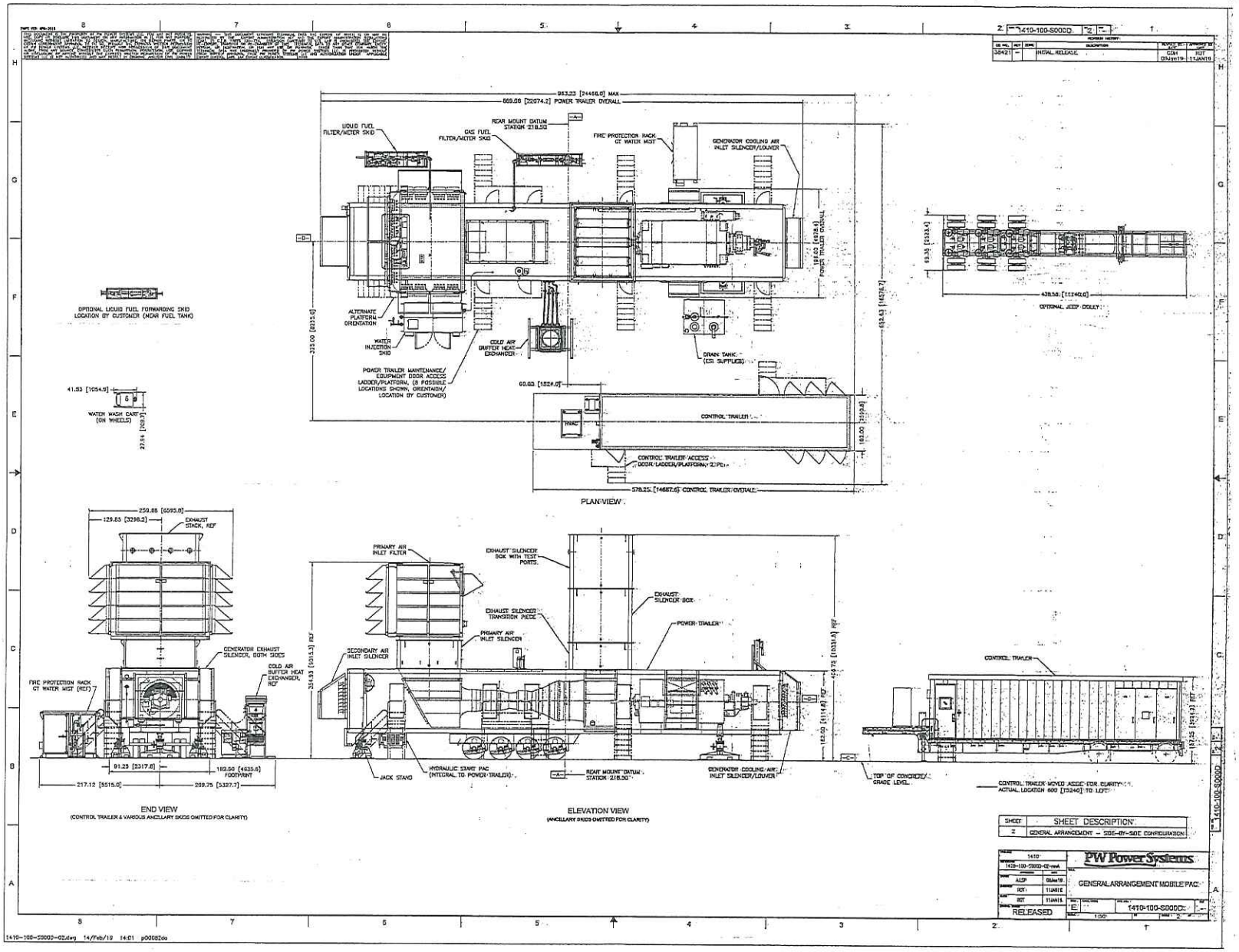

1410-100-S000D-02
LIQUID FUEL FILTER/METER SKID
GAS FUEL FILTER/METER SKID
REAR MOUNT DATUM STATION 218.50
FIRE PROTECTION RACK GT WATER MIST
GENERATOR COOLING AIR INLET SILENCER/LOUVER
OPTIONAL LIQUID FUEL FORWARDING SKID LOCATION BY CUSTOMER (NEAR FUEL TANK)
ALTERNATE PLATFORM ORIENTATION
WATER INJECTION SKID
COLD AIR BUTTER HEAT EXCHANGER
DRAIN TANK (CUSTOMER SUPPLIED)
POWER TRAILER MAINTENANCE/ EQUIPMENT DOOR ACCESS LADDER/PLATFORM, (8 POSSIBLE LOCATIONS SHOWN, ORIENTATION/ LOCATION BY CUSTOMER)
WATER WASH CART (ON WHEELS)
CONTROL TRAILER
TRAC
CONTROL TRAILER ACCESS DOOR/LADDER/PLATFORM (2 PLCS)
OPTIONAL JEEP DOLLY
PLAN VIEW
EXHAUST STACK, REF
GENERATOR EXHAUST SILENCER, BOTH SIDES
COLD AIR BUTTER HEAT EXCHANGER, REF
FIRE PROTECTION RACK GT WATER MIST (REF)
END VIEW
(CONTROL TRAILER & VARIOUS ANCILLARY SKIDS OMITTED FOR CLARITY)
PRIMARY AIR INLET FILTER
EXHAUST SILENCER BOX WITH TEST PORTS
EXHAUST SILENCER TRANSITION PIECE
EXHAUST SILENCER BOX
PRIMARY AIR INLET SILENCER
POWER TRAILER
SECONDARY AIR INLET SILENCER
JACK STAND
HYDRAULIC START PAC (INTEGRAL TO POWER TRAILER)
REAR MOUNT DATUM STATION 218.50
GENERATOR COOLING AIR INLET SILENCER/LOUVER
TOP OF CONCRETE/ GRADE LEVEL
ELEVATION VIEW
(ANCILLARY SKIDS OMITTED FOR CLARITY)
CONTROL TRAILER
CONTROL TRAILER MOVED ASIDE FOR CLARITY ACTUAL LOCATION 600 [23240] TO LEFT
SHEET DESCRIPTION
2 GENERAL ARRANGEMENT – SIDE-BY-SIDE CONFIGURATION
PW Power Systems
GENERAL ARRANGEMENT MOBILE PAC
1410-100-S000D-
RELEASED

APENDICE C

FACTORES DE EMISION, ESTIMADO DE EMISIONES

Tabla 1: Factores de Emisión para las Turbinas PW FT8 Mobilepac:

PALO SECO TURBINAS FT-8 MOBILEPAC [1]					
OPERACION EN DIESEL - DRY			OPERACION EN GAS NATURAL - DRY		
CONTAMINANTE	FACTOR DE EMISION	UNIDADES	CONTAMINANTE	FACTOR DE EMISION	UNIDADES
PM	0.0773	Lbs/MMBtu	PM	0.0233	Lbs/MMBtu
PM10	0.0773	Lbs/MMBtu	PM10	0.0233	Lbs/MMBtu
PM2.5	0.0773	Lbs/MMBtu	PM2.5	0.0233	Lbs/MMBtu
SOx	0.0554	Lbs/MMBtu	SOx (Mass Bal.)	0.0152	Lbs/MMBtu
NOx	2.206	Lbs/MMBtu	NOx	0.8373	Lbs/MMBtu
VOC	0.0072	Lbs/MMBtu	VOC	0.0013	Lbs/MMBtu
CO	0.0352	Lbs/MMBtu	CO	0.021	Lbs/MMBtu
HEAT INPUT	233	MMBtu/Hr	HEAT INPUT	252	MMBtu/Hr

Tabla 2: Estimado de Emisiones - Turbinas PW FT8 Mobilepac, período de dispensa:

PALO SECO TURBINAS FT-8 MOBILEPAC (3 UNIDADES) - DRY - BAJO LIMITE SIGNIFICATIVO DE PSD[1]			
CONTAMINANTE	PW FT8 EMISIONES PERMISIBLES (tons) PSD	PW FT8 COMBUSTIBLE PERMISIBLE - GAS (SCF)	PW FT8 COMBUSTIBLE PERMISIBLE - DIESEL (GAL)
NOx	39	91,329,802	256,217
PM	24	2,016,806,723	4,502,415
PM10	14	1,176,470,588	2,626,409
PM2.5	9	756,302,521	1,688,406
SO2	39	5,044,656,606	10,201,057
VOC	39	56,678,200,692	78,390,269
CO	99	9,229,744,728	40,768,823

[1] NOTES:

1) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
2) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
3) Natural Gas Sulfur Content 5.0 gr/100 dscf
4) Fuel Oil Sulfur Content .05 % per wt
5) SO2 emissions based upon fuel sulfur content limits
6) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
7) Heating Value Fuel Oil .138 MMBtu/Gal
8) Heating Value Natural Gas .00102 MMBtu/SCF
9) NOx PSD Limiting Pollutant



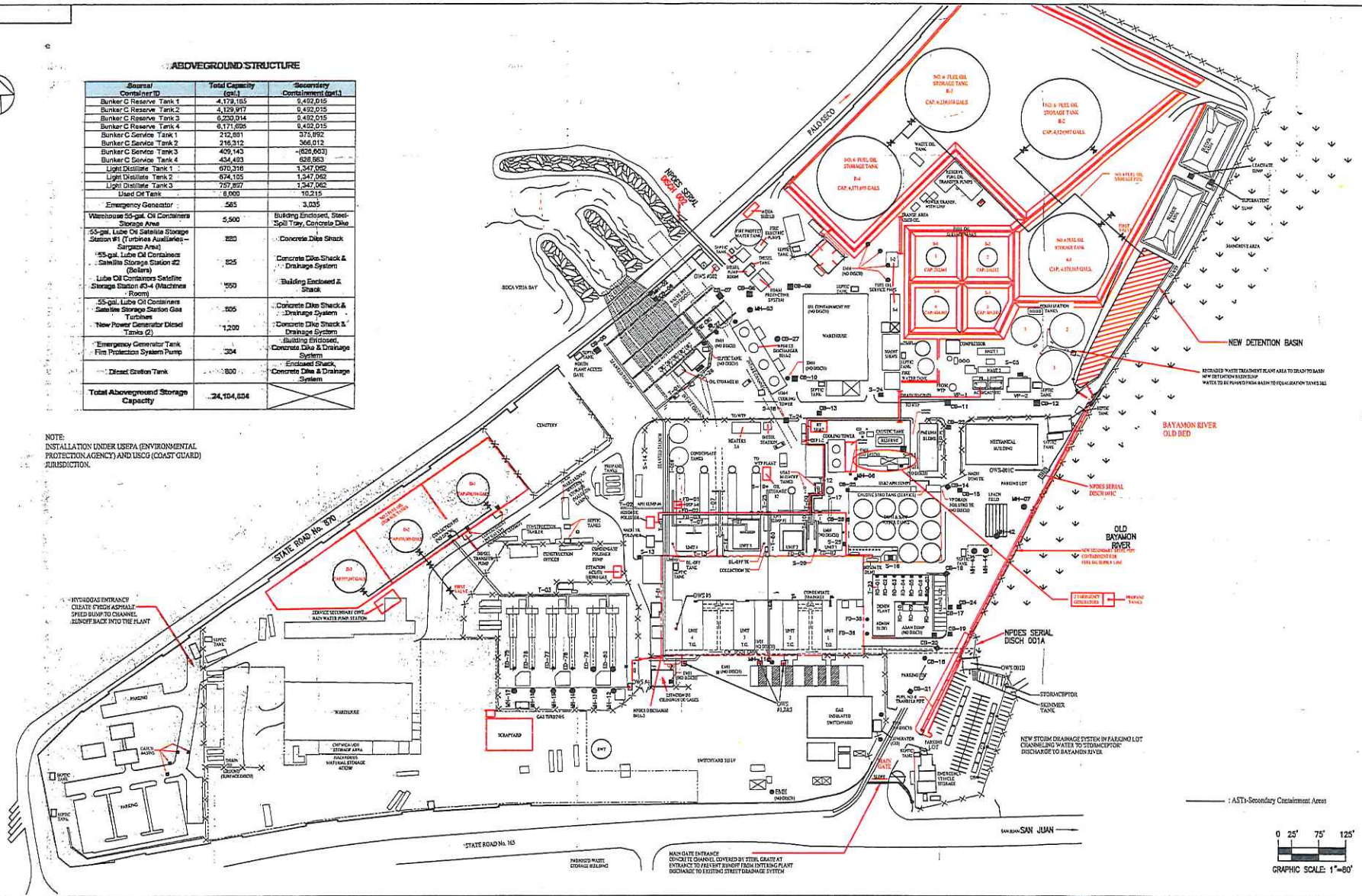
APENDICE D

PLANO DE SITIO – CENTRAL PALO SECO

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,185	9,492,015
Bunker C Reserve Tank 2	4,129,917	9,492,015
Bunker C Reserve Tank 3	6,230,014	9,492,015
Bunker C Reserve Tank 4	6,171,695	9,492,015
Bunker C Service Tank 1	212,881	375,892
Bunker C Service Tank 2	216,312	366,012
Bunker C Service Tank 3	409,143	-(626,603)
Bunker C Service Tank 4	434,403	626,863
Light Distillate Tank 1	670,216	1,347,062
Light Distillate Tank 2	674,105	1,347,062
Light Distillate Tank 3	757,897	1,347,062
Used Oil Tank	6,000	10,215
Emergency Generator	585	3,035
Warehouse 55-gal. Oil Containers Storage Area	5,500	Building Enclosed, Steel-Spill Tray, Concrete Dike
55-gal. Lube Oil Satellite Storage Station #1 (Turbines Auxiliaries – Sargazo Area)	880	Concrete Dike Shack
55-gal. Lube Oil Containers Satellite Storage Station #2 (Boilers)	825	Concrete Dike Shack & Drainage System
Lube Oil Containers Satellite Storage Station #3-4 (Machines Room)	1650	Building Enclosed & Shack
55-gal. Lube Oil Containers Satellite Storage Station Gas Turbines	605	Concrete Dike Shack & Drainage System
New Power Generator Diesel Tanks (2)	1,200	Concrete Dike Shack & Drainage System
Emergency Generator Tank Fire Protection System Pump	304	Building Enclosed, Concrete Dike & Drainage System
Diesel Station Tank	800	Enclosed Shack, Concrete Dike & Drainage System
Total Aboveground Storage Capacity	**24,104,604**	

NOTE:
INSTALLATION UNDER USEPA (ENVIRONMENTAL PROTECTION AGENCY) AND USCG (COAST GUARD) JURISDICTION.



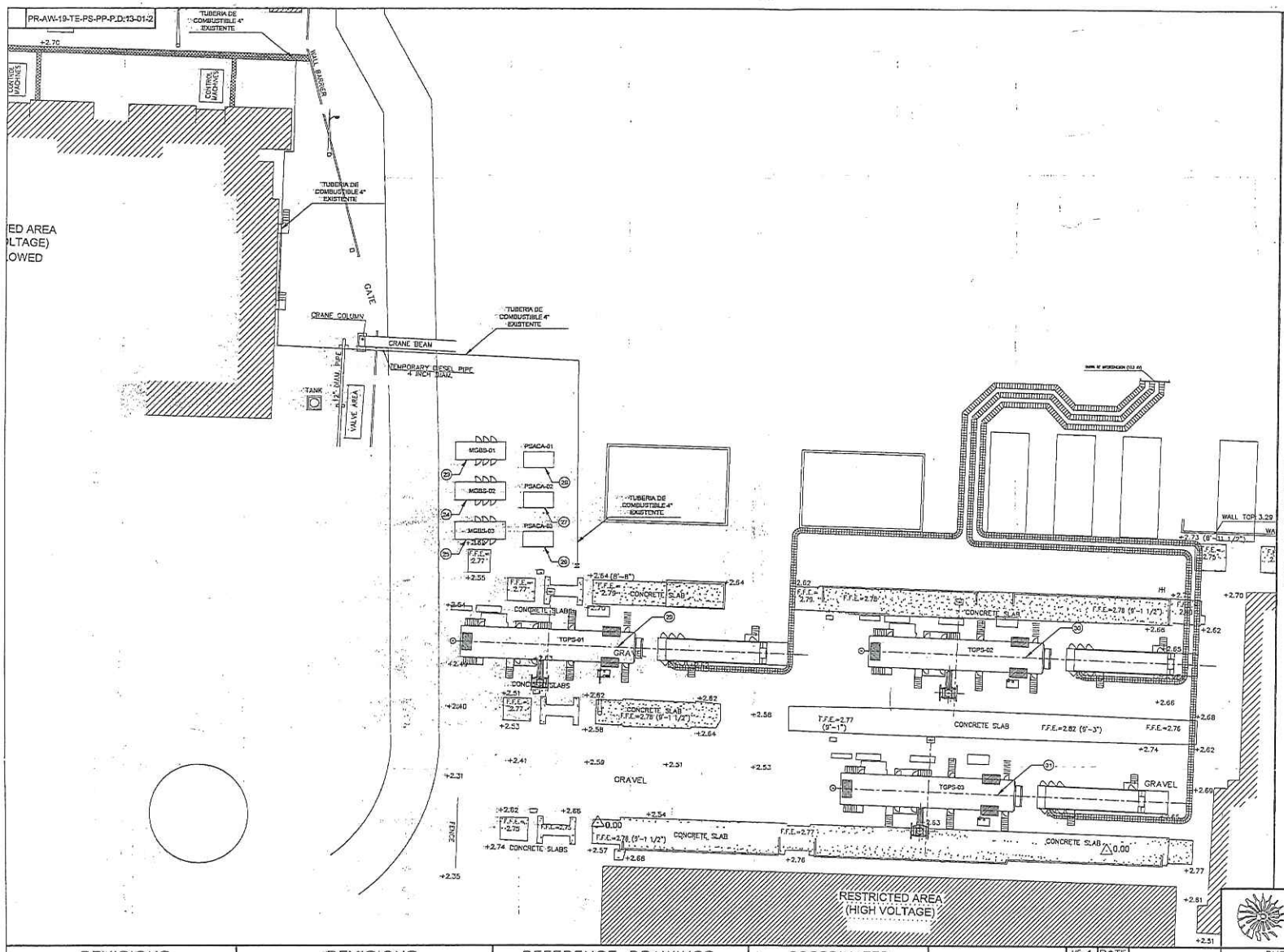
REVISIONS				REVISIONS				REFERENCE DRAWINGS		COORDINATED			
NO.	DATE	DESCRIPTION	APP.	NO.	DATE	DESCRIPTION	APP.	NUMBER	TITLE	DEPARTMENT	SIGNATURE	DATE	
0	OCTOBER, 2013	SPCC PLAN REVISION								ARCHITECTURAL			
										CIVIL			
										ELECTRICAL			
										MECHANICAL			

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

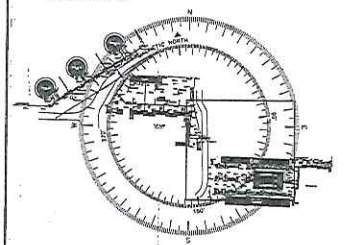
PUERTO RICO ELECTRIC POWER AUTHORITY
WATER QUALITY DEPARTMENT

PALO SECO STEAM PLANT
SITE PLAN – SPCCP

SCALE: | SAN JUAN, PUERTO RICO | November 2014



PLANO DE SITUACION



LEYEND:

EQPO	EQUIPOS A INSTALAR
	TUBERIA DE COMBUSTIBLE 4" EXISTENTE
(8'-02")	GROUND LEVEL CONVERSION ENGLISH UNITS
+2.49	GROUND LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION

LISTA DE EQUIPOS

PTO	TAG	DESCRIPCION	NORTE	ESTE
23	MGBS-01	MOTOGENERADOR DIESEL – BLACK START 01	268815.38	230005.03
24	MGBS-02	MOTOGENERADOR DIESEL – BLACK START 02	268810.81	230005.03
25	MGBS-03	MOTOGENERADOR DIESEL – BLACK START 03	268806.23	230005.03
26	PSACA-01	Paquete de SACA 01	268814.27	230011.67
27	PSACA-02	Paquete de SACA 02	268809.70	230011.67
28	PSACA-03	Paquete de SACA 03	268805.21	230011.67
29	TOPS-01	Turbogenerador Palo Seco 01	268.793.20	230.012.86
30	TOPS-02	Turbogenerador Palo Seco 02	268.792.15	230.059.46
31	TOPS-03	Turbogenerador Palo Seco 03	268.776.32	230.054.23

GRAPHIC SCALE (METERS)

GRAPHIC SCALE (FEET)

Wellington Turbines LLC

PRECISION CORP. INDUSTRIAL CONTRACTORS

REVISIONS				REVISIONS				REFERENCE DRAWINGS		COORDINATED		
NO.	DATE	DESCRIPTION	APP'D	NO.	DATE	DESCRIPTION	APP'D	NUMBER	TITLE	DEPARTMENT	SIGNATURE	DATE
										ARCHITECTURAL		
										CIVIL		
										ELECTRICAL		
										MECHANICAL		

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

W.O. #	DATE

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO – PLANTA PALO SECO
PLOT PLANT

SCALE: 1:200	SAN JUAN, PUERTO RICO	HOJA 02 DE 02

GOBIERNO DE PUERTO RICO
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

24 OCT. 2019

ING. JOSÉ ORTIZ
Director Ejecutivo
Autoridad de Energía Eléctrica de Puerto Rico
Apartado 364267
San Juan, PR 00936-4267

Att: Efran Paredes Maisonet
Director Planificación y Protección Ambiental

Estimado ingeniero Ortiz,

Re: Solicitud de Dispensa de Emergencia
Autoridad de Energía Eléctrica de Puerto Rico.
Central Palo Seco
TV-4911-70-1196-0015

En carta con fecha del 11 de octubre de 2019 el Sr. Efran Paredes Maisonet, Director Planificación y Protección Ambiental de la Autoridad de Energía Eléctrica de Puerto Rico (en adelante AEE) presentó una solicitud de dispensa de emergencia para la instalación y operación de tres turbinas de gas con una capacidad de generación de aproximadamente 23 MW. La solicitud se presenta para asegurar la confiabilidad y resiliencia del sistema eléctrico. Esta solicitud se presenta conforme las disposiciones de la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica (RCCA), Reglamento Núm. 5300, según enmendado. El inciso A de la Regla 302 del RCCA establece que:

A) La Junta podrá conceder dispensas de emergencia solo bajo circunstancias muy especiales, como por ejemplo, para evitar una amenaza inminente a la salud.
...

Según establece la AEE en su solicitud de dispensa, actualmente tiene varias unidades de carga base que están fuera de servicios debido a mantenimientos o reparaciones, o están limitadas a parte de su capacidad de generación de electricidad. Esta situación afecta la resiliencia del sistema eléctrico del país. Razón por la cual presentaron la solicitud de dispensa.

Conforme a lo anterior, se aprueba la solicitud de dispensa por un periodo que no podrá exceder de 90 días a partir de la fecha de esta notificación. Durante el periodo de dispensa deberá cumplir con todas las condiciones incluidas en el anejo. La información y condiciones sometidas en su solicitud de permiso forman parte de esta autorización.

24 OCT. 2019

De conformidad con la Sección 5.4 de la Ley Núm. 38-2017, conocida como, Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, se le apercibe que: "Toda persona a la que la agencia deniegue la concesión de una licencia, franquicia, permiso, endoso, autorización o gestión similar, tendrá derecho a impugnar la determinación de la agencia por medio de un procedimiento adjudicativo, según se establezca en la ley especial de que se trate y en el Capítulo III de dicha Ley." Para esto, se concede un término de veinte (20) días a partir de la notificación del mismo.

La agencia podrá revocar esta autorización en cualquier momento si se violan las condiciones del mismo o reglamentos y/o regulaciones aplicables. La agencia, además, podrá emitir una Orden de Cese y Desistimiento y Mostrar Causa.

Cualquier duda o pregunta, puede comunicarse con el Ing. Luis Sierra, Gerente Interino del Área de Calidad de Aire, al 787-767-8181, extensión 2300, o a través del correo electrónico luissierra@jca.pr.gov.

Cordialmente,

Tania Vázquez Rivera
Secretaria

TVR/lst

24 OCT. 2019

ANEJO: CONDICIONES DE DISPENSA

1. Por este medio se autoriza una dispensa por emergencia la instalación y operación de tres turbinas de gas en la Central Palo Seco, con una capacidad de generación de aproximadamente 23 MW cada una. Esta dispensa tendrá una duración que no excederá de 90 días a partir de la aprobación de la misma.
2. Deberá mantener copia de esta dispensa en la instalación en todo momento. La misma estará disponible para inspección por el personal técnico del Departamento de Recursos Naturales y Ambientales (en adelante DRNA) o la Agencia Federal de Protección Ambiental (EPA, en inglés).
3. Una vez culmine la dispensa, las unidades deberán ser desconectadas, a menos que un permiso para la construcción para las unidades, según las disposiciones de la Regla 203 del Reglamento 5300, según enmendado, haya sido emitido por esta agencia.
4. Esta dispensa no exime de acciones de cumplimiento y/o legales por la construcción/instalación de las unidades previo a la otorgación de esta dispensa de emergencia.
5. Para la operación de los generadores, el contenido máximo de azufre en el combustible No. 2 no excederá de 0.5 porciento por peso y en el gas natural no excederá de 5 gr/100 sft^3.
6. Deberá tener un registro de operación y consumo de combustible con contenido de azufre y horas de operación para cada turbina.
7. Deberá enviar un informe de aplicabilidad, y/o notificación inicial de ser necesario, con respecto a las disposiciones del 40 CFR, Parte 60, Subparte GG, Subparte KKKK o cualquier otra regulación que sea aplicable a las turbinas. Deberán indicar en el informe todos los requisitos aplicables a la unidad de emisión. De existir regulaciones que sean potencialmente aplicables, deberá indicar en el informe las razones por las cuales no le aplica.
8. Deberá cumplir con todos los requisitos aplicables en el informe enviado a la agencia. El no identificar adecuadamente la regulación aplicable, no les exime de incumplimiento con la regulación federal y/o estatal.
9. Estas unidades fueron clasificadas en su solicitud de dispensa como unidades estacionarias de emisión. Deberá llevar a cabo las pruebas de funcionamiento requeridas por la regulación federal para fuentes estacionarias, en los términos establecidos en el estándar de emisión aplicable.
10. Deberá someter un informe mensual indicando en una base diaria el contenido de azufre (porciento por peso) en los combustibles quemados o consumidos en la unidad durante cada mes. Este informe será enviado a la Junta a la atención de la Jefa de la División de Validación de Datos Modelaje Matemático del Área de Calidad de Aire, la Sra. Lula Lucia Fernández Fontán. Todos los informes mensuales deberán ser enviados en o antes de los treinta (30) días siguientes al final de cada mes natural.
11. La tonalidad de los gases emitidos durante la operación de cada motor incluido en este permiso no excederá del 20% de opacidad. Se permitirá una tonalidad de hasta 60% de opacidad sólo en un periodo no mayor de 4 minutos dentro de cualquier periodo de 30 minutos consecutivos.

Info on Waiver PS Emergency Turbines

José A. Santos Jiménez <JOSE.SANTOS@prepa.com>

Tue 11/26/2019 11:39 AM

To: Jon, Frank <Jon.Frank@epa.gov>
Cc: Maria V Mercado Rondon <MARIA.MERCADO@prepa.com>; Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>

3 attachments (13 MB)

Solicitud de dispensa DRNE Instalacion turbinas FT8 Palo Seco 10-11-2019.pdf; Dispensa PREPA Palo Seco 24oct19.pdf; PREPA San Juan 0365C mod LNG 3oct2019.pdf;

Saludos Frank.

Per your request during today' call.

Enclosed find copy of the DNER waiver request for the Palo Seco Emergency Turbines and DNER's approval of the same.

As discussed we are preparing the DRNE construction application for the mentioned turbines.

Also enclosed find copy of the permit to construct issued by DNER, for the San Juan Units 5 and 6 Dual fuel conversion.

Let me know if additional information is needed.

Regards;
J.Santos.

****

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CN 078-04495
Rev. 11/17

GOVERNMENT OF PUERTO RICO
Puerto Rico Electric Power Authority

December 17, 2019

Eng. Luis R. Sierra Torres, Chief
Inspection and Compliance Division
Acting Director, Air Quality Area
Department of Natural and Environmental Resources
PO Box 11488
San Juan, Puerto Rico 00910

Subject: Permit to Construct Application for Proposed Peaking Combustion Turbines to Replace Existing Units PSGT 2-2, 3-1, and 3-2 at our Palo Seco Plant

Dear engineer Sierra:

The Puerto Rico Electric Power Authority (PREPA) presents the New Source Review (NSR) applicability analysis and Construction Permit Application (See Appendix A) to replace combustion turbine units PSGT 2-2, 3-1, and 3-2 at the Palo Seco Power Plant (Central Palo Seco or the plant) with PW Power Systems (PWPS) model FT8® MOBILEPAC dual fuel combustion turbines ("project "). The proposed dual fuel combustion turbines will initially fire distillate oil as the sole fuel. When natural gas becomes available, it is expected that natural gas will be the primary fuel with backup firing of distillate oil. The project will also include the installation of three black start generators (BSGs) engines to support startup of the new combustion turbines during periods when the transmission system is down. As described below, the project will not result in a significant increase of any pollutant regulated under the NSR Program of the Environmental Protection Agency of the United States (EPA). Therefore, the project is not subject to NSR permitting requirements.

The project is a crucial component of PREPA's plan to transition its generation fleet to cleaner fuels, including natural gas. This transition is expected to have significant environmental and economic benefits for Puerto Rico. Among other things, this project: a) will improve the profile of the total emissions of the Central Palo Seco plant, b) will result in significant cost savings for our customers due to the projected lower price of natural gas as compared to oil as well as the higher efficiency of the new turbines; and c) improve the reliability of the System. The Project is vital, especially in the recovery of Puerto Rico after the devastation caused by recent hurricanes, to improve reliability and PREPA fleet diversity. In advance, PREPA appreciates the continued support that the Department of Natural and Environmental Resources (DNER/EQB) has always given us and whoever will provide us support during this transition.

"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."

Introduction

PREPA plans to replace combustion turbine units PSGT 2-2, 3-1, and 3-2 at Central Palo Seco with PWPS model FT8® MOBILEPAC dual fuel combustion turbines. The proposed dual fuel combustion turbines will fire distillate oil and natural gas when it becomes available. The BSGs will be fired solely with ultra-low sulfur distillate oil (ULSD). The fuel conversion project is necessary to ensure reliable energy to Puerto Rico. PREPA applied to EQB requesting an Emergency Waiver for the Installation of (3) Combustion Turbines at Palo Seco under PRCCAP Rule 302, EQB granted this request on October 24, 2019.

The NSR regulations do not require projects that involve only simple cycle combustion turbines (i.e. electric generating units that do not use steam) and net out of PSD to provide the EPA with the netting analysis prior to construction. In accordance with 40 CFR §52.21(r)(6)(ii) as a modification of an existing major NSR source, PREPA must develop the following information prior to beginning construction of the project: a description of the project; identification of the emission unit(s), whose contaminant regulated by the NSR may be affected for the project; and a description of the applicability test used to determine that the project is not a major modification for any regulated pollutant of the NSR, including current reference emissions (Baseline), current emissions projected, the amount of emissions excluded and an explanation why such amount, and net verification calculations, if applicable. This application provides PREPA's analysis in compliance with the NSR regulations for the proposed project and was prepared and submitted to the DNER/EQB in accordance with Rule 203 of the Regulations for the Control of Atmospheric Pollution of the EQB (RCAP) and 40 CFR §52.21(r)(6)(i).

As described below, PREPA determined that the project will not result in a significant increase in emissions above current baseline emissions for any regulated pollutant of the NSR. This analysis was performed in accordance with the applicability test provisions pursuant to 40 CFR §52.21(a)(2)(iv)(d) for projects that only involve construction of new emissions units. This test compares the potential emissions from the proposed new emission units to the baseline actual emissions. For this analysis, PREPA has proposed enforceable emission limits on the new PWPS model FT8® MOBILEPAC combustion turbines and the BSGs. In addition to the proposed new combustion turbines and BSGs, the project will include new natural gas handling infrastructure at the facility. Potential fugitive natural gas emissions from the new natural gas handling infrastructure were also estimated. Fugitive natural gas emissions will include methane as greenhouse gases (GHGs) with small amounts of volatile organic compounds (VOCs).

Natural gas will be provided by pipeline from a proposed fuel management facility in the metropolitan area. The fuel management facility will be owned and operated by a separate entity and PREPA will not have any ownership or control of this facility. The fuel management facility will not be part of the Palo Seco Power Plant and therefore is not considered part of the project according to 40 CFR §52.21(b)(6)(i).

PREPA's analysis of applicability demonstrates that the project will not result in a significant increase in the emissions of any NSR regulated contaminant. So, it is not necessary for PREPA to obtain a permit under the NSR program. The technical evaluation was carried out by environmental consultants of PREPA and these are available to answer any questions that the DNER/EQB.

Project Description

The plant includes four (4) boilers with No. 6 oil burning and steam turbines (Units 1-4) and six (6) simple cycle combustion turbines firing No. 2 oil (Units PSGT 1-1, 1-2, 2-1, 2-2, 3-1, and 3-2). Each simple cycle combustion turbine is rated at 301.5 million British Thermal Units per hour (MMBtu/hr) with an output per unit of approximately 21 megawatts (MW). The project includes replacing simple cycle combustion turbine Units PSGT 2-2, 3-1, and 3-2 with three new PWPS model FT8® MOBILEPAC combustion turbines and the three BSGs. The proposed PWPS model FT8® MOBILEPAC combustion turbines will be rated at 294.8 MMBtu/hr firing natural gas and 283.3 MMBtu/hr firing distillate oil with an output per unit of approximately 27.9 MW. The proposed BSGs will be Caterpillar Model C13 emergency generator engines; the engines will be rated at 609 brake-horsepower (bhp) powering an electric generator rated at 400 kilowatts (kW).

In addition to the new combustion turbines and BSGs, new systems will be necessary for support of the project including natural gas supply infrastructure on site. The natural gas supply infrastructure will include pipes and their supports, pressure control systems, interconnections in the plant, and a measurement system. The three new combustion turbines will be equipped with independent natural gas meters for continuous monitoring and recording of natural gas consumption.

The existing boilers and combustion turbines were commissioned between 1960 and 1973, prior to the promulgation of the prevention significant deterioration (PSD) program, and therefore were not subject to PSD permitting. However, based upon the potential emissions from the existing emission sources, the plant is an existing major source under the (PSD) program for emissions of nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM), PM with a diameter equal to or less than 10 micrometers (PM_{10}), PM with a diameter equal to or less than 2.5 micrometers ($PM_{2.5}$), VOCs, GHGs and sulfuric acid mist (H_2SO_4). Therefore, any modifications at the facility, including modifications to existing emission units or installation of new emission units, must be evaluated against the applicable PSD significance thresholds for each PSD regulated pollutant.

The project includes installation of new emission units and therefore, an evaluation is required to determine if the project meets the requirements of a "major modification" as defined under 40 CFR §52.21(b)(2)(i). The project will be considered a major modification if it results in a significant emissions increase (as defined in 40 CFR §52.21(b)(40)) of a regulated NSR pollutant and a significant net emissions increase of that pollutant (as defined in 40 CFR §52.21(b)(3)(i)). The project will result in a significant emissions increase if the combined potential emissions of the new combustion turbines, BSGs, and the natural gas handling equipment exceeds a PSD significance threshold for one or more pollutants. Net emissions are defined in 40 CFR §52.21(b)(3)(i) and include the increase in emissions from the proposed new emission sources and any other creditable

increase and reduction in emissions at the plant that is contemporaneous with the project. In accordance with 40 CFR §52.21(a)(2)(iv)(a), the project will be a major modification if it causes two types of emissions increases, a significant emissions increase (as defined in 40 CFR §52.21 (b)(40)), and a significant net emissions increase (as defined in 40 CFR §52.21(b)(3) and 40 CFR §52.21(b)(23)).

The project will include only new emission sources. Therefore, the significant emissions increase (as defined in 40 CFR §52.21(b)(40)) evaluation was carried out according to 40 CFR §52.21(a)(2)(iv)(d), which includes an actual-to-potential test for projects that only involve construction of a new emissions units. The significant net emissions increase (as defined in §52.21(b)(3) and §52.21(b)(23)) evaluation includes the potential emissions increase from the proposed new emission sources minus the creditable reduction in actual emissions from the shutdown of Units PSGT 2-2, 3-1, and 3-2. As detailed below, the results of this applicability test show that there will be a significant increase in emissions but not a significant net emissions increase of a regulated pollutant by the NSR as a result of the project. Therefore, the proposed project does not trigger PSD permitting.

Significant Increase in Emissions Test

In accordance with 40 CFR §52.21(a)(2)(iv)(d), for projects that only include new emission units, a significant emissions increase of a regulated NSR pollutant occurs if the sum of the difference between the potential to emit (as defined in 40 CFR §52.21(b)(4)) from each new emissions unit following completion of the project, and the baseline actual emissions (as defined in 40 CFR §52.21(b)(48)(iii)) of these units before the project, equals or exceeds the significant amount for that pollutant (as defined in 40 CFR §52.21(b)(23)). As defined under 40 CFR §52.21(b)(48)(iii), the baseline emissions of the new emission units shall equal zero. Therefore, the increase in emissions will be equal to the potential emissions of the new emission units, which includes the three proposed combustion turbines, three BSGs, and onsite natural gas handling equipment.

Pursuant to 40 CFR §52.21(b)(4), potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit. Pursuant to 40 CFR §52.21(b)(18), secondary emissions include emissions from any offsite support facility which would not be constructed or increase its emissions except as a result of the construction or operation of the major stationary source or major modification. Secondary emissions also do not include emissions from a mobile source.

Provided in Table 1 is a summary of the potential emissions from the proposed new emission sources versus the applicable PSD significance thresholds. Emissions of NO_x, PM, PM_{10}, $PM_{2.5}$, VOC and CO from the proposed combustion turbines and BSGs are based upon vendor performance emissions data. Emissions of SO_2 are based upon the maximum sulfur content of the fuels, which will be 5 grains per 100 cubic feet of natural gas and 0.05 percent for distillate oil.

H_2SO_4 emissions are based upon 10 percent conversion of SO_2 to H_2SO_4. Emissions of GHGs are based upon the emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2.

PREPA is proposing to assume federally enforceable limits on emissions from the combustion turbines to meet the requirements of 40 CFR §52.21(b)(4). PREPA is proposing to quantify emissions each day from the combustion turbines and calculate rolling 365-day emissions to document that the emissions are below the proposed caps. Each BSG will be limited to no more than 500 hours per year.

The natural gas supply infrastructure will be a new source of emissions from the plant with fugitive natural gas emissions from the connections, valves, meters, and other system components. These emissions will be composed of methane (as GHGs) with a small amount of VOCs. An estimate of potential fugitive emissions was conducted based on EPA emission factors from the "*Protocol for Emission Estimates in Equipment Leaks*" (November 1995) and the inventory of components in the diagram of pipe and instrumentation for natural gas supply infrastructure. The potential fugitive emissions are based upon 8,760 hours per year. This analysis results in possible VOC emissions of less than 1 tpy as documented in Appendix B.

Table 1: Significant Increase in Emissions Test

Pollutant	Combustion Turbine Potential (tpy)	BSGs Potential (tpy)	Natural Gas Handling Potential (tpy)	Project Total Potential (tpy)	PSD Significance Threshold (tpy)
NO_x	191.34	4.92	0	196.4	40
PM	19.57	0.13	0	19.7	25
PM_{10}	19.57	0.13	0	19.7	15
$PM_{2.5}$	19.57	0.13	0	19.7	10
CO	99.45	2.29	0	101.7	100
VOC	7.85	0.14	0.55	8.54	40
SO_2	55.82	0.004	0	55.8	40
H_2SO_4	8.55	0.001	0	8.55	7
GHGs (as CO_2e)	180,889	481	124	181,494	75,000

Table 1 shows that the project will result in a significant increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, and GHGs as defined in §52.21(b)(40). Therefore, an evaluation must be conducted for these pollutants to determine if there will be a significant net emissions increase as defined in 40 CFR §52.21(b)(3) and §52.21(b)(23). There will not be a significant increase in emissions of PM and VOC and therefore a net emissions increase evaluation is not required for these pollutants.

Significant Net Increase in Emissions Test

An evaluation of the net emissions increases of the project, as defined in 40 CFR §52.21(b)(3), was conducted to determine if the net emissions increase would be significant for one or more of the pollutants determined to have a significant increase in emissions in the first step. Pursuant to 40 CFR §52.21(b)(3)(i), net emissions increase means the amount by which the sum of the following exceeds zero:

a) The increase in emissions from a particular physical change or change in the method of operation at a stationary source as calculated pursuant to paragraph 40 CFR §52.21(a)(2)(iv); and

b) Any other increases and decreases in actual emissions at the major stationary source that are contemporaneous with the particular change and are otherwise creditable. Baseline actual emissions for calculating increases and decreases shall be determined as provided in paragraph 40 CFR §52.21(b)(48), except that paragraphs 40 CFR §52.21(b)(48)(i)(*c*) and (b)(48)(ii)(*d*) shall not apply.

The increase in emissions for 40 CFR §52.21(b)(3)(i)(a) is equal to the project total potential emissions presented in Table 1. Pursuant to 40 CFR §52.21(b)(3)(ii), an increase or decrease in actual emissions is contemporaneous only if it occurs between the date five years before construction on the project and the date that the increase from the project occurs. There are no contemporaneous increases in emissions at the plant to be accounted for in the net emissions increase analysis. There will be a contemporaneous reduction in actual emissions resulting from the shutdown of units PSGT 2-2, 3-1, and 3-2. Pursuant to 40 CFR §52.21(b)(3)(vi), the contemporaneous reduction in actual emissions resulting from the shutdown of units PSGT 2-2, 3-1, and 3-2 is creditable only to the extent that:

a. The old level of actual emissions or the old level of allowable emissions, whichever is lower, exceeds the new level of actual emissions;

b. It is enforceable as a practical matter at and after the time that actual construction on the particular change begins; and

c. It has approximately the same qualitative significance for public health and welfare as that attributed to the increase from the particular change.

The contemporaneous reduction in actual emissions resulting from the shutdown of units PSGT 2-2, 3-1, and 3-2 is creditable as it meets all of the criteria:

a. Units PSGT 2-2, 3-1, and 3-2 will be shut down and therefore the new level of actual emissions after the project will be zero;

b. The reduction in emissions from units PSGT 2-2, 3-1, and 3-2 will be enforceable at and after the time that actual construction on the proposed project begins; and

c. The reduction in emissions will occur at the same facility and from the same type of stationary source and therefore, will have approximately the same qualitative significance for public health and welfare as that attributed to the increase from the project.

As the reduction in emissions from the shutdown of units PSGT 2-2, 3-1, and 3-2 is both contemporaneous and creditable, this reduction can be accounted for in the net emissions increase analysis for the project.

Baseline Emissions of PSGT 2-2, 3-1, and 3-2

The reduction in emissions is equal to the baseline actual emissions of units PSGT 2-2, 3-1, and 3-2 as determined in accordance with 40 CFR §52.21(b)(48), except that paragraphs 40 CFR §52.21(b)(48)(i)(*c*) and (b)(48)(ii)(*d*) shall not apply. Units PSGT 2-2, 3-1, and 3-2 are not electric utility steam generating units and therefore, in accordance with 40 CFR §52.21(b)(48)(ii), baseline emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding either the start of construction of the project or the date a complete permit application is received by the Administrator for a permit required under this section or by the reviewing authority for a permit required by a plan, whichever is earlier. Therefore, the applicable baseline period is any consecutive 24-month period within 10-years from the filing of this complete application.

Pursuant to 40 CFR §52.21(b)(48)(ii)(*a*) through (*c*), the baseline emissions shall account for the following:

(a) Shall include fugitive emissions to the extent quantifiable, and emissions associated with startups, shutdowns, and malfunctions.

(b) Shall be adjusted downward to exclude any non-compliant emissions that occurred while the source was operating above an emission limitation that was legally enforceable during the consecutive 24-month period.

(c) Shall be adjusted downward to exclude any emissions that would have exceeded an emission limitation with which the major stationary source must currently comply, had such major stationary source been required to comply with such limitations during the consecutive 24-month period.

There are no fugitive emissions from units PSGT 2-2, 3-1, and 3-2 and emissions associated with startups, shutdowns, and malfunctions are not quantifiable. Units PSGT 2-2, 3-1, and 3-2 do not have any emission limitations for NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, and GHGs. Therefore, the baseline emissions do not need to be adjusted in any manner to address 40 CFR §52.21(b)(48)(ii)(*a*) through (*c*).

Baseline emissions from units PSGT 2-2, 3-1, and 3-2 were determined from the monthly fuel oil throughput and fuel oil sulfur content. The combustion turbines are not equipped with a continuous emissions monitoring systems (CEMS) and no stack emission tests have been performed on the units.

Emissions of NO_x, PM_{10}, $PM_{2.5}$, and CO were estimated in accordance with EPA's Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources, Chapter 3.1 (AP-42 3.1) and the recorded monthly fuel throughput. It was assumed that all PM was $PM_{2.5}$ and therefore baseline PM_{10} emissions are the same as $PM_{2.5}$. SO_2 emissions were quantified by mass balance from the monthly fuel throughput and sulfur content assuming that 100 percent of the sulfur was oxidized to SO_2. H_2SO_4 emissions are based upon 10 percent conversion of SO_2 to H_2SO_4. Emissions of GHGs are based upon the global warming potentials and emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2. Detailed emission calculations are provided in Appendix B including potential emission estimates for Hazardous Air Pollutants (HAP's).

From the information provided in Appendix B, PREPA selected a 24-month period consecutive from May 2016 through April 2018 for all pollutants, which is well within the 10-year period preceding the submittal of this application. The calculated baseline emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, and GHGs for units PSGT 2-2, 3-1, and 3-2 are provided in Table 2 and documented in the Appendix B.

Table 2: Baseline Actual Emissions for Units PSGT 2-2, 3-1, and 3-2

Pollutant	Baseline Actual Emissions (tpy)	24-Month Consecutive Period
NO_x	718.4	May 2016 through April 2018
$PM_{10}/PM_{2.5}$	9.8	May 2016 through April 2018
CO	2.7	May 2016 through April 2018
SO_2	19.8	May 2016 through April 2018
H_2SO_4	3.04	May 2016 through April 2018
GHGs (as CO_2e)	133,596	May 2016 through April 2018

The baseline emissions presented in Table 2 will be creditable and contemporaneous reductions in emissions with the project.

Net Emissions Increase

Table 3: Significant Net Increase In Emissions Test

Pollutant	Project Total Potential (tpy)	Reduction In Emissions (tpy)	Project Net Increase in Emissions (tpy)	PSD Significance Threshold (tpy)
NO_x	196.3	718.4	-522.1	40
PM_{10}	19.7	9.8	9.9	15
$PM_{2.5}$	19.7	9.8	9.9	10
CO	101.7	2.7	99.0	100
SO_2	55.8	19.8	36.0	40
H_2SO_4	8.55	3.04	5.51	7
GHGs (as CO_2e)	181,494	133,596	47,898	75,000

The net emissions increase summary in Table 3 demonstrates that the project will not result in a significant net increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, H_2SO_4, or GHGs.

NSR Applicability Conclusion

The project constitutes a modification of an existing major NSR source. In accordance with 40 CFR §52.21(a)(2)(iv)(a), the project would be a major modification if it causes two types of emissions increases, a significant emissions increase (as defined in 40 CFR §52.21 (b)(40)), and a significant net emissions increase (as defined in 40 CFR §52.21(b)(3) and 40 CFR §52.21(b)(23)). As the project will only include new emission sources, an emissions increase evaluation was carried in accordance with 40 CFR §52.21(a)(2)(iv)(d), which is an actual-to-potential test. The emissions increase evaluation showed that there would be a significant increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHGs but not for PM, VOC, and H_2SO_4. A net increase in emissions evaluation was then performed for NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHGs. The net increase in emissions evaluation included the creditable contemporaneous reduction in emissions that will occur due to the shutdown of units PSGT 2-2, 3-1, and 3-2. The net increase in emissions evaluation demonstrated that there will not be a significant net increase in emissions of NO_x, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHGs. Therefore, the project will not result in a significant emissions increase and a significant net emissions increase for any NSR regulated pollutant and therefore NSR permitting is not triggered.

DNER / EQB Construction Permit Process and Proposed Federally Enforceable Emissions

PREPA is submitting this application to obtain a permit to construct for the three proposed combustion turbines and BSGs. The Increase in Emissions and Net increase in Emissions tests provided above are based upon emission limitations for the proposed new combustion turbines and a limit on operating hours for the BSGs. PREPA is proposing to make these operating and emission limitations federally enforceable in the construction permit to satisfy the requirements of 40 CFR §52.21(b)(4).

As part of this permitting process, PREPA requests that the DNER / EQB impose annual mass-based emission limits for NO_x, CO, VOCs, SO_2, H_2SO_4, PM, PM_{10}, $PM_{2.5}$ on the three new peaking turbines in the permit. Table 4 summarizes the proposed annual emission limits for the peaking turbines.

Table 4: Proposed Emission Limits On Peaking Turbines

Pollutant	Combustion Turbine Potential (tpy)
NO_x	191.3
PM	19.57
PM_{10}	19.57
$PM_{2.5}$	19.57
CO	99.45
VOC	7.85
SO_2	55.8
H_2SO_4	8.55
GHGs	180,889

The operating hours for each BSG will be limited to no more than 500 hours per rolling 12-month period, which will limit their emissions to the level presented in Table 1. The proposed limits presented in Table 4 are for all three turbines combined and based upon fuel heat contents of 1,020 Btu per cubic foot of natural gas and 138,000 Btu per gallon of distillate oil.

Regulatory Applicability Analysis and Compliance Evaluation

In accordance with RCAP Rule 203(B)(1), the source shall be able to comply with all applicable rules and regulations. Following is a review of applicable EPA and EQB regulations that may be applicable to the proposed combustion turbines.

40 CFR 60 – New Source Performance Standard (NSPS) Subpart KKKK – Stationary Gas Turbines

NSPS Subpart KKKK is applicable to stationary gas turbines with a rated heat input greater than 10 MMBtu/hr that commenced construction, reconstruction, or modification after February 18, 2005. The proposed combustion turbines will be subject to NSPS Subpart KKKK.

NSPS Subpart KKKK imposes limits on emissions of NO_x and SO_2. The applicable emission limits for combustion turbines with a rated heat input between 50 and 850 MMBtu/hr is summarized in Table 5.

Table 5: Applicable Emissions Limits Under NSPS Subpart KKKK

Fuel	NO_x	SO_2
Natural Gas	25 parts per million at 15 percent O_2 (ppmvdc) or 1.2 pounds per megawatt-hour (lb/MWh) of useful output	6.2 lb/MWh gross output, or a fuel sulfur content with potential SO_2 emission not greater than 0.42 lb/MMBtu.
Distillate Oil	74 ppmvdc or 3.6 lb/MWh	

The combustion turbines will be equipped with water injection to control NO_x emissions below the applicable limits. For natural gas firing, it is expected that the proposed turbines will meet the alternate NO_x limit of 1.2 lb/MWh of useful output where useful output is defined under 40 CFR §60.4420 as "the gross useful work performed by the stationary combustion turbine system. For units using the mechanical energy directly or generating only electricity, the gross useful work performed is the gross electrical or mechanical output from the turbine/generator set." The turbines will meet the 74 ppmvdc limit for distillate oil firing. The turbines will be equipped with a continuous water to fuel ratio monitoring system meeting the requirements of 40 CFR §60.4335(a).

The natural gas will have a maximum sulfur content of 5 grains per 100 cubic feet, equivalent to a potential SO_2 emission rate of 0.014 lb/MMBtu. The distillate oil will have a maximum sulfur content of 0.05 percent by weight, equivalent to a potential SO_2 emission rate of 0.0505 lb/MMBtu. These potential SO_2 emission rates are well below the applicable fuel sulfur standard

40 CFR 60 – NSPS Subpart TTTT – Greenhouse Gas Emissions for Electric Generating Units

NSPS Subpart TTTT is applicable to CTGs with a fuel firing rate above 250 MMBtu/hr or a generating output above 25 MW that commences construction or reconstruction after January 8, 2014. The proposed combustion turbines will be subject to NSPS Subpart TTTT.

A natural gas-fired combustion turbine with an annual capacity factor (on a three-year rolling basis) below its "design efficiency," is not subject to the output based standards (lb CO_2/MWh) of NSPS Subpart TTTT. The "design efficiency" value for the proposed combustion turbines when firing natural gas at full load is 35.8% based upon a heat rate of 9,532 Btu per kilowatt-hour (gross lower heating value). PREPA proposes to limit the annual capacity factor of each combustion turbine to 35.8% on a rolling 3-year average. As multi-fuel units exempt from the output based standards, the combustion turbines can be operated up to a 50% capacity factor in any 12-month period as long as the three year rolling average is below 35.8%.

Under Subpart TTTT, multi-fuel combustion turbines that are not subject to the output based emission standards must comply with a mass-based standard, which is expressed in the units of lbs of CO_2 per MMBtu heat input (lb CO_2/MMBtu). For units that fire natural gas and distillate oil, compliance is demonstrated on a sliding scale standard based upon emissions of 120 lb CO_2/MMBtu for natural gas firing and 160 lb CO_2/MMBtu for distillate oil. In accordance with 40 CFR §60.5525(a)(2), Equation 1, the firing of natural gas and distillate oil will always be in compliance with these mass based emission standards.

40 CFR 63 – National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart YYYY – Stationary Combustion Turbines

NESHAP Subpart YYYY establishes emission limitations and operating limitations for HAP emissions from combustion turbines located at major sources of HAP emissions. The Facility is a major source of HAP emissions and therefore the proposed combustion turbines will be subject to NESHAP Subpart YYYY. The proposed combustion turbines will meet the definition of *diffusion flame oil-fired stationary combustion turbines* as they are capable of firing both natural gas and distillate oil and the existing and proposed combustion turbines fire oil more than an aggregate total of 1000 hours during the calendar year. NESHAP Subpart YYYY limits the concentration of formaldehyde in the combustion turbine exhaust to 91 parts per billion by volume dry at 15 percent oxygen. The combustion turbines will meet this limit through good combustion controls without the need for an oxidation catalyst. PREPA will operate the turbines in accordance with manufacturer recommendations to demonstrate continuous compliance in accordance with 40 CFR 63.6140(a).

RCAP Rule 403 – Visible Emissions

The CTGs will meet the Rule 403 visible emission limit of opacity no greater than 20 percent (6-minute average) except an opacity up to 60 percent for a period of no more than four minutes in any consecutive thirty (30) minute interval during the firing of distillate oil and natural gas.

RCAP Rule 405 – Particulate Matter Emissions

Rule 405 limits particulate matter (PM) emissions (filterable) to no greater than 0.30 pounds per million BTU when firing liquid fuel. The filterable PM emissions from the combustion turbines will be well below this limit.

RCAP Rule 410 – Fuel Sulfur Content

The fuel sulfur content of the fuels fired in the CTGs will be limited to 0.05 percent by weight for distillate oil and 5 grains per 100 standard cubic feet of natural gas (approximately 0.015 percent by weight) per the following equation.

$$Natural\ Gas\ Sulfur\ (wt\%) = \left(\frac{5\ grains\ S}{100\ standard\ ft^3}\right) X \left(\frac{385.3\ standard\ ft^3}{lb-mole\ gas}\right) + MW\ \left(\frac{1\ lb-mole}{17.5\ lbs\ gas}\right) X\ \left(\frac{1\ lb}{7{,}000\ grains}\right)\ X\ 100$$

RCAP Rule 412 – SO_2 Emissions

Rule 412 limits SO_2 emissions to no greater than 1,000 ppm by volume at 21% oxygen from any emission source. The SO_2 emissions from the CTGs when firing distillate oil, the fuel with the highest sulfur content, will have stack emissions of approximately 32 ppm by volume in the stack at 15% oxygen per the following equation from 40 CFR 60, Appendix B, Method 19.

$$SO2\ (ppmvd\ @21\%\ O2) = \left(\frac{0.0505\ lb}{MMBtu}\right) X\ Fd \left(\frac{1\ MMBtu}{9{,}190\ dscf}\right) X\ EPA\ Method\ 19, Table\ 19-1\ factor \left(\frac{1}{1.660\ x\ 10^{-7}}\right)$$

Respectfully, PREPA submits for DNER/EQB's evaluation this Application for a Permit to Construct the proposed dual fuel combustion turbines at Central Palo Seco. PREPA welcomes the opportunity to discuss and respond to any questions that you may have.

Cordially,

Luisette X. Ríos Castañer, Head
Environmental Protection and
Quality Assurance Division

THIS IS WATERMARK PAPER - DO NOT ACCEPT WITHOUT NOTING WATERMARK - HOLD TO LIGHT TO VERIFY WATERMARK

Puerto Rico Electric Power Authority

CITIBANK, N.A. –CSMG
GENERAL FUND

CHECK NO. **472218**
DATE 20–DEC–19

PAY One Thousand Fifty–Five And 85/100 Dollars **********$1,055.85

TO THE ORDER OF

SECRETARIO DE HACIENDA
JUNTA DE CALIDAD AMBIENTAL
PO BOX 11488
SAN JUAN, PR 00910-1488

NOT VALID AFTER THREE MONTHS FROM DATE OF ISSUE

MP

⑈00472218⑈ ⑆021502040⑆ 040001501 5⑈

Puerto Rico Electric Power Authority

CITIBANK CSMG – GENERAL FUND

Vendor Number	Date	Check No.
00498715	20–DEC–19	472218

Date	Invoice	Description	Gross	Withheld Amount	Discount	Net
13–DEC–19	19–12–CM–004	SOLICITUD DE PERMISO DE CONSTRUCCION PARA TUR	1,055.85	0.00	0.00	1,055.85
		4961				
		Jose				
THE ATTACHED CHECK IS IN PAYMENT FOR ITEMS DESCRIBED ABOVE		**TOTAL**	1,055.85	0.00	0.00	1,055.85

Appendices

Appendix A: Application Permit for the Construction or Operation of Sources of Emission in Puerto Rico

Appendix B: Supporting emission calculations documentation to support NSR Applicability Analysis, including Project Potential Emissions and Baseline Actual Emissions. Includes potential estimates for Hazardous Air Pollutants - HAP's

Appendix C: Copy of Approved Environmental Evaluations (Rule 141)

Appendix D: DNER Emergency Waiver for the Installation of (3) Combustion Turbines at Palo Seco

Appendix E: Black Start Generator Manufacturer's Emissions Certification

Appendix F: Site and Project Figures

Appendix A:

Application Permit for the Construction or Operation of Sources of Emission in Puerto Rico

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

DOCUMENTOS A SOMETERSE PARA PROYECTOS
POR LEY DE CERTIFICACIÓN O POR PROCESO ORDINARIO

FORMULARIO DE RADICACIÓN

San Juan P.R.
de de 2019.

PFE_____

HOJA DE COTEJO

Para someter formularios de permiso de construcción u operación bajo el proceso ordinario y bajo las disposiciones del Reglamento para la Certificación de Planos y Documentos ante la Junta de Calidad Ambiental.

Ley de Certificación		**Ordinario**		
Ingeniero	Arquitecto	Químico	JCA	
✓	☐	☐	☐	Original y copia del permiso para Construir u Operar Fuente de Emisión en Puerto Rico, firmado y sellado por un Ingeniero, Arquitecto o Químico Licenciado practicando la profesión en Puerto Rico.
✓	☐	☐	☐	Evidencia de haber cumplido con el Artículo 4B(3) de la Ley 416 del 22 de septiembre de 2004, según enmendada (Ley de Política Pública Ambiental) para la fuente de emisión a construirse. (**Rule 141)**
N/A	☐	☐	☐	Certificación de remoción de asbesto y plomo para los proyectos que contengan demolición de estructura.
✓	☐	☐	☐	Dos (2) copias de planos de localización.
✓	☐	☐	☐	Especificaciones de la fuente de emisión y medidas de control.
✓	☐	☐	☐	Original y copia de los cálculos de emisiones. **(Appendix B)**
✓	☐	☐	☐	Evidencia de haber cumplido con la cuotas del Colegio correspondiente (CIAPR, CAAPPR, CQPR).
✓	☐	☐	☐	Cumplir con la Regla 501 del Reglamento para el Control de la Contaminación Atmosférica (cargos por radicación y permiso).
✓	☐	☐	☐	Dos (2) copias del estimado de costo de la obra a construirse, detallado y desglosado.
N/A	☐	☐	☐	Evidencia o presentación de comprobante y sellos para cancelar: 1- Sellos CIAPR por la cantidad de: _____. 2- Comprobante de Rentas Internas por la cantidad de: _____.
☐	☐	☐	✓	Evidenciar copia de los Permisos de las Agencias Gubernamentales que tienen jurisdicción con el caso **(Waiver (Dispensa), Rule 141)**

_____
(Representante autorizado JCA)

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

Eng. Efran Paredes Maisonet
(Firma y sello Ingeniero, Químico o Arquitecto licenciado)

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE I - INFORMACION GENERAL

( ) Primero ( ) Revisión ( ) Renovación (X) Modificación ( )
Temporal Fecha: December 17, 2019

1. Solicitante:
   A. Nombre de la fuente de emisión: Autoridad de Energía Eléctrica de Puerto Rico (AEE o PREPA)
   B. Teléfono: 787-521-4960 SS Patronal: 66-043374
   C. Localización: PR-165 Km 30.8, Toa Baja, PR 00949
   D. Dirección Postal: PO Box 364267 San Juan. P.R. 00936-4267
   E. Oficial Responsable: Autoridad de Energia Electrica de Puerto Rico
   Daniel Hernández Morales Organización
   Ing. Daniel Hernández — Director de Generación — 787-521-6421
   Nombre del Oficial Responsable — Título — Teléfono
   Correo Electrónico:
   Dirección Postal: PO Box 364267, San Juan. P.R. 00936-4267
2. Propósito de la solicitud: (X) Construcción ( ) Operación (marque sólo una)
3. Naturaleza de la actividad: Installation of 3 PWPS Model FT8 MOBILPAC Peaking Combustion Turbines (Dual fuel Turbines, Gas Natural y Diesel) and 3 Caterpillar Model C13 black start generator engines
4. Número de empleos directos a crear: 147 Número de empleos indirectos a crear: 74
5. Número de empleos retenidos:
6. Costo de inversión capital: $58,093,016
7. Producción anual máxima (especifique unidad):
8. Horario máximo de operación: 24 Horas/día — 7 Días/semana — 12 Meses/año
9. Si es operación intermitente, frecuencia máxima: SIC: 4911 (Código de Clasificación Industrial)
10. Se deben incluir los siguientes documentos:
    A. Plano de localización (proyectado o existente) indicando colindancias adyacentes y estructuras.
    B. Plano de la facilidad (proyectado o existente) indicando todos los puntos de emisión.
    C. Certificación del solicitante autorizando al representante (si aplica).
11. Anote todos los permisos otorgados por alguna agencia federal, estatal o local para la estructura o construcción, permiso de uso o número requerido:

Tipo de Permiso	Agencia	No. de Identificación	Fecha
PFE Tíulo V	DNER/EQB JCA	PFE-TV-4911-70-1196-0015	March 16, 2015
Rule 141	DNER/EQB	141-19-0538	November 04, 2019
Categorical exclusion	OGPe	2019-268588-DEC-077849	June 26, 2019

12. Esta instalación, existía o fue construida legalmente antes del 16 de septiembre de 1971?
    ( ) sí (X) no (marque sólo una)

CERTIFICACION

La presente solicitud se somete con el propósito de obtener autorización para la actividad aquí descrita. Certifico que, a mi mejor conocimiento y creencia, toda la información es correcta, completa y exacta.

Firma del Oficial Responsable

AFFIDAVIT

Affidavit No. 830

Jurado y suscrito ante mí por Daniel Hernández Morales oficial responsable de AEE mayor de edad, estatus civil Casado y residente de Bayamón, PR.
En San Juan, Puerto Rico, hoy día 18 de diciembre de 2019.

Notario Público

EXENTO PAGO ARANCEL LEY 17 DE JULIO 1982

ANITA VAZQUEZ RODRIGUEZ ABOGADA NOTARIO PUERTO RICO

SOLO PARA USO DE LA JUNTA DE CALIDAD AMBIENTAL

Permiso otorgado en Expira No. solicitud

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE II - PROCESO DE LA PLANTA Y DESCRIPCIÓN DE EMISIONES

I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3$/min.

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: PWPS Model FT8® MOBILEPAC combustion turbines: 294.8 MMBtu/hr per Nat. Gas: 283.3 MMBtu/hr per Oil. (Tipo) (BTU/hr) (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Natural Gas	289,029 scf/hr	5.0 gr/100 dscf
Distillate Oil	2,053 gal/hr	0.05 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso	Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
Water Injection (gas)	85	33.9 pies	120.95" x 97.08" pulg.	794 °F	157.4 pies/
Water Injection (oil)	85 seg.	33.9 pies	120.95" x 97.08" pulg.	794 °F	155.4

4. Chimeneas: (ver tabla anterior)

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar: Tipo _____ Gal/hr ó Lb/hr _____ % azufre _____
6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

Certifico que estoy registrado y autorizado para practicar mi profesión en Puerto Rico; que el equipo y medidas para el control de emisiones son adecuadas y cumplen con las disposiciones del Reglamento de Control de Contaminantes Atmosféricos de la Junta de Calidad Ambiental de Puerto Rico y que, de acuerdo a mis mejores conocimientos y creencias, la información suministrada es veraz, completa y exacta.

17776 (Número de Licencia) — Efran Paredes (Nombre (Letra de molde)) — _____ (Firma)

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

Fecha: _____. Número de solicitud: _____.

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

HOJA DE PAGO

Número de Solicitud: _____
Nombre del Oficial Responsable: Ing. Daniel Hernández
Título: Director de Generación
Nombre del Proyecto o Fuente de Emisión: _____
Dirección Postal: _____

I. Pago por Solicitud de Permiso:
1. Pago por Radicación ($100.00): (X) Construcción ( ) Operación
( ) Escuela de Adiestramiento de Asbesto
2. ( ) Pago por Permiso 3. ( ) Pago por Renovación 4. ( ) Pago por Modificación

$100.0

($10.00 por toneladas por Contaminante)

CONTAMINANTE	EMISIONES (Ton/año)	CARGO TOTAL
Material Particulado (PM_{10})		
Dióxido de Azufre (SO_x)		
Oxido de Nitrógeno (NO_x)		
Compuestos Orgánicos Volátiles (VOC) e Hidrocarburos (HC)	6.9	$69.12
Plomo (Pb)		
Otros (CO)	88.7	$886.73
TOTAL		$1,055.85

CERTIFICACIONES DE ASBESTO

1. Escuela de Adiestramiento de Asbesto	$600.00		N/A
2. Registro de Asbesto ($40.00 por categoría) ( ) Especialista en Muestreo de Aire ( ) Diseñador de proyecto ( ) Planificador de proyecto ( ) Inspector ( ) Supervisor ( ) Trabajador			

OTROS CARGOS

1. Cambio de dueño o localización	(50% del cargo por radicación)	N/A
2. Pago por Revisión	(50% del cargo por radicación)	N/A
3. Duplicados de Permisos	$10.00	N/A
4. Pago por Exceso de Emisiones:		
A. Dispensas	($25.00/ton/contaminante)	N/A
B. Pequeños Negocios	($12.50/ton/cantaminante)	N/A

PAGO TOTAL DE LA SOLICITUD:

II. Pago anual (pago por un año)	N/A
III. Pago por cuatro (4) años extras (pago por 4 años)	N/A
IV. TOTAL	$1,055.85

PARA COMPLETARSE EN LA OFICINA DEL ÁREA DE CALIDAD DE AIRE

Cantidad a pagar: _____ Fecha: _____ Recibido por: _____

Número de cheque: _____ Número de recibo: _____

_____ _____
Firma del Representante autorizado JCA Firma División de Finanzas

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

PERMIT FEE CALCULATION

Pollutant	Tons Per Year			Difference	Fee
	PSGT Per Unit	PSGT 1-1, 1-2, and 2-1	Project		
PM10	15.85	47.54	19.70	-27.84	$0.00
SO2	666.89	2000.66	55.83	-1944.84	$0.00
NOx	1162.10	3486.30	196.27	-3290.04	$0.00
VOC	0.54	1.62	8.54	6.91	$69.12
CO	4.36	13.07	101.75	88.67	$886.73
TOTAL					$955.85



RENOVACIÓN APROBADA: 16 de noviembre, 2015

RENEWAL APPROVED ON: November 16, 2015

NÚM. EMP. 11964

Estado Libre Asociado de Puerto Rico
Commonwealth of Puerto Rico

DEPARTAMENTO DE ESTADO
Department of State

Secretaría Auxiliar de Juntas Examinadoras
Office of the Assistant Secretary of State for Examining Boards

La Junta Examinadora de Ingenieros y Agrimensores
The Examining Board of Engineers and Land Surveyors

por la presente certifica que
hereby certifies that

Efran Paredes Maisonet

habiendo cumplido todos los requisitos de Ley, se ha inscrito en el Registro de esta Junta como
having met all the requirements of law, has been registered as:

Ingeniero Licenciado
Licensed Engineer

16 FEB 16 AM 9:08

En testimonio de lo cual, se expide esta licencia para el ejercicio de dicha profesión, bajo el sello de la Junta Examinadora.
In testimony whereof, this license is issued to practice this profession, under the seal of the Board of Examiners.

En San Juan, Puerto Rico, efectivo 15 de diciembre de 2015
In San Juan, Puerto Rico, effective December 15, 2015.

Número de Licencia: 17776
License Number

Vencimiento: 15 de diciembre de 2020
Expires: December 15, 2020

JUNTA EXAMINADORA DE INGENIEROS Y AGRIMENSORES
ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE ESTADO

Presidente

Secretario Auxiliar Lcdo. Francisco Rodríguez Bernier
Under Secretary

Certifico que es copia fiel y exacta del original.

Sonia Miranda Vega, Directora
Planificación y Protección Ambiental
Núm. Emp. 9218, Tel. 4884

COPY

#empleado 11964

S/SCC ARCHIVOS DE PERSONAL

Y CORREOS-NOV15'18 AM11:06



CERTIFICO QUE ESTE DOCUMENTO ES
COPIA FIEL Y EXACTA DEL ORIGINAL.

Mónica A. del Playa 14/nov/2018

FIRMA FECHA


G
EFRAN
PAREDES MAISONET
11964

CN 078-04479
Rev. 11/17

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

18 de diciembre de 2018

Luisette X. Rios Castañer, Jefe
División de Protección Ambiental

Jaime A. Umpierre Montalvo, Jefe
División de Ingeniería y Servicios Técnicos

Desgloce de Costos para Solicitud Permiso de Construcción – Proyecto MegaGens Central Palo Seco

La Autoridad de Energía Eléctrica contrató mediante un proceso competitivo a la compañía ARG Precision Corp, para el diseño, compra, instalación y puesta en servicio de tres turbinas aeroderivadas, combustible dual (diésel y gas natural), móviles, de 27 MW, modelo Mobilepac FT8, manufacturado por PW Power Systems. El contrato fue por $58,093,016, cantidad que se distribuye en las siguientes partidas:

Major Equipments (Aeroderivative Turbines)	$50,501,543.04
Balance of Plant (BOP) Equipments	$3,485,580.96
Design	$180,000
Management & Administration	$700,000
Installation & Commissioning	$3,030,373.94
Taxes	$195,518.06

Para información adicional o aclaración de dudas favor de llamarnos a la extensión 6541.

JAIME A. UMPIERRE
INGENIERO LICENCIADO
PUERTO RICO

Lic. 12789

"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."

CN 078-04479
Rev. 11/17

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

18 de diciembre de 2018

Luisette X. Rios Castañer, Jefe
División de Protección Ambiental

Jaime A. Umpierre Montalvo, Jefe
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Desgloce de Costos para Solicitud Permiso de Construcción – Proyecto MegaGens Central Palo Seco

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ARECIBO
PUERTO RICO
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Appendix B:

Supporting Emission Calculations

PREPA Palo Seco - Pratt & Whitney FT-8 Allowable Operation To Net Out of PSD

Pollutant	PSGT 2-2, 3-1, and 3-2 Baseline Emissions (tpy)	BSG Potential Emissions (tpy)	PSD Significance (tpy)	PW FT8 Allowable Emissions (tpy)	PW FT8 Emissions Gas (lb/MMBtu)	PW FT8 Allowable Gas (MMBtu/yr)	PW FT8 Emissions Oil (lb/MMBtu)	PW FT8 Allowable Oil (MMBtu/yr)
NOx	718.4	4.92	40	753.4	0.1100	13,698,316	0.1731	8,704,880
PM	9.8	0.131	25	34.6	0.010	6,793,487	0.0177	3,905,707
PM10	9.8	0.131	15	24.6	0.010	4,828,092	0.0177	2,775,763
PM2.5	9.8	0.131	10	19.6	0.010	3,845,394	0.0177	2,210,791
SO2	19.8	0.004	40	59.7	0.0140	8,532,314	0.0505	2,365,394
VOC	0.33	0.14	40	40.1	0.0051	15,620,658	0.0071	11,263,804
CO	2.69	2.29	100	99.4	0.0767	2,593,341	0.0343	5,796,061
H2SO4	3.04	0.001	7	9.99	0.0021	9,316,279	0.0077	2,582,731
GHGs	133,596	481	75,000	208,115	117.12	3,553,938	163.64	2,543,553

NOTES:

PW FT8 Allowable Emissions (tpy) are equal to baseline emissions for PSGT 2-2, 3-1, and 3-2 plus PSD Significance Threshold

PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F

PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant

PW FT8 Allowable (hr/yr) are total hours for all three proposed PW FT8 Turbines based on allowable MMBtu/yr and 294.8 MMBtu/hr gas firing and 283.3 MM Btu/hr oil firing

Natural gas sulfur content limited to 5 grains per 100 standard cubic feet of gas

Distillate oil sulfur content limited to 0.05 percent by weight

GHGs are based upon the global warming potentials and emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2.



12/16/2019

Palo Seco Combustion Turbine Project Potential Emissions Versus PSD Significance Thresholds

Pollutant	Combustion Turbine Potential (tpy)	BSGs Potential (tpy)	Natural Gas Handling Potential (tpy)	Project Total Potential (tpy)	PSD Significance Threshold (tpy)
NO_x	191.34	4.922	0	196.3	40
PM	19.57	0.109	0	19.7	25
PM_{10}	19.57	0.131	0	19.7	15
$PM_{2.5}$	19.57	0.131	0	19.7	10
CO	99.45	2.292	0	101.7	100
VOC	7.85	0.136	0.55	8.54	40
SO_2	55.82	0.004	0	55.8	40
H_2SO_4	8.55	0.001	0	8.55	7
GHGs (as CO2e)	180,889	481	124	181,494	75,000



Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
NOx		8.8E-01	3,486.3	1.73E-01	191.3	1.10E-01	142.6	191.34	4.92		0.2133	3,811.6	9.85	7,499.1
CO		3.3E-03	13.1	3.43E-02	37.9	7.67E-02	99.5	99.45	2.29		0.0333	595.6	3.06	711.2
VOC		4.1E-04	1.6	7.10E-03	7.85	5.13E-03	6.7	7.85	0.14		0.0051	90.5	0.55	100.6
PM		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0521	930.9	0.24	998.2
PM10		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
PM2.5		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
SO2		5.05E-01	2,000.7	5.05E-02	55.82	1.40E-03	1.8	55.82	0.004		0.5423	9,689.9	1.32	11,747.7
H2SO4		7.73E-02	306.4	7.73E-03	8.55	2.14E-04	0.3	8.55	0.001		8.30E-02	1,483.8	0.20	1,798.9
GHGs as CO2e		163.64	648,300	163.64	180,889	117.12	151,864	180,889	481.0		1.66E+02	2,968,700	584	3,798,472
1,1,1-Trichloroethane											1.57E-06	2.81E-02		2.81E-02
1,3-Butadiene		1.60E-05	6.34E-02	1.60E-05	1.77E-02	4.30E-07	5.58E-04	1.77E-02					3.77E-05	8.11E-02
Acenaphthene									1.38E-05		1.41E-07	2.51E-03	1.35E-05	2.53E-03
Acenaphthylene									2.71E-05		1.69E-09	3.01E-05	2.89E-05	5.91E-05
Acetaldehyde						4.00E-05	5.19E-02	5.19E-02	7.41E-05				8.13E-04	5.27E-02
Acrolein						6.40E-06	8.30E-03	8.30E-03	2.32E-05				1.10E-04	8.41E-03
Anthracene									3.62E-06		8.13E-09	1.45E-04	5.03E-06	1.50E-04
Benzo(a)anthracene									1.83E-06		2.67E-08	4.78E-04	3.26E-06	4.81E-04
Benzene		5.50E-05	2.18E-01	5.50E-05	6.08E-02	1.20E-05	1.56E-02	6.08E-02	2.28E-03		1.43E-06	2.55E-02	2.92E-03	3.07E-01
Benzo(a)pyrene									7.55E-07				6.69E-07	6.69E-07
Benzo(b)fluoranthene									3.26E-06				2.89E-06	2.89E-06
Benzo(b,k)fluoranthene											9.87E-09	1.76E-04	1.64E-07	1.76E-04
Benzo(g,h,i)perylene									1.63E-06		1.51E-08	2.69E-04	1.92E-06	2.71E-04
Benzo(k)fluoranthene									6.41E-07				5.67E-07	5.67E-07
Chrysene									4.50E-06		1.59E-08	2.83E-04	4.32E-06	2.88E-04
Dibenzo(a,h)anthracene									1.02E-06		1.11E-08	1.99E-04	1.46E-06	2.00E-04
Ethylbenzene						3.20E-05	4.15E-02	4.15E-02			4.24E-07	7.58E-03		4.91E-02
Fluoranthene									1.18E-05		3.23E-08	5.77E-04	1.78E-05	5.94E-04
Fluorene									3.76E-05		2.98E-08	5.32E-04	6.13E-05	5.94E-04
Formaldehyde		2.31E-04	9.15E-01	2.31E-04	2.55E-01	2.19E-04	2.84E-01	2.84E-01	2.32E-04		2.20E-04	3.93E+00	1.36E-03	5.13E+00
Indeno(1,2,3-cd)pyrene									1.22E-06		1.43E-08	2.55E-04	1.44E-06	2.56E-04
Naphtalene		3.50E-05	1.39E-01	3.50E-05	3.87E-02	1.30E-06	1.69E-03	3.87E-02						1.77E-01
Total PAHs		4.00E-05	1.58E-01	4.00E-05	4.42E-02	2.20E-06	2.85E-03	4.42E-02	3.82E-04		8.67E-06	1.55E-01	5.02E-04	3.58E-01
OCDD											2.07E-11	3.69E-07		3.69E-07
Phenanathrene									1.20E-04		7.00E-08	1.25E-03	1.34E-04	1.38E-03
Propylene														
Pyrene									1.09E-05		2.83E-08	5.06E-04	1.43E-05	5.21E-04
Toluene						1.30E-04	1.69E-01	1.69E-01	8.26E-04		4.13E-05	7.39E-01	1.13E-03	9.08E-01
Xylene						6.40E-05	8.30E-02	8.30E-02	5.67E-04		7.27E-07	1.30E-02	7.82E-04	9.68E-02
Arsenic	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01

ING. ALFREDO SANTOS
INGENIERO
LICENCIADO
LIC. #17776
PUERTO RICO

12/12/2019

Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
Antimony	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Beryllium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Cadmium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Chromium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	4.00	2.15E-04	3.84E+00	8.80E-06	3.85E+00
Cobalt	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	0.30	1.61E-05	2.88E-01	1.76E-05	3.13E-01
Lead	0.20	9.87E-06	3.91E-02	9.87E-06	1.09E-02			1.09E-02	2.90E-05	5.00	2.69E-04	4.80E+00	3.52E-05	4.85E+00
Manganese	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Mercury	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Nickel	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	10.8	5.80E-04	1.04E+01	1.76E-05	1.04E+01
Selenium	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Total HAPs		**4.70E-04**	**1.86**	**4.70E-04**	**0.52**	**5.06E-04**	**0.66**	**0.66**	**0.66**		**1.47E-03**	**26.27**		**28.79**
Maximum Individual HAP												**Nickel**		**10.39**



Future Potential Emissions - Palo Seco Power Plant

Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)

Fuel Type	Heat Content		Density lb/gal	Annual Firing Rate			
Distillate Oil (New GTs)	138,000	Btu/gal	6.81	16,020,227	gal/yr	2,210,791	MMBtu/yr
Natural Gas (New GTs)	1,020	Btu/cf	N/A	2,542	MMCF/yr	2,593,341	MMBtu/yr
Distillate Oil (Existing GTs	138,000	Btu/gal	6.81	57,416,087	gal/yr	7,923,420	MMBtu/yr
No. 6 Fuel Oil (Boilers)	150,000	Btu/gal	8.06	238,227,149	gal/yr	35,734,072	MMBtu/yr
Fuel Sulfur (new GTs)		0.05	%				
Fuel Sulfur (existing GTs)		0.50	%				
Fuel Sulfur (Boilers)		0.50	%				

Notes:

1) If results of fuel oil testing indicated that the concentration of a particular metal is below detectable limits, the metal concentration was set to one-half the lowest detectable level.
2) The facility-wide HAP potential emissions is based upon the maximum result by individual HAP and total HAPs for fuel oil and natural gas.
3) For distillate oil firing, PTE based upon existing permit limits, rated firing rate, and 8,760 hr/yr, as applicable.
4) For natural gas firing, PTE based upon vendor emission guarantee rated firing rate, and 8,760 hr/yr, as applicable
5) For natural gas firing, VOC and PM/PM10/PM2.5 emissions based on AP-42, Section 3.1, Table 3.1-1.
6) For natural gas firing, formaldehyde (HCOH) PTE based on vendor guarantee (91 ppbvd).
7) SO2 emissions based upon fuel sulfur content limits
8) HAP PTE, except for HCOH on gas for new CTGs, based on AP-42 Section 3.1, Tables 3.1-1, 3.1-3, 3.1-4, and 3.1-5.
9) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
10) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2
11) Natural gas and distillate oil throughput limited to keep emissions below PSD signficance threshold.
12) Boilers 1 and 2 potential emissions based upon 8% annual capacity factor for limited use oil units under 40 CFR 63, Subpart UUUUU.

13) Fuel Oil F factor	9190	dsf/MMBtu	
14) Natural Gas F factor	8710	dsf/MMBtu	
15) From Method 19 - NOx	1.194E-07	lb/scf:ppm	
16) From Method 19 - CO	7.270E-08	lb/scf:ppm	

Rated Fuel Firing Rates FT8		
Fuel Type	MMBtu/hr	
Distillate Oil	283.3	24-hr average
Natural Gas	294.8	24-hr average

1 lb = 7000 grains



Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
1,1,1-Trichloroethane							
1,1-Dichloroethane							
1,2-Dichloroethane							
1,1,2,2,-Tetrachloroethane							
1,1,2-Trichloroethane							
1,3-Butadiene							
1,3-Dichloropropene							
Trimethylbenzenes							
2,2,4-Trimethylpentane							
Acenaphthene	4.68E-06	4.59E-06	4.68E-06	4.59E-06	4.68E-06	4.59E-06	1.38E-05
Acenaphthylene	9.23E-06	9.04E-06	9.23E-06	9.04E-06	9.23E-06	9.04E-06	2.71E-05
Acetaldehyde	2.52E-05	2.47E-05	2.52E-05	2.47E-05	2.52E-05	2.47E-05	7.41E-05
Acrolein	7.88E-06	7.72E-06	7.88E-06	7.72E-06	7.88E-06	7.72E-06	2.32E-05
Anthracene	1.23E-06	1.21E-06	1.23E-06	1.21E-06	1.23E-06	1.21E-06	3.62E-06
Benzo(a)anthracene	6.22E-07	6.09E-07	6.22E-07	6.09E-07	6.22E-07	6.09E-07	1.83E-06
Benzene	7.76E-04	7.60E-04	7.76E-04	7.60E-04	7.76E-04	7.60E-04	2.28E-03
Benzo(a)pyrene	2.57E-07	2.52E-07	2.57E-07	2.52E-07	2.57E-07	2.52E-07	7.55E-07
Benzo(b)fluoranthene	1.11E-06	1.09E-06	1.11E-06	1.09E-06	1.11E-06	1.09E-06	3.26E-06
Benzo(b,k)fluoranthene							
Benzo(e)pyrene							
Benzo(g,h,i)perylene	5.56E-07	5.45E-07	5.56E-07	5.45E-07	5.56E-07	5.45E-07	1.63E-06
Benzo(k)fluoranthene	2.18E-07	2.14E-07	2.18E-07	2.14E-07	2.18E-07	2.14E-07	6.41E-07
Biphenyl							
Carbon Tetrachloride							
Chlorobenzene							
Chloroform							
Chrysene	1.53E-06	1.50E-06	1.53E-06	1.50E-06	1.53E-06	1.50E-06	4.50E-06
Cyclohexane							
Dibenzo(a,h)anthracene	3.46E-07	3.39E-07	3.46E-07	3.39E-07	3.46E-07	3.39E-07	1.02E-06
Ethylbenzene							
Fluoranthene	4.03E-06	3.95E-06	4.03E-06	3.95E-06	4.03E-06	3.95E-06	1.18E-05
Fluorene	1.28E-05	1.25E-05	1.28E-05	1.25E-05	1.28E-05	1.25E-05	3.76E-05
Formaldehyde	7.89E-05	7.73E-05	7.89E-05	7.73E-05	7.89E-05	7.73E-05	2.32E-04
Indeno(1,2,3-cd)pyrene	4.14E-07	4.06E-07	4.14E-07	4.06E-07	4.14E-07	4.06E-07	1.22E-06
Methanol							
Methyl chloride							
Total PAHs	1.30E-04	1.27E-04	1.30E-04	1.27E-04	1.30E-04	1.27E-04	3.82E-04
n-Hexane							

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
OCDD							
Perylene							
Phenanathrene	4.08E-05	4.00E-05	4.08E-05	4.00E-05	4.08E-05	4.00E-05	1.20E-04
Phenol							
Pyrene	3.71E-06	3.64E-06	3.71E-06	3.64E-06	3.71E-06	3.64E-06	1.09E-05
Styrene							
Toluene	2.81E-04	2.75E-04	2.81E-04	2.75E-04	2.81E-04	2.75E-04	8.26E-04
Vinyl Chloride							
Xylene	1.93E-04	1.89E-04	1.93E-04	1.89E-04	1.93E-04	1.89E-04	5.67E-04
Arsenic	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Antimony	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Beryllium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cadmium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Chromium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cobalt	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Lead	9.87E-06	9.67E-06	9.87E-06	9.67E-06	9.87E-06	9.67E-06	2.90E-05
Manganese	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Mercury	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Nickel	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Selenium	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Total HAPs	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**5.00E-03**

Engine firing rate	**28.4**	**gal/hr**	**28.4**	**gal/hr**	**28.4**	**gal/hr**
Engine firing rate	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**
Engine annual heat input	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.0015**	**%**

Notes:
1) Organic HAP emissions from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples
2) NOx, CO, PM (filterable), and VOC (as HC) emissions are from Caterpillar performance specifications
3) PM10/PM2.5 condensable from AP-42, Table 3.4-2
4) SO2 emissions from mass balance and fuel sulfur content
5) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
6) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2 and GWPs in 40 CFR 98, Subchapter A, Table 1



Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
1,1,1-Trichloroethane									
1,1-Dichloroethane									
1,2-Dichloroethane									
1,1,2,2,-Tetrachloroethane									
1,1,2-Trichloroethane									
1,3-Butadiene	3.90E-05	2.37E-05	3.90E-05	1.40E-05					3.77E-05
1,3-Dichloropropene									
Trimethylbenzenes									
2,2,4-Trimethylpentane									
Acenaphthene	1.40E-06	8.50E-07	1.40E-06	5.02E-07	4.68E-06	6.09E-06	4.68E-06	6.09E-06	1.35E-05
Acenaphthylene	5.10E-06	3.10E-06	5.10E-06	1.83E-06	9.23E-06	1.20E-05	9.23E-06	1.20E-05	2.89E-05
Acetaldehyde	7.74E-04	4.70E-04	7.74E-04	2.78E-04	2.52E-05	3.28E-05	2.52E-05	3.28E-05	8.13E-04
Acrolein	9.30E-05	5.65E-05	9.30E-05	3.34E-05	7.88E-06	1.02E-05	7.88E-06	1.02E-05	1.10E-04
Anthracene	1.90E-06	1.15E-06	1.90E-06	6.82E-07	1.23E-06	1.60E-06	1.23E-06	1.60E-06	5.03E-06
Benzo(a)anthracene	1.70E-06	1.03E-06	1.70E-06	6.10E-07	6.22E-07	8.09E-07	6.22E-07	8.09E-07	3.26E-06
Benzene	9.30E-04	5.65E-04	9.30E-04	3.34E-04	7.76E-04	1.01E-03	7.76E-04	1.01E-03	2.92E-03
Benzo(a)pyrene					2.57E-07	3.34E-07	2.57E-07	3.34E-07	6.69E-07
Benzo(b)fluoranthene					1.11E-06	1.44E-06	1.11E-06	1.44E-06	2.89E-06
Benzo(b,k)fluoranthene	1.70E-07	1.03E-07	1.70E-07	6.10E-08					1.64E-07
Benzo(e)pyrene									
Benzo(g,h,i)perylene	4.90E-07	2.98E-07	4.90E-07	1.76E-07	5.56E-07	7.23E-07	5.56E-07	7.23E-07	1.92E-06
Benzo(k)fluoranthene					2.18E-07	2.84E-07	2.18E-07	2.84E-07	5.67E-07
Biphenyl									
Carbon Tetrachloride									
Chlorobenzene									
Chloroform									
Chrysene	3.50E-07	2.13E-07	3.50E-07	1.26E-07	1.53E-06	1.99E-06	1.53E-06	1.99E-06	4.32E-06
Cyclohexane									
Dibenzo(a,h)anthracene	5.80E-07	3.52E-07	5.80E-07	2.08E-07	3.46E-07	4.50E-07	3.46E-07	4.50E-07	1.46E-06
Ethylbenzene									
Fluoranthene	7.60E-06	4.61E-06	7.60E-06	2.73E-06	4.03E-06	5.24E-06	4.03E-06	5.24E-06	1.78E-05
Fluorene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	1.28E-05	1.66E-05	1.28E-05	1.66E-05	6.13E-05
Formaldehyde	1.20E-03	7.29E-04	1.20E-03	4.31E-04	7.89E-05	1.03E-04	7.89E-05	1.03E-04	1.36E-03
Indeno(1,2,3-cd)pyrene	3.80E-07	2.31E-07	3.80E-07	1.36E-07	4.14E-07	5.38E-07	4.14E-07	5.38E-07	1.44E-06
Methanol									
Methyl chloride									
Total PAHs	1.70E-04	1.03E-04	1.70E-04	6.10E-05	1.30E-04	1.69E-04	1.30E-04	1.69E-04	5.02E-04
n-Hexane									
OCDD									
Perylene									
Phenanathrene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	4.08E-05	5.31E-05	4.08E-05	5.31E-05	1.34E-04
Phenol									
Pyrene	4.80E-06	2.91E-06	4.80E-06	1.72E-06	3.71E-06	4.83E-06	3.71E-06	4.83E-06	1.43E-05
Styrene									
Toluene	4.10E-04	2.49E-04	4.10E-04	1.47E-04	2.81E-04	3.65E-04	2.81E-04	3.65E-04	1.13E-03
Vinyl Chloride									
Xylene	2.90E-04	1.76E-04	2.90E-04	1.04E-04	1.93E-04	2.51E-04	1.93E-04	2.51E-04	7.82E-04
Arsenic	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Antimony	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05

LIC. #17776 PUERTO RICO

Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
Beryllium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cadmium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Chromium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cobalt	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Lead	9.87E-06	5.99E-06	9.87E-06	3.54E-06	9.87E-06	1.28E-05	9.87E-06	1.28E-05	3.52E-05
Manganese	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Mercury	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Nickel	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Selenium	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Total HAPs	**4.12E-03**	**2.50E-03**	**4.12E-03**	**1.48E-03**	**1.70E-03**	**2.21E-03**	**1.70E-03**	**2.21E-03**	**8.40E-03**

Engine firing rate	**17.6**	**gal/hr**	**10.4**	**gal/hr**	**37.7**	**gal/hr**	**37.7**	**gal/hr**
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**
Engine annual heat input	**1,214**	**MMBtu/yr**	**718**	**MMBtu/yr**	**2,601**	**MMBtu/yr**	**2,601**	**MMBtu/yr**
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.50**	**%**	**0.50**	**%**

Notes:
1) Organic HAP emissions from diesel engines rated <600 hp from AP-42 Section 3.3, Table 3.3-2. Metal HAP emissions from fuel samples
2) Organic HAP emissions from diesel engines rated >600 hp from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples
3) HAP emisisons from propane engine from AP-42 Section 3.2, Table 3.2-2.
4) NOx, CO, and PM (filterable) emissions are from 40 CFR 60 NSPS Subpart IIII for GE-GIS-PS-1 and B1-PS-1
5) VOC from AP-42 Tables 3.3-1 and 3.4-1
6) SO2 emissions from mass balance and fuel sulfur content
7) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
8) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2



12/16/2019

Potential Emissions - Palo Seco Natural Gas Handling System Fugitive Emissions

Emission Factors	
Source Type	**Gas (kg/hr/source)**
Flanges (Vapor)	0.00039
Flanges (Liquid)	0.00011
Valves (Vapor)	0.0045
Others (compressors, drains, instruments, meters, PSVs, vents) (Vapor)	0.0088

Emission factors are from EPA's "Protocol for Equipment Leak Emissions Estimates" Table 2-4 (November 1995)

Potential Emissions					
Source Type	**Source Type Used**	**Count**	**All Gas (tpy)**	**VOC (tpy)**	**GHG (tpy)**
Flange (Vapor)	Flanges	38	0.143	0.014	3.2
Flange (Liquid)	Flanges	20	0.021	0.002	0.5
Valves (Vapor)	Valves	53	2.303	0.230	51.8
Vents, Drains, PIs, Lis, PSVs (Vapor)	Others	36	3.060	0.306	68.8
TOTALS			**5.53**	**0.55**	**124.4**
LNG estimated to have combined methane and ethane content >95% but emissions conservatively assume a VOC content of 10 percent.					
GHG emissions based upon all non-VOC emissions being methane with a global warmng potential of 25 (see 40 CFR 98, Subpart A, Table A-1)					

$$GHG\left(\frac{ton}{year}\right) = [All\ gas\left(\frac{ton}{year}\right) - VOC\left(\frac{ton}{year}\right)]\ X\ 25$$



PREPA Palo Seco

Proposed Compliance Emissions Tracking - Pratt & Whitney FT8 Combustion Turbine Project

The two limiting pollutants to net out of PSD are CO for gas firing and PM2.5 for oil firing to avoid PSD. A simple fuel cap can be assumed if only one fuel is fired in any year, however in a typical year will likely include firing of both fuels. To account for this, the following compliance mechanism will be implemented to ensure that the emissions of all pollutants remain below the proposed emission caps to ensure that the Project nets out of PSD.

PREPA shall track daily fuel usage and emissions.
The daily emissions shall be used to calculate rolling 365-day emissins

NOx:

$$NOx\left(\frac{ton}{day}\right) + NOx\ Total\ tons\ (364\ previous\ days) < 753.4\ tons\ 365\ days\ rolling$$

$$NOx\left(\frac{ton}{day}\right) = [NSPS\ Subpart\ KKKK\ Limit\left(\frac{1.2\ lb}{MW-hr}\right) X\ USNG\left(\frac{MW-hr}{day}\right) + NSPS\ Subpart\ KKKK\ Limit\left(\frac{3.6\ lb}{MW-hr}\right)\ X\ USdiesel\ \left(\frac{MW-hr}{day}\right)] \div 2.000\ lb/ton$$

CO:

$$CO\left(\frac{ton}{day}\right) + CO\ Total\ tons\ (364\ previous\ days) < 99.4\ tons\ 365\ days\ rolling$$

$$CO\left(\frac{ton}{day}\right) = [0.0767\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0343\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

PM:

$$PM\left(\frac{ton}{day}\right) + PM\ Total\ tons\ (364\ previous\ days) < 34.6\ tons\ 365\ days\ rolling$$

$$PM\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

PM10:

$$PM10\left(\frac{ton}{day}\right) + PM10\ Total\ tons\ (364\ previous\ days) < 24.6\ tons\ 365\ days\ rolling$$

$$PM10\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

PM2.5:

$$PM2.5\left(\frac{ton}{day}\right) + PM2.5\ Total\ tons\ (364\ previous\ days) < 19.6\ tons\ 365\ days\ rolling$$

$$PM2.5\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$



12/12/2019

VOC:

$$VOC\ \left(\frac{ton}{day}\right) + VOC\ Total\ tons\ (364\ previous\ days) < 40.1\ tons\ 365\ days\ rolling$$

$$VOC\ \left(\frac{ton}{day}\right) = [0.0051\ \left(\frac{lb}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) + 0.0071\ \left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$

SO2:

$$SO2\ \left(\frac{ton}{day}\right) + SO2\ Total\ tons\ (364\ previous\ days) < 59.7\ tons\ 365\ days\ rolling$$

$$SO2\ \left(\frac{ton}{day}\right) = [NG\ \left(\frac{gr\ S}{100\ dscf}\right) X\ \left(\frac{1\ lb}{7{,}000\ gr}\right) X\ \left(\frac{1\ dscf}{1{,}020\ Btu}\right) X\ \left(\frac{1x10^6\ Btu}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) +$$

$$Diesel\ wt\%\ S\ X\ Diesel\ gals\ X\ \left(\frac{7.05\ lb}{gal}\right) X\ USDiesel\ \left(\frac{MMBtu}{day}\right)] X\ \left(\frac{2\ lb\ SO2}{lb\ S}\right) \div 2.000\ lb/ton$$

H2SO4:

$$H2SO4\ \left(\frac{ton}{day}\right) + H2SO4\ Total\ tons\ (364\ previous\ days) < 9.9\ tons\ 365\ days\ rolling$$

$$H2SO4\ \left(\frac{ton}{day}\right) = SO2\ \left(\frac{ton}{day}\right) x\ \frac{98\ lb\ H2SO4}{64\ lb\ SO2}\ x\ 10\%$$

GHGs:

$$GHG\ \left(\frac{ton}{day}\right) + GHG\ Total\ tons\ (364\ previous\ days) < 208{,}115\ tons\ 365\ days\ rolling$$

$$GHG\ \left(\frac{ton}{day}\right) = [117.12\ \left(\frac{lb}{MMBtu}\right) X\ USNG\ \left(\frac{MMBtu}{day}\right) + 163.64\ \left(\frac{lb}{MMBtu}\right) X\ USdiesel\ \left(\frac{MMBtu}{day}\right)] \div 2.000\ lb/ton$$



PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

			NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
2009	**13,212.0**	**0.040**														
Jan	215.7	0.040	0.55		0.01		0.03		0.00		0.00		0.00		102.27	
Feb	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Mar	56.7	0.040	0.14		0.00		0.01		0.00		0.00		0.00		26.87	
Apr	113.8	0.040	0.29		0.00		0.01		0.00		0.00		0.00		53.98	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	2,813.5	0.025	7.17		0.10		0.21		0.03		0.03		0.00		1,334.23	
Sep	2,655.0	0.020	6.77		0.09		0.16		0.02		0.03		0.00		1,259.09	
Oct	7,357.4	0.018	18.76		0.26		0.39		0.06		0.07		0.01		3,489.12	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
2010	**12,979.4**	**0.024**														
Jan	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Feb	3,040.1	0.020	7.75		0.11		0.17		0.03		0.03		0.00		1,441.73	
Mar	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Apr	100.0	0.020	0.25		0.00		0.01		0.00		0.00		0.00		47.41	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	2,580.2	0.024	6.58		0.09		0.18		0.03		0.02		0.00		1,223.63	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	4,069.6	0.024	10.38		0.14		0.28		0.04		0.04		0.00		1,929.93	
Sep	3,189.4	0.020	8.13		0.11		0.19		0.03		0.03		0.00		1,512.53	
Oct	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00	33.40	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,210.40
2011	**7,956.4**	**0.020**														
Jan	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Feb	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Mar	476.9	0.020	1.22	33.66	0.02	0.46	0.03	0.81	0.00	0.12	0.00	0.13	0.00	0.02	226.18	6,258.92
Apr	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
May	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jun	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jul	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Aug	2,799.2	0.020	7.14	33.49	0.10	0.46	0.16	0.78	0.03	0.12	0.03	0.13	0.00	0.02	1,327.48	6,228.55
Sep	1,148.2	0.020	2.93	31.57	0.04	0.43	0.07	0.74	0.01	0.11	0.01	0.12	0.00	0.01	544.52	5,871.27
Oct	3,532.0	0.020	9.01	26.70	0.12	0.36	0.21	0.65	0.03	0.10	0.03	0.10	0.00	0.01	1,675.01	4,964.22
Nov	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Dec	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
2012	**11,064.7**	**0.020**														
Jan	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Feb	9,971.2	0.010	25.43	35.53	0.35	0.48	0.29	0.71	0.04	0.11	0.10	0.13	0.01	0.02	4,728.65	6,607.67
Mar	0.0	0.000	0.00	35.53	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,607.67
Apr	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
May	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
Jun	920.7	0.020	2.35	33.29	0.03	0.45	0.05	0.64	0.01	0.10	0.01	0.12	0.00	0.02	436.61	6,190.46
Jul	0.0	0.000	0.00	33.29	0.00	0.45	0.00	0.64	0.00	0.10	0.00	0.12	0.00	0.02	0.00	6,190.46
Aug	0.0	0.000	0.00	28.10	0.00	0.38	0.00	0.50	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,225.49
Sep	172.9	0.010	0.44	24.25	0.01	0.33	0.01	0.41	0.00	0.06	0.00	0.09	0.00	0.01	81.98	4,510.21
Oct	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Nov	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

			NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Dec	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
2013	**8,759.6**	**0.020**														
Jan	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Feb	7,162.7	0.020	18.27	33.39	0.25	0.46	0.41	0.61	0.06	0.09	0.07	0.13	0.01	0.02	3,396.78	6,208.60
Mar	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Apr	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
May	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jun	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jul	139.2	0.020	0.36	32.96	0.00	0.45	0.01	0.60	0.00	0.09	0.00	0.12	0.00	0.02	66.02	6,128.52
Aug	0.0	0.000	0.00	29.39	0.00	0.40	0.00	0.52	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,464.78
Sep	1,457.7	0.020	3.72	29.78	0.05	0.41	0.09	0.53	0.01	0.08	0.01	0.11	0.00	0.01	691.30	5,538.17
Oct	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Nov	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Dec	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
2014	**119,480.3**	**0.020**														
Jan	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Feb	0.0	0.000	0.00	12.56	0.00	0.17	0.00	0.28	0.00	0.04	0.00	0.05	0.00	0.01	0.00	2,336.34
Mar	545.1	0.020	1.39	13.26	0.02	0.18	0.03	0.30	0.00	0.05	0.01	0.05	0.00	0.01	258.50	2,465.59
Apr	1,662.5	0.020	4.24	15.38	0.06	0.21	0.10	0.35	0.01	0.05	0.02	0.06	0.00	0.01	788.43	2,859.81
May	10,213.0	0.018	26.05	28.40	0.36	0.39	0.53	0.61	0.08	0.09	0.10	0.11	0.01	0.01	4,843.33	5,281.47
Jun	7,112.5	0.020	18.14	36.30	0.25	0.49	0.42	0.79	0.06	0.12	0.07	0.14	0.01	0.02	3,372.99	6,749.66
Jul	16,711.2	0.019	42.62	57.61	0.58	0.79	0.91	1.25	0.14	0.19	0.16	0.22	0.02	0.03	7,925.00	10,712.16
Aug	52,615.4	0.017	134.18	124.70	1.83	1.70	2.68	2.59	0.41	0.40	0.50	0.47	0.06	0.06	24,951.94	23,188.14
Sep	16,883.6	0.010	43.06	146.00	0.59	1.99	0.47	2.83	0.07	0.43	0.16	0.55	0.02	0.07	8,006.75	27,150.52
Oct	9,729.2	0.010	24.81	158.41	0.34	2.16	0.27	2.96	0.04	0.45	0.09	0.59	0.01	0.07	4,613.90	29,457.47
Nov	3,212.0	0.011	8.19	162.51	0.11	2.22	0.10	3.01	0.02	0.46	0.03	0.61	0.00	0.08	1,523.23	30,219.09
Dec	795.9	0.010	2.03	163.52	0.03	2.23	0.02	3.02	0.00	0.46	0.01	0.61	0.00	0.08	377.42	30,407.80
2015	**186,089.6**	**0.022**														
Jan	464.9	0.010	1.19	164.11	0.02	2.24	0.01	3.03	0.00	0.46	0.00	0.62	0.00	0.08	220.48	30,518.04
Feb	691.1	0.010	1.76	155.86	0.02	2.13	0.02	2.83	0.00	0.43	0.01	0.58	0.00	0.07	327.75	28,983.52
Mar	1,434.7	0.010	3.66	157.69	0.05	2.15	0.04	2.86	0.01	0.44	0.01	0.59	0.00	0.07	680.39	29,323.72
Apr	5,283.3	0.010	13.47	164.43	0.18	2.24	0.16	2.93	0.02	0.45	0.05	0.62	0.01	0.08	2,505.52	30,576.48
May	1,276.5	0.010	3.26	166.06	0.04	2.26	0.04	2.95	0.01	0.45	0.01	0.62	0.00	0.08	605.37	30,879.16
Jun	9,074.1	0.011	23.14	177.63	0.32	2.42	0.29	3.10	0.04	0.47	0.09	0.67	0.01	0.08	4,303.25	33,030.79
Jul	10,688.6	0.010	27.26	191.08	0.37	2.61	0.31	3.25	0.05	0.50	0.10	0.72	0.01	0.09	5,068.88	35,532.22
Aug	5,933.8	0.010	15.13	198.64	0.21	2.71	0.17	3.33	0.03	0.51	0.06	0.74	0.01	0.09	2,814.00	36,939.22
Sep	52,771.5	0.015	134.58	264.08	1.84	3.60	2.32	4.45	0.36	0.68	0.50	0.99	0.06	0.12	25,025.98	49,106.55
Oct	31,689.0	0.022	80.81	304.48	1.10	4.15	2.05	5.47	0.31	0.84	0.30	1.14	0.04	0.14	15,027.97	56,620.54
Nov	22,427.0	0.020	57.19	333.08	0.78	4.54	1.34	6.14	0.21	0.94	0.21	1.25	0.03	0.16	10,635.62	61,938.35
Dec	44,355.0	0.022	113.12	389.64	1.54	5.31	2.91	7.60	0.45	1.16	0.42	1.46	0.05	0.18	21,034.60	72,455.65
2016	**181,283.1**	**0.030**														
Jan	14,543.0	0.021	37.09	408.18	0.51	5.57	0.89	8.04	0.14	1.23	0.14	1.53	0.02	0.19	6,896.77	75,904.03
Feb	6,276.0	0.021	16.01	416.19	0.22	5.68	0.38	8.23	0.06	1.26	0.06	1.56	0.01	0.19	2,976.29	77,392.17
Mar	18,228.0	0.020	46.49	438.73	0.63	5.98	1.07	8.76	0.16	1.34	0.17	1.65	0.02	0.20	8,644.32	81,585.08
Apr	10,584.0	0.020	26.99	450.11	0.37	6.14	0.61	9.01	0.09	1.38	0.10	1.69	0.01	0.21	5,019.28	83,700.51
May	17,539.0	0.019	44.73	459.45	0.61	6.27	1.00	9.24	0.15	1.42	0.17	1.72	0.02	0.21	8,317.57	85,437.63
Jun	5,438.0	0.020	13.87	457.32	0.19	6.24	0.32	9.20	0.05	1.41	0.05	1.71	0.01	0.21	2,578.88	85,040.57
Jul	46,750.0	0.030	119.22	495.62	1.63	6.76	4.13	10.81	0.63	1.65	0.45	1.86	0.06	0.23	22,170.39	92,163.26
Aug	39,045.0	0.022	99.57	478.31	1.36	6.52	2.56	10.74	0.39	1.64	0.37	1.79	0.05	0.22	18,516.42	88,945.50
Sep	17,341.0	0.021	44.22	478.90	0.60	6.53	1.09	11.05	0.17	1.69	0.17	1.80	0.02	0.22	8,223.67	89,053.96
Oct	5,136.3	0.016	13.10	473.04	0.18	6.45	0.24	11.03	0.04	1.69	0.05	1.77	0.01	0.22	2,435.78	87,964.90

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

			NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Nov	159.6	0.016	0.41	469.15	0.01	6.40	0.01	10.99	0.00	1.68	0.00	1.76	0.00	0.22	75.70	87,241.14
Dec	243.2	0.016	0.62	468.44	0.01	6.39	0.01	10.98	0.00	1.68	0.00	1.76	0.00	0.22	115.35	87,110.10
2017	**300,672.4**	**0.045**														
Jan	3,072.0	0.016	7.83	471.77	0.11	6.43	0.14	11.05	0.02	1.69	0.03	1.77	0.00	0.22	1,456.86	87,728.29
Feb	4,567.4	0.016	11.65	476.71	0.16	6.50	0.21	11.14	0.03	1.71	0.04	1.79	0.01	0.22	2,166.01	88,647.43
Mar	1,700.4	0.013	4.34	477.05	0.06	6.51	0.07	11.15	0.01	1.71	0.02	1.79	0.00	0.22	806.40	88,710.43
Apr	6,686.6	0.013	17.05	478.84	0.23	6.53	0.26	11.21	0.04	1.72	0.06	1.80	0.01	0.22	3,171.02	89,043.18
May	12,826.8	0.010	32.71	493.57	0.45	6.73	0.38	11.38	0.06	1.74	0.12	1.85	0.02	0.23	6,082.90	91,781.95
Jun	20,716.7	0.006	52.83	508.41	0.72	6.93	0.37	11.42	0.06	1.75	0.20	1.91	0.02	0.24	9,824.55	94,542.60
Jul	27,821.3	0.004	70.95	530.26	0.97	7.23	0.34	11.43	0.05	1.75	0.27	1.99	0.03	0.25	13,193.78	98,605.05
Aug	54,325.2	0.007	138.54	591.96	1.89	8.07	1.10	11.90	0.17	1.82	0.52	2.22	0.06	0.28	25,762.78	110,079.44
Sep	30,986.9	0.027	79.02	564.19	1.08	7.69	2.43	11.95	0.37	1.83	0.30	2.12	0.04	0.26	14,694.99	104,913.95
Oct	44,144.4	0.034	112.58	580.07	1.54	7.91	4.39	13.13	0.67	2.01	0.42	2.18	0.05	0.27	20,934.73	107,867.33
Nov	48,381.8	0.045	123.39	613.16	1.68	8.36	6.38	15.64	0.98	2.40	0.46	2.30	0.06	0.29	22,944.22	114,021.63
Dec	45,442.8	0.036	115.89	614.55	1.58	8.38	4.84	16.61	0.74	2.54	0.43	2.30	0.05	0.29	21,550.47	114,279.57
2018	**163,433.8**	**0.032**														
Jan	46,933.0	0.032	119.69	655.85	1.63	8.94	4.39	18.36	0.67	2.81	0.45	2.46	0.06	0.31	22,257.15	121,959.76
Feb	41,449.7	0.019	105.71	700.70	1.44	9.56	2.31	19.33	0.35	2.96	0.40	2.63	0.05	0.33	19,656.80	130,300.01
Mar	24,675.0	0.024	62.93	708.92	0.86	9.67	1.76	19.67	0.27	3.01	0.24	2.66	0.03	0.33	11,701.68	131,828.69
Apr	18,039.1	0.018	46.00	718.43	0.63	9.80	0.93	19.83	0.14	3.04	0.17	2.69	0.02	0.33	8,554.75	133,596.43
May	6,210.3	0.014	15.84	703.98	0.22	9.60	0.25	19.46	0.04	2.98	0.06	2.64	0.01	0.33	2,945.12	130,910.21
Jun	2,091.9	0.022	5.33	699.72	0.07	9.54	0.14	19.37	0.02	2.97	0.02	2.62	0.00	0.33	992.06	130,116.80
Jul	4,691.7	0.027	11.96	646.09	0.16	8.81	0.38	17.49	0.06	2.68	0.04	2.42	0.01	0.30	2,224.95	120,144.08
Aug	8,599.4	0.029	21.93	607.27	0.30	8.28	0.73	16.58	0.11	2.54	0.08	2.28	0.01	0.28	4,078.11	112,924.93
Sep	290.6	0.028	0.74	585.53	0.01	7.98	0.02	16.05	0.00	2.46	0.00	2.20	0.00	0.27	137.82	108,882.00
Oct	1,224.1	0.028	3.12	580.54	0.04	7.92	0.10	15.98	0.02	2.45	0.01	2.18	0.00	0.27	580.53	107,954.38
Nov	5,820.9	0.024	14.84	587.76	0.20	8.01	0.41	16.18	0.06	2.48	0.06	2.20	0.01	0.27	2,760.46	109,296.76
Dec	3,408.1	0.018	8.69	591.79	0.12	8.07	0.18	16.26	0.03	2.49	0.03	2.22	0.00	0.28	1,616.21	110,047.19
2019	**2,606.1**	**0.018**														
Jan	0.0	0.000	0.00	587.87	0.00	8.02	0.00	16.19	0.00	2.48	0.00	2.20	0.00	0.27	0.00	109,318.76
Feb	78.2	0.018	0.20	582.15	0.00	7.94	0.00	16.09	0.00	2.46	0.00	2.18	0.00	0.27	37.09	108,254.30
Mar	767.4	0.018	1.96	580.96	0.03	7.92	0.04	16.07	0.01	2.46	0.01	2.18	0.00	0.27	363.94	108,033.07
Apr	1,760.5	0.017	4.49	574.68	0.06	7.84	0.09	15.99	0.01	2.45	0.02	2.16	0.00	0.27	834.89	106,865.00



AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco - Pratt & Whitney FT-8 Allowable Operation To Net Out of PSD

Pollutant	PSGT 2-2, 3-1, and 3-2 Baseline Emissions (tpy)	BSG Potential Emissions (tpy)	PSD Significance (tpy)	PW FT8 Allowable Emissions (tpy)	PW FT8 Emissions Gas (lb/MMBtu)	PW FT8 Allowable Gas (MMBtu/yr)	PW FT8 Emissions Oil (lb/MMBtu)	PW FT8 Allowable Oil (MMBtu/yr)
NOx	718.4	4.92	40	753.4	0.1100	13,698,316	0.1731	8,704,880
PM	9.8	0.131	25	34.6	0.010	6,793,487	0.0177	3,905,707
PM10	9.8	0.131	15	24.6	0.010	4,828,092	0.0177	2,775,763
PM2.5	9.8	0.131	10	19.6	0.010	3,845,394	0.0177	2,210,791
SO2	19.8	0.004	40	59.7	0.0140	8,532,314	0.0505	2,365,394
VOC	0.33	0.14	40	40.1	0.0051	15,620,658	0.0071	11,263,804
CO	2.69	2.29	100	99.4	0.0767	2,593,341	0.0343	5,796,061
H2SO4	3.04	0.001	7	9.99	0.0021	9,316,279	0.0077	2,582,731
GHGs	133,596	481	75,000	208,115	117.12	3,553,938	163.64	2,543,553

NOTES:

PW FT8 Allowable Emissions (tpy) are equal to baseline emissions for PSGT 2-2, 3-1, and 3-2 plus PSD Significance Threshold

PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F

PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant

PW FT8 Allowable (hr/yr) are total hours for all three proposed PW FT8 Turbines based on allowable MMBtu/yr and 294.8 MMBtu/hr gas firing and 283.3 MM Btu/hr oil firing

Natural gas sulfur content limited to 5 grains per 100 standard cubic feet of gas

Distillate oil sulfur content limited to 0.05 percent by weight

GHGs are based upon the global warming potentials and emission factors in 40 CFR §98, Subpart A, Table A-1 and 40 CFR §98, Subpart C, Tables C-1 and C-2.



12/16/2019

Palo Seco Combustion Turbine Project Potential Emissions Versus PSD Significance Thresholds

Pollutant	Combustion Turbine Potential (tpy)	BSGs Potential (tpy)	Natural Gas Handling Potential (tpy)	Project Total Potential (tpy)	PSD Significance Threshold (tpy)
NO_x	191.34	4.922	0	196.3	40
PM	19.57	0.109	0	19.7	25
PM_{10}	19.57	0.131	0	19.7	15
$PM_{2.5}$	19.57	0.131	0	19.7	10
CO	99.45	2.292	0	101.7	100
VOC	7.85	0.136	0.55	8.54	40
SO_2	55.82	0.004	0	55.8	40
H_2SO_4	8.55	0.001	0	8.55	7
GHGs (as CO2e)	180,889	481	124	181,494	75,000



12/12/2019

Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
NOx		8.8E-01	3,486.3	1.73E-01	191.3	1.10E-01	142.6	191.34	4.92		0.2133	3,811.6	9.85	7,499.1
CO		3.3E-03	13.1	3.43E-02	37.9	7.67E-02	99.5	99.45	2.29		0.0333	595.6	3.06	711.2
VOC		4.1E-04	1.6	7.10E-03	7.85	5.13E-03	6.7	7.85	0.14		0.0051	90.5	0.55	100.6
PM		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0521	930.9	0.24	998.2
PM10		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
PM2.5		0.012	47.5	0.0177	19.6	0.010	13.2	19.57	0.13		0.0470	839.6	0.23	907.0
SO2		5.05E-01	2,000.7	5.05E-02	55.82	1.40E-03	1.8	55.82	0.004		0.5423	9,689.9	1.32	11,747.7
H2SO4		7.73E-02	306.4	7.73E-03	8.55	2.14E-04	0.3	8.55	0.001		8.30E-02	1,483.8	0.20	1,798.9
GHGs as CO2e		163.64	648,300	163.64	180,889	117.12	151,864	180,889	481.0		1.66E+02	2,968,700	584	3,798,472
1,1,1-Trichloroethane											1.57E-06	2.81E-02		2.81E-02
1,3-Butadiene		1.60E-05	6.34E-02	1.60E-05	1.77E-02	4.30E-07	5.58E-04	1.77E-02					3.77E-05	8.11E-02
Acenaphthene									1.38E-05		1.41E-07	2.51E-03	1.35E-05	2.53E-03
Acenaphthylene									2.71E-05		1.69E-09	3.01E-05	2.89E-05	5.91E-05
Acetaldehyde						4.00E-05	5.19E-02	5.19E-02	7.41E-05				8.13E-04	5.27E-02
Acrolein						6.40E-06	8.30E-03	8.30E-03	2.32E-05				1.10E-04	8.41E-03
Anthracene									3.62E-06		8.13E-09	1.45E-04	5.03E-06	1.50E-04
Benzo(a)anthracene									1.83E-06		2.67E-08	4.78E-04	3.26E-06	4.81E-04
Benzene		5.50E-05	2.18E-01	5.50E-05	6.08E-02	1.20E-05	1.56E-02	6.08E-02	2.28E-03		1.43E-06	2.55E-02	2.92E-03	3.07E-01
Benzo(a)pyrene									7.55E-07				6.69E-07	6.69E-07
Benzo(b)fluoranthene									3.26E-06				2.89E-06	2.89E-06
Benzo(b,k)fluoranthene											9.87E-09	1.76E-04	1.64E-07	1.76E-04
Benzo(g,h,i)perylene									1.63E-06		1.51E-08	2.69E-04	1.92E-06	2.71E-04
Benzo(k)fluoranthene									6.41E-07				5.67E-07	5.67E-07
Chrysene									4.50E-06		1.59E-08	2.83E-04	4.32E-06	2.88E-04
Dibenzo(a,h)anthracene									1.02E-06		1.11E-08	1.99E-04	1.46E-06	2.00E-04
Ethylbenzene						3.20E-05	4.15E-02	4.15E-02			4.24E-07	7.58E-03		4.91E-02
Fluoranthene									1.18E-05		3.23E-08	5.77E-04	1.78E-05	5.94E-04
Fluorene									3.76E-05		2.98E-08	5.32E-04	6.13E-05	5.94E-04
Formaldehyde		2.31E-04	9.15E-01	2.31E-04	2.55E-01	2.19E-04	2.84E-01	2.84E-01	2.32E-04		2.20E-04	3.93E+00	1.36E-03	5.13E+00
Indeno(1,2,3-cd)pyrene									1.22E-06		1.43E-08	2.55E-04	1.44E-06	2.56E-04
Naphtalene		3.50E-05	1.39E-01	3.50E-05	3.87E-02	1.30E-06	1.69E-03	3.87E-02						1.77E-01
Total PAHs		4.00E-05	1.58E-01	4.00E-05	4.42E-02	2.20E-06	2.85E-03	4.42E-02	3.82E-04		8.67E-06	1.55E-01	5.02E-04	3.58E-01
OCDD											2.07E-11	3.69E-07		3.69E-07
Phenanathrene									1.20E-04		7.00E-08	1.25E-03	1.34E-04	1.38E-03
Propylene														
Pyrene									7.09E-05		2.83E-08	5.06E-04	1.43E-05	5.21E-04
Toluene						1.30E-04	1.69E-01	1.69E-01	8.26E-04		4.13E-05	7.38E-01	1.13E-03	9.08E-01
Xylene						6.40E-05	8.30E-02	8.30E-02	5.67E-04		7.27E-07	1.30E-02	7.82E-04	9.68E-02
Arsenic	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01

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PUERTO RICO

12/12/2019

Future Potential Emissions - Palo Seco Power Plant														
Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)
Antimony	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Beryllium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Cadmium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Chromium	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	4.00	2.15E-04	3.84E+00	8.80E-06	3.85E+00
Cobalt	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	0.30	1.61E-05	2.88E-01	1.76E-05	3.13E-01
Lead	0.20	9.87E-06	3.91E-02	9.87E-06	1.09E-02			1.09E-02	2.90E-05	5.00	2.69E-04	4.80E+00	3.52E-05	4.85E+00
Manganese	0.05	2.47E-06	9.78E-03	2.47E-06	2.73E-03			2.73E-03	7.25E-06	0.05	2.69E-06	4.80E-02	8.80E-06	6.05E-02
Mercury	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Nickel	0.10	4.93E-06	1.96E-02	4.93E-06	5.45E-03			5.45E-03	1.45E-05	10.8	5.80E-04	1.04E+01	1.76E-05	1.04E+01
Selenium	0.50	2.47E-05	9.78E-02	2.47E-05	2.73E-02			2.73E-02	7.25E-05	0.50	2.69E-05	4.80E-01	8.80E-05	6.05E-01
Total HAPs		**4.70E-04**	**1.86**	**4.70E-04**	**0.52**	**5.06E-04**	**0.66**	**0.66**	**0.66**		**1.47E-03**	**26.27**		**28.79**
Maximum Individual HAP												**Nickel**		**10.39**



Future Potential Emissions - Palo Seco Power Plant

Pollutant	Emissions From PSGT 1-1, 1-2, and 2-1			Emissions From New FT8 Combustion Turbines				Emissions From New FT8 Combustion Turbines	Emissions From New BSGs	Emissions From Units 1-4			Emergency Engines	Total Power Plant Emissions
	AP-42 04/00 - GT Fuel Oil Table 3.1-4 for Organics Fuel Sample Metals			Vendor Specs Criteria Pollutants. AP-42 04/00 - Oil Table 3.1-4 for Organic HAPs. Fuel Sample Metal HAPs		Vendor Specs Criteria Pollutants. AP-42 04/00 - Gas Table 3.1-3 for Organic HAPs.				AP-42 09/98 - No. 6 Oil Combustion Table 1.3-9 and 1.3-11 No. 6 Fuel Oil Sample for Metals				
	ppm	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ton/yr	ton/yr	ppm	lb/MMBtu	ton/yr	ton/yr	(ton/yr)

Fuel Type	Heat Content		Density lb/gal	Annual Firing Rate			
Distillate Oil (New GTs)	138,000	Btu/gal	6.81	16,020,227	gal/yr	2,210,791	MMBtu/yr
Natural Gas (New GTs)	1,020	Btu/cf	N/A	2,542	MMCF/yr	2,593,341	MMBtu/yr
Distillate Oil (Existing GTs	138,000	Btu/gal	6.81	57,416,087	gal/yr	7,923,420	MMBtu/yr
No. 6 Fuel Oil (Boilers)	150,000	Btu/gal	8.06	238,227,149	gal/yr	35,734,072	MMBtu/yr
Fuel Sulfur (new GTs)		0.05	%				
Fuel Sulfur (existing GTs)		0.50	%				
Fuel Sulfur (Boilers)		0.50	%				

Notes:

1) If results of fuel oil testing indicated that the concentration of a particular metal is below detectable limits, the metal concentration was set to one-half the lowest detectable level.
2) The facility-wide HAP potential emissions is based upon the maximum result by individual HAP and total HAPs for fuel oil and natural gas.
3) For distillate oil firing, PTE based upon existing permit limits, rated firing rate, and 8,760 hr/yr, as applicable.
4) For natural gas firing, PTE based upon vendor emission guarantee rated firing rate, and 8,760 hr/yr, as applicable
5) For natural gas firing, VOC and PM/PM10/PM2.5 emissions based on AP-42, Section 3.1, Table 3.1-1.
6) For natural gas firing, formaldehyde (HCOH) PTE based on vendor guarantee (91 ppbvd).
7) SO2 emissions based upon fuel sulfur content limits
8) HAP PTE, except for HCOH on gas for new CTGs, based on AP-42 Section 3.1, Tables 3.1-1, 3.1-3, 3.1-4, and 3.1-5.
9) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
10) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2
11) Natural gas and distillate oil throughput limited to keep emissions below PSD signficance threshold.
12) Boilers 1 and 2 potential emissions based upon 8% annual capacity factor for limited use oil units under 40 CFR 63, Subpart UUUUU.

13) Fuel Oil F factor		9190	dsf/MMBtu
14) Natural Gas F factor		8710	dsf/MMBtu
15) From Method 19 - NOx		1.194E-07	lb/scf:ppm
16) From Method 19 - CO		7.270E-08	lb/scf:ppm

Rated Fuel Firing Rates FT8

Fuel Type	MMBtu/hr	
Distillate Oil	283.3	24-hr average
Natural Gas	294.8	24-hr average

1 lb = 7000 grains



12/12/2019

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
1,1,1-Trichloroethane							
1,1-Dichloroethane							
1,2-Dichloroethane							
1,1,2,2,-Tetrachloroethane							
1,1,2-Trichloroethane							
1,3-Butadiene							
1,3-Dichloropropene							
Trimethylbenzenes							
2,2,4-Trimethylpentane							
Acenaphthene	4.68E-06	4.59E-06	4.68E-06	4.59E-06	4.68E-06	4.59E-06	1.38E-05
Acenaphthylene	9.23E-06	9.04E-06	9.23E-06	9.04E-06	9.23E-06	9.04E-06	2.71E-05
Acetaldehyde	2.52E-05	2.47E-05	2.52E-05	2.47E-05	2.52E-05	2.47E-05	7.41E-05
Acrolein	7.88E-06	7.72E-06	7.88E-06	7.72E-06	7.88E-06	7.72E-06	2.32E-05
Anthracene	1.23E-06	1.21E-06	1.23E-06	1.21E-06	1.23E-06	1.21E-06	3.62E-06
Benzo(a)anthracene	6.22E-07	6.09E-07	6.22E-07	6.09E-07	6.22E-07	6.09E-07	1.83E-06
Benzene	7.76E-04	7.60E-04	7.76E-04	7.60E-04	7.76E-04	7.60E-04	2.28E-03
Benzo(a)pyrene	2.57E-07	2.52E-07	2.57E-07	2.52E-07	2.57E-07	2.52E-07	7.55E-07
Benzo(b)fluoranthene	1.11E-06	1.09E-06	1.11E-06	1.09E-06	1.11E-06	1.09E-06	3.26E-06
Benzo(b,k)fluoranthene							
Benzo(e)pyrene							
Benzo(g,h,i)perylene	5.56E-07	5.45E-07	5.56E-07	5.45E-07	5.56E-07	5.45E-07	1.63E-06
Benzo(k)fluoranthene	2.18E-07	2.14E-07	2.18E-07	2.14E-07	2.18E-07	2.14E-07	6.41E-07
Biphenyl							
Carbon Tetrachloride							
Chlorobenzene							
Chloroform							
Chrysene	1.53E-06	1.50E-06	1.53E-06	1.50E-06	1.53E-06	1.50E-06	4.50E-06
Cyclohexane							
Dibenzo(a,h)anthracene	3.46E-07	3.39E-07	3.46E-07	3.39E-07	3.46E-07	3.39E-07	1.02E-06
Ethylbenzene							
Fluoranthene	4.03E-06	3.95E-06	4.03E-06	3.95E-06	4.03E-06	3.95E-06	1.18E-05
Fluorene	1.28E-05	1.25E-05	1.28E-05	1.25E-05	1.28E-05	1.25E-05	3.76E-05
Formaldehyde	7.89E-05	7.73E-05	7.89E-05	7.73E-05	7.89E-05	7.73E-05	2.32E-04
Indeno(1,2,3-cd)pyrene	4.14E-07	4.06E-07	4.14E-07	4.06E-07	4.14E-07	4.06E-07	1.22E-06
Methanol							
Methyl chloride							
Total PAHs	1.30E-04	1.27E-04	1.30E-04	1.27E-04	1.30E-04	1.27E-04	3.82E-04
n-Hexane							

Potential Emissions - Palo Seco Power Plant Black Start Engines

Pollutant	Emissions From BSG-PS-1 609 hp		Emissions From BSG-PS-2 609 hp		Emissions From BSG-PS-3 609 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.675	1.641	1.675	1.641	1.675	1.641	4.922
CO	0.780	0.764	0.780	0.764	0.780	0.764	2.292
VOC	0.046	0.045	0.046	0.045	0.046	0.045	0.136
PM (filterable only)	0.0370	0.036	0.0370	0.036	0.0370	0.036	0.109
PM10	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
PM2.5	0.0447	0.044	0.0447	0.044	0.0447	0.044	0.131
SO2	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.004
H2SO4	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.001
CO2e	163.64	160.3	163.64	160.3	163.64	160.3	481.0
OCDD							
Perylene							
Phenanathrene	4.08E-05	4.00E-05	4.08E-05	4.00E-05	4.08E-05	4.00E-05	1.20E-04
Phenol							
Pyrene	3.71E-06	3.64E-06	3.71E-06	3.64E-06	3.71E-06	3.64E-06	1.09E-05
Styrene							
Toluene	2.81E-04	2.75E-04	2.81E-04	2.75E-04	2.81E-04	2.75E-04	8.26E-04
Vinyl Chloride							
Xylene	1.93E-04	1.89E-04	1.93E-04	1.89E-04	1.93E-04	1.89E-04	5.67E-04
Arsenic	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Antimony	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Beryllium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cadmium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Chromium	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Cobalt	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Lead	9.87E-06	9.67E-06	9.87E-06	9.67E-06	9.87E-06	9.67E-06	2.90E-05
Manganese	2.47E-06	2.42E-06	2.47E-06	2.42E-06	2.47E-06	2.42E-06	7.25E-06
Mercury	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Nickel	4.93E-06	4.84E-06	4.93E-06	4.84E-06	4.93E-06	4.84E-06	1.45E-05
Selenium	2.47E-05	2.42E-05	2.47E-05	2.42E-05	2.47E-05	2.42E-05	7.25E-05
Total HAPs	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**1.70E-03**	**1.67E-03**	**5.00E-03**

Engine firing rate	**28.4**	**gal/hr**	**28.4**	**gal/hr**	**28.4**	**gal/hr**
Engine firing rate	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**	**3.92**	**MMBtu/hr**
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**
Engine annual heat input	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**	**1,960**	**MMBtu/yr**
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.0015**	**%**

Notes:

1) Organic HAP emissions from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples

2) NOx, CO, PM (filterable), and VOC (as HC) emissions are from Caterpillar performance specifications

3) PM10/PM2.5 condensable from AP-42, Table 3.4-2

4) SO2 emissions from mass balance and fuel sulfur content

5) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4

6) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2 and GWPs in 40 CFR 98, Subchapter A, Table 1

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Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
1,1,1-Trichloroethane									
1,1-Dichloroethane									
1,2-Dichloroethane									
1,1,2,2,-Tetrachloroethane									
1,1,2-Trichloroethane									
1,3-Butadiene	3.90E-05	2.37E-05	3.90E-05	1.40E-05					3.77E-05
1,3-Dichloropropene									
Trimethylbenzenes									
2,2,4-Trimethylpentane									
Acenaphthene	1.40E-06	8.50E-07	1.40E-06	5.02E-07	4.68E-06	6.09E-06	4.68E-06	6.09E-06	1.35E-05
Acenaphthylene	5.10E-06	3.10E-06	5.10E-06	1.83E-06	9.23E-06	1.20E-05	9.23E-06	1.20E-05	2.89E-05
Acetaldehyde	7.74E-04	4.70E-04	7.74E-04	2.78E-04	2.52E-05	3.28E-05	2.52E-05	3.28E-05	8.13E-04
Acrolein	9.30E-05	5.65E-05	9.30E-05	3.34E-05	7.88E-06	1.02E-05	7.88E-06	1.02E-05	1.10E-04
Anthracene	1.90E-06	1.15E-06	1.90E-06	6.82E-07	1.23E-06	1.60E-06	1.23E-06	1.60E-06	5.03E-06
Benzo(a)anthracene	1.70E-06	1.03E-06	1.70E-06	6.10E-07	6.22E-07	8.09E-07	6.22E-07	8.09E-07	3.26E-06
Benzene	9.30E-04	5.65E-04	9.30E-04	3.34E-04	7.76E-04	1.01E-03	7.76E-04	1.01E-03	2.92E-03
Benzo(a)pyrene					2.57E-07	3.34E-07	2.57E-07	3.34E-07	6.69E-07
Benzo(b)fluoranthene					1.11E-06	1.44E-06	1.11E-06	1.44E-06	2.89E-06
Benzo(b,k)fluoranthene	1.70E-07	1.03E-07	1.70E-07	6.10E-08					1.64E-07
Benzo(e)pyrene									
Benzo(g,h,i)perylene	4.90E-07	2.98E-07	4.90E-07	1.76E-07	5.56E-07	7.23E-07	5.56E-07	7.23E-07	1.92E-06
Benzo(k)fluoranthene					2.18E-07	2.84E-07	2.18E-07	2.84E-07	5.67E-07
Biphenyl									
Carbon Tetrachloride									
Chlorobenzene									
Chloroform									
Chrysene	3.50E-07	2.13E-07	3.50E-07	1.26E-07	1.53E-06	1.99E-06	1.53E-06	1.99E-06	4.32E-06
Cyclohexane									
Dibenzo(a,h)anthracene	5.80E-07	3.52E-07	5.80E-07	2.08E-07	3.46E-07	4.50E-07	3.46E-07	4.50E-07	1.46E-06
Ethylbenzene									
Fluoranthene	7.60E-06	4.61E-06	7.60E-06	2.73E-06	4.03E-06	5.24E-06	4.03E-06	5.24E-06	1.78E-05
Fluorene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	1.28E-05	1.66E-05	1.28E-05	1.66E-05	6.13E-05
Formaldehyde	1.20E-03	7.29E-04	1.20E-03	4.31E-04	7.89E-05	1.03E-04	7.89E-05	1.03E-04	1.36E-03
Indeno(1,2,3-cd)pyrene	3.80E-07	2.31E-07	3.80E-07	1.36E-07	4.14E-07	5.38E-07	4.14E-07	5.38E-07	1.44E-06
Methanol									
Methyl chloride									
Total PAHs	1.70E-04	1.03E-04	1.70E-04	6.10E-05	1.30E-04	1.69E-04	1.30E-04	1.69E-04	5.02E-04
n-Hexane									
OCDD									
Perylene									
Phenanathrene	2.90E-05	1.76E-05	2.90E-05	1.04E-05	4.08E-05	5.31E-05	4.08E-05	5.31E-05	1.34E-04
Phenol									
Pyrene	4.80E-06	2.91E-06	4.80E-06	1.72E-06	3.71E-06	4.83E-06	3.71E-06	4.83E-06	1.43E-05
Styrene									
Toluene	4.10E-04	2.49E-04	4.10E-04	1.47E-04	2.81E-04	3.65E-04	2.81E-04	3.65E-04	1.13E-03
Vinyl Chloride									
Xylene	2.90E-04	1.76E-04	2.90E-04	1.04E-04	1.93E-04	2.51E-04	1.93E-04	2.51E-04	7.82E-04
Arsenic	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Antimony	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05

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PUERTO RICO

12/16/2019

Potential Emissions - Palo Seco Power Plant Emergency Engines

Pollutant	Emissions From GE-GIS-PS-1 385 hp		Emissions From B1-PS-1 208 hp		Emissions From GE-PS-1 765 hp		Emissions From GE-PS-2 765 hp		Totals
	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	
NOx	1.048	0.64	2.492	0.89	3.2	4.16	3.2	4.16	9.85E+00
CO	0.909	0.55	0.831	0.30	0.85	1.11	0.85	1.11	3.06E+00
VOC	0.35	0.21	0.35	0.13	0.0819	0.11	0.0819	0.11	5.51E-01
PM	0.0524	0.03	0.1278	0.05	0.062	0.08	0.062	0.08	2.39E-01
PM10	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
PM2.5	0.0601	0.04	0.1355	0.05	0.0573	0.07	0.0573	0.07	2.34E-01
SO2	0.0015	0.00	0.0015	0.00	0.5050	0.66	0.5050	0.66	1.32E+00
H2SO4	2.30E-04	1.39E-04	2.30E-04	8.24E-05	7.73E-02	1.01E-01	7.73E-02	1.01E-01	2.01E-01
CO2e	1.64E+02	9.94E+01	1.64E+02	5.87E+01	1.64E+02	2.13E+02	1.64E+02	2.13E+02	5.84E+02
Beryllium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cadmium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Chromium	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Cobalt	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Lead	9.87E-06	5.99E-06	9.87E-06	3.54E-06	9.87E-06	1.28E-05	9.87E-06	1.28E-05	3.52E-05
Manganese	2.47E-06	1.50E-06	2.47E-06	8.85E-07	2.47E-06	3.21E-06	2.47E-06	3.21E-06	8.80E-06
Mercury	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Nickel	4.93E-06	3.00E-06	4.93E-06	1.77E-06	4.93E-06	6.42E-06	4.93E-06	6.42E-06	1.76E-05
Selenium	2.47E-05	1.50E-05	2.47E-05	8.85E-06	2.47E-05	3.21E-05	2.47E-05	3.21E-05	8.80E-05
Total HAPs	**4.12E-03**	**2.50E-03**	**4.12E-03**	**1.48E-03**	**1.70E-03**	**2.21E-03**	**1.70E-03**	**2.21E-03**	**8.40E-03**
Engine firing rate	**17.6**	**gal/hr**	**10.4**	**gal/hr**	**37.7**	**gal/hr**	**37.7**	**gal/hr**	
Engine operating hours	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**	**500**	**hr/yr**	
Engine annual heat input	**1,214**	**MMBtu/yr**	**718**	**MMBtu/yr**	**2,601**	**MMBtu/yr**	**2,601**	**MMBtu/yr**	
Fuel Sulfur	**0.0015**	**%**	**0.0015**	**%**	**0.50**	**%**	**0.50**	**%**	

Notes:
1) Organic HAP emissions from diesel engines rated <600 hp from AP-42 Section 3.3, Table 3.3-2. Metal HAP emissions from fuel samples
2) Organic HAP emissions from diesel engines rated >600 hp from AP-42 Section 3.4, Tables 3.4-3 and 3.4-4. Metal HAP emissions from fuel samples
3) HAP emisisons from propane engine from AP-42 Section 3.2, Table 3.2-2.
4) NOx, CO, and PM (filterable) emissions are from 40 CFR 60 NSPS Subpart IIII for GE-GIS-PS-1 and B1-PS-1
5) VOC from AP-42 Tables 3.3-1 and 3.4-1
6) SO2 emissions from mass balance and fuel sulfur content
7) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
8) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2



12/16/2019

Potential Emissions - Palo Seco Natural Gas Handling System Fugitive Emissions

Emission Factors	
Source Type	**Gas (kg/hr/source)**
Flanges (Vapor)	0.00039
Flanges (Liquid)	0.00011
Valves (Vapor)	0.0045
Others (compressors, drains, instruments, meters, PSVs, vents) (Vapor)	0.0088

Emission factors are from EPA's "Protocol for Equipment Leak Emissions Estimates" Table 2-4 (November 1995)

Potential Emissions					
Source Type	**Source Type Used**	**Count**	**All Gas (tpy)**	**VOC (tpy)**	**GHG (tpy)**
Flange (Vapor)	Flanges	38	0.143	0.014	3.2
Flange (Liquid)	Flanges	20	0.021	0.002	0.5
Valves (Vapor)	Valves	53	2.303	0.230	51.8
Vents, Drains, PIs, Lis, PSVs (Vapor)	Others	36	3.060	0.306	68.8
TOTALS			**5.53**	**0.55**	**124.4**
LNG estimated to have combined methane and ethane content >95% but emissions conservatively assume a VOC content of 10 percent.					
GHG emissions based upon all non-VOC emissions being methane with a global warmng potential of 25 (see 40 CFR 98, Subpart A, Table A-1)					

$$GHG\left(\frac{ton}{year}\right) = [All\ gas\left(\frac{ton}{year}\right) - VOC\left(\frac{ton}{year}\right)]\ X\ 25$$



PREPA Palo Seco

Proposed Compliance Emissions Tracking - Pratt & Whitney FT8 Combustion Turbine Project

The two limiting pollutants to net out of PSD are CO for gas firing and PM2.5 for oil firing to avoid PSD. A simple fuel cap can be assumed if only one fuel is fired in any year, however in a typical year will likely include firing of both fuels. To account for this, the following compliance mechanism will be implemented to ensure that the emissions of all pollutants remain below the proposed emission caps to ensure that the Project nets out of PSD.

PREPA shall track daily fuel usage and emissions.
The daily emissions shall be used to calculate rolling 365-day emissins

NOx:

$$NOx\left(\frac{ton}{day}\right) + NOx\ Total\ tons\ (364\ previous\ days) < 753.4\ tons\ 365\ days\ rolling$$

$$NOx\left(\frac{ton}{day}\right) = [NSPS\ Subpart\ KKKK\ Limit\left(\frac{1.2\ lb}{MW-hr}\right) X\ USNG\left(\frac{MW-hr}{day}\right) + NSPS\ Subpart\ KKKK\ Limit\left(\frac{3.6\ lb}{MW-hr}\right) X\ USdiesel\left(\frac{MW-hr}{day}\right)] \div 2{,}000\ lb/ton$$

CO:

$$CO\left(\frac{ton}{day}\right) + CO\ Total\ tons\ (364\ previous\ days) < 99.4\ tons\ 365\ days\ rolling$$

$$CO\left(\frac{ton}{day}\right) = [0.0767\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0343\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

PM:

$$PM\left(\frac{ton}{day}\right) + PM\ Total\ tons\ (364\ previous\ days) < 34.6\ tons\ 365\ days\ rolling$$

$$PM\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

PM10:

$$PM10\left(\frac{ton}{day}\right) + PM10\ Total\ tons\ (364\ previous\ days) < 24.6\ tons\ 365\ days\ rolling$$

$$PM10\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

PM2.5:

$$PM2.5\left(\frac{ton}{day}\right) + PM2.5\ Total\ tons\ (364\ previous\ days) < 19.6\ tons\ 365\ days\ rolling$$

$$PM2.5\left(\frac{ton}{day}\right) = [0.010\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0177\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$



12/12/2019

VOC:

$$VOC\ \left(\frac{ton}{day}\right) + VOC\ Total\ tons\ (364\ previous\ days) < 40.1\ tons\ 365\ days\ rolling$$

$$VOC\ \left(\frac{ton}{day}\right) = [0.0051\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 0.0071\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$

SO2:

$$SO2\ \left(\frac{ton}{day}\right) + SO2\ Total\ tons\ (364\ previous\ days) < 59.7\ tons\ 365\ days\ rolling$$

$$SO2\ \left(\frac{ton}{day}\right) = [NG\left(\frac{gr\ S}{100\ dscf}\right) X\left(\frac{1\ lb}{7{,}000\ gr}\right) X\left(\frac{1\ dscf}{1{,}020\ Btu}\right) X\left(\frac{1x10^6\ Btu}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) +$$

$$Diesel\ wt\%\ S\ X\ Diesel\ gals\ X\left(\frac{7.05\ lb}{gal}\right) X\ USDiesel\left(\frac{MMBtu}{day}\right)] X\left(\frac{2\ lb\ SO2}{lb\ S}\right) \div 2{,}000\ lb/ton$$

H2SO4:

$$H2SO4\ \left(\frac{ton}{day}\right) + H2SO4\ Total\ tons\ (364\ previous\ days) < 9.9\ tons\ 365\ days\ rolling$$

$$H2SO4\ \left(\frac{ton}{day}\right) = SO2\ \left(\frac{ton}{day}\right) x\ \frac{98\ lb\ H2SO4}{64\ lb\ SO2}\ x\ 10\%$$

GHGs:

$$GHG\ \left(\frac{ton}{day}\right) + GHG\ Total\ tons\ (364\ previous\ days) < 208{,}115\ tons\ 365\ days\ rolling$$

$$GHG\ \left(\frac{ton}{day}\right) = [117.12\left(\frac{lb}{MMBtu}\right) X\ USNG\left(\frac{MMBtu}{day}\right) + 163.64\left(\frac{lb}{MMBtu}\right) X\ USdiesel\left(\frac{MMBtu}{day}\right)] \div 2{,}000\ lb/ton$$



PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
			(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
2009	**13,212.0**	**0.040**														
Jan	215.7	0.040	0.55		0.01		0.03		0.00		0.00		0.00		102.27	
Feb	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Mar	56.7	0.040	0.14		0.00		0.01		0.00		0.00		0.00		26.87	
Apr	113.8	0.040	0.29		0.00		0.01		0.00		0.00		0.00		53.98	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	2,813.5	0.025	7.17		0.10		0.21		0.03		0.03		0.00		1,334.23	
Sep	2,655.0	0.020	6.77		0.09		0.16		0.02		0.03		0.00		1,259.09	
Oct	7,357.4	0.018	18.76		0.26		0.39		0.06		0.07		0.01		3,489.12	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
2010	**12,979.4**	**0.024**														
Jan	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Feb	3,040.1	0.020	7.75		0.11		0.17		0.03		0.03		0.00		1,441.73	
Mar	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Apr	100.0	0.020	0.25		0.00		0.01		0.00		0.00		0.00		47.41	
May	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Jun	2,580.2	0.024	6.58		0.09		0.18		0.03		0.02		0.00		1,223.63	
Jul	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Aug	4,069.6	0.024	10.38		0.14		0.28		0.04		0.04		0.00		1,929.93	
Sep	3,189.4	0.020	8.13		0.11		0.19		0.03		0.03		0.00		1,512.53	
Oct	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Nov	0.0	0.000	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Dec	0.0	0.000	0.00	33.40	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,210.40
2011	**7,956.4**	**0.020**														
Jan	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Feb	0.0	0.000	0.00	33.12	0.00	0.45	0.00	0.80	0.00	0.12	0.00	0.12	0.00	0.02	0.00	6,159.27
Mar	476.9	0.020	1.22	33.66	0.02	0.46	0.03	0.81	0.00	0.12	0.00	0.13	0.00	0.02	226.18	6,258.92
Apr	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
May	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jun	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Jul	0.0	0.000	0.00	33.51	0.00	0.46	0.00	0.81	0.00	0.12	0.00	0.13	0.00	0.02	0.00	6,231.93
Aug	2,799.2	0.020	7.14	33.49	0.10	0.46	0.16	0.78	0.03	0.12	0.03	0.13	0.00	0.02	1,327.48	6,228.55
Sep	1,148.2	0.020	2.93	31.57	0.04	0.43	0.07	0.74	0.01	0.11	0.01	0.12	0.00	0.01	544.52	5,871.27
Oct	3,532.0	0.020	9.01	26.70	0.12	0.36	0.21	0.65	0.03	0.10	0.03	0.10	0.00	0.01	1,675.01	4,964.22
Nov	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Dec	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
2012	**11,064.7**	**0.020**														
Jan	0.0	0.000	0.00	26.70	0.00	0.36	0.00	0.65	0.00	0.10	0.00	0.10	0.00	0.01	0.00	4,964.22
Feb	9,971.2	0.010	25.43	35.53	0.35	0.48	0.29	0.71	0.04	0.11	0.10	0.13	0.01	0.02	4,728.65	6,607.67
Mar	0.0	0.000	0.00	35.53	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,607.67
Apr	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
May	0.0	0.000	0.00	35.41	0.00	0.48	0.00	0.71	0.00	0.11	0.00	0.13	0.00	0.02	0.00	6,583.97
Jun	920.7	0.020	2.35	33.29	0.03	0.45	0.05	0.64	0.01	0.10	0.01	0.12	0.00	0.02	436.61	6,190.46
Jul	0.0	0.000	0.00	33.29	0.00	0.45	0.00	0.64	0.00	0.10	0.00	0.12	0.00	0.02	0.00	6,190.46
Aug	0.0	0.000	0.00	28.10	0.00	0.38	0.00	0.50	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,225.49
Sep	172.9	0.010	0.44	24.25	0.01	0.33	0.01	0.41	0.00	0.06	0.00	0.09	0.00	0.01	81.98	4,510.21
Oct	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Nov	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

			NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Dec	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
2013	**8,759.6**	**0.020**														
Jan	0.0	0.000	0.00	24.25	0.00	0.33	0.00	0.41	0.00	0.06	0.00	0.09	0.00	0.01	0.00	4,510.21
Feb	7,162.7	0.020	18.27	33.39	0.25	0.46	0.41	0.61	0.06	0.09	0.07	0.13	0.01	0.02	3,396.78	6,208.60
Mar	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Apr	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
May	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jun	0.0	0.000	0.00	32.78	0.00	0.45	0.00	0.60	0.00	0.09	0.00	0.12	0.00	0.02	0.00	6,095.51
Jul	139.2	0.020	0.36	32.96	0.00	0.45	0.01	0.60	0.00	0.09	0.00	0.12	0.00	0.02	66.02	6,128.52
Aug	0.0	0.000	0.00	29.39	0.00	0.40	0.00	0.52	0.00	0.08	0.00	0.11	0.00	0.01	0.00	5,464.78
Sep	1,457.7	0.020	3.72	29.78	0.05	0.41	0.09	0.53	0.01	0.08	0.01	0.11	0.00	0.01	691.30	5,538.17
Oct	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Nov	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Dec	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
2014	**119,480.3**	**0.020**														
Jan	0.0	0.000	0.00	25.28	0.00	0.34	0.00	0.43	0.00	0.07	0.00	0.09	0.00	0.01	0.00	4,700.66
Feb	0.0	0.000	0.00	12.56	0.00	0.17	0.00	0.28	0.00	0.04	0.00	0.05	0.00	0.01	0.00	2,336.34
Mar	545.1	0.020	1.39	13.26	0.02	0.18	0.03	0.30	0.00	0.05	0.01	0.05	0.00	0.01	258.50	2,465.59
Apr	1,662.5	0.020	4.24	15.38	0.06	0.21	0.10	0.35	0.01	0.05	0.02	0.06	0.00	0.01	788.43	2,859.81
May	10,213.0	0.018	26.05	28.40	0.36	0.39	0.53	0.61	0.08	0.09	0.10	0.11	0.01	0.01	4,843.33	5,281.47
Jun	7,112.5	0.020	18.14	36.30	0.25	0.49	0.42	0.79	0.06	0.12	0.07	0.14	0.01	0.02	3,372.99	6,749.66
Jul	16,711.2	0.019	42.62	57.61	0.58	0.79	0.91	1.25	0.14	0.19	0.16	0.22	0.02	0.03	7,925.00	10,712.16
Aug	52,615.4	0.017	134.18	124.70	1.83	1.70	2.68	2.59	0.41	0.40	0.50	0.47	0.06	0.06	24,951.94	23,188.14
Sep	16,883.6	0.010	43.06	146.00	0.59	1.99	0.47	2.83	0.07	0.43	0.16	0.55	0.02	0.07	8,006.75	27,150.52
Oct	9,729.2	0.010	24.81	158.41	0.34	2.16	0.27	2.96	0.04	0.45	0.09	0.59	0.01	0.07	4,613.90	29,457.47
Nov	3,212.0	0.011	8.19	162.51	0.11	2.22	0.10	3.01	0.02	0.46	0.03	0.61	0.00	0.08	1,523.23	30,219.09
Dec	795.9	0.010	2.03	163.52	0.03	2.23	0.02	3.02	0.00	0.46	0.01	0.61	0.00	0.08	377.42	30,407.80
2015	**186,089.6**	**0.022**														
Jan	464.9	0.010	1.19	164.11	0.02	2.24	0.01	3.03	0.00	0.46	0.00	0.62	0.00	0.08	220.48	30,518.04
Feb	691.1	0.010	1.76	155.86	0.02	2.13	0.02	2.83	0.00	0.43	0.01	0.58	0.00	0.07	327.75	28,983.52
Mar	1,434.7	0.010	3.66	157.69	0.05	2.15	0.04	2.86	0.01	0.44	0.01	0.59	0.00	0.07	680.39	29,323.72
Apr	5,283.3	0.010	13.47	164.43	0.18	2.24	0.16	2.93	0.02	0.45	0.05	0.62	0.01	0.08	2,505.52	30,576.48
May	1,276.5	0.010	3.26	166.06	0.04	2.26	0.04	2.95	0.01	0.45	0.01	0.62	0.00	0.08	605.37	30,879.16
Jun	9,074.1	0.011	23.14	177.63	0.32	2.42	0.29	3.10	0.04	0.47	0.09	0.67	0.01	0.08	4,303.25	33,030.79
Jul	10,688.6	0.010	27.26	191.08	0.37	2.61	0.31	3.25	0.05	0.50	0.10	0.72	0.01	0.09	5,068.88	35,532.22
Aug	5,933.8	0.010	15.13	198.64	0.21	2.71	0.17	3.33	0.03	0.51	0.06	0.74	0.01	0.09	2,814.00	36,939.22
Sep	52,771.5	0.015	134.58	264.08	1.84	3.60	2.32	4.45	0.36	0.68	0.50	0.99	0.06	0.12	25,025.98	49,106.55
Oct	31,689.0	0.022	80.81	304.48	1.10	4.15	2.05	5.47	0.31	0.84	0.30	1.14	0.04	0.14	15,027.97	56,620.54
Nov	22,427.0	0.020	57.19	333.08	0.78	4.54	1.34	6.14	0.21	0.94	0.21	1.25	0.03	0.16	10,635.62	61,938.35
Dec	44,355.0	0.022	113.12	389.64	1.54	5.31	2.91	7.60	0.45	1.16	0.42	1.46	0.05	0.18	21,034.60	72,455.65
2016	**181,283.1**	**0.030**														
Jan	14,543.0	0.021	37.09	408.18	0.51	5.57	0.89	8.04	0.14	1.23	0.14	1.53	0.02	0.19	6,896.77	75,904.03
Feb	6,276.0	0.021	16.01	416.19	0.22	5.68	0.38	8.23	0.06	1.26	0.06	1.56	0.01	0.19	2,976.29	77,392.17
Mar	18,228.0	0.020	46.49	438.73	0.63	5.98	1.07	8.76	0.16	1.34	0.17	1.65	0.02	0.20	8,644.32	81,585.08
Apr	10,584.0	0.020	26.99	450.11	0.37	6.14	0.61	9.01	0.09	1.38	0.10	1.69	0.01	0.21	5,019.28	83,700.51
May	17,539.0	0.019	44.73	459.45	0.61	6.27	1.00	9.24	0.15	1.42	0.17	1.72	0.02	0.21	8,317.57	85,437.63
Jun	5,438.0	0.020	13.87	457.32	0.19	6.24	0.32	9.20	0.05	1.41	0.05	1.71	0.01	0.21	2,578.88	85,040.57
Jul	46,750.0	0.030	119.22	495.62	1.63	6.76	4.13	10.81	0.63	1.65	0.45	1.86	0.06	0.23	22,170.39	92,163.26
Aug	39,045.0	0.022	99.57	478.31	1.36	6.52	2.56	10.74	0.39	1.64	0.37	1.79	0.05	0.22	18,516.42	88,945.50
Sep	17,341.0	0.021	44.22	478.90	0.60	6.53	1.09	11.05	0.17	1.69	0.17	1.80	0.02	0.22	8,223.67	89,053.96
Oct	5,136.3	0.016	13.10	473.04	0.18	6.45	0.24	11.03	0.04	1.69	0.05	1.77	0.01	0.22	2,435.78	87,964.90

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions

Month	PSGT 2-2, 3-1, and 3-2 Oil Consumption (bbls)	% Sulfur	NOx		PM/PM10/PM2.5		SO2		H2SO4		CO		VOC		GHGs	
			(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)	(tons)	24-month (tpy)
Nov	159.6	0.016	0.41	469.15	0.01	6.40	0.01	10.99	0.00	1.68	0.00	1.76	0.00	0.22	75.70	87,241.14
Dec	243.2	0.016	0.62	468.44	0.01	6.39	0.01	10.98	0.00	1.68	0.00	1.76	0.00	0.22	115.35	87,110.10
2017	**300,672.4**	**0.045**														
Jan	3,072.0	0.016	7.83	471.77	0.11	6.43	0.14	11.05	0.02	1.69	0.03	1.77	0.00	0.22	1,456.86	87,728.29
Feb	4,567.4	0.016	11.65	476.71	0.16	6.50	0.21	11.14	0.03	1.71	0.04	1.79	0.01	0.22	2,166.01	88,647.43
Mar	1,700.4	0.013	4.34	477.05	0.06	6.51	0.07	11.15	0.01	1.71	0.02	1.79	0.00	0.22	806.40	88,710.43
Apr	6,686.6	0.013	17.05	478.84	0.23	6.53	0.26	11.21	0.04	1.72	0.06	1.80	0.01	0.22	3,171.02	89,043.18
May	12,826.8	0.010	32.71	493.57	0.45	6.73	0.38	11.38	0.06	1.74	0.12	1.85	0.02	0.23	6,082.90	91,781.95
Jun	20,716.7	0.006	52.83	508.41	0.72	6.93	0.37	11.42	0.06	1.75	0.20	1.91	0.02	0.24	9,824.55	94,542.60
Jul	27,821.3	0.004	70.95	530.26	0.97	7.23	0.34	11.43	0.05	1.75	0.27	1.99	0.03	0.25	13,193.78	98,605.05
Aug	54,325.2	0.007	138.54	591.96	1.89	8.07	1.10	11.90	0.17	1.82	0.52	2.22	0.06	0.28	25,762.78	110,079.44
Sep	30,986.9	0.027	79.02	564.19	1.08	7.69	2.43	11.95	0.37	1.83	0.30	2.12	0.04	0.26	14,694.99	104,913.95
Oct	44,144.4	0.034	112.58	580.07	1.54	7.91	4.39	13.13	0.67	2.01	0.42	2.18	0.05	0.27	20,934.73	107,867.33
Nov	48,381.8	0.045	123.39	613.16	1.68	8.36	6.38	15.64	0.98	2.40	0.46	2.30	0.06	0.29	22,944.22	114,021.63
Dec	45,442.8	0.036	115.89	614.55	1.58	8.38	4.84	16.61	0.74	2.54	0.43	2.30	0.05	0.29	21,550.47	114,279.57
2018	**163,433.8**	**0.032**														
Jan	46,933.0	0.032	119.69	655.85	1.63	8.94	4.39	18.36	0.67	2.81	0.45	2.46	0.06	0.31	22,257.15	121,959.76
Feb	41,449.7	0.019	105.71	700.70	1.44	9.56	2.31	19.33	0.35	2.96	0.40	2.63	0.05	0.33	19,656.80	130,300.01
Mar	24,675.0	0.024	62.93	708.92	0.86	9.67	1.76	19.67	0.27	3.01	0.24	2.66	0.03	0.33	11,701.68	131,828.69
Apr	18,039.1	0.018	46.00	718.43	0.63	9.80	0.93	19.83	0.14	3.04	0.17	2.69	0.02	0.33	8,554.75	133,596.43
May	6,210.3	0.014	15.84	703.98	0.22	9.60	0.25	19.46	0.04	2.98	0.06	2.64	0.01	0.33	2,945.12	130,910.21
Jun	2,091.9	0.022	5.33	699.72	0.07	9.54	0.14	19.37	0.02	2.97	0.02	2.62	0.00	0.33	992.06	130,116.80
Jul	4,691.7	0.027	11.96	646.09	0.16	8.81	0.38	17.49	0.06	2.68	0.04	2.42	0.01	0.30	2,224.95	120,144.08
Aug	8,599.4	0.029	21.93	607.27	0.30	8.28	0.73	16.58	0.11	2.54	0.08	2.28	0.01	0.28	4,078.11	112,924.93
Sep	290.6	0.028	0.74	585.53	0.01	7.98	0.02	16.05	0.00	2.46	0.00	2.20	0.00	0.27	137.82	108,882.00
Oct	1,224.1	0.028	3.12	580.54	0.04	7.92	0.10	15.98	0.02	2.45	0.01	2.18	0.00	0.27	580.53	107,954.38
Nov	5,820.9	0.024	14.84	587.76	0.20	8.01	0.41	16.18	0.06	2.48	0.06	2.20	0.01	0.27	2,760.46	109,296.76
Dec	3,408.1	0.018	8.69	591.79	0.12	8.07	0.18	16.26	0.03	2.49	0.03	2.22	0.00	0.28	1,616.21	110,047.19
2019	**2,606.1**	**0.018**														
Jan	0.0	0.000	0.00	587.87	0.00	8.02	0.00	16.19	0.00	2.48	0.00	2.20	0.00	0.27	0.00	109,318.76
Feb	78.2	0.018	0.20	582.15	0.00	7.94	0.00	16.09	0.00	2.46	0.00	2.18	0.00	0.27	37.09	108,254.30
Mar	767.4	0.018	1.96	580.96	0.03	7.92	0.04	16.07	0.01	2.46	0.01	2.18	0.00	0.27	363.94	108,033.07
Apr	1,760.5	0.017	4.49	574.68	0.06	7.84	0.09	15.99	0.01	2.45	0.02	2.16	0.00	0.27	834.89	106,865.00



AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

11/12/2019

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Jan-09	0.00	0.0000
Palo Seco	PSGT3-1	Jan-09	82.10	0.0400
Palo Seco	PSGT3-2	Jan-09	133.55	0.0400
Palo Seco	PSGT2-2	Feb-09	0.00	0.0000
Palo Seco	PSGT3-1	Feb-09	0.00	0.0000
Palo Seco	PSGT3-2	Feb-09	0.00	0.0000
Palo Seco	PSGT2-2	Mar-09	56.67	0.0400
Palo Seco	PSGT3-1	Mar-09	0.00	0.0000
Palo Seco	PSGT3-2	Mar-09	0.00	0.0000
Palo Seco	PSGT2-2	Apr-09	0.00	0.0000
Palo Seco	PSGT3-1	Apr-09	113.83	0.0000
Palo Seco	PSGT3-2	Apr-09	0.00	0.0400
Palo Seco	PSGT2-2	May-09	0.00	0.0000
Palo Seco	PSGT3-1	May-09	0.00	0.0000
Palo Seco	PSGT3-2	May-09	0.00	0.0000
Palo Seco	PSGT2-2	Jun-09	0.00	0.0000
Palo Seco	PSGT3-1	Jun-09	0.00	0.0000
Palo Seco	PSGT3-2	Jun-09	0.00	0.0000
Palo Seco	PSGT2-2	Jul-09	0.00	0.0000
Palo Seco	PSGT3-1	Jul-09	0.00	0.0000
Palo Seco	PSGT3-2	Jul-09	0.00	0.0000
Palo Seco	PSGT2-2	Aug-09	1,793.90	0.0250
Palo Seco	PSGT3-1	Aug-09	1,019.55	0.0250
Palo Seco	PSGT3-2	Aug-09	0.00	0.0250
Palo Seco	PSGT2-2	Sep-09	1,048.52	0.0200
Palo Seco	PSGT3-1	Sep-09	387.29	0.0200
Palo Seco	PSGT3-2	Sep-09	1,219.19	0.0200
Palo Seco	PSGT2-2	Oct-09	2,634.81	0.0180
Palo Seco	PSGT3-1	Oct-09	2,608.07	0.0180
Palo Seco	PSGT3-2	Oct-09	2,114.52	0.0180
Palo Seco	PSGT2-2	Nov-09	0.00	0.0000
Palo Seco	PSGT3-1	Nov-09	0.00	0.0000
Palo Seco	PSGT3-2	Nov-09	0.00	0.0000
Palo Seco	PSGT2-2	Dec-09	0.00	0.0000
Palo Seco	PSGT3-1	Dec-09	0.00	0.0000
Palo Seco	PSGT3-2	Dec-09	0.00	0.0000
Palo Seco	PSGT2-2	Jan-10	0.00	0.0000
Palo Seco	PSGT3-1	Jan-10	0.00	0.0000
Palo Seco	PSGT3-2	Jan-10	0.00	0.0000
Palo Seco	PSGT2-2	Feb-10	701.90	0.0196
Palo Seco	PSGT3-1	Feb-10	1,131.12	0.0195

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	Feb-10	1,207.12	0.0194
Palo Seco	PSGT2-2	Mar-10	0.00	0.0000
Palo Seco	PSGT3-1	Mar-10	0.00	0.0000
Palo Seco	PSGT3-2	Mar-10	0.00	0.0000
Palo Seco	PSGT2-2	Apr-10	99.98	0.0200
Palo Seco	PSGT3-1	Apr-10	0.00	0.0000
Palo Seco	PSGT3-2	Apr-10	0.00	0.0000
Palo Seco	PSGT2-2	May-10	0.00	0.0000
Palo Seco	PSGT3-1	May-10	0.00	0.0000
Palo Seco	PSGT3-2	May-10	0.00	0.0000
Palo Seco	PSGT2-2	Jun-10	817.31	0.0243
Palo Seco	PSGT3-1	Jun-10	621.05	0.0243
Palo Seco	PSGT3-2	Jun-10	1,141.86	0.0243
Palo Seco	PSGT2-2	Jul-10	0.00	0.0000
Palo Seco	PSGT3-1	Jul-10	0.00	0.0000
Palo Seco	PSGT3-2	Jul-10	0.00	0.0000
Palo Seco	PSGT2-2	Aug-10	1,015.50	0.0238
Palo Seco	PSGT3-1	Aug-10	1,465.95	0.0238
Palo Seco	PSGT3-2	Aug-10	1,588.14	0.0238
Palo Seco	PSGT2-2	Sep-10	708.86	0.0200
Palo Seco	PSGT3-1	Sep-10	1,121.50	0.0192
Palo Seco	PSGT3-2	Sep-10	1,359.07	0.0192
Palo Seco	PSGT2-2	Oct-10	0.00	0.0000
Palo Seco	PSGT3-1	Oct-10	0.00	0.0000
Palo Seco	PSGT3-2	Oct-10	0.00	0.0000
Palo Seco	PSGT2-2	Nov-10	0.00	0.0000
Palo Seco	PSGT3-1	Nov-10	0.00	0.0000
Palo Seco	PSGT3-2	Nov-10	0.00	0.0000
Palo Seco	PSGT2-2	Dec-10	0.00	0.0000
Palo Seco	PSGT3-1	Dec-10	0.00	0.0000
Palo Seco	PSGT3-2	Dec-10	0.00	0.0000
Palo Seco	PSGT2-2	Jan-11	0.00	0.0000
Palo Seco	PSGT3-1	Jan-11	0.00	0.0000
Palo Seco	PSGT3-2	Jan-11	0.00	0.0000
Palo Seco	PSGT2-2	Feb-11	0.00	0.0000
Palo Seco	PSGT3-1	Feb-11	0.00	0.0000
Palo Seco	PSGT3-2	Feb-11	0.00	0.0000
Palo Seco	PSGT2-2	Mar-11	102.40	0.0200
Palo Seco	PSGT3-1	Mar-11	0.00	0.0000
Palo Seco	PSGT3-2	Mar-11	374.52	0.0200
Palo Seco	PSGT2-2	Apr-11	0.00	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-1	Apr-11	0.00	0.0000
Palo Seco	PSGT3-2	Apr-11	0.00	0.0000
Palo Seco	PSGT2-2	May-11	0.00	0.0000
Palo Seco	PSGT3-1	May-11	0.00	0.0000
Palo Seco	PSGT3-2	May-11	0.00	0.0000
Palo Seco	PSGT2-2	Jun-11	0.00	0.0000
Palo Seco	PSGT3-1	Jun-11	0.00	0.0000
Palo Seco	PSGT3-2	Jun-11	0.00	0.0000
Palo Seco	PSGT2-2	Jul-11	0.00	0.0000
Palo Seco	PSGT3-1	Jul-11	0.00	0.0000
Palo Seco	PSGT3-2	Jul-11	0.00	0.0000
Palo Seco	PSGT2-2	Aug-11	1,160.21	0.0200
Palo Seco	PSGT3-1	Aug-11	773.93	0.0200
Palo Seco	PSGT3-2	Aug-11	865.08	0.0200
Palo Seco	PSGT2-2	Sep-11	382.74	0.0200
Palo Seco	PSGT3-1	Sep-11	425.27	0.0200
Palo Seco	PSGT3-2	Sep-11	340.21	0.0200
Palo Seco	PSGT2-2	Oct-11	1,152.31	0.0200
Palo Seco	PSGT3-1	Oct-11	1,218.74	0.0200
Palo Seco	PSGT3-2	Oct-11	1,161.00	0.0200
Palo Seco	PSGT2-2	Nov-11	0.00	0.0000
Palo Seco	PSGT3-1	Nov-11	0.00	0.0000
Palo Seco	PSGT3-2	Nov-11	0.00	0.0000
Palo Seco	PSGT2-2	Dec-11	0.00	0.0000
Palo Seco	PSGT3-1	Dec-11	0.00	0.0000
Palo Seco	PSGT3-2	Dec-11	0.00	0.0000
Palo Seco	PSGT2-2	Jan-12	0.00	0.0000
Palo Seco	PSGT3-1	Jan-12	0.00	0.0000
Palo Seco	PSGT3-2	Jan-12	0.00	0.0000
Palo Seco	PSGT2-2	Feb-12	3,578.46	0.0100
Palo Seco	PSGT3-1	Feb-12	3,177.34	0.0100
Palo Seco	PSGT3-2	Feb-12	3,215.35	0.0100
Palo Seco	PSGT2-2	Mar-12	0.00	0.0000
Palo Seco	PSGT3-1	Mar-12	0.00	0.0000
Palo Seco	PSGT3-2	Mar-12	0.00	0.0000
Palo Seco	PSGT2-2	Apr-12	0.00	0.0000
Palo Seco	PSGT3-1	Apr-12	0.00	0.0000
Palo Seco	PSGT3-2	Apr-12	0.00	0.0000
Palo Seco	PSGT2-2	May-12	0.00	0.0000
Palo Seco	PSGT3-1	May-12	0.00	0.0000
Palo Seco	PSGT3-2	May-12	0.00	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Jun-12	482.25	0.0200
Palo Seco	PSGT3-1	Jun-12	438.41	0.0200
Palo Seco	PSGT3-2	Jun-12	0.00	0.0000
Palo Seco	PSGT2-2	Jul-12	0.00	0.0000
Palo Seco	PSGT3-1	Jul-12	0.00	0.0000
Palo Seco	PSGT3-2	Jul-12	0.00	0.0000
Palo Seco	PSGT2-2	Aug-12	0.00	0.0000
Palo Seco	PSGT3-1	Aug-12	0.00	0.0000
Palo Seco	PSGT3-2	Aug-12	0.00	0.0000
Palo Seco	PSGT2-2	Sep-12	0.00	0.0000
Palo Seco	PSGT3-1	Sep-12	0.00	0.0100
Palo Seco	PSGT3-2	Sep-12	172.86	0.0000
Palo Seco	PSGT2-2	Oct-12	0.00	0.0000
Palo Seco	PSGT3-1	Oct-12	0.00	0.0000
Palo Seco	PSGT3-2	Oct-12	0.00	0.0000
Palo Seco	PSGT2-2	Nov-12	0.00	0.0000
Palo Seco	PSGT3-1	Nov-12	0.00	0.0000
Palo Seco	PSGT3-2	Nov-12	0.00	0.0000
Palo Seco	PSGT2-2	Dec-12	0.00	0.0000
Palo Seco	PSGT3-1	Dec-12	0.00	0.0000
Palo Seco	PSGT3-2	Dec-12	0.00	0.0000
Palo Seco	PSGT2-2	Jan-13	0.00	0.0000
Palo Seco	PSGT3-1	Jan-13	0.00	0.0000
Palo Seco	PSGT3-2	Jan-13	0.00	0.0000
Palo Seco	PSGT2-2	Feb-13	2,560.58	0.0194
Palo Seco	PSGT3-1	Feb-13	2,138.19	0.0194
Palo Seco	PSGT3-2	Feb-13	2,463.91	0.0196
Palo Seco	PSGT2-2	Mar-13	0.00	0.0000
Palo Seco	PSGT3-1	Mar-13	0.00	0.0000
Palo Seco	PSGT3-2	Mar-13	0.00	0.0000
Palo Seco	PSGT2-2	Apr-13	0.00	0.0000
Palo Seco	PSGT3-1	Apr-13	0.00	0.0000
Palo Seco	PSGT3-2	Apr-13	0.00	0.0000
Palo Seco	PSGT2-2	May-13	0.00	0.0000
Palo Seco	PSGT3-1	May-13	0.00	0.0000
Palo Seco	PSGT3-2	May-13	0.00	0.0000
Palo Seco	PSGT2-2	Jun-13	0.00	0.0000
Palo Seco	PSGT3-1	Jun-13	0.00	0.0000
Palo Seco	PSGT3-2	Jun-13	0.00	0.0000
Palo Seco	PSGT2-2	Jul-13	30.90	0.0200
Palo Seco	PSGT3-1	Jul-13	0.00	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	Jul-13	108.31	0.0200
Palo Seco	PSGT2-2	Aug-13	0.00	0.0000
Palo Seco	PSGT3-1	Aug-13	0.00	0.0000
Palo Seco	PSGT3-2	Aug-13	0.00	0.0000
Palo Seco	PSGT2-2	Sep-13	629.07	0.0200
Palo Seco	PSGT3-1	Sep-13	557.14	0.0200
Palo Seco	PSGT3-2	Sep-13	271.52	0.0200
Palo Seco	PSGT2-2	Oct-13	0.00	0.0000
Palo Seco	PSGT3-1	Oct-13	0.00	0.0000
Palo Seco	PSGT3-2	Oct-13	0.00	0.0000
Palo Seco	PSGT2-2	Nov-13	0.00	0.0000
Palo Seco	PSGT3-1	Nov-13	0.00	0.0000
Palo Seco	PSGT3-2	Nov-13	0.00	0.0000
Palo Seco	PSGT2-2	Dec-13	0.00	0.0000
Palo Seco	PSGT3-1	Dec-13	0.00	0.0000
Palo Seco	PSGT3-2	Dec-13	0.00	0.0000
Palo Seco	PSGT2-2	Jan-14	0.00	0.0000
Palo Seco	PSGT3-1	Jan-14	0.00	0.0000
Palo Seco	PSGT3-2	Jan-14	0.00	0.0000
Palo Seco	PSGT2-2	Feb-14	0.00	0.0000
Palo Seco	PSGT3-1	Feb-14	0.00	0.0000
Palo Seco	PSGT3-2	Feb-14	0.00	0.0000
Palo Seco	PSGT2-2	Mar-14	146.35	0.0200
Palo Seco	PSGT3-1	Mar-14	162.75	0.0200
Palo Seco	PSGT3-2	Mar-14	236.00	0.0200
Palo Seco	PSGT2-2	Apr-14	803.14	0.0200
Palo Seco	PSGT3-1	Apr-14	566.37	0.0200
Palo Seco	PSGT3-2	Apr-14	293.02	0.0200
Palo Seco	PSGT2-2	May-14	3,473.26	0.0178
Palo Seco	PSGT3-1	May-14	3,581.14	0.0178
Palo Seco	PSGT3-2	May-14	3,158.57	0.0178
Palo Seco	PSGT2-2	Jun-14	1,971.02	0.0200
Palo Seco	PSGT3-1	Jun-14	2,568.86	0.0200
Palo Seco	PSGT3-2	Jun-14	2,572.64	0.0200
Palo Seco	PSGT2-2	Jul-14	6,390.57	0.0186
Palo Seco	PSGT3-1	Jul-14	5,156.93	0.0184
Palo Seco	PSGT3-2	Jul-14	5,163.71	0.0183
Palo Seco	PSGT2-2	Aug-14	20,128.97	0.0169
Palo Seco	PSGT3-1	Aug-14	18,422.47	0.0169
Palo Seco	PSGT3-2	Aug-14	14,063.94	0.0174
Palo Seco	PSGT2-2	Sep-14	5,877.76	0.0096

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-1	Sep-14	5,325.95	0.0096
Palo Seco	PSGT3-2	Sep-14	5,679.88	0.0096
Palo Seco	PSGT2-2	Oct-14	3,205.98	0.0095
Palo Seco	PSGT3-1	Oct-14	3,522.04	0.0095
Palo Seco	PSGT3-2	Oct-14	3,001.17	0.0095
Palo Seco	PSGT2-2	Nov-14	1,020.23	0.0103
Palo Seco	PSGT3-1	Nov-14	815.03	0.0106
Palo Seco	PSGT3-2	Nov-14	1,376.72	0.0106
Palo Seco	PSGT2-2	Dec-14	282.55	0.0100
Palo Seco	PSGT3-1	Dec-14	282.60	0.0100
Palo Seco	PSGT3-2	Dec-14	230.70	0.0100
Palo Seco	PSGT2-2	Jan-15	189.24	0.0100
Palo Seco	PSGT3-1	Jan-15	159.45	0.0100
Palo Seco	PSGT3-2	Jan-15	116.23	0.0100
Palo Seco	PSGT2-2	Feb-15	494.69	0.0100
Palo Seco	PSGT3-1	Feb-15	145.26	0.0100
Palo Seco	PSGT3-2	Feb-15	51.16	0.0100
Palo Seco	PSGT2-2	Mar-15	538.98	0.0100
Palo Seco	PSGT3-1	Mar-15	484.71	0.0100
Palo Seco	PSGT3-2	Mar-15	411.03	0.0100
Palo Seco	PSGT2-2	Apr-15	2082.95	0.0101
Palo Seco	PSGT3-1	Apr-15	1561.26	0.0101
Palo Seco	PSGT3-2	Apr-15	1639.11	0.0101
Palo Seco	PSGT2-2	May-15	671	0.0100
Palo Seco	PSGT3-1	May-15	605.52	0.0100
Palo Seco	PSGT3-2	May-15	0	0.0000
Palo Seco	PSGT2-2	Jun-15	3877.98	0.0108
Palo Seco	PSGT3-1	Jun-15	2735.98	0.0108
Palo Seco	PSGT3-2	Jun-15	2460.16	0.0109
Palo Seco	PSGT2-2	Jul-15	4718.4	0.0098
Palo Seco	PSGT3-1	Jul-15	2419.79	0.0098
Palo Seco	PSGT3-2	Jul-15	3550.4	0.0098
Palo Seco	PSGT2-2	Aug-15	2157.1	0.0100
Palo Seco	PSGT3-1	Aug-15	1888.31	0.0100
Palo Seco	PSGT3-2	Aug-15	1888.38	0.0100
Palo Seco	PSGT2-2	Sep-15	19798.69	0.0150
Palo Seco	PSGT3-1	Sep-15	17757.38	0.0150
Palo Seco	PSGT3-2	Sep-15	15215.43	0.0147
Palo Seco	PSGT2-2	Oct-15	16538	0.0221
Palo Seco	PSGT3-1	Oct-15	14279	0.0221
Palo Seco	PSGT3-2	Oct-15	872	0.0211

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Nov-15	11058	0.0204
Palo Seco	PSGT3-1	Nov-15	10371	0.0204
Palo Seco	PSGT3-2	Nov-15	998	0.0204
Palo Seco	PSGT2-2	Dec-15	18659	0.0224
Palo Seco	PSGT3-1	Dec-15	17363	0.0224
Palo Seco	PSGT3-2	Dec-15	8333	0.0223
Palo Seco	PSGT2-2	Jan-16	5697	0.0209
Palo Seco	PSGT3-1	Jan-16	5392	0.0209
Palo Seco	PSGT3-2	Jan-16	3454	0.0209
Palo Seco	PSGT2-2	Feb-16	2306	0.0208
Palo Seco	PSGT3-1	Feb-16	2176	0.0208
Palo Seco	PSGT3-2	Feb-16	1794	0.0208
Palo Seco	PSGT2-2	Mar-16	7237	0.0201
Palo Seco	PSGT3-1	Mar-16	5384	0.0201
Palo Seco	PSGT3-2	Mar-16	5607	0.0201
Palo Seco	PSGT2-2	Apr-16	3452	0.0198
Palo Seco	PSGT3-1	Apr-16	3638	0.0197
Palo Seco	PSGT3-2	Apr-16	3494	0.0198
Palo Seco	PSGT2-2	May-16	6094	0.0194
Palo Seco	PSGT3-1	May-16	5962	0.0194
Palo Seco	PSGT3-2	May-16	5483	0.0194
Palo Seco	PSGT2-2	Jun-16	2116	0.0200
Palo Seco	PSGT3-1	Jun-16	1525	0.0200
Palo Seco	PSGT3-2	Jun-16	1797	0.0200
Palo Seco	PSGT2-2	Jul-16	16733	0.0302
Palo Seco	PSGT3-1	Jul-16	16375	0.0299
Palo Seco	PSGT3-2	Jul-16	13642	0.0302
Palo Seco	PSGT2-2	Aug-16	13538	0.0224
Palo Seco	PSGT3-1	Aug-16	13663	0.0221
Palo Seco	PSGT3-2	Aug-16	11844	0.0224
Palo Seco	PSGT2-2	Sep-16	7646	0.0214
Palo Seco	PSGT3-1	Sep-16	7885	0.0214
Palo Seco	PSGT3-2	Sep-16	1810	0.0212
Palo Seco	PSGT2-2	Oct-16	2509.67	0.0160
Palo Seco	PSGT3-1	Oct-16	2563.48	0.0160
Palo Seco	PSGT3-2	Oct-16	63.1	0.0160
Palo Seco	PSGT2-2	Nov-16	0	0.0000
Palo Seco	PSGT3-1	Nov-16	159.62	0.0160
Palo Seco	PSGT3-2	Nov-16	0	0.0000
Palo Seco	PSGT2-2	Dec-16	0	0.0000
Palo Seco	PSGT3-1	Dec-16	243.24	0.0160

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	Dec-16	0	0.0000
Palo Seco	PSGT2-2	Jan-17	1535.83	0.0160
Palo Seco	PSGT3-1	Jan-17	1536.21	0.0160
Palo Seco	PSGT3-2	Jan-17	0	0.0000
Palo Seco	PSGT2-2	Feb-17	2343.28	0.0156
Palo Seco	PSGT3-1	Feb-17	2224.12	0.0155
Palo Seco	PSGT3-2	Feb-17	0	0.0000
Palo Seco	PSGT2-2	Mar-17	804.78	0.0133
Palo Seco	PSGT3-1	Mar-17	895.64	0.0133
Palo Seco	PSGT3-2	Mar-17	0	0.0000
Palo Seco	PSGT2-2	Apr-17	3456.09	0.0133
Palo Seco	PSGT3-1	Apr-17	3230.55	0.0133
Palo Seco	PSGT3-2	Apr-17	0	0.0133
Palo Seco	PSGT2-2	May-17	6760.31	0.0102
Palo Seco	PSGT3-1	May-17	6066.52	0.0102
Palo Seco	PSGT3-2	May-17	0	0.0000
Palo Seco	PSGT2-2	Jun-17	8236.43	0.0060
Palo Seco	PSGT3-1	Jun-17	12480.3	0.0060
Palo Seco	PSGT3-2	Jun-17	0	0.0000
Palo Seco	PSGT2-2	Jul-17	14722.08	0.0042
Palo Seco	PSGT3-1	Jul-17	13099.23	0.0042
Palo Seco	PSGT3-2	Jul-17	0	0.0000
Palo Seco	PSGT2-2	Aug-17	30638.6	0.0066
Palo Seco	PSGT3-1	Aug-17	23686.57	0.0069
Palo Seco	PSGT3-2	Aug-17	0	0.0000
Palo Seco	PSGT2-2	Sep-17	11217.16	0.0255
Palo Seco	PSGT3-1	Sep-17	19769.71	0.0268
Palo Seco	PSGT3-2	Sep-17	0	0.0000
Palo Seco	PSGT2-2	Oct-17	29990.11	0.0339
Palo Seco	PSGT3-1	Oct-17	14154.29	0.0340
Palo Seco	PSGT3-2	Oct-17	0	0.0000
Palo Seco	PSGT2-2	Nov-17	31816.05	0.0451
Palo Seco	PSGT3-1	Nov-17	16565.71	0.0450
Palo Seco	PSGT3-2	Nov-17	0	0.0000
Palo Seco	PSGT2-2	Dec-17	24213.97	0.0352
Palo Seco	PSGT3-1	Dec-17	21228.84	0.0364
Palo Seco	PSGT3-2	Dec-17	0	0.0000
Palo Seco	PSGT2-2	Jan-18	19015.35	0.0320
Palo Seco	PSGT3-1	Jan-18	27917.61	0.0291
Palo Seco	PSGT3-2	Jan-18	0	0.0000
Palo Seco	PSGT2-2	Feb-18	14030.3	0.0188

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-1	Feb-18	27419.37	0.0190
Palo Seco	PSGT3-2	Feb-18	0	0.0000
Palo Seco	PSGT2-2	Mar-18	13186.57	0.0243
Palo Seco	PSGT3-1	Mar-18	11488.4	0.0244
Palo Seco	PSGT3-2	Mar-18	0	0.0000
Palo Seco	PSGT2-2	Apr-18	10972.54	0.0175
Palo Seco	PSGT3-1	Apr-18	7066.59	0.0177
Palo Seco	PSGT3-2	Apr-18	0	0.0000
Palo Seco	PSGT2-2	May-18	6064.97	0.0136
Palo Seco	PSGT3-1	May-18	145.32	0.0140
Palo Seco	PSGT3-2	May-18	0	0.0000
Palo Seco	PSGT2-2	Jun-18	472.68	0.0204
Palo Seco	PSGT3-1	Jun-18	1619.25	0.0223
Palo Seco	PSGT3-2	Jun-18	0	0.0000
Palo Seco	PSGT2-2	Jul-18	0	0.0000
Palo Seco	PSGT3-1	Jul-18	4691.69	0.0274
Palo Seco	PSGT3-2	Jul-18	0	0.0000
Palo Seco	PSGT2-2	Aug-18	0.6	0.0291
Palo Seco	PSGT3-1	Aug-18	8598.79	0.0286
Palo Seco	PSGT3-2	Aug-18	0	0.0000
Palo Seco	PSGT2-2	Sep-18	13.12	0.0283
Palo Seco	PSGT3-1	Sep-18	277.5	0.0283
Palo Seco	PSGT3-2	Sep-18	0	0.0000
Palo Seco	PSGT2-2	Oct-18	0	0.0000
Palo Seco	PSGT3-1	Oct-18	1224.14	0.0283
Palo Seco	PSGT3-2	Oct-18	0	0.0000
Palo Seco	PSGT2-2	Nov-18	0	0.0000
Palo Seco	PSGT3-1	Nov-18	5820.9	0.0239
Palo Seco	PSGT3-2	Nov-18	0	0.0000
Palo Seco	PSGT2-2	Dec-18	0	0.0000
Palo Seco	PSGT3-1	Dec-18	3408.06	0.0176
Palo Seco	PSGT3-2	Dec-18	0	0.0000
Palo Seco	PSGT2-2	Jan-19	0	0.0000
Palo Seco	PSGT3-1	Jan-19	0	0.0000
Palo Seco	PSGT3-2	Jan-19	0	0.0000
Palo Seco	PSGT2-2	Jan-19	0	0.0000
Palo Seco	PSGT3-1	Jan-19	0	0.0000
Palo Seco	PSGT3-2	Jan-19	0	0.0000
Palo Seco	PSGT2-2	Feb-19	0	0.0000
Palo Seco	PSGT3-1	Feb-19	78.21	0.0176
Palo Seco	PSGT3-2	Feb-19	0	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT2-2	Mar-19	0	0.0000
Palo Seco	PSGT3-1	Mar-19	767.43	0.0175
Palo Seco	PSGT3-2	Mar-19	0	0.0000
Palo Seco	PSGT2-2	Apr-19	0	0.0000
Palo Seco	PSGT3-1	Apr-19	1760.5	0.0170
Palo Seco	PSGT3-2	Apr-19	0	0.0000

FT8® GAS TURBINE MOBILEPAC® (Water Injected)
Estimated Performance and Emissions

Performance Data			
Fuel Type		Nat Gas	Liquid
Percent of Unit Rating	%	100	100
Ambient Temperature	Deg F	85.0	85.0
Ambient Pressure	psia	14.696	14.696
Burner Water Injection In-Service		Yes	Yes
Fuel HHV	Btu/lb	23,748	19,858
Gross Power Output per GT	MW	27.888	27.226
Gross Heat Rate, HHV	Btu/kW-hr	10,571	10,404
Fuel Flow, per GT	lbs/hr	12,414	14,264
Heat Input, HHV, per GT	MMBtu/hr	294.8	283.3
Emissions & Exhaust Conditions at Stack Exit			
NOx	ppmvd @ 15% O2	30	45
	lb/MMBtu	0.1100	0.1731
	lb/hr	32.4	49.0
	lb/MW-hr	1.16	1.80
CO	ppmvd @ 15% O2	34.2	14.5
	lb/MMBtu	0.0767	0.0343
	lb/hr	22.6	9.7
VOC	ppmvd @ 15% O2	4.0	5.3
	lb/MMBtu	0.0051	0.0071
	lb/hr	1.51	2.02
SO2 (5.0 gr/100 cf gas, 0.05% oil)	lb/hr	4.13	14.30
	lb/MMBtu	0.0140	0.0505
TSP/PM10/PM2.5, Filt and Cond	lb/hr	3.00	5.00
	lb/MMBtu	0.0102	0.0177

EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC® (Estimated Only, Water Injected)
Estimated Performance and Emissions
PREPA - ARG

Configuration: Gas Fuel WI-31 ppmvd NOx @ 15% O2, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																
Fuel Type		Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	48.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	48.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0
Burner Water Injection In-Service	Yes / No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV	Btu/lb	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414
Ratio of HHV to LHV		1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109
Gross Power Output per MP, ref Gen Term	MWe	29.919	30.619	30.875	31.252	31.247	31.268	31.283	31.217	31.081	30.288	29.358	28.373	27.888	27.218	26.149
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,864	8,956	8,995	9,064	9,092	9,191	9,256	9,279	9,285	9,325	9,404	9,487	9,532	9,603	9,732
Power Isle and BOP Aux Load, per MP	kW	327	327	327	327	327	327	327	327	327	327	327	327	327	327	327
Net Power Output, per MP	MWe	29.592	30.292	30.548	30.925	30.920	30.941	30.956	30.890	30.754	29.961	29.031	28.046	27.561	26.891	25.822
Net Heat Rate, LHV	Btu/kWhr	8,962	9,052	9,091	9,159	9,188	9,288	9,354	9,378	9,384	9,427	9,509	9,598	9,703	9,720	9,855
Fuel Flow, per GT	lbs/hr	12,385	12,805	12,969	13,227	13,267	13,420	13,522	13,527	13,477	13,189	12,892	12,570	12,414	12,206	11,884
Gaseous Fuel Flow, per GT	SCF/hr	283,945	293,592	297,333	303,269	304,180	307,688	310,014	310,143	308,987	302,396	295,580	288,199	284,612	279,859	272,457
Calc Heat Input, HHV, per GT	MMBtu/hr	294	304	308	314	315	319	321	321	320	313	306	299	295	290	282
Burner Water Injection Flow, per GT	gal/min	20.1	22.2	23.0	24.3	24.7	26.0	26.9	27.1	27.0	26.4	26.0	25.4	25.1	24.8	24.2
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																
NOx	ppmvd	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
NOx, as NO2, per GT	lbs/hr	32	33	34	34	34	35	35	35	35	34	33	33	32	31	31
CO	ppmvd	77.3	70.5	62.9	47.9	43.6	41.3	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
CO, per GT	lbs/hr	54.3	51.2	46.3	36.0	32.8	31.5	24.7	24.7	24.6	24.0	23.5	22.9	22.6	22.1	21.5
VOC as C1	ppmvd	8.2	6.9	5.9	4.0	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
VOC as C1, per GT	lbs/hr	3.28	2.87	2.47	1.74	1.55	1.52	1.54	1.54	1.53	1.50	1.46	1.42	1.41	1.38	1.34
SO2	ppmvd	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
SO2, per GT	lbs/hr	0.81	0.84	0.85	0.87	0.87	0.88	0.89	0.89	0.88	0.86	0.84	0.82	0.81	0.80	0.78
TSP/PM10, Filterable and Cond, per MP	lbs/hr	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Exhaust Gas Mass Flow, per GT **	lbs/sec	293.4	285.1	282.0	277.0	274.7	267.2	262.6	260.7	259.8	255.7	249.5	243.8	240.7	237.8	230.6
Exhaust Gas Temperature **	Deg F	561	615	636	671	683	725	752	760	762	768	780	790	794	799	810
Exhaust Gas Molecular Weight, Wet		28.54	28.50	28.48	28.45	28.44	28.38	28.34	28.32	28.31	28.28	28.22	28.16	28.11	28.07	27.94
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,659	7,846	7,919	8,035	8,058	8,142	8,196	8,202	8,186	8,107	8,003	7,896	7,840	7,787	7,653
Stack Exhaust Exit Velocity **	ft/sec	153.8	157.6	159.0	161.3	161.8	163.5	164.6	164.7	164.4	162.8	160.7	158.6	157.4	156.4	153.7
H2O **	% Vol wet	5.60	6.08	6.28	6.64	6.77	7.33	7.80	8.00	8.05	8.32	8.85	9.47	9.87	10.27	11.42
O2 **	% Vol wet	16.11	15.78	15.65	15.43	15.36	15.08	14.88	14.81	14.80	14.78	14.67	14.57	14.49	14.45	14.21
CO2 **	% Vol wet	2.11	2.24	2.29	2.37	2.40	2.49	2.55	2.56	2.56	2.54	2.54	2.53	2.53	2.51	2.51
A **	% Vol wet	0.90	0.89	0.89	0.89	0.89	0.88	0.88	0.88	0.88	0.87	0.87	0.86	0.86	0.86	0.84
N2 **	% Vol wet	75.28	75.00	74.88	74.66	74.58	74.21	73.89	73.75	73.70	73.48	73.06	72.56	72.25	71.90	71.01

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

All data are estimates.

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EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC® (Estimated Only, Water Injected)
Estimated Performance and Emissions
PREPA - ARG

Configuration: Liquid Fuel WI-42 ppmvd NOx @ 15% O2, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																	
Fuel Type		Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	50.0	59.0	70.0	77.0	80.0	85.0	90.0	100.0	110.0
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	30.0	43.0	50.0	59.0	70.0	77.0	80.0	85.0	90.0	100.0	110.0
Burner Water Injection In-Service	Yes / No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV	Btu/lb	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646
Ratio of HHV to LHV		1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065
Gross Power Output per MP, ref Gen Term	MWe	27.486	28.114	28.113	28.126	28.122	28.164	28.172	28.179	28.198	28.196	28.207	27.911	27.226	26.647	25.577	24.479
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	9,030	9,119	9,161	9,233	9,265	9,376	9,453	9,495	9,549	9,619	9,665	9,696	9,769	9,834	9,965	10,111
Power Isle and BOP Aux Load, per MP	kW	352	352	352	352	352	352	352	352	352	352	352	352	352	352	352	352
Net Power Output, per MP	MWe	27.134	27.762	27.761	27.774	27.770	27.812	27.820	27.827	27.846	27.844	27.855	27.559	26.874	26.295	25.225	24.127
Net Heat Rate, LHV	Btu/kWhr	9,147	9,235	9,277	9,350	9,382	9,495	9,572	9,615	9,670	9,741	9,787	9,819	9,956	9,966	10,104	10,259
Fuel Flow, per GT	lbs/hr	13,311	13,749	13,812	13,927	13,973	14,162	14,282	14,349	14,441	14,546	14,621	14,513	14,264	14,054	13,669	13,275
Liquid Fuel Flow, per GT	gal/min	31	32	32	33	33	33	34	34	34	34	34	34	34	33	32	31
Calc Heat Input, HHV, per GT	MMBtu/hr	264	273	274	277	277	281	284	285	287	289	290	288	283	279	271	264
Burner Water Injection Flow, per GT	gal/min	23.9	26.4	27.1	28.3	28.8	30.5	31.6	32.1	32.9	33.8	34.4	34.2	33.7	33.2	32.4	31.5
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																	
NOx	ppmvd	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
NOx, as NO2, per GT	lbs/hr	46	47	48	48	48	49	49	49	50	50	50	50	49	48	47	45
CO	ppmvd	46.8	35.8	32.9	28.2	26.7	22.0	19.0	17.8	16.3	14.8	13.9	13.8	13.7	13.6	13.3	13.2
CO, per GT	lbs/hr	31.0	24.5	22.7	19.6	18.6	15.5	13.5	12.7	11.8	10.7	10.1	10.0	9.7	9.5	9.0	8.7
VOC as C1	ppmvd	12.4	6.8	5.6	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
VOC as C1, per GT	lbs/hr	4.71	2.68	2.20	1.98	1.99	2.02	2.03	2.04	2.06	2.07	2.08	2.06	2.02	1.99	1.94	1.88
SO2	ppmvd	9.08	9.07	9.06	9.06	9.06	9.07	9.08	9.07	9.07	9.07	9.07	9.08	9.16	9.12	9.12	9.14
SO2, per GT	lbs/hr	12.51	12.92	12.98	13.09	13.13	13.31	13.43	13.49	13.57	13.67	13.74	13.64	13.41	13.21	12.85	12.48
TSP/PM10, Filterable and Cond, per MP	lbs/hr	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Exhaust Gas Mass Flow, per GT **	lbs/sec	289.9	281.7	278.0	272.2	269.8	262.1	257.4	254.9	251.8	248.0	245.7	243.8	239.9	236.4	229.8	223.1
Exhaust Gas Temperature **	Deg F	534	586	603	633	645	688	715	730	749	771	786	789	794	799	810	819
Exhaust Gas Molecular Weight, Wet		28.79	28.77	28.75	28.73	28.72	28.68	28.64	28.61	28.56	28.50	28.44	28.42	28.38	28.32	28.20	28.04
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,308	7,475	7,505	7,557	7,577	7,657	7,709	7,737	7,776	7,822	7,854	7,821	7,739	7,673	7,552	7,428
Stack Exhaust Exit Velocity **	ft/sec	146.7	150.1	150.7	151.8	152.2	153.8	154.8	155.4	156.2	157.1	157.7	157.1	155.4	154.1	151.7	149.2
H2O **	% Vol wet	4.17	4.59	4.74	5.00	5.13	5.67	6.13	6.43	6.89	7.59	8.13	8.35	8.70	9.17	10.30	11.74
O2 **	% Vol wet	16.54	16.23	16.13	15.96	15.89	15.62	15.42	15.30	15.13	14.89	14.72	14.69	14.66	14.55	14.33	14.07
CO2 **	% Vol wet	2.69	2.86	2.91	2.99	3.03	3.15	3.23	3.27	3.33	3.39	3.44	3.43	3.41	3.41	3.40	3.38
A **	% Vol wet	0.90	0.90	0.90	0.89	0.89	0.89	0.88	0.88	0.88	0.87	0.87	0.86	0.86	0.86	0.85	0.83
N2 **	% Vol wet	75.70	75.42	75.33	75.14	75.06	74.67	74.34	74.11	73.77	73.25	72.83	72.67	72.36	72.00	71.12	69.98

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

All data are estimates.

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FT8® GAS TURBINE MOBILEPAC® (Estimated Only, Water Injected)
Notes Applicable to Performance and Emissions Data
PREPA - ARG

PrfCustCopy_PREPA-ARG_FT8-MP-WI_60Hz_138_AD_R0_10042019.xlsx

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EAR Export Classification: ECCN EAR99

Notes:

1. All Performance/Emissions Data submitted are subject to the sum of the following notes, and the most recent version of PWPS "Factory and Field Tests" at the time of the proposal offering.
   All data is presented on an estimated basis.
2. The MOBILEPAC® (MP) consists of one turbine (1-GT) driving one generator. Rates are shown as per GT, and per MOBILEPAC® (MP), which are equivalent for this configuration.
3. Gaseous fuel supplied to gas turbines must meet PWPS fuel specification FR-2, liquid fuel supplied to gas turbines must meet PWPS fuel specification FR-1. Water used for burner injection must meet PWPS specification AR-1 (demin water).
4. Water injected performance requires water injection to the stated NOx concentrations, at 15% O2 on a dry basis.
   DRY performance data is based on the standard combustor without water injection.
5. All data supplied based on 0m/0ft Alt. and 70% relative humidity.
6. Inlet loss estimated at 63.5mm/2.5in W.C. with 2-stage inlet filter. No correction of test results for inlet loss.
7. Exhaust loss for all cases estimated at 25.4mm/1in W.C. for standard exhaust stack. There will be no correction of test results for exhaust loss in simple-cycle.
8. Stack exhaust velocity is based on exhaust gas vol flow rate and exhaust exit area (4.63sq m/49.8sq ft).
9. Secondary (enclosure) cooling air is mixed with primary exhaust flow, before stack exit.
10. Data designated as "primary exhaust" is referenced to the GT exhaust and does not include secondary (enclosure) cooling air.
11. All data submitted is based upon a generator operating at 60Hz, 0.9 power factor @ 13.8kV.
12. Net Power = Power measured at the generator terminals, minus auxiliary load for power island and 200 kW BOP.
13. GSU losses and gas compression loads are not included in Net Power output or Net Heat Rate determinations.
14. Performance Acceptance Test for GT Net Power Output and GT Net Heat Rates to be conducted per PWPS test procedures, instrumentation, and calculations; all being in general accordance with ASME PTC-22 (2005) and PTC-19.1.
15. Performance acceptance testing for GT Net Power Output and GT Net Heat Rate shall be furnished by PWPS through third party contractor.
16. Test boundary shall be Ambient Temperature as defined by the average dry bulb temperature at the inlet filter face.
17. Site performance to be corrected for changes in ambient temperature, pressure, relative/specific humidity and power factor.
18. Thermal performance tests must be conducted in "New & Clean" condition, with less than 100 fired-hours. If Units are dispatched for Commercial Operation, or operated by Purchaser for more than 100 fired-hours, then thermal performance will have been deemed to have been met, and any thermal performance testing would be conducted and reported as "Information Only".
19. Approximately 30 days prior to performance testing of the units, Purchaser will be provided with correction curves for the GT power and heat rate, as well as draft performance acceptance test procedures. Curves and procedures will not be issued with RFQ responses.
20. Emission data is representative of steady-state operation, and may not be indicative of emissions during transient operation. Demonstration of emission concentrations for NOx, CO and VOC's are based on 1-hour averages, after operation under steady-state conditions for 1-hour. "Steady state" shall be defined as less than +/-1.3% variation from the average for power output, which is in alignment for the PTC-22 (2005) gas turbine code for steady state conditions. Compliance with shall be based on the average of stack traverse's.
21. Applications that utilize CEM systems, must use a multi-point, multiple probe system to read emissions concentrations in the backpass. This averaging system is required to prevent emission compliance issues related to diluent stratification associated with the addition of secondary (enclosure) cooling air, and the use of noise attenuation baffles in the stack.
22. Performance and emissions are based upon assumed fuel compositions shown on Sheet - 2, and significant changes from these assumed characteristics can change the quoted performance and emissions.
23. SO2 data is estimated from Sulfur contents stated on Sheet - 2, which PWPS does not control and therefore can't guarantee.
24. All emission measurements to be by US EPA methods. All emissions measurements for engine tuning, demonstration of emissions levels and/or Air Permit compliance (and related procedures), to be furnished by Purchaser, and shall conform to PWPS Quality Assurance procedure: "McHale PWPS EmissionsTuningQAProcedure 0001ETQAR3.pdf"
25. Volatile Organic Compounds (VOC) are defined as non methane, non ethane, with > 85% of the composition being ethene. Values shown are based upon PWPS experience and measurement using EPA Method 25A (total UHC) on liquid fuel, and/or Method 18 (w/Tedlar bag samples) if UHC exceeds VOC levels on gaseous fuel.
26. Testing for PM10 shall conform to PWPS Quality Assurance documentation in addition to EPA Reference Method 5 (filterable) and R/M 202 (condensable/back half) fractions. Volumetric flow rate for determination of PM10 to be per EPA Method 19, which utilized fuel flow, O2%, and F-factors.
27. Particulate samples shall be drawn isokinetically, with a minimum of 3-hour sample duration and are to consist of 3-tests. sample results are outside of specification, any suspect PM10 test shall be rejected and retested at the expense of the customer.
28. In the event that the customer does not provide emissions measurements for tuning of water injection systems which meet the requirements of the PWPS Emissions Quality Assurance document, then PWPS reserves the right to tune water/fuel ratios in accordance with our default levels.
29. In the event that the customer does not conduct emissions testing for the verification of compliance with PWPS emissions levels, or if such testing is not in accordance with PWPS Emissions Quality Assurance document, the achievement of substantial completion of the project by PWPS shall not be delayed.
30. If future emissions tuning or testing are required after the initial commissioning period when staffed by PWPS personnel and/or contractors, the additional mobilizations/demobilizations and provision of technical teams for the tuning and/or testing shall be at the customers expense.
31. Tested NOx concentrations shall be corrected lower for liquid fuel bound nitrogen (FBN) in excess of 0.015% by weight.

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PWPS VER: APR-2018

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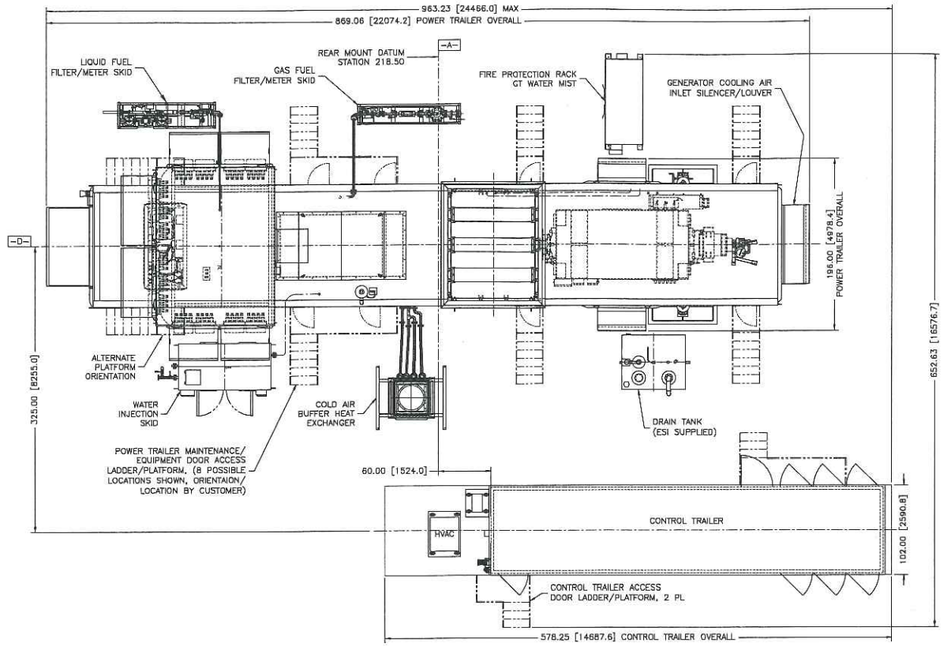
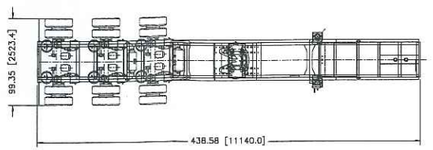
DWG NO. 1410-100-S000D | SH. 2 | REV. -

REVISION HISTORY

EC NO.	REV	ZONE	DESCRIPTION	REVISED BY DATE	APPROVED BY DATE
38421	-		INITIAL RELEASE	CDH 09Jan19	RDT 11JAN19



PLAN VIEW

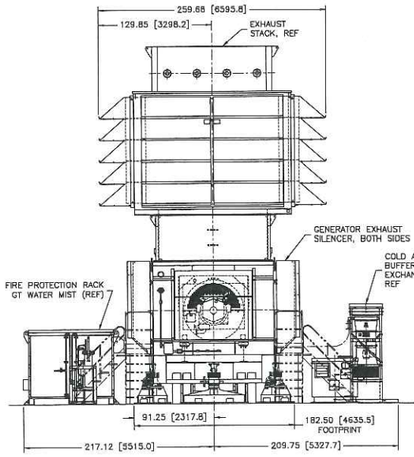


OPTIONAL JEEP DOLLY

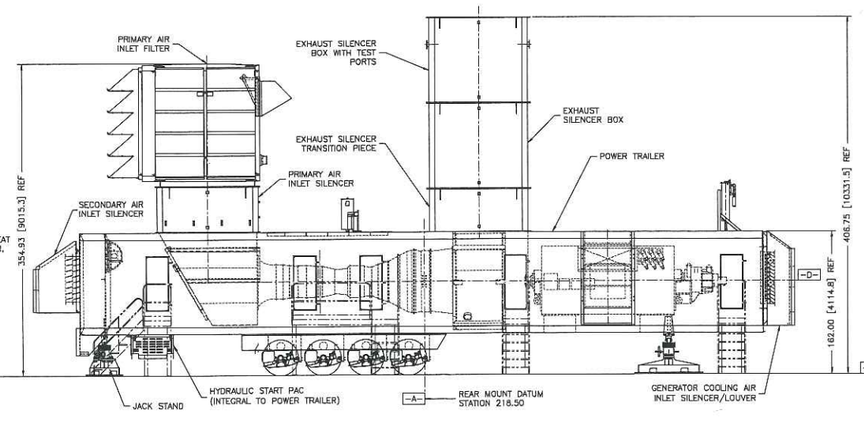
OPTIONAL LIQUID FUEL FORWARDING SKID LOCATION BY CUSTOMER (NEAR FUEL TANK)



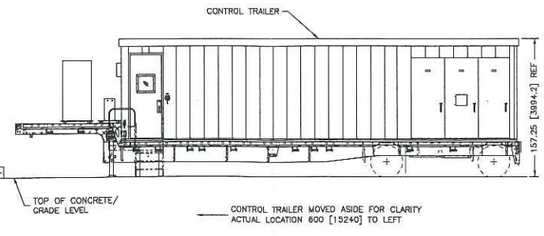
WATER WASH CART (ON WHEELS)



END VIEW
(CONTROL TRAILER & VARIOUS ANCILLARY SKIDS OMITTED FOR CLARITY)



ELEVATION VIEW
(ANCILLARY SKIDS OMITTED FOR CLARITY)



SHEET	SHEET DESCRIPTION
2	GENERAL ARRANGEMENT – SIDE-BY-SIDE CONFIGURATION

PROJECT	1410		PW Power Systems
REFERENCE	1428-100-S000D-02-revA		
DRAWN	ALSP	08Jan19	TITLE: GENERAL ARRANGEMENT MOBILE PAC
CHECKED	RDT	11JAN19	
APPROVED	RDT	11JAN19	
GENERAL STATUS	RELEASED		REV: E; SIZE: D; DWG NO: 1410-100-S000D; REV: -
			SCALE: 1:50; WT: ; SHEET 2 OF

1410-100-S000D-02.dwg 14/Feb/19 14:01 p00082do

Appendix C:

Copy of Approved Environmental Evaluations (Rule 141)

18 de junio de 2019

RE: Solicitud de Determinación ambiental bajo exclusión categórica.

Luego del paso del Huracán María y la susceptibilidad del Sistema Eléctrico de PR, la AEE ha identificado la necesidad de fortalecer la generación eléctrica en el Área Norte del País, a su vez contemplo el uso de Unidades Generatrices de mayor eficiencia a las existentes y con la opción de mover estás de acuerdo a las necesidades del sistema en términos de operación, mantenimiento y en emergencias.

Por este medio la PREPA (Palo Seco) solicita una determinación de cumplimiento ambiental bajo exclusión categórica. Se identifica la actividad de excavación no profundas (trincheras) y la instalación de sistemas de alta eficiencia energética. Exclusiones número 21 y 26.

El Proyecto consiste en la compra e instalación de tres Unidades Móviles Generatrices de 30 MW cada una. El Proyecto requiere la conexión de esas al Sistema Eléctrico de la AEE (Central Palo Seco) y la instalación al Sistema de combustible de los tanques de la AEE. No habrá excavaciones profundas, construcción permanente, otras. Las estructuras ya vienen construidas en tráiler, y se ensamblan o unen en el sitio.

Exclusiones Categóricas solicitadas para la actividad.

B. Modificar usos existentes o acciones aprobadas

21. Relocalización o reemplazo de líneas eléctricas aéreas y soterradas en áreas previamente impactadas o urbanizadas. Incluye la instalación de tuberías, trincheras, registros y postes con un máximo de ciento cinco pulgadas (105") de profundidad para

excavación de trincheras, y de doce pies (12') máximos de profundidad para fosas de postes.

26. Acciones para conservar energía tales como la instalación y reemplazo de equipos o sistemas de alta eficiencia energética para mejorar la eficiencia en el control de la calidad ambiental en una instalación existente.

GOBIERNO DE PUERTO RICO
Departamento de Recursos Naturales y Ambientales

NOV 0 4 2019

Sr. Victor V. De Castro Carlo
Autoridad de Energía Eléctrica
PO Box 364267
San Juan, PR 00936

141-19-0538
Generadores de Electricidad para Emergencias
"Palo Seco Power Plant", PR-870
Toa Baja, Puerto Rico

Estimado señor De Castro:

El Departamento de Recursos Naturales y Ambientales (DRNA) ha recibido la documentación sometida para la instalación y operación de tres (3) generadores de electricidad para emergencias en la facilidad de referencia.

Los tres generadores (1, 2 y 3) son idénticos: marca Caterpillar modelo LC6 con capacidad generación nominal de 400 kW, motor marca Caterpillar, modelo C-13, con capacidad o potencia de 609 HP, operación máxima de 500 horas/año, y razón de consumo de combustible diésel de 28.4 gal/hr. La chimenea (tubo de escape): muflers de 10" de diámetro y altura de 8'-0".

Las tres unidades poseen tanques de combustible diésel de acero doble pared, integrados a los generadores, y con capacidad de 1041 galones cada uno.

La Secretaria Auxiliar de Cumplimiento Ambiental del DRNA (anterior Junta de Calidad Ambiental), amparado en la Regla 141 del Reglamento Núm. 8858 del 23 de noviembre de 2016, conocido como el "Reglamento Para el Proceso de Evaluación Ambiental" ha determinado que la acción propuesta no ocasionará impactos significativos al ambiente. El documento sometido para la acción propuesta cumple con lo requerido en el Artículo 4-B (3) de la Ley sobre Política Pública Ambiental, Ley 416-2004, según enmendada.

No obstante, se le requiere que cumpla con todas las disposiciones de las leyes y reglamentos estatales y federales aplicables, incluyendo las siguientes:

1. Solicitar a través de la Oficina de Gerencia de Permisos (OGPe) los correspondientes permisos conforme al Reglamento Núm. 7308 del 1 de marzo de 2007, conocido como el "Reglamento para el Trámite de Permisos Generales".

NOV 0 4 2019

2. Controlar los olores objetables que puedan afectar la atmósfera comunal.

3. Cumplir con el Reglamento Núm. 8019 del 9 de mayo de 2011, conocido como el "Reglamento para el Control de la Contaminación por Ruido" en lo relacionado al nivel de sonido máximo permitido.

4. Revisar el Plan de Emergencia de la facilidad de referencia de manera que este incluya los tanques sobre tierra para suplir combustible diésel a los generadores, y todos los tanques sobre tierra que se utilicen para almacenar combustible diésel o sustancias químicas; y presentar el mismo ante el Área de Calidad de Agua, reflejando las acciones a tomar para evitar, controlar y remediar derrames de diésel o cualquier otra sustancia química, a tenor con la Regla 1306.5 del Reglamento Núm. 9079 del 26 de abril de 2019, conocido como el "Reglamento de Estándares de Calidad de Agua de Puerto Rico".

Las recomendaciones presentadas en esta comunicación, no eximen de cumplir con cualquier otro requerimiento o permiso del DRNA o de cualquier otra agencia estatal o federal, que sean aplicables a la acción propuesta.

Cordialmente,

PNI
Tania Vázquez Rivera
Secretaria

ADL/adl

Certificación de Cumplimiento Ambiental por Exclusión Categórica

Puerto Rico Electric Power Authority (PREPA) Palo Seco

Fecha de Expedición:

26/JUN/2019

Datos de Localización

De conformidad con las disposiciones contenidas en las leyes y los reglamentos vigentes, se expide la presente Certificación de Exclusión Categórica para la acción(es) antes descrita(s):

Dirección Física:

Dirección: PALO SECO POWER PLANT
PR-870,
PUERTO RICO, 00949
Municipio: Toa Baja
Estado: Puerto Rico
Código Postal: 00949

Calificación

Distrito(s) de Calificación: I-P (50%), CR (49%), DT-G (1%)

Distrito en el Mapa de Inundabilidad: X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Tipo de Suelo: Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)

Dueño:

Autoridad Energia Electrica

Sometido por:

Autoridad Energia Electrica

Número(s) de Catastro:

039-000-008-04

Datos de determinación

Exclusión Categórica

Números de exclusión categórica aplicables de acuerdo a la R-11-17 de la JCA*:

21,26

Fecha de Expedición:

26/JUN/2019

Condiciones Generales

De acuerdo con la solicitud de esta Determinación, se certificó cumplimiento con los siguientes requisitos, cuyo incumplimiento podrá repercutir en la revocación de esta Determinación:

1. Las actividades de uso o de construcciones livianas de nuevas estructuras no están ubicadas o desarrolladas en:

a. Areas especiales de riesgo de inundaciones, derrumbes o marejadas.

b. Areas en las que la Junta de Calidad Ambiental (JCA) u otras agencias gubernamentales estatales o federales hayan determinado que existe un grado de contaminación que excede el permitido por los reglamentos vigentes.

c. Areas ecológicamente sensitivas o protegidas, según establecido por el Departamento de Recursos Naturales y Ambientales (DRNA), en las que existan especies únicas de fauna o flora o que estén en peligro de extinción o en las que puedan afectarse ecológicamente sistemas naturales o artificiales, ya sea en forma directa o indirecta.

d. Areas en las que existan problemas de infraestructura o de deficiencias en los sistemas de servicios de suministro de agua potable, disposición de las aguas sanitarias, suministro de energía eléctrica o capacidad vial para el manejo adecuado del tránsito de vehículos de motor.

e. Areas que constituyan yacimientos minerales, conocidos o potenciales.

f. Areas en las que existen yacimientos arqueológicos o de valor cultural, según determinado por el Instituto

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Certificación de Cumplimiento Ambiental por Exclusión Categórica

de Cultura Puertorriqueña (ICP).

g. Areas de topografía escarpada, en cuencas hidrográficas donde se puedan afectar fuentes de abasto de agua potable.

h. Cualquier otra acción que la JCA haya establecido mediante Resolución.

2. No descargarán contaminantes a cuerpos de agua, ni generará desperdicios peligrosos o emisiones al aire que excedan dos (2) toneladas al año de contaminantes de aire criterio, o cinco (5) toneladas de cualquier combinación de contaminantes criterios, ni emitirá al aire contaminantes peligrosos o tóxicos u olores objetables.

3. La disposición o descarga de las aguas usadas se realizará mediante acometidas a un sistema sanitario existente, lo cual requerirá la obtención del endoso de la AAA previo a la solicitud de permisos de construcción.

4. Que existe la infraestructura necesaria (agua potable y alcantarillado sanitario suministrado por la AAA, energía eléctrica, alcantarillado pluvial, vías de acceso) para servir a la operación del proyecto o actividad propuesta, con excepción de los proyectos agrícolas que se ubican por regla general en las áreas rurales, así como las residencias unifamiliares asociadas en las que las instalaciones de esa naturaleza son limitadas.

5. La operación de la actividad no afectará áreas residenciales o zonas de tranquilidad por contaminación sónica según establecido por el Reglamento para el Control de la Contaminación por Ruido.

6. Que el desarrollo de la instalación comercial, industrial, de servicio, institucional y de desarrollo de terrenos para uso turístico y proyectos recreativos no excede de cinco mil (5,000) pies cuadrados de conStrucción en área total de ocupación y área bruta de piso y que cumple con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables.

7. El uso de edificios o estructuras existentes para facilidades comerciales, almacenes y usos industriales o de servicios no excederán de cien mil (100,000) pies cuadrados en área total de ocupación y área bruta de piso. Dicha operación deberá cumplir con las condiciones de ubicación y operación establecidas por la OGPe u otra agencia con jurisdicción, según sean aplicables, y las establecidas para las exclusiones categóricas en este Reglamento.

8. Para la ejecución o desarrollo de las acciones aprobadas como exclusiones categóricas, se requerirá la obtención de los permisos aplicables de las agencias gubernamentales para las etapas de construcción y operación.

9. La acción no ha sido fragmentada o segmentada para fines de la evaluación y será determinación de la agencia proponente si la misma satisface o no los requisitos para ser considerada y ejecutada bajo una exclusión categórica.

10. Que ha cumplido con el requisito de publicación de un Aviso Público de conformidad con la Regla 122 del Reglamento de Evaluación y Trámite de Documentos Ambientales de la JCA, en el caso que la acción propuesta esté relacionada al uso u otorgamiento de fondos federales que requieran un proceso de evaluación parecido al de NEPA (NEPA-Like Process).

Aviso

Si luego de haberse aquí dado cumplimiento con el Artículo 4(B) de la Ley Núm. 416 surgieran variaciones sustanciales en la acción propuesta que requieran la evaluación a los impactos ambientales, habrá que presentar el correspondiente documento ambiental, de conformidad con la Ley sobre Política Pública Ambiental.

Condiciones Especiales

NINGUNA

Firma / Sellos

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Certificación de Cumplimiento Ambiental por Exclusión Categórica

Fecha de Expedición:
26/JUN/2019

Arq. María R. Cintrón Flores
Secretaria Auxiliar
Departamento de Desarrollo Económico y Comercio de Puerto Rico
Oficina de Gerencia de Permisos

Arq. María R. Cintrón Flores

Secretaria Auxiliar de la OGPe, DDEC

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Appendix D:

DNER Emergency Waiver for the Installation of (3) Combustion Turbines at Palo Seco

GOBIERNO DE PUERTO RICO
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

24 OCT. 2019

ING. JOSÉ ORTIZ
Director Ejecutivo
Autoridad de Energía Eléctrica de Puerto Rico
Apartado 364267
San Juan, PR 00936-4267

Att: Efran Paredes Maisonet
Director Planificación y Protección Ambiental

Estimado ingeniero Ortiz,

Re: Solicitud de Dispensa de Emergencia
Autoridad de Energía Eléctrica de Puerto Rico.
Central Palo Seco
TV-4911-70-1196-0015

En carta con fecha del 11 de octubre de 2019 el Sr. Efran Paredes Maisonet, Director Planificación y Protección Ambiental de la Autoridad de Energía Eléctrica de Puerto Rico (en adelante AEE) presentó una solicitud de dispensa de emergencia para la instalación y operación de tres turbinas de gas con una capacidad de generación de aproximadamente 23 MW. La solicitud se presenta para asegurar la confiabilidad y resiliencia del sistema eléctrico. Esta solicitud se presenta conforme las disposiciones de la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica (RCCA), Reglamento Núm. 5300, según enmendado. El inciso A de la Regla 302 del RCCA establece que:

A) La Junta podrá conceder dispensas de emergencia solo bajo circunstancias muy especiales, como por ejemplo, para evitar una amenaza inminente a la salud.
...

Según establece la AEE en su solicitud de dispensa, actualmente tiene varias unidades de carga base que están fuera de servicios debido a mantenimientos o reparaciones, o están limitadas a parte de su capacidad de generación de electricidad. Esta situación afecta la resiliencia del sistema eléctrico del país. Razón por la cual presentaron la solicitud de dispensa.

Conforme a lo anterior, se aprueba la solicitud de dispensa por un periodo que no podrá exceder de 90 días a partir de la fecha de esta notificación. Durante el periodo de dispensa deberá cumplir con todas las condiciones incluidas en el anejo. La información y condiciones sometidas en su solicitud de permiso forman parte de esta autorización.

24 OCT. 2019

De conformidad con la Sección 5.4 de la Ley Núm. 38-2017, conocida como, Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, se le apercibe que: "Toda persona a la que la agencia deniegue la concesión de una licencia, franquicia, permiso, endoso, autorización o gestión similar, tendrá derecho a impugnar la determinación de la agencia por medio de un procedimiento adjudicativo, según se establezca en la ley especial de que se trate y en el Capítulo III de dicha Ley." Para esto, se concede un término de veinte (20) días a partir de la notificación del mismo.

La agencia podrá revocar esta autorización en cualquier momento si se violan las condiciones del mismo o reglamentos y/o regulaciones aplicables. La agencia, además, podrá emitir una Orden de Cese y Desistimiento y Mostrar Causa.

Cualquier duda o pregunta, puede comunicarse con el Ing. Luis Sierra, Gerente Interino del Área de Calidad de Aire, al 787-767-8181, extensión 2300, o a través del correo electrónico luissierra@jca.pr.gov.

Cordialmente,

Tania Vázquez Rivera
Secretaria

TVR/lst

24 OCT. 2019

ANEJO: CONDICIONES DE DISPENSA

1. Por este medio se autoriza una dispensa por emergencia la instalación y operación de tres turbinas de gas en la Central Palo Seco, con una capacidad de generación de aproximadamente 23 MW cada una. Esta dispensa tendrá una duración que no excederá de 90 días a partir de la aprobación de la misma.
2. Deberá mantener copia de esta dispensa en la instalación en todo momento. La misma estará disponible para inspección por el personal técnico del Departamento de Recursos Naturales y Ambientales (en adelante DRNA) o la Agencia Federal de Protección Ambiental (EPA, en inglés).
3. Una vez culmine la dispensa, las unidades deberán ser desconectadas, a menos que un permiso para la construcción para las unidades, según las disposiciones de la Regla 203 del Reglamento 5300, según enmendado, haya sido emitido por esta agencia.
4. Esta dispensa no exime de acciones de cumplimiento y/o legales por la construcción/instalación de las unidades previo a la otorgación de esta dispensa de emergencia.
5. Para la operación de los generadores, el contenido máximo de azufre en el combustible No. 2 no excederá de 0.5 porciento por peso y en el gas natural no excederá de 5 gr/100 sft^3.
6. Deberá tener un registro de operación y consumo de combustible con contenido de azufre y horas de operación para cada turbina.
7. Deberá enviar un informe de aplicabilidad, y/o notificación inicial de ser necesario, con respecto a las disposiciones del 40 CFR, Parte 60, Subparte GG, Subparte KKKK o cualquier otra regulación que sea aplicable a las turbinas. Deberán indicar en el informe todos los requisitos aplicables a la unidad de emisión. De existir regulaciones que sean potencialmente aplicables, deberá indicar en el informe las razones por las cuales no le aplica.
8. Deberá cumplir con todos los requisitos aplicables en el informe enviado a la agencia. El no identificar adecuadamente la regulación aplicable, no les exime de incumplimiento con la regulación federal y/o estatal.
9. Estas unidades fueron clasificadas en su solicitud de dispensa como unidades estacionarias de emisión. Deberá llevar a cabo las pruebas de funcionamiento requeridas por la regulación federal para fuentes estacionarias, en los términos establecidos en el estándar de emisión aplicable.
10. Deberá someter un informe mensual indicando en una base diaria el contenido de azufre (porciento por peso) en los combustibles quemados o consumidos en la unidad durante cada mes. Este informe será enviado a la Junta a la atención de la Jefa de la División de Validación de Datos Modelaje Matemático del Área de Calidad de Aire, la Sra. Lula Lucia Fernández Fontán. Todos los informes mensuales deberán ser enviados en o antes de los treinta (30) días siguientes al final de cada mes natural.
11. La tonalidad de los gases emitidos durante la operación de cada motor incluido en este permiso no excederá del 20% de opacidad. Se permitirá una tonalidad de hasta 60% de opacidad sólo en un periodo no mayor de 4 minutos dentro de cualquier periodo de 30 minutos consecutivos.

TVR

CN 078-04479
Rev.

GOBIERNO DE PUERTO RICO
Autoridad de Energía Eléctrica de Puerto Rico

11 de octubre de 2019

Ing. Luis R. Sierra Torres
Gerente Área de Calidad de Aire
Junta de Calidad Ambiental
PO Box 11488
San Juan, Puerto Rico 00910

Estimado ingeniero Sierra Torres:

Dispensa Emergencia para Instalación de Turbinas de Gas en la Central Palo Seco para Proporcionar Energía de Respaldo de Emergencia

La Autoridad de Energía Eléctrica (Autoridad) interesa instalar tres turbinas de gas de aproximadamente 23 MW cada una en la Central Palo Seco. Estas turbinas estarán disponibles para proveer generación de emergencia (*backup*) como parte del plan de contingencia que desarrolló la Autoridad durante la temporada de huracanes y que, a su vez, nos permitirá asegurar el mantenimiento de un servicio de energía eléctrica confiable en la Isla y que servirá para reforzar la resistencia del sistema de la Autoridad, que se requiere en este momento. Dado que nos encontramos en la temporada de huracanes, la Autoridad pretende comenzar la instalación y condicionamiento de estas tres unidades inmediatamente. Por consiguiente, la Autoridad solicita que se otorgue una dispensa conforme lo dispone la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica de la Junta de Calidad Ambiental, vigente. De esta manera estas unidades estarán disponibles para su uso desde octubre de 2019.

Necesidad inmediata de energía para asegurar confiabilidad y resiliencia del sistema eléctrico

Actualmente, la Autoridad tiene varias unidades de carga base que están fuera de servicio por mantenimiento o reparación, o se limitan a solo una parte de su capacidad. Como ejemplo de lo anterior podemos mencionar; que la Unidad 2 de Aguirre se encuentra fuera de servicio (probablemente hasta febrero del 2020) debido a una falla del transformador principal de la unidad. En la Central San Juan, la Unidad 10 está fuera de servicio desde el 2016, la unidad de Ciclo Combinado San Juan 5 saldrá de servicio para la conversión a quema dual de combustible y la Unidad 6 tiene limitaciones de carga por alta presión del condensador.

"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."

En Palo Seco la Unidad 2 se encuentra fuera de servicio, y las Unidades 3 y 4 tienen limitada su capacidad.

Al mismo tiempo, otras unidades base deben someterse a mantenimientos o salidas ambientales obligatorias. Otras unidades están limitadas en cuanto a sus operaciones porque son unidades de uso limitado bajo el *Mercury and Air Toxic Standard* (MATS, por sus siglas en inglés) aprobado por la Agencia Federal de Protección Ambiental (EPA, por sus siglas en ingles). De otra parte, en San Juan la unidad 6 tiene salida programada en noviembre de 2019, la Unidad 8 estará fuera de servicio hasta comienzos de noviembre, además de ser una unidad de uso limitado por MATS. La Unidad 1 de Palo Seco se someterá a su salida ambiental y estará fuera de servicio hasta comienzos de noviembre, además de ser una unidad de uso limitado bajo la regulación MATS. En Costa Sur la unidad 6 tiene una salida programada desde finales de octubre hasta principio de diciembre. Por lo que, la falta de unidades podría resultar en una incapacidad para proveer la demanda de energía necesaria, lo que podría ocasionar interrupciones del servicio.

Por las razones antes expuestas y ante la necesidad de poder satisfacer de manera confiable la demanda eléctrica y como parte del plan de contingencia que establecimos para cubrir incidencias que puedan ocurrir, la Autoridad propone instalar estas tres turbinas de gas en Palo Seco. La disponibilidad de estas tres nuevas turbinas de gas ayudará a restaurar la energía de forma rápida en caso de emergencia y a asegurar la estabilidad y la resiliencia del sistema de la Autoridad. Estas nuevas turbinas se ubicarán estratégicamente en Palo Seco, en el área metropolitana de San Juan, donde la demanda de energía eléctrica es mayor. Además, el lugar se encuentra preparado ya que se ubicarán las mismas en el área donde se instalaron los generadores de emergencia que proveyó el Cuerpo de Ingenieros luego de los huracanes Irma y María, los cuales proporcionaron la estabilidad que requería el sistema de electricidad en ese momento. La destrucción por los huracanes Irma y María de las líneas de transmisión más importantes de la Autoridad creó restricciones de transmisión grave que retrasó la capacidad de la Autoridad para restaurar completamente la energía en la Isla.

Descripción de la Central Palo Seco

La Central Palo Seco se encuentra en 56.3 hectáreas en una zona industrial en la carretera PR-165 km 30.8 en el municipio de Toa Baja. Palo Seco consiste de diez unidades generadoras existentes distribuidas en dos áreas de la central: la termoeléctrica que consiste en cuatro calderas de vapor con una capacidad de generación combinada de 602 MW y la porción del bloque de alimentación de la planta (*powerblock*) que consiste en seis turbinas de gas con una capacidad de generación combinada de 126 MW. Cada turbina de gas existente es de 21 MW cada una. También en Palo Seco se encuentran tres generadores de electricidad de emergencia y una bomba de contra incendio con motor diésel. Palo Seco es una fuente mayor bajo un permiso Título V. Palo Seco no tiene un permiso de prevención del deterioro significativo ("PSD" por sus siglas en ingles).

Descripción de las Turbinas de Gas a ser instaladas en Palo Seco

La Autoridad propone instalar tres paquetes de turbinas de gas MOBILEPAC® con motores FT8® con una capacidad de aproximadamente 23 MW cada una. El MOBILEPAC® ofrece 22.5 MW (Diésel) / 23.8 MW (Gas Natural) de energía. Utilizando la probada tecnología de turbina de gas SWIFTPAC®, este paquete está diseñado para proporcionar energía rápida, confiable y es especialmente útil en situaciones de emergencia. Cada MOBILEPAC® comprende de dos vagones de arrastre. El primero contiene la turbina de gas, generador eléctrico, motor, colector de escape y difusor de sistema de aceite lubricación. El segundo vagón lleva el sistema de control, panel de operación, relés de protección, baterías y cargador, centro control de motores y el paquete de arranque hidráulico.

Se estima que la instalación de estas unidades no conlleva un aumento significativo en la capacidad de generación de la Central. Estas nuevas unidades tienen la capacidad de usar diésel o gas natural como combustible (*dual fuel*). La instalación de estas unidades tiene el potencial de facilitar un cambio en el perfil del combustible de la Autoridad a gas natural de una combustión más limpia. Sin embargo, en estos momentos se utilizará diésel de bajo contenido de azufre. Para la operación del equipo propuesto, se utilizarán los tanques existentes en la planta para almacenar combustible y que están provistos de un dique para control de derrames de combustible.

Las turbinas de gas ya se encuentran en las facilidades de la Central Palo Seco y se instalarán en la parte sur de la Central, al sureste de donde está situado el *powerblock* actual. Para asegurar la disponibilidad durante la temporada de huracanes, la Autoridad interesa completar la instalación durante el mes de octubre de 2019. No se prevén mayores trabajos de construcción que no sean aquellos requeridos para la estabilización de las bases de los equipos, las debidas conexiones eléctricas y a los tanques de combustible.

La Autoridad identificó los fondos necesarios para la instalación de un sistema de inyección de agua desmineralizada para el control de emisiones de las turbinas. Actualmente, estamos en un proceso competitivo para seleccionar al contratista que completará dicha instalación, se espera que en las próximas dos semanas se concrete la selección. El sistema debe estar en servicio antes de 4 meses.

Durante el proceso de instalación y condicionamiento parcial de las turbinas se requiere la operación de las mismas. Como parte de su instalación y condicionamiento se realizarán pruebas para verificar el encendido de la turbina, condiciones del generador y sus protecciones eléctricas, ajustes de control y pruebas de sincronización eléctrica entre otros. El consumo de combustible No.2 (.05 % azufre por peso) para las pruebas será de aproximadamente 135,000 galones.

La puesta en marcha de las unidades se espera que sea entre mediados o cerca de finales de octubre de 2019. Las operaciones continuas de las unidades deben comenzar durante las primeras semanas de noviembre de 2019.

En la Tabla 1 y 2, a continuación, la Autoridad proporciona los factores de emisiones esperados para las turbinas de gas y el estimado de emisiones durante la operación de las unidades en el período cubierto por la dispensa. Información de respaldo se incluye en los Apéndices A, B, C y D que acompañan esta solicitud:

Tabla 1: Factores de Emisión para las Turbinas PW FT8 Mobilepac:

PALO SECO TURBINAS FT-8 MOBILEPAC [1]					
OPERACION EN DIESEL - DRY			OPERACION EN GAS NATURAL - DRY		
CONTAMINANTE	FACTOR DE EMISION	UNIDADES	CONTAMINANTE	FACTOR DE EMISION	UNIDADES
PM	0.0773	Lbs/MMBtu	PM	0.0233	Lbs/MMBtu
PM10	0.0773	Lbs/MMBtu	PM10	0.0233	Lbs/MMBtu
PM2.5	0.0773	Lbs/MMBtu	PM2.5	0.0233	Lbs/MMBtu
SOx	0.0554	Lbs/MMBtu	SOx (Mass Bal.)	0.0152	Lbs/MMBtu
NOx	2.2060	Lbs/MMBtu	NOx	0.8373	Lbs/MMBtu
VOC	0.0072	Lbs/MMBtu	VOC	0.0013	Lbs/MMBtu
CO	0.0352	Lbs/MMBtu	CO	0.0210	Lbs/MMBtu
HEAT INPUT	233	MMBtu/Hr	HEAT INPUT	252	MMBtu/Hr

[1] NOTES:

1) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
2) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
3) Natural Gas Sulfur Content 5.0 gr/100 dscf
4) Fuel Oil Sulfur Content .05 % per wt
5) SO2 emissions based upon fuel sulfur content limits
6) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
7) Heating Value Fuel Oil .138 MMBtu/Gal
8) Heating Value Natural Gas .00102 MMBtu/SCF
9) NOx PSD Limiting Pollutant

Tabla 2: Estimado de Emisiones - Turbinas PW FT8 Mobilepac, período de dispensa:

PALO SECO TURBINAS FT-8 MOBILEPAC (3 UNIDADES) - DRY - BAJO LIMITE SIGNIFICATIVO DE PSD[1]			
CONTAMINANTE	PW FT8 EMISIONES PERMISIBLES (tons) PSD	PW FT8 COMBUSTIBLE PERMISIBLE - GAS (SCF)	PW FT8 COMBUSTIBLE PERMISIBLE - DIESEL (GAL)
NOx	**39**	**91,329,802**	**256,217**
PM	24	2,016,806,723	4,502,415
PM10	14	1,176,470,588	2,626,409
PM2.5	9	756,302,521	1,688,406
SO2	39	5,044,656,606	10,201,057
VOC	39	56,678,200,692	78,390,269
CO	99	9,229,744,728	40,768,823

Aunque la necesidad inmediata de las tres turbinas de gas es servir como fuente de energía durante la temporada de huracanes, o absorber cualquier tipo de incidencia que se pueda registrar ante la falta de capacidad de generación por la que atravesamos, eventualmente la Autoridad interesa mantener estas unidades para sus operaciones regulares. Para ello considera comenzar con el proceso de los trámites correspondientes para licenciar las mismas y de esta forma proceder con el reemplazo de tres de las unidades existentes de 21 MW GE 5000 en la Central Palo Seco, toda vez que resultan más eficientes. La Autoridad espera que el gas natural esté disponible en la Central Palo Seco en un futuro cercano.

La Autoridad no puede precisar cuándo exactamente las tres unidades existentes puedan ser retiradas, pero se espera que esto ocurra después de la actual temporada de huracanes. La razón de esto es que la Autoridad tiene que mantener cierta redundancia en sus activos de generación durante la temporada de huracanes para promover la resiliencia y para garantizar la suficiente energía en el caso de otro desastre. Como señalamos anteriormente, esto es especialmente cierto para la generación de unidades ubicadas en la parte norte de la Isla, que se encuentran cerca de la demanda y no son tan vulnerables a las posibles restricciones de transmisión que pueden resultar de las condiciones del tiempo.

Conclusión

Dada la necesidad de mayor resiliencia frente a la actual temporada de huracanes, y tomando en consideración la necesidad de absorber la demanda de energía que se requiere la Autoridad solicita que basado en las disposiciones de la Regla 302 del RCCA se nos permita la instalación de las tres turbinas de gas en octubre de 2019 en la Central

Palo Seco. Esto le permite a la Autoridad tener estas unidades disponibles para su uso a principios de noviembre de 2019. De igual forma le permite determinar los pasos a seguir para que estas unidades puedan utilizarse a mayor capacidad para reemplazar unidades existentes.

De necesitar información adicional, puede comunicarse con la señora Luisette X. Ríos, Jefa de la División Protección Ambiental y Confiabilidad de Calidad, por el (787) 521-4960.

Cordialmente,

Efran Paredes Maisonet, Director
Planificación y Protección Ambiental

LXRC/MVM/JAS/yba

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE II - PROCESO DE LA PLANTA Y DESCRIPCIÓN DE EMISIONES

I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3$/min.

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: 3 Turbinas de Combustión PWPS FT-8 Mobilepac (DRY): 252 MMBtu/Hr per Unit Nat.Gas: 233 MMBtu/Hr per Unit Fuel Oil ó _____ (Tipo) _____ (BTU/hr) _____ (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Diesel	1,680	.05
Gas Natural	242,932 Scf/Hr	5.0 gr/100 dscf

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
N/A Diesel	
N/A Gas Natural	

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
33.89 pies	120.95" x 97.08" pulg.	793 °F	142.8 pies/seg.
33.89 pies	120.95" x 97.08" pulg.	790 °F	146.6 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día))
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar: Tipo _____ Gal/hr ó Lb/hr _____ % azufre _____
6. Equipo de control: _____ (Tipo) _____ % por peso, (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

Certifico que estoy registrado y autorizado para practicar mi profesión en Puerto Rico; que el equipo y medidas para el control de emisiones son adecuadas y cumplen con las disposiciones del Reglamento de Control de Contaminantes Atmosféricos de la Junta de Calidad Ambiental de Puerto Rico y que, de acuerdo a mis mejores conocimientos y creencias, la información suministrada es veraz, completa y exacta.

17776-PE (Número de Licencia) — Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) — _____ (Firma)

EFRAN PAREDES MAISONET INGENIERO LICENCIADO LIC. #17776 PUERTO RICO

Fecha: _____. Número de solicitud: _____

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

Área de Calidad de Aire

PUERTO RICO VERDE

HOJA DE PAGO

Número de Solicitud: _____
Nombre del Oficial Responsable: Ing. Daniel Hernández
Título: Director de Generación
Nombre del Proyecto o Fuente de Emisión: Turbinas Palo Seco FT8 Mobilepac
Dirección Postal: _____

I. Pago por Solicitud de Permiso:
1. Pago por Radicación ($100.00): (X) Construcción ( ) Operación
( ) Escuela de Adiestramiento de Asbesto $100.00
2. (X) Pago por Permiso 3. ( ) Pago por Renovación 4. ( ) Pago por Modificación

($25.00 por toneladas por Contaminante - Dispensa)

CONTAMINANTE	EMISIONES (Ton/año)	CARGO TOTAL
Material Particulado (PM, PM_{10}, $PM_{2.5}$)	50	$1,250
Dióxido de Azufre (SO_x)	40	$1,000
Oxido de Nitrógeno (NO_x)	40	$1,000
Compuestos Orgánicos Volátiles (VOC) e Hidrocarburos (HC)	40	$1,000
Plomo (Pb)		
Otros (Favor de identificar) CO	100	$2,500
TOTAL		$6,850

CERTIFICACIONES DE ASBESTO

1. Escuela de Adiestramiento de Asbesto	$600.00		N/A
2. Registro de Asbesto ($40.00 por categoría) ( ) Especialista en Muestreo de Aire ( ) Diseñador de proyecto ( ) Planificador de proyecto ( ) Inspector ( ) Supervisor ( ) Trabajador			

OTROS CARGOS

1. Cambio de dueño o localización	(50% del cargo por radicación)	N/A
2. Pago por Revisión	(50% del cargo por radicación)	N/A
3. Duplicados de Permisos	$10.00	N/A
4. Pago por Exceso de Emisiones:		
A. Dispensas	($25.00/ton/contaminante)	$6,750
B. Pequeños Negocios	($12.50/ton/cantaminante)	N/A

PAGO TOTAL DE LA SOLICITUD:

II. Pago anual (pago por un año)	N/A
III. Pago por cuatro (4) años extras (pago por 4 años)	N/A
IV. TOTAL (cheque # 470934)	$6,850

PARA COMPLETARSE EN LA OFICINA DEL ÁREA DE CALIDAD DE AIRE

Cantidad a pagar: _____ Fecha: _____ Recibido por: _____

Número de cheque: _____ Número de recibo: _____

_____ _____
Firma del Representante autorizado JCA Firma División de Finanzas

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

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Puerto Rico Electric Power Authority
CITIBANK, N.A. –CSMG
GENERAL FUND

CHECK NO. **470934**
DATE 25–SEP–19

PAY Six Thousand Eight Hundred Fifty And NO/100 Dollars **********$6,850.00

TO THE ORDER OF

SECRETARIO DE HACIENDA
JUNTA DE CALIDAD AMBIENTAL
PO BOX 11488
SAN JUAN, PR 00910-1488

José A. Ruiz Torres
Dalia Sánchez Serrano

NOT VALID AFTER THREE MONTHS FROM DATE OF ISSUE

⑈00470934⑈ ⑆021502040⑆ 040001501 5⑈

Puerto Rico Electric Power Authority

CITIBANK CSMG – GENERAL FUND

Vendor Number	Date	Check No.
00498715	25–SEP–19	470934

Date	Invoice	Description	Gross	Withheld Amount	Discount	Net
24–JUN–19	19–06–SR–118	DISPENSA PALO SECO MEGA GENERADORES	6,850.00	0.00	0.00	6,850.00
THE ATTACHED CHECK IS IN PAYMENT FOR ITEMS DESCRIBED ABOVE		**TOTAL**	6,850.00	0.00	0.00	6,850.00

RENOVACIÓN APROBADA: 16 de noviembre, 2015

RENEWAL APPROVED ON: November 16, 2015

NÚM. EMP. 11964

Estado Libre Asociado de Puerto Rico
Commonwealth of Puerto Rico

DEPARTAMENTO DE ESTADO
Department of State

Secretaría Auxiliar de Juntas Examinadoras
Office of the Assistant Secretary of State for Examining Boards

La Junta Examinadora de Ingenieros y Agrimensores
The Examining Board of Engineers and Land Surveyors

por la presente certifica que
hereby certifies that

Efran Paredes Maisonet

habiendo cumplido todos los requisitos de Ley, se ha inscrito en el Registro de esta Junta como
having met all the requirements of law, has been registered as:

Ingeniero Licenciado
Licensed Engineer

16 DIC 15 AM 9:08

En testimonio de lo cual, se expide esta licencia para el ejercicio de dicha profesión, bajo el sello de la Junta Examinadora.
In testimony whereof, this license is issued to practice this profession, under the seal of the Board of Examiners.

En San Juan, Puerto Rico, efectivo 15 de diciembre de 2015
In San Juan, Puerto Rico, effective December 15, 2015.

Número de Licencia: 17776
License Number

Vencimiento: 15 de diciembre de 2020
Expires: December 15, 2020

JUNTA EXAMINADORA DE INGENIEROS Y AGRIMENSORES
ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE ESTADO

Presidente

Secretario Auxiliar Lcdo. Francisco Rodríguez Bernier
Under Secretary

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Sonia Miranda Vega, Directora
Planificación y Protección Ambiental
Núm. Emp. 9218, Tel. 4884

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#empleado 11964

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Mónica A. del Playa 14/nov/2018

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PAREDES MAISONET
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APENDICE B

ESPECIFICACIONES DEL MANUFACTURERO (PWPS/ARG)



PERFORMANCE CURVES & EMISSION RATES

Following find FT8 Guaranteed Performance for this proposal. Performance tables and curves are shown for dry and water injection burning with diesel or natural gas

Guaranteed net unit output (diesel) @ specified conditions without water or steam injection	MW 22.563
Guaranteed net unit output (NG) @ specified conditions without water or steam injection	MW 23.842
Unit minimum load for continuous operation	MW 1
Time from shutdown to guaranteed net unit output	**Minutes 10**
Unit Heat Rate (NG – LHV) Assume 21,414 BTU/Lb energy content @ guar net unit output	BTU/KW-hr 9574
Unit Heat Rate (diesel – LHV) Assume 18,646 BTU/Lb energy content @ guar net unit output	BTU/KW-hr 9759

(1) If energy price varies with output, provide data related to this variation. Provide output vs. Energy Price curves if applicable.

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FT8® GAS TURBINE MOBILEPAC®
Notes Applicable to Performance and Emissions Data
PREPA - ARG

Prf_CustCpy_PREPA-ARG_FT8-MP_60Hz_138_AS_R0_091418.xlsm

WARNING -- This document contains technical data the export of which is or may be restricted by the Export Administration Act and the Export Administration Regulations (EAR), 15 C.F.R. parts 730-774. Diversion contrary to U.S. law is prohibited. The export, reexport, transfer or re-transfer of this technical data to any other company, entity, person, or destination, or for any use or purpose other than that for which the technical data was originally provided by PW Power Systems (PWPS), is prohibited without prior written approval from PWPS and authorization under applicable export control laws.
EAR Export Classification: ECCN EAR99

Notes:

1. All Performance/Emissions Data submitted are subject to the sum of the following notes, and the most recent version of PWPS "Factory and Field Tests" at the time of the proposal offering. Guaranteed values are indicated by the following designations, (G) or bold/boxed, all other data are estimates.
2. The MOBILEPAC® (MP) consists of one turbine (1-GT) driving one generator. Rates are shown as per GT, and per MOBILEPAC® (MP), which are equivalent for this configuration.
3. Gaseous fuel supplied to gas turbines must meet PWPS fuel specification FR-2, liquid fuel supplied to gas turbines must meet PWPS fuel specification FR-1.
4. Data shown is based on standard combustor without water injection.
5. All data supplied based on 0m/0ft Alt. and 70% relative humidity.
6. Inlet loss estimated at 63.5mm/2.5in W.C. with 2-stage inlet filter. No correction of test results for inlet loss.
7. Exhaust loss for all cases estimated at 25.4mm/1in W.C. for standard exhaust stack. There will be no correction of test results for exhaust loss in simple-cycle.
8. Stack exhaust velocity is based on exhaust gas vol flow rate and exhaust exit area (4.63sq m/49.8sq ft).
9. Secondary (enclosure) cooling air is mixed with primary exhaust flow, before stack exit.
10. Data designated as "primary exhaust" is referenced to the GT exhaust and does not include secondary (enclosure) cooling air.
11. All data submitted is based upon a generator operating at 60Hz, 0.9 power factor @ 13.8kV.
12. Net Power = Power measured at the generator terminals, minus auxiliary load for power island and 200 kW BOP.
13. GSU losses and gas compression loads are not included in Net Power output or Net Heat Rate determinations.
14. Performance Acceptance Test for GT Net Power Output and GT Net Heat Rates to be conducted per PWPS test procedures, instrumentation, and calculations; all being in general accordance with ASME PTC-22 (2005) and PTC-19.1.
15. Performance acceptance testing for GT Net Power Output and GT Net Heat Rate shall be furnished by PWPS through third party contractor.
16. Test boundary shall be Ambient Temperature as defined by the average dry bulb temperature at the inlet filter face.
17. Site performance to be corrected for changes in ambient temperature, pressure, relative/specific humidity and power factor.
18. Thermal performance tests must be conducted in "New & Clean" condition, with less than 100 fired-hours. If Units are dispatched for Commercial Operation, or operated by Purchaser for more than 100 fired-hours, then thermal performance will have been deemed to have been met, and any thermal performance testing would be conducted and reported as "Information Only".
19. Approximately 30 days prior to performance testing of the units, Purchaser will be provided with correction curves for the GT power and heat rate, as well as draft performance acceptance test procedures. Curves and procedures will not be issued with RFQ responses.
20. Emission data is representative of steady-state operation, and may not be indicative of emissions during transient operation. Demonstration of emission concentrations for NOx, CO and VOC's are based on 1-hour averages, after operation under steady-state conditions for 1-hour. "Steady state" shall be defined as less than +/-1.3% variation from the average for power output, which is in alignment for the PTC-22 (2005) gas turbine code for steady state conditions. Compliance with shall be based on the average of stack traverse's.
21. Applications that utilize CEM systems, must use a multi-point, multiple probe system to read emissions concentrations in the backpass. This averaging system is required to prevent emission compliance issues related to diluent stratification associated with the addition of secondary (enclosure) cooling air, and the use of noise attenuation baffles in the stack.
22. Performance and emissions are based upon assumed fuel compositions shown on Sheet - 2, and significant changes from these assumed characteristics can change the quoted performance and emissions.
23. SO2 data is estimated from Sulfur contents stated on Sheet - 2, which PWPS does not control and therefore can't guarantee.
24. All emission measurements to be by US EPA methods. All emissions measurements for engine tuning, demonstration of emissions levels and/or Air Permit compliance (and related procedures), to be furnished by Purchaser, and shall conform to PWPS Quality Assurance procedure: "McHale PWPS EmissionsTuningQAProcedure 0001ETQAR3.pdf"
25. Volatile Organic Compounds (VOC) are defined as non methane, non ethane, with > 85% of the composition being ethene. Values shown are based upon PWPS experience and measurement using EPA Method 25A (total UHC) on liquid fuel, and/or Method 18 (w/Tedlar bag samples) if UHC exceeds VOC levels on gaseous fuel.
26. Testing for PM10 shall conform to PWPS Quality Assurance documentation in addition to EPA Reference Method 5 (filterable) and R/M 202 (condensable/back half) fractions. Volumetric flow rate for determination of PM10 to be per EPA Method 19, which utilized fuel flow, O2%, and F-factors.
27. Particulate samples shall be drawn isokinetically, with a minimum of 3-hour sample duration and are to consist of 3-tests. sample results are outside of specification, any suspect PM10 test shall be rejected and retested at the expense of the customer.
28. In the event that the customer does not provide emissions measurements for tuning of water injection systems which meet the requirements of the PWPS Emissions Quality Assurance document, then PWPS reserves the right to tune water/fuel ratios in accordance with our default levels.
29. In the event that the customer does not conduct emissions testing for the verification of compliance with PWPS emissions levels, or if such testing is not in accordance with PWPS Emissions Quality Assurance document, the achievement of substantial completion of the project by PWPS shall not be delayed.
30. If future emissions tuning or testing are required after the initial commissioning period when staffed by PWPS personnel and/or contractors, the additional mobilizations/demobilizations and provision of technical teams for the tuning and/or testing shall be at the customers expense.
31. Tested NOx concentrations shall be corrected lower for liquid fuel bound nitrogen (FBN) in excess of 0.015% by weight.

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FT8® GAS TURBINE MOBILEPAC®

EAR Export Classification: ECCN EAR99

Assumed Fuel Properties

PREPA - ARG

The following fuel properties are assumed as representative of site fuels, based on specified data.

Specified Natural Gas			Units	
	Volume - Mol %	Hydrogen to Carbon Ratio	$H_{(mw)} / C_{(mw)}$	0.330
Methane	96.33	Hydrocarbon Molecular Weight		16.535
Ethane	3.08	Gas Molar Weight		16.635
Propane	0.16	Higher Heating Value	Btu/lb	23,748
N-Butane	0.01		kJ/kg	55,238
Isobutane	0.01		Btu/SCF	1,036
N-Pentane	0.00		kJ/Nm3	38,593
Isopentane	0.00	Lower Heating Value	Btu/lb	21,414
N-Hexane	0.00		kJ/kg	49,809
Nitrogen	0.26		Btu/SCF	934.0
CO2	0.14		kJ/Nm3	34,800
Total	100.0	Ratio HHV/LHV		1.109
		Specific Gravity		0.5743
		Assumed Max Sulfur in gas fuel	grains/100 scf	5.0
		Assumed Max Sulfur in gas fuel	mg/Nm3	121

Standard No. 2 Fuel Oil				
	Weight %		Units	
Carbon	87.12	Hydrogen to Carbon Ratio		0.1470
Hydrogen	12.80	Higher Heating Value	Btu/lb	19,858
Nitrogen	0.015		kJ/kg	46,189
Oxygen	0.010	Lower Heating Value	Btu/lb	18,646
Sulfur Max	0.050		kJ/kg	43,371
Total	100.0	Ratio HHV/LHV		1.065
		Specific Gravity		0.816

Prf CustCpy PREPA-ARG FT8-MP 60Hz 138 AS R0 091418.xlsm

Sheet - 2

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EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC®
Performance and Emissions
PREPA - ARG

Configuration: Dual Fuel Std. Combustor Dry, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																		
Fuel Type		Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	
Burner Water Injection In-Service	Yes / No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
Inlet Loss	Inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Exhaust Loss	Inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Fuel LHV	Btu/lb	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	21,414	
Ratio of HHV to LHV		1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	1.109	
Gross Power Output per MP, ref Gen Term	MWe	29.742	30.365	30.610	30.950	30.934	30.929	30.102	28.885	28.255	27.260	25.988	24.723	24.111	23.529	22.446	21.433	
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,606	8,686	8,720	8,780	8,806	8,850	8,876	8,951	9,002	9,083	9,211	9,340	9,411	9,482	9,635	9,796	
Power Isle and BOP Aux Load, per MP	kW	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	
Net Power Output, per MP	MWe	29.473	30.096	30.341	30.681	30.665	30.660	29.833	28.616	27.986	26.991	25.719	24.454	23.842	23.260	22.177	21.164	
Net Heat Rate, LHV	Btu/kWhr	8,686	8,764	8,797	8,857	8,883	8,927	8,956	9,036	9,088	9,174	9,307	9,442	9,574	9,592	9,752	9,920	
Fuel Flow, per GT	lbs/hr	11,955	12,317	12,465	12,690	12,720	12,762	12,477	12,074	11,877	11,563	11,178	10,783	10,596	10,419	10,100	9,804	
Gaseous Fuel Flow, per GT	SCF/hr	274,097	282,398	285,789	290,952	291,642	293,054	286,061	276,832	272,314	265,116	256,274	247,221	242,932	238,883	231,558	224,785	
Calc Heat Input, HHV, per GT	MMBtu/hr	284	293	296	301	302	304	296	287	282	275	265	256	252	247	240	233	
Burner Water Injection Flow, per GT	gal/min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																		
NOx	ppmvd	156	174	181	194	199	207	207	208	210	211	213	214	214	214	216	217	
NOx, as NO2, per GT	lbs/hr	174	200	211	230	237	247	241	235	233	228	222	215	211	208	203	198	
CO	ppmvd	14.7	12.3	11.5	10.1	9.6	9.1	9.1	9.1	9.0	9.0	8.9	8.9	8.8	8.8	8.8	8.7	
CO, per GT	lbs/hr	10.0	8.6	8.1	7.3	7.0	6.7	6.5	6.2	6.1	5.9	5.6	5.4	5.3	5.2	5.0	4.8	
VOC as C1	ppmvd	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
VOC as C1, per GT	lbs/hr	0.47	0.46	0.45	0.45	0.46	0.45	0.44	0.41	0.40	0.38	0.36	0.35	0.34	0.34	0.33	0.32	
SO2	ppmvd	2.77	2.77	2.77	2.76	2.76	2.76	2.76	2.77	2.77	2.77	2.77	2.77	2.78	2.78	2.78	2.78	
SO2, per GT	lbs/hr	4.31	4.44	4.49	4.57	4.58	4.60	4.49	4.35	4.28	4.17	4.03	3.88	3.82	3.75	3.64	3.53	
TSP/PM10, Filterable and Cond, per MP	lbs/hr	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	
Exhaust Gas Mass Flow, per GT **	lbs/sec	290.4	281.7	278.5	273.4	271.0	267.1	261.9	254.9	250.9	245.2	237.6	230.5	227.1	223.6	217.0	210.3	
Exhaust Gas Temperature **	Deg F	577	634	656	693	706	729	735	747	755	764	776	785	790	795	806	816	
Exhaust Gas Molecular Weight, Wet		28.71	28.69	28.68	28.67	28.66	28.65	28.63	28.61	28.58	28.55	28.49	28.42	28.38	28.33	28.20	28.04	
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,654	7,838	7,911	8,025	8,048	8,090	7,981	7,852	7,784	7,672	7,530	7,371	7,299	7,229	7,106	6,985	
Stack Exhaust Exit Velocity **	fl/sec	153.7	157.4	158.9	161.2	161.6	162.5	160.3	157.7	156.3	154.1	151.2	148.0	146.6	145.2	142.7	140.3	
H2O **	% Vol wet	4.02	4.29	4.40	4.62	4.71	4.88	5.00	5.23	5.41	5.71	6.22	6.85	7.24	7.70	8.83	10.32	
O2 **	% Vol wet	16.49	16.22	16.10	15.91	15.85	15.73	15.73	15.71	15.68	15.64	15.56	15.46	15.40	15.32	15.11	14.82	
CO2 **	% Vol wet	2.07	2.19	2.24	2.33	2.35	2.39	2.38	2.37	2.36	2.35	2.34	2.32	2.31	2.31	2.29	2.28	
A **	% Vol wet	0.91	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90	0.89	0.89	0.88	0.88	0.87	0.85	
N2 **	% Vol wet	76.50	76.38	76.33	76.22	76.17	76.07	75.97	75.77	75.62	75.38	74.97	74.46	74.15	73.78	72.88	71.71	

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

Guaranteed values are indicated by (G), or value

All other data are estimates.

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EAR Export Classification: ECCN EAR99

FT8® GAS TURBINE MOBILEPAC®

Performance and Emissions

PREPA - ARG

Configuration: Dual Fuel Std. Combustor Dry, 0 m Alt., 70% RH, 60Hz PT, 60 Hz, 13.8 kV, 0.9 pf, Simple-Cycle

Performance Data																								
Fuel Type		Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Percent of Unit Rating	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of GT's in Operation	No.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ambient Relative Humidity	%	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Ambient Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0
Ambient Pressure	Psia	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696	14.696
Plenum Inlet Temperature	Deg F	-40.0	-18.4	-10.0	4.0	10.0	20.0	30.0	43.0	50.0	59.0	70.0	80.0	85.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0
Burner Water Injection In-Service	Yes / No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Inlet Loss	inch H2O	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Exhaust Loss	inch H2O	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fuel LHV	Btu/lb	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646	18,646
Ratio of HHV to LHV		1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065	1.065
Gross Power Output per MP, ref Gen Term	MWe	27.255	27.841	27.835	27.845	27.836	27.832	27.834	27.808	27.094	25.961	24.758	23.468	22.857	22.271	21.349	20.286	19.223	18.160	17.097	16.034	14.971	13.908	12.845
Gross Heat Rate, LHV, ref Gen Term	Btu/kWhr	8,691	8,759	8,795	8,855	8,883	8,930	8,979	9,045	9,110	9,218	9,349	9,497	9,576	9,657	9,815	9,982	10,159	10,350	10,557	10,784	11,035	11,315	11,630
Power Isle and BOP Aux Load, per MP	kW	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294
Net Power Ouput, per MP	MWe	26.961	27.547	27.541	27.551	27.542	27.538	27.540	27.514	26.800	25.667	24.464	23.174	22.563	21.977	20.955	19.992	18.929	17.866	16.803	15.740	14.677	13.614	12.551
Net Heat Rate, LHV	Btu/kWhr	8,786	8,853	8,889	8,950	8,977	9,025	9,074	9,142	9,210	9,323	9,461	9,618	9,759	9,786	9,963	10,129	10,327	10,548	10,797	11,080	11,407	11,788	12,236
Fuel Flow, per GT	lbs/hr	12,704	13,079	13,129	13,224	13,260	13,329	13,403	13,490	13,237	12,834	12,413	11,953	11,739	11,534	11,185	10,860	10,545	10,240	9,945	9,659	9,382	9,113	8,852
Liquid Fuel Flow, per GT	gal/min	30	31	31	31	31	31	32	32	31	30	29	28	28	27	26	26	25	24	24	23	22	22	21
Calc Heat Input, HHV, per GT	MMBtu/hr	252	260	261	263	263	265	266	268	263	255	245	237	233	229	222	216	210	204	198	192	187	181	176
Burner Water Injection Flow, per GT	gal/min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Emissions & Exhaust Conditions at Stack Exit, After Addition of Secondary (Enclosure) Cooling Air *																								
NOx	ppmvd	265	322	342	378	396	428	460	504	510	517	526	529	531	534	541	546	552	557	562	567	572	577	582
NOx, as NO2, per GT	lbs/hr	278	347	371	413	434	472	510	562	559	548	539	521	514	508	498	488	479	470	461	452	443	434	426
CO	ppmvd	40.1	30.2	27.3	23.6	22.0	19.4	17.4	15.1	14.8	14.6	14.2	14.1	14.0	13.9	13.6	13.4	13.2	13.0	12.8	12.6	12.4	12.2	12.0
CO, per GT	lbs/hr	25.5	19.9	18.0	15.7	14.7	13.0	11.7	10.2	9.8	9.4	8.8	8.4	8.2	8.0	7.6	7.3	7.0	6.8	6.5	6.3	6.1	5.9	5.7
VOC as C1	ppmvd	8.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
VOC as C1, per GT	lbs/hr	3.26	1.88	1.90	1.91	1.92	1.93	1.94	1.90	1.84	1.78	1.71	1.68	1.65	1.60	1.55	1.50	1.46	1.41	1.37	1.33	1.29	1.25	1.21
SO2	ppmvd	9.57	9.55	9.54	9.54	9.54	9.54	9.54	9.55	9.57	9.57	9.58	9.59	9.59	9.56	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
SO2, per GT	lbs/hr	13.97	14.39	14.44	14.55	14.59	14.66	14.74	14.84	14.56	14.12	13.65	13.15	12.91	12.69	12.30	11.95	11.61	11.27	10.94	10.63	10.32	10.03	9.74
TSP/PM10, Filterable and Cond, per MP	lbs/hr	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Exhaust Gas Mass Flow, per GT **	lbs/sec	286.5	277.9	274.1	268.2	265.7	261.6	257.8	252.8	248.3	241.6	234.2	226.8	223.2	219.6	213.1	206.7	200.4	194.2	188.1	182.1	176.2	170.4	164.7
Exhaust Gas Temperature **	Deg F	553	608	627	659	673	696	719	748	757	766	779	798	793	798	809	820	831	842	853	864	875	886	897
Exhaust Gas Molecular Weight, Wet		28.99	28.99	28.99	28.99	28.98	28.98	28.96	28.93	28.91	28.88	28.82	28.75	28.70	28.65	28.52	28.35	28.17	27.98	27.78	27.57	27.35	27.12	26.88
Exhaust Gas Vol Flow Rate, per GT **	ACFS	7,305	7,472	7,502	7,557	7,578	7,617	7,657	7,706	7,624	7,487	7,346	7,186	7,112	7,040	6,920	6,809	6,699	6,589	6,480	6,371	6,263	6,155	6,048
Stack Exhaust Exit Velocity**	ft/sec	146.7	150.0	150.7	151.8	152.2	153.0	153.8	154.8	153.1	150.4	147.5	144.3	142.8	141.4	139.0	136.7	134.4	132.2	130.0	127.8	125.6	123.4	121.3
H2O **	% Vol wet	2.28	2.44	2.51	2.64	2.70	2.85	3.04	3.37	3.55	3.86	4.39	5.04	5.44	5.91	7.07	8.57	10.39	12.62	15.36	18.77	23.04	28.37	35.04
O2 **	% Vol wet	17.00	16.75	16.67	16.53	16.47	16.36	16.24	16.07	16.04	16.01	15.91	15.81	15.75	15.67	15.44	15.15	14.82	14.43	13.96	13.40	12.71	11.87	10.85
CO2 **	% Vol wet	2.62	2.78	2.83	2.91	2.95	3.00	3.06	3.14	3.13	3.11	3.10	3.08	3.06	3.05	3.04	3.03	3.01	2.99	2.96	2.93	2.89	2.84	2.78
A **	% Vol wet	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.91	0.90	0.89	0.89	0.89	0.87	0.86	0.84	0.82	0.80	0.77	0.74	0.71	0.67
N2 **	% Vol wet	77.17	77.09	77.06	76.98	76.94	76.85	76.71	76.48	76.33	76.08	75.66	75.14	74.82	74.45	73.54	72.35	70.94	69.34	67.28	64.93	62.02	58.73	54.87

* All concentrations corrected to 15% O2

** Secondary (Enclosure) Cooling Air Mixed with Primary Exhaust

All data subject to sum of Notes on Sheet - 1

Guaranteed values are indicated by (G), or value

All other data are estimates.

Sheet - 5

Prf_CustCpy_PREPA-ARG_FT8-MP_60Hz_138_AS_R0_091418.xlsm

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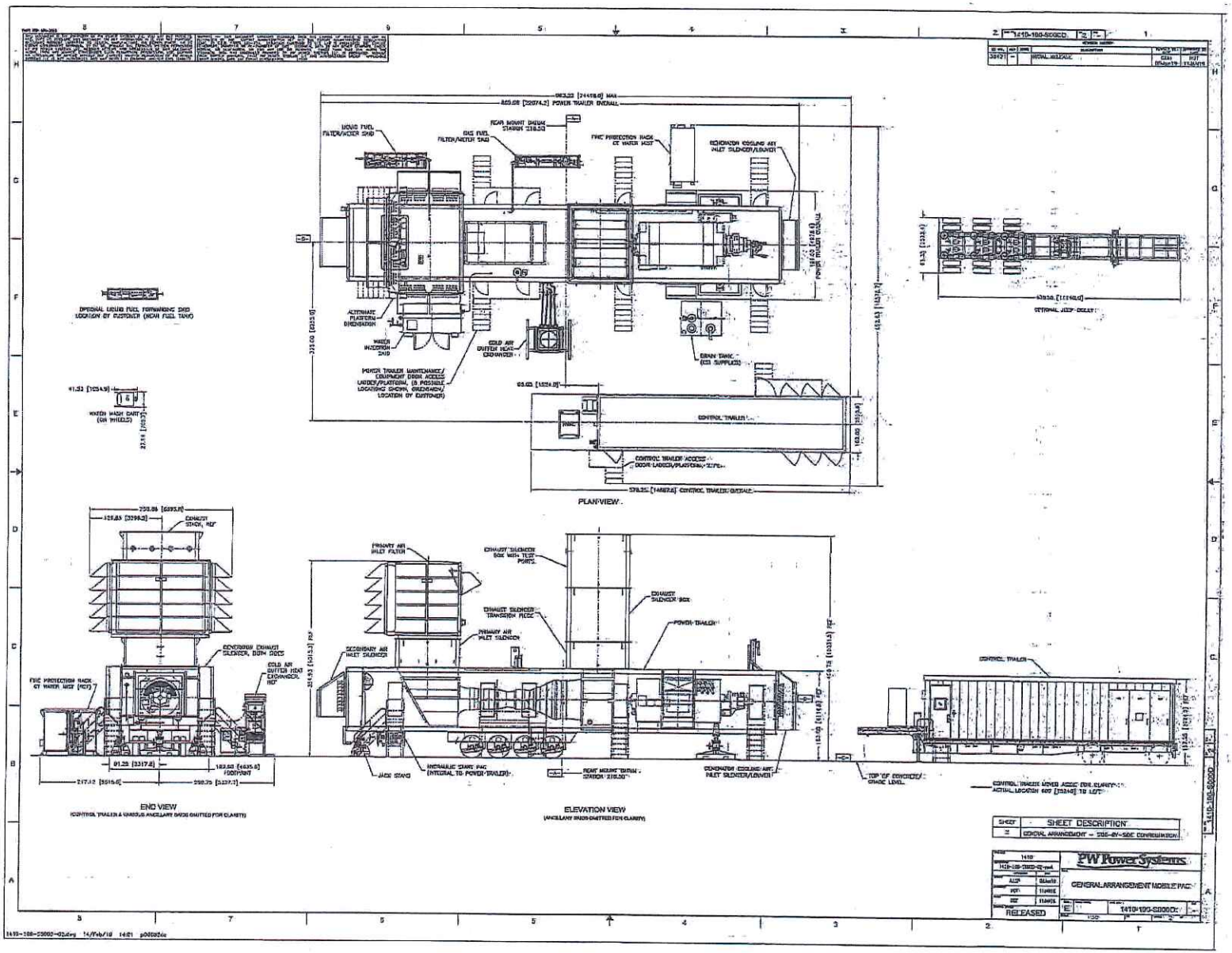

PLAN VIEW
END VIEW
ELEVATION VIEW
PW PowerSystems
GENERAL ARRANGEMENT MOBILE PAC
RELEASED

APENDICE C

FACTORES DE EMISION, ESTIMADO DE EMISIONES

Tabla 1: Factores de Emisión para las Turbinas PW FT8 Mobilepac:

PALO SECO TURBINAS FT-8 MOBILEPAC [1]					
OPERACION EN DIESEL - DRY			OPERACION EN GAS NATURAL - DRY		
CONTAMINANTE	FACTOR DE EMISION	UNIDADES	CONTAMINANTE	FACTOR DE EMISION	UNIDADES
PM	0.0773	Lbs/MMBtu	PM	0.0233	Lbs/MMBtu
PM10	0.0773	Lbs/MMBtu	PM10	0.0233	Lbs/MMBtu
PM2.5	0.0773	Lbs/MMBtu	PM2.5	0.0233	Lbs/MMBtu
SOx	0.0554	Lbs/MMBtu	SOx (Mass Bal.)	0.0152	Lbs/MMBtu
NOx	2.206	Lbs/MMBtu	NOx	0.8373	Lbs/MMBtu
VOC	0.0072	Lbs/MMBtu	VOC	0.0013	Lbs/MMBtu
CO	0.0352	Lbs/MMBtu	CO	0.021	Lbs/MMBtu
HEAT INPUT	233	MMBtu/Hr	HEAT INPUT	252	MMBtu/Hr

Tabla 2: Estimado de Emisiones - Turbinas PW FT8 Mobilepac, período de dispensa:

PALO SECO TURBINAS FT-8 MOBILEPAC (3 UNIDADES) - DRY - BAJO LIMITE SIGNIFICATIVO DE PSD[1]			
CONTAMINANTE	PW FT8 EMISIONES PERMISIBLES (tons) PSD	PW FT8 COMBUSTIBLE PERMISIBLE - GAS (SCF)	PW FT8 COMBUSTIBLE PERMISIBLE - DIESEL (GAL)
NOx	39	91,329,802	256,217
PM	24	2,016,806,723	4,502,415
PM10	14	1,176,470,588	2,626,409
PM2.5	9	756,302,521	1,688,406
SO2	39	5,044,656,606	10,201,057
VOC	39	56,678,200,692	78,390,269
CO	99	9,229,744,728	40,768,823

[1] NOTES:

1) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
2) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
3) Natural Gas Sulfur Content 5.0 gr/100 dscf
4) Fuel Oil Sulfur Content .05 % per wt
5) SO2 emissions based upon fuel sulfur content limits
6) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
7) Heating Value Fuel Oil .138 MMBtu/Gal
8) Heating Value Natural Gas .00102 MMBtu/SCF
9) NOx PSD Limiting Pollutant

EFRAN PAREDES MAISONET
INGENIERO LICENCIADO
LIC. #17776
PUERTO RICO

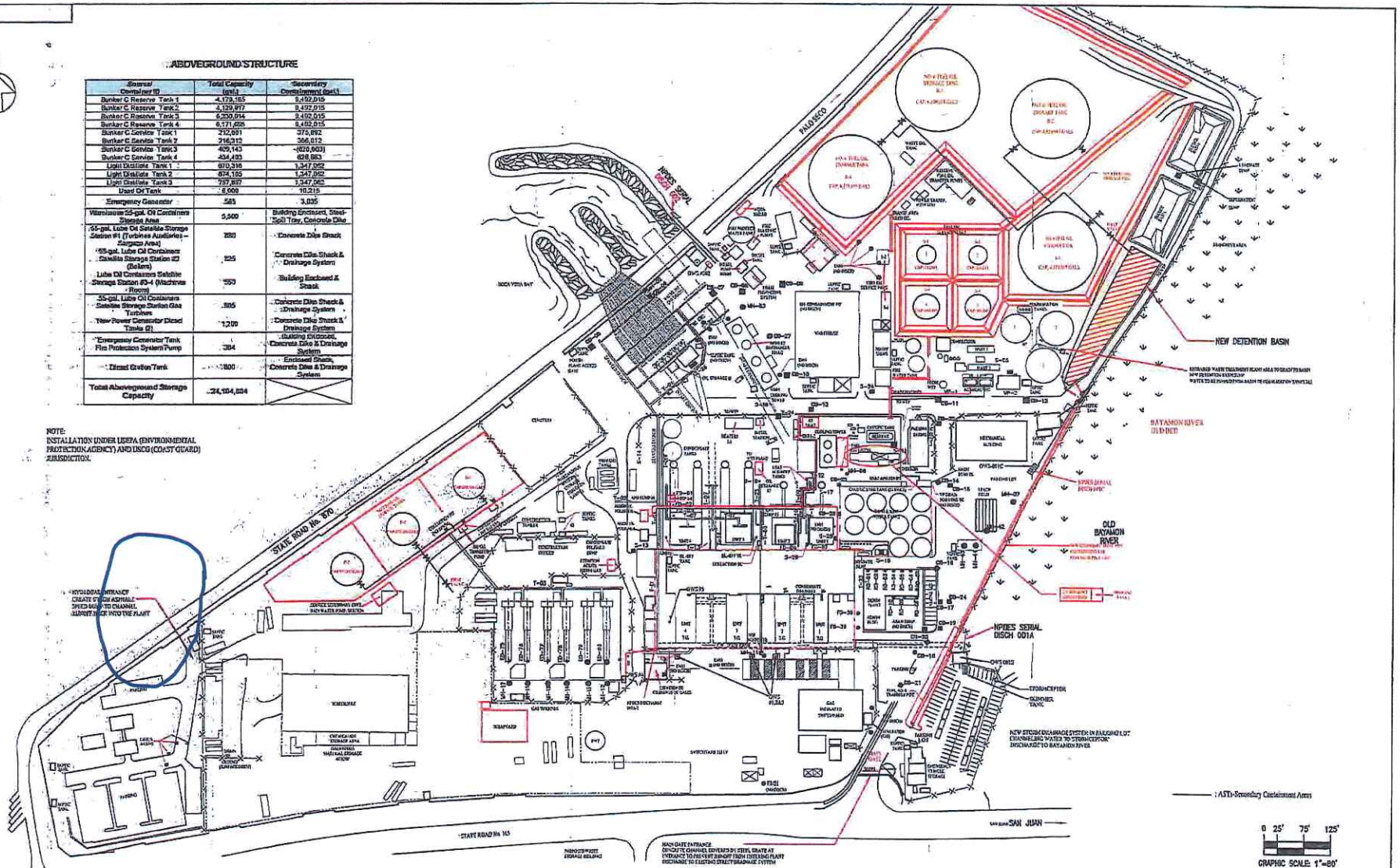
APENDICE D

PLANO DE SITIO – CENTRAL PALO SECO

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,165	9,402,015
Bunker C Reserve Tank 2	4,129,917	9,402,015
Bunker C Reserve Tank 3	6,230,014	9,402,015
Bunker C Reserve Tank 4	6,171,625	9,402,015
Bunker C Service Tank 1	212,601	375,892
Bunker C Service Tank 2	216,312	366,012
Bunker C Service Tank 3	409,143	(626,003)
Bunker C Service Tank 4	434,403	626,883
Light Distillate Tank 1	670,316	1,347,062
Light Distillate Tank 2	674,105	1,347,062
Light Distillate Tank 3	757,897	1,347,062
Used Oil Tank	6,000	10,215
Emergency Generator	585	3,035
Warehouse 55-gal. Oil Containers Storage Area	5,500	Building Enclosed, Steel-Spill Tray, Concrete Dike
55-gal. Lube Oil Satellite Storage Station #1 (Turbines Auxiliaries – Sargaco Area)	880	Concrete Dike Shack
55-gal. Lube Oil Containers Satellite Storage Station #2 (Boilers)	825	Concrete Dike Shack & Drainage System
Lube Oil Containers Satellite Storage Station #3-4 (Machines Room)	550	Building Enclosed & Shack
55-gal. Lube Oil Containers Satellite Storage Station Gas Turbines	805	Concrete Dike Shack & Drainage System
New Power Generator Diesel Tanks (2)	1,200	Concrete Dike Shack & Drainage System
Emergency Generator Tank Fire Protection System Pump	384	Building Enclosed, Concrete Dike & Drainage System
Diesel Station Tank	800	Enclosed Shack, Concrete Dike & Drainage System
Total Aboveground Storage Capacity	24,104,834	

NOTE:
INSTALLATION UNDER USEPA (ENVIRONMENTAL PROTECTION AGENCY) AND USCG (COAST GUARD) JURISDICTION.



REVISIONS				REVISIONS				REFERENCE DRAWINGS	
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE
0	[illegible]	[illegible]							

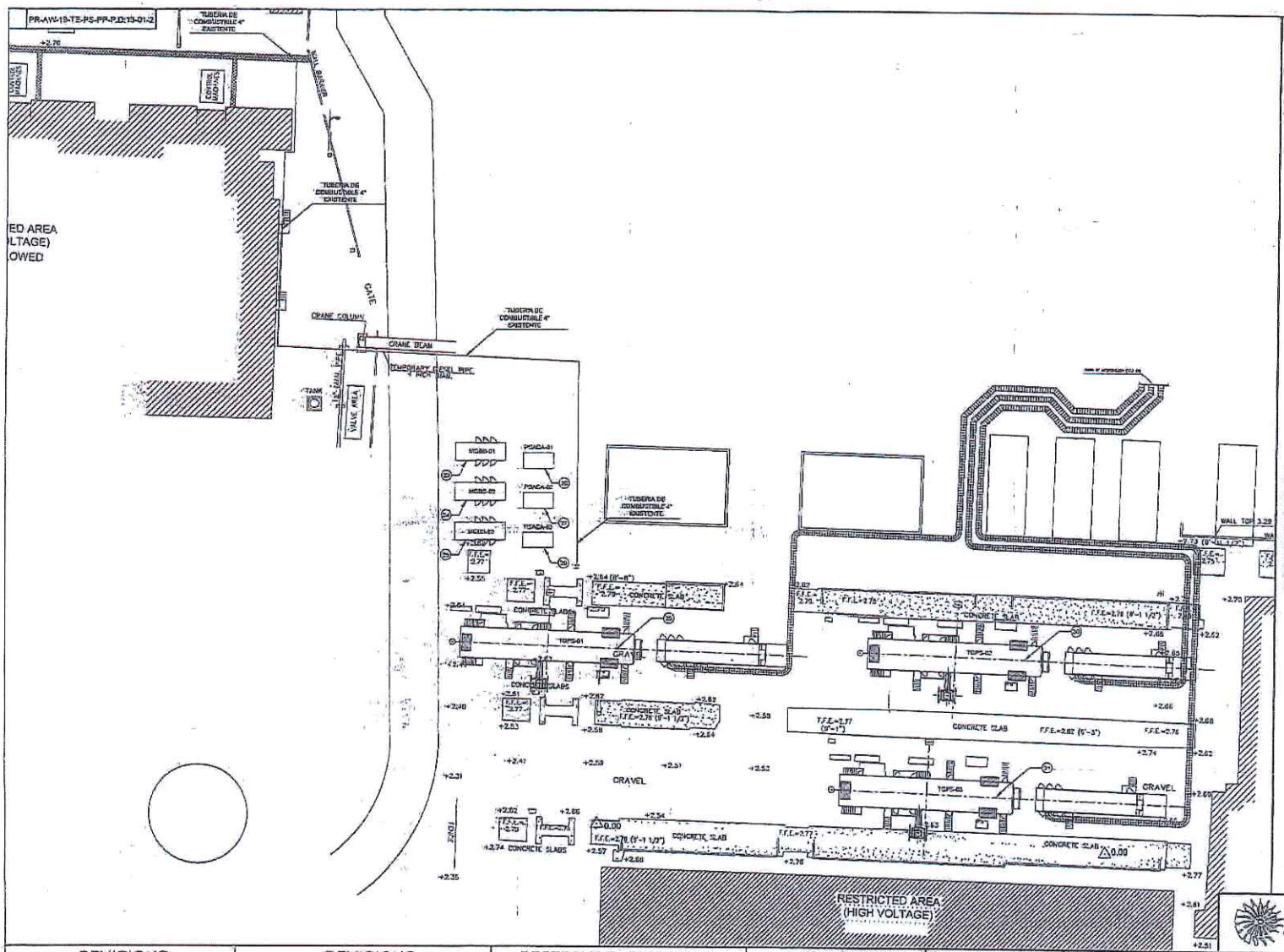
COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

DESIGNED
SUBMITTED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

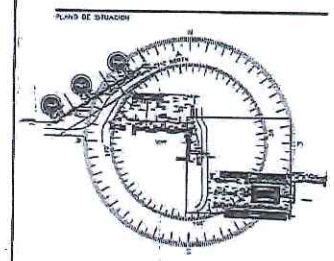
PUERTO RICO ELECTRIC POWER AUTHORITY
WATER QUALITY DEPARTMENT

PALO SECO STEAM PLANT
SITE PLAN – SPCCP

SCALE: SAN JUAN PUERTO RICO November 2014



PLANO DE SITUACION



LEYENO:

EQPO	EQUIPOS A INSTALAR
———	TUBERIA DE COMBUSTIBLE 4" EXISTENTE
(8'-02")	CIRCUITO LEVEL CONVERSION ENGLISH UNITS
+2.49	CIRCUITO LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION

LISTA DE EQUIPOS

PTO	TAG	DESCRIPCION	NORTE	ESTE
23	MCBS-01	MOTOGENERADOR DIESEL – BLACK START 01	268615.36	230005.03
24	MCBS-02	MOTOGENERADOR DIESEL – BLACK START 02	268610.81	230005.03
25	MCBS-03	MOTOGENERADOR DIESEL – BLACK START 03	268606.23	230005.03
26	PSACA-01	Paquete de SACA 01	268614.27	230011.87
27	PSACA-02	Paquete de SACA 02	268609.79	230011.87
28	PSACA-03	Paquete de SACA 03	268605.31	230011.87
29	TOPS-01	Turbogenerador Polo Seco 01	268,793.26	229,012.88
30	TOPS-02	Turbogenerador Polo Seco 02	268,792.15	230,059.46
31	TOPS-03	Turbogenerador Polo Seco 03	268,796.32	230,056.23

GRAPHIC SCALE (METERS)

GRAPHIC SCALE (FEET)

Wellington Turbines LLC

PRECISION CORP.

REVISIONS				REVISIONS				REFERENCE DRAWINGS	
NO	SIZE	DESCRIPTION	APPD	NO	SIZE	DESCRIPTION	APPD	NUMBER	TITLE

COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

DESIGNED
SUBMITTED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

PUERTO RICO ELECTRIC POWER AUTHORITY
CORPORATE SEAL

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO – PLANTA PALO SECO
PLOT PLANT

SCALE: 1:200 | SAN JUAN, PUERTO RICO | HOJA 02 DE 02

Appendix E:

Black Start Generator Manufacturer's Emissions Certification

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2019 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: **KCPXL12.5NYS-006**

Effective Date: 07/24/2018

Expiration Date: 12/31/2019

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 07/24/2018

Revision Date: N/A

Model Year: 2019
Manufacturer Type: Original Engine Manufacturer
Engine Family: KCPXL12.5NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CATERPILLAR

Engine Emissions Data

For Emissions / Certification feedback and questions, please submit a ticket via our ERC Request Portal

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	**PW300837**
Sales Model	C13
Regulatory Build Date	19-AUG-2019
As Shipped Data	
Engine Arrangement Number	5066872
Certification Arrangement	3662120
Test Spec Number	0K9333
Regulatory Status	EPA Emergency Stationary @ Constant Speed
Labeled Model Year	2019
EPA Family Code	KCPXL12.5NYS
Current Flash file	5607704
Flash File Progression	5607704
CORR FL Power at RPM	620 HP (462.0 KW)1800 RPM
Advertised Power	609 HP 1,800RPM
Total Displacement	12.5

Disclaimer: The information provided has been compiled from third party sources and is accurate to the best of Caterpillar's knowledge. However, Caterpillar cannot guarantee the accuracy, completeness, or validity of the information and is not liable for any errors or omissions contained therein. All information provided should be independently verified and confirmed, including by examining the emissions label located on the engine.

Need emission replacement label? Click here!

Caterpillar Confidential: **Green**
Content Owner: Commercial Processes Division
Web Master(s): PSG Web Based Systems Support
Current Date: 10/24/2019 9:39:20 AM
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2018 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: **JCPXL12.5NYS-005**

Effective Date: 06/19/2017

Expiration Date: 12/31/2018

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/19/2017

Revision Date: N/A

Model Year: 2018
Manufacturer Type: Original Engine Manufacturer
Engine Family: JCPXL12.5NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CATERPILLAR

Engine Emissions Data

For Emissions / Certification feedback and questions, please submit a ticket via our ERC Request Portal

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	**PW300530**
Sales Model	C13
Regulatory Build Date	30-JUL-2018
As Shipped Data	
Engine Arrangement Number	5066872
Certification Arrangement	
Test Spec Number	0K9333
Regulatory Status	EPA Emergency Stationary @ Constant Speed
Labeled Model Year	2018
EPA Family Code	JCPXL12.5NYS
Current Flash file	5607704
Flash File Progression	5607704
CORR FL Power at RPM	620 HP (462.0 KW)1800 RPM
Advertised Power	609 HP 1,800RPM
Total Displacement	12.5

Disclaimer: The information provided has been compiled from third party sources and is accurate to the best of Caterpillar's knowledge. However, Caterpillar cannot guarantee the accuracy, completeness, or validity of the information and is not liable for any errors or omissions contained therein. All information provided should be independently verified and confirmed, including by examining the emissions label located on the engine.

Need emission replacement label? Click here!

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2018 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: **JCPXL12.5NYS-005**

Effective Date: 06/19/2017

Expiration Date: 12/31/2018

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/19/2017

Revision Date: N/A

Model Year: 2018
Manufacturer Type: Original Engine Manufacturer
Engine Family: JCPXL12.5NYS

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 225<=kW<450
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control, Smoke Puff Limiter, Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

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CATERPILLAR

Engine Emissions Data

For Emissions / Certification feedback and questions, please submit a ticket via our ERC Request Portal

This emission data is Caterpillar's best estimate for this rating. If actual emissions are required then an emission test needs to be run on your engine.

Serial Number (Machine)	
Serial Number (Engine)	**PW300535**
Sales Model	C13
Regulatory Build Date	01-AUG-2018
As Shipped Data	
Engine Arrangement Number	5066872
Certification Arrangement	
Test Spec Number	0K9333
Regulatory Status	EPA Emergency Stationary @ Constant Speed
Labeled Model Year	2018
EPA Family Code	JCPXL12.5NYS
Current Flash file	5607704
Flash File Progression	5607704
CORR FL Power at RPM	620 HP (462.0 KW)1800 RPM
Advertised Power	609 HP 1,800RPM
Total Displacement	12.5

Disclaimer: The information provided has been compiled from third party sources and is accurate to the best of Caterpillar's knowledge. However, Caterpillar cannot guarantee the accuracy, completeness, or validity of the information and is not liable for any errors or omissions contained therein. All information provided should be independently verified and confirmed, including by examining the emissions label located on the engine.

Need emission replacement label? Click here!

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PERFORMANCE DATA[EM1694]

October 24, 2019

Performance Number: EM1694

Change Level: 02

SALES MODEL:	C13	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	609	**HERTZ:**	60
GEN POWER WITH FAN (EKW):	400.0	**FAN POWER (HP):**	20.1
COMPRESSION RATIO:	16.3	**ADDITIONAL PARASITICS (HP):**	10.4
RATING LEVEL:	STANDBY	**ASPIRATION:**	TA
PUMP QUANTITY:	1	**AFTERCOOLER TYPE:**	ATAAC
FUEL TYPE:	DIESEL	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	**INLET MANIFOLD AIR TEMP (F):**	120
GOVERNOR TYPE:	ELEC	**JACKET WATER TEMP (F):**	192.2
ELECTRONICS TYPE:	ADEM4	**TURBO CONFIGURATION:**	SINGLE
CAMSHAFT TYPE:	STANDARD	**TURBO QUANTITY:**	1
IGNITION TYPE:	CI	**TURBOCHARGER MODEL:**	GTA5002BS 1.60A/R
INJECTOR TYPE:	EUI	**CERTIFICATION YEAR:**	2015
REF EXH STACK DIAMETER (IN):	5	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,854.3
MAX OPERATING ALTITUDE (FT):	1,640		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
400.0	100	609	351	0.326	28.4	56.6	117.0	1,287.5	38.0	1,058.8
360.0	90	546	315	0.326	25.4	50.2	112.8	1,239.3	32.8	1,026.2
320.0	80	486	280	0.355	24.6	53.7	115.3	1,243.0	36.2	1,014.2
300.0	75	457	263	0.367	24.0	54.1	115.3	1,242.2	36.6	1,006.9
280.0	70	428	247	0.373	22.8	51.8	113.2	1,230.3	34.6	994.7
240.0	60	372	214	0.381	20.3	45.8	108.4	1,193.6	30.2	964.8
200.0	50	316	182	0.387	17.5	37.8	103.0	1,140.2	25.0	927.6
160.0	40	261	151	0.389	14.5	27.4	96.5	1,080.7	18.9	889.3
120.0	30	206	119	0.390	11.5	17.1	90.3	998.9	12.9	840.0
100.0	25	178	102	0.392	9.9	12.4	87.5	948.6	10.3	810.6
80.0	20	149	86	0.396	8.4	8.5	85.3	886.6	8.2	770.9
40.0	10	90.8	52	0.427	5.5	3.6	82.6	689.5	5.6	609.6

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
400.0	100	609	61	357.2	978.1	2,936.2	4,292.2	4,490.4	950.7	854.7
360.0	90	546	54	330.0	915.9	2,656.6	3,998.8	4,176.7	879.0	792.5
320.0	80	486	58	344.8	970.5	2,788.5	4,248.8	4,421.0	930.2	846.5
300.0	75	457	59	347.3	982.7	2,801.1	4,301.0	4,468.6	939.1	857.4
280.0	70	428	56	338.9	963.1	2,705.2	4,203.1	4,362.5	914.6	836.0
240.0	60	372	50	314.6	901.9	2,463.5	3,915.9	4,057.6	850.3	779.2
200.0	50	316	41	280.3	812.5	2,156.6	3,510.3	3,632.6	764.3	702.0
160.0	40	261	30	234.0	687.0	1,781.4	2,955.8	3,057.3	649.3	597.7
120.0	30	206	19	186.1	559.5	1,398.1	2,396.3	2,476.6	528.9	488.0
100.0	25	178	14	163.5	501.9	1,216.0	2,144.3	2,213.9	470.7	434.8
80.0	20	149	10	143.6	454.1	1,050.9	1,934.8	1,994.0	419.9	388.7
40.0	10	90.8	5	114.6	397.9	789.9	1,686.8	1,725.7	363.2	341.4

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY

PERFORMANCE DATA[EM1694]

October 24, 2019

EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
400.0	100	609	8,952	2,925	23,022	13,776	3,243	4,130	25,831	60,887	64,860
360.0	90	546	8,186	2,654	20,622	12,177	2,905	3,479	23,152	54,534	58,093
320.0	80	486	7,906	2,618	21,212	12,600	2,812	3,904	20,601	52,796	56,241
300.0	75	457	7,710	2,546	21,145	12,570	2,738	3,995	19,365	51,406	54,761
280.0	70	428	7,378	2,442	20,304	12,022	2,604	3,800	18,150	48,885	52,075
240.0	60	372	6,706	2,418	18,182	10,623	2,315	3,233	15,765	43,469	46,305
200.0	50	316	6,033	2,483	15,558	8,900	1,999	2,492	13,418	37,535	39,984
160.0	40	261	5,465	2,508	12,515	6,965	1,660	1,628	11,079	31,161	33,194
120.0	30	206	4,843	2,208	9,534	5,102	1,312	920	8,725	24,624	26,230
100.0	25	178	4,472	1,897	8,187	4,276	1,137	653	7,535	21,350	22,743
80.0	20	149	4,040	1,542	6,945	3,504	965	452	6,327	18,124	19,307
40.0	10	90.8	2,963	1,112	4,536	1,834	634	216	3,852	11,904	12,681

Emissions Data

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	400.0	300.0	200.0	100.0	40.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	609	457	316	178	90.8
TOTAL NOX (AS NO2)		G/HR	2,977	1,068	588	577	371
TOTAL CO		G/HR	1,386	852	1,107	1,159	773
TOTAL HC		G/HR	11	34	57	58	82
PART MATTER		G/HR	61.3	65.7	37.7	32.1	44.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,481.2	1,040.3	779.4	1,396.4	1,483.0
TOTAL CO	(CORR 5% O2)	MG/NM3	1,150.6	842.7	1,484.4	2,885.1	3,110.1
TOTAL HC	(CORR 5% O2)	MG/NM3	7.5	28.5	66.0	127.6	338.9
PART MATTER	(CORR 5% O2)	MG/NM3	41.1	52.9	42.2	66.9	189.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,209	507	380	680	722
TOTAL CO	(CORR 5% O2)	PPM	920	674	1,188	2,308	2,488
TOTAL HC	(CORR 5% O2)	PPM	14	53	123	238	633
TOTAL NOX (AS NO2)		G/HP-HR	4.98	2.36	1.87	3.26	4.10
TOTAL CO		G/HP-HR	2.32	1.88	3.52	6.55	8.55
TOTAL HC		G/HP-HR	0.02	0.08	0.18	0.33	0.90
PART MATTER		G/HP-HR	0.10	0.15	0.12	0.18	0.49
TOTAL NOX (AS NO2)		LB/HR	6.56	2.36	1.30	1.27	0.82
TOTAL CO		LB/HR	3.05	1.88	2.44	2.55	1.71
TOTAL HC		LB/HR	0.02	0.07	0.13	0.13	0.18
PART MATTER		LB/HR	0.14	0.14	0.08	0.07	0.10

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	400.0	300.0	200.0	100.0	40.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	609	457	316	178	90.8
TOTAL NOX (AS NO2)		G/HR	2,757	989	544	534	343
TOTAL CO		G/HR	741	456	592	620	414
TOTAL HC		G/HR	6	18	30	30	43
TOTAL CO2		KG/HR	275	236	172	98	55
PART MATTER		G/HR	31.4	33.7	19.4	16.5	22.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,297.5	963.2	721.7	1,293.0	1,373.1
TOTAL CO	(CORR 5% O2)	MG/NM3	615.3	450.6	793.8	1,542.8	1,663.2
TOTAL HC	(CORR 5% O2)	MG/NM3	4.0	15.1	34.9	67.5	179.3
PART MATTER	(CORR 5% O2)	MG/NM3	21.1	27.1	21.7	34.3	97.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,119	469	352	630	669
TOTAL CO	(CORR 5% O2)	PPM	492	361	635	1,234	1,331
TOTAL HC	(CORR 5% O2)	PPM	7	28	65	126	335
TOTAL NOX (AS NO2)		G/HP-HR	4.61	2.19	1.73	3.02	3.80
TOTAL CO		G/HP-HR	1.24	1.01	1.88	3.50	4.57
TOTAL HC		G/HP-HR	0.01	0.04	0.10	0.17	0.48
PART MATTER		G/HP-HR	0.05	0.07	0.06	0.09	0.25
TOTAL NOX (AS NO2)		LB/HR	6.08	2.18	1.20	1.18	0.76
TOTAL CO		LB/HR	1.63	1.00	1.31	1.37	0.91
TOTAL HC		LB/HR	0.01	0.04	0.07	0.07	0.10
TOTAL CO2		LB/HR	605	520	378	215	121
PART MATTER		LB/HR	0.07	0.07	0.04	0.04	0.05
OXYGEN IN EXH		%	7.4	9.6	10.8	11.8	14.4
DRY SMOKE OPACITY		%	1.7	1.1	1.0	2.9	2.0
BOSCH SMOKE NUMBER			1.11	0.75	0.70	1.72	1.27

Regulatory Information

EPA EMERGENCY STATIONARY		2011 - ----		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.				
Locality	**Agency**	**Regulation**	**Tier/Stage**	**Max Limits - G/BKW - HR**
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 4.0 PM: 0.20

Altitude Derate Data

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	609	609	609	609	609	609	609	609	609	600	590	580	609
1,000	609	609	609	609	609	609	609	598	588	578	568	558	609
2,000	609	609	609	609	609	597	587	576	566	556	547	538	607
3,000	609	609	609	597	586	575	564	554	545	535	526	517	588
4,000	609	597	586	574	564	553	543	533	524	515	506	498	570
5,000	586	575	563	552	542	532	522	513	504	495	487	479	552
6,000	564	552	542	531	521	511	502	493	484	476	468	460	534
7,000	542	531	520	510	501	492	483	474	466	458	450	442	517
8,000	520	510	500	490	481	472	464	455	447	440	432	425	500
9,000	500	490	480	471	462	454	445	437	430	422	415	408	484
10,000	480	470	461	452	444	435	427	420	412	405	398	392	467
11,000	460	451	442	434	426	418	410	403	396	389	382	376	452
12,000	442	433	424	416	408	401	393	386	380	373	367	361	437
13,000	424	415	407	399	392	384	377	371	364	358	352	346	422
14,000	406	398	390	382	375	368	362	355	349	343	337	331	407
15,000	389	381	374	366	359	353	346	340	334	328	323	318	393

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K9333	PP7710	4343726	PG045	LS	PW300001	

Performance Parameter Reference

Parameters Reference:DM9600-11
PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600
APPLICATION:
Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.
PERFORMANCE PARAMETER TOLERANCE FACTORS:
Power +/- 3%
Torque +/- 3%
Exhaust stack temperature +/- 8%

PERFORMANCE DATA[EM1694]

Inlet airflow +/- 5%
Intake manifold pressure-gage +/- 10%
Exhaust flow +/- 6%
Specific fuel consumption +/- 3%
Fuel rate +/- 5%
Specific DEF consumption +/- 3%
DEF rate +/- 5%
Heat rejection +/- 5%
Heat rejection exhaust only +/- 10%
Heat rejection CEM only +/- 10%
Heat Rejection values based on using treated water.
Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.
On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.
These values do not apply to C280/3600. For these models, see the tolerances listed below.
C280/3600 HEAT REJECTION TOLERANCE FACTORS:
Heat rejection +/- 10%
Heat rejection to Atmosphere +/- 50%
Heat rejection to Lube Oil +/- 20%
Heat rejection to Aftercooler +/- 5%
TEST CELL TRANSDUCER TOLERANCE FACTORS:
Torque +/- 0.5%
Speed +/- 0.2%
Fuel flow +/- 1.0%
Temperature +/- 2.0 C degrees
Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.
REFERENCE ATMOSPHERIC INLET AIR
FOR 3500 ENGINES AND SMALLER
SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES
Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.
MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE
Location for air temperature measurement air cleaner inlet at stabilized operating conditions.
REFERENCE EXHAUST STACK DIAMETER
The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.
REFERENCE FUEL
DIESEL
Reference fuel is #2 distillate diesel with a 35API gravity;
A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 29 deg C (84.2 deg F), where the density is 838.9 G/Liter (7.001 Lbs/Gal).
GAS
Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.
ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD
Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.
ALTITUDE CAPABILITY
Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.
Standard temperature values versus altitude could be seen on TM2001.
When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.
Engines with ADEM MEUI and HEUI fuel systems operating at

conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.
Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.
REGULATIONS AND PRODUCT COMPLIANCE
TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.
Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.
EMISSION CYCLE LIMITS:
Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.
EMISSIONS DEFINITIONS:
Emissions : DM1176
EMISSION CYCLE DEFINITIONS
1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets
test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.
HEAT REJECTION DEFINITIONS:
Diesel Circuit Type and HHV Balance : DM9500
HIGH DISPLACEMENT (HD) DEFINITIONS:
3500: EM1500
RATING DEFINITIONS:
Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038
SOUND DEFINITIONS:
Sound Power : DM8702
Sound Pressure : TM7080
Date Released : 07/10/19

Appendix F:

Site and Project Figures

Google Maps



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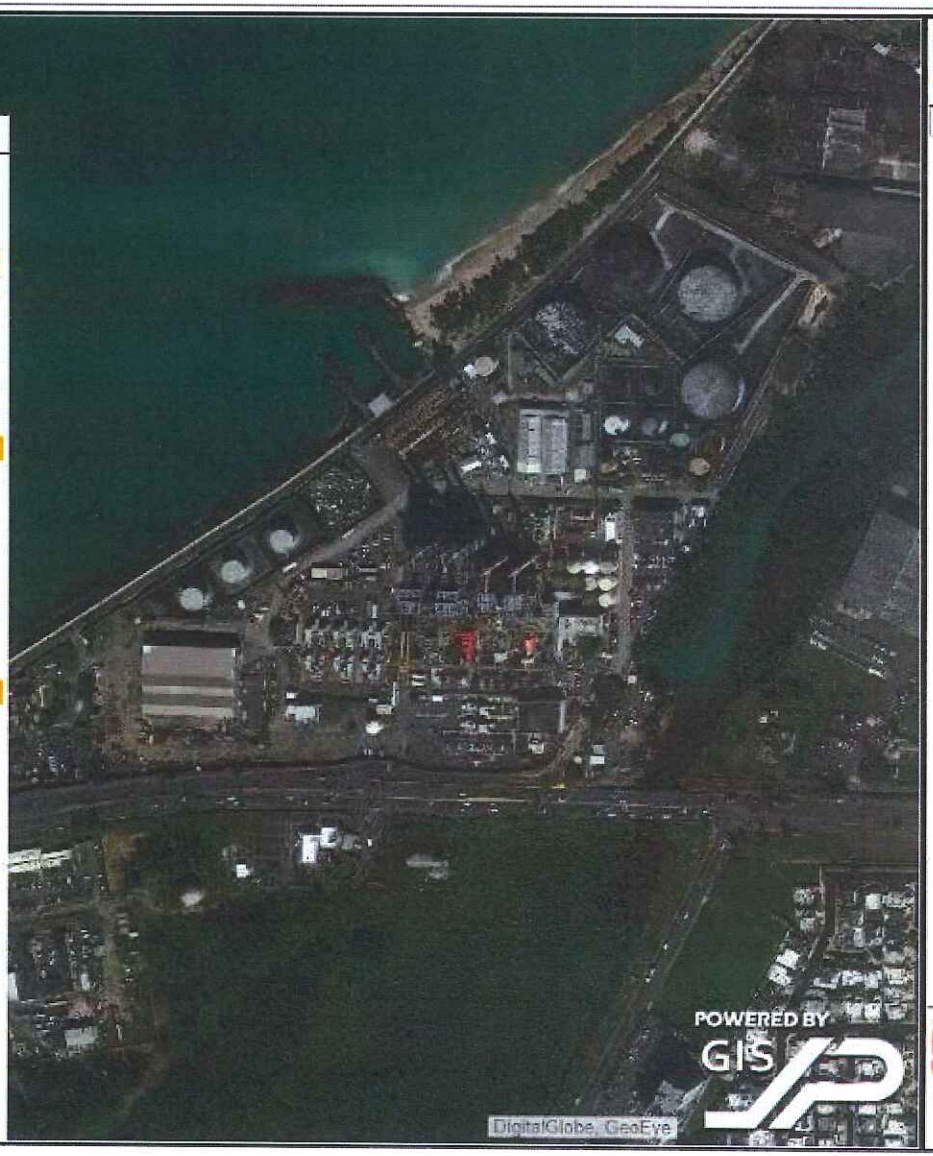
Casa
Establecer ubicación

https://www.google.com/maps/@18.4559701,-66.149336,529m/data=!3m1!1e3!5m1!1e4

Ubicación	
Catastro	039-000-008-04
Coordenadas Nad83	x: 229611.4883, y: 268420.4046 (Lat: 18.45129942, Lon: -66.15300751) Ver: Google | Yahoo
Area Aprox. (m.c.)	922526.0056
Municipio	Toa Baja (95.0%), Cataño (5.0%)
Barrio	Palo Seco (89.3%), Sabana Seca (5.7%), Palmas (5.0%)
Características Ambientales	
Zona Inundabilidad	X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Zona Inund. Advisory	AE (55.8%), A (27.3%), X 0.2% ACF (11.2%), Coastal A Zone (0.8%), VE (0.2%)
Panel Inundabilidad	72000C0335J
Floodway	
Suelo (NRCS)	Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)
Calificación y Clasificación de Suelo	
Calificación	Oficializacion del geodato en proceso, favor de referirse al mapa de calificacion vigente.
Clasificación PT	Oficializacion del geodato en proceso, favor de referirse al mapa de calificacion vigente.
Clasificación PUT	SU (97%), AGUA (2%), VIAL (1%)
Mapas de Calificación	Hoja: 032 de Toa Baja, Mapa PUT, Cataño
Distrito Sobrepuesto	APE-ZC (Área de Planificación Especial Zona Cársica)
Zona Histórica	
Sitio Histórico	
Reglamento Aplicable	• Plan de Uso de Terrenos • Plan de Área 5 Frente Marítimo Toa Baja • Plan de Área 5 Frente Marítimo Toa Baja
Vigencia de Clasificación PUT	30-nov-2015
Vigencia de GeoDato de Calificación	4/10/2008
Status POT	Municipio Autónomo



(oprima para definir titulo)


ESTADO LIBRE ASOCIADO DE
PUERTO RICO
Junta de Planificación
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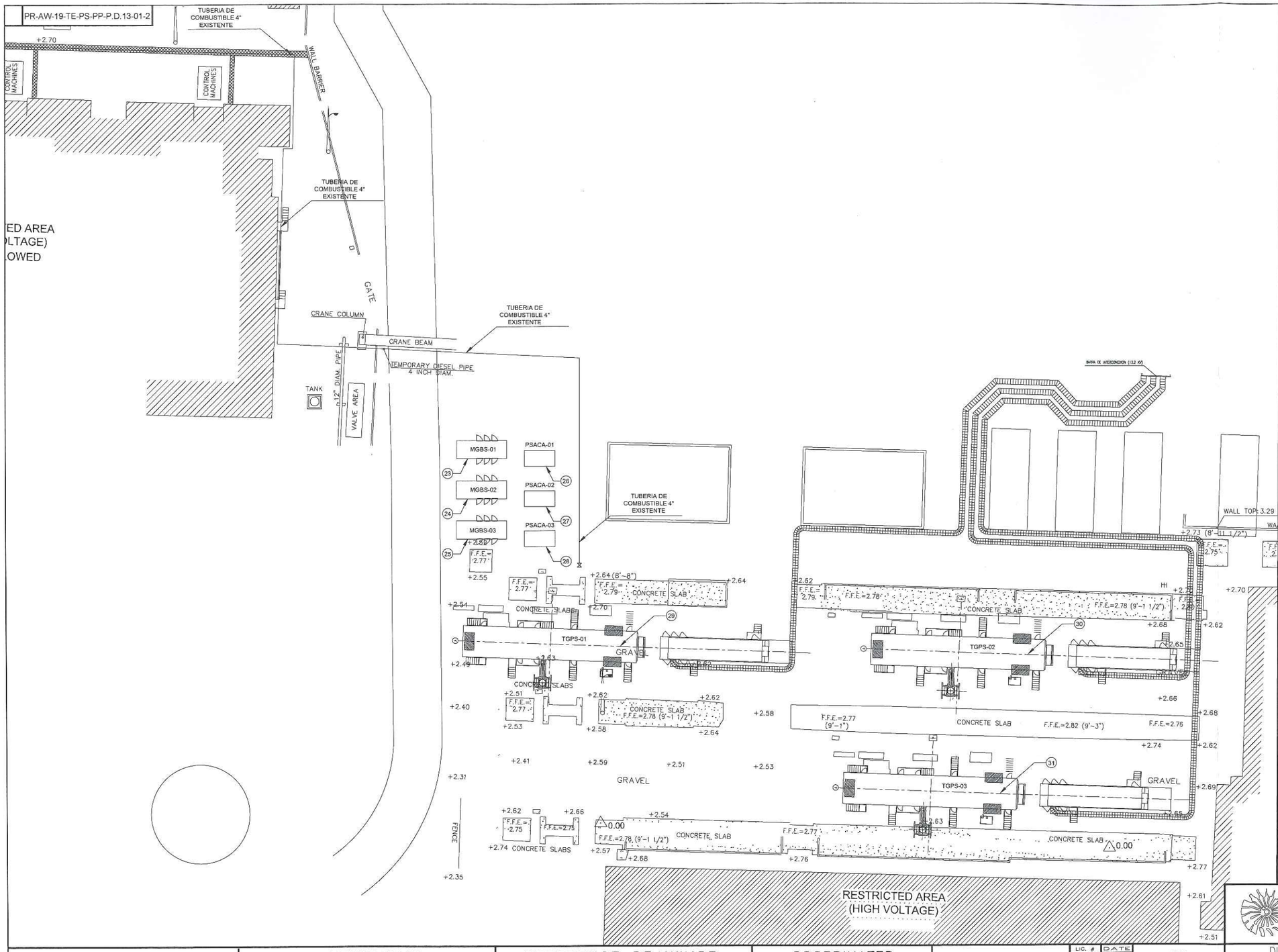
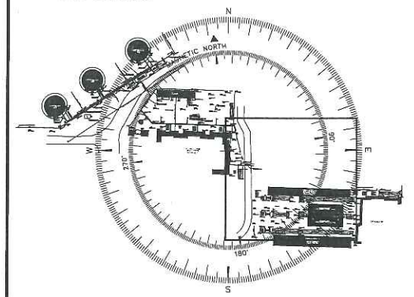
400ft
JUNTA DE PLANIFICACION

PR-AW-19-TE-PS-PP-P.D.13-01-2



PLANO DE SITUACION



LEYEND:

	EQUIPOS A INSTALAR
	TUBERIA DE COMBUSTIBE 4" EXISTENTE
(8'-02")	GROUND LEVEL CONVERSION ENGLISH UNITS
+2.49	GROUND LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION



LISTA DE EQUIPOS				
PTO	TAG	DESCRIPCION	NORTE	ESTE
23	MGBS-01	MOTOGENERADOR DIESEL – BLACK START 01	268815.39	230005.03
24	MGBS-02	MOTOGENERADOR DIESEL – BLACK START 02	268810.81	230005.03
25	MGBS-03	MOTOGENERADOR DIESEL – BLACK START 03	268806.23	230005.03
26	PSACA-01	Paquete de SACA 01	268814.37	230011.67
27	PSACA-02	Paquete de SACA 02	268809.79	230011.67
28	PSACA-03	Paquete de SACA 03	268805.21	230011.67
29	TGPS-01	Turbogenerador Palo Seco 01	268,793.20	230,012.88
30	TGPS-02	Turbogenerador Palo Seco 02	268,792.15	230,059.48
31	TGPS-03	Turbogenerador Palo Seco 03	268,776.32	230,056.23

GRAPHIC SCALE (METERS)

0 5 10 20 30 40 50

GRAPHIC SCALE (FEET)

0 5 10 20 30 40 50 60 70 80 90 100

Wellington Turbines LLC

PRECISION CORP. INDUSTRIAL CONTRACTORS

REVISIONS				REVISIONS				REFERENCE DRAWINGS		COORDINATED			LIC. #	DATE
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE	DEPARTMENT	SIGNATURE	DATE		
										ARCHITECTURAL				
										CIVIL				
										ELECTRICAL				
										MECHANICAL				

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

PUERTO RICO ELECTRIC POWER AUTHORITY – CORPORATE SEAL

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO – PLANTA PALO SECO
PLOT PLANT

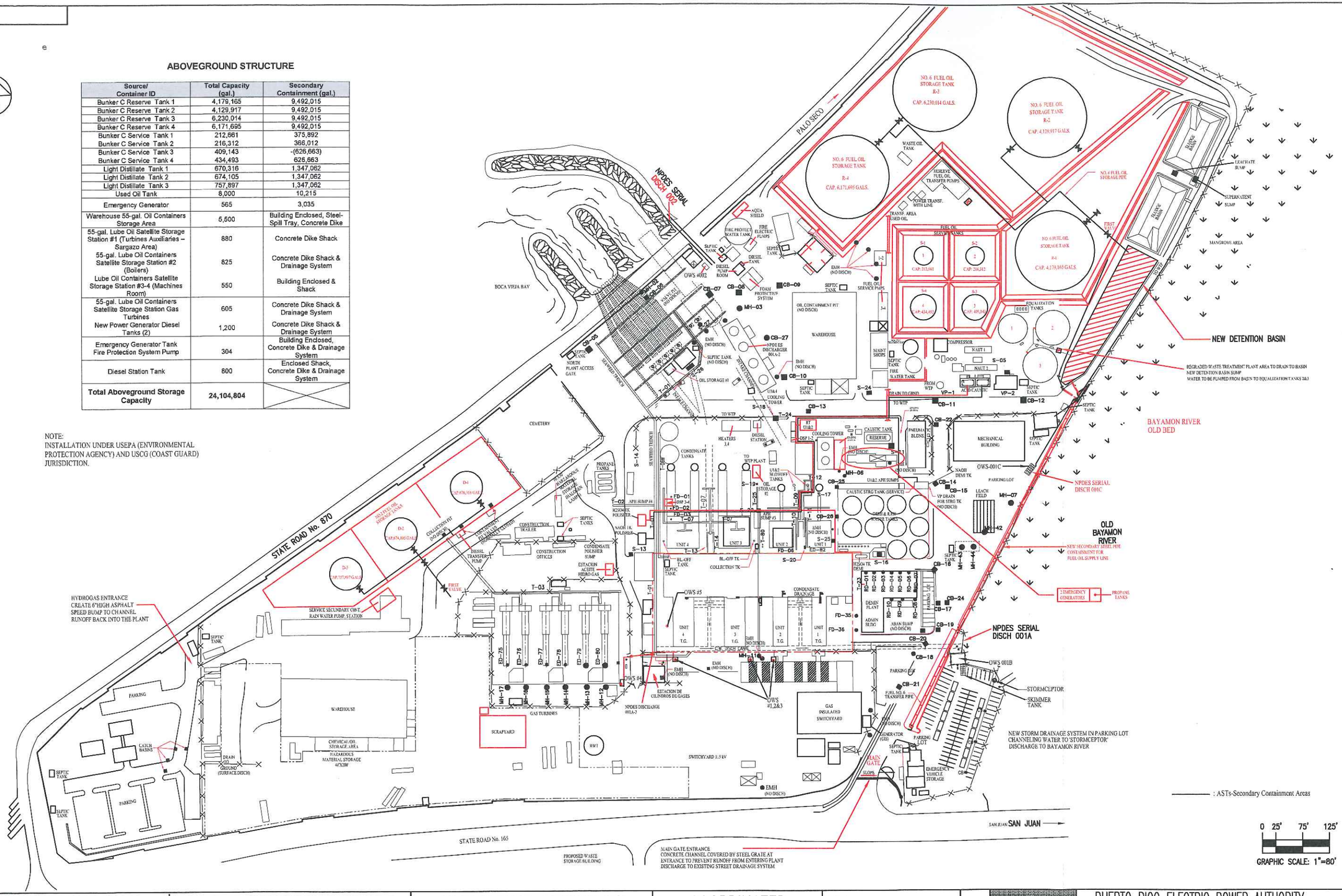
SCALE: 1:200 | SAN JUAN, PUERTO RICO | HOJA 02 DE 02

NORTH

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,165	9,492,015
Bunker C Reserve Tank 2	4,129,917	9,492,015
Bunker C Reserve Tank 3	6,230,014	9,492,015
Bunker C Reserve Tank 4	6,171,695	9,492,015
Bunker C Service Tank 1	212,661	375,892
Bunker C Service Tank 2	216,312	366,012
Bunker C Service Tank 3	409,143	-(626,663)
Bunker C Service Tank 4	434,493	626,663
Light Distillate Tank 1	670,316	1,347,062
Light Distillate Tank 2	674,105	1,347,062
Light Distillate Tank 3	757,897	1,347,062
Used Oil Tank	8,000	10,215
Emergency Generator	565	3,035
Warehouse 55-gal. Oil Containers Storage Area	5,500	Building Enclosed, Steel-Spill Tray, Concrete Dike
55-gal. Lube Oil Satellite Storage Station #1 (Turbines Auxiliaries – Sargazo Area)	880	Concrete Dike Shack
55-gal. Lube Oil Containers Satellite Storage Station #2 (Boilers)	825	Concrete Dike Shack & Drainage System
Lube Oil Containers Satellite Storage Station #3-4 (Machines Room)	550	Building Enclosed & Shack
55-gal. Lube Oil Containers Satellite Storage Station Gas Turbines	605	Concrete Dike Shack & Drainage System
New Power Generator Diesel Tanks (2)	1,200	Concrete Dike Shack & Drainage System
Emergency Generator Tank Fire Protection System Pump	304	Building Enclosed, Concrete Dike & Drainage System
Diesel Station Tank	800	Enclosed Shack, Concrete Dike & Drainage System
Total Aboveground Storage Capacity	**24,104,804**	

NOTE:
INSTALLATION UNDER USEPA (ENVIRONMENTAL PROTECTION AGENCY) AND USCG (COAST GUARD) JURISDICTION.


PALO SECO
NPDES SERIAL DISCH 002
BOCA VIEJA BAY
NO. 6 FUEL OIL STORAGE TANK R-3 CAP. 6,230,014 GALS.
NO. 6 FUEL OIL STORAGE TANK R-2 CAP. 4,129,917 GALS.
NO. 6 FUEL OIL STORAGE TANK R-4 CAP. 4,171,695 GALS.
NO. 6 FUEL OIL STORAGE TANK R-1 CAP. 4,179,165 GALS.
WASTE OIL TANK
RESERVE FUEL OIL TRANSFER PUMPS
POWER TRANSF. WITH LINE
TRANSF. AREA USED OIL
FUEL OIL SERVICE TANKS
S-1 CAP. 212,661
S-2 CAP. 216,312
S-3 CAP. 409,143
S-4 CAP. 434,493
NO. 6 FUEL OIL STORAGE PIPE
SETTLING BASIN
LEACHATE SUMP
SUPERNATENT SUMP
MANGROVE AREA
NEW DETENTION BASIN
REGRADED WASTE TREATMENT PLANT AREA TO DRAIN TO BASIN NEW DETENTION BASIN SUMP WATER TO BE PUMPED FROM BASIN TO EQUALIZATION TANKS 2&3
EQUALIZATION TANKS
BAYAMON RIVER OLD BED
OLD BAYAMON RIVER
NEW SECONDARY STEEL PIPE CONTAINMENT FOR FUEL OIL SUPPLY LINE
2 EMERGENCY GENERATORS
PROPANE TANKS
NPDES SERIAL DISCH 001A
NPDES SERIAL DISCH 001C
OWS 001B
STORMCEPTOR
SKIMMER TANK
NEW STORM DRAINAGE SYSTEM IN PARKING LOT CHANNELING WATER TO 'STORMCEPTOR' DISCHARGE TO BAYAMON RIVER
STATE ROAD No. 870
HYDROGAS ENTRANCE CREATE 6"HIGH ASPHALT SPEED BUMP TO CHANNEL RUNOFF BACK INTO THE PLANT
STATE ROAD No. 165
SAN JUAN
MAIN GATE ENTRANCE CONCRETE CHANNEL COVERED BY STEEL GRATE AT ENTRANCE TO PREVENT RUNOFF FROM ENTERING PLANT DISCHARGE TO EXISTING STREET DRAINAGE SYSTEM
PROPOSED WASTE STORAGE BUILDING
CEMETERY
WAREHOUSE
CHEMICAL/OIL STORAGE AREA
HAZARDOUS MATERIAL STORAGE AREA
SCRAPYARD
GAS TURBINES
GAS INSULATED SWITCHYARD
SWITCHYARD 115 kV
MAIN GATE
PARKING
CATCH BASINS
DRAIN TO GROUND (SURFACE DISCH)
SEPTIC TANK
NORTH PLANT ACCESS GATE
OWS #1,2&3
OWS #2
OWS #4
OWS #5
OWS 400Z
OWS-001C
EMH (NO DISCH)
EMH
MH-03
MH-06
MH-11
MH-12
MH-13
MH-14
MH-15
MH-16
MH-17
MH-18
MH-19
CB-07
CB-08
CB-09
CB-10
CB-11
CB-12
CB-13
CB-14
CB-15
CB-17
CB-18
CB-19
CB-20
CB-21
CB-22
CB-25
CB-26
CB-27
CB-28
CB-29
WAREHOUSE
OIL CONTAINMENT PIT (NO DISCH)
MAINT SHOPS
COMPRESSOR
NAUT 1
NAUT 2
ACID/CAUSTIC
FIRE WATER TANK
COOLING TOWER
CAUSTIC TANK
RESERVE
MECHANICAL BUILDING
PNEUMATIC BLDNG.
CAUSTIC STRG TANK (SERVICE)
CONDENSATE TANKS
HEATERS 3,4
DIESEL STATION
TO WTP PLANT
OIL STORAGE #2
U1&2 SLOPTOFF TANKS
U1&2 APH SUMPS
APH SUMP #4
APH SUMP #3
H2SO4 TK
NAOH TK
CAUSTIC STRG TANK
SEWER & R/W WATER TANKS
NAOH DEMI TK
VP DRAIN FOR STRG TK (NO DISCH)
LEACH FIELD
PARKING LOT
CONSTRUCTION TRAILER
CONSTRUCTION OFFICES
CONDENSATE POLISHER SUMP
ESTACION ACEITE HIDRO GAS
ESTACION DE CILINDROS DE GASES
CONDENSATE POLISHER
DIESEL TRANSFER PUMP
SERVICE SECUNDARY CONT. RAIN WATER PUMP STATION
CONTAINMENT FLOODED DURING RAINY SEASON
COLLECTION PIT (NO DISCH)
AQUA SHIELD
FIRE PROTECT WATER TANK
FIRE ELECTRIC PUMPS
DIESEL PUMP ROOM
DIESEL TANK
SEPTIC TANK
FOAM PROTECTIVE SYSTEM
FUEL OIL SERVICE PUMPS
BL-OFF TANK
BL-OFF TK COLLECTION TK
H2SO4 TK DRUM
CONDENSATE DRAINAGE TK
DEMIN PLANT
ADMIN BLDG.
ABAN SUMP (NO DISCH)
CW DISCH CANAL
EMH (NO DISCH)
EMH (NO DISCH)
EMH (NO DISCH)

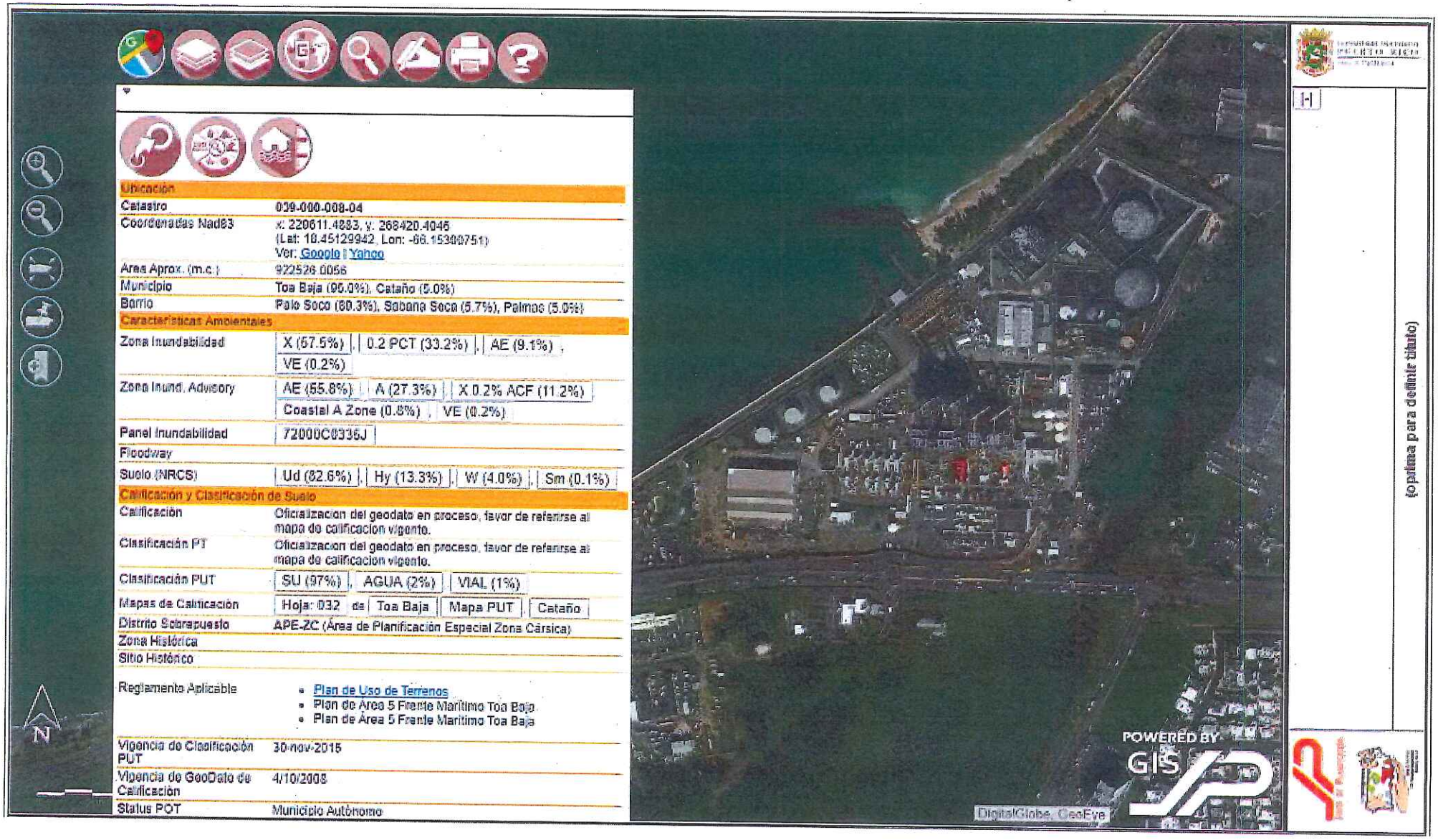
Google Maps



Imágenes © 2019 Google, Imágenes © 2019 CNES / Airbus, Maxar Technologies, U.S. Geological Survey, Datos del mapa © 2019 50 m

Casa
Establecer ubicación

https://www.google.com/maps/@18.4559701,-66.149336,529m/data=!3m1!1e3!5m1!1e4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Catastro 039-000-008-04
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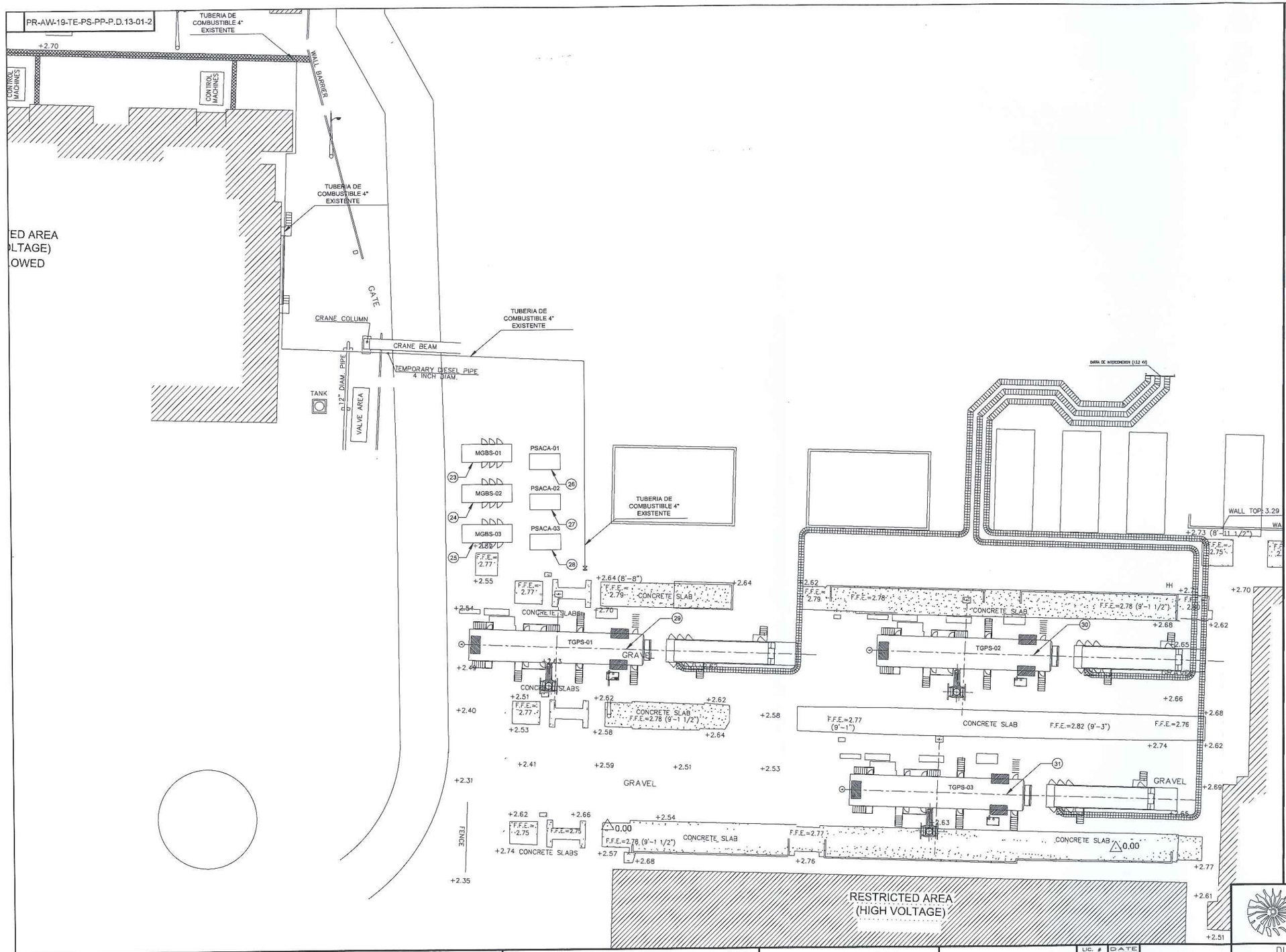
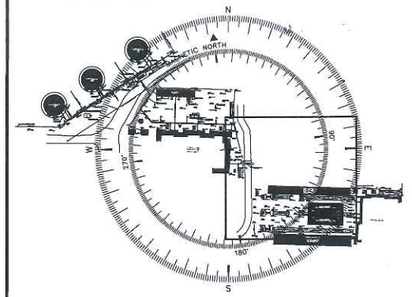
(Lat: 18.45129942, Lon: -66.15300751)
Ver: Google | Yahoo
Area Aprox. (m.c.) 922526.0056
Municipio Toa Baja (95.0%), Cataño (5.0%)
Barrio Palo Seco (89.3%), Sabana Seca (5.7%), Palmas (5.0%)
Caracteristicas Ambientales
Zona Inundabilidad X (57.5%), 0.2 PCT (33.2%), AE (9.1%), VE (0.2%)
Zona Inund. Advisory AE (55.8%), A (27.3%), X 0.2% ACF (11.2%), Coastal A Zone (0.8%), VE (0.2%)
Panel Inundabilidad 72000C0336J
Floodway
Suelo (NRCS) Ud (82.6%), Hy (13.3%), W (4.0%), Sm (0.1%)
Calificación y Clasificación de Suelo
Calificación Oficialización del geodato en proceso, favor de referirse al mapa de calificación vigente.
Clasificación PT Oficialización del geodato en proceso, favor de referirse al mapa de calificación vigente.
Clasificación PUT SU (97%), AGUA (2%), VIAL (1%)
Mapas de Calificación Hoja: 032 de Toa Baja, Mapa PUT, Cataño
Distrito Sobrepuesto APE-ZC (Área de Planificación Especial Zona Cársica)
Zona Histórica
Sitio Histórico
Reglamento Aplicable
Plan de Uso de Terrenos
Plan de Área 5 Frente Marítimo Toa Baja
Plan de Área 5 Frente Marítimo Toa Baja
Vigencia de Clasificación PUT 30-nov-2015
Vigencia de GeoDato de Calificación 4/10/2008
Status POT Municipio Autónomo
POWERED BY
GIS
DigitalGlobe, GeoEye
(optima para definir tributo)


ESTADO LIBRE ASOCIADO DE
PUERTO RICO
Junta de Planificación
(oprima para definir título)
N
0
200
400ft

PR-AW-19-TE-PS-PP-P.D.13-01-2



PLANO DE SITUACION



LEYEND:

EQPO	EQUIPOS A INSTALAR
———	TUBERIA DE COMBUSTIBLE 4" EXISTENTE
(8'-02")	GROUND LEVEL CONVERSION ENGLISH UNITS
+2.49	GROUND LEVEL (MEAN SEA LEVEL) METERS
△ EST-1	CONTROL STATION



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31	TGPS-03	Turbogenerador Palo Seco 03	268.776.32	230.056.23

GRAPHIC SCALE (METERS)

0 5 10 20 30 40 50

GRAPHIC SCALE (FEET)

0 5 10 20 30 40 50 60 70 80 90 100

REVISIONS				REVISIONS			
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.

REFERENCE DRAWINGS	
NUMBER	TITLE

COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

	LIC. #	DATE
DESIGNED		
SURVEYED		
DRAWN		
CHECKED		
SUBMITTED		
RECOMMENDED		
APPROVED		

PUERTO RICO ELECTRIC POWER AUTHORITY – CORPORATE SEAL

Wellington Turbines LLC

PRECISION CORP. INDUSTRIAL CONTRACTORS

PUERTO RICO ELECTRIC POWER AUTHORITY
ENGINEERING DIVISION

SAN JUAN, PUERTO RICO – PLANTA PALO SECO
PLOT PLANT

SCALE: 1:200 | SAN JUAN, PUERTO RICO | HOJA 02 DE 02

ABOVEGROUND STRUCTURE

Source/ Container ID	Total Capacity (gal.)	Secondary Containment (gal.)
Bunker C Reserve Tank 1	4,179,165	9,492,015
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Total Aboveground Storage Capacity	**24,104,804**	

NOTE:
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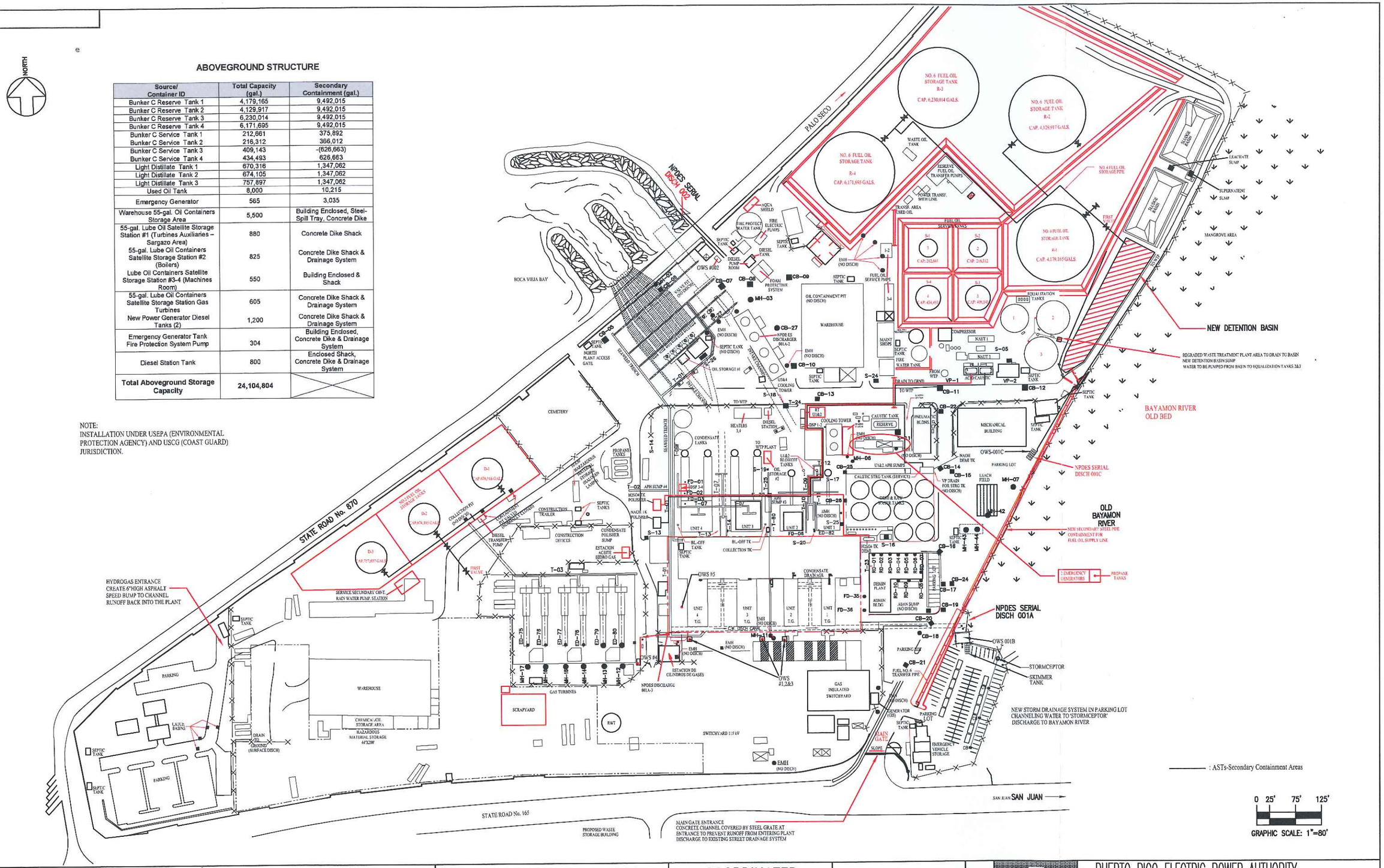

REVISIONS				REVISIONS				REFERENCE DRAWINGS	
NO.	DATE	DESCRIPTION	APPD.	NO.	DATE	DESCRIPTION	APPD.	NUMBER	TITLE
1	OCTOBER 2013	SPCC PLAN REVISION							

COORDINATED		
DEPARTMENT	SIGNATURE	DATE
ARCHITECTURAL		
CIVIL		
ELECTRICAL		
MECHANICAL		

DESIGNED
SURVEYED
DRAWN
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

PUERTO RICO ELECTRIC POWER AUTHORITY
WATER QUALITY DEPARTMENT

PALO SECO STEAM PLANT
SITE PLAN – SPCCP

SCALE: | SAN JUAN, PUERTO RICO | November 2014

Gobierno de Puerto Rico
Autoridad de Energía Eléctrica

22 de enero de 2020

Honorable Armando Otero Negrón
Secretario, Interino
Departamento de Recursos Naturales
y Ambientales
San Juan Puerto Rico

Estimado señor Secretario:

RE: Solicitud de Dispensa – Emergencia Causada Sismos Enero de 2020

Puerto Rico ha estado experimentando continuos movimientos telúricos de diferentes grados de magnitud. Entre los movimientos de tierra ocurridos recientemente destacamos los eventos ocurridos en la madrugada del 7 de enero de 2020, en los que se registraron dos sismos con una magnitud de 6.4 y 6.0 en la escala Richter, ocurridos a unas 10 millas al sur del Municipio de Guayanilla. Estos eventos han ocasionado daños significativos en la infraestructura, vida y propiedad, incluyendo carreteras, puentes, escuelas, viviendas y otros daños relacionados. Estos sismos impactaron severamente el sistema eléctrico de la Autoridad de Energía Eléctrica de Puerto Rico (Autoridad), lo que ocasionó que todas las unidades generadoras de carga base y turbinas de la Autoridad quedaran fuera de servicio. Esto tuvo el efecto de que los residentes, empresas y otras instalaciones en la Isla se quedaran sin electricidad.

Como consecuencia de lo anterior, el 7 de enero de 2020, la Honorable Wanda Vázquez Garced, Gobernadora de Puerto Rico, emitió la Orden Ejecutiva OE-2020-01 que declara un estado de emergencia debido a la actividad sísmica. Esta declaración de emergencia se realiza con el fin de atender toda amenaza a la vida y los daños causados a la infraestructura y propiedad, por la actividad sísmica. El Presidente de los Estados Unidos de Norteamérica, Donald J. Trump, firmó una declaración de emergencia que permite al Gobierno Federal proveer ayuda al Gobierno de Puerto Rico dirigida a salvar vidas, protegerlas y en favor de la seguridad pública.

Principal Oficial Ejecutivo
Apartado 364267
San Juan, Puerto Rico 00936-4267

787.521.4666
787.521.4665

"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."

La Central Costa Sur se encuentra en el área sur de Puerto Rico, cerca del epicentro de estos sismos y sufrió graves daños físicos y estructurales que ocasionaron que quede fuera de servicio. Debido a la continua actividad sísmica que aún se reporta, y a la inestabilidad de la Central Costa Sur en estos momentos, el acceso a la instalación es limitado y restringido. Se estima, preliminarmente, que la Central estará fuera de operaciones por aproximadamente un año. Las unidades afectadas producen aproximadamente el 25% de la generación eléctrica base del país.

Con Costa Sur fuera de servicio, la Autoridad dirige todos los esfuerzos a sus otras unidades disponibles para restablecer el servicio de energía eléctrica al pueblo de Puerto Rico. En este momento la Autoridad tiene el 98% de sus aproximadamente 1.4 millones de clientes con servicio. No obstante, anticipamos que nuestro sistema de generación eléctrica permanecerá inestable hasta que podamos completar la generación necesaria para satisfacer la demanda que requiere el país y tener una reserva adecuada para cualquier otro evento que pueda surgir. Esto trae como consecuencia una inestabilidad en el sistema que requiere que la Autoridad utilice todas sus unidades disponibles.

La salida inesperada de las unidades de Costa Sur agrava la situación por la que ya atravesaba la Autoridad y que ha sido producto de los daños ocasionados por los huracanes Irma y María, ocurridos en septiembre de 2017, y que dejaron el sistema eléctrico en muy mal estado. Como consecuencia de esa situación, la Autoridad ha tenido que requerir de su agencia y de la Agencia Federal de Protección Ambiental (EPA, por sus siglas en inglés) varias dispensas para su operación. En la carta del 10 de enero de 2020, copia de la cual incluimos, le reseñamos las condiciones del sistema de generación eléctrica y su vulnerabilidad. Los sismos ocurridos han trastocado las operaciones de la Autoridad; por lo cual estos eventos constituyen una emergencia, según definida en la Regla 603(e) del Reglamento para el Control de la Contaminación Atmosférica, (RCCA) vigente. Además, según definida en la reglamentación federal aplicable 40 CFR 63.6675, se considera emergencia en fuentes estacionarias como la falta de servicio, servicio intermitente de energía eléctrica de la AEE, servicio con voltaje inestable, de poca calidad, inseguro o que represente riesgo para equipos o personal.

Como resultado de estos eventos y de la emergencia suscitada, anticipamos se pueda causar un disloque en el cumplimiento con los permisos de Fuentes de Emisión, condiciones del *Mercury and Air Toxics Standards* (MATS), el *State Implementation Plan* (SIP) y el Acuerdo por Consentimiento firmado en el 1999 con el Departamento de Justicia Federal y la Agencia de Protección Ambiental, que aún se encuentra vigente.

Por lo anterior, solicitamos que, para garantizar la operación de nuestro sistema eléctrico, nos provea de una dispensa operacional que considere los aspectos que a continuación exponemos:

Programa de Permisos de Fuente de Emisión

La Autoridad cuenta con 10 permisos de fuentes de emisión necesarios para la generación de electricidad a todo el pueblo de Puerto Rico. Esos permisos fueron expedidos por la Junta de Calidad Ambiental, ahora Departamento de Recursos Naturales y Ambientales (DRNA), como parte del programa de operaciones de permisos de fuentes de emisión, cubiertas bajo el Título V de la Ley de Aire Limpio Federal que fue delegado a dicha agencia y que se recoge en la Parte VI del Reglamento para el Control de la Contaminación Atmosférica (RCCA), vigente. Los permisos expedidos bajo este reglamento a favor de la Autoridad se encuentran codificados bajo los números:

- PFE-TV-4911-63-0212-0244 – Central Generatriz Aguirre
- PFE-TV-4911-31-0397-0021- Central Costa Sur
- PFE-TV-4911-70-1196-0015 – Central Palo Seco[1]
- PFE-TV-4911-65-1196-0016 – Central San Juan[2]
- PFE-TV-4911-07-0897-0043 – Central Cambalache
- PFE-TV-4911-19-0306-0447 - Turbinas de Daguao
- PFE-TV-4911-30-1107-0991 – Turbinas de Jobos
- PFE-TV-4911-63-1196-0014 – Turbinas de Mayagüez
- PFE-TV-4911-74-0106-0021 – Turbinas de Vega Baja
- PFE-TV-4911-77-0707-0759 – Turbinas de Yabucoa

La Autoridad solicita al DRNA flexibilidad con los términos y condiciones establecidos en los permisos aquí mencionados. Además, solicita que, en cuanto a dichos permisos, sus términos y condiciones sean dispensados o pospuestos para lo siguiente:

- Debido a la salida inesperada de la Central Costa Sur que anticipamos quedará fuera de servicio por un año aproximadamente, la Autoridad estará impedida de dar estricto cumplimiento a los términos y condiciones establecidos en el permiso de operación expedido por su agencia para dicha instalación y con los términos y periodos dispuestos en los mencionados permisos. Por lo cual, solicitamos se dispense del cumplimiento de los términos y condiciones del permiso de operación para fuente de emisión antes mencionado. La Autoridad notificará cuando se reinicien las operaciones.

- Se requiere la operación continua de las tres turbinas de gas con capacidad de generación de aproximadamente 23MV que fueron instaladas recientemente mediante una dispensa de emergencia en la Central Palo Seco. Estas unidades aún no cuentan con los controles de emisión para su operación. Se anticipa que

[1] Permiso incluye modificación a Permiso de Construcción Núm. PFE-65-0499-0365-I-II-C para la conversión a combustible dual para unidades San Juan 5 y 6

[2] Permiso incluye dispensa para Central Palo Seco del 24 de octubre de 2019 para la instalación y operación de tres turbinas de gas.

las emisiones de estas unidades pueden superar el umbral de fuente nueva bajo el programa "PSD" del 40 CFR § 52.21. El 14 de enero de 2020, se presentó la solicitud de permiso de construcción ante el DRNA. Además, se requiere la operación continua de las turbinas de combustión existentes en la central y cubiertas en el Permiso de Operación TV (Ejemplo; PSGT 3-1, entre otras).

- Se requiere la operación continua de las unidades 5 y 6 de Central San Juan (SJ5 convertida a combustible dual recientemente) utilizando combustible diésel sin activar las condiciones establecidas en el permiso de construcción aprobado el 3 de octubre de 2019.

- Se requiere la operación continua de las unidades generatrices en exceso de horas de operación, de consumo de combustible y de emisiones, entre otros.

- Se requiere la operación continua de las unidades generatrices fuera de horario establecido bajo requerimiento de Reglamentación de Contaminación por Ruido.

- Desviaciones al cumplimento de requerimiento del Acuerdo por Consentimiento según incluido en los permisos de operación.

- Desviaciones al cumplimiento de requerimiento del MATS según incluidas en los permisos de operación y construcción.

- Desviaciones a la Regla 403 del RCCA de la Junta de Calidad Ambiental de Puerto Rico, ahora DRNA.

Permisos de Operación Generadores de Electricidad para Emergencias

La Autoridad cuenta con varios permisos de operación de generadores de electricidad para emergencias, expedidos bajo ciertas disposiciones del RCCA de la JCA, vigente, y conforme lo establece el 40 CRF, Parte 63, Subparte ZZZZ: Estándares Nacionales de Emisión para los Contaminantes Atmosféricos Peligrosos para Motores de Pistones de Combustión Interna Estacionarios (RICE NESHAP, por sus siglas en inglés). Como parte de las condiciones específicas de los referidos permisos destacan las limitaciones en cuanto a las horas de uso de operación, capacidad de consumo de combustible, así como el requisito de realizar, radicar y mantener informes mensuales y anuales.

Debido a la situación creada por los dos sismos y debido a la necesidad de complementar la falta de generación, necesaria para servir a nuestros clientes, la Autoridad tiene la necesidad de utilizar estos generadores de electricidad de emergencia a toda capacidad. Se anticipa que la utilización de estos podría sobrepasar los límites de horas de operación y consumo de combustible conforme con lo establecido en dichos permisos. Por lo cual, solicitamos flexibilidad con los términos establecidos en los permisos expedidos bajo esa

reglamentación y que se dispense a la Autoridad de cumplir con los términos de horas de uso y capacidad de consumo de combustible y emisiones, entre otros requisitos.

En cuanto a la radicación de los informes, la Autoridad solicita al DRNA que los términos dispuestos en los permisos sean pospuestos o prorrogados, según entienda mejor corresponda a la realidad operacional de esta corporación pública.

Es pertinente mencionar que aun utilizando las unidades existentes a la capacidad que el sistema lo tolere o permita, no será suficiente para satisfacer la demanda que requiere el pueblo de Puerto Rico. Es importante destacar que, ante la fragilidad del sistema eléctrico, la Autoridad evalúa los mecanismos alternos que deberá implementar para sustituir la generación suprimida tras la salida de Costa Sur. Por lo cual, anticipamos que hasta que los mecanismos sean puestos en vigor, la Autoridad podría verse obligada a recurrir al mecanismo de relevos de carga, con la consecuencia inevitable de apagones selectivos en la Isla.

Incluimos copia del *No-Action Assurance Request* presentado ante la EPA donde hicimos una petición similar a la que aquí presentamos, para aquellos asuntos cubiertos bajo la jurisdicción federal, aplicables a las operaciones de la Autoridad.

Apreciamos la colaboración que nos puedan brindar en cuanto a esta solicitud. De requerir información adicional, puede comunicarse con el ingeniero Efran Paredes Maisonet, Director de Planificación y Protección Ambiental, por el (787) 521-4884.

Cordialmente,

José F. Ortiz Vázquez
Principal Oficial Ejecutivo

Anejos

Dic. 3 bis 1164

PP-058006

GOBIERNO DE PUERTO RICO

DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

24 OCT. 2019

ING. JOSÉ ORTIZ

Director Ejecutivo
Autoridad de Energía Eléctrica de Puerto Rico
Apartado 364267
San Juan, PR 00936-4267

Att: Efran Paredes Maisonet
Director Planificación y Protección Ambiental

Estimado ingeniero Ortiz,

Re: Solicitud de Dispensa de Emergencia
Autoridad de Energía Eléctrica de Puerto Rico.
Central Palo Seco
TV-4911-70-1196-0015

En carta con fecha del 11 de octubre de 2019 el Sr. Efran Paredes Maisonet, Director Planificación y Protección Ambiental de la Autoridad de Energía Eléctrica de Puerto Rico (en adelante AEE) presentó una solicitud de dispensa de emergencia para la instalación y operación de tres turbinas de gas con una capacidad de generación de aproximadamente 23 MW. La solicitud se presenta para asegurar la confiabilidad y resiliencia del sistema eléctrico. Esta solicitud se presenta conforme las disposiciones de la Regla 302 del Reglamento para el Control de la Contaminación Atmosférica (RCCA), Reglamento Núm. 5300, según enmendado. El inciso A de la Regla 302 del RCCA establece que:

A) La Junta podrá conceder dispensas de emergencia solo bajo circunstancias muy especiales, como por ejemplo, para evitar una amenaza inminente a la salud.
...

Según establece la AEE en su solicitud de dispensa, actualmente tiene varias unidades de carga base que están fuera de servicios debido a mantenimientos o reparaciones, o están limitadas a parte de su capacidad de generación de electricidad. Esta situación afecta la resiliencia del sistema eléctrico del país. Razón por la cual presentaron la solicitud de dispensa.

Conforme a lo anterior, se aprueba la solicitud de dispensa por un periodo que no podrá exceder de 90 días a partir de la fecha de esta notificación. Durante el periodo de dispensa deberá cumplir con todas las condiciones incluidas en el anejo. La información y condiciones sometidas en su solicitud de permiso forman parte de esta autorización.

24 OCT. 2019

De conformidad con la Sección 5.4 de la Ley Núm. 38-2017, conocida como, Ley de Procedimiento Administrativo Uniforme del Gobierno de Puerto Rico, se le apercibe que: "Toda persona a la que la agencia deniegue la concesión de una licencia, franquicia, permiso, endoso, autorización o gestión similar, tendrá derecho a impugnar la determinación de la agencia por medio de un procedimiento adjudicativo, según se establezca en la ley especial de que se trate y en el Capítulo III de dicha Ley." Para esto, se concede un término de veinte (20) días a partir de la notificación del mismo.

La agencia podrá revocar esta autorización en cualquier momento si se violan las condiciones del mismo o reglamentos y/o regulaciones aplicables. La agencia, además, podrá emitir una Orden de Cese y Desistimiento y Mostrar Causa.

Cualquier duda o pregunta, puede comunicarse con el Ing. Luis Sierra, Gerente Interino del Área de Calidad de Aire, al 787-767-8181, extensión 2300, o a través del correo electrónico luissierra@jca.pr.gov.

Cordialmente,

Tania Vázquez Rivera
Secretaria

TVR/lst

24 OCT. 2019

ANEJO: CONDICIONES DE DISPENSA

1. Por este medio se autoriza una dispensa por emergencia la instalación y operación de tres turbinas de gas en la Central Palo Seco, con una capacidad de generación de aproximadamente 23 MW cada una. Esta dispensa tendrá una duración que no excederá de 90 días a partir de la aprobación de la misma.
2. Deberá mantener copia de esta dispensa en la instalación en todo momento. La misma estará disponible para inspección por el personal técnico del Departamento de Recursos Naturales y Ambientales (en adelante DRNA) o la Agencia Federal de Protección Ambiental (EPA, en inglés).
3. Una vez culmine la dispensa, las unidades deberán ser desconectadas, a menos que un permiso para la construcción para las unidades, según las disposiciones de la Regla 203 del Reglamento 5300, según enmendado, haya sido emitido por esta agencia.
4. Esta dispensa no exime de acciones de cumplimiento y/o legales por la construcción/instalación de las unidades previo a la otorgación de esta dispensa de emergencia.
5. Para la operación de los generadores, el contenido máximo de azufre en el combustible No. 2 no excederá de 0.5 porciento por peso y en el gas natural no excederá de 5 gr/100 sft^3.
6. Deberá tener un registro de operación y consumo de combustible con contenido de azufre y horas de operación para cada turbina.
7. Deberá enviar un informe de aplicabilidad, y/o notificación inicial de ser necesario, con respecto a las disposiciones del 40 CFR, Parte 60, Subparte GG, Subparte KKKK o cualquier otra regulación que sea aplicable a las turbinas. Deberán indicar en el informe todos los requisitos aplicables a la unidad de emisión. De existir regulaciones que sean potencialmente aplicables, deberá indicar en el informe las razones por las cuales no le aplica.
8. Deberá cumplir con todos los requisitos aplicables en el informe enviado a la agencia. El no identificar adecuadamente la regulación aplicable, no les exime de incumplimiento con la regulación federal y/o estatal.
9. Estas unidades fueron clasificadas en su solicitud de dispensa como unidades estacionarias de emisión. Deberá llevar a cabo las pruebas de funcionamiento requeridas por la regulación federal para fuentes estacionarias, en los términos establecidos en el estándar de emisión aplicable.
10. Deberá someter un informe mensual indicando en una base diaria el contenido de azufre (porciento por peso) en los combustibles quemados o consumidos en la unidad durante cada mes. Este informe será enviado a la Junta a la atención de la Jefa de la División de Validación de Datos Modelaje Matemático del Área de Calidad de Aire, la Sra. Lula Lucia Fernández Fontán. Todos los informes mensuales deberán ser enviados en o antes de los treinta (30) días siguientes al final de cada mes natural.
11. La tonalidad de los gases emitidos durante la operación de cada motor incluido en este permiso no excederá del 20% de opacidad. Se permitirá una tonalidad de hasta 60% de opacidad sólo en un periodo no mayor de 4 minutos dentro de cualquier periodo de 30 minutos consecutivos.

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004
T +1 202 637 5600
F +1 202 637 5910
www.hoganlovells.com

January 14, 2020

By Electronic Mail

Ms. Susan Bodine
Assistant Administrator
Office of Enforcement & Compliance Assurance
U.S. Environmental Protection Agency
Mail Code 2201A
1200 Pennsylvania Ave, N.W.
Washington, DC 20460

Mr. Phillip A. Brooks
Director
Air Enforcement Division
Office of Civil Enforcement
U.S. Environmental Protection Agency
Mail Code 2242A
1200 Pennsylvania Ave, N.W.
Washington, DC 20460

Re: No-Action Assurance Extension Request – Puerto Rico Electric Power Authority – Earthquakes

Dear Ms. Bodine and Mr. Brooks:

I write on behalf of the Puerto Rico Electric Power Authority ("PREPA") to request that the United States Environmental Protection Agency ("EPA") issue a no-action assurance due to the extreme circumstances that have arisen in the Commonwealth of Puerto Rico caused by a series of earthquakes occurring in and around the Guanica municipal area in the southwest region of Puerto Rico. On January 7, 2020, the Governor of Puerto Rico issued an executive order declaring a state of emergency for the Commonwealth of Puerto Rico to facilitate the deployment of resources necessary to respond to the widespread destruction caused by the earthquakes. Specifically, PREPA writes requesting that EPA exercise its discretion to not enforce the requirements of PREPA's Clean Air Act permits,[1] the Mercury and Air Toxics Standards ("MATS"),[2] the Puerto Rico

[1] The applicable Title V permits include permit numbers PFE-TV-4911-63-0212-0244 (Aguirre Power Station), PFE-TV-4911-70-1196-0015 (Palo Seco Steam Power Plant), TV-4911-70-1196-0015 TV-4911-31-0397-0021 (South Coast Steam Power Plant), PFE-TV-4911-65-1196-0016 (San Juan Steam Power Plant), TV-4911-63-1196-0014 (Mayaguez), PFTE-TV-4911-07-0897-0043 (Cambalache Combustion Turbine Plant), PFE-TV-4911-19-0306-0447 (Daguao Turbine Power Block), PFE-TV-4911-30-1107-0991 (Jobos Turbine Power Block), , and PFE-TV-4911-77-0707-0759 (Yabucoa Gas Turbine Power Block). The applicable permits and authorizations also include a letter from the Puerto Rico Department of Natural and Environmental Resources RE "Solicitude de Dispensa de Emergencia," TV-4911-70-1196-0015 (approval of waiver request to install and operate three gas turbines at Palo Seco Steam Power Plant), Modified Construction Permit for San Juan Power Plant PFE-65-0499-0365-I-II-C (Natural Gas Conversion project), and the letter from U.S. EPA to PREPA RE "Prevention of Significant Deterioration of

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State Implementation Plan ("SIP"),[3] other applicable provisions of or regulations under the Clean Air Act, and the provisions of the 1999 Consent Decree between the United States of America and PREPA. A no-action assurance is necessary to protect public welfare as the Commonwealth of Puerto Rico and PREPA respond to the extreme circumstances created by the series of earthquakes that have occurred in and around Puerto Rico since the end of December 2019, which includes at least six earthquakes of a 5.0 magnitude or greater.

The Costa Sur power plant in the southern town of Guayanilla, located near the epicenter of the January 7, 2020 earthquakes of 6.4- and 5.6-magnitude, experienced significant damage to Costa Sur units nos. 5 (410 megawatts (MW)) and 6 (410MW), and to ancillary equipment serving those units. Due to ongoing earthquake activity, and the instability of the Costa Sur power complex, PREPA personnel have not been permitted on-site to fully assess the impact of the earthquakes. Current estimates are that it will take months to affect repairs to the damaged units and equipment, which could remain offline for up to one year. The damaged units provide approximately 25% of the baseload generated electricity used by homes and businesses on the island.

With Costa Sur out of service due to the impact of the earthquakes, Puerto Rico needs to rely on its other power plants to operate almost at full capacity to meet demand and to ensure the protection of public health.[4] As of the writing of this letter, PREPA has restored power to approximately 98% of Puerto Rico's approximately 1.4 million customers. Nonetheless, once the power is fully restored, Puerto Rico will have no reserve capacity, and there will be little leeway for any of its plants to go offline, which could lead to possible blackouts or brownouts. At this time, PREPA is considering emergency measures, including the rationing of power amongst the island's power sector grids, to ensure the maintenance of power. The graph below projects PREPA's generation deficit from January 1, 2020 through December 2020 under three operating scenarios.

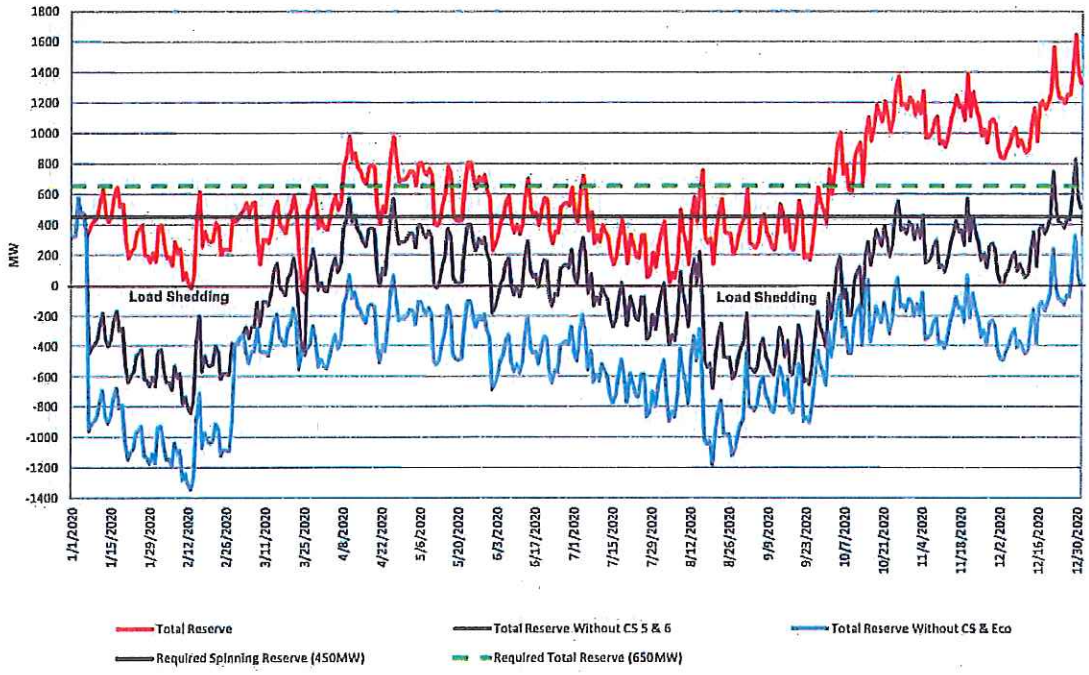
Air Quality (PSD) Non-Applicability Analysis of San Juan Units 5 and 6 Fuel Conversion Project," dated July 19, 2019.

[2] *See generally* 40 C.F.R. Part 63, Subpart UUUU; *see also id.* tbl 2 (listing a filterable particulate matter limit of 0.03 lb/MMBtu for liquid oil-fired non-continental generating units).

[3] *See generally* 40 C.F.R. Part 52, Subpart BBB.

[4] Private power providers, such as EcoEléctrica, also remain offline due to the emergency situation caused by the earthquake.

PREPA's Electric System Reserve
CS & Eco offline after Earthquake Event on January 7, 2020



In the above graph, the green dotted line shows PREPA's required 650 MW total grid reserve, while the bold black line shows PREPA's required 450 MW spinning reserve or "synchronous reserve." Under normal operating conditions, the 450 MW spinning reserve is provided by units already in service or "synched" to the grid, while the additional 200 MW spinning reserve is "non-synchronous" and is covered by offline peaking plants. When the reserve is at 0 MW, it means that PREPA has no reserve, and when the reserve is negative, it means that if PREPA experiences a further disturbance that causes it to lose generation, or is not able to bring other generating units online, that lost generation will result in load shedding.

With that context, the red line shows the reserve from PREPA's baseline power generation, reflecting business as usual prior to the earthquakes. In particular, the red line considers Costa Sur units nos. 5 and 6 in operation, and all operating units in compliance with applicable Clean Air Act requirements, permit conditions, and consent decree obligations. The purple line shows the reserve from PREPA's baseline load generation with Costa Sur units nos. 5 and 6 out of operation as a result of the earthquakes. The blue line shows the reserve from PREPA's baseload generation if Costa Sur units nos. 5 and 6 as well as EcoEléctrica are out of operation.

At this time, PREPA is still gathering information on the full extent of the flexibility needed to provide power to the island, and it will continue to provide further information to EPA as it becomes

available. Based on the foregoing, and the need to ensure that the citizens of Puerto Rico have electricity, PREPA requests a no action assurance as set forth in Table 1:

TABLE 1: Clean Air Act Requirements

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
San Juan	5 (160MW)	For performance of conditions under the Modified Construction Permit, PFE-65-0499-0365-I-II-C (Natural gas conversion project). Further, under the circumstances, PREPA expects significant delays in required performance testing, maintenance obligations, and associated notification, recordkeeping and reporting obligations.
San Juan	6 (160MW)	For performance of conditions under the Modified Construction Permit, PFE-65-0499-0365-I-II-C (Natural gas conversion project). Further, under the circumstances, PREPA expects significant delays in required performance testing, maintenance obligations, and associated notification, recordkeeping and reporting obligations.
San Juan	7 (100MW)	This unit is as a designated MATS limited use unit. PREPA will be required to run this unit beyond the limited use restrictions imposed by MATS. For performance under the 1999 Consent Decree.
San Juan	8 (100MW)	This unit is designated as a MATS limited use unit. PREPA will be required to run this unit beyond the limited use restrictions imposed by MATS. For performance under the 1999 Consent Decree.
San Juan	9 (100MW)	MATS requirements related to particulate matter ("PM") emissions limitation of 0.030 lb/MMBTU, associated performance testing requirements, and work practice standards. For performance under the 1999 Consent Decree.
Costa Sur	5 (410MW)	For performance under the 1999 Consent Decree related to required reporting obligations. For safety reasons, PREPA has limited and restricted access to the site, including restricted access to data and systems necessary to complete reporting obligations.
Costa Sur	6 (410MW)	For performance under the 1999 Consent Decree related to required reporting obligations. For safety reasons, PREPA has

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
		limited and restricted access to the site, including restricted access to data and systems necessary to complete reporting obligations.
Palo Seco	1 (85MW)	This unit is designated as a MATS limited use unit. PREPA will be required to run this unit beyond the limited use restrictions imposed by MATS. For performance under the 1999 Consent Decree Palo Seco Title V Permit conditions related to MATS compliance and the 1999 Consent Decree requirements incorporated into the Title V permit.
Palo Seco	3 (216MW)	MATS requirements related to particulate matter ("PM") emissions limitation of 0.030 lb/MMBTU, associated performance testing requirements, and work practice standards. For performance under the 1999 Consent Decree. Palo Seco Title V Permit conditions related to MATS compliance and the 1999 Consent Decree requirements incorporated into the Title V permit.
Palo Seco	4 (216MW)	MATS requirements related to particulate matter ("PM") emissions limitation of 0.030 lb/MMBTU, associated performance testing requirements, and work practice standards. For performance under the 1999 Consent Decree. Palo Seco Title V Permit conditions related to MATS compliance and the 1999 Consent Decree requirements incorporated into the Title V permit.
Palo Seco	GT 1-1 (21MW)	Palo Seco Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Palo Seco	GT 1-2 (21MW)	Palo Seco Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Palo Seco	GT 3-1 (21MW)	Palo Seco Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
Palo Seco	Mobile Pack 1 (1411) (23MW)	For compliance with itemized conditions under the letter from the Puerto Rico Department of Natural and Environmental Resources RE "Solicitude de Dispensa de Emergencia," dated October 24, 2019, TV-4911-70-1196-0015, approving a waiver request to install and operate three gas turbines at the Palo Seco Steam Power Plant ("Emergency Waiver"), and the Prevention of Significant Deterioration ("PSD") emissions thresholds that are expected to be exceeded. When the Emergency Waiver expires, for performance under the Puerto Rico Regulation for Control of Atmospheric Pollution (40 C.F.R. § 52.2723) related to permit requirements and emissions limits. For performance under other applicable Clean Air Act requirements, including but not limited to 40 C.F.R. Part 60, Subpart KKKK and 40 C.F.R. Part 63, Subpart YYYY.
Palo Seco	Mobile Pack 1 (1410) (23MW)	For compliance with itemized conditions under the letter from the Puerto Rico Department of Natural and Environmental Resources RE "Solicitude de Dispensa de Emergencia," dated October 24, 2019, TV-4911-70-1196-0015, approving a waiver request to install and operate three gas turbines at the Palo Seco Steam Power Plant ("Emergency Waiver"), and the Prevention of Significant Deterioration ("PSD") emissions thresholds that are expected to be exceeded. When the Emergency Waiver expires, for performance under the Puerto Rico Regulation for Control of Atmospheric Pollution (40 C.F.R. § 52.2723) related to permit requirements and emissions limits. For performance under other applicable Clean Air Act requirements, including but not limited to 40 C.F.R. Part 60, Subpart KKKK and 40 C.F.R. Part 63, Subpart YYYY.
Palo Seco	Mobile Pack 1 (1412) (23MW)	For compliance with itemized conditions under the letter from the Puerto Rico Department of Natural and Environmental Resources RE "Solicitude de Dispensa de Emergencia," dated October 24, 2019, TV-4911-70-1196-0015, approving a waiver request to install and operate three gas turbines at the Palo Seco Steam Power Plant ("Emergency Waiver"), and the Prevention of Significant Deterioration ("PSD") emissions thresholds that are expected to be exceeded.

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
		When the Emergency Waiver expires, for performance under the Puerto Rico Regulation for Control of Atmospheric Pollution (40 C.F.R. § 52.2723) related to permit requirements and emissions limits. For performance under other applicable Clean Air Act requirements, including but not limited to 40 C.F.R. Part 60, Subpart KKKK and 40 C.F.R. Part 63, Subpart YYYY.
Aguirre	1 (450MW)	MATS requirements related to the particulate matter ("PM") emissions limit of 0.030 lb/MMBTU, associated performance testing requirements, and work practice standards. For performance under the 1999 Consent Decree.
Aguirre	Combined cycle gas turbine "CCGT" 1-1 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements, and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Aguirre	CCGT 1-2 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Aguirre	CCGT 1-3 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements, and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Aguirre	CCGT 1-4 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Aguirre	CCGT 2-1 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Aguirre	CCGT 2-3 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Aguirre	CCGT 2-4 (50MW)	Aguirre Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
Mayaguez	GT-5 (54MW)	Mayaguez Title V permit conditions related to fuel quality requirements, and fuel consumption limits (barrels per year), which will directly impact annual emissions and other permit conditions (e.g., emissions control).
Mayaguez	GT-6 (54MW)	Mayaguez Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Mayaguez	GT-7 (54MW)	Mayaguez Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions and other permit conditions (e.g., emissions control).
Mayaguez	GT-8 (54MW)	Mayaguez Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions and other permit conditions (e.g. emissions control).
Cambalache Peakers	2 (83MW)	Cambalache Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Cambalache Peakers	3 (83MW)	Cambalache Title V permit conditions related to fuel quality requirements and fuel consumption limits (barrels per year), which will directly impact annual emissions.
Daguao Peakers	GT 1-1 (21MW)	Daguao Title V permit conditions related to fuel quality requirements fuel consumption limits (barrels per year), which will directly impact annual emissions; and noise control requirements (hours operating restrictions) required by Commonwealth ordinance and PR Rule for the Control of Noise Pollution.
Daguao Peakers	GT 1-2 (21MW)	Daguao Title V permit conditions related to fuel quality; fuel consumption limits (barrels per year), which will directly impact annual emissions; and noise control requirements (hours operating restrictions) required by Commonwealth ordinance PR Rule for the Control of Noise Pollution.
Yabucoa Peakers	GT 1-1 (21MW)	Yabucoa Title V permit conditions related to fuel quality requirements fuel consumption limits (barrels per year), which will directly impact annual emissions; and noise control requirements

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
		(hours operating restrictions) required by Commonwealth ordinance PR Rule for the Control of Noise Pollution.
Jobos Peakers	GT 1-2 (21MW)	Jobos Title V permit conditions related to fuel quality requirements fuel consumption limits (barrels per year), which will directly impact annual emissions; and noise control requirements (hours operating restrictions) required by Commonwealth ordinance PR Rule for the Control of Noise Pollution.
	Internal Combustion Engines	PREPA will be required to run these combustion engines in excess of this limit.

PREPA identifies in Table 1 the basic Clean Air Act-related requirements that are implicated by PREPA's need to operate the listed units at or near their full capacity. PREPA will address any variations in operating unit conditions. PREPA is not now seeking to cover with this request for a no action assurance(s) PREPA power generating units that are currently offline but that are expected to return to service. Should those units become available, PREPA may need to seek additional relief from EPA in the form of further no action assurance(s). Under the circumstances, PREPA cannot reasonably predict the precise timeframe in which it will require additional regulatory flexibility, but PREPA will use its best efforts to keep EPA abreast of the restoration of its grid and its progress towards a resumption of normal operation.

PREPA knows that EPA is taking all possible measures to assist the Commonwealth in responding to, and recovering from, the earthquakes, and we stand ready to support the agency in those measures. We look forward to hearing from you soon.

Respectfully submitted,



Adam M. Kushner

Partner
adam.kushner@hoganlovells.com
D +1 202 637 5724

Cc: Mr. Eric Schaaf, EPA Region 2 Counsel
Ms. Carmen Guerrero, EPA Caribbean Office
Mr. Armando Otero, Acting Secretary, Puerto Rico Department of Natural and Environmental Resources

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C., 20460

ASSISTANT ADMINISTRATOR
FOR ENFORCEMENT AND
COMPLIANCE ASSURANCE

FEB 13 2020

Adam Kushner
Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, D.C. 20004

RE: No Action Assurance for the Puerto Rico Electric Power Authority (PREPA) Emergency Request for Generating Units Subject to the Mercury and Air Toxics Standard (MATS)

Dear Mr. Kushner:

This letter is in response to your January 14, 2020, request, on behalf of the Puerto Rico Electric Power Authority (PREPA), for No Action Assurance (NAA) regarding the operation of certain electric generating units operated by PREPA in Puerto Rico. More specifically, this letter responds to that portion of PREPA's request that seeks relief for units that are subject to the National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (40 CFR Part 63, Subpart UUUUU), also referred to as the Mercury and Air Toxics Standards (MATS). Beginning on or about December 28, 2019, and continuing since, Puerto Rico has experienced multiple earthquakes and aftershocks that have caused extreme damage to its power grid. Among other things, the earthquakes have rendered the Costa Sur Power station, a critical baseload station, inoperable. On January 7, 2020, the Governor of Puerto Rico signed an Executive Order decreeing a state of emergency throughout Puerto Rico; on January 16, 2020, the President signed a major disaster declaration for Puerto Rico.

Your January 14, 2020, letter requests NAA for electric generating units subject to MATS for: (1) operating above the 8% capacity factor specified in the "limited use liquid oil-fired subcategory;" (2) exceeding the particulate matter (PM) emission limit, or otherwise not meeting applicable performance testing standards, and work practice standards; and (3) violating the related Title V permit requirements.

PREPA currently operates and is seeking relief for the following three (3) electric generating units classified under the Subpart UUUUU "limited-use liquid oil fired subcategory": San Juan Unit 7, San Juan Unit 8, and Palo Seco Unit 1. In order to qualify for the "limited-use liquid oil fired subcategory," an electric generating unit must have an annual capacity factor, when burning oil, of less than 8% of its maximum or nameplate heat input, whichever is greater, averaged over a 24-month block contiguous period commencing on the first of the month following the compliance date. 40 CFR § 63.10042. Electric generating units that qualify for the "limited-use liquid oil fired subcategory" are not subject to the emission limits in Tables 1 and 2 of Subpart UUUUU. 40 CFR § 63.10000(c)(2)(iv). In order to

provide power during the emergency declaration, however, the electric generating units need to operate above the 8% capacity factor and therefore would no longer qualify for the "limited-use liquid oil fired subcategory." PREPA is requesting that the three (3) electric generating units listed above, previously classified as "limited-use liquid oil fired" units, continue to be classified as "limited-use liquid oil fired" units even though they will exceed the 8% capacity factor as a result of operation during the state of emergency.

PREPA is also seeking relief from the MATS Subpart UUUUU requirements for the following five (5) electric generating units: San Juan Unit 9, Palo Seco Unit 3, Palo Seco Unit 4, Aguirre Unit 1, and Aguirre Unit 2. Specifically, PREPA is seeking relief from the PM emission limit and related performance testing and work practice requirements in Subpart UUUUU during the state of emergency.

PREPA requested NAA in order to maintain the supply of electricity to customers and critical facilities in Puerto Rico, and to facilitate the expeditious restoration of lost electrical service caused by the earthquakes. In light of the existing emergency in Puerto Rico, the U.S. Environmental Protection Agency will exercise its discretion with respect to San Juan Unit 7, San Juan Unit 8, San Juan Unit 9, Palo Seco Unit 1, Palo Seco Unit 3, Palo Seco Unit 4, Aguirre Unit 1, and Aguirre Unit 2 not to pursue enforcement for violations of the MATS provisions cited above, along with the related Title V requirements, that occur during the period covered by this NAA, subject to the following conditions:

1. This NAA applies only to MATS violations that occur as a result of EGU operations that are necessitated because of the impacts from the earthquakes.

2. Electric generating units listed above must return to normal operations as soon as practicable.

3. For the purpose of determining compliance with the 8% capacity factor following the termination of this NAA, PREPA will exclude the days during the time period of this NAA from the calculation of the average 24-month block specified in the annual capacity factor definition in 40 CFR § 63.100042.

4. PREPA will continue to calculate the 30-day total particulate emission limits for San Juan Unit 9, Palo Seco Unit 3, Palo Seco Unit 4, Aguirre Unit 1, and Aguirre Unit 2 pursuant to the relevant requirements of Subpart UUUUU, or best available information.

5. With respect to electric generating units for which PREPA will seek relief from the 8% capacity factor limit described above, PREPA must maintain records of the fuel burned, and hours operated during the time period of this NAA.

PREPA must submit a report to the EPA within two weeks of the termination of the NAA containing the following information:

1. The name, address, and contact information for the person submitting the report.

2. For each of the three (3) electric generating units identified as limited use and covered by this NAA (San Juan Unit 7, San Juan Unit 8, Palo Seco Unit 1), the hours operated, the fuel burned, and calculations of the excess emissions generated.

3. For each of the five (5) electric generating units covered by this NAA (San Juan Unit 9, Palo Seco Unit 3, Palo Seco Unit 4, Aguirre Unit 1, and Aguirre Unit 2), a calculation of the total PM emissions during the period of the NAA.

4. A description of how the energy was used, including any benefits provided to the public.

The notifications identified above should be sent to the EPA via email to Harish Patel at patel.harish@epa.gov.

The issuance of an NAA for this period of time is in the public interest. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by the earthquakes. The EPA intends to use the period of the NAA to evaluate the appropriate longer-term approach for addressing this situation. Nothing in this NAA is intended to override state or local authorities.

The NAA terminates at 11:59 PM Atlantic Standard Time, April 30, 2020. The EPA reserves the right to extend, revoke or modify the NAA if the EPA believes that such action is necessary to protect public health and the environment. This NAA does not apply to any other federal requirements that may apply to regulated activities at these facilities other than those listed above.

Nothing in this exercise of enforcement discretion relieves any person of the obligation under law, if any, to report emissions from the operation of equipment covered by this action. If you have any questions please contact Gregory Fried, at 202-564-7016 or fried.gregory@epa.gov.

Sincerely,



Susan Parker Bodine

cc: Peter D. Lopez, Regional Administrator, EPA Region 2

GOBIERNO DE PUERTO RICO
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JUNTA DE CALIDAD AMBIENTAL

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I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
____ pies	____ pulg.	____ °F	____ pies/seg.
____ pies	____ pulg.	____ °F	____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3$/min.

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: **PS BSG-1** Caterpillar C13 Emergency Diesel Generator (Tipo) _____ 609 Hp (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Distillate Oil	28.4 gal/Hr	.0015 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
N/A	N/A

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
9.4 pies	5" pulg.	1059 °F	104.5 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar: Tipo _____ Gal/hr ó Lb/hr _____ % azufre _____
6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

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17776-PE (Número de Licencia) | Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) | _____ (Firma)

EFRAN PAREDES MAISONET INGENIERO LICENCIADO LIC. #17776 PUERTO RICO

Fecha: _____. Número de solicitud: _____.

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I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3$/min.

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: **PS BSG-2** Caterpillar C13 Emergency Diesel Generator (Tipo) _____ (BTU/hr) 609 Hp (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Distillate Oil	28.4 gal/Hr	.0015 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
N/A	N/A

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
9.4 pies	5" pulg.	1059 °F	104.5 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar:

Tipo	Gal/hr ó Lb/hr	% azufre

6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

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Número de Licencia	Nombre (Letra de molde)	Firma
17776-PE	Ing. Efrain Paredes Maisonet	

EFRAIN PAREDES MAISONET INGENIERO LICENCIADO LIC. #17776 PUERTO RICO

Fecha: _____. Número de solicitud: _____.

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I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3$/min.

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: **PS BSG-3** Caterpillar C13 Emergency Diesel Generator (Tipo) 609 Hp (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Distillate Oil	28.4 gal/Hr	.0015 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
N/A	N/A

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
9.4 pies	5" pulg.	1059 °F	104.5 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar:

Tipo	Gal/hr ó Lb/hr	% azufre

6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

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17776-PE (Número de Licencia) — Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) — _____ (Firma)

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I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3/min.$

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: **PS MP-1** PWPS Model FT-8 MOBILEPAC Combustion Turbine: 294.8 MMBtu/Hr (Nat.Gas); 283.3 MMBtu/Hr Fuel Oil ó __
(Tipo) (BTU/hr) (HP)

2. Combustible:

Tipo	Gal/hr	ó	Lb/hr	% azufre
Gas Natural	289.029 Scf/Hr			5.0 gr/100 dscf
Distillate Oil	2.053 gal/Hr			.05 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
Water Injection (Gas)	85
Water Injection (Oil)	85

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
33.9 pies	120.95" x 97.08" pulg.	794 °F	157.4 pies/seg.
33.9 pies	120.95" x 97.08" pulg.	794 °F	155.4 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar:

Tipo	Gal/hr	ó	Lb/hr	% azufre

6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.

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1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3/min.$

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: **PS MP-2** PWPS Model FT-8 MOBILEPAC Combustion Turbine: 294.8 MMBtu/Hr (Nat.Gas); 283.3 MMBtu/Hr Fuel Oil ó __
(Tipo) (BTU/hr) (HP)

2. Combustible:

Tipo	Gal/hr	ó	Lb/hr	% azufre
Gas Natural	289.029 Scf/Hr		_____	5.0 gr/100 dscf
Distillate Oil	2.053 gal/Hr		_____	.05 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
Water Injection (Gas)	85
Water Injection (Oil)	85

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
33.9 pies	120.95" x 97.08" pulg.	794 °F	157.4 pies/seg.
33.9 pies	120.95" x 97.08" pulg.	794 °F	155.4 pies/seg.

III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar:

Tipo	Gal/hr	ó	Lb/hr	% azufre

6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.
V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

Certifico que estoy registrado y autorizado para practicar mi profesión en Puerto Rico; que el equipo y medidas para el control de emisiones son adecuadas y cumplen con las disposiciones del Reglamento de Control de Contaminantes Atmosféricos de la Junta de Calidad Ambiental de Puerto Rico y que, de acuerdo a mis mejores conocimientos y creencias, la información suministrada es veraz, completa y exacta.

17776-PE (Número de Licencia) — Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) — _____ (Firma)

EFRAN PAREDES MAISONET INGENIERO LICENCIADO LIC. #17776 PUERTO RICO

Fecha: _____ Número de solicitud: _____.

GOBIERNO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

PUERTO RICO VERDE

Área de Calidad de Aire

SOLICITUD DE PERMISO PARA LA CONSTRUCCIÓN U OPERACIÓN
DE FUENTES DE EMISIÓN EN PUERTO RICO

PARTE II - PROCESO DE LA PLANTA Y DESCRIPCIÓN DE EMISIONES

I. EMISIONES INDUSTRIALES: (Movimiento de terreno, almacenaje en tanques, talleres de pintado, etc.)

1. Descripción del proceso u operación que emite contaminantes atmosféricos:
N/A

2. Materia prima usada o procesada: _____ (Tipo) _____ (Cantidad) _____ (unidad/unidad tiempo)

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.
_____ pies	_____ pulg.	_____ °F	_____ pies/seg.

5. Volumen de descarga de emisiones: _____ $Pies^3/min.$

6. Emisiones actuales: Estimado basado en: _____.

Tipo de contaminante	Cantidad (masa/tiempo)	Duración (tiempo/unidad tiempo)

7. Incluya un diagrama de flujo del proceso (tipo bloque) demostrando puntos, cantidades y tipos de emisiones.

II. EMISIONES POR COMBUSTIÓN: (Calderas, calentadores, plantas de emergencia, bombas de incendio, etc.)

1. Equipo de combustión: **PS MP-3** PWPS Model FT-8 MOBILEPAC Combustion Turbine: 294.8 MMBtu/Hr (Nat.Gas); 283.3 MMBtu/Hr Fuel Oil ó __
(Tipo) (BTU/hr) (HP)

2. Combustible:

Tipo	Gal/hr ó Lb/hr	% azufre
Gas Natural	289.029 Scf/Hr	5.0 gr/100 dscf
Distillate Oil	2.053 gal/Hr	.05 wt%

3. Equipo de control para emisiones:

Tipo	Eficiencia % por peso
Water Injection (Gas)	85
Water Injection (Oil)	85

4. Chimeneas:

Altura	Diámetro Salida	Temp. Salida	Velocidad Salida
33.9 pies	120.95" x 97.08" pulg.	794 °F	157.4 pies/seg.
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III. EMISIONES POR INCINERACIÓN O DISPOCISIÓN DE DESPERDICIOS: (Sólidos, líquidos, gaseosos)

1. Método para disponer los desperdicios: N/A.
2. Tipo de desperdicios: _____ Cantidad: _____ Lb/día.
3. Incinerador: _____ (Tipo) _____ (Marca) _____ (Capacidad (Lb/día)).
4. Chimenea: _____ Pies (Altura) _____ Pies (Diámetro Salida) _____ °F (Temp. Salida) _____ Pies/seg. (Velocidad Salida)
5. Combustible auxiliar:

Tipo	Gal/hr ó Lb/hr	% azufre

6. Equipo de control: _____ (Tipo) _____ % por peso. (Eficiencia)

IV. CUMPLIMIENTO: Incluya datos o información demostrando que las emisiones no exceden los límites establecidos.
V. EQUIPO DE CONTROL: Incluya esquema de la instalación del equipo de control de la fuente de emisión.

CERTIFICACIÓN DE UN INGENIERO, QUÍMICO O ARQUITECTO LICENCIADO

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17776-PE (Número de Licencia) | Ing. Efran Paredes Maisonet (Nombre (Letra de molde)) | _____ (Firma)

EFRAN PAREDES MAISONET INGENIERO LICENCIADO PUERTO RICO LIC. #17776

Fecha: _____. Número de solicitud: _____.

Dirección Física: Edificio de Agencias Ambientales Cruz A. Matos, San José Industrial Park,
1375 Avenida Ponce de León, San Juan, Puerto Rico 00926-2604
Dirección Postal: Apartado 11488, San Juan, PR 00910
Tel. (787) 767-8181 • Fax (787) 756-5906

CN 078-04495
Rev. 11/17

GOVERNMENT OF PUERTO RICO
Puerto Rico Electric Power Authority

March 2, 2020

Ottmar J. Chávez
Executive Director
Central Office for Recovery, Reconstruction and Resilience COR3
Governor's Authorized Representative
GFR Building #50 Carr. 165
Parque Industrial Buchanan
Guaynabo, PR 00968-8024

Dear Mr. Chávez:

PREPA'S Request for Temporary Generation Following Disaster 4473

Overview

On January 6, 2020, a magnitude 5.8 earthquake struck the southwest region of Puerto Rico causing considerable damage to homes and other private and public structures as well as a partial electric power blackout leaving over 327,000 citizens without power. On January 7, 2020, a magnitude 6.4 earthquake, Puerto Rico's most destructive quake in a century, caused major damage to private and public structures and infrastructure, including structural and mechanical damage to Puerto Rico Electric Power Authorities (PREPA) Costa Sur power plant. Costa Sur, a 820 MW power plant provides over 26% of the electric power on the island. The island suffered a complete electric power blackout as a result of the earthquake and the Costa Sur power plant failure. On January 11, 2020, a magnitude 5.9 aftershock once again rattled Puerto Rico's southwestern coast exacerbating previous damages to the plant.

Damages and Inspections

A series of surface evaluations performed by PREPA and contracted engineering firms revealed significant damages to critical generation components and surrounding structural areas that makes the facility unsound and not feasible to be operated. Since late January 2020, there have been more than 100 earthquakes or aftershocks of magnitude 3 or higher, which have continued to deteriorate and exacerbate damages to the Costa Sur Power Plant all while exposing employees to significant safety risks.

"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."

The Occupational Safety and Health Administration (OSHA) performed an onsite intervention in which it was determined, as exhibited in its letter dated January 12th 2020, that Costa Sur was not suitable as a working environment and required PREPA to evacuate all the plant's employees (Attachment A – OSHA Letter). It was therefore, that PREPA's management completed a series of safety inspections, through independent contractors, that outlined several immediate repairs that need to be completed before further inspections, damage assessments, and employee access could be reinitiated. Report included herein as Attachment B, formally advises management of immediate repairs that should be completed within units 3, 4, 5, & 6 prior to permitting more extensive personnel access to the areas. Damages identified and recommended repairs addressed structural stabilization concerns within the units that pose significant safety risk to any individual present in the area. Areas deemed safe for access continued their damage assessment and inspection evaluations, refer to PREPA's Action Plan Report in Attachment C.

Furthermore, preliminary damage assessments and visual surface level evaluations performed before the Plant's closure, revealed the following:
Preliminary Damage Assessment:

Boiler water system – Fallen tanks, decoupled pipes, and damaged bases. Visual inspection shows cracks in the floor that cross the base of the tanks. Deformation in some tanks by possible cracks consisting of visual water leaks along with an eroded and broken base. Deformation in tank walls, cracks within the base and broken anchor bolts.

Boiler – Approximately 90% of the structural bracing members and gussets plates that provide support to the engine rooms and boiler require replacement due to buckling. Visual damages presented by the refractory insulation material in 90% of its entirety. Visual cracks in Boiler's concrete bases. Concrete secondary containment was broken at piping sleeve section due to movement or vibration of piping.

Turbines - Diaphragms of the one of the units broke and caused the refractory material to detach from the duct.

Switch Gear room and electrical panel - masonry wall south switchgear rooms are compromised; the rest of the panels were observed to be without surface damage.

Transformers - Common damage are within structures. Transformers derailed out of their bases showing oil leaks, broken radiators and impaired railing system. Differential settlement observed by visual cracks in masonry walls.

Natural Gas Piping Storage - Piping has displacement, bending of beam, cracks and settlement on the floor-pavement around the station (multiple areas) building columns base plates-footing anchor bolts up lifted and damaged.

Due to the intricate nature of all the equipment components of Costa Sur a comprehensive damage assessment is scheduled to initiate in the following weeks with the objective to provide a consolidated report containing all assessment activities and findings to be used as the basis for the decision of how to proceed with providing the lost 820MW of power generation at Costa Sur. Expected completion date of such report is 12 weeks after initiation (Attachment D – Sargent & Lundy Proposal).

Nevertheless, through the inspections initiated in condenser tanks 5 & 6 (areas marked safe for access), engineers have communicated preliminary to PREPA management that damages suffered by the event to the tanks require that those be demolished and rebuilt along with the construction of ancillary walls to prevent further seismic damages. Tanks are critical to the operation of the generation units and are expected be repaired with an estimated minimum 6 month scheduled. Such estimate does not consider the evaluation of load foundation pillars that will be examined once the demolition of tanks is initiated, thus possibly extending the initial estimated repairs beyond the 6-month base line. Refer to Attachment E – HGE Tank Structural Analysis proposal. Formal engineering report by contractor is expected to be received mid-march.

Imminent Threat

PREPA, as a State Corporation, has the fiducial responsibility to provide power to critical infrastructure across the island. Its Organic Act (Puerto Rico Electric Power Authority Enabling Act, Act No. 83 of May 2, 1941, as amended) tasks PREPA to provide electric power and contribute to the general welfare and sustainability of the development of Puerto Rico. PREPA is currently the only entity that provides electric service to all of Puerto Rico's citizens and business including all private and public critical facilities. Critical facilities include but are not limited to13 Police Regions, 63 Hospitals, 91 Fire Stations, 51 Waste Water Plants, 1,800 Sewage Pump Stations, 112 Potable Water Plants, 33 State Prisons, 10 Airports, 8 Ports, 2,224 K-12 Schools and 152 Higher Learning Institutions.
Moreover, providing power to access and functional needs citizens including169,000 disabled people in Puerto Rico and more than 850 licensed elderly homes across the island.

The loss of Costa Sur's 820 MW generation provoked a forecasted critical base energy deficiency of 634MW (345MW Min - 908MW Max) propelling PREPA to critical reserve levels and replacing "base" energy with sources of power not designed for this intended use, i.e. "peakers", refer to attachment H. The absence of base energy directly exposes PREPA to a shortage of reserve capacity, shortage of Primary and Secondary frequency regulation, extensive use of less efficient generating units, increasing operating costs,

reduced power system inertia, dynamic and transient stability margins, and alteration of PREPA's maintenance schedules.

Generation capacity at the Costa Sur plant has been lost and at present, PREPA is using nine peaking units as a stopgap measure to replace 26% total of Puerto Rico's electrical generation capacity that was lost due to the Costa Sur plant damage directly caused by the earthquakes. PREPA has no remaining usable equipment or methods to produce energy that are not currently being used as emergency measures. Furthermore, three of these base generators, that produce 150 MW, are not EPA compliant and the emissions waiver for these units ends April 30, 2020. After this date, the generators will be taken off line due to this Federal requirement putting a further burden onto Puerto Rico's power production, refer to Attachment G, EPA No Action Assurance letter.

It is logical that severe energy load sheds expose critical facilities (i.e. Hospitals, water facilities, ports and other essential services) as well as citizens whose lives depend on energy service to outages or a total system blackout threatening overall public health and safety.

Even with all emergency measures implemented, base generation capacity is still running at critical levels leaving PREPA to perform load sheds, experiencing two at around 20MW within the last month leaving a total of 20,000 citizens without power (Attachment F – PREPA Informe Mensal de Eventos Importantes). Load sheds are expected to become more recurring and severe considering that coming months reflects the Authority's peak demands exposing citizens to an imminent threat.

A critical base energy deficiency replaced by "peaking units" for an extended period of time will result in possible total system blackout / failure which in turn results the immediate threat to the lives, public health and safety to the people of Puerto Rico and its improved properties.

Moreover, temporary repairs due to the aftermath of Maria required PREPA to perform several deviations to lines in which identification of critical facilities may have been impaired, thus limiting PREPA's ability to reduce load sheds to essential services. Within PREPA's permanent work formulation the entity is assuring that significant mitigation measures are addressed to critical lines and that all the critical facilities and properly identified and incorporated.

Emergency Temporary Measures proposed

A temporary Emergency Protective measure is currently being pursued by PREPA by publishing a Request for Proposal that will lease or buy generators to meet that lost capacity at an approximate lease and fuel cost of $26 Million/month and $45 Million/month, respectively. The estimated total cost of generation of 500MW will be $71 Million a month to lease the equipment and operate such. PREPA estimates that 500 MW

should satisfy the deficiency of reliable power in PREPA's system to avoid load sheds that would adversely affect the lives of millions and may jeopardize the Island's economy stability PREPA is seeking temporary generation through the leasing/purchasing of

generation base units in order to eliminate or lessen the imminent threat that will certainly happen in the following months of high demand while PREPA performs a formal damage inspection and repairs, ultimately made to reinstate the damaged facility back to its full capacity and functionality. Such units will temporarily replace the loss base generation capacity of Costa Sur Power Plant, lessening the imminent threat of load shed and possible blackouts in the island.

PREPA is working to procure contracts, through an expedited competitive process (i.e., RFP), approved by its Board of Directors Resolution No. 4759, Attachment I, in accordance with PREPA's procurement policies and Title 2 C.F.R 200.317, in order to lease temporary/mobile generation to compensate for the loss of Costa Sur and ensure adequate capacity before the summer, the Island's high-demand season. This is the only option available to eliminate the imminent threat to life, health, safety and property that the foreseeable blackouts represent.

Another aspect worth considering is the geographical situation of Puerto Rico. Obviously, there is no option to obtain power from neighbor states or cities. PREPA has no other feasible option that leasing or buying power generators to replace generation capacity lost due to damages caused by the earthquakes. Knowing market availability limitations for these types of equipment, PREPA in its RFP allowed proposers to present offers to sell or lease the equipment. PREPA, after receiving offers from bidders, will definitely consider the best options and more economically sound to maximize both local and federal funds. A benefit cost analysis will be performed to ultimately maximize the use of funds and limit excess cost while still achieving the desired outcome.

Ultimately, the purpose of the RFP is to seek reputable and experienced firms (contractors) that can provide a timely solution to lease, install, operate and maintain the power generation system equipment necessary to bridge the gap caused by the loss of the 820 MW Costa Sur power plant in Guayanilla.

Financial Analysis

Regardless of FEMA's determination, PREPA definitely needs to lease or purchase these generators to prevent the damages that will be suffered in the following two months. However, PREPA is currently under a bankruptcy case and its operational liquidity is very low. Considering the exigent circumstances PREPA is facing, management will prioritize and reallocate budgetary items to fund these emergency measures, albeit consuming its working capital within a matter of months. Cost alternatives may only be feasible if external financial funds are available or programmed expenses budgets are

diverted to pay for the earthquake-caused emergency generation expenses, subject to the approval of its regulating entities. This is evidence that the measure that needs to be taken are way beyond state capacity.

It is important to note that even though PREPA is a revenue generating entity and ultimately recoups its cost from its clients, PREPA is not free to implement changes in its rates to recover costs, including extraordinary costs required to responds to an emergency, without having sought and obtained authorization from various regulatory bodies.

PREPA, as a comprehensively regulated entity, is not free to implement rate changes without first having received formal approval from its regulators, the Puerto Rico Energy Bureau "PREB". Such changes must, in addition, be consistent with the Fiscal Plan approved by the Financial Oversight Board for Puerto Rico (the "FOMB") created under the Puerto Rico Oversight, Management and Economic Stability Act of 2016, 48 U.S.C. 2101 et seq. ("PROMESA").

It has historically taken a great deal of time – measured in years- for PREPA to obtain certainty regarding its ability to recover the cost it has incurred in vesting in its infrastructure and in providing services. Moreover, PREPA extraordinary expenses incurred by Hurricane Maria were examined by the PREB to ensure that no costs associated with federal reimbursements were passed on to the clients.

The process for obtaining authorization to increase rates is demanding in terms of the information required to support a rate change filing, and in terms of time required to satisfy procedural requirements imposed by law, to complete required exchanges of information, to conduct the legally required hearings, and to obtain and Energy Bureau determination on its proposal.

Insurance Coverage

PREPA's insurance policy covers the costs associated in property damages due to the loss of Costa Sur power plant and the replacement, permanent and/or temporary, of its generation capacity. The insurance policy provides coverage for property damages, business interruption, and extra expenses (such as a more expensive fuel burnt) caused by unexpected events like earthquakes up to $300 million, with its related deductible, all considering that PREPA takes all necessary measures to mitigate the losses expeditiously. It is uncertain if PREPA will receive insurance proceeds in advance.

Moreover, PREPA is a shareholder in a mutual type insurance company (Oil Insurance Limited) that provides reasonable and effective insurance coverage up to $250 million. However, coverage is limited to property damages in excess of $300 million claimed within the commercial property insurance referenced above. If FEMA ultimately finds cost

measures incurred to be eligible and awards funding to reimburse such, FEMA will reduce funding by the anticipated or actual amount of insurance proceeds received to avoid a duplication of benefits excluding amounts relating to associated deductibles.

Insurance claim efforts are well underway to properly assess damages and losses covered by the insurance and ultimately identify uninsured losses eligible for FEMA reimbursement.

Eligibility Analysis

In terms of regulatory boundaries, eligibility of works under FEMA Public Assistance program are set based on "Robert T. Stafford Disaster Relief and Emergency Assistance Act", ("Stafford Act"), as the Congressional Act which authorizes all disaster recovery action by Federal Emergency Management Agency. Under Stafford Act authority, FEMA promulgated implementing regulations in Title 44 C.F.R. Part 206, and developed the Public Assistance Program and Policy Guide ("PAPPG") V3.1.

Regarding sections applicable to this request, PAPPG Chapter IV- B says:

Emergency protective measures conducted before, during, and after an incident are eligible if the measures:

a- Eliminate or lessen immediate threats to lives, public health, or safety; OR

b- Eliminate or lessen immediate threats of significant additional damage to improved public or private property in a cost-effective manner

Among the emergency protective measures that are considered eligible to eliminate or lessen immediate threats, the list specifically includes the use or lease of temporary generators for facilities that provide essential community services. Obviously, and as established in data provided before, PREPA is the only agency that provides energy to all territory of Puerto Rico. As it is known, power outages will affect continuity of public services, hospital care, darkness will provoke increase in crime, basic services to citizens will be interrupted and therefore enormous economic losses.

Also, FEMA is authorized to provide PA funding for Emergency Work, especially where there an immediate threat. FEMA policy states:
"Immediate threat" is the threat of additional damage or destruction from an incident that can reasonably be expected to occur within 5 years of the declared incident.

An immediate threat means imminent danger from an incident that can **reasonably be expected to occur within 5 years**. In this case, power outages will certainly occur in the following two (2) months. Therefore, the situation for what PREPA is requesting Cat B PW approval certainly fulfills "immediate threat" requirements.

The procurement of generation assets can be considered eligible under the provision for temporary relocation of essential services (PAPPG pages 76-80), under FEMA's Public Assistance Program, as an emergency protective measure. All of the conditions of eligibility for temporary relocation are or will be met for the emergency protective measures associated with temporary generation, including but not limited to;

- The disaster-damaged facility operated an eligible essential service as a public utility,
- Damage to Costa Sur is to the extent that it cannot be occupied safely and restoration cannot be completed without suspending operations of the facility for an unacceptable period of time,
- The temporary facilities will provide up to the pre-disaster capacity of the disaster-damaged facilities, and exist for the same function as the disaster-damaged facility, which is to provide power generation for the Puerto Rico electric power grid and system,

Later, PAPPG V3.1 sets in page 60 the guidelines for "Expenses Related to Operating a Facility or Providing a Service". Specifically, PAPPG says that:

> The Applicant may incur additional costs related to operating a facility as a result of the incident because of an increased demand for the services the facility provides.
>
> These additional costs are only eligible if:
>
> a- The services are specifically related to **eligible emergency actions to save lives or protect public health and safety or improved property**;
> b- The costs are for a **limited period of time** based on the exigency of the circumstances; and
> c- The Applicant tracks and documents the additional costs.

Potentially eligible increased operating costs include, **but are not limited to**, costs for:

a- **Generators** at a hospital or police station
b- Water testing and treatment supplies in the immediate aftermath of the incident to counter a specific threat
c- **Fuel** for increased use of a pumping station
d- EOC facility costs (e.g., utilities)

Examples of ineligible operating costs include, but are not limited to, costs for:

a- Obtaining electrical power from an alternate source

Now, when we look for a definition for the term "power alternate source", Dr. Ann Brown from Department of Mechanical Engineering, The Queen's University of Belfast, Belfast, N. Ireland, U.K., defines "Alternate Energy Sources" as "sources of energy that provide alternatives to conventional fossil". Some examples given by Dr. Ann Brown are: Wind Power, Water Power, Solar Energy, Geothermal Energy and Bioenergy. This definition provided by Dr. Ann Brown is supported by World Energy Council.

It shall be noted that PAPPG does not define at all the term "alternate source". However, it is an industry standard term that power alternate sources do not refer to power generators because in the examples list of increased costs eligible for reimbursement, the PAPPG does mention "Generators" at hospitals or police stations. The term alternate source of power deemed ineligible under PAPPG obviously refer to sources of energy that do not use fossil fuels or nuclear energy. This is clearly not the case in PREPA's request. PREPA's request is to obtain power generators leasing or purchase price reimbursement as well as fossil fuels costs reimbursement.

Finally, even though the term "limited time period" is not defined in PAPPG, we can certainly interpret it as the six (6) month period allowed for emergency protective measures or until the imminent threat the measure addresses ceases to exit. That limited period of time will be enough for PREPA to take measures to prevent damages that power outages bring. Accordingly, this request is definitely for a limited period of time until PREPA is able to complete adequate assessments and inspections, by certified engineering entities, that can establish a final work plan to repair and bring Costa Sur plan back to operation. Also, the request PREPA is presenting is to fulfill the high demand season forthcoming that will commence in next May and extend until end of next October.

Conclusion and Request

Therefore, due to Puerto Rico's current emergency situation and the foreseeable and imminent threats expressed before, PREPA is requesting a Category B Project Worksheet approval to deem eligible the costs associated with the emergency protective measures for emergency generation, including leasing, installing, operating and maintain power generation equipment necessary to substitute the 820 MW power generation lost due to Costa Sur power plant damages caused by the earthquakes. This request is eligible under FEMA's statutory, regulatory, and policy guidelines as addressed above. As an alternative, PREPA's request is that FEMA assists/or provide them with temporary equipment (generators) via direct federal assistance to prevent further energy interruption to the affected areas.

Sincerely,

Arturo Deliz Vélez
DFMO Administrator

CC: Alex Amparo – Federal Emergency Management Agency
Federal Coordinating Officer

Attachment A

GOBIERNO DE PUERTO RICO
DEPARTAMENTO DEL TRABAJO Y
RECURSOS HUMANOS

13 de enero de 2020

Hon. Briseida Torres Reyes
Secretaria

Luis E. Pardo Rosado
Secretario Auxiliar

Eric C. Vega Guzmán, MSOSH, CSHM
Director, Oficina Área San Juan

INFORME DE INTERVENCIÓN A LA CENTRAL COSTA SUR DE AEE

En el día de ayer, 12 de enero de 2020, se nos encomendó realizar una inspección a la Central Costa Sur de la Autoridad de Energía Eléctrica. Llegamos a la 1:00 p.m.

Representantes de PR OSHA: Sr. Eric C. Vega Guzmán, Director Área de San Juan
Sr. Melvin Pérez, Especialista en Seguridad y Salud

Representante del patrono:
Sr. Ángel Pérez, Jefe de Operaciones
Sr. Ramón Aguilar, Jefe de la Central
Sr. William Ríos Mera, Generación
Sr. Luis Felipe Torres, FSO
Sr. Héctor Tirado, FSO
Sr. Arturo Deliz, Administración DFMO
Sra. Mervet Rodríguez, Especialista de Proyectos
Sra. Shehaly Rosado, Jefa de Seguridad y Salud
Sra. Karilyn Salas, Supervisora de Seguridad y Salud
Sra. Diabel Colón, Oficial de Seguridad
Lcdo. Jorge Vega, Especialista de Proyectos

PROPÓSITO:

Realizar una intervención en la Planta Costa Sur para inspeccionar el Cuarto Eléctrico, el Taller de Mecánica General y el Almacén. Esto, a petición del patrono en su interés de tener más información para determinar si permitían el acceso a los empleados y el trabajo. Durante el recorrido observamos los daños ocurridos por los continuos temblores de tierra y riesgos de seguridad y salud ocupacionales.

POR MENORES DE LA VISITA:

Durante la visita nos acompañaron todos los representantes del patrono y se inspeccionaron las áreas establecidas de la central, en donde se observó lo siguiente:

Cuarto Eléctrico - Riesgos

- Panel eléctrico obstruido por armarios
- Paneles acústicos en el suelo como consecuencia de temblores
- Paneles eléctricos de distribución de potencia DC sin tapas
- Puerta de salida de emergencia obstruida por casilleros
- Cable eléctrico casero para energizar equipos de cocina en el salón comedor
- Panel de control de incendios deshabilitado – poner a funcionar
- Cuarto de controles en desorden y sucio
- "Multiplugs" conectados en cadena para energizar equipos en cuarto de comunicación
- Los conductos de aire acondicionado requieren limpieza
- Escalera de acceso al sótano no tiene pasamanos
- Habilitar baños

Taller de mecánica general - Riesgos

- Cilindros de acetileno y oxígeno almacenados juntos en un carrito por tiempo mayor a 24 horas
- Hacer una inspección anual a las grúas de techo
- Las lámparas de techo requieren estar sujetas de mejor forma
- Cable eléctrico sin clavija de "ground" en una esmeriladora
- Paneles eléctricos obstruidos por una máquina y materiales
- Ninguna de las esmeriladoras tenía los dispositivos de seguridad
- Receptáculos eléctricos sin tapas en las paredes
- Cilindros de gas abandonados en pasillo trasero del taller
- Habilitar estaciones de lavado de ojos y duchas de emergencia, realizarles inspecciones semanales
- Taladros sin resguardos de seguridad

Almacén 059 – Riesgos

- Pared derecha de la entrada tiene grietas – realizar un estudio estructural
- Extensión casera con caja de metal (4x2) como sustituto de cablería permanente
- Paredes con grietas en cuarto de llaves y comedor
- Eliminar cajas sobre anaqueles en el almacén anexo.
- Falta una tabla de capellada en el mezanine
- Cables flexibles usados como sustitutos de cables permanentes en cajas de interruptores de encender y apagar luces interiores

Impresión general de las áreas

- El área continúa temblando (réplicas), por lo que las estructuras y los equipos se podrían ver más afectados.
- Los riesgos observados son los comunes hallados en un lugar de trabajo que no tiene inspecciones de seguridad y salud ocupacional.

Recomendación de PR OSHA

Si el patrono decide poner las áreas evaluadas en funcionamiento, debe:

- Enviar copia de los informes de inspección realizados por empresas contratadas al Sr. Luis Pardo, Secretario Auxiliar de PR OSHA.
- Corregir los riesgos hallados en cada área de trabajo.
- El plan de emergencia o desalojo debe revisarse conforme vayan surgiendo eventos adicionales, de manera que se pueda ajustar a las situaciones que encuentren.
- Tener una restricción completa de la entrada a las áreas afectadas y evaluadas por PR OSHA según informe anterior.
- Minimizar al máximo la entrada de personal de AEE a las instalaciones.
- Cada empleado deberá asistir con el uniforme completo y con su equipo de seguridad.
- Preparar un calendario por día que incluya los empleados de la AEE y los contratistas que trabajarán, así como los trabajos que se realizarán.
- Impedir el acceso a personas sin equipo de seguridad.
- Proveer adiestramiento a los empleados sobre desalojo de emergencia
- Proveer adiestramiento a los empleados sobre lockout/tagout para las máquinas en el taller de mecánica.
- Realizar diariamente *safety meetings*.
- El personal gerencial tiene que corregir riesgos identificados por los oficiales de seguridad y salud internos en un tiempo mínimo.
- Los Oficiales de Seguridad del patrono tienen la autoridad de detener cualquier trabajo que presente riesgo.
- Ampliar el área acordonada del edificio de administración y coordinar su demolición.

Nota: La AEE, como patrono, se reserva el derecho de poner en funcionamiento las unidades 5 y 6 y el acceso al área para el control de agua cruda.

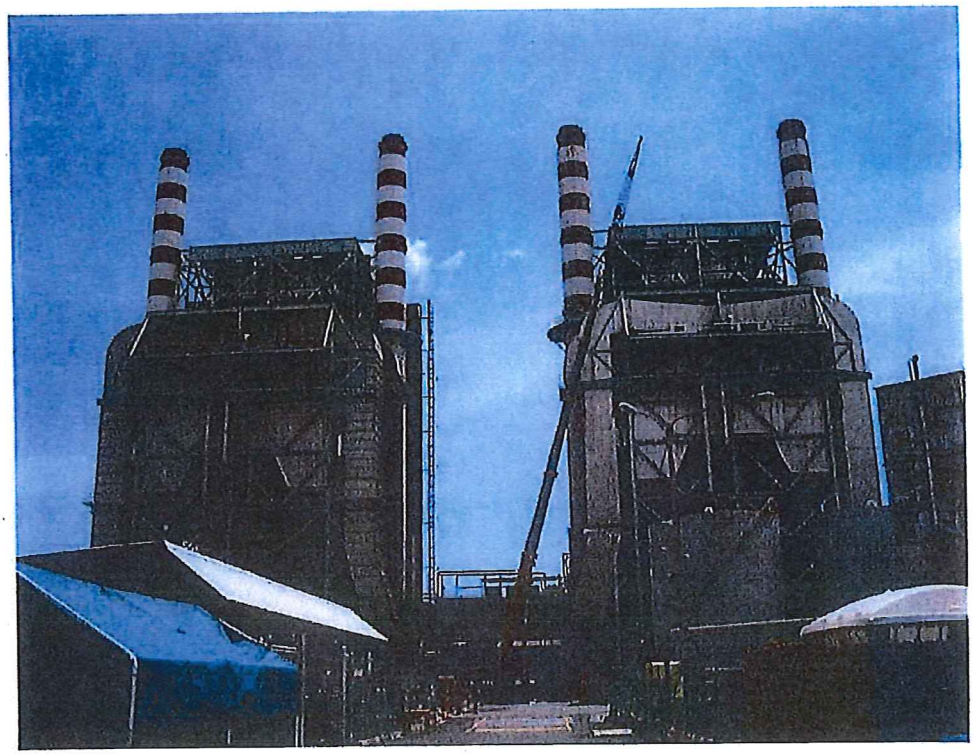
El presente informe no releva a PR OSHA de realizar inspecciones de cumplimiento conforme a las disposiciones de la Ley 16 de 5 de agosto de 1975, Ley de Seguridad y Salud en el Trabajo.

Anejo Fotos

Puerto Rico Electric Power Authority

South Coast Plant Units 3, 4, 5 & 6

Emergency Structural Inspection and Assessment
Preliminary Report of Immediate Remediation Needs
And Repair Approach
1-30-20



Prepared by:

Island Structures Engineering, PC

319 Sunrise Highway, West Islip, NY 11795

PREPA South Coast Units 3-6
Emergency Structural Inspection and Assessment
Preliminary Report of Immediate Remediation Needs
And Repair Approach
1-30-20

GENERAL:

PRPEA has requested this preliminary site inspection report, in anticipation of receiving a more complete evaluation of conditions and remediation recommendations to be submitted later next week. PREPA has requested this preliminary written report to indicate the extent of necessary remediation efforts that should be performed immediately so that PREPA and others can more safely enter the units to complete more thorough damage assessments.

PURPOSE:

Island Structures Engineering, PC (Island), working together with GE/Fieldcore personnel performed an initial inspection of the PREPA South Coast power generating units 3, 4, 5 and 6, on January 27 and 28, 2020 subsequent to a significant seismic event measuring 6.4 on the Modified Mercali Intensity Scale on January 7, 2020. Several smaller seismic events had occurred just prior to this significant event and numerous additional seismic events measuring in the 3, 4 and 5 range continue to occur at the time of this report. A formal initial assessment report is being developed and is expected to be issued during the week of February 7. Island provided a verbal post-inspection presentation to PREPA staff on January 29 and advised that certain damages should be remediated prior to proceeding further with more detailed inspections and damage assessments.

- Inspect and assess damage from recent seismic events to Units 3, 4, 5 and 6.
- Determine overall structural stability of Units 3 against gross structural collapse or major component structural failure which may pose significant threat to other plant facilities. It is not expected that these units will be placed back in service; however their demolition may not occur for several years. It is expected that personnel access will be limited to these units once stabilized.
- Determine the extent of immediate remediation work that should be performed in order to stabilize Units 5 and 6 to a degree sufficient to permit the further inspection of damages and repair investigations.
- Determine the extent of structural damage to Unit 5 in order for PREPA to evaluate the decision to make needed repairs to expedite its return to service within a few months. The structural assessment is also being supplemented with a similar assessment of the high energy piping systems, the boiler components (both internal and external), and budgetary costs for all the above.
- Determine the extent of structural damage to Unit 6 in order for PREPA to evaluate the decision to make needed repairs to expedite its return to service within the next several months. Due to damages to other process components such as demineralized water storage, boiler components and other required systems, it is currently anticipated that such other work could require considerably longer to return Unit 6 to service than Unit 5.
- This structural evaluation is being performed concurrently with an assessment of the Unit 5 and 6 high energy piping systems and an external boiler assessment. These assessments will be reported on in more detail with the

initial structural assessment. GE/Fieldcore will also be providing budgetary cost and preliminary schedule information for PREPA's use in the decision making as to whether to proceed with Unit 5 and/or Unit 6 repairs.

SCOPE OF ASSESSMENT:

- Units 3-6
- Inspection of critical lateral load resisting systems
- General overall structural inspection of all bracing and framing systems
- Inspection of high energy pipe supports for signs of distress from seismic event
- Unlike prior structural assessments performed by Island, this assessment includes the may bracing systems of the Equipment Building (located between the Boiler Structure and the T-G pedestal area.

EFFECTS OF RECENT SEISMIC EVENT:

- 6.4 on the Modified Mercali Intensity Scale
- Each number on scale is x10
  - 2 to 5 felt but minor damage
  - 5 to 6 slight damage
  - >6 a lot of damage
- Observations
  - Significant damages and indications of large displacement of structures, equipment and piping
  - Significant damages to lateral bracing systems throughout the Equipment Building from the seismic event
  - Significant damages to isolated members of the lateral bracing systems of the Unit 5 and Unit 6 bracing systems
  - Significant damages to the lateral boiler and steam drum restraints.
  - Significant damages to isolated support components of the high energy piping

APPROACH FOR REMEDIATION:

The following preliminary approach to addressing the issues observed was agreed to during the meeting attended by PREPA, Island, GE/FieldCore on January 29, 2020:

PHASE 1: Emergency Efforts to Stabilize Units Against Gross Failure:

- Phase IA: Island will compile the information ascertained during its site visit and inspections on January 27 and 28, 2020.
- Phase 1B: Island will prepare a summary of damages that need to be addressed to mitigate potential collapse failure **prior to performing more extensive assessments**. The summary to be transmitted by Island to PREPA and GE/Fieldcore simultaneously by January 31. GE/Fieldcore is to provide an immediate budget estimate and time frame required to complete these preliminary repairs. PREPA will determine if these repairs will be performed by GE/Fieldcore or by Others. These repairs are critical for the overall structural stability of the units and should be done at once, and prior to allowing additional inspections by personnel. These repairs will be required even in the event that the units are not returned to service, as this overall stability is necessary even for limited efforts required for the safe decommissioning efforts that would be required.

- Phase 1C: Complete repairs as noted above.

PHASE 2: Repairs to Units 5 and 6 required prior to placing units back in service:

- Phase 2A: Island will prepare a summary of structural repairs that are required **prior to returning Unit 5 and/or Unit 6 to service**. This report will be issued by the end of the week of February 7. Island will provide a draft list of repairs to GE/Fieldcore by Feb 4 so that they may establish budgetary cost and schedule information to supplement the report. This report will also be supplemented by a similar list of repairs required for the high-energy piping systems.
- Island 2B: Island will provide GE/Fieldcore a proposal cost estimate for the additional engineering and inspection services that would be required to detail the repairs noted in Phase 2A, provide recommended periodic inspections of the work and provide a final certification of the work, for inclusion by GE/Fieldcore in its budgetary estimate for the Unit 5 and Unit 6 repairs.
- Phase 2C: Upon review and approval by PREPA of the phase 2A & 2B scope, budget and schedule, the repairs will be performed by GE/Fieldcore with oversight by Island as a subconsultant to GE/Fieldcore, with inspection and final reports issued by Island to PREPA.

PHASE 3: Required repairs to Units 5 and 6 that may be completed with the Units in service:

- Phase 3A: Island will prepare a more detailed summary of structural repairs that are required for the continued safe operation of Units 5 & 6. The extent of these repairs will be determined with an anticipated useful operating life in the range of 5 to 10 years. Island will provide a draft list of these repairs to GE/Fieldcore by Feb 4 so that they may also be used to establish their Phase 3C budgetary cost and schedule information to supplement the February 7 report.
- Island 3B: Island will provide GE/Fieldcore a proposal cost estimate for the additional engineering and inspection services that would be required to detail the repairs noted in Phase 3A, provide recommended periodic inspections of the work and provide a final certification of the work, for inclusion by GE/Fieldcore in its budgetary estimate for the Unit 5 and Unit 6 repairs.
- Phase 3C: Upon review and approval by PREPA of the phase 3A & 3B scope, budget and schedule, the repairs will be performed by GE/Fieldcore with oversight by Island as a subconsultant to GE/Fieldcore, with inspection and final reports issued by Island to PREPA.

PHASE 4: Preliminary Assessment of Unit 5 and Unit 6 Original Lateral Load Design Capacity:

- Phase 4A: Island will review the available drawings (and other documentation that may be provided by PREPA) in order to advise PREPA as to the original design capacity of Units 5 & 6 to resist wind and seismic loads. This will be for informational purposes only, for PREPA's use in evaluating the viability of the units, as designed, for the limited life span noted above. Island will include the engineering fee for this effort in its proposal to GE/FieldCore for the other engineering services.

IMMEDIATE REPAIRS REQUIRED FOR OVERALL STRUCTURAL STABILITY:

The following are repairs that should be performed immediately and prior to permitting more extensive personnel access to the Units for the purpose of more detailed damage assessments.

UNIT 3:

- Unit 3 requires no immediate remediation at this time to permit limited access for further damage assessment. Note however, that all of the Unit 3/Unit 4 Equipment Building bracing at the lower level has been buckled. Although the bracing in this condition can still accept tension loading, the overall capacity of the unit to resist lateral loads is severely compromised. Personnel access should be limited and all personnel should vacate this building during periods of high winds and at the first indication of additional seismic activity.

UNIT 4:

- Column line G at column G-9 2/3 at the base level, the main diagonal brace (back to back L5x5x3/8) was previously cut and welded near the base of the column. The repair weld has completely failed (broken). The member must be realigned, the weld surfaces properly prepared and a full penetration bevel weld must be performed. Due to limited access between the vertical legs, a backer bar full penetration weld should be used for these welds. Welding should be performed by a certified welder. (photos 102-2399, 102-2400, 102-2401
- Column line E at column E-11 1/3 at the base level, the main diagonal brace (back to back L8x8x3/4 has buckled the web of the connecting T at the column base. The web of the gusset should be cut where buckled and replaced using a full penetration weld to remaining section of the T. (Photos 120-2403 and 120-2404).
- Note that all of the Unit 3/Unit 4 Equipment Building bracing at the lower level has been buckled. Although the bracing in this condition can still accept tension loading, the overall capacity of the unit to resist lateral loads is severely compromised. Personnel access should be limited and all personnel should vacate this building during periods of high winds and at the first indication of additional seismic activity.

UNIT 5:

- Column line E-5, at column E5-20.00, Level 2 (47'-4") the main diagonal brace (14WF48) has had a section replaced with incomplete splice repairs that must be full penetration welded. The weld ends must be properly prepared and full penetration bevel welds completed. We recommend removal of the temporary erection splice plate(s) after flanges are welded to allow for the proper welding of the web. (photo 120-2419 and 120-2420)
- Note that the majority of the Unit 5/Unit 6 Equipment Building bracing at both the lower and upper levels has been buckled. Although the bracing in this condition can still accept tension loading, the overall capacity of the unit to resist lateral loads is severely compromised. Personnel access should be limited and all personnel should vacate this building during periods of high winds and at the first indication of additional seismic activity.
- Note that the majority of the vertical bracing at the back of the DA framing (column line C, which is common to the east side of the Equipment Building has buckled. Note that all of the Unit 3/Unit 4 Equipment Building bracing at the lower level has been buckled. Although the bracing in this condition can still accept tension loading, the overall capacity of the unit to resist lateral loads is severely compromised. Personnel access should be limited and all personnel should vacate this area during periods of high winds and at the first indication of additional seismic activity.

UNIT 6:

- Unit 6 requires no immediate remediation at this time to permit limited access for further damage assessment.
- Note that the majority of the Unit 5/Unit 6 Equipment Building bracing at both the lower and upper levels has been buckled. Although the bracing in this condition can still accept tension loading, the overall capacity of the unit to resist lateral loads is severely compromised.

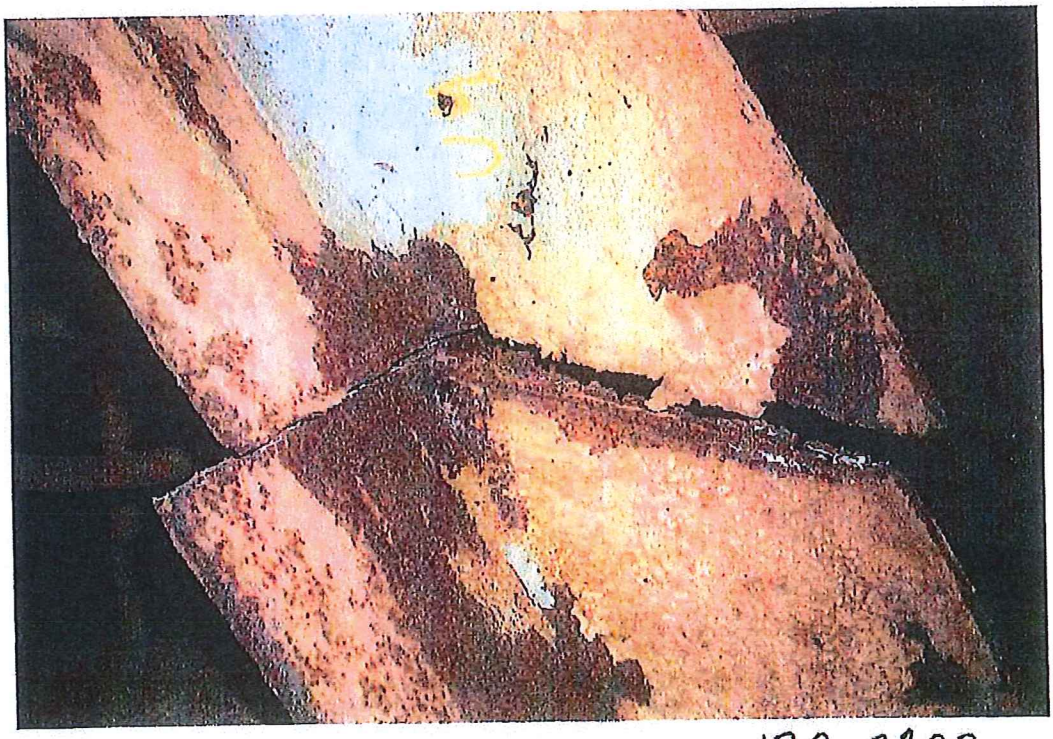
Personnel access should be limited and all personnel should vacate this building during periods of high winds and at the first indication of additional seismic activity.

- Note that the majority of the vertical bracing at the back of the DA framing (column line C, which is common to the east side of the Equipment Building has buckled. Note that all of the Unit 3/Unit 4 Equipment Building bracing at the lower level has been buckled. Although the bracing in this condition can still accept tension loading, the overall capacity of the unit to resist lateral loads is severely compromised. Personnel access should be limited and all personnel should vacate this area during periods of high winds and at the first indication of additional seismic activity.

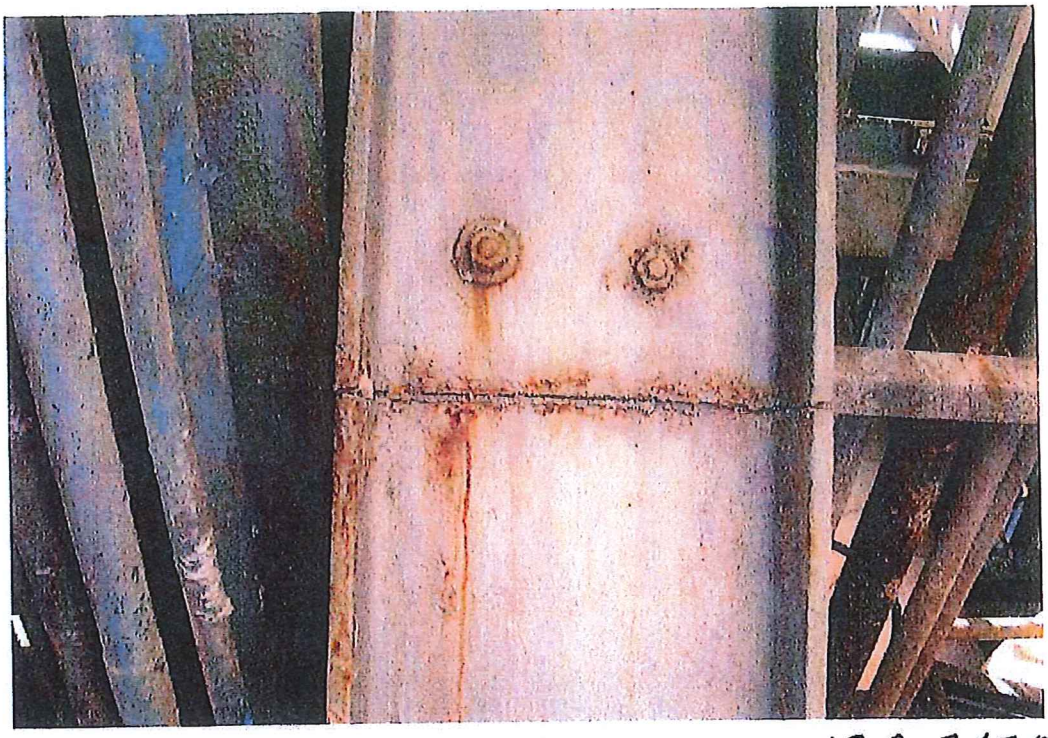
PHOTOS



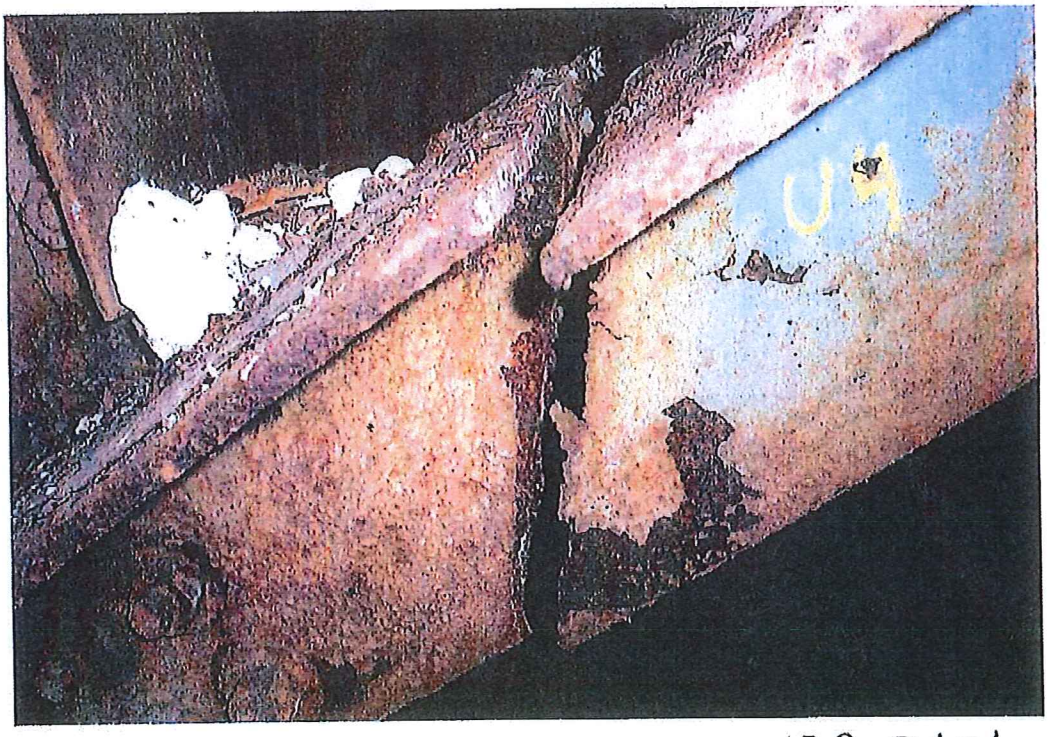
120-2399



120-2400



120-2420



120-2401



120-2404



120-2419



120-2403

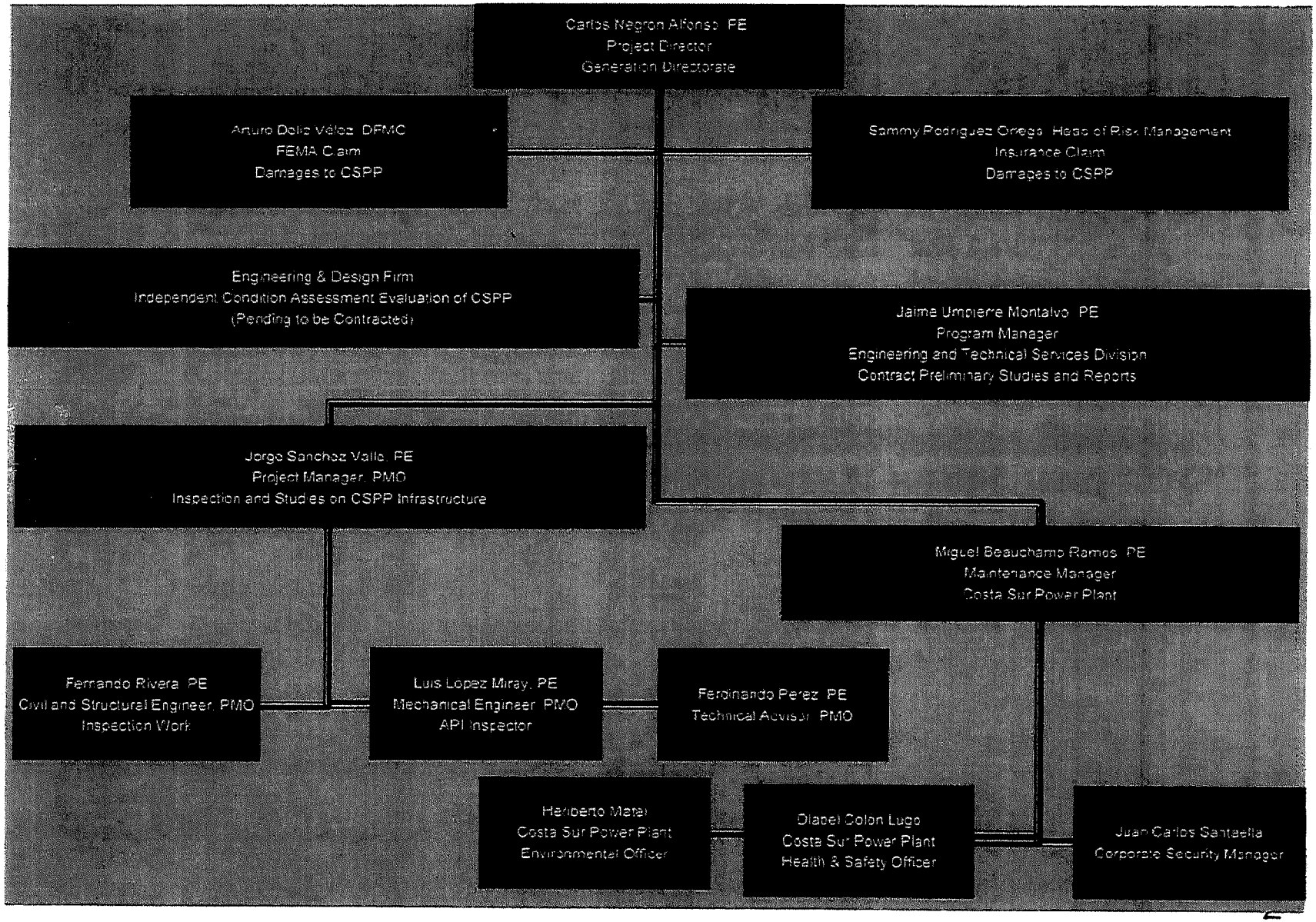
Attachment C

Puerto Rico Electric Power Authority

Strategic Action Plan
Condition Assessment, Value Engineering and Decision Making
Restoration of Lost Power Capacity at Costa Sur Power Plant (CSPP) due to Earthquake Damages

January, 2020

Organigram – Execution Strategic Action Plant CSPP



Strategic Action Plan - Condition Assessment, Value Engineering and Decision Making Restoration of Lost Power Costa Sur Power Plant

I. First Step - as an initial response, just after the earthquake hit PR, PREPA began an inspection of the facilities of the CSPP to determine safety issues and operational capability.

II. Second Step – Prepare and execute an Strategic Action Plan (SAP) to determine the feasibility of restoring the lost power capacity of the CSPP through repair or replacement works.

FIRST STEP

- As an initial response, just after the earthquake hit PR, PREPA began an inspection of the facilities of the CSPP.
- Objective – to determine safety issues and operational capability.
- Purpose –
  - If the work area was safe for the employees
  - That there had not been an incident of spillage of fuel, oil or any other chemical that could directly affect any natural resources or the live or property of the people of Guayanilla and Peñuelas
  - If the power plant could once again enter into operations and continue contributing energy to the electrical system of the island.
  - Quantify the damages that occurred to begin the claim process to the insurance companies, in coordination with any claim that was to be made to the Federal Emergency Management Agency (FEMA).
- Results – After studying the data obtained from these inspections, taking into account the continuous seismic aftershocks, and the priority the safety of the personnel that operates and administers the power plant, PREPA made the difficult decision to close the operations of this facility.

Strategic Action Plan - Condition Assessment, Value Engineering and Decision Making Restoration of Lost Power Costa Sur Power Plant

SECOND STEP

- Prepare an Strategic Action Plan (**SAP**) to determine the feasibility of restoring the lost power capacity of the CSPP through repair or replacement works.
- Purpose –
  - The purpose of this step is to require to a qualified Engineering and Design Firm (E&D) all the activities necessary to present an engineering and commercial opinion of whether is feasible to put back into service a more resilient and safe Costa Sur Power Plant.
- The SAP is broken-down in 4 Phases:
  - Phase 1 – Commissioning by PREPA of Engineering Studies on Four Critical Parts of the Power Plant
    - Boilers Unit 5 and 6 Exterior and Interior Inspection and Report
    - Boilers and Main Equipment Steel Structure Units 1, 2, 3, 4, 5 and 6
    - Fuel and Water Tanks (Storage and Service) Inspection and Report
    - Concrete Pedestals Supports for Power Turbine and Generator Units 5 and 6
  - Phase 2 – (Selection of E&D) – is intended for the selection of a recognized and specialized E&D for the condition assessment survey, value engineering and decision making on the future of CSPP.

SECOND STEP (Cont.)

- The SAP is broken-down in 4 Phases (Cont.):
  - Phase 3 (Formalize a Contract between PREPA and E&D) –is intended to comply with all commercial and legal steps necessary to formalize a contract between the E&D and PREPA for execution of all activities require under this SAP.
  - Phase 4 (Condition Assessment Survey, Value Engineering and Decision Making on the Future of CSPP) – is intended to provide PREPA with a value engineering study in order to make a decision as to repair or replace the plant for restoration of lost generation capacity as noted above. A qualified (E&D) shall perform a condition survey and value engineering study with a recommendation for at least two options including repair or replace to restore 820 MW capacity due to earthquake damages. The two options are:
    a) **If the power plant is to be repair, design shall be based on current code and standards to the extent practical.**
    b) **If a new power plant must be built, it shall be in compliance with all current codes and standards. Also, if this new plant may be built at the same existing site.**

SECOND STEP - Status on Phase 1

Item Num	Inspection/Study Title	Start Date	Completion Date	Percentage Completed	Comments
1	Exterior Mechanical Inspection Boilers Units 5 and 6	Jan 8, 2020	Feb 11, 2020	100%	Report by General Electric recommends Non-destructive testing.
2	Preliminary Inspection of Steam Piping and Equipment Structural Supports	Jan 27, 2020	Feb 5, 2020	100%	Report by General Electric recommends repair works.
3	Preliminary Inspection of Steel Structural Elements for Boilers and Auxiliary Equipment U. 3-6	Jan 27, 2020	Jan 31, 2020	100%	Report by General Electric recommends immediate repair works to continue interior inspections of the units.
4	Structural Elements Repair Work to Allow Additional Interior Inspection of the Boilers and Other Equipment of the CSPP	Feb 14, 2020	Mar 16, 2020	1%	Immediate repairs recommended by GE Structural study as step 1 to continue with inspection of interior of boilers and other equipment and structures.
5	Interior mechanical inspection of the condition of the boilers	Mar11, 2020	April 11, 2020	0%	Shall start after finishing with immediate repair works.

SECOND STEP - Status on Phase 1 (Cont.)

Item Num	Inspection/Study Title	Start Date	Completion Date	Percentage Completed	Comments
6	More Detail Inspection, Structural Design Work for Repairs Units 5 and 6 (Before Put On Service)	Feb 12, 2020	Mar 12, 2020	5%	This work shall be performed as Recommendation on Preliminary Study for this Structure by the company Island Structure Engineering, PC (GE/Fieldcore)
7	Fuel and Water Tanks Structural Assessment	Feb 11, 2020	Mar 30, 2020	10%	Inspection and report on the structural conditions of 20 tanks.
8	Condition Survey and Testing for Concrete Pedestals for Power Turbine and Generator Units , 5 and 6	Feb 24, 2020	April 30, 2020	0%	Structural condition assessment of the concrete support for the Units 5 and 6 Power Blocks. The study shall include visual inspection, concrete resistance test, petrographic testing.

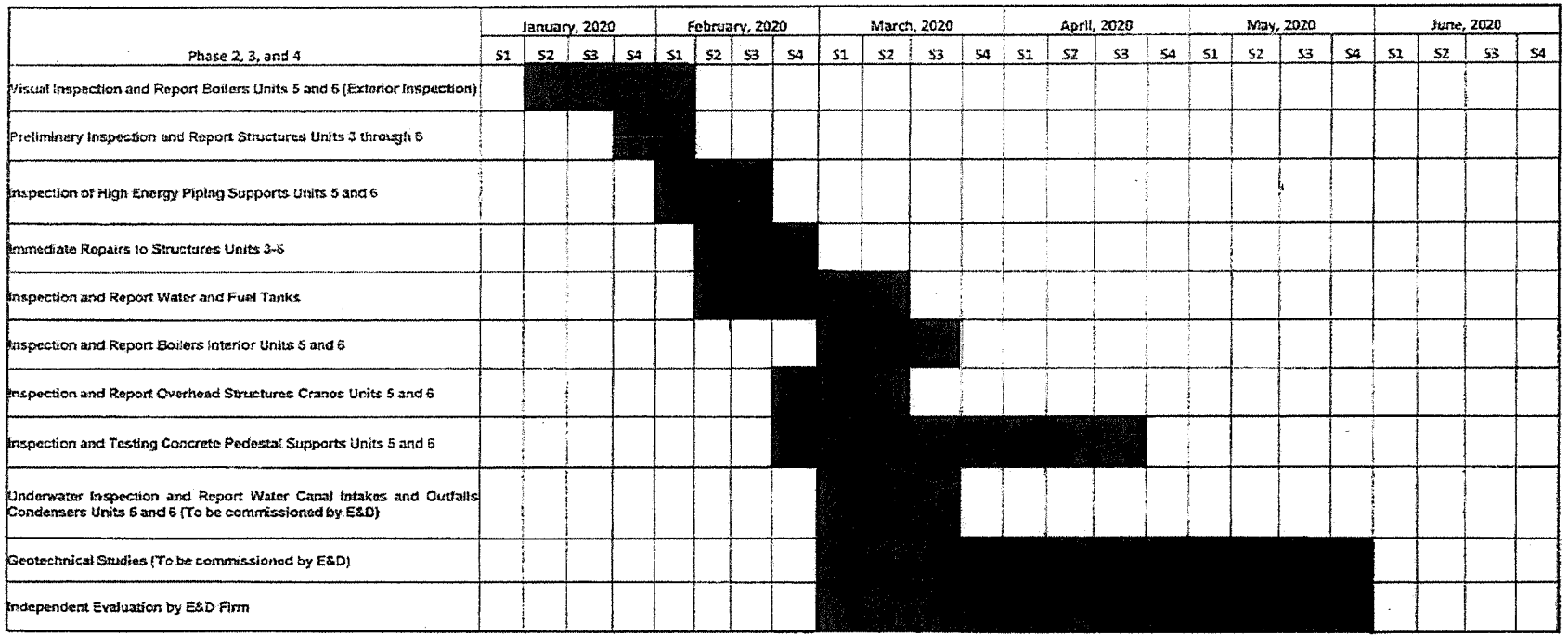
SECOND STEP - Status on Phase 2 and 3

- PREPA is on the process of selecting of a recognized and specialized E&D for the condition assessment survey, value engineering and decision making on the future of CSPP. The E&D shall be selected based on the following criteria:
  - Experience in work related to what is required in this SAP.
  - Economic capacity to finance internal and external resources that will be required to achieve the operational objective of PREPA for this SAP.
  - Economical proposal for this SAP.
  - Compliance with PREPA's deliverables time requirement for this SAP.

- PREPA expects to have selected the E&D firm on the last week of February, 2020.
- For Phase 3 PREPA expect to have contracted the E&D firm on the first week of March, 2020.

SECOND STEP – Forecast for Phase 4

- Included is a Forecast of Main Milestones for Phase 4:



Cost on Studies

Item	Equipment/Structure Name	Inspection/ Study Description	Status on Inspection/Study	Start Date	Completion Date	Inspection/Study Findings	Engineering Consultant Firm	Cost Amount	Comments
1	Boilers Units 5 & 6	Exterior mechanical inspection of the condition of the boilers	Completed	January 8, 2020	February 11, 2020	Recommendation of Nondestructive Tests	General Electric-Fieldcore (GEF)	$ 60,000.00	Report Delivered by GE to PREPA. Costs are an approximate. Pending GE Invoicing.
2	High Energy Piping Units 5 & 6	Preliminary Visual Inspection of Steam Piping and Equipment and Structural Supports.	Completed	January 27, 2020	February 5, 2020	Pending	GEF/Island Structures Engineering	$ 21,000.00	Report Delivered by GE to PREPA. Costs are an approximate. Pending GE Invoicing.
3	Structures Units 3 & 4	Preliminary Inspection and Steel Structural Elements for Boilers and Auxiliary Equipment	Completed	January 27, 2020	January 31, 2020	Need Repairs	GEF/Island Structures Engineering	$ 20,000.00	Report Delivered by GE to PREPA. Costs are an approximate. Pending GE Invoicing. Next Step: Complete Phase 1 - Inmediate Repairs to permit additional Inspection Work on Unit 5.
4	Structures Units 5 & 6	Preliminary Inspection and Steel Structural Elements for Boilers and Auxiliary Equipment	Completed	January 27, 2020	January 31, 2020	Need Repairs	GEF/Island Structures Engineering	$ 20,000.00	Report Delivered by GE to PREPA. Costs are an approximate. Pending GE Invoicing. Next Step: Complete Phase 1 - Inmediate Repairs to permit additional Inspection Work on Unit 6.
5	Inmediate Repairs Structures Units 4, 5 and 6	Structural Elements Repair Work to Allow Additional Interior Inspection of the Boilers and Other Equipment of the CSPP	On Procurement	February 14, 2020	March 16, 2020	Need Repairs	Enersys	$ 56,563.00	The Start and Completion Dates Shall depend on the Notice to Proceed. Costs are an approximate and shall depend on procurement process between GE and Enersys. (Units 5 and 6 Equipment Building have inmediate Repairs)

Cost on Studies

Item	Equipment/Structure Name	Inspection/ Study Description	Status on Inspection/ Study	Start Date	Completion Date	Inspection/ Study Findings	Engineering Consultant Firm	Cost Amount	Comments
6	Boilers Units 5 & 6	Interior mechanical inspection of the condition of the boilers	Not Started Pending Repairs on Structures	March 11, 2020	April 11, 2020	Pending	GEF	Pending	Start and Completion Dates Shall are estimated and shall depend on the repairs that must be performed on the structure of the boilers and the GE's Work Plan.
7	Structures Units 1 & 2	Preliminary Inspection and Steel Structural Elements for Boilers and Auxiliary Equipment	Not Started	February 17, 2020	February 21, 2020	Pending	GEF/Island Structures Engineering	$ 20,000.00	Costs are an approximate. Pending GE invoicing.
8	Phase 2- Structures 5 & 6	More Detail Inspection, Structural Design Work for Repairs Units 5 and 6 (Before Put On Service)	On Course	February 12, 2020	March 12, 2020	Pending	GEF/Island Structures Engineering		This work shall be performed as Recommendation on Preliminary Study for this Structure by the company Island Structure Engineering, PC (GE/Fieldcore)
9	Water and Fuel Tanks Inspection	Visual Inspection and Ultrasonic Inspect API 653	On Course	February 11, 2020	March 30, 2020	Pending	Heisen Global Engineering (HGE)	$ 134,448.00	Start and Completion Dates Shall Depend on the Contract Approval date of the Consultant. Contract 85840. There is going to be a Change Request to add an additional 8 tanks that were not included in the first Contract. An ammendment was approved for the inspection of 8 additional tanks, including all tanks used for the Water Treatment Process. The amount added to the original contract was $48,358 and an extension of 15 days to original schedule time.

Cost on Studies

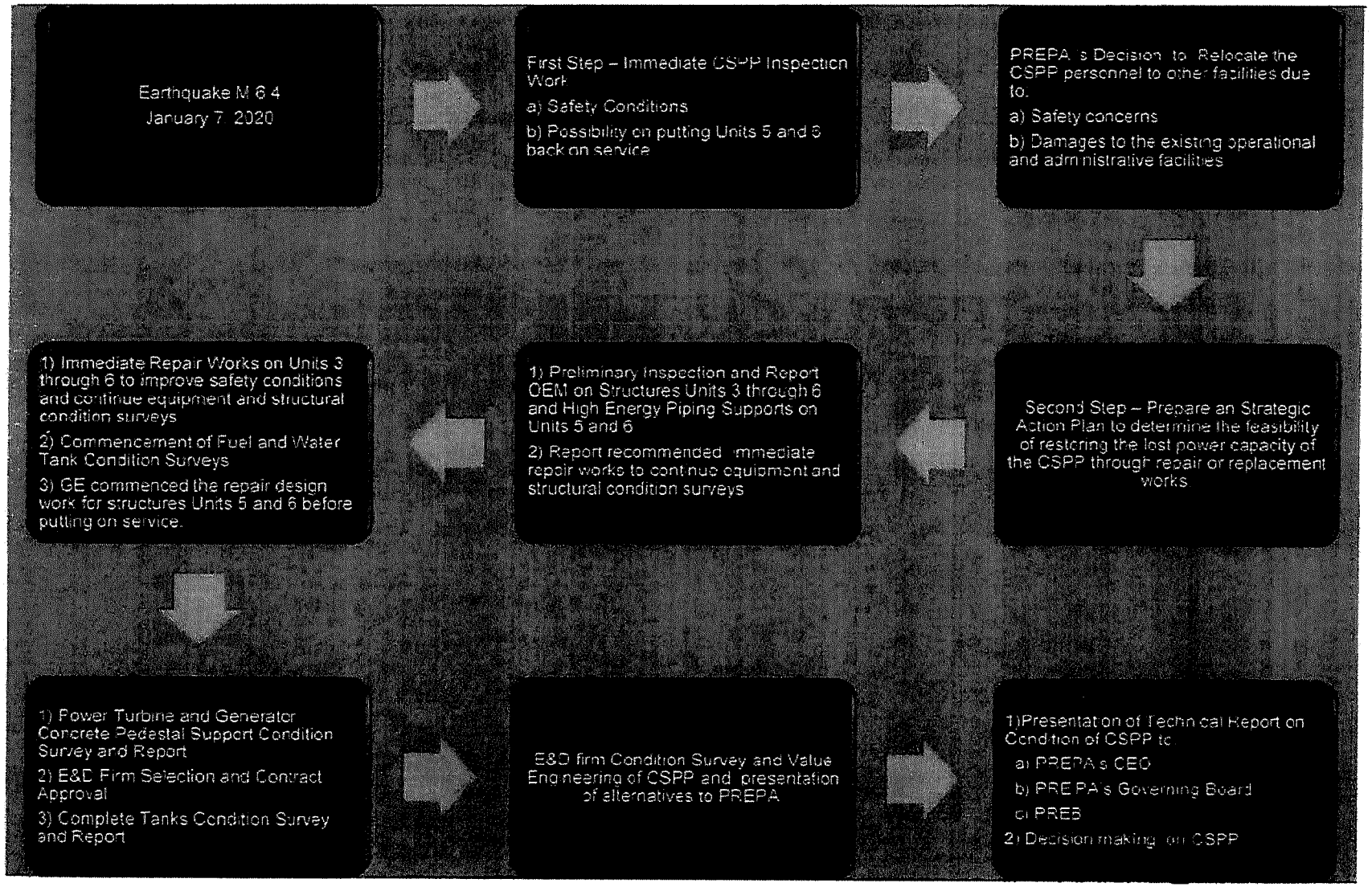
Item	Equipment/Structure Name	Inspection/ Study Description	Status on Inspection/ Study	Start Date	Completion Date	Inspection/ Study Findings	Engineering Consultant Firm	Cost Amount	Comments
10	Units 5-6 Concrete Pedestals for Power Blocks	Condition Survey and Testing for Concrete Pedestals for Power Turbine and Generator Units , 5 and 6	On Procurement	February 25, 2020	April 30, 2020	Pending	Heisen Global Engineering (HGE)	$ 55,160.00	This Studies will be commissionto HGE, PSC. The Start and Completion Dates Shall depend on the Notice to Proceed. The study shall include visual inspection, Concrete Resistance Test, Petrographic Testing.
11	Concrete Water Closed Channel Condenser Unit 5	Underwater Visual Inspection of the Structural Condition of the Closed Channel Into and Exit of Condenser Unit 5	Not Started			Pending	E&D Company Selected by PREPA		This Studies will be commission by E&D Selected by PREPA for Engineering Independent Report
12	Concrete Water Closed Channel Condenser Unit 6	Underwater Visual Inspection of the Structural Condition of the Closed Channel Into and Exit of Condenser Unit 6	Not Started			Pending	E&D Company Selected by PREPA		This Studies will be commission by E&D Selected by PREPA for Engineering Independent Report
13	Concrete Open Channel Sea Water Discharge	Underwater Visual Inspection of the Structural Condition of the Open Channel Sea Water Discharge from Condensers 5 and 6	Not Started			Pending	E&D Company Selected by PREPA		This Studies will be commission by E&D Selected by PREPA for Engineering Independent Report
14	Overhead Cranes Units 5 and 6	Condition Survey Structure for Overhead Cranes Units 5 and 6	Not Started			Pending	E&D Company Selected by PREPA		This Studies will be commission by E&D Selected by PREPA for Engineering Independent Report

Cost on Studies

Item	Equipment/Structure Name	Inspection/ Study Description	Status on Inspection/ Study	Start Date	Completion Date	Inspection/ Study Findings	Engineering Consultant Firm	Cost Amount	Comments
15	Geotechnical Studies	Provide post-earthquake geotechnical evaluation of the foundation support of the different structures in the facility. Provide general recommendations on mitigation of seismic related damage. Provide general recommendations on geotechnical design parameters for the current site conditions, which will allow to adequately perform further structural assessment of the different structures that may had been affected by the recent seismic events and subsequent aftershocks.	Not Started			Pending	E&D Company Selected by PREPA		This Studies will be commission by E&D Selected by PREPA for Engineering Independent Report

Total Cost on Studies $ **387,171.00**

Sequence of Events on PREPA's Response to CSPP After the Earthquake of January 7, 2020



Attachment D

Christopher Woods
Vice President & Project Director
+1-312-269-8659 (office)
+1-312-581-6481 (mobile)
christopher.l.woods@sargentlundy.com

February 5, 2020
Proposal No.0287.136

Puerto Rico Electric Power Authority
San Juan, Puerto Rico

SUBJECT: **STRATEGIC ACTION PLAN**
Condition Assessment, Value Engineering, Decision Making and Design Restoration of Lost Power Capacity at Costa Sur Power Plant due to Earthquake Damages, January 2020

Introduction:

Sargent & Lundy L.L.C. (S&L) is pleased to present this revised proposal to the Puerto Rico Electric Power Authority (PREPA) associated with the condition assessment, value engineering, for the decision making for the restoration of lost power capacity at Costa Sur Power Plant due to Earthquake damages sustained in January of this year.

Our proposal is centered on arranging S&L's power industry leading technical expertise in the engineering and design of power plants along with a strong core of experience working with the PREPA team and at PREPA facilities. Our revise proposal includes an allowance for sub-contractor services.

We will include on our team local service firms (sub-contractors) that will be qualified on a technical basis to perform the required scope of services. These firms will be responsible for providing specialized inspection services for turbines, power block structures, overhead crane structure, condenser cooling water intake and discharge channels, NDE, surveying, electrical and geotechnical work under the technical supervision of S&L.

Sargent & Lundy History:

Sargent & Lundy is a 128 year old full-service, customer-centric and solutions-oriented consulting engineering firm with more than 2,000 people dedicated exclusively to the power industry. We provide our customers with a turnkey suite of services to provide program and project management of utility and industrial projects from conceptual development, site survey, environmental assessment, detailed engineering and design, project / construction management to post-construction monitoring and project close out. Our experience includes the design of power generation facilities, due diligence review, condition assessment, and many other related modifications and studies.

Sargent & Lundy Approach:

Sargent & Lundy is well positioned to support the evaluation of the Costa Sur Power Plant (Costa Sur) following three major seismic events due to our extensive understanding of PREPA's energy infrastructure, specifically power plants. S&L has been studying PREPA's power generation and electrical grid system for the past year and a half, and from generation condition assessments we have performed, we understand the current state of the system and have the know-how to prioritize and optimize the project work effectively. S&L brings valuable

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technical experience and lessons learned from other similar generation projects executed throughout the main land and other parts of the world. We feel this experience will be of tremendous value that will benefit PREPA in making a final decision on Costa Sur given its current condition post recent earthquakes.

S&L will work together with PREPA's personnel supported by a team of experienced professionals on-island, with many of them Spanish speakers to ensure effective communication. Our on-island staff will be supported by the strength and depth of our home offices and they will be responsible for specific project management along with all technical engineering of the scope. The home office staff will review the work our subcontractors prepare such as surveys, geotechnical investigations, and nondestructive examination results to complete Phase I scope of services. The team will also develop the quality control and inspection protocol requirements that the local subcontractors will follow, along with reviewing all the cost estimates and other documents that the local subcontractors prepare.

On behalf of Sargent & Lundy, we appreciate the opportunity to offer our services for helping to rebuild the Puerto Rico power system. To the best of my knowledge the information submitted for this proposal is true and accurate. If you have any questions, please feel free to call me at +1-312-269-8659.

Best regards,



Christopher L. Woods

Vice President & Project Director

Sargent & Lundy

PROPOSAL

I. Introduction

In response to a request from the Puerto Rico Electric Power Authority (PREPA), Sargent & Lundy (S&L) is pleased to offer consultancy services to assess, analyze, evaluate, and recommend a path forward for addressing damages and lost generation at the 820MW Costa Sur power plant. Our work will be completed in general compliance with the Phase 1 scope identified in the Strategic Action Plan.

This scope of work proposed herein is intended to provide PREPA with a value engineering study in order to make a decision as to repair or replace the plant for restoration of lost generation capacity as noted above. This study will capture all project inputs to develop a consolidated report to serve as the single source of information related to the Costa Sur damages.

Based on the proposed project team's careful review of the action plan and our understanding of the Costa Sur site, S&L is confident that our proposal thoroughly responds to the intent and requirements set forth therein, and includes the following value-added benefits:

- **Demonstrated Industry Leadership in Condition Assessments and RUL Studies,** dating back to 1984 when we were selected by EPRI to help develop pioneering life extension strategies for fossil power plants. This culminated in the development of more than 60 EPRI guidelines covering examination, testing, and evaluating major power cycle and BOP equipment, components, and systems.

- **Unrivaled Experience in Performing This Exact Type of Work.** S&L's extensive experience with plant modifications and refurbishment projects provides for a good understanding of, and sensitivity to, the factors involved in assessing the condition of existing power plants. In addition to completing several hundred fossil betterment and backfit projects each year, S&L has been involved with hundreds of condition assessment programs for well over 150 generating units. Appendix C highlights S&L's comprehensive experience performing condition assessment for multiple station and utilities.

- **Extensive Detailed Design Experience on New Fossil Fueled Plants**, having over 130 units of completed power plant detailed designs since 1990 plays an integral part in our critical review process for these types of assessment projects.

- **Our staff includes key team members that have recently been engaged to perform repairs and condition assessments on utility scale projects.** This staff brings relevant credentials and experience that can add substantial value to our objective results for the Costa Sur condition assessment.

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Our experienced team will provide PREPA with a true third-party approach with a consolidated engineering report that involves methodology and analytics we have developed over the last three decades to best serve long term decisions by your organization.

II. Background

PREPA invited S&L to submit a proposal to provide engineering services to assess, analyze, evaluate and provide a path forward recommendation of damages at the 820MW Costa Sur power plant, following three major earthquakes ranging in magnitude between 5.8 and 6.4 (Richter scale), occurring on January 6th, 2020 and January 7th, 2020.

Costa Sur Power plant is an extremely important facility in PREPA's generating and power distribution system. The restoration or replacement of the facility to generate its potential 820 MW is crucial. For information purposes, Table 1 below shows the operating status of the Costa Sur power plant prior to the seismic events.

Table 1. Costa Sur operating status at the time of the earthquake Jan 06 – 07, 2020

Turbine Generator	COD	MW	Technology	Fuel	Operating status
Steam Turbine #1	1960s	n/a	Steam	Oil #6	This plant was decommissioned on February 2010.
Steam Turbine #2	1960s	n/a	Steam	Oil #6	This plant was decommissioned on February 2010.
Steam Turbine #3	1962	85	Steam	Oil #6	Unit is limited to 55 MW. Last time it was used was on **2016**.
Steam Turbine #4	1963	85	Steam	Oil #6	Unit is limited to 45 MW. Last time it was used was on **2016**.
Steam Turbine #5	1972	410	Steam	Natural Gas	Operating
Steam Turbine #6	1973	410	Steam	Natural Gas	Operating
Combustion Turbine #1	1972	21	GT	Oil #2	Not available due to mechanical repair works.
Combustion Turbine #2	1972	21	GT	Oil #2	Not available due to mechanical repair works.

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Based on the information above, Steam Turbine #5 and #6 represent the greatest and most critical electric output at this site and will be the primary focus of the assessments to be made under this proposed scope of work.

III. Goals & Objectives

The main goal of the project is to conduct an independent engineering assessment, analysis, evaluation and recommendation of the damages sustained at the Costa Sur power plant following three major earthquakes on January 6th and 7th, 2020. The objective is to provide a consolidated report containing all assessment activities and findings to be used as the basis for the decision of how to proceed with providing the lost 820MW of power generation at Costa Sur.

IV. Project Description

As per PREPA's "Strategic Action Plan", the full scope of services is divided into three phases. This proposal outlines the work associated with Phase I and includes the following:

Phase I -- Scope of engineering services:

1. Execute a survey monitoring program for all main structures, tanks and buildings to monitor vertical and horizontal movements, particularly after earthquakes, with the intent of maintaining a safety zone program while all the studies and inspection works are done at the power plant. This scope will utilize approved local sub-contractors and technical information provided by PREPA.

2. Identify and assess through site reviews, structural, mechanical and electrical damages to all the main buildings, power plant equipment such as (but not limited to) boilers, power turbines, generators, condenser, transformers, fuel and water tanks, piping, auxiliary equipment, critical balance of plant equipment, all foundations, internal roads, transmission centers, tanks, natural gas pipeline, communication towers or rooms, and parking lots. Some of this scope will be covered by inspections performed by approved local sub-contractors and/or OEMs, as well as technical information provided by PREPA.

3. Execute any geotechnical or geological survey necessary to assess the present conditions of the foundations of the structures, tanks, transformers, transmission centers, or any other heavy equipment of the power plant. An approved local sub-contractor will be utilized for the performance of the site testing activities(borings) and reports.

4. In necessary, perform non-destructive material testing necessary to assess the condition of any structure, equipment or other type of infrastructure of the power plant to assure a more complete and reliable technical report of the power plant. Areas requiring non-destructive testing will be identified by the S&L team for testing by an approved local sub-contractor.

5. Prepare an Engineering report with recommendations that includes an AACE International Class 4 cost estimate and Level II schedule. An AACE Class 4 cost estimate has an accuracy range of +20 to +50% and -15 to -30%. This level of estimate is typical for 1% to 15% project definition. The Level II schedule will include key task for all scope with durations, major milestones, and logic to define the sequence of activities. All the reports and data from the sub-contractors will be reviewed and incorporated into the Engineering report. The report will evaluate the following alternatives:

   a. **Repair:** If the power plant is to be repaired, design shall be based on current industry and local Puerto Rico code and standards to the extent practical.
   b. **Replace***: If a new power plant must be built at the existing site (brownfield project), it shall be designed to all current industry and Puerto Rico codes and standards.
   c. **Relocate***: If a new power plant must be built at a new greenfield site outside Costa Sur in accordance to all current industry and Puerto Rico codes and standards

      **Costs for the replace and relocate alternatives will be obtained from the existing S&L PREPA deliverables that provide costs for new combined cycle generation.*

6. Prepare and present a summary presentation to review the Engineering report with all project stakeholders.

V. Project Execution

Our experienced team of engineers and specialist will be focused on the plant systems, structures, equipment, and components that may have sustained damage during the earthquakes. The overall team will have individual areas of focus with key project activities. The activities are summarized in the following text to allow a general understanding of the work the teams will be performing to complete the assessments. All teams will begin project activities by reviewing all available Costa Sur drawings and data. A listing of requested Costa Sur information will be provided prior to award. All teams will have the option to review additional inspection and testing utilizing local sub-contractors. These inspection and testing scopes will be finalized during the initial site visits and provided to the sub-contractors for bidding purposes.

Mechanical Assessment:

A team consisting of a Boiler, Turbine and Piping specialist will attend the kickoff meeting and initial site walkdown. The initial walkdown is intended to gain a working knowledge of the overall condition of the major systems and equipment associated with plant. This will facilitate the resource planning of future inspections and coordination of subcontractors and OEM specialists to evaluate the critical plant equipment and systems. Subsequent walkdowns will be performed by a team of mechanical engineers to address the damage associated with the balance of plant systems and other areas that were not previously inspected and/or inaccessible during the initial walkdown. The balance of plant systems would include, but would not be limited to: Cooling systems, water treatment systems, compressed air systems, general service water systems. The walkdown would also include a more in depth walkdown and investigation of the critical systems, which include; Steam Turbine, Boiler, Condensate System, Boiler Feedwater System and associated piping systems.

High Energy Piping Assessment:

The assessment would start with a detailed walkdown of each high energy system to observe the pipe, pipe supports, pipe support auxiliary steel and connections of auxiliary steel to main steel framing members. This assumes that safe access to the areas where the pipe is located can be provided. Otherwise, observations with binoculars from a safe distance will be made.

The pipe would be observed for evidence of distortion due to loss of support or impact damage due to movement of the pipe or projectile impact. Impact damage on the pipe would be first noticed by insulation damage, and/or distortion of nearby steel or equipment due to contact with the pipe. If such insulation damage is found, material integrity verification by nondestructive examination (NDE) of the pipe will be required by removing the insulation in the area to determine whether dents or cracking of the pipe has occurred. Minor dents may be evaluated using the methods of API-579/ASME FFS-1 to determine if the pipe needs to be repaired or may be used "as-is". Dented areas should also be NDE examined using magnetic particle (MT) or dye penetrant (PT) methods to find surface cracks. If welds are in the dented area, a volumetric examination of the weld using ultrasonic (UT) or radiographic (RT) methods should be used to detect subsurface damage. NDE testing would be performed by a qualified testing sub-contractor.

Pipe supports would be observed for distortion (bent hanger rods or struts) or loss of function (such as rod/strut failure, spring failures, pipe clamp separation or load plate rod pull-out).

Structural Assessment:

Prior to mobilizing a site team, S&L will review the available foundation, structural steel, flue gas ductwork drawings, and any previous technical report submitted by PREPA, if available. This review will determine the seismic force-resisting system and the critical members required for resistance to seismic forces and the elements most likely to be damaged during a seismic event.

A structural engineer with expertise in concrete foundations, structural steel, and flue gas ductwork will attend the kickoff meeting and perform the Phase 1A walkdown. The initial walkdown will be conducted to gain knowledge of the overall condition of the structures and to perform a general condition assessment of the critical seismic force resisting members to determine if there is an immediate safety concern or a significant structural deficiency with imminent potential for loss of life, personal injury, property damage or structural collapse. The balance of the Phase 1A assessments will then be completed.

Information obtained during the kickoff meeting and the Phase 1A walkdown will assist in planning the subsequent plant-wide walkdown performed by structural engineering specialists. During this walkdown the concrete foundations will be inspected for spalling, settlement, and any leaning of the foundation from tilting in the two orthogonal directions. The structural steel and flue gas ductwork will be inspected for cracking, buckling, and local yielding with special emphasis on the vertical brace members, the columns, and the flue gas ductwork supports which are of critical importance to the overall stability of the structure and the structural integrity during future seismic events.

In addition, a Krautkramer ultrasonic thickness gauge will determine the post-seismic material thickness in regions where the structural engineering condition assessment team suspects thinning of the steel material may have occurred and could potentially jeopardize the seismic resistance from the original design condition. All observations will be captured on field notes taken on printouts of the design drawings and with photographs. The extent of damage will be assigned a damage class ranging from 1

to 4 depending if the damage represents an immediate safety concern or significant structural deficiency to a minor structural or non-structural deficiency which does not pose any threat to loss of life or structural integrity and the condition and should be closely monitored in the future for evidence of further deterioration.

After conclusion of the walkdown, a detailed report of the on-site findings will be generated in a tabular format and this table would dictate the repair work based on the extent of damage observed. The repairs will generally incorporate the latest seismic recommendations as presented in the AISC Seismic Design Manual and ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures to the greatest extent possible provided that the repair does not adversely impact the non-repaired portions of the existing structure. The repairs would ensure a more ideal structural performance and resistance during future seismic events.

Civil and Geotech Assessment:

The initial walkdown will be completed to gain a working knowledge of the overall condition and to assist in planning the geotechnical exploration, survey work, and a more thorough second walkdown.

During this walkdown, consideration will also be given to ongoing seismic activity and the potential for continued near term soil movement. These considerations will include, possibly, recommendations regarding areas that may warrant immediate shoring, stabilizing, or other remediation. The recommendations may also include areas where restricted access is prudent to minimize loading of such elements as retaining walls, seawalls, or other structures.

The second walkdown will consist of more in depth walkdown and investigation of foundations, retaining walls, roads, parking lots, storm sewers, plant fencing, containment berms, and other geotechnical and civil related structures. Additionally, this site time will include on-site supervision of subcontract geotechnical exploration and survey subcontractors.

Low Voltage Electrical Assessment:

One Lead Electrical Assessor will attend the initial site walkdown to review the damages to the main power transformer and the associated equipment. The balance of the assessments will be complete in a subsequent phase. The investigative walkdown for the subsequent phase will consist of a walkdown and investigation of the following within the plant:

- Essential electrical equipment (e.g. unit auxiliary transformers, medium/low voltage switchgear, low voltage motor control centers, motors, etc.)
- Protective electrical relay cabinets and DCS cabinets
- Major electrical raceway (tray, conduit, bus duct, etc.)

After the investigative walkdown, our electrical engineers will prepare technical specifications for local firms to perform various electrical testing as determined from the initial walkdown. Investigation program to document the electrical conditions.

A final engineering report with recommendations shall be prepared by our electrical engineers, including a value engineering cost & time analysis.

The report will include any essential electrical equipment that will need to be replaced or refurbished. A procurement plan shall also be included for estimated costs and lead-times for the equipment.

Additionally, the report will include an assessment and recommendations on the electrical relay cabinets, DCS cabinets, electrical raceway, and findings from the data collected by the local firms.

High Voltage Station Assessment:

This assessment will evaluate if visual damage occurred and estimate repairs for the following:

- The structures, foundations, equipment and cable systems from the Main Power Transformers to the Transmission Center
- The structures, foundations, equipment and cable systems from the Emergency Station Service Transformer to the Transmission Center
- The structures, foundations, equipment and cable systems of the 38kV, 115kV & 230kV Transmission Center(s)
- The Transmission Center control and relaying panels and equipment located in the Costa Sur Plant Control Room(s).

All damage observations will be documented by photos and sketches. If drawings are available, these will be marked up to indicate the areas of damage that were found. If drawings are not available, a hand drawn sketch of each system will be made to indicate the approximate location of the damaged areas. All repairs for damages areas will be sketched to show required extent of repair and allow for the development of the repair costs and schedule.

VI. Project Team

Our team members have proven their ability to meet difficult schedules, produce high quality deliverables and be flexible in order to execute the project work in the manner best tailored to PREPA's requirements.

These personnel have a wide variety of skills covering all areas of power plant engineering and design. All appropriate technical resources of S&L will be available to support the project team as required.

Our proposed core team members to execute the Phase I scope of work are the following:

Title	Name
Project Director	Christopher Woods
High Voltage Project Director	Vince Heinz
Project Manager (local in Puerto Rico)	Felipe Mazzini
Costa Sur Site Manager	J. Morales
Project Manager (S&L Offices)	Chester Radek
Structural Lead Assessor	Matthew Rosecrans
Civil Lead Assessor	Marco Galvan
Mechanical Lead Assessor	Brian Klesath

Instrument & Controls Lead Assessor	Elia Sung
Electrical Lead Assessor	Alfredo Osorio
Geotech Lead Assessor	David Nielsen
Materials Engineer and Turbine Inspection (NDE supervision)	Karl Anderson
Steam Turbine Lead Assessor	Ed Giermak
Boiler Lead Assessor	Marc Lemmons
High Energy Piping Systems Lead Assessor	Joe Kinsella
High Voltage Lead Assessor	Raul Morton
High Voltage Station Structural Assessor	Jim Kerkhoven
High Voltage Station Support	Brian Cleary

Resumes of the relevant key personnel and specialists are included in Appendix B. We believe you will agree that the proposed team offers well-rounded backgrounds and a high degree of experience in all aspects of plant services work such as this.

VII. Sub-Contractors

The following are recommended sub-contractors that have been identified as possible options to support the project. Sub-contractors will be engaged as much as possible to provide needed services to execute the work: Before mobilizing any subcontractors, S&L and PREPA shall discuss the subcontractors to be used and the work plan for each of them during the kick-off meeting.

Services	Name of Contractor	Contact information
Power Turbines, Generators, Inspections	General Electric	Eng. Orlando Soto 787-450-7895
Power Turbine and Generator Inspection and Report	MD&A	Alvaro Brussi 787-466-9611 abrussi@mdaturbines.com
Geotechnical Studies	Jaca & Sierra	Eng. Manuel Candelario – 787-238-7771
Geotechnical Studies	Earth Engineers	Eng. Marcos Arocho – 787-922-5579
Concrete Pedestal Inspection, Testing and Report for Power Turbine and Generator Units 3 to 6	Heisen Global Engineering, PSC	Engineer Alan Heisen – 787-528-8911
Overhead Crane Units 5&6 Steel Structure Inspections and Technical Report	Heisen Global Engineering, PSC	Engineer Alan Heisen – 787-528-8911
Surveying Services	Surveyor Julio Soto	Surveyor Julio Soto – 787-614-1296
Surveying Services	Surveyor José Gregorio Pagán	Surveyor José Gregorio Pagán – 787-938-5307
Surveying Services	J. Bidot & Asociados	Ing. Javier Bidot, 787-505-1853
Under Water Diving	Under Water Marine	David Holt – 787-405-7109

Services	Name of Contractor	Contact information
Inspection Work	Services	
Under Water Diving Inspection Work	Marine Divers Contractor	Mr. Jovet – 787-382-1038
Water Channel Intake and Discharge Channel Units 5&6 and Seawater Discharge Channel	Commercial Divers	commdive@ commercialdiversinc.com
DCS Foxboro Control System	Lt Automation	Ing. Jorge Acosta, 787-638-4458
Mark VI Control System	Engineering Services International, ESI	Ing. Citlalin Oliveras 787-598-4421, 787-296-4941

VIII. Proposal Activities, Timeline, and Resources

A draft schedule showing activities for executing the Phase I scope of work is included in Appendix A. The schedule is developed to provide a consolidated report to PREPA in 12 weeks after authorization.

The key activities for execution are:

- Attend Kickoff Meeting and conduct initial site visits to determine testing, investigations, or other services to be provided by third parties.
- Develop scopes of work to send to contractors for bid, or to contactors already engaged, to confirm their scope, pricing, and time frame for completing their work.
- Conduct investigative site visits to perform the condition assessment walkdowns, gather / review documents, interview plant personnel regarding the current condition and operability of plant components.
- Develop engineering deliverables to document the result of the site assessments and the basis of the recommendations.
- Determine recommendations for repair / replacement of components.
- Develop costs for the recommendations.
- Develop schedule for the recommendations.
- Prepare and Issue a Report for PREPA's review / use

We will work with PREPA to further refine the major tasks and durations for the project considering your schedule for providing input to our team. Tis includes the expected procurement durations for any testing activity.

This schedule will be adjusted after the kickoff meeting and initial site visits to best meet PREPA's needs and expectations. The project team will remain flexible to the changing needs of the project and will strive to provide our deliverables in the most efficient manner. We understand the importance of time and the impacts the loss of power has on Puerto Rico. Our team will strive to save as many weeks as possible for the overall duration.

IX. Cost Proposal

1. Cost – Pricing Breakdown

We propose to complete this effort on a time and material basis with an estimated not-to-exceed cost shown in the table below. Our proposal is based on the Phase 1 services detailed in the Strategic Action Plan as noted above.

The proposed base cost is for the completion of the detailed assessment for the Costa Sur site and the technical management of the identified sub-contractors. Travel for the base costs includes trips to complete the Phase 1 activities.

For the commercial management of the sub-contractors we have estimated the optional costs needed to contract and manage the sub-contractors. This includes the addition of a contractor lead at site and the staff required in our commercial and procurement groups. In addition to the S&L costs we will need to include allowances based on our expected scope of work for the sub-contracts and our experience working on similar projects.

	Estimated Hours	Estimated Cost
Sargent & Lundy – Base	5,686	$1,274,000
Travel - Base		$89,000
Total Base Cost		$1,363,000
Optional Procurement Services	512	$117,000
Third party services - Allowance		$250,000
Total Cost	6,198	$1,730,000
Expert Witness Testimony	TBD	$293/hr

2. Terms and Conditions

Sargent & Lundy has an existing Professional Services Contract with the Puerto Rico Electric Power Authority dated July 1, 2019 (2020-P00002). Our proposed services will be completed in accordance with the terms and conditions of that existing Contract. Given the Contract and the provided scope of work document, we would like to note the following clarifications.

a. Sargent Lundy's assessment team will strive to find and detail all the damage at the Costa Sur site. Due to limitations on access and possible limited lines of site there is a chance that some limited amount of damage may go undiscovered. This will be reviewed and discussed during the initial site visit to gain better access provisions for the second visit.
b. Sargent & Lundy reserves the right within our reasonable discretion to assign engineering, design services, as well as the obligation to sign and seal such drawings, design calculations, reports, specifications and like documents to a Puerto Rican affiliate.

c. The scope of work for Sargent & Lundy is the assessment of the Costa Sur site to provide a complete report that details the basis for a decision to repair or replace the 820MW of electrical power generation. Inspections will be performed by sub-contractors under the technical direction of Sargent & Lundy. Optional pricing has been provided for these commercial management of the sub-contractors.

3. Travel

S&L will have trips to the site to complete the assessment activities. There is an initial site trip for the team to finalize scope and plans for the assessment as well as finalize scope for the sub-contractors. We are planning for a team of 13 people to support this initial trip shortly after authorization. There will then be a second set of trips for the completion of S&L's assessment activities. We are planning for a team of 13 people to support this second trip. We are also planning on 4 people staying for a second week as part of this second trip. Our last trip will be for a team of 4 people to present the report to the project stakeholders. The estimated costs are based on reimbursement per the requirements of the existing contract.

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APPENDIX A
Project milestones schedule and resources

	Start Week of: XX/XX/2020												
PHASE I -- ENGINEERING INSPECTION & EVALUATION	1	2	3	4	5	6	7	8	9	10	11	12	13
Authorization to proceed	◆												
Kick-off meeting, Initial Site Visit	■												
Establish a safety plan during the site inspection	■												
Planning and Data Collection for site visits	■												
Develop geotech study scope	■												
Solicit geotech bids from local contractors		■											
Evaluate geotech bids and select contractor			■										
Geotech contract negotiation and award contract			■	■									
Conduct geotech site work (supervised by S&L)					■	■							
Review geotech results and issue report							■	■					
Develop NDE study scope	■												
Solicit NDE bids from local contractors		■											
Evaluate NDE bids and select contractor			■										
NDE contract negotiation and award contract			■	■									
Conduct NDE site work (supervised by S&L)					■	■							
Review NDE results and issue report							■	■					
Second Site Visit at Costa Sur					■	■							
Develop enginering and design delvierables							■	■	■				
Prepare Class 4 cost estimate								■	■	■	■		
Prepare Level II schedule								■	■	■	■		
Finalize Report									■	■	■	■	
Issue Report												◆	
Report Presentation													◆

Staff	Hours per week													Sum
Local Project Manager	32	20	10	10	30	30	8	8	8	8	8	8	16	196
Chicago Work Stream Manager	32	40	40	40	40	40	40	40	40	40	40	40	40	512
Chicago Project Director	32	8	8	8	32	8	8	8	16	16	16	16	16	192
S&L / PREPA Contract Manager	32	2	2	2	2	2	2	2	2	2	2	2	16	70
S&L / PREPA Lead	2	2	2	2	2	2	2	2	2	12	12	2	0	44
Technical Deliverables									20	20	20	20		80
S&L Costa Sur Site Manager	0	0	40	40	40	40	40	40	40	0	0	0	0	280
Structural Lead Assessor	32	24	16	16	40	40	24	24	40	40	40	40	16	392
Structural support	16	0	0	16	40	40	8	8	40	32	8	8	0	216
Geotech Lead Assessor	32	16	8	8	40	32	16	16	16	24	16	8	16	248
Civil Lead Assessor	8	16	8	8	40	16	16	16	16	24	16	8	0	192
LV Electrical Assessor	32	16	16	16	40	40	24	16	40	24	16	8	16	304
Mechanical Lead Assessor	32	16	16	16	40	16	16	16	40	24	24	24	16	296
High Energy Piping / supports Assessor	32	16	16	16	40	16	16	16	24	8	8	8	0	216
Boiler Lead Assessor	8	16	16	8	40	8	0	0	24	8	8	8	0	144
STG Lead Assessor	8	16	16	8	40	8	0	0	24	8	8	8	0	144
Instrument & Controls Lead Assessor	32	16	16	16	40	8	8	8	24	16	16	8	0	208
HV Station Project Director	32	4	4	4	16	4	4	4	4	4	8	8	0	96
HV Station Lead Assessor	32	10	10	8	40	16	16	16	32	24	24	24	16	268
HV Station Structural Assessor	32	0	0	0	0	16	0	0	16	8	0	0	0	72
HV Station Support	32	10	10	8	40	16	16	16	16	16	16	8	0	204
Geotech engineering deliverables	8	16	16	8	8	8	8	8	8	24	24	24	0	160
Civil engineering deliverables	8	16	16	8	8	8	8	8	8	24	24	24	0	160
Mechanical engineering deliverables	16	8	8	8	8	8	8	8	8	24	24	24	16	168
Structural engineering deliverables	16	16	16	8	8	8	8	8	8	24	24	24	16	184
LV Electrical engineering deliverables	8	16	16	8	8	8	8	8	8	24	24	24	0	160
HV Station engineering deliverables	8	8	0	0	16	8	0	0	8	24	24	24	16	136
Design and Drafting deliverables	0	0	0	0	0	40	40	40	40	40	0	0	0	200
Procurement / subcontract activities	8	32	32	32	32	32	32	32	0	0	0	0	0	232
Cost Estimating	0	0	0	0	0	0	16	16	32	32	40	8	0	144
Scheduling	16	0	0	0	0	0	0	16	24	24	24	0	0	104
Admin delvierables	8	8	8	8	8	8	8	16	24	24	24	24	8	176
Subtotal hours														6,198
S&L Travel (# travelers)	13				13	4							4	

HGE

January 31, 2020

Jorge Sanchez
Project Manager / Technical Advisor
Puerto Rico Electrical Power Authority
Engineering and Technical Services
Penuelas, Puerto Rico

Ref.: **Structural Engineering Services**
Project: **Costa Sur Tanks Structural Analysis**
Location: **Penuelas, PR**

PROJECT DESCRIPTION:

Due to the recent earthquake on Jan 07, PREPA decided to perform an structural assessment and visual inspection to 12 tanks located in the Costa Sur facilities including:

- VT to all tanks (12ea)
- API 653 in service inspection to 4ea (see table below)
- Structural Assessment to all (12ea)

SCOPE OF WORK

1.0 External Structural Visual Inspection

The external visual inspection of all tanks will consist in looking into damages due to the earthquake, wear and tear, shell, roof and connections or any other situation visually identified as out of code, as well as foundations. The inspection will be performed by an API 653 certified inspector and a PE structural engineer. All inspections will be external since the tanks are in service. This inspection will determine if the tanks are suitable for continue in service. API 653 in service inspection will be performed to 4 of the 12 tanks. A final report with findings and recommendations will be issued after the assessment completion.

HGE PSC
PO BOX 190953, San Juan PR 00919
Tel. 787-528-8911 Fax. 787-765-9764
Email: aheinsen@hglobaleng.com

2.0 Settlement calculation and Report

Settlement readings will be performed as per appendix B of API 653. Level measurements will be obtain around the tank shell, 12" above the foundation ring in the tank shell. The diameters, height and number of tanks are as follows::

Diam / Height	Tank No	Inspection
70 ft / 48 ft	Agua Cruda	(Visual)
48 ft / 42 ft	Agua Demi-5	(Visual)
48 ft / 42 ft	Agua Demi-6	(Visual)
100 ft / 48 ft	Agua Demi-5	(Visual)
100 ft / 48 ft	Agua Demi-6	(Visual)
48 ft / 40 ft	Agua Condensada-5	(Visual)
48 ft / 40 ft	Agua Condensada-6	(Visual)
219 ft / 48 ft	Heavy oil - R-2	(Visual and UT)
219 ft / 48 ft	Heavy oil - R-3	(Visual and UT)
80 ft / 48 ft	S-4	(Visual)
80 ft / 48 ft	S-5	(Visual and UT)
35 ft / 48 ft	Light Oil - LDS-7	(Visual and UT)

Data gathering will take 10 to 12 working days. Report will be submitted 10 working days after the data gathering is completed.

Notes:

1. To perform the above assessment, the contractor will provide us with the following:

   a. Complete access to the areas;

   b. Provide a PO for the total of the engineering fees presented in this proposal

HGE PSC
PO BOX 190953, San Juan PR 00919
Tel. 787-528-8911 Fax. 787-765-9764
Email: aheinsen@hglobaleng.com

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Professional services requested by your company will be invoiced as per the following hourly rate:

- Licensed Professional Engineer /Architect - $150/hr
- Professional Surveyor - $125/hr
- Assistant Engineer - $125/hr
- REVIT Designer - $70/hr
- CAD Draftmen - $50/hr
- Clerical / Administrative - $30/hr
-

The project will be billed per phase as follows

Professional Fees and Method of Payment

1. Mobilization fee and Insurance cost	**$18,000.00**
2. API 653 Visual Inspection and UT tests	**$40,000.00**
3. Settlement measurements and drawings	**$18,000.00**
4. Engineering Report	**$10,000.00**
5. CIAPR Special Stamps	**$ 90.00**
TOTAL	**$86,090.00**

A mobilization fee of $18,000.00 will be billed prior work starts. Invoices must be paid in the first 60 days after is submitted. After 60 days, a finance fee of 2% will be applied to the invoice. Cancelation of contract will incur in a cancelation fee of 30% of the unbilled work, plus the work already done.

A PO needs to be issued before work begins.

Cordially

Alan Heinsen, MECE, PE
President
HGE PSC

HGE PSC
PO BOX 190953, San Juan PR 00919
Tel. 787-528-8911 Fax. 787-765-9764
Email: aheinsen@hglobaleng.com

HGE

PROJECT AUTHORIZATION FORM

Project Name: **Costa Sur Tanks Structural Assessment**

Project Location: *Penuelas, PR*

Proposal Date: January 31, 2020

CLIENT Name: Jorge Sanchez
Project Manager / Technical Advisor
Puerto Rico Electrical Power Authority
Engineering and Technical Services
Penuelas, Puerto Rico

Special Comments_____

PROJECT ACCEPTANCE

The Terms and Conditions of this Project, including the terms and conditions on this and the attached pages are:

Accepted on_____ of 2020

_____
Signature of authorized representative

_____
Print or type name of authorized representative and title

Note: Professional liability shall not exceed the compensation received in this project.

HGE PSC
PO BOX 190953, San Juan PR 00919
Tel. 787-528-8911 Fax. 787-765-9764
Email: aheinsen@hglobaleng.com

Attachment F

Informe Mensual de Eventos Importantes

Enero 2020

SALIDA UNIDAD DIA HORA	UNIDAD AFECTADA / CAUSA SALIDA	PLANTA	GENERACION PERDIDA (MW)	FRECUENCIA MIN (HZ)	FRECUENCIA BAJO 59.2 HZ (SEG)	CARGA INTERRUMPIDA	TIEMPO INTERRUPCION (MIN)	ENTRADA UNIDAD DIA HORA
20-Jan-20 6:32 PM		PRCR 26	0	0.0	Relevo de carga programado por deficiencia en generación. Se relevaron 14 MW, afectándose aproximadamente 8,395 clientes.	ST 0 SD 48	20-Jan-20 7:20 PM	
28-Jan-20 6:49 PM		PRCR 26	0	0.0	Relevo de carga programado por deficiencia en generación. Se relevaron 26 MW, afectándose aproximadamente 20,336 clientes.	ST 0 SD 66	28-Jan-20 7:55 PM	

D = UNIDAD DISPARO CON UNA CARGA DE...
R = UNIDAD REDUJO SU CARGA EN...
T = EVENTOS EN RED DE TRANSMISIÓN...
ST = SISTEMA TRANSMISIÓN...
SD = SISTEMA DISTRIBUCIÓN...
RC = RELEVO POR CONTINGENCIA
PRCR = PLAN RELEVO DE CARGA ROTATIVO...
O = OTRAS CAUSAS AJENAS A LA CENTRAL...

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C., 20460

ASSISTANT ADMINISTRATOR
FOR ENFORCEMENT AND
COMPLIANCE ASSURANCE

JAN 3 1 2020

Adam Kushner
Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, D.C. 20004

RE: No Action Assurance for Puerto Rico Power Authority for Fuel Consumption and Analysis

Dear Mr. Kushner:

This letter is in response to your January 14, 2020, request, on behalf of the Puerto Rico Electric Power Authority (PREPA), for No Action Assurance (NAA) regarding the operation of certain electric generating units operated by PREPA in Puerto Rico. More specifically, this letter responds to that portion of PREPA's request that seeks relief for the fuel consumption limits and fuel quality and quality analysis requirements described below. Beginning on or about December 28, 2019, and continuing through at least January 7, 2020, Puerto Rico has experienced multiple earthquakes and aftershocks that have caused extreme damage to its power grid. Among other things, the earthquakes have rendered the Costa Sur power station, a critical baseload station, inoperable. On January 7, 2020, the Governor of Puerto Rico signed an Executive Order delaring a state of emergency throughout Puerto Rico; on January 16, 2020, the President signed a major disaster declaration for Puerto Rico.

The U.S. Environmental Protection Agency has determined that issuance of this NAA is necessary to enable PREPA to supply electricity to residential and business customers. Because the request for an NAA covers multiple units in varying operating circumstances, after discussions with counsel for PREPA the EPA has determined that the most appropriate way to timely address the requested action is to issue this NAA covering a subset of the units identified in the January 14, 2020 request. To that end, as set forth below, this NAA addresses the generating units identified in Table 1 below for the permit provisions and requirements of law specifically identified in the Table.

The EPA has determined that issuing an NAA, as detailed below, is in the public interest given the conditions in Puerto Rico. Through the issuance of this NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by recent earthquakes.

Nothing in this exercise of enforcement discretion relieves any person of the obligation under law, if any, to report emissions from the operation of equipment covered by this action. Pursuant to this NAA, the EPA will not enforce violations of the following requirements that occur during the period of this NAA:

- The fuel consumption limits identified in Table 1 for the identified Generating Unit; and
- The fuel quality and quality analysis requirements identified in Table 1 for the identified Generating Unit, to the extent that the requirements mandate that the analysis of the fuel sample must be completed prior to firing of the fuel in the Generating Unit.

This NAA is subject to the following conditions:

1. Fuel consumption limits: Once the NAA terminates, in calculating the 365-day rolling total fuel consumption, PREPA may exclude fuel consumption data from days it operated pursuant to this NAA and instead calculate the 365-day rolling total fuel consumption by including 365 days of fuel consumption data from consecutive days immediately prior to the effective date and immediately after the termination date of this NAA, but excluding each day that PREPA operated a covered Generating Unit pursuant to this NAA. PREPA must, however, also provide the Puerto Rico Department of Natural and Environmental Resources with the 365-day rolling total fuel consumption calculation using the total fuel consumption data during the time it operated pursuant to this NAA;
2. Fuel quality and quality analysis: Where results of the fuel quality analysis are not available prior to the need to burn the fuel, PREPA will rely on bulk analysis documentation from the fuel supplier regarding the content of the fuel to show that the fuel is compliant with the required standard. PREPA will also not blend the newly received fuel with other fuel not known to be compliant prior to receipt of its own fuel quality analysis results. In the event PREPA becomes aware that it is burning noncompliant fuel, through receiving lab results or otherwise, PREPA will notify the EPA immediately and timely take any actions required by EPA to address the noncompliant fuel;
3. To the best of its ability, while the NAA is in effect PREPA will report on fuel consumption for the 365 days prior to this NAA in accordance with any reporting requirement in an applicable permit or regulation;
4. PREPA informs the EPA within 48 hours that it has obtained sufficient generation from units compliant with the Clean Air Act and all applicable permits to allow discontinuation of operation of covered Generating Units under this NAA; and
5. PREPA complies with all conditions imposed by territory or local authorities on these emergency operations.

PREPA must submit a report to the EPA within thirty (30) days of the termination of the NAA containing the following information:

1. The name, address, and contact information for the person submitting the report;
2. A description of the amount of fuel used for each covered Generating Unit during the period this NAA is in effect;
3. A description of how the energy was used, including any benefits provided to the public; and
4. A description of any instances in which fuel quality analysis results received after PREPA began burning newly-received fuel indicated that the fuel was not compliant.

The report referenced above must be sent by email to Gregory Fried, Chief, Stationary Source Enforcement Branch, within EPA's Air Enforcement Division, at fried.gregory@epa.gov. The report

must be in portable document format (PDF) and be clearly labeled as "Report for PREPA Generators Operated Pursuant to the No Action Assurance First Issued (insert date of issuance of this NAA)." Where the information for these reports is not available due to the emergency circumstances, the EPA would accept instead an explanation of those circumstances and specifically how they prevented the collection or transmission of that information.

This NAA terminates at 11:59 PM Atlantic Standard Time, April 30, 2020. The EPA will assess whether an extension to or revision of this NAA is necessary and appropriate. The EPA reserves the right to revoke or modify the NAA if the EPA believes that such action is necessary to protect public health and the environment. This NAA does not apply to any other federal requirements that may apply to regulated activities at this facility other than those listed above. The EPA intends to use the period of the NAA to evaluate the appropriate longer-term approach for addressing this situation.

The issuance of an NAA for this period of time is in the public interest. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by the recent earthquakes. Nothing in this NAA is intended to over-ride Puerto Rico or local authorities.

Please contact Gregory Fried, Chief, Stationary Source Enforcement Branch, with questions. Mr. Fried can be reached at (202) 564-7016 or fried.gregory@epa.gov.

Sincerely,

Susan Parker Bodine

cc: Peter D. Lopez, Regional Administrator, EPA Region 2

TABLE 1: Covered Generating Units and Associated Clean Air Act Permit Requirements

Facility	Generating Unit	Clean Air Act Permit Requirements
Palo Seco	GT 1-1 (21MW)	Palo Seco Title V permit No. PFE-TV-4911-70-1196-0015 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B) and V(B)(c)–(d).
Palo Seco	GT 1-2 (21MW)	Palo Seco Title V permit No. PFE-TV-4911-70-1196-0015 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B) and V(B)(c)–(d).
Palo Seco	GT 3-1 (21MW)	Palo Seco Title V permit No. PFE-TV-4911-70-1196-0015 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B) and V(B)(c)–(d).
Aguirre	Combined cycle gas turbine "CCGT" 1-1 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 1-2 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 1-3 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 1-4 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 2-1 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B),

Facility	Generating Unit	Clean Air Act Permit Requirements
		V(B)(c)–(d), and V(C).
Aguirre	CCGT 2-3 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Aguirre	CCGT 2-4 (50MW)	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(B), V(B)(c)–(d), and V(C).
Mayaguez	GT-5 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Mayaguez	GT-6 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Mayaguez	GT-7 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Mayaguez	GT-8 (54MW)	Mayaguez construction permit no. PFE-50-0307-0286-I-II-C for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions II; and III(A)(31)–(33) and (37).
Cambalache Peakers	2 (83MW)	Cambalache PSD Permit Modification for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Attachment I (general description); and Attachment II, Conditions VII(1), (2), (5), and X.
Cambalache Peakers	3 (83MW)	Cambalache PSD Permit Modification for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Attachment I (general description); and Attachment II, Conditions VII(1), (2), (5), and X.

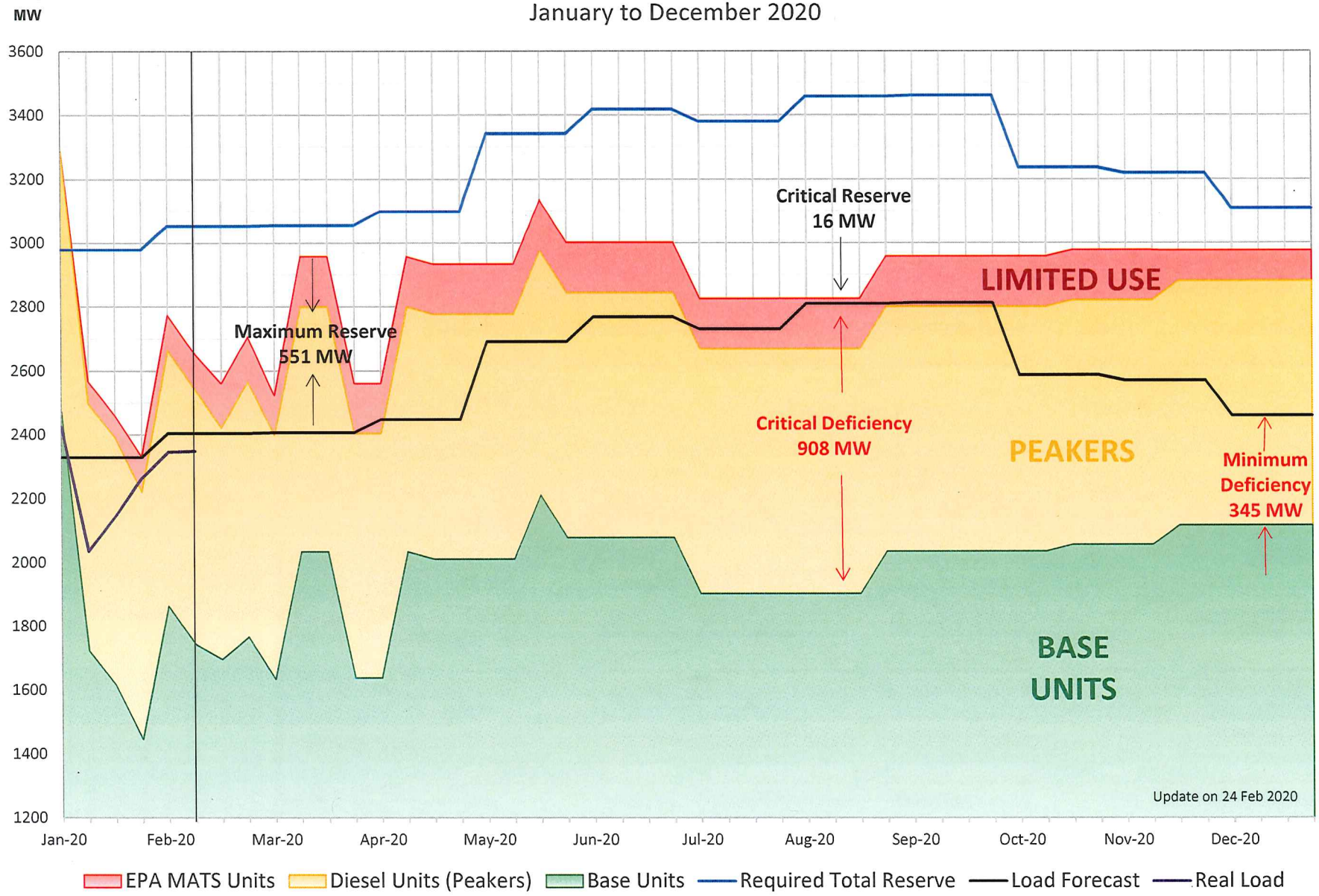
Facility	Generating Unit	Clean Air Act Permit Requirements
Daguao Peakers	GT 1-1 (21MW)	Daguao Title V permit No. PFE-TV-4911-63-0212-0447 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).
Daguao Peakers	GT 1-2 (21MW)	Daguao Title V permit No. PFE-TV-4911-63-0212-0447 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).
Yabucoa Peakers	GT 1-1 (21MW)	Yabucoa Title V permit No. PFE-TV-4911-77-0707-0759 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).
Jobos Peakers	GT 1-2 (21MW)	Jobos Title V permit No. PFE-TV-4911-30-1107-0991 for conditions pertaining to fuel quality testing and fuel consumption limits (barrels per year) at Conditions V(A)(1) and V(A)(1)(c)–(d).

Attachment H

Load Forecast vs Generation Availability

Generation Availability without Costa Sur

January to December 2020



Attachment I

GOVERNMENT OF PUERTO RICO
Puerto Rico Electric Power Authority
Governing Board

RESOLUTION 4759
REQUEST FOR PROPOSAL TEMPORARY EMERGENCY GENERATION

WHEREAS: The Puerto Rico Electric Power Authority (PREPA) is a public corporation and an instrumentality of the Government of Puerto Rico created by Act No. 83 of May 2, 1941, as amended (Act 83). PREPA was created to provide electrical energy in a reliable way, contributing to the general welfare and sustainable future of the people of Puerto Rico, maximizing benefits and minimizing social, environmental and economic impacts. In addition, PREPA provides a service based on affordable, fair, reasonable, and non-discriminatory cost that is consistent with environmental protection, non-profit, focused on citizen participation and its clients.

WHEREAS: Act 83 authorizes PREPA, in the management of its purposes, to grant contracts and formalize all the instruments that are necessary or convenient in the exercise of any of its powers.

WHEREAS: Section 15(1)(a) of Act 83 states that all purchases made and contracts for supplies or services, except professional services, entered into by PREPA, including its capital construction contracts, shall follow a bid process.

WHEREAS: According to Section 15 (2)(f) of Act 83, a competitive bidding process shall not be necessary, when in the judgment of the Governing Board, a competitive request for proposal (RFP) process for the acquisition of goods, equipment, materials or services must be carried out to encourage greater competition, reduce the risk of collusion, and promote the best possible terms and conditions in benefit of greater savings and reduction of costs and the operational expenses of PREPA.

WHEREAS: On January 7, 2020, a 6.4 magnitude earthquake with its epicenter near Tallaboa, Guayanilla, shook the Island and caused damage to part of the infrastructure of the southwest region, including considerable damages to the Costa Sur Power Plant. The event caused the units' shutdown, which triggered a general blackout across the Island. Privately owned and operated EcoEléctrica suffered damages to its ancillary equipment, water tanks, and roads, which prevented its two combined cycle units, with a 507 MW capacity, to be dispatched for eight (8) days. These natural gas-powered units were started-up again and connected to the grid on January 15, 2020.

"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."

WHEREAS: As indicated by the Generation Director, engineer Daniel Hernández Morales, Costa Sur had the most significant damages of PREPA's power plant fleet. The boiler and generator structures, water and fuel tanks, steam and natural gas piping, console room, buildings, and roads, were all affected by the 6.4 magnitude earthquake and other subsequent earthquakes and aftershocks. PREPA is still working with the damage assessment of the 820 MW capacity power plant, which is expected to cost tens of millions to be brought back to operational shape, if that were to be a feasible option.

WHEREAS: The loss of Costa Sur's 820 MW for an undetermined time because of current damages, due to the continuous aftershocks and seismic activity, creates concerns of another blackout on the Island. PREPA has provided power to its clients since the major event with all available units, but this situation leaves us with an almost non-existent power reserve. At present, the preliminary determination is that temporary generation will be required for at least twelve (12) months, with PREPA's option to extend for an additional six (6) months.

WHEREAS: The solution to this unforeseen emergency situation requires up to 500 MW generation units that are fast, cost-effective, and reliable and can be installed in a short term, at various locations identified or accepted by PREPA, to be available before summer, which is our high-power-demand season and also coincides with Puerto Rico's hurricane season. Units shall be able to synchronize to PREPA's electrical system and be available to be dispatched from PREPA's Control Center. Generating units shall have the latest technology to maximize its efficiency and compliance with all environmental requirements. All equipment shall be able to comply with local and federal environmental requirements.

WHEREAS: Based on the emergency situation, PREPA is seeking federal funds managed by the Federal Emergency Management Agency (FEMA) to help with the lease and operations and maintenance (O&M) costs, while a permanent generation solution is available. PREPA will seek the necessary guidance to comply with all federal regulations required for federal funding assistance.

WHEREAS: On February 4, 2020, Mr. Nelson Morales-Rivera, Finance Director, certified that the budget for Fiscal Year 2019-20 includes the funds for this contract, with the amount of $30,000,000 under account 01-1748-17596-555-287. These funds are from the emergency account of PREPA's Generation Directorate.

WHEREAS: PREPA's General Counsel considered Mr. Fernando Padilla-Padilla's memorandum and concluded that, with the Governing Board's approval, the temporary generation for the Costa Sur steam units' loss may be procured through a request for proposals (RFP) competitive procurement process, since it will provide PREPA with the opportunity to negotiate the best possible terms and conditions with the interested participants, to obtain the required temporary generation.

THEREFORE: In accordance with Act 83, PREPA's Governing Board resolves to:

1. Authorize an RFP process that may result in a contract or contracts for temporary generation to compensate for Costa Sur Power Plant's steam units' loss generation due to the emergency caused by the earthquakes.

2. Approve and appoint the members of the Evaluation Committee of the RFP, as recommended by PREPA's Chief Executive Officer. The members of the Evaluation Committee responsible for the evaluation and selection of the best alternative(s) are: engineer Daniel Hernández, engineer Efran Paredes, Mr. Neftalí González-Cruz, Mr. Fernando Padilla-Padilla, and attorney Astrid Rodríguez-Cruz.

3. Appoint Mr. Fernando Padilla-Padilla as the Chairman of the Evaluation Committee.

4. The Evaluation Committee will select an independent party to advice the Committee in the evaluation and ranking of the proposals, in order to make the selection based on the scoring criteria set forth in the RFP.

5. The Chief Executive Officer will inform the Governing Board of the result of the procurement process before the award of the contract(s) resulting from the RFP.

6. The General Counsel will review the terms and conditions of the contract(s) to ensure that they meet the legal requirements regarding government contracting to address the emergency situation.

7. PREPA will submit the RFP documents for the approval of the Puerto Rico Energy Bureau prior to launching the RFP.

Approved in San Juan, Puerto Rico, this sixth day of February, two thousand and twenty.

Eduardo Arosemena-Muñoz
Secretary of the Board

Re: <<EXTERNAL EMAIL>>Solicitud de permiso PREPA Palo Seco PFE-70-0120-0010-II-C

José A. Santos Jiménez <JOSE.SANTOS@prepa.com>

Thu 3/5/2020 4:46 PM

To: Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>
Cc: Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>; Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>; Maria V Mercado Rondon <MARIA.MERCADO@prepa.com>

4 attachments (13 MB)

Facility SIte Source View 02-11-2020 a.pdf; Emergency Generators Palo Seco.zip; Palo Seco Mega Gens_stack_parameter_02-10-2020.pdf; Palo Seco Mega Gens Parte II Solicitud Permiso Construccion 02-26-2020.pdf;

Buenas tardes.

Según solicitado incluimos contestación y documentos en referencia a las inquietudes presentadas en el correo electrónico adjunto.

Ver comentarios/respuestas, en azul, a cada una de las preguntas.

Aún estamos trabajando con lo siguiente (sombreado en Amarillo): 1. Información relacionada a la determinación de aplicabilidad de PSD por parte de EPA y 2. Documento ambiental para las turbinas.

Solicitamos mayor tiempo para los dos artículos enumerados arriba, estamos en el proceso de determinar el tiempo necesario para completar los mismos. Proveeremos estimado a la brevedad posible.

Att. J.Santos.

From: Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>
Sent: Friday, February 7, 2020 12:25 PM
To: Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>
Cc: Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>; José A. Santos Jiménez <JOSE.SANTOS@prepa.com>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>
Subject: <<EXTERNAL EMAIL>>Solicitud de permiso PREPA Palo Seco PFE-70-0120-0010-II-C

Saludos

Hemos evaluado la solicitud de asunto para determinar si la misma está completa. Hemos determinado que la solicitud está incompleta, deberá entregar la siguiente información:

1. Copia de la determinación final de EPA sobre la aplicabilidad o no aplicabilidad del proyecto de la Prevención de Deterioro Significativo (PSD, en inglés) para el proyecto solicitado. Según la carta de la EPA del 23 de julio de 2019, PREPA solicitó una revisión de no aplicabilidad expedita para tres unidades de generación. La EPA establece que PREPA accedió a proveer las razones de emisión por hora de las tres turbinas junto con los niveles de carga para que la EPA pudiera determinar si era posible establecer condiciones de no aplicabilidad para PSD para estas unidades. A la fecha de la comunicación EPA no había recibido dicha información. PREPA alego que el manufacturero de las unidades no había provisto los factores de emisión garantizados y EPA estableció que sin esta información no podrían comenzar la revisión expedita según solicitado.

2. Plano de la facilidad (proyectado o existente) indicando todos los puntos de emisión.
   See enclosed copy

Para las turbinas:

3. Incluir una hoja Parte II para cada unidad por separado. Incluir una identificación para cada turbina.
   See documents enclosed

4. Documento ambiental para las turbinas (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416) y el uso de gas natural y diésel. Este trámite no clasifica como exclusión categórica.
5. Parámetros de chimenea para cada unidad:
   a. Identificación para cada chimenea
   b. Coordenadas de la chimenea

See documents enclosed

5. Determinación específica y detallada de la aplicabilidad (incluyendo método de cumplimiento específico) o no aplicabilidad de las siguientes reglamentaciones federales:

a. 40 CFR Parte 60 Subparte GG: *Standards of Performance for Stationary Gas Turbines.* Solicitado desde el 24 de octubre de 2019.

As discussed in the Permit to Construct (PTC) application, 40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines) is applicable to the project as the PW Power Systems (PWPS) model FT8® MOBILEPAC dual fuel combustion turbines have a heat input rating greater than 10 million British Thermal Units per hour (MMBtu/hr) and construction on these turbines commenced after February 18, 2005. In accordance with 40 CFR 60.4305(b), combustion turbines subject to 40 CFR 60 Subpart KKKK are exempt from the requirements of 40 CFR 60 Subpart GG. Since the combustion turbines are subject to Subpart KKKK, they are exempt from Subpart GG.

a. 40 CFR Parte 63 Subparte YYYY: *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines.*

As discussed in the Permit To Construct (PTC) application, 40 CFR 63 Subpart YYYY (National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines) is applicable to the PWPS FT8® MOBILEPAC combustion turbines as the facility is an existing major source of hazardous air pollutant (HAP) emissions and the existing and proposed combustion turbines fire oil more than an aggregate total of 1000 hours during the calendar year. Consequently, the combustion turbines must meet a formaldehyde emission limit of 91 parts per billion by volume dry at 15 percent oxygen when firing natural gas and oil.

On January 31, 2020, the United States Environmental protection Agency (USEPA) issued final amendments to NESHAP Subpart YYYY following the completion of a residual risk and technology review (RTR). The USEPA concluded from the RTR that no new cost-effective controls are available and did not propose any changes to the operating or emission standards. The USEPA did however, issue minor amendments to the rule that will apply to the PWPS FT8® MOBILEPAC combustion turbines, including revising requirements for periods of startup, shutdown and malfunction (SSM) and requiring electronic reporting of performance test results and compliance reports.

The USEPA amended 40 CFR 63.6105 to eliminate the exemption from the emission and operating limits during SSM periods. Therefore, beginning 180 days after the date of publication of the revised rule in the Federal Register, the formaldehyde emission limit will apply during SSM periods. In accordance with the amended 40 CFR 63.6120(c), performance testing shall be conducted during representative conditions which excludes startup, shutdown, and malfunction. The revised rule has not yet been published in the Federal Register and therefore, the effective date of this rule change is not yet known. As the PWPS FT8® MOBILEPAC combustion turbines will meet the formaldehyde emission limit without add-on pollution controls, there will be no change to the monitoring and reporting requirements as a result of the amended rule.

Beginning on the effective date of the amended rule, PREPA will submit performance test results and compliance reports through USEPA's Central Data Exchange using the Compliance and Emissions Data Reporting Interface.

Deberá tomar en cuenta las enmiendas finalizadas el 31 de enero de 2020.

Para los motores:

1. Incluir una hoja Parte II para cada motor por separado. Incluir una identificación para cada motor.

See documents enclosed

7. Documento ambiental para el uso de gas natural en los motores. (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica.

Natural Gas will not be used on emergency engines PS BSG-1, PS BSG-2, PS BSG-3

7. Parámetros de chimenea para cada unidad:

   See enclosed table with stack information for Emergency Engines and Turbines

   i. Identificación para cada chimenea
   ii. Coordenadas de la chimenea
   iii. Altura de la chimenea
   iv. Diámetro de salida
   v. Temperatura de salida
   vi. Velocidad de salida

10. Fecha de orden de cada motor

    May 28, 2019

10. Foto de la placa de cada motor donde se vea fechas y potencia del motor, si están en la instalación.

    See documents enclosed

10. Establecer si cada motor cumplirá con la definición de *black start* de la reglamentación federal RICE o se considerarán de emergencia.

    See answer below.

10. Determinación específica y detallada de la aplicabilidad (incluyendo método de cumplimiento específico) o no aplicabilidad de las siguientes reglamentaciones federales:

    a. 40 CFR Parte 60 Subparte IIII: *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

    Pursuant to 40 CFR 60.4200(a)(4), 40 CFR Part 60 Subpart IIII is applicable to the owners and operators of stationary compression ignition internal combustion engines that commenced construction after July 11, 2005. The three black start generator (BSG) engines are subject to 40 CFR Part 60 Subpart IIII. The three BSG engines meet the criteria of emergency engines pursuant to 40 CFR 60.4219 defined as follows:

    > Emergency stationary internal combustion engine means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary ICE must comply with the requirements specified in §60.4211(f) in order to be considered emergency stationary ICE. If the engine does not comply with the requirements specified in §60.4211(f), then it is not considered to be an emergency stationary ICE under this subpart.

    1. The stationary ICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc.
    2. The stationary ICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §60.4211(f).
    3. The stationary ICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §60.4211(f)(2)(ii) or (iii) and §60.4211(f)(3)(i).

    The three BSG engines will be operated only during periods as defined in criteria (1) above, to provide electrical power to the PWPS model FT8® MOBILEPAC combustion turbines during periods when there is no electrical power from the grid (i.e. a blackout). The BSG engines will be operated to comply with 40 CFR 60.4211(f). Therefore, the three BSG engines are subject to the requirements for new emergency engines. There is no separate distinction for black start engines under 40 CFR Part 60 Subpart IIII.

    a. 40 CFR Parte 60 Subparte JJJJ: *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

    Pursuant to 40 CFR 60.4219, compression ignition means a stationary internal combustion engine that is not a spark ignition engine and a spark ignition means a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device. Pursuant to 40 CFR 60.4230(a), 40 CFR 60 Subpart JJJJ is applicable to stationary spark ignition internal combustion engines. The three black start generator engines do not have a spark plug and are compression ignition engines, therefore they are not subject to 40 CFR Part 60 Subpart JJJJ.

    a. 40 CFR Parte 63 Subparte ZZZZ: *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Pursuant to 40 CFR 63.6585, 40 CFR Part 60 Subpart IIII is applicable to the owners and operators of all stationary compression ignition internal combustion engines located at a major source of HAP emissions that commenced construction after December 19, 2002. The three black start generator (BSG) engines are subject to 40 CFR Part 63 Subpart ZZZZ. 40 CFR Part 63 Subpart ZZZZ provides definitions of both black start and emergency engines pursuant to 40 CFR 63.6675 as follows:

> Black start engine means an engine whose only purpose is to start up a combustion turbine.
>
> Emergency stationary RICE means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary RICE must comply with the requirements specified in §63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in §63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart.

1. The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.
2. The stationary RICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §63.6640(f).
3. The stationary RICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §63.6640(f)(2)(ii) or (iii) and §63.6640(f)(4)(i) or (ii).

The first criteria for an emergency engine is exactly the same as defined under 40 CFR 60.4219 for an emergency engine subject to 40 CFR 60 Subpart IIII. The three BSG engines satisfy both the criteria of a black start engine and an emergency engine under 40 CFR Part 63 Subpart ZZZZ. During an emergency when there is no electrical power from the electrical grid to start the combustion turbines, the BSG engines will be used to start the combustion turbines. The applicable requirements for new emergency engines rated greater than 500 horsepower at a major HAP source have been summarized by the USEPA and available online here https://www3.epa.gov/ttn/atw/rice/pdf/New&Reconemergencyover500HP2b(ii).pdf. The requirements for a new black start engine that meets the criteria of an emergency engine are the same as an emergency engine.

Natural Gas Supply Infrastructure on site:

14. Incluir una hoja Parte II para cada unidad de emisión.
15. Documento ambiental para la infraestructura de gas natural (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica.
16. Un plano esquemático que indique el flujo desde el recibo de gas natural hasta el uso final identificando cada fuente de emisión.
17. Procedencia del gas natural.
18. Especificar el método de almacenaje del gas natural.
19. Plan de Reacción a Emergencias de acuerdo con la Regla 107C del RCCA. El plan deberá incluir incidencias de derrames accidentales de gas natural.

The natural gas equipment onsite will consist solely of the pipeline that transports the natural gas from the supplier to the PWPS model FT8® MOBILEPAC combustion turbines. There will be no storage of natural gas onsite and therefore, an emergency Response Plan in accordance with Rule 107C is not required. The only natural gas equipment to be installed onsite will be the pipeline and associated ancillary equipment (e.g. valves, flanges, connectors, etc.). The PTC application included an estimate of potential fugitive natural gas emissions from the new natural gas handling infrastructure to be installed onsite at the Palo Seco plant. The emission calculations are provided in Appendix B of the application. No additional information regarding the natural gas handling equipment is available at this time.

Esta solicitud de información es preliminar, una vez se evalué la parte técnica de los cálculos de emisión en detalle o la información entregada podríamos solicitar información adicional para poder establecer los requisitos aplicables estatales y federales.

Le concedemos hasta el **9 de marzo de 2020** para entregar toda la información requerida.

Cordialmente,

Leimarys Delgado Medero, P.E.

Jefa, Permisos e Ingeniería | Área de Calidad de Aire
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES
P.O. Box 11488 San Juan PR 00910
☎: (787) 767-8181 Ext. 2310

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004
T +1 202 637 5600
F +1 202 637 5910
www.hoganlovells.com

April 6, 2020

By Electronic Mail

Liliana Villatora
Air Branch Chief, Office of Regional Counsel
U.S. Environmental Protection Agency – Region 2
Ted Weiss Federal Building
290 Broadway
New York, NY 10007
villatora.liliana@epa.gov

Re: Puerto Rico Electric Power Authority –– No-Action Assurance Request –– Earthquakes –– Additional Responsive Information

Dear Ms. Villatora:

On January 14, 2020, the Puerto Rico Electric Power Authority ("PREPA") requested that the United States Environmental Protection Agency ("EPA") issue a no-action assurance with regard to certain of its generating units due to the extreme circumstances in the Commonwealth of Puerto Rico caused by a series of earthquakes occurring in and around the Guanica municipal area in the southwest region of Puerto Rico. Following submission of the written request for no-action assurance, EPA provided a list of specific information requests to counsel for PREPA via electronic mail on January 22, 2020.

I write on behalf of PREPA to provide the following responses to EPA's information requests, and in support of PREPA's no-action assurance requests. We have enumerated and bolded the specific request made by EPA, and provided a response to each.

PREPA's responses to EPA's requests are made to the best of PREPA's knowledge as of the date of this letter. However, many of PREPA's responses involve date estimates for when various projects and repairs will be completed, and many of these dates do not account for potential delays that may occur due to the COVID-19 pandemic. This situation is rapidly evolving and may affect some of the date estimates provided herein.

April 6, 2020 Puerto Rico Electric Power Authority's Response to the United States Environmental Protection Agency's January 22, 2020 Request For Information

I. PREPA RESPONSE TO JANUARY 22, 2020 REQUEST FOR INFORMATION

A. Palo Seco Generating Station Mobile Packs

EPA Request No. 1:

Indicate the total number of hours that each mobile pack operated prior to Jan. 7, 2020.

PREPA Response:

Prior to January 7, 2020, the FT8 Mobilepac Gas Turbine units ("Mobilepac units") were operated for commissioning purposes only as described below:

October 2019: The Mobilepac units did not operate in October 2019. As discussed in more detail below, on October 24, 2019, the Puerto Rico Department of Natural and Environmental Resources ("DNER") granted PREPA an emergency waiver to install and commission the Mobilepac units. *See* "Solicitude de Dispensa de Emergencia," dated October 11, 2019, TV-4911-70-1196-0015 (appended hereto as Attachment 1).

November 2019: Operation of the units during November was for commissioning purposes only. The below table shows the hours of operation and fuel usage for the Mobilepac units for November 2019:

Unit	Fuel Type	Fuel Quantity (gallons)	Hours of Operation
PS 1410 (Mobilepac unit 2)	2	30,931	32.31
PS 1411 (Mobilepac unit 1)	2	30,313	28.73
PS 1412 (Mobilepac unit 3)	2	23,384	27.35

December 2019: Operation of the units during December was for commissioning purposes only. The below table shows the hours of operation and fuel usage for the mobile pack units during December 2019:

Unit	Fuel Type	Fuel Quantity (gallons)	Hours of Operation
PS 1410 (Mobilepac unit 2)	2	23,721	9.38
PS 1411 (Mobilepac unit 1)	2	18,642	6.46
PS 1412 (Mobilepac unit 3)	2	22,311	8.17

January 2020: The units were not operated from January 1, 2020 to January 7, 2020.

EPA Request No. 2:

Indicate the total number of hours that each mobile pack has operated since Jan. 7, 2020.

PREPA Response:

The hours of operation for each of the Mobilepac units for the period January 8, 2020 through February 29, 2020, is set forth in the below table. For your information, we have also included the amount of fuel usage for each unit. PREPA has not yet compiled the hours of operation and fuel usage data for Mobile Pac units for the month of March. PREPA will provide that information when it becomes available.

Unit	Fuel Type	Fuel Quantity (gallons)	Hours of Operation
PS 1410 (Mobilepac unit 2)	2	1,835,144	1,180
PS 1411 (Mobilepac unit 1)	2	1,710,251	1,147
PS 1412 (Mobilepac unit 3)	2	1,945,530	1,168

EPA Request No. 3:

When did PREPA shut down each of the existing 3 turbines at Palo Seco?

PREPA Response:

Combustion turbine units PSGT 2-2 and 3-2 were removed from service on September 25, 2018 and September 26, 2016, respectively, due to mechanical issues and equipment failures, and have remained out-of-service since that time.

PREPA utilized combustion turbine PSGT 3-1 during the last quarter of 2019, as required to respond to peak loads. PSGT 3-1 was not online in 2020 prior to the earthquakes; PREPA brought PSGT 3-1 into service on January 7, 2020, in response to the earthquakes. The October 24, 2019 "Emergency Waiver" issued by DNER did not require units PSGT 2-2, 3-1, and 3-2 be removed from service as a condition of the installation and commissioning of the Mobilepac units.

EPA Request No. 4:

When did PREPA re-start the one existing turbine that it is currently operating?

PREPA Response:

As described above, PREPA utilized combustion turbine PSGT 3-1 in 2019, prior to the earthquakes, as required to respond to peak loads. PSGT 3-1 was not online in 2020 prior to the earthquakes; PREPA brought PSGT 3-1 into service on January 7, 2020 in response to the earthquakes. PSGT 3-1 was taken out-of-service on January 30, 2020. PSGT 3-1 will remain out-of-service.

EPA Request No. 5:

Did PREPA take any steps to make the shutdown of each turbine enforceable, for example, by surrendering a permit or taking restrictions in a permit? If so, please provide details.

PREPA Response:

PREPA applied for and received an "Emergency Waiver" from the DNER to install and commission the Mobilepac units prior to obtaining a construction permit from DNER. *See* "Solicitude de Dispensa de Emergencia," dated October 24, 2019, TV-4911-70-1196-0015. The Emergency Waiver was issued by DNER on October 24, 2019, and was effective for a period of up to 90 days after that date (i.e. January 22, 2020). On January 22, 2020, PREPA requested additional emergency relief from DNER as a result of the January earthquakes in Puerto Rico. Specifically, PREPA requested that it be allowed to run the Mobilepac units in response to the emergency.

Prior to the earthquakes, PREPA was not utilizing the Mobilepac units to bring electricity to the grid; PREPA only operated the Mobilepac units for testing and commissioning purposes in November and December of 2019. PREPA did plan to ultimately bring these units into

service; however, PREPA planned to first submit and receive a construction permit from the DNER prior to operating the Mobilepac units as a part of its generation portfolio. But for the earthquakes, the three Mobilepac units would not have been put into service until after PREPA applied to DNER, and received a, construction permit. Due to the instability of the system and severely limited reserve capacity, PREPA needs to rely on all generating units to operate almost at full capacity to meet demand and reserve requirements and to ensure the protection of public health.

PREPA submitted its application for a construction permit to DNER on January 14, 2020. *See* "Permit to Construction Application for Proposed Peaking Combustion Turbines to Replace Existing Units PSGT 2-2, 3-1, and 3-2 at [PREPA's] Palo Seco Plant" (dated Dec. 17, 2019; submitted Jan. 14, 2020) (appended hereto as Attachment 2). This application was submitted before the 90-day Emergency Waiver expired. The construction permit application states that PREPA will replace simple cycle combustion turbine units PSGT 2-2, 3-1, and 3-2 at the Palo Seco Power Plant with the three Mobilepac units. The Mobilepac units are rated at 294.8 MMBtu/hr firing natural gas (when gas becomes available), and 283.3 MMBtu/hr firing distillate oil, with an output per unit of approximately 27.9 MW. The construction permit application also contemplates installation and operation of three black start generator engines ("BSGs") to support startup of the new combustion turbines during periods when the transmission system is down. The BSGs will be fired solely with ultra-low sulfur distillate oil. To support the construction permit application, PREPA provided a detailed analysis forecasting that the project would not result in a significant increase in any pollutant regulated under the New Source Review ("NSR") program, given PREPA's anticipated operation of the units. This analysis did not account for the unexpected emergency situation created by the earthquakes.

In the application, PREPA proposed to (i) limit emissions from the combustion of the Mobilepac units, (ii) decommission the three simple cycle combustion turbines, and (iii) limit the BSGs to no more than 500 hours per year of operation. In the application, PREPA also proposed to make these operating and emission limitations federally enforceable in the construction permit. Following issuance of the construction permit, PREPA would submit an application for an amendment to its Title V permit to incorporate those limits. At present, the three simple cycle turbines PSGT 2-2, 3-1, and 3-2 are not in service. PSGT 3-1 was taken out-of-service on January 30, 2020, as soon as practicable after the emergency conditions created by the earthquakes.

EPA Request No. 6:

When will PREPA install the water injection controls on the mobile packs?

PREPA Response:

Water injection is expected to be online on or about the end of May 2020.

EPA Request No. 7:

How long must each mobile pack be out-of-service to effectuate installation of the water injection controls?

PREPA Response:

Installation of water injection controls and commissioning of the units takes approximately seven (7) days. PREPA expects that the Mobilepac units will be in and out-of-service during that seven day period.

EPA Request No. 8:

How many hours can the 3 mobile packs plus the restarted turbine operate before hitting the PSD significance level and what is the limiting pollutant? Please answer assuming operation both with and without water injection controls.

PREPA Response:

Considering the hours of operation of PSGT 3-1 from January 7 through 30, 2020, and assuming the Mobilepac units are operating at maximum capacity and using 0.05% sulfur fuel, the three (3) Mobilepac units can operate as follows before hitting the Prevention of Significant Deterioration significance level:

Operations Without Water Injection – oil (limiting pollutant particulate matter 2.5) 2,067 hours total.

Operations With Water Injection – oil (limiting pollutant sulfur dioxide) 2,209 hours total.

These calculations account for emission reduction credits associated with the shutdown of PSGT 2-2, 3-1, and 3-2, except the emissions associated with the number of hours that PSGT 3-1 actually operated between January 7 and 30, 2020, are accounted for in determining the number of hours the three Mobilepac units can operate.

These calculations are maximum potential calculations as they assume use of fuel with a0.05% sulfur content, and PREPA is using fuel with less sulfur content.

EPA Request No. 9:

Is Palo Seco 4 operating?

PREPA Response:

Palo Seco unit no. 4 was returned to service on October 6, 2019. Palo Seco unit no. 4 has a 216 MW capacity. However, the unit is not able to run at full capacity at this time due to limited boiler fan capacity and a high differential pressure across the air heater, which is limiting capacity to approximately ~165 MW. Palo Seco unit no. 3 is also only operating at

approximately a ~150 MW capacity also due to limited boiler fan capacity and a high differential pressure across the air heater.

B. San Juan Unit Nos. 5 and 6

EPA Request No. 10:

What date does PREPA expect to begin firing gas in Unit 5?

PREPA Response:

Gas is expected to be available at the San Juan Power Plant and firing in unit no. 5 on or about mid-April, 2020. In light of COVID-19, this date is PREPA's best estimate, and we will keep EPA apprised of changes to the schedule as it continues to be an evolving situation to respond to COVID-19.

EPA Request No. 11:

Does the DNER permit require PREPA to begin firing gas in Unit 5 by a specific date? If so, please provide details.

PREPA Response:

No, the final construction permit modification issued by DNER for the San Juan Power Plant combined cycle project does not establish a date certain by which PREPA must begin firing natural gas at either unit no. 5 or unit no. 6. *See* Permit No. PFE-65-0499-0365-I-II-C (Oct. 3, 2019).

EPA Request No. 12:

How long will Unit 5 have to be off-line to install SCR/OxCat controls?

PREPA Response:

PREPA currently anticipates that San Juan unit no. 5 will take an outage for approximately 3 months to allow for the installation of the SCR/OxCat controls.

EPA Request No. 13:

PREPA indicated that Unit 6 might have to be off-line for two months to convert it to gas? Are there possible options for shortening the period of shutdown?

PREPA Response:

PREPA currently anticipates that San Juan unit no. 6 will need to be offline for approximately 6 weeks to convert the unit to natural gas. San Juan unit no. 6 has been offline for the conversion since February 29, 2020, and is currently scheduled to come back online on April 17, 2020. In light of COVID-19, these dates are PREPA's best estimates, and we will keep EPA apprised of changes to the schedule as it continues to be an evolving situation to respond to COVID-19.

EPA Request No. 14:

Are there additional power sources in Puerto Rico that are currently not operating but are expected to come on-line in the next 2-8 months? If so, please provide details.

PREPA Response:

The following units have recently returned to service or are expected to come back online in the 2-8 months:

- Aguirre unit GT 2-2 (21 MW) has been out-of-service for generator repairs since August 2017. The unit was returned to service on or about March 15, 2020.
- San Juan unit no. 8 (100 MW) is expected to return to service on or about early April 2020. It will be limited to ~40-50 MW due to a fan shaft failure.
- The San Juan unit no. 5 steam turbine (60 MW) is not available after a generator failure on September 14, 2019. The unit is currently expected to return to service on or about the first half of April 2020.
- Mayaguez unit GT-6 was damaged by the earthquakes, but is expected to return to service by the end of April 2020.
- Mayaguez unit GT-8 was damaged by the earthquakes, but is expected to return to service by the end of April 2020.
- Vega Baja unit GT 1-1 (21 MW) is out-of-service due to a starting motor failure, but is expected to return to service on or about May 3, 2020.
- Aguirre unit no. 2 (450 MW) is out-of-service due to necessary repairs to the generator stator cooling system, and is expected to return to service on or about August 30, 2020.
- The San Juan unit no. 6 steam turbine (60 MW) is not available after a generator failure on January 26, 2020. The unit is currently expected to return to service by September 27, 2020.

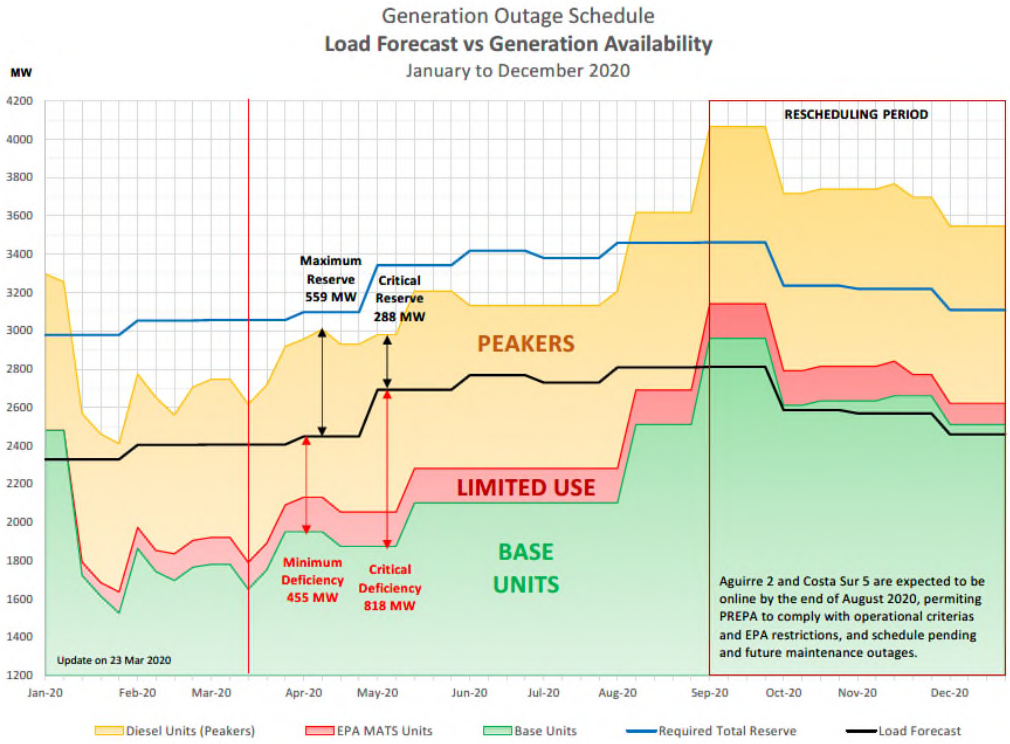
PREPA also has issued a request for proposals ("RFP") for generation resources and is currently working to secure ~500 MW of temporary emergency generation to improve its reserve margins and reduce the risk of load shedding. The RFP was provided to EPA on April 1, 2020.

PREPA is continuously evaluating the generating units within its portfolio against its reserve capacity and the demands of the system to determine what units are necessary to operate to support the system and the communities of Puerto Rico.

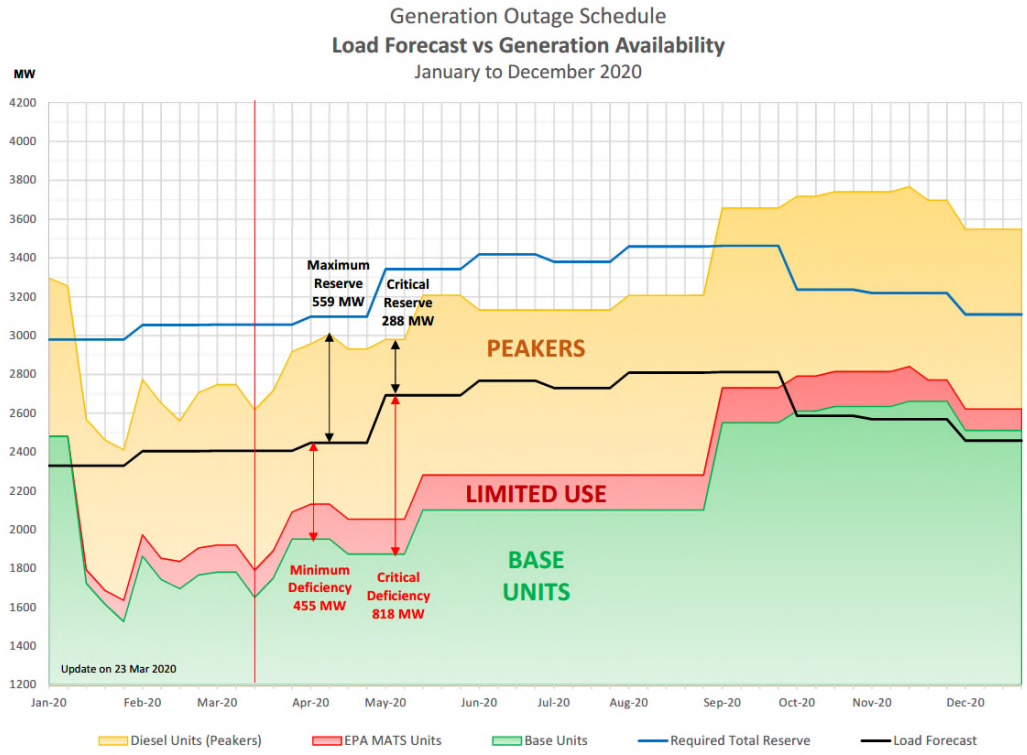
The below graphs provide two scenarios for PREPA's forecast of electric system reserve and generation deficit through December 2020, depending on when Costa Sur Unit 5 can be

returned to service. The repairs at Costa Sur Unit 5 are currently estimated to extend to September-October 2020. Graph 1 shows PREPA's forecast as of March 23, 2020, and assumes an optimistic (likely best case) scenario for Costa Sur Unit 5 returning to service on August 8, 2020. Graph 2 shows another scenario with Costa Sur Unit 5 returning to service on October 1, 2020, which reflects the more likely outcome. PREPA is in the process of assessing the extent of the damages suffered by the Costa Sur power plant, and prepared and submitted a progress report to the Puerto Rico Energy Bureau ("PREB") on March 31, 2020 entitled "Costa Sur Damage Assessment and Repairs Progress Report." On April 1, 2020, PREPA also submitted to PREB a series of detailed engineering reports assessing the damage, which we will share with EPA by secure file transfer.

Graph 1: Scenario with Costa Sur Returning to Service on August 8, 2020



Graph 2: Scenario with Costa Sur Returning to Service on October 1, 2020



In the above graphs, the black line shows PREPA's load forecast, and the blue line shows PREPA's required 650 MW total grid reserve (i.e., the blue line shows PREPA's forecasted load plus 650 MW for required reserve). The green line shows the generation available from PREPA's base load units, which is far below the load forecast at most times during the year. This deficiency could reach 818 MW if PREPA was relying solely on its baseload units. And, until Costa Sur Unit 5 or Aguirre Unit 2 is able to return to service, that deficiency is projected to be 455 MW or greater. To meet load demand, in the above graphs, PREPA assumes operation of all available peaker units. In addition, PREPA assumes that its MATS limited-use units will also operate as baseload units (i.e., Palo Seco Unit 1, San Juan Units 7-8). Generation availability of the peaker units is shown by the yellow line, while the operation of the MATS limited-use units is shown by the red line.

Assuming operation of all available peaker units and the MATS limited-use units, PREPA's reserve is anticipated to range from only 288 MW to 559 MW until Costa Sur Unit 5 or Aguirre Unit 2 returns to service. Moreover, during the critical summer months, the forecasted reserve hovers around only 350 MW for much of the summer. This means that the loss of even one unit could result in PREPA having negative load.

Importantly, the above graph assumes that the environmental outages for Palo Seco Unit 3, and Aguirre Unit 1 are conducted on the dates requested in this *force majeure* notice, not the dates on which the outages are actually due under the Consent Decree. For instance, if PREPA was required to take Aguirre Unit 1 (450 MW) out-of-service on the Consent Decree

outage deadline of August 13, 2020, PREPA would have little to no reserve if Costa Sur Unit 5 is still out-of-service.

When the available reserve is at 0 MW, it means that PREPA has no reserve, and when the reserve is negative, it means that if PREPA experiences a disturbance that causes it to lose generation, or is not able to bring other generating units online, that lost generation will result in load shedding. Indeed, since the blackout caused by the earthquakes, PREPA has experienced load shedding on approximately 7 additional occasions. Additional assumptions regarding generating unit availability that are reflected in the above in Graphs 1 and 2 are provided in Attachments 6 and 7 to this letter, respectively.

PREPA continues to lack sufficient reserve capacity to ensure system reliability, and there will be little leeway for any of its available generating units to go offline, which could lead to load shedding and possible blackouts or brownouts. PREPA is continuing to analyze the data and operations to develop strategies to provide reliable power to the grid and maintain compliance with applicable Clean Air Act requirements.

II. CONCLUSION

PREPA is appreciative of EPA's continued assistance in responding to, and recovering from, the earthquakes. Please let us know if you have any questions regarding the above responses or require additional information.

Respectfully submitted,



Adam M. Kushner
Partner
adam.kushner@hoganlovells.com
D +1 202 637 5724

Cc: Mr. Phillip Brooks, U.S. EPA, Office of Civil Enforcement
Mr. Eric Schaaf, U.S. EPA Region 2,
Ms. Mary McHale, U.S. EPA Region 2
Ms. Sara Froikin, U.S. EPA Region 2
Mr. Hector Velez, U.S. EPA Region 2
Mr. Harish Patel, U.S. EPA Region 2
Mr. Steven Keller, U.S. Department of Justice, Environmental Enforcement Section
Mr. Luis Sierra, Puerto Rico Department of Natural and Environmental Resources

Attachment 1

"Solicitude de Dispensa de Emergencia," dated October 11, 2019, TV-4911-70-1196-0015

Attachment 2

"Permit to Construction Application for Proposed Peaking Combustion Turbines to Replace Existing Units PSGT 2-2, 3-1, and 3-2 at [PREPA's] Palo Seco Plant,"
dated Dec. 17, 2019; submitted Jan. 14, 2020

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

ASSISTANT ADMINISTRATOR
FOR ENFORCEMENT AND
COMPLIANCE ASSURANCE

May 18, 2020

Adam Kushner
Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, D.C. 20004

RE: Extension of Earthquake-Related No Action Assurances for the Puerto Rico Electric Power Authority (PREPA)

Dear Mr. Kushner,

This letter is in response to your April 29, 2020 request, on behalf of the Puerto Rico Electric Power Authority (PREPA), to extend the majority of two of the three No Action Assurances (NAAs) previously issued to PREPA following the recent earthquakes in Puerto Rico. These two NAAs are as follows:

(1) Fuel Consumption and Analysis NAA *(issued January 31, 2020)*: relates to specified fuel consumption, fuel quality, and fuel quality analysis requirements at certain gas turbines; and
(2) Mercury and Air Toxics Standards (MATS) NAA *(issued February 13, 2020)*: relates to specified violations of MATS requirements at certain electric generating units.

The two NAAs are included here as Attachments A and B to this letter, respectively.[1]

More specifically, regarding the Fuel Consumption and Analysis NAA, PREPA is seeking to 1) extend the fuel consumption limits portion of the NAA and 2) expand its request to cover two additional units (Aguirre GT 2-2 and Vega Baja GT 1-2) that have come back online since the last NAA was issued. Regarding the MATS NAA, PREPA is seeking to extend all of the NAA except for the limited-use limit for San Juan Unit 8, MATS performance testing requirements, and certain MATS work practice standards. Further, PREPA is asking for an NAA for regulatory reporting requirements at Costa Sur due to what it describes as limited and restricted access to the site for safety reasons.

Beginning with earthquakes registering 4.7 and 5.0 on the Richter scale around December 28, 2019, Puerto Rico experienced multiple earthquakes and aftershocks causing extreme damage to its power

[1] Note that neither of these initial NAAs, nor the extension being granted today, applies or applied to requirements under the existing 1999 consent decree, amended in 2004, in *United States of America et al., v. Puerto Rico Electric Power Authority,* Civil Action No. 93-2527 CCC (D.P.R.). The NAAs relate to the specified Clean Air Act regulatory requirements only.

grid, with the largest earthquake being a 6.4 magnitude earthquake on January 7, 2020. Specifically, the earthquakes rendered the Costa Sur power station, a critical baseload station, inoperable. On January 7, 2020, the Governor of Puerto Rico signed an Executive Order decreeing a state of emergency throughout Puerto Rico; on January 16, 2020, the President signed a major disaster declaration for Puerto Rico.

The U.S. Environmental Protection Agency had previously determined that issuance of these NAAs was necessary to enable PREPA to supply electricity to residential and business customers; today, the EPA is determining that an extension of these two NAAs is necessary to continue to allow PREPA to address earthquake-related impacts. The EPA has thus determined that extending the requested portions of the two No Action Assurances, attached, is in the public interest given the conditions in Puerto Rico. The EPA has also determined that the addition to the NAA of relief regarding fuel consumption limits for two gas turbines and the following Costa Sur reporting requirements is also in the public interest given the conditions in Puerto Rico:

- CAA Title V reporting for Costa Sur:
    - Heat Input and Excess Emissions Report for 2nd Semester 2019 and 1st Semester 2020 (information for the period of January 1 to January 7, 2020)
    - Yearly Emergency Generators Report 2019
- MATS regulatory reporting requirements for Costa Sur:
    - 2019 Second Half Semiannual Report
    - 2019 4th Quarter Report
    - 2020 1st Quarter Report (information for the period of January 1 to January 7, 2020).

Through the issuance of this NAA extension, the EPA is continuing its commitment to address the very difficult circumstances caused by recent earthquakes.

The portions of the two NAAs extended by today's action, and the new additions to the NAA, are those that are listed in the table included at Attachment C to this NAA. Pursuant to this NAA extension, the EPA will not enforce violations of the requirements specified in Attachment C, for the period of this NAA extension. Nothing in this exercise of enforcement discretion relieves any person of the obligation under law, if any, to report emissions from the operation of equipment covered by this action.

The units subject to this NAA extension continue to be subject to the relevant conditions outlined in the two initial NAAs. Further, as a condition of this NAA extension, for all units subject to the initial Fuel NAA or the initial MATS NAA, PREPA must submit the complete final report for the term of the relevant initial NAA by the date indicated in that NAA. If Costa Sur Unit 5 and/or Aguirre Unit 2 become available to generate electricity prior to the termination date for this NAA, PREPA must provide EPA notice within 3 days of Costa Sur Unit 5 and/or Aguirre Unit 2 becoming operational. Aguirre GT 2-2 and Vega Baja GT 1-2 shall be subject to the relevant conditions in the initial Fuel Consumption and Analysis NAA. Costa Sur shall be subject to the following conditions:

1. PREPA shall continue to meet all reporting obligations that it is able to meet without entering areas of the Costa Sur facility deemed unsafe. This includes accessing record copies (backup or otherwise) not contained in areas deemed unsafe. This also includes submitting partial reports where some but not all necessary information is available.

2. As accessing the relevant information becomes safe, PREPA shall inform EPA within 10 days and shall make all efforts to expeditiously meet all reporting requirements.
3. PREPA shall comply with all recordkeeping requirements for the Costa Sur facility for facility operations on or after Jan. 8, 2020.

PREPA must submit a report to the EPA within thirty (30) days of the termination of the NAA extension containing the following information for the term of the NAA extension:

1. The name, address, and contact information for the person submitting the report;
2. Regarding the units covered by the initial Fuel Consumption and Analysis NAA, as well as Aguirre GT 2-2 and Vega Baja GT 1-2:
    a. A description of the amount of fuel used for each covered Generating Unit during the period this NAA is in effect;
    b. A description of how the energy was used, including any benefits provided to the public; and
    c. A description of any instances in which fuel quality analysis results received after PREPA began burning newly-received fuel indicated that the fuel was not compliant.
3. Regarding the units covered by the initial MATS NAA:
    a. For each of the two (2) electric generating units identified as limited use and covered by both the NAA and the NAA extension (San Juan Unit 7, Palo Seco Unit 1), the hours operated, the fuel burned, and calculations of the excess emissions generated;
    b. For each of the five (5) electric generating units covered by this NAA (San Juan Unit 9, Palo Seco Unit 3, Palo Seco Unit 4, Aguirre Unit 1, and Aguirre Unit 2), a calculation of the total emissions during the period of the NAA; and
    c. A description of how the energy was used, including any benefits provided to the public.
4. Regarding Costa Sur:
    a. A list of all reporting requirements that PREPA was unable to meet due to safety concerns, including the specific reports or portions of reports that were not submitted, a description of the specific information that was inaccessible, and the specific safety issue that made it inaccessible (including the duration of the safety issue).

The report referenced above must be sent by email to Gregory Fried at fried.gregory@epa.gov and to Harish Patel at patel.harish@epa.gov. The report must be in portable document format (PDF) and be clearly labeled as "Report for PREPA Generators Operated Pursuant to the No Action Assurance Extension Issued (insert date of issuance of this NAA)." Where the information for these reports is not available due to the emergency circumstances, the EPA would accept instead an explanation of those circumstances and specifically how they prevented the collection or transmission of that information.

This NAA extension is effective as of today and terminates at 11:59 PM Atlantic Standard Time, August 14, 2020 or the date Costa Sur Unit 5 is operational, whichever is earlier. As always, the EPA reserves the right to revoke or modify the NAA extension if the EPA believes that such action is necessary to protect public health and the environment, including but not limited to if EPA's understanding of the factual basis for this NAA extension changes. This NAA does not apply to any other federal requirements that may apply to regulated activities at this facility other than those listed above. EPA will not extend any of the no action assurances provided in this letter beyond August 14, 2020. By August 14, 2020 each of the units addressed herein must be (a) operating in compliance with applicable law; (b)

on an enforceable schedule to come into compliance with applicable law that includes appropriate limits on emissions in the interim; or (c) the subject of an enforceable schedule to come into compliance with applicable law that is awaiting approval by a federal district court (or is rapidly progressing towards such an agreement).

The issuance of an NAA for this period of time is in the public interest. Through today's NAA, the EPA is continuing its commitment to address the very difficult circumstances caused by the recent earthquakes. Nothing in this NAA is intended to over-ride Puerto Rico or local authorities.

Please contact Gregory Fried, Chief, Stationary Source Enforcement Branch, with questions. Mr. Fried can be reached at (202) 564-7016 or fried.gregory@epa.gov.

Sincerely,

Susan Parker Bodine

Enclosure

cc: Peter D. Lopez, Regional Administrator, EPA Region 2

Attachment C

TABLE 1: Clean Air Act Requirements Subject to this NAA Extension

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
San Juan	7 (100 MW)	MATS limited-use restrictions specified in the initial MATS NAA.
	9 (100 MW)	MATS particulate matter ("PM") emission limit requirements in Subpart UUUUU specified in the initial MATS NAA.
Costa Sur	5 (410 MW) 6 (410 MW)	The following Clean Air Act Title V reporting obligations: • Heat Input and Excess Emissions Report for 2nd Semester 2019 and 1st Semester 2020 (information for the period of January 1 to January 7, 2020) • Yearly Emergency Generators Report 2019 The following MATS reporting requirements: • 2019 Second Half Semiannual Report • 2019 4th Quarter Report • 2020 1st Quarter Report (information for the period of January 1 to January 7, 2020)
Palo Seco	1 (85 MW)	MATS limited-use restrictions specified in the initial MATS NAA, as well as related Palo Seco Title V Permit requirements.
	3 (216 MW)	MATS PM emission limit and related work practice standard requirements in Subpart UUUUU specified in the initial MATS NAA, as well as related Palo Seco Title V Permit conditions.
	4 (216 MW)	MATS PM emission limit requirements in Subpart UUUUU specified in the initial MATS NAA, as well as related Palo Seco Title V Permit conditions.
Palo Seco GTs	GT 1-1 (21 MW) GT 1-2 (21 MW)	Palo Seco Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Aguirre	1 (450 MW) 2 (450 MW)	MATS PM emission limit and related work practice standard requirements in Subpart UUUUU specified in the initial MATS NAA, as well as related Aguirre Title V Permit conditions.

Facility	Unit	Clean Air Act Requirements and Title V Permit Obligations
Aguirre combined cycle gas turbines ("CCGT")	CCGT 1-1 (50 MW) CCGT 1-2 (50 MW) CCGT 1-3 (50MW) CCGT 1-4 (50 MW) CCGT 2-1 (50 MW) CCGT 2-3 (50 MW) CCGT 2-4 (50 MW)	Aguirre Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Aguirre GT	GT 2-2 (21 MW)*	Aguirre Title V permit No. PFE-TV-4911-63-0212-0244 for conditions pertaining to fuel consumption limits (barrels per year) at Conditions V(B) and/or V(B)(d).
Mayaguez	GT-5 (54 MW) GT-6 (54 MW) GT-7 (54 MW) GT-8 (54 MW)	Mayaguez Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Cambalache Peakers	2 (83 MW) 3 (83 MW)	Cambalache Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Daguao Peakers	GT 1-1 (21 MW) GT 1-2 (21 MW)	Daguao Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Yabucoa Peaker	GT 1-1 (21 MW)	Yabucoa Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Jobos Peaker	GT 1-2 (21 MW)	Jobos Title V permit conditions pertaining to fuel consumption limits (barrels per year), as covered by the initial Fuel Consumption and Analysis NAA.
Vega Baja Peaker	GT 1-2 (21 MW)*	Vega Baja Title V permit No. PFE-TV-4911-74-0106-0021 for conditions pertaining to fuel consumption limits (barrels per year) at Conditions V(A)(1) and/or (V)(A)(1)(d).

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004
T +1 202 637 5600
F +1 202 637 5910
www.hoganlovells.com

June 16, 2020

By Electronic Mail

Liliana Villatora
Air Branch Chief, Office of Regional Counsel
U.S. Environmental Protection Agency – Region 2
Ted Weiss Federal Building
290 Broadway
New York, NY 10007
villatora.liliana@epa.gov

Re: Puerto Rico Electric Power Authority - Response to EPA Questions Regarding MobilePac Units and Three Shutdown Turbines at the Palo Seco Generating Station

Dear Ms. Villatora:

I write on behalf of the Puerto Rico Electric Power Authority ("PREPA") to provide PREPA's written response to the questions posed by the United States Environmental Protection Agency ("EPA") in its April 24, 2020 email. PREPA initially responded to the below questions during its April 28, 2020 telephone conference with EPA. We reiterate those responses below. In addition, we are providing the requested emissions-related information, which is attached hereto.

Palo Seco MobilePac Units

1. **For each of the three MobilePac units, state the date when each was fired for the first time in 2019.**

   PREPA Response:

Unit	Date and Purpose of First Firing
PS MP-1 ID#1411	November 13, 2019 (start-up testing)
PS MP-2 ID#1410	November 13, 2019 (start-up testing)
PS MP-3 ID#1412	November 07, 2019 (start-up testing)

PREPA initiated operation of PS MP-1 and PS MP-2 on January 7, 2020, and PS MP-3 on January 8, 2020, following the earthquakes. Prior to that point, the units had only been operated for start-up testing and commissioning purposes.

2. **For each of the three MobilePac units, please provide the actual hours of actual operation, the fuel type burned, and the total number of gallons burned for the month of March and thus far for the month of April, if available by the time a response to these questions is prepared.**

PREPA Response:

For the month of March 2020:

Unit	Fuel Burned	Hours of Operation	Gallons of Fuel
PS MP-1 ID#1411	Diesel	741	1,125,669.30
PS MP-2 ID#1410	Diesel	710	1,168,194.30
PS MP-3 ID#1412	Diesel	739	1,173,326.28

For the month of April 2020:

Unit	Fuel Burned	Hours of Operation	Gallons of Fuel
PS MP-1 ID#1411	Diesel	719	768,387.9
PS MP-2 ID#1410	Diesel	709	769,716.8
PS MP-3 ID#1412	Diesel	681	736,157.1

3. **Page 6 of April 7, 2020 submittal states:**

   a. **PSD limiting pollutant without water injection, burning oil – $PM_{2.5}$ @2,067 hours.**
   b. **PSD limiting pollutant with water injection, burning oil – SO_2 @ 2,209 hours.**
   c. **Does not consider the Jan. emissions from PSGT 3-1.**
   d. **Based on 0.05% sulfur. Actual sulfur is less.**

   According to the Oct. 11, 2019 PREPA letter to DNER and Page 106 of the Dec. 17, 2019 permit application for the MobilePacs, the emission factor for NOx uncontrolled (firing oil, without water injection) is 2.206 lbs. NOx/MMBTU. The above statements about PSD limiting pollutants seem to rely on a NOx emission factor of 0.17 lbs. NOx/MMBTU with water injection. Which NOx emission factor was used in determining the PSD-limiting pollutants above? Please provide the calculations and results for the above numbers for all the pollutants.

   PREPA Response:

   Attached hereto as Attachment A, PREPA is providing the calculations it used to determine the "PSD limiting pollutant." See Attachment A ("Potential Emissions Calculations Palo Seco MobilePac FT-8 Turbines"). PREPA reviewed the calculations previously provided to EPA, and has revised them to reflect actual fuel usage and quality for PSGT 3-1. The updated

calculations indicate that $PM_{2.5}$ is the limiting pollutant for oil, both with and without water injection.

More specifically, PREPA's calculations in Attachment A have been updated to account for the actual emissions of PSGT 3-1 from November 7, 2019 through January 30, 2020, i.e., the emissions of PSGT 3-1 during this period have been subtracted from the estimated allowable emissions for the 3 MobilePac units for the purpose of estimating the allowable hours of operation for this calculation. PREPA's calculations for PSGT 3-1 actual emissions are detailed in Attachment C ("Emissions Calculations Palo Seco PSGT 3-1 Nov 7, 2019 to Jan 30, 2020").

Attachment A identifies PREPA's calculations for both "dry" operation of the MobilePac units, and for operation with water injection. PREPA's estimated emissions calculations applied the emission factor for "NOx uncontrolled" firing to reflect dry operations, and applied the emission factor assuming NOx controlled firing to reflect operations with water injection. For oil operation, these emissions factors were 2.2060 lbs/MMBtu and 0.1730 lbs/MMBtu, respectively.

4. **The Oct. 11, 2019 PREPA letter to DNER requesting a permit waiver states that the NOx emission factor for the 3 MobilePacs will be 2.206 lb NOx/MMBTU at 233 MMBTU/hour heat input when oil firing dry during the waiver period. Has PREPA done anything to these turbines to try to minimize this NOx emission factor to any other lower presumed NOx emission factor without the water injection? If yes, please provide details. Does PREPA still expect the water injection control to be online on or about the end of May 2020? If not, provide the current expected date.**

   PREPA Response:

   The installation of the water injection system was scheduled to be completed the week of May 10, 2020. Due to the COVID-19 pandemic restrictions, PREPA now estimates that the installation of the water injection system will be completed the week of July 13, 2020, assuming no further delays associated with COVID-19.

5. **In the Dec. 17, 2019 permit application for the MobilePacs, PREPA proposed annual emission limits for the 3 turbines and the 3 black start generators (BSGs). Is PREPA still expecting to meet these proposed emission limits or is it expecting to use the "netting allowable limits" as permit limits?**

   PREPA Response:

   Due to the earthquake emergency, PREPA does not expect to meet the proposed permit limits in the first year of operation of the MobilePac units. In future years, PREPA expects to meet the emission limits as proposed in the permit application. PREPA notes that the current need to utilize the MobilePac units was not expected at the time of its permit application, and

is directly attributable to meeting the island's power needs in the wake of the January 7, 2020 earthquakes, which caused Cost Sur Units 5 and 6 and two Mayaguez units to be unavailable.

6. **Can PREPA still be able to operate within the constraints of either of the annual limits in Question 5 above for the 3 MobilePac units and the 3 BSGs without triggering PSD? Please provide a revised netting analysis (with calculations) using the 2.206 lb NOx/MMBTU emission factor and any revised emission factors for the other pollutants, assuming no water injection.**

   PREPA Response:

   As noted above, due to the earthquake emergency, PREPA does not expect to meet the proposed annual limits in the first year of operation of the units. In future years, PREPA expects to operate the MobilePac units to meet the emission limits as proposed in the permit application. PREPA reiterates that the current need to utilize the MobilePac units was not expected at the time of its permit application, and is directly attributable to meeting the island's power needs in the wake of the January 7, 2020 earthquakes, which caused Cost Sur Units 5 and 6 and two Mayaguez units to be unavailable.

PSGT 2-2, PSGT 3-1, and PSGT 3-2

7. **Page 8 and Appendix B of the Dec. 17, 2019 submittal describe the total "actual emissions" that is used for netting purposes from the shutdown of these 3 turbines combined for the period of May 2016 through 2018. In a table form, please provide the same "actual emissions" for each pollutant for each of these 3 turbines separately.**

   PREPA Response:

   The requested information is attached hereto as Attachment B ("Palo Seco Baseline Actual Emissions by Unit").

8. **For each of these three turbines provide the dates when they were permanently shut down and describe the steps taken to render each of them permanently shut down/disabled (i.e., cancelling/revising the DNER permits, dismantling the units, disconnecting the fuel supply, etc.).**

   PREPA Response:

   PSGT 2-2: This unit has been out-of-service since September 25, 2018, due to an exhaust duct failure. To render Unit PSGT 2-2 inoperable, PREPA removed the starting motor and auxiliary equipment on or about February 2019.

PSGT 3-1: This unit has been out-of-service since January 30, 2020. To render Unit PSGT 3-1 inoperable, PREPA removed the starting motor and auxiliary equipment on or about February 2020.

PSGT 3-2: This unit has been out-of-service since September 26, 2016 due to high temperature on the gear reductor and high bearing vibration. To render Unit PSGT 3-2 inoperable, PREPA removed the generator, starting motor, and auxiliary equipment on or about January 2019.

9. **Was turbine PSGT 3-1 ever permanently disconnected from service prior to the initial firing of the first MobilePac unit in 2019? If yes, please describe what was done.**

PREPA Response:

No. The MobilePac units were installed pursuant to an emergency variance waiver issued by the Puerto Rico Department of Natural and Environmental Resources ("PRDNER") under the authority of the Puerto Rico Regulation for the Control of Atmospheric Pollution ("PRRCAP") Rule 302; the issuance of the waiver was not conditioned on the shutdown of PSGT 3-1. In January 2020, PREPA submitted an application to PRDNER for a permit to construct the MobilePac units. In its application, PREPA indicates that it would take a permanent shutdown of each of the three units in order to be able to apply emission credits attributable to the retirement of those units to the MobilePac units.

10. **Indicate what was required to bring turbine PSGT 3-1 back into service on January 7, 2020, including physical changes and permit-related activities and requests made to DNER.**

PREPA Response:

Prior to January 7, 2020, PSGT 3-1's last in-service date was December 30, 2019.
PSGT 3-1 was returned to service on January 7, 2020, and remained in service until January 30, 2020, as it was needed to meet demand and assist in grid recovery after the earthquakes that rendered Costa Sur Units 5 and 6 and two of the Mayaguez units inoperable.

11. PREPA states that PSGT 3-1 was taken out of service on January 30, 2020, and will remain out of service because PREPA is relying on netting credits from this unit. Is this turbine permanently disconnected and has the DNER permit been revoked? Please provide a copy of PREPA's request for the permit revocation or revision if one was submitted to DNER. Describe what "remain out of service" means. What steps would be required to bring this unit back on-line and how long would it take and what costs would be incurred to bring it back on-line?

PREPA Response:

PREPA has not yet requested a permit revocation for PSGT 3-1, as its construction permit application for the MobilePac units is still under evaluation by PRDNER. As described above, PREPA has rendered the unit inoperable by removing the starting motor and auxiliary equipment from the unit, and it will remain out of service.

Significant work would be required on each of the three turbine units in order to be able to return them to service. PREPA estimates that the work needed to return these units to service would take approximately six to twelve weeks assuming the availability of equipment. For Unit PSGT 3-2, the time estimate is expected to be closer to 12 weeks because the generator was removed from that unit. For the other two units, the time estimate is expected to be closer to 6 weeks. Assuming the availability of in-house technical resources, PREPA estimates the required work would cost in the range of ~$200,000 to ~$250,000.

12. With respect to PSGT 3-1, provide the hours of operation, type of fuel burned, total gallons of fuel burned, and emissions for each criteria pollutant and total GHG (in CO_2e) pollutants from the period after the initial startup date of the first MobilePac unit through the shutdown of PSGT 3-1 on Jan. 30, 2020.

PREPA Response:

As noted above, November 7, 2019 was the date that the first MobilePac unit underwent start-up testing. Accordingly, in the table below, PREPA provides the hours of operation of PSGT 3-1 from November 7, 2019 through January 30, 2020.

Unit	Month and Year	Hours of Operation	Fuel Usage (Gals)	Fuel Type
PSGT 3-1	November 7 to 30, 2019	79.1	78.834	Fuel Oil No. 2
	December 2019	130.69	265,621	Fuel Oil No. 2
	January 2020	562.8	1,115,457	Fuel Oil No. 2

The requested emissions information is attached hereto as Attachment C ("Emissions Calculations Palo Seco PS GT 3-1 Nov 7_2019 to Jan 30_2020").

Please let us know if you have any questions regarding the above responses or require additional information.

Respectfully submitted,



Adam M. Kushner
Partner
adam.kushner@hoganlovells.com
D +1 202 637 5724

Cc: Mr. Joseph Siegel, United States Environmental Protection Agency, Region 2

Mr. Luis Sierra, Puerto Rico Department of Natural and Environmental Resources

Enclosures:

Attachment A – Potential Emissions Calculations Palo Seco MobilePac FT-8 Turbines
Attachment B – Palo Seco Baseline Actual Emissions by Unit
Attachment C – Emissions Calculations Palo Seco PSGT 3-1 Nov 7, 2019 to Jan 30, 2020

Attachment A

Potential Emissions Calculations for Palo Seco MobilePac FT-8 Turbines

PALO SECO TURBINES FT-8 MOBILEPAC (3 UNITS) - DRY										
Pollutant	PSGT 2-2, 3-1, 3-2 Baseline Emissions (tpy)	PSD Significance (tpy)	PS GT 3-1 Actuals (November 7, 2019 to January 30, 2020)	PW FT8 Allowable Emissions (tpy)	PW FT8 Emissions Gas (lb/MMBtu)	PW FT8 Allowable Gas (MMBtu/yr)	PW FT8 Allowable Gas (hr/yr)	PW FT8 Emissions Oil (lb/MMBtu)	PW FT8 Allowable Oil (MMBtu/yr)	PW FT8 Allowable Oil (hr/yr)
NOx	718.4	40	88.65	669.65	0.8373	1,599,553	6,347	2.2060	607,118	2,606
PM	9.8	25	1.21	33.49	0.0233	2,870,674	11,392	0.0773	867,050	3,721
PM10	9.8	15	1.21	23.49	0.0233	2,013,531	7,990	0.0773	608,161	2,610
PM2.5	9.8	10	1.21	18.49	0.0233	1,584,959	6,290	0.0773	478,716	2,055
SO2	19.8	40	3.66	56.04	0.0152	7,393,326	29,339	0.0554	2,022,704	8,681
VOC	0.33	40	0.04	40.2	0.0013	59,573,836	236,404	0.0072	11,147,580	47,844
CO	2.69	100	0.33	102.3	0.0210	9,724,117	38,588	0.0352	5,811,223	24,941
H2SO4	3.04	7	0.56	9.38	0.0023	8,082,371	32,073	0.0085	2,211,217	9,490
Lead		0.6	0.001410275	0.498589725				0.000014	71,227,104	305,696
CO2e (tpy)	133,596	75,000	16,484	192,112	116.98	3,284,524	13,034	163.64	2,347,981	10,077

NOTES:
1) PW FT8 Allowable Emissions (tpy) are equal to baseline emissions for PSGT 2-2, 3-1, and 3-2 plus PSD Significance Threshold
2) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
3) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
4) PW FT8 Allowable (hr/yr) are total hours for all three proposed PW FT8 Turbines based on allowable (MMBtu/yr) and rated fring rate at 85°F
5) Natural Gas Sulfur Content 5.0 gr/100dscf
6) Fuel Oil Sulfur Content .05 % per wt
7) SO2 emissions based upon fuel sulfur content limits
8) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
9) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2
10) NOx emissions compliance with 1.2 lb/MWhr standard
11) Heating Value Fuel Oil .138 MMBtu/Gal
12) Heating Value Natural Gas .00102 MMBtu/SCF

PALO SECO TURBINES FT-8 MOBILEPAC DIESEL OPERATION - DRY				
POLLUTANT	EMISSION FACTOR	UNITS	EMISSION FACTOR	UNITS
PM	18	Lbs/Hr	0.07725	Lbs/MMBtu
PM10	18	Lbs/Hr	0.07725	Lbs/MMBtu
PM2.5	18	Lbs/Hr	0.07725	Lbs/MMBtu
SOx	12.91	Lbs/Hr	0.05541	Lbs/MMBtu
NOx	514	Lbs/Hr	2.20601	Lbs/MMBtu
VOC	1.68	Lbs/Hr	0.00721	Lbs/MMBtu
CO	8.2	Lbs/Hr	0.03519	Lbs/MMBtu
H2SO4 (Mass Bal.)			0.00848	Lbs/MMBtu
Pb (AP-42)			0.0000140	Lbs/MMBtu
HEAT INPUT	233	MMBTU/Hr		
PALO SECO TURBINES FT-8 MOBILEPAC NATURAL GAS OPERATION - DRY				
POLLUTANT	EMISSION FACTOR	UNITS	EMISSION FACTOR	UNITS
PM	5.88	Lbs/Hr	0.0233	Lbs/MMBtu
PM10	5.88	Lbs/Hr	0.0233	Lbs/MMBtu
PM2.5	5.88	Lbs/Hr	0.0233	Lbs/MMBtu
SOx (Mass Bal.)	3.82	Lbs/Hr	0.0152	Lbs/MMBtu
NOx	211	Lbs/Hr	0.8373	Lbs/MMBtu
VOC	0.34	Lbs/Hr	0.0013	Lbs/MMBtu
CO	5.3	Lbs/Hr	0.02103	Lbs/MMBtu
H2SO4 (Mass Bal.)			0.00232	Lbs/MMBtu
HEAT INPUT	252	MMBTU/Hr		

PALO SECO TURBINES FT-8 MOBILEPAC (3 UNITS) - WATER INJECTION										
Pollutant	PSGT 2-2, 3-1, 3-2 Baseline Emissions (tpy)	PSD Significance (tpy)	PS GT 3-1 Actuals (November 7, 2019 to January 30, 2020)	PW FT8 Allowable Emissions (tpy)	PW FT8 Emissions Gas (lb/MMBtu)	PW FT8 Allowable Gas (MMBtu/yr)	PW FT8 Allowable Gas (hr/yr)	PW FT8 Emissions Oil (lb/MMBtu)	PW FT8 Allowable Oil (MMBtu/yr)	PW FT8 Allowable Oil (hr/yr)
NOx	718.4	40	88.65	669.65	0.1099	12,186,051	41,337	0.1730	7,743,388	27,333
PM	9.8	25	1.21	33.49	0.0102	6,582,136	22,327	0.0176	3,795,222	13,396
PM10	9.8	15	1.21	23.49	0.0102	4,616,802	15,661	0.0176	2,662,022	9,396
PM2.5	9.8	10	1.21	18.49	0.0102	3,634,136	12,327	0.0176	2,095,422	7,396
SO2	19.8	40	3.66	56.04	0.0140	7,999,818	27,136	0.0505	2,220,308	7,837
VOC	0.33	40	0.04	40.2	0.0051	15,692,223	53,230	0.0071	11,272,731	39,791
CO	2.69	100	0.33	102.3	0.0767	2,667,746	9,049	0.0342	5,973,108	21,084
H2SO4	3.04	7	0.56	9.38	0.0021	8,745,387	29,665	0.0077	2,427,237	8,568
Lead	????	0.6	0.001410275	0.498589725				0.000014	71,227,104	251,419
CO2e (tpy)	133,596	75,000	16,484	192,112	116.98	3,284,524	11,142	163.64	2,347,981	8,288

NOTES:
1) PW FT8 Allowable Emissions (tpy) are equal to baseline emissions for PSGT 2-2, 3-1, and 3-2 plus PSD Significance Threshold
2) PW FT8 Emissions (lb/MMBtu) are based upon PW FT8 performance data at 85°F
3) PW FT8 Allowable (MMBtu/yr) based upon allowable emissions (tpy) and emission rates (lb/MMBtu) for each pollutant
4) PW FT8 Allowable (hr/yr) are total hours for all three proposed PW FT8 Turbines based on allowable (MMBtu/yr) and rated fring rate at 85°F
5) Natural Gas Sulfur Content 5.0 gr/100dscf
6) Fuel Oil Sulfur Content .05 % per wt
7) SO2 emissions based upon fuel sulfur content limits
8) H2SO4 emissions based upon 10% conversion of SO2 to H2SO4
9) CO2e emissions from 40 CFR 98, Subchapter C, Tables 1 and 2
10) NOx emissions compliance with 1.2 lb/MWhr standard
11) Heating Value Fuel Oil .138 MMBtu/Gal
12) Heating Value Natural Gas .00102 MMBtu/SCF

PALO SECO TURBINES FT-8 MOBILEPAC DIESEL OPERATION				
POLLUTANT	EMISSION FACTOR	UNITS	EMISSION FACTOR	UNITS
PM	5	Lbs/Hr	0.0176	Lbs/MMBtu
PM10	5	Lbs/Hr	0.0176	Lbs/MMBtu
PM2.5	5	Lbs/Hr	0.0176	Lbs/MMBtu
SOx	14.3	Lbs/Hr	0.0505	Lbs/MMBtu
NOx	49	Lbs/Hr	0.1730	Lbs/MMBtu
VOC	2.02	Lbs/Hr	0.0071	Lbs/MMBtu
CO	9.7	Lbs/Hr	0.0342	Lbs/MMBtu
H2SO4 (Mass Bal.)			0.0077	Lbs/MMBtu
Pb (AP-42)			0.0000140	Lbs/MMBtu
HEAT INPUT	283.3	MMBTU/Hr		
PALO SECO TURBINES FT-8 MOBILEPAC NATURAL GAS OPERATION				
POLLUTANT	EMISSION FACTOR	UNITS	EMISSION FACTOR	UNITS
PM	3	Lbs/Hr	0.0102	Lbs/MMBtu
PM10	3	Lbs/Hr	0.0102	Lbs/MMBtu
PM2.5	3	Lbs/Hr	0.0102	Lbs/MMBtu
SOx (Mass Bal.)	4.13	Lbs/Hr	0.0140	Lbs/MMBtu
NOx	32.4	Lbs/Hr	0.1099	Lbs/MMBtu
VOC	1.51	Lbs/Hr	0.0051	Lbs/MMBtu
CO	22.6	Lbs/Hr	0.0767	Lbs/MMBtu
H2SO4 (Mass Bal.)			0.00214	Lbs/MMBtu
HEAT INPUT	294.8	MMBTU/Hr		

Attachment B

Palo Seco Baseline
Actual Emissions Per Unit

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Emissions Per Unit Summary							
	NOx	PM/PM10/PM2.5	SO2	H2SO4	CO	VOC	GHGs
Unit ID	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)
2-2	346.29	4.72	9.73	1.49	1.30	0.16	64,395
3-1	327.97	4.47	8.62	1.32	1.23	0.15	60,988
3-2	44.17	0.60	1.26	0.19	0.17	0.02	8,213
Baseline	**718.43**	**9.80**	**19.61**	**3.00**	**2.69**	**0.33**	**133,596**

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data					PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Monthly Emissions Per Unit						
					NOx	PM/PM10/PM2.5	SO2	H2SO4	CO	VOC	GHGs
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)
Palo Seco	PSGT2-2	May-16	6094	0.0194	15.5	0.21	0.35	0.05	0.06	0.01	2,890.0
Palo Seco	PSGT2-2	Jun-16	2116	0.0200	5.4	0.07	0.12	0.02	0.02	0.00	1,003.5
Palo Seco	PSGT2-2	Jul-16	16733	0.0302	42.7	0.58	1.48	0.23	0.16	0.02	7,935.3
Palo Seco	PSGT2-2	Aug-16	13538	0.0224	34.5	0.47	0.89	0.14	0.13	0.02	6,420.2
Palo Seco	PSGT2-2	Sep-16	7646	0.0214	19.5	0.27	0.48	0.07	0.07	0.01	3,626.0
Palo Seco	PSGT2-2	Oct-16	2509.67	0.0160	6.4	0.09	0.12	0.02	0.02	0.00	1,190.2
Palo Seco	PSGT2-2	Nov-16	0	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.0
Palo Seco	PSGT2-2	Dec-16	0	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.0
Palo Seco	PSGT2-2	Jan-17	1535.83	0.0160	3.9	0.05	0.07	0.01	0.01	0.00	728.3
Palo Seco	PSGT2-2	Feb-17	2343.28	0.0156	6.0	0.08	0.11	0.02	0.02	0.00	1,111.3
Palo Seco	PSGT2-2	Mar-17	804.78	0.0133	2.1	0.03	0.03	0.00	0.01	0.00	381.7
Palo Seco	PSGT2-2	Apr-17	3456.09	0.0133	8.8	0.12	0.13	0.02	0.03	0.00	1,639.0
Palo Seco	PSGT2-2	May-17	6760.31	0.0102	17.2	0.24	0.20	0.03	0.06	0.01	3,206.0
Palo Seco	PSGT2-2	Jun-17	8236.43	0.0060	21.0	0.29	0.15	0.02	0.08	0.01	3,906.0
Palo Seco	PSGT2-2	Jul-17	14722.08	0.0042	37.5	0.51	0.18	0.03	0.14	0.02	6,981.7
Palo Seco	PSGT2-2	Aug-17	30638.6	0.0066	78.1	1.07	0.59	0.09	0.29	0.04	14,529.8
Palo Seco	PSGT2-2	Sep-17	11217.16	0.0255	28.6	0.39	0.84	0.13	0.11	0.01	5,319.5
Palo Seco	PSGT2-2	Oct-17	29990.11	0.0339	76.5	1.04	2.98	0.46	0.29	0.04	14,222.3
Palo Seco	PSGT2-2	Nov-17	31816.05	0.0451	81.1	1.11	4.20	0.64	0.30	0.04	15,088.2
Palo Seco	PSGT2-2	Dec-17	24213.97	0.0352	61.8	0.84	2.50	0.38	0.23	0.03	11,483.1
Palo Seco	PSGT2-2	Jan-18	19015.35	0.0320	48.5	0.66	1.78	0.27	0.18	0.02	9,017.7
Palo Seco	PSGT2-2	Feb-18	14030.3	0.0188	35.8	0.49	0.77	0.12	0.13	0.02	6,653.6
Palo Seco	PSGT2-2	Mar-18	13186.57	0.0243	33.6	0.46	0.94	0.14	0.13	0.02	6,253.5
Palo Seco	PSGT2-2	Apr-18	10972.54	0.0175	28.0	0.38	0.56	0.09	0.10	0.01	5,203.5
				2-2	**346.3**	**4.7**	**9.7**	**1.5**	**1.3**	**0.2**	**64,395.2**
Palo Seco	PSGT3-1	May-16	5962	0.0194	15.2	0.21	0.34	0.05	0.06	0.01	2,827.4
Palo Seco	PSGT3-1	Jun-16	1525	0.0200	3.9	0.05	0.09	0.01	0.01	0.00	723.2
Palo Seco	PSGT3-1	Jul-16	16375	0.0299	41.8	0.57	1.43	0.22	0.16	0.02	7,765.6
Palo Seco	PSGT3-1	Aug-16	13663	0.0221	34.8	0.48	0.89	0.14	0.13	0.02	6,479.4
Palo Seco	PSGT3-1	Sep-16	7885	0.0214	20.1	0.27	0.49	0.08	0.08	0.01	3,739.3
Palo Seco	PSGT3-1	Oct-16	2563.48	0.0160	6.5	0.09	0.12	0.02	0.02	0.00	1,215.7
Palo Seco	PSGT3-1	Nov-16	159.62	0.0160	0.4	0.01	0.01	0.00	0.00	0.00	75.7
Palo Seco	PSGT3-1	Dec-16	243.24	0.0160	0.6	0.01	0.01	0.00	0.00	0.00	115.4
Palo Seco	PSGT3-1	Jan-17	1536.21	0.0160	3.9	0.05	0.07	0.01	0.01	0.00	728.5
Palo Seco	PSGT3-1	Feb-17	2224.12	0.0155	5.7	0.08	0.10	0.02	0.02	0.00	1,054.8
Palo Seco	PSGT3-1	Mar-17	895.64	0.0133	2.3	0.03	0.03	0.01	0.01	0.00	424.7
Palo Seco	PSGT3-1	Apr-17	3230.55	0.0133	8.2	0.11	0.13	0.02	0.03	0.00	1,532.0
Palo Seco	PSGT3-1	May-17	6066.52	0.0102	15.5	0.21	0.18	0.03	0.06	0.01	2,876.9
Palo Seco	PSGT3-1	Jun-17	12480.3	0.0060	31.8	0.43	0.22	0.03	0.12	0.01	5,918.6
Palo Seco	PSGT3-1	Jul-17	13099.23	0.0042	33.4	0.46	0.16	0.02	0.13	0.02	6,212.1
Palo Seco	PSGT3-1	Aug-17	23686.57	0.0069	60.4	0.82	0.48	0.07	0.23	0.03	11,232.9
Palo Seco	PSGT3-1	Sep-17	19769.71	0.0268	50.4	0.69	1.55	0.24	0.19	0.02	9,375.4
Palo Seco	PSGT3-1	Oct-17	14154.29	0.0340	36.1	0.49	1.41	0.22	0.14	0.02	6,712.4
Palo Seco	PSGT3-1	Nov-17	16565.71	0.0450	42.2	0.58	2.18	0.33	0.16	0.02	7,856.0
Palo Seco	PSGT3-1	Dec-17	21228.84	0.0364	54.1	0.74	2.26	0.35	0.20	0.03	10,067.4
Palo Seco	PSGT3-1	Jan-18	27917.61	0.0291	71.2	0.97	2.38	0.36	0.27	0.03	13,239.4
Palo Seco	PSGT3-1	Feb-18	27419.37	0.0190	69.9	0.95	1.53	0.23	0.26	0.03	13,003.2
Palo Seco	PSGT3-1	Mar-18	11488.4	0.0244	29.3	0.40	0.82	0.13	0.11	0.01	5,448.2
Palo Seco	PSGT3-1	Apr-18	7066.59	0.0177	18.0	0.25	0.37	0.06	0.07	0.01	3,351.2
				3-1	**328.0**	**4.5**	**8.6**	**1.3**	**1.2**	**0.2**	**60,987.8**

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Monthly Baseline Operating Data				
Plant	Unit ID	Month	Oil Consumption (bbls)	Sulfur (%)
Palo Seco	PSGT3-2	May-16	5483	0.0194
Palo Seco	PSGT3-2	Jun-16	1797	0.0200
Palo Seco	PSGT3-2	Jul-16	13642	0.0302
Palo Seco	PSGT3-2	Aug-16	11844	0.0224
Palo Seco	PSGT3-2	Sep-16	1810	0.0212
Palo Seco	PSGT3-2	Oct-16	63.1	0.0160
Palo Seco	PSGT3-2	Nov-16	0	0.0000
Palo Seco	PSGT3-2	Dec-16	0	0.0000
Palo Seco	PSGT3-2	Jan-17	0	0.0000
Palo Seco	PSGT3-2	Feb-17	0	0.0000
Palo Seco	PSGT3-2	Mar-17	0	0.0000
Palo Seco	PSGT3-2	Apr-17	0	0.0133
Palo Seco	PSGT3-2	May-17	0	0.0000
Palo Seco	PSGT3-2	Jun-17	0	0.0000
Palo Seco	PSGT3-2	Jul-17	0	0.0000
Palo Seco	PSGT3-2	Aug-17	0	0.0000
Palo Seco	PSGT3-2	Sep-17	0	0.0000
Palo Seco	PSGT3-2	Oct-17	0	0.0000
Palo Seco	PSGT3-2	Nov-17	0	0.0000
Palo Seco	PSGT3-2	Dec-17	0	0.0000
Palo Seco	PSGT3-2	Jan-18	0	0.0000
Palo Seco	PSGT3-2	Feb-18	0	0.0000
Palo Seco	PSGT3-2	Mar-18	0	0.0000
Palo Seco	PSGT3-2	Apr-18	0	0.0000

PREPA Palo Seco PSGT 2-2, 3-1, and 3-2 Baseline Monthly Emissions Per Unit							
	NOx	PM/PM10/PM2.5	SO2	H2SO4	CO	VOC	GHGs
	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)
	14.0	0.19	0.31	0.05	0.05	0.01	2,600.2
	4.6	0.06	0.11	0.02	0.02	0.00	852.2
	34.8	0.47	1.21	0.18	0.13	0.02	6,469.5
	30.2	0.41	0.78	0.12	0.11	0.01	5,616.8
	4.6	0.06	0.11	0.02	0.02	0.00	858.4
	0.2	0.00	0.00	0.00	0.00	0.00	29.9
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
	0.0	0.00	0.00	0.00	0.00	0.00	0.0
3-2	**44.2**	**0.6**	**1.3**	**0.2**	**0.2**	**0.0**	**8,213.5**

AP-42 Section 3.1 Emission Factors (lb/MMBtu): NOx = 0.88; PM = 0.012; SO2 = 1.01 x %S; CO = 0.0033; VOC = 0.00041

Attachment C

Emission Calculations Palo Seco PSGT 3-1
November 7, 2019 to January 30, 2020

Actual Emissions November 7, 2019 to January 30, 2020 - Palo Seco GT 3-1

AP-42 Emission Factors		
PM	0.012	lb/MMBtu
SOx	1.01*%S	lb/MMBtu
NOx	0.88	lb/MMBtu
VOC	0.00041	lb/MMBtu
CO	0.0033	lb/MMBtu
HAP,s (Pb)	0.000014	lb/MMBtu

Fuel Oil #2	1,459,912.46	gal/yr
Sulfur %	0.04	

Actuals (Tons)	Pollutant
1.21	PM
3.66	SOx
88.65	NOx
0.04	VOC
0.33	CO
0.0014	HAP,s (Pb)
0.56	H2SO4
16484	CO2e

Emission Calculations PM

$$= \frac{0.012\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 1.21\ \frac{\text{ton}}{\text{yr}} = 0.28\ \frac{\text{lb}}{\text{hr}}$$

Emission Calculations SOx

$$= \frac{0.04\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 3.66\ \frac{\text{ton}}{\text{yr}} = 0.84\ \frac{\text{lb}}{\text{hr}}$$

Emission Calculations NOx

$$= \frac{0.88\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 88.65\ \frac{\text{ton}}{\text{yr}} = 20.24\ \frac{\text{lb}}{\text{hr}}$$

Emission Calculations VOC

$$= \frac{0.00041\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 0.04\ \frac{\text{ton}}{\text{yr}} = 0.01\ \frac{\text{lb}}{\text{hr}}$$

Emission Calculations CO

$$= \frac{0.0033\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 0.33\ \frac{\text{ton}}{\text{yr}} = 0.08\ \frac{\text{lb}}{\text{hr}}$$

Emission Calculations Pb

$$= \frac{0.000014\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 0.0014\ \frac{\text{ton}}{\text{yr}} = 0.000\ \frac{\text{lb}}{\text{hr}}$$

Emission Calculations CO2e

$$= \frac{163.64\ \text{lb}}{\text{MMBTU}} \times \frac{1{,}459{,}912\ \text{gal}}{\text{yr}} \times \frac{0.138\ \text{MMBTU}}{\text{gal}} \times \frac{\text{ton}}{2000\ \text{lb}}$$

$$= 16484.105\ \frac{\text{ton}}{\text{yr}} = 3763.494\ \frac{\text{lb}}{\text{hr}}$$

UNITED STATES CIVILIAN BOARD OF CONTRACT APPEALS

PUERTO RICO ELECTRIC POWER AUTHORITY, Applicant, v. FEDERAL EMERGENCY MANAGEMENT AGENCY Respondent.	CBCA 6630-FEMA Date: July 29, 2020

JOINT STIPULATION TO DISMISS WITHOUT PREJUDICE

IT IS HEREBY STIPULATED and agreed to by and between Respondent, the Federal Emergency Management Agency ("FEMA"), the Applicant, the Puerto Rico Electric Power Authority ("PREPA"), and the Recipient, the Puerto Rico Central Office of Recovery, Reconstruction, and Resiliency ("COR^3") (together, the "Parties"), that the above-captioned arbitration request filed on October 11, 2019, shall be dismissed without prejudice in accordance with the terms set forth in the Arbitration Agreement attached hereto as Exhibit A. The Parties have reached an agreement to resolve this dispute. The Parties agree that any dispute arising out of the Arbitration Agreement may be resolved by reopening this case.

Accordingly, the Parties jointly request that this Panel of the Civilian Board of Contract Appeals dismiss CBCA 6630-FEMA without prejudice.

Respectfully submitted on this 29th day of July, 2020.

/s/ Charles Schexnaildre
Charles Schexnaildre, Lead Attorney

Louisiana Integration and Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802
Phone: (225) 339-6658
E-mail: charles.schexnaildre@fema.dhs.gov

Frank Bruscato
Louisiana Integration and Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802
Phone: (202) 285-4054
E-mail: frank.bruscato@fema.dhs.gov

John Dimos
Louisiana Integration and Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802
Phone: (504) 491-0873
E-mail: john.dimos@fema.dhs.gov

Attorneys for Respondents FEMA and Peter T. Gaynor

/s/ Ernest B. Abbott
Baker, Donelson, Bearman, Caldwell & Berkowitz, PC
901 K Street NW, Suite 900
Washington, DC 20006
Phone: (202) 508-3425
E-mail: eabbott@bakerdonelson.com

Wendy Huff Ellard, Esq.
Baker, Donelson, Bearman, Caldwell & Berkowitz, PC
4268 I-55 North
Jackson, Mississippi 39211
Phone: (601) 969-4681
E-mail: wellard@bakerdonelson.com

Michelle F. Zaltsberg, Esq.
Baker, Donelson, Bearman, Caldwell & Berkowitz, PC
200 South Orange Avenue
Suite 2900
Orlando, Florida 32801
Phone: (407) 367-5433

E-mail: mzaltsberg@bakerdonelson.com

Jorge J. Vega Caro, Esq.
Puerto Rico Electric Power Authority
Disaster Funds Management Office
1110 Av. Ponce de Leon
P.O. Box 364267
San Juan, Puerto Rico
Phone: (787) 521-2050
E-mail: Jorge.Vega@prepa.com

Astrid Rodriguez Cruz, Esq.
General Counsel
Lionel Santa Crispin, Esq.
Senior Counsel
Puerto Rico Electric Power Authority
1110 Av. Ponce de Leon
P.O. Box 364267
San Juan, Puerto Rico
Phone: 787-521-4431
E-mail: Astrid.Rodriguez@prepa.com
Lionel.Santa@prepa.com

Attorneys for Applicant Puerto Rico Electric Power Authority

/s/Nathalia C. Rivera Smith
Nathalia C. Rivera Smith, Chief Legal Counsel
Central Office of Recovery, Reconstruction and Resiliency
P.O. Box 195014
San Juan, Puerto Rico 00918-5014
Phone: (787) 505-1606
E-mail: natrivera@cor3.pr.gov

Sebastián E. Batista Bustelo
Central Office of Recovery, Reconstruction and Resiliency
P.O. Box 195014
San Juan, Puerto Rico 00918-5014
Phone: (787) 642-1954
E-mail: sbatista@cor3.pr.gov

Alejandro R. Nieto Vincenty
Central Office of Recovery, Reconstruction and Resiliency

P.O. Box 195014
San Juan, Puerto Rico 00918-5014
Phone: (787) 585-2685
E-mail: anieto@cor3.pr.gov

Attorneys for Recipient Puerto Rico Central Office of Recovery, Reconstruction, and Resiliency

Exhibit A

IN THE MATTER OF PUERTO RICO ELECTRIC POWER AUTHORITY
ARBITRATION
DOCKET # CBCA-6630-FEMA

Arbitration Agreement

This agreement (hereinafter referred to as the "Arbitration Agreement"), is entered into on the 20th day of July, 2020, by and between the Federal Emergency Management Agency (hereinafter referred to as "FEMA" or the "'Agency"), the Puerto Rico Electric Power Authority ("PREPA"), and the Central Recovery and Reconstruction Office of Puerto Rico (the "Recipient") as follows:

WITNESSETH that:

WHEREAS, PREPA sought arbitration before the Civilian Board of Contract Appeals ("CBCA") in the matter identified as CBCA-6630-FEMA, *In the Matter of Puerto Rico Electric Power Authority*, to resolve a dispute arising out of the PREPA's request for a Public Assistance grant under the Robert T. Stafford Disaster Relief and Emergency Assistance Act ("Stafford Act"), 42 U.S.C. § 5172, for the purchase cost of three mega generators; and

WHEREAS, FEMA has determined that the purchase of three mega generators is eligible for reimbursement as a cost-effective solution as part of the method of repair of transmission and distribution components of PREPA's power grid, itself eligible work that will be funded under Stafford Act § 428 (the "T&D Permanent Work Project"); and

WHEREAS, this Arbitration Agreement only pertains to costs associated with the three mega generators in dispute in CBCA 6630-FEMA.

NOW THEREFORE, in consideration of the foregoing, FEMA, PREPA, and the Recipient agree to resolve CBCA-6630-FEMA as follows:

1. The recitals above are ratified, confirmed, adopted, and incorporated as though specifically set forth below.

AD

2. This Arbitration Agreement is not a deviation from FEMA practice and policies.

3. FEMA has determined the purchase of the three mega generators was a cost-effective solution as part of the method of repair for the T&D Permanent Work Project and will be adding the cost of the mega generators to the T&D Permanent Work Project, which is currently being drafted. The Parties agree that the eligible costs for the three mega generators is $58,093,016.00. The three mega generators will provide backup power and generation capacity while PREPA performs eligible work to repair and replace eligible portions of PREPA's transmission and distribution systems.

4. Within three days of the execution of this Arbitration Agreement, PREPA agrees to request the CBCA dismiss CBCA-6649-FEMAwithout prejudice.

5. The Parties agree that when the mega generators are no longer needed for Transmission 428 Permanent Work Projects, PREPA will dispose of the equipment in the manner required by 2 C.F.R. § 200.313(e).

6. The statutes, rules, regulations, policies, and procedures that relate to and govern FEMA Public Assistance grants apply to the grants that are the subject of this Arbitration Agreement and this Arbitration Agreement does not negate or otherwise set aside any statute, regulation, policy, or procedure to which a Stafford Act grant is otherwise subject.

7. The Parties agree to each bear their own attorneys' fees, costs, and expenses related to the dispute and CBCA-6630-FEMA.

8. The terms of this Arbitration Agreement are in full and final resolution and satisfaction of any and all claims, demands, rights, and causes of action of whatsoever kind and nature against FEMA based on, arising from, and by reason of any and all known and unknown injuries, foreseen and unforeseen, that PREPA now has or hereafter may acquire against FEMA, its agents, servants, and employees, resulting, or to result, from FEMA action that is the subject of, or in any way related to the to the dispute in CBCA-6630-FEMA; and, PREPA forever waives all rights to bring any actions, claims, demands, and causes of action of whatsoever kind and nature against FEMA related to CBCA-6630-FEMA, unless FEMA fails to adhere to the commitments made under numbered paragraph 3 of this Arbitration Agreement.

9. The terms of the numbered paragraphs of this Arbitration Agreement constitute the entire Arbitration Agreement of the Parties, and no statement, remark, agreement, or understanding, oral or written, that is not contained herein shall be recognized or enforced.

10. In consideration of the terms set forth above the parties agree that the arbitration before the CBCA is resolved and PREPA hereby agrees to request the CBCA dismiss CBCA-6630-FEMA within three days after the execution of this Arbitration Agreement.

11. This Arbitration Agreement may be executed in counterparts, each of which shall be deemed an original, and all of which together shall be deemed one and the same instrument.

IN WITNESS WHEREOF, the parties, PREPA, Central Recovery and Reconstruction Office of Puerto Rico, and FEMA, through their duly authorized representatives, have executed this Arbitration Agreement as of the date indicated below:

07/27/2020

Keith Turi
Federal Emergency Management Agency
Assistant Administrator - Recovery Directorate
Office of Response and Recovery

Date

Arturo Deliz

07/20/2020

Arturo Deliz Vélez
Director, Disaster Funds Management Office
Puerto Rico Electric Power Authority

Date

7/23/2020

Ottmar Chavez Piñero
Director
Central Recovery and Reconstruction Office of Puerto Rico

Date

07/22/2020

Nathalia C. Rivera Smith
Chief Legal Counsel
Central Recovery and Reconstruction Office of Puerto Rico

Date

10 de febrero de 2021

Victor V. De Castro Carlo
Puerto Rico Electric Power Authority (PREPA) Palo Seco
PO Box 364267
San Juan, PR 00949

ENM. 141-20-0340
Generadores de Emergencia
Palo Seco Power Plant
PR-870, Palo Seco
Toa Baja, Puerto Rico

Estimado señor De Castro:

El Área de Evaluación de Documentos Ambientales adscrita a la Secretaría Auxiliar de Cumplimiento Ambiental del Departamento de Recursos Naturales y Ambientales (DRNA) recibió el 10 de febrero del 2021, la comunicación del Ing. Ricardo Ramos De Juan, que lee como sigue:

"Por este medio la Autoridad de Energía de Puerto Rico – División de Ingeniería y Servicios Técnicos por conducto del Ing. Ricardo Ramos De Juan solicita – una Evaluación Ambiental bajo la Regla 141 para Tres unidades de turbo generadores móviles generatricesde 30 MW cada una United Technologies Pratt & Whitney (descripción abajo). Se incluye la data técnica y cálculos de emisión. Las unidades se ubicaran en PREPA Palo Seco, ubicada en la PR-870, en Toa Baja.

Se aclara que dichas unidades son Unidades Peaking.

Dichas Unidades Peaking tendrán un uso de operación se estima en 2,680 horas / año.

I. Unidad Peaking- Movil

El generador es marca: Brush Electrical Machines
Modelo Frame no. MXI 44.07 no. 925501.00, 30,000 KW
Motor marca United Technologies Pratt & Whitney,
Modelo FT8, GG8-3 / PT8-6. Caballaje: 40,800 HP
Tiempo de operación se estima en 2,680 hrs/yr.
El consumo de combustible es de 1,980 gal/hr
Combustible utilizado: Dual Fuel (diésel y gas natural)
Tubo de escape: largo de 120 pulgadas, ancho de 140 pulgadas y altura de 244.75 pulgadas.

II. Unidad Peaking- Movil

El generador es marca Toshiba Mitsubishi-Electrical System Corporation
Modelo: Serial #D1577020AW,30,000 KW
Motor marca United Technologies Pratt & Whitney
Modelo GG8-3 / PT8-6. Caballaje: 40,800 HP
Tiempo de operación se estima en 2,680 hrs/yr.
El consumo de combustible es de 1980 gal/hr
Combustible utilizado: Dual Fuel (diésel y gas natural)
Tubo de escape: largo de 120 pulgadas, ancho de 60 pulgadas y altura de 244.75 pulgadas.

III. Unidad Peaking- Movil

El generador es marca Toshiba Mitsubishi-Electrical System Corporation
Modelo: Serial #D1580200AW, 30,000 KW
Motor marca United Technologies Pratt & Whitney
Modelo GG8-3/PT8-6. Caballaje: 40,800 HP
Tiempo de operación se estima en 2,680 hrs/yr.
El consumo de combustible es de 1980 gal/hr
Combustible utilizado: Dual Fuel (diésel y gas Natural)
Tubo de escape: largo de 120 pulgadas, ancho de 140 pulgadas y altura de 244.75 pulgadas.

Las tres unidades utilizan un tanque de acero externo con dique de capacidad de 670,316 galones".

La Secretaria Auxiliar de Cumplimiento Ambiental del DRNA (anterior Junta de Calidad Ambiental), amparada en la Regla 141 del Reglamento Núm. 8858 del 23 de noviembre de 2016, conocido como el "Reglamento Para el Proceso de Evaluación Ambiental (RPEA)" ha determinado que la acción propuesta no ocasionará impactos significativos al ambiente. El documento sometido para la acción propuesta cumple con lo requerido en el Artículo 4-B (3) de la Ley sobre Política Pública Ambiental, Ley 416-2004, según enmendada.

No obstante, se le requiere que cumpla con todas las disposiciones de las leyes y reglamentos estatales y federales aplicables, incluyendo las siguientes:

1. Obtener los correspondiente permisos o modificaciones de permisos de construcción y operación, otorgados por el Área de Calidad de Aire, conforme al Reglamento Núm. 5300 del 28 de agosto de 1995, conocido como el "Reglamento para el Control de la Contaminación Atmosférica".

2. Las especificaciones y nuevos cálculos de emisiones certificados por un ingeniero o químico licenciado y autorizado a ejercer su profesión en Puerto Rico, deberán incluirse durante el proceso de modificación o solicitud del permiso.

3. Controlar los olores objetables que puedan afectar la atmósfera comunal.

4. Revisar el Plan de Emergencia de la facilidad de referencia de manera que este incluya todos los tanques sobre tierra que se utilicen para almacenar combustible(s) o sustancias químicas; y de ser necesario se deberá presentar el mismo ante el Área de Calidad de Agua, reflejando las acciones a tomar para evitar, controlar y remediar derrames de combustible(s) o cualquier otra sustancia química, a tenor con la Regla 1306.5 del Reglamento Núm. 9079 del 26 de abril de 2019, conocido como el "Reglamento de Estándares de Calidad de Agua de Puerto Rico".

5. Cumplir con el Reglamento Núm. 8019 del 9 de mayo de 2011, conocido como el "Reglamento para el Control de la Contaminación por Ruido" en lo relacionado al nivel de sonido máximo permitido.

6. Según la Regla 138 (Vigencia de la Determinación de Cumplimiento Ambiental), Inciso C del RPEA, la vigencia de la determinación de cumplimiento ambiental a tenor con la Regla 141 será de cinco (5) años o hasta la fecha límite para el comienzo de la acción propuesta o hasta que se otorgue o modifique el permiso solicitado, lo que ocurra primero.

Las recomendaciones presentadas en esta comunicación, no eximen de cumplir con cualquier otro requerimiento o permiso del DRNA o de cualquier otra agencia estatal o federal, que sean aplicables a la acción propuesta.

Cordialmente,

Ing. Luis Sierra
Secretario Auxiliar
Secretaria Auxiliar de Permisos
Endosos, y Servicios Especializados

ADL/adl

Re: <<EXTERNAL EMAIL>>Palo Seco Turbines

José A. Santos Jiménez <JOSE.SANTOS@prepa.com>

Fri 2/19/2021 12:52 PM

To: Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>; Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>
Cc: Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>

2 attachments (2 MB)

LNG Supply to Mega Gens Palo Seco Steam Plant.pdf; ENM. 141-20-0340_02-10-2021.pdf;

Saludos Leimarys, Luis.

Adjunto suplemento de información complementando los datos ofrecidos el pasado 21 de junio de 2020 en relación a la petición de información del DRNA para la evaluación de la solicitud de permiso de construcción del Proyecto de Instalación de Turbinas en La Central Palo Seco. A continuación contestaciones al remanente de preguntas solicitadas.

1. Copia de la determinación final de EPA sobre la aplicabilidad o no aplicabilidad del proyecto de la Prevención de Deterioro Significativo (PSD, en inglés) para el proyecto solicitado. Según la carta de la EPA del 23 de julio de 2019, PREPA solicitó una revisión de no aplicabilidad expedita para tres unidades de generación. La EPA establece que PREPA accedió a proveer las razones de emisión por hora de las tres turbinas junto con los niveles de carga para que la EPA pudiera determinar si era posible establecer condiciones de no aplicabilidad para PSD para estas unidades. A la fecha de la comunicación EPA no había recibido dicha información. PREPA alego que el manufacturero de las unidades no había provisto los factores de emisión garantizados y EPA estableció que sin esta información no podrían comenzar la revisión expedita según solicitado.

- This project involves simple cycle combustion turbines envisioned to net out PSD, under NSR regulations it is not required to provide EPA with the netting analysis prior to construction. Description of the project as well as the applicability test used to determine that the project was not a major modification was included on the construction permit application.
- Although:
    - On November 26, 2019 PREPA provided EPA Region 2 personnel (via email) with copy of the DNER emergency waiver request (which includes units emission rates)
    - On April 7, 2020 PREPA Response to EPA January 22, 2020 Request for Information PREPA provided EPA with copy of the DNER construction permit application. The copy of the construction application included project compliance applicability, baseline emissions, all emission rates for the units as well as proposed project emission limits
    - Currently no Non PSD applicability evaluation is available. PREPA have been sharing Project information and fulfilling EPA's inquiries.

4. Documento ambiental para las turbinas (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416) y el uso de gas natural y diésel. Este trámite no clasifica como exclusión categórica.

- We have an approved 141-20-0340, copy enclosed.

15. Documento ambiental para la infraestructura de gas natural (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica.See Item 4.

16. Un plano esquemático que indique el flujo desde el recibo de gas natural hasta el uso final identificando cada fuente de emisión. See enclosed file LNG Supply to Mega Gens Palo Seco Steam Plant.pdf.
17. Procedencia del gas natural. See enclosed file LNG Supply to Mega Gens Palo Seco Steam Plant.pdf.
18. Especificar el método de almacenaje del gas natural. See enclosed file LNG Supply to Mega Gens Palo Seco Steam Plant.pdf.
19. Plan de Reacción a Emergencias de acuerdo con la Regla 107C del RCCA. El plan deberá incluir incidencias de derrames accidentales de gas natural. See enclosed file LNG Supply to Mega Gens Palo Seco Steam Plant.pdf.

De requerir aclaraciones al respecto no dude en comunicarse.

Att.

José A. Santos Jiménez
Manager / Technical Advisor
Puerto Rico Electric Power Authority
Environmental Protection & Quality Assurance Division
jose.santos@prepa.com
787-521-4961



****
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From: José A. Santos Jiménez <JOSE.SANTOS@prepa.com>
Sent: Wednesday, June 24, 2020 9:22 AM
To: Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>; Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>
Cc: Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>
Subject: Re: <<EXTERNAL EMAIL>>Palo Seco Turbines

Buenos días Leimarys.

Sorry, el orden de número es el aquí incluido. El item 19 es el que comienza en " Plan de Reacción a Emergencias de acuerdo con la Regla 107C del RCCA. El plan deberá...".

Att. J.Santos.

Cual es el item 19?

1. Documento ambiental para la infraestructura de gas natural (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica. See Item 19.

16. Un plano esquemático que indique el flujo desde el recibo de gas natural hasta el uso final identificando cada fuente de emisión. See Item 19.
17. Procedencia del gas natural. See Item 19.
18. Especificar el método de almacenaje del gas natural. See Item 19.
19. Plan de Reacción a Emergencias de acuerdo con la Regla 107C del RCCA. El plan deberá incluir incidencias de derrames accidentales de gas natural.

- The natural gas equipment onsite will consist solely of the pipeline that transports the natural gas from the supplier to the PWPS model FT8® MOBILEPAC combustion turbines. There will be no storage of natural gas onsite and therefore, an emergency Response Plan in accordance with Rule 107C is not required. The only natural gas equipment to be installed onsite will be the pipeline and associated ancillary equipment (e.g. valves, flanges, connectors, etc.). The PTC application included an estimate of potential fugitive natural gas emissions from the new natural gas handling infrastructure to be installed onsite at the Palo Seco plant. The emission calculations are provided in Appendix B of the application. No additional information regarding the natural gas handling equipment is available at this time. Response as included on the March 05, 2020 electronic mail.

****

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From: Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>
Sent: Tuesday, June 23, 2020 8:29 PM
To: José A. Santos Jiménez <JOSE.SANTOS@prepa.com>; Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>
Cc: Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>
Subject: Re: <<EXTERNAL EMAIL>>Palo Seco Turbines

Saludos

Cual es el item 19?

1. Documento ambiental para la infraestructura de gas natural (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica. See Item 19.
1. Un plano esquemático que indique el flujo desde el recibo de gas natural hasta el uso final identificando cada fuente de emisión. See Item 19.
1. Procedencia del gas natural. See Item 19.
1. Especificar el método de almacenaje del gas natural. See Item 19.

Leimarys Delgado Medero, P.E.
Chief, Permits and Engineering Division | Air Quality Area
DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES

From: José A. Santos Jiménez <JOSE.SANTOS@prepa.com>
Sent: Sunday, June 21, 2020 12:31 PM
To: Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>; Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>
Cc: Luisette X Ríos Castañer <luisette.rios@prepa.com>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>
Subject: Re: <<EXTERNAL EMAIL>>Palo Seco Turbines

Saludos Luis, Leimarys.

Enclosed find attachment files and responses to the Palo Seco MobilePac Project inquiries. Most of the items were responded on our March 05, 2020 electronic mail communication.

Outstanding information is related to EPA's PSD applicability evaluation and revision to the environmental docume nt (Rule 141 and categoric exclusion).

The answers are divided in two parts responding to: 1. Luis' April 14, 2020 email request and 2. Leimarys' Februar y 7, 2020 email request.

Please review the enclosed information and let us know if additional information is required. Remaining data will be provided as it becomes available.

Regards;

J.Santos.

1. **Luis R. Sierra-Torres electronic communication from April 14, 2020:**

   Related to the permit application, by this means we are requesting an electronic copy of the emission estimates. Preferably in data sheet format. In order to proceed with the permit application the DNER is also waiting for the response on data information requested by e-mail.

- Electronic spreadsheet is enclosed as "Palo Seco Potential Emissions 12122019.xls"

Related to the waiver, please send us current emission factors for the units (i.e. without control equipment), the January and March fuel consumption reports and emission estimates. If the operation of this emission units operation during a potential waiver could exceed PSD limits, provide with emission projections for the units and date projected to exceed PSD limit.

- Response including the information requested is detailed in the enclosed copy of our recent submittal to EPA regarding the mentioned project. Refer to "PREPA Response to U.S. EPA Questions Regarding Palo Seco Units 06.16.20F.pdf" file.

2. Leimarys Delgado Medero electronic communication from February 7, 2020:

1. Copia de la determinación final de EPA sobre la aplicabilidad o no aplicabilidad del proyecto de la Prevención de Deterioro Significativo (PSD, en inglés) para el proyecto solicitado. Según la carta de la EPA del 23 de julio de 2019, PREPA solicitó una revisión de no aplicabilidad expedita para tres unidades de generación. La EPA establece que PREPA accedió a proveer las razones de emisión por hora de las tres turbinas junto con los niveles de carga para que la EPA pudiera determinar si era posible establecer condiciones de no aplicabilidad para PSD para estas unidades. A la fecha de la comunicación EPA no había recibido dicha información. PREPA alego que el manufacturero de las unidades no había provisto los factores de emisión garantizados y EPA estableció que sin esta información no podrían comenzar la revisión expedita según solicitado.

- Currently no Non PSD applicability evaluation is available. Although, PREPA have been sharing Project information and fulfilling EPA's inquiries. PREPA will provide details as they become available.

1. Plano de la facilidad (proyectado o existente) indicando todos los puntos de emisión.

- Information provided on March 5, 2020 via email. Enclosed copy of the information as "Facility SIte Source View 02-11-2020 a.pdf" file.

<u>Para las turbinas:</u>

3. Incluir una hoja Parte II para cada unidad por separado. Incluir una identificación para cada turbina.

- Information provided on March 5, 2020 via email. Enclosed copy of the information as "Palo Seco Mega Gens Parte II Solicitud Permiso Construccion 02-26-2020.pdf" file.

4. Documento ambiental para las turbinas (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416) y el uso de gas natural y diésel. Este trámite no clasifica como exclusión categórica.

- Environmental document is under review. Any updates, clarifications or exclusions justifications will be provided.

5. Parámetros de chimenea para cada unidad:
    a. Identificación para cada chimenea
    a. Coordenadas de la chimenea

- Information provided on March 5, 2020 via email. Enclosed copy of the information as "Palo Seco Mega Gens_stack_parameter_02-10-2020.pdf" file.

1. Determinación específica y detallada de la aplicabilidad (incluyendo método de cumplimiento específico) o no aplicabilidad de las siguientes reglamentaciones federales:

    a. 40 CFR Parte 60 Subparte GG: *Standards of Performance for Stationary Gas Turbines.* Solicitado desde el 24 de octubre de 2019.

- Explanation sent via electronic mail on March 5, 2020 via email. As discussed in the Permit to Construct (PTC) application, 40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines) is applicable to the project as the PW Power Systems (PWPS) model FT8® MOBILEPAC dual fuel combustion turbines have a heat input rating greater than 10 million British Thermal Units per hour (MMBtu/hr) and construction on these turbines commenced after February 18, 2005. In accordance with 40 CFR 60.4305(b), combustion turbines subject to 40 CFR 60 Subpart KKKK are exempt from the requirements of 40 CFR 60 Subpart GG. Since the combustion turbines are subject to Subpart KKKK, they are exempt from Subpart GG.

    b. 40 CFR Parte 63 Subparte YYYY: *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines.* Deberá tomar en cuenta las enmiendas finalizadas el 31 de enero de 2020.

- Explanation sent via electronic mail on March 5, 2020 via email. As discussed in the Permit To Construct (PTC) application, 40 CFR 63 Subpart YYYY (National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines) is applicable to the PWPS FT8® MOBILEPAC combustion turbines as the facility is an existing major source of hazardous air pollutant (HAP) emissions and the existing and proposed combustion turbines fire oil more than an aggregate total of 1000 hours during the calendar year. Consequently, the combustion turbines must meet a formaldehyde emission limit of 91 parts per billion by volume dry at 15 percent oxygen when firing natural gas and oil.

  On January 31, 2020, the United States Environmental protection Agency (USEPA) issued final amendments to NESHAP Subpart YYYY following the completion of a residual risk and technology review (RTR). The USEPA concluded from the RTR that no new cost-effective controls are available and did not propose any changes to the operating or emission standards. The USEPA did however, issue minor amendments to the rule that will apply to the PWPS FT8® MOBILEPAC combustion turbines, including revising requirements for periods of startup, shutdown and malfunction (SSM) and requiring electronic reporting of performance test results and compliance reports.

  The USEPA amended 40 CFR 63.6105 to eliminate the exemption from the emission and operating limits during SSM periods. Therefore, beginning 180 days after the date of publication of the revised rule in the Federal Register, the formaldehyde emission limit will apply during SSM periods. In accordance with the amended 40 CFR 63.6120(c), performance testing shall be conducted during representative conditions which excludes startup, shutdown, and malfunction. The revised rule has not yet been published in the Federal Register and therefore, the effective date of this rule change is not yet known. As the PWPS FT8® MOBILEPAC combustion turbines will meet the formaldehyde emission limit without add-on pollution controls, there will be no change to the monitoring and reporting requirements as a result of the amended rule.

  Beginning on the effective date of the amended rule, PREPA will submit performance test results and compliance reports through USEPA's Central Data Exchange using the Compliance and Emissions Data Reporting Interface.

<u>Para los motores:</u>

2. Incluir una hoja Parte II para cada motor por separado. Incluir una identificación para cada motor.

- Information provided on March 5, 2020 via email. Enclosed copy of the information as "Palo Seco Mega Gens Parte II Solicitud Permiso Construccion 02-26-2020.pdf" file.

3. Documento ambiental para el uso de gas natural en los motores. (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica.

- As described in the March 5, 2020 electronic communication, Natural Gas will not be used on emergency engines PS BSG-1, PS BSG-2, PS BSG-3

4. Parámetros de chimenea para cada unidad:

    i. Identificación para cada chimenea
    ii. Coordenadas de la chimenea
    iii. Altura de la chimenea
    iv. Diámetro de salida
    iv. Temperatura de salida
    v. Velocidad de salida

- Enclosed copy of the information as "Palo Seco Mega Gens_stack_parameter_02-10-2020.pdf" file. These details were provided by electronic mail on March 05, 2020.

5. Fecha de orden de cada motor

- May 28, 2019. Informed on the March 05, 2020 electronic mail communication.

6. Foto de la placa de cada motor donde se vea fechas y potencia del motor, si están en la instalación.

- Emergency Generators details enclosed as "Emergency Generators Palo Seco.zip" file. This information was included on the March 05, 2020 communication.

7. Establecer si cada motor cumplirá con la definición de *black start* de la reglamentación federal RICE o se considerarán de emergencia.

- See answer below (Item 13), as presented on the March 05, 2020 communication.

8. Determinación específica y detallada de la aplicabilidad (incluyendo método de cumplimiento específico) o no aplicabilidad de las siguientes reglamentaciones federales:

    a. 40 CFR Parte 60 Subparte IIII: *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

- Pursuant to 40 CFR 60.4200(a)(4), 40 CFR Part 60 Subpart IIII is applicable to the owners and operators of stationary compression ignition internal combustion engines that commenced construction after July 11, 2005. The three black start generator (BSG) engines are subject to 40 CFR Part 60 Subpart IIII. The three BSG engines meet the criteria of emergency engines pursuant to 40 CFR 60.4219 defined as follows:

    - Emergency stationary internal combustion engine means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary ICE must comply with the requirements specified in §60.4211(f) in order to be considered emergency stationary ICE. If the engine does not comply with the requirements specified in §60.4211(f), then it is not considered to be an emergency stationary ICE under this subpart.

- The stationary ICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc.
- The stationary ICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §60.4211(f).
- The stationary ICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §60.4211(f)(2)(ii) or (iii) and §60.4211(f)(3)(i).
    - The three BSG engines will be operated only during periods as defined in criteria (1) above, to provide electrical power to the PWPS model FT8® MOBILEPAC combustion turbines during periods when there is no electrical power from the grid (i.e. a blackout). The BSG engines will be operated to comply with 40 CFR 60.4211(f). Therefore, the three BSG engines are subject to the requirements for new emergency engines. There is no separate distinction for black start engines under 40 CFR Part 60 Subpart IIII.

b. 40 CFR Parte 60 Subparte JJJJ: *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

- Pursuant to 40 CFR 60.4219, compression ignition means a stationary internal combustion engine that is not a spark ignition engine and a spark ignition means a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device. Pursuant to 40 CFR 60.4230(a), 40 CFR 60 Subpart JJJJ is applicable to stationary spark ignition internal combustion engines. The three black start generator engines do not have a spark plug and are compression ignition engines, therefore they are not subject to 40 CFR Part 60 Subpart JJJJ.

c. 40 CFR Parte 63 Subparte ZZZZ: *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

- Pursuant to 40 CFR 63.6585, 40 CFR Part 60 Subpart IIII is applicable to the owners and operators of all stationary compression ignition internal combustion engines located at a major source of HAP emissions that commenced construction after December 19, 2002. The three black start generator (BSG) engines are subject to 40 CFR Part 63 Subpart ZZZZ. 40 CFR Part 63 Subpart ZZZZ provides definitions of both black start and emergency engines pursuant to 40 CFR 63.6675 as follows:
    - Black start engine means an engine whose only purpose is to start up a combustion turbine.
    - Emergency stationary RICE means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary RICE must comply with the requirements specified in §63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in §63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart.
        - The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.
        - The stationary RICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §63.6640(f).
        - The stationary RICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §63.6640(f)(2)(ii)

or (iii) and §63.6640(f)(4)(i) or (ii).

- The first criteria for an emergency engine is exactly the same as defined under 40 CFR 60.4219 for an emergency engine subject to 40 CFR 60 Subpart IIII. The three BSG engines satisfy both the criteria of a black start engine and an emergency engine under 40 CFR Part 63 Subpart ZZZZ. During an emergency when there is no electrical power from the electrical grid to start the combustion turbines, the BSG engines will be used to start the combustion turbines. The applicable requirements for new emergency engines rated greater than 500 horsepower at a major HAP source have been summarized by the USEPA and available online here https://www3.epa.gov/ttn/atw/rice/pdf/New&Reconemergencyover500HP2b(ii).pdf . The requirements for a new black start engine that meets the criteria of an emergency engine are the same as an emergency engine.

Natural Gas Supply Infrastructure on site:

9. Incluir una hoja Parte II para cada unidad de emisión.

- Enclosed copy of the information as "Palo Seco Mega Gens Parte II Solicitud Permiso Construccion 02-26-2020.pdf" file.

10. Documento ambiental para la infraestructura de gas natural (Cumplimiento con el Artículo 4(B) de la Ley Núm. 416). Este trámite no clasifica como exclusión categórica. See Item 19.
1. Un plano esquemático que indique el flujo desde el recibo de gas natural hasta el uso final identificando cada fuente de emisión. See Item 19.
1. Procedencia del gas natural. See Item 19.
1. Especificar el método de almacenaje del gas natural. See Item 19.
1. Plan de Reacción a Emergencias de acuerdo con la Regla 107C del RCCA. El plan deberá incluir incidencias de derrames accidentales de gas natural.

- The natural gas equipment onsite will consist solely of the pipeline that transports the natural gas from the supplier to the PWPS model FT8® MOBILEPAC combustion turbines. There will be no storage of natural gas onsite and therefore, an emergency Response Plan in accordance with Rule 107C is not required. The only natural gas equipment to be installed onsite will be the pipeline and associated ancillary equipment (e.g. valves, flanges, connectors, etc.). The PTC application included an estimate of potential fugitive natural gas emissions from the new natural gas handling infrastructure to be installed onsite at the Palo Seco plant. The emission calculations are provided in Appendix B of the application. No additional information regarding the natural gas handling equipment is available at this time. Response as included on the March 05, 2020 electronic mail.

****

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From: Luis R. Sierra-Torres <LuisSierra@jca.pr.gov>
Sent: Tuesday, April 14, 2020 1:27 PM
To: José A. Santos Jiménez <JOSE.SANTOS@prepa.com>
Cc: Luisette X Ríos Castañer <LUISETTE.RIOS@prepa.com>; Leimarys Delgado Medero <LeimarysDelgado@jca.pr.gov>; Amanda Rodriguez Martinez <AmandaRodriguez@jca.pr.gov>
Subject: <<EXTERNAL EMAIL>>Palo Seco Turbines

Greetings,

On January 2020 the DNER received a permit application for the construction of 3 turbines at Palo Seco site. DNER also received a waiver request for the operation of the after mentioned units due the earthquake emergency.

Related to the permit application, by this means we are requesting an electronic copy of the emission estimates. Preferably in data sheet format. In order to proceed with the permit application the DNER is also waiting for the response on data information requested by e-mail.

Related to the waiver, please send us current emission factors for the units (i.e. without control equipment), the January and March fuel consumption reports and emission estimates. If the operation of this emission units operation during a potential waiver could exceed PSD limits, provide with emission projections for the units and date projected to exceed PSD limit.

Cordially

Eng. Luis R. Sierra
Chief, Inspection and Compliance Divsion
Acting Director, Air Quality Area
Department of Natural and Environmental Resources
Phone: (787) 767-8181 x. 2301

www.drna.pr.gov/acai

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May 26, 2021 Correspondence to United States Environmental Protection Agency Re: MobilePac Units

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004
T +1 202 637 5600
F +1 202 637 5910
www.hoganlovells.com

May 26, 2021

Via Electronic Mail

Ms. Liliana Villatora
Chief, Air Branch
Office of Regional Counsel
United States Environmental Protection Agency, Region 2
290 Broadway
New York, NY 10007-1866

Ms. Amanda Prentice
Assistant Regional Counsel
Office of Regional Counsel
United States Environmental Protection Agency, Region 2
290 Broadway
New York, NY 10007-1866

Re: Puerto Rico Electric Power Authority – Equitable Considerations Surrounding Palo Seco MobilePac Units

To Whom It May Concern:

On January 22, 2021, the United States Environmental Protection Agency ("EPA") issued a Notice of Violation and Opportunity to Confer ("NOVOC") regarding the Puerto Rico Electric Power Authority's ("PREPA") installation of three ~23 MW MobilePac combustion turbine units ("MobilePac Units") to replace three existing units in the Palo Seco Power Block. PREPA subsequently requested an opportunity to confer with EPA, and PREPA and EPA have since engaged in several conversations. As a part of these discussions, on April 12, 2021, EPA requested that PREPA identify equitable factors for EPA's consideration concerning the installation of the MobilePac Units and the opportunity to credit the retirement of one of the Palo Seco Power Block units (Unit PSGT 3-1). Through this letter, PREPA provides the information requested by EPA, and looks forward to receiving EPA's guidance on a pathway forward to ensure the availability of the MobilePac Units as soon as possible, as PREPA approaches the 2021 hurricane season.

I. PREPA's Installation of the MobilePac Units in the Context of Natural Disasters

Following Hurricanes Irma and Maria in September 2017, PREPA's system was decimated, resulting in island-wide blackouts and power losses on portions of the island for close to nine months. PREPA's immediate recovery extended nearly a year, but its system was left weakened and vulnerable, with the threat of additional hurricanes looming.

Accordingly, as the 2019 hurricane season approached, PREPA sought to install the three Palo Seco MobilePac Units to provide emergency backup power in the event of a hurricane. In coordination with the Puerto Rico Department of Natural and Environmental Resources ("DNER"), PREPA applied to DNER for an emergency variance to install the three units pursuant to Rule 302 of the Puerto Rico Regulation for the Control of Atmospheric Pollution. Under Rule 302, DNER "may grant emergency variances only under very special circumstances, e.g., to avoid an imminent health threat." On October 24, 2019, DNER granted the requested emergency variance for 90 days, deeming the status of PREPA's system and the limitations on its generation resources serious enough to meet this standard, and determining that the situation affected the resilience of Puerto Rico's electricity system. Under Rule 302, DNER was required to inform EPA of its decision to grant the emergency variance. The emergency variance allowed for PREPA to install the three MobilePac units without first applying for and obtaining a DNER-issued construction permit. Before the 90 days expired, PREPA applied for a construction permit for the units.

While no hurricane hit the island during the 2019 hurricane season, hundreds of earthquakes struck the island beginning in December 2019. In January 2020, Puerto Rico suffered an island-wide blackout when a large earthquake struck on January 7, 2020, damaging units at the Mayaguez and San Juan Power Plants and rendering the Costa Sur Power Plant inoperable. Costa Sur Unit 5 was inoperable for seven months, while Costa Sur Unit 6 was inoperable for even longer, not returning to service until 2021. The result was the loss of approximately 1000 megawatts ("MW") of generation capacity, and PREPA faced system instability and critical reserve deficits (hundreds of MW even with full utilization of available peaker units).

The earthquakes demonstrated all too well the need for the MobilePac Units, as PREPA was required to effectively operate these units as baseload units in the aftermath of the earthquakes in order to meet demand and ensure adequate reserve to keep the lights on. Even with the MobilePac Units available, PREPA experienced a number of load shedding events—at least eight (8) such events.

These natural disasters struck in the midst of PREPA's efforts to modernize its aging fleet of power plants, and significantly reduced PREPA's options and flexibility in keeping the lights on in Puerto Rico. It is against this backdrop that PREPA urges EPA to view PREPA's installation and operation of the Palo Seco MobilePac Units. Indeed, PREPA continues to be vulnerable as it approaches the coming hurricane season, and thus respectfully requests EPA to evaluate and exercise any equitable authorities and discretion it may have in resolving this matter.

II. The Earthquakes Fundamentally Altered PREPA's Plans for the MobilePac Units

Prior to the January 7, 2020 earthquake, PREPA had only operated the MobilePac Units for commissioning and testing purposes, as allowed by the DNER emergency variance, so that the units would be available in the event of a hurricane. PREPA had not operated these units commercially and intended to disconnect these units at the end of the 90-day emergency variance period.

Before the 90 days expired, PREPA applied for a construction permit for the MobilePac Units. This construction permit application included the applicability analysis PREPA had conducted to determine if its installation and operation of the MobilePac Units as intended would trigger New Source Review ("NSR") / Prevention of Significant Deterioration ("PSD") permitting requirements. PREPA's analysis indicated that it would not exceed the relevant emissions thresholds. Consistent with this analysis, PREPA's construction permit application sought for DNER to impose annual emissions limits on the MobilePac Units to keep them below the NSR/PSD significance thresholds for each pollutant.

Although PREPA had intended to keep the MobilePac Units offline and disconnected until PREPA obtained the DNER construction permit and NOx water injection controls were operational, the unforeseen emergency caused by the earthquakes resulted in a serious generation shortfall of nearly 1000 MW, as described above. PREPA's projections showed critical reserve deficiencies and significant risk of load shedding. As noted above, this load shedding actually came to pass on a number of occasions.

In the aftermath of the earthquake disaster, as an island system, PREPA was required to take any action necessary to restore power to and keep the lights on in Puerto Rico in order to protect the public health and welfare. The situation required PREPA to bring the MobilePac Units into service and to operate the MobilePac Units in a manner and to a degree that had not been intended or anticipated by PREPA. Shortly after the earthquakes, in mid-January, PREPA alerted EPA and DNER of the dire situation and the need to operate all available generation units, and sought emergency relief in the form of a no-action assurance. PREPA's request for a no-action assurance included the MobilePac Units, which was not granted by EPA, although EPA was made well aware of the fact that PREPA would need to operate the MobilePac Units until Costa Sur Unit 5 returned to service. PREPA continued to provide updates regarding its operation of the MobilePac Units and answered a number of questions from EPA in this regard.

Due to the large generation shortfall created by the earthquakes, and as communicated to EPA on multiple occasions, PREPA needed to operate the MobilePac Units until the return to service of Costa Sur Unit 5 in mid-August 2020, despite the fact that DNER had not issued a construction permit and PREPA had not yet completed installation of NOx water injection controls. Accordingly, as a result of the earthquake emergency, PREPA did not meet several of the permit limits proposed in its construction permit application in the first year of operation of the MobilePac Units. Emissions from the MobilePac Units during the earthquake recovery period exceeded the PSD significance thresholds for particulate matter ("PM") and NOx, the latter due to the fact that PREPA had been forced to operate the units in response to the emergency before it had a chance to

complete the planned NOx water injection controls.[1] PREPA had never intended to operate the units without NOx water injection controls, and the necessity to do so due to the earthquakes fundamentally changed the emissions profile of the units with respect to NOx. Once the water injection controls are operational, the units will be well within the NOx limit.

In future years, without the extreme circumstances caused by the earthquakes, PREPA would operate the units to meet the emission limits as proposed in its construction permit application. As detailed above, the need to utilize the MobilePac Units for 7 months following the earthquakes was not expected at the time of its permit application, and is directly attributable to meeting the island's power needs in the wake of the January 7, 2020 earthquakes.

Following the return to service of Costa Sur Unit 5 in mid-August 2020, PREPA removed the MobilePac Units from service.[2] Currently, the MobilePac Units have been disconnected and cannot be operated at this time. Barring an unforeseen emergency, these units will remain out-of-service until NOx water injection controls are fully operational, and DNER issues the required construction permit.

III. The Earthquakes Required PREPA to Operate Unit PSGT 3-1 in January 2020

PREPA's construction permit application to DNER stated that PREPA would take a permanent shutdown of three existing gas turbine units (PSGT 2-2, 3-1, and 3-2) in order to be able to apply emission credits attributable to the retirement of those units to the MobilePac Units. PREPA did not intend, and could not anticipate, that it would need to operate the MobilePac Units and Unit PSGT 3-1 to provide power to the grid at the same time, and intended for Unit PSGT 3-1 to cease operations prior to operation of the MobilePac Units to provide power to the grid.

Due to the earthquake emergency, PREPA was required to bring Unit PSGT 3-1 into service on January 7, 2020, and was unable to take it out of service until January 30, 2020, as it was needed to meet demand and assist in grid recovery after the earthquakes. As soon as the immediate acute emergency had passed, PREPA rendered Unit PSGT 3-1 inoperable. PREPA removed the starting motor and auxiliary equipment on or about February 2020, and Unit PSGT 3-1 has not been operated since that date.

In its construction permit application, PREPA committed to a permanent shutdown of Unit PSGT 3-1, provided that PREPA is able to utilize credits from its retirement of Unit PSGT 3-1 in its permitting of the MobilePac Units. PREPA's intention is to have DNER remove Units PSGT 2-2, 3-1, and 3-2 from the Palo Seco Title V permit, once the construction permit for the MobilePac Units is issued. PREPA remains committed to this approach. However, if Unit PSGT 3-1 cannot be used for

[1] As detailed to EPA in other correspondence, PREPA initiated installation of the water injection controls during this timeframe, but encountered unforeseen technical difficulties. In April 2020, PREPA began the project to install a system of pumps and pipes for the injection of demineralized water ("demi water") from Palo Seco demi water tanks 1 to 4 to the three Palo Seco MobilePac Units. The project was completed in June 2020. However, at the end of June 2020, PREPA took water samples and discovered that the water quality results were out of tolerance with the OEM requirements for the Palo Seco MobilePac turbines.

[2] As detailed to EPA in prior communications, PREPA operated the MobilePac Units for a few hours in a few isolated instances for synchronization testing and to avoid load shedding in September and October 2020.

crediting purposes, PREPA cannot afford to lose the option to utilize this unit as a potential generation resource, given its current need for generation resources, and may decide to return Unit PSGT 3-1 to service. In other words, PREPA only plans to request that DNER permanently retire this unit if PREPA can use the associated netting credits towards the permitting of the MobilePac Units.

Apart from January 2020, due to the earthquake emergency, the MobilePac Units and Unit PSGT 3-1 were not operating at the same time to provide power to the grid. PREPA accordingly requests that EPA exercise any equitable authorities it may have to allow for PREPA to take credit for the permanent shutdown of Unit PSGT 3-1, as the need to operate this unit in January 2020 was beyond PREPA's control.

PREPA's approach recognizes the extremely challenging situations PREPA has faced in maintaining reliable power supply in the face of repeated natural disasters, while also serving the purpose of EPA's netting regulations. In its rulemaking establishing the netting requirements, EPA acknowledged it had flexibility in defining the scope of the contemporaneous period for netting purposes, and explained that a purpose of crediting emissions reductions during a 5-year contemporaneous period was because "EPA believes that the period should be wide enough so as to minimize any incentive for keeping old or obsolete equipment in operation beyond its usefulness. As a result, EPA has set five years, plus time for construction, as the period of contemporaneity for the purposes of the Part 52 PSD regulations . . . ." *Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans*, 45 Fed. Reg. 52,676, 52,701 (Aug. 7, 1980); *see also* 40 C.F.R. § 52.21(b)(3).

The goal of the regulation would thus be served by allowing for PREPA to credit emissions reductions from the retirement of Unit PSGT 3-1, as this will ensure that Unit PSGT 3-1 is retired as a condition of the construction permit for the MobilePac Units. Palo Seco Unit PSGT 3-1 is an older unit (installed in February 1973), has no control equipment, is not subject to annual emissions limits (tons/year), has a fuel oil consumption limit that would effectively permit the unit to operate year-round, and is much less efficient than the Palo Seco MobilePac Units. Given its vintage, Unit PSGT 3-1 is also not subject to New Source Performance Standards for Stationary Combustion Turbines (40 C.F.R. Part 60, Subpart GG or Subpart KKKK). In contrast, the MobilePac Units will be subject to Subpart KKKK, and PREPA is proposing that the MobilePac Units will be subject to annual tons per year emissions limits as a part of the construction permit application submitted to DNER.

In addition, if not for the earthquakes, Unit PSGT 3-1 would no longer have been in operation when PREPA began commercial operation of the MobilePac Units to bring power to the grid, such that the decrease in emissions from Unit PSGT 3-1 would have occurred prior to the date that the increase in emissions occurred from when the MobilePac Units became operational to provide power to the grid. This is consistent with the intent of EPA's regulations defining the contemporaneous period. As explained in EPA's rulemaking, "[a]n increase from a physical change 'occurs' when the affected emissions unit becomes operational and begins to emit a particular pollutant. Any unit that requires shakedown becomes operational only after a reasonable shakedown period . . . ." *Requirements for Preparation, Adoption, and Submittal of Implementation Plans; Approval and Promulgation of Implementation Plans*, 45 Fed. Reg. 52,676, 52,698 (Aug. 7, 1980).

PREPA had also intended that it would not operate the MobilePac Units prior to the time it submitted its construction permit application to DNER. This construction permit application contained PREPA's commitment to retire Unit PSGT 3-1, as a condition of the construction permit for the MobilePac Units.

IV. Path Forward and Conclusion

Another hurricane season is rapidly approaching, and PREPA thus seeks EPA's guidance and assistance in reaching a fair resolution of the NOVOC for the MobilePac Units that reflects the significant challenges faces by PREPA and the equitable considerations outlined herein. Since the earthquakes struck in January 2020, PREPA has sought EPA's guidance on how best to proceed to ensure the Palo Seco MobilePac Units can be available for PREPA to utilize as a generation resource, particularly in emergencies. PREPA intends to work with DNER to expeditiously obtain the permit to construct for the MobilePac Units, and is working diligently to achieve operation of the water injection controls in accordance with the timeline conveyed to EPA. Likewise, PREPA intends to work with EPA to resolve uncertainty regarding the permitting path for the units, and to potentially enter into an administrative order, in the interim, that would allow for PREPA to operate the units during the hurricane season in the event of an emergency.

PREPA looks forward to continuing its discussions with EPA and to identifying a clear path forward that will allow PREPA to permit and operate the Palo Seco MobilePac Units as soon as possible.

If you have any questions, please do not hesitate to contact me. We look forward to providing any additional information the EPA may require.

Sincerely,



Adam Kushner
Partner
Hogan Lovells US LLP
555 Thirteenth Street, NW
Washington, DC 20004
Telephone: 202-637-5724
adam.kushner@hoganlovells.com

Cc:

Mr. Harish Patel, United States Environmental Protection Agency, Region 2

Mr. Alex Rivera, United States Environmental Protection Agency, Region 2, Caribbean Environmental Protection Division

Mr. Luis Sierra, Puerto Rico Department of Natural and Environmental Resources

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

In the Matter of: Puerto Rico Electric Power Authority Palo Seco Steam Power Plant Toa Baja, Puerto Rico, Respondent, In a proceeding under Section 113(a) of the Clean Air Act

ADMINISTRATIVE COMPLIANCE
ORDER ON CONSENT
CAA-02-2022-1001

The Director of the Enforcement and Compliance Assurance Division ("Director") for the United States Environmental Protection Agency ("EPA") Region 2 Office issues this Administrative Compliance Order on Consent ("Order"), pursuant to Section 113(a) of the Clean Air Act ("CAA" or "the Act"), 42 U.S.C. § 7413(a), to Respondent, Puerto Rico Electric Power Authority ("PREPA" or "Respondent"), for alleged violations of the Act at its Palo Seco Steam Power Plant. The authority to find a CAA violation and issue this Order is delegated to the Director from the Administrator through the Regional Administrator.

STATUTORY AND REGULATORY BACKGROUND

EPA's Clean Air Act Enforcement Authority

1. Section 302(e) of the CAA provides that whenever the term "person" is used in the Act, the term includes an individual, corporation, partnership, association, State, municipality, political subdivision of a State, and any agency, department, or instrumentality of the United States and any officer, agent, or employee thereof. *See* 42 U.S.C. § 7602(e).

2. The meaning of the term "State" includes the Commonwealth of Puerto Rico. *See* 42 U.S.C. § 7602(d).

3. Section 113(a)(3) of the CAA authorizes the EPA Administrator to, among other actions, issue Administrative Compliance Orders to any person whenever, on the basis of any information available to EPA, the Administrator finds that such person has violated or is in violation of any requirement or prohibition of Title I of the Act, or of any regulation promulgated pursuant to Section 112 of the Act. *See* 42 U.S.C. § 7413(a)(3).

4. Pursuant to EPA Delegation of Authority 7-6-A and EPA Region 2 Delegation of Authority 7-6-A, the authority to make findings of violation and to issue a CAA Section 113(a) Administrative Compliance Order has been delegated to the Director by the EPA Administrator through the Region 2 Regional Administrator.

5. Section 114 of the CAA authorizes the EPA Administrator to require testing, monitoring, record-keeping, and reporting of information, to enable him or her to carry out any provision of the Act (except certain provisions in Title II) and to assess compliance with, among other requirements, any regulations promulgated under Section 112 of the Act. *See* 42 U.S.C. § 7414.

6. Pursuant to EPA Delegation of Authority 7-8 and EPA Region 2 Delegation of Authority 7-8, the EPA Administrator's information-gathering authority under CAA Section 114 has been delegated to the Director, through the Region 2 Regional Administrator.

Prevention of Significant Deterioration

7. When the Act was passed in 1970, Congress exempted existing facilities from many of its requirements. However, Congress made it clear that this exemption would not last forever. As the United States Court of Appeals for the D.C. Circuit explained in *Alabama Power v. Costle*, 636 F.2d. 323, 400 (D.C. Cir. 1979), "[the] statutory scheme intends to 'grandfather' existing industries; but . . . this is not to constitute a perpetual immunity from all standards under the

P[revention of] S[ignificant] D[eterioration] program." Rather, the Act requires grandfathered facilities to install modern pollution control devices whenever they propose modifications that may increase their emissions.

8. On June 19, 1978, EPA promulgated regulations pursuant to Part C of Title I of the Act, "Prevention of Significant Deterioration of Air Quality" ("PSD"). *See* 43 Fed. Reg. 26,403 (June 19, 1978).

9. The PSD provisions of Part C of Title I of the Act establish specific requirements applicable to the construction and modification of sources located in areas designated as either attainment or unclassifiable for purposes of meeting the National Ambient Air Quality Standards ("NAAQS"). *See* 42 U.S.C. §§ 7470-7492. These statutory provisions and their implementing regulations at 40 C.F.R. § 52.21, collectively known as the PSD program, provide that if a major stationary source located in an attainment area is planning to make a major modification, then that source must obtain a PSD permit before beginning actual construction. *See* 40 C.F.R. § 52.21(a)(2). To obtain this permit, the source must, among other things, undergo a technology review and apply Best Available Control Technology ("BACT"); perform a source impact analysis; perform an air quality analysis and modeling; submit appropriate information; and conduct additional impact analyses as required.

10. 40 C.F.R. § 52.21(a)(1) provides that the PSD regulations apply to any State Implementation Plan ("SIP") which has been disapproved with respect to prevention of significant deterioration of air quality in any portion of any state that is in attainment with the applicable NAAQS.

11. Pursuant to Sections 110 and 161 of the Act, EPA (1) disapproved Puerto Rico's prevention of significant deterioration of air quality rules, and (2) incorporated by reference, and

made part of the applicable Puerto Rico SIP, the provisions at 40 C.F.R. §§ 52.21(a)(2) through (w). *See* 40 C.F.R. §§ 52.2720 through 52.2732; 62 Fed. Reg. 3211, 3213 (January 22, 1997); 68 Fed. Reg. 74,491 (Dec. 24, 2003); 42 U.S.C. §§ 7410, 7471.

Non-attainment New Source Review ("NSR")

12. Part D of Title I of the Act, 42 U.S.C. §§ 7501-7515, "Plan Requirements for Non-attainment Areas," sets forth New Source Review ("NSR") provisions for areas classified as non-attainment with the NAAQS. These provisions are referred to herein as the "Non-attainment NSR" program. The Non-attainment NSR program is intended to reduce emissions of air pollutants in areas that have not attained NAAQS so that the areas can make progress towards meeting the NAAQS. Prior to the effective date of the 1990 Clean Air Act Amendments, P. Law 101-549, effective November 15, 1990, the Non-attainment NSR provisions were set forth at 42 U.S.C. §§ 7501-7508.

13. Under Section 172(c)(5) of the Non-attainment NSR provisions of the Act, 42 U.S.C. § 7502(c)(5), each state is required to adopt Non-attainment NSR SIP rules that include provisions to require permits that conform to the requirements of Section 173 of the Act, 42 U.S.C. § 7503, for the construction and operation of modified major stationary sources within non-attainment areas. Section 173 of the Act, in turn, sets forth a series of minimum requirements for the issuance of permits for major modifications to major stationary sources within non-attainment areas. 42 U.S.C. § 7503.

14. Section 173(a) of the Act, 42 U.S.C. § 7503(a), provides that construction and operating permits may be issued, if, *inter alia*, (a) sufficient offsetting emission reductions have been obtained to reduce existing emissions to the point where reasonable further progress towards meeting the national ambient air quality standards is maintained; and (b) the pollution controls to be employed will reduce emissions to the lowest achievable emission rate.

15. Under 40 C.F.R. Part 51 Appendix S, "Emission Offset Interpretative Ruling," no person may undertake a major modification of an existing major stationary source in a non-attainment area without first obtaining a Non-attainment NSR permit.

16. Under Appendix S, a "major stationary source" of particulate matter 10 (PM_{10}), nitrogen oxides (NOx), volatile organic compounds (VOCs), carbon monoxide (CO), carbon dioxide-equivalent (CO_2e), and SO_2 is one that emits or has the potential to emit 100 tons per year or more, and a "significant" net emissions increase of these pollutants is one that results in increased emissions of 40 tons per year or more of these pollutants.

17. 40 C.F.R. § 81.355 establishes the attainment status designations for Puerto Rico, including the 2010 Sulfur Dioxide NAAQS non-attainment designation made in 2018 for the San Juan, Puerto Rico area, which includes the Toa Baja Municipality (specifically, the Palo Seco and Sabana Seca Wards). This area was designated non-attainment for the 2010 one-hour primary sulfur dioxide (SO_2) NAAQS on April 9, 2018. *See* 83 Fed. Reg. 1098, 1171 (Jan. 9, 2018).

New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants

18. Section 111 of the Act authorizes EPA to develop technology-based standards that apply to specific categories of stationary sources. These standards are referred to as the New Source Performance Standards ("NSPS"), which are set forth at 40 C.F.R. part 60. The Act provides that after the effective date of any emission limit or other standard promulgated pursuant to Section 111, it shall be unlawful for any owner or operator of a new source to operate that source in violation of the emission limit or standard. *See* 42 U.S.C. §§ 7411(e); 7411(h)(5). A "new source" is one that is constructed or modified after the publication of regulations (or, if earlier, proposed regulations). *See id.* § 7411(a)(2).

19. 40 C.F.R. part 60 subpart KKKK regulates stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005 with a heat input at peak load of equal to or greater than 10 million British Thermal Units ("MMBtu") per hour, and imposes emission limits on NOx and SO_2.

20. Subpart KKKK, at 40 C.F.R. § 60.4333(a), requires a regulated entity to operate and maintain its stationary combustion turbines, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including startup, shutdown, and malfunction.

21. 40 C.F.R. § 60.4335(a) requires regulated entities that choose to use water or steam injection systems to control NOx emissions to install, calibrate, and maintain a continuous monitoring system to monitor and record fuel consumption and the ratio of water or steam to fuel being fired in the turbine when burning a fuel that requires water or steam injection for compliance. Alternatively, 40 C.F.R.§ 60.4335(b) provides several alternative options for an entity to use continuous emission monitoring.

22. 40 C.F.R. § 60.4340 explains how an entity that is not using water or steam injection may demonstrate continuous compliance for NOx. It generally requires an entity to perform annual performance tests to demonstrate continuous compliance, or alternatively, install, calibrate, maintain, and operate a continuous monitoring system.

23. Section 112(d) of the Act requires EPA to promulgate regulations establishing national emission standards for hazardous air pollutants ("NESHAPs") for certain categories of sources of hazardous air pollutants. NESHAPs promulgated under the Act, as amended in 1990, are set forth in 40 C.F.R. part 63. Part 63 NESHAPs are sometimes known as maximum achievable control technology ("MACT") standards, because Section 112(d) of the CAA, as amended in 1990, directs EPA to promulgate

emissions standards based on the MACT. *See* 42 U.S.C. § 7412(d)(2).

24. 40 C.F.R. part 63 subpart YYYY establishes NESHAPs and operating limitations for stationary combustion turbines located at major sources of emissions of hazardous air pollutants. Sources must demonstrate initial and continuous compliance with applicable emission and operating limitations established by subpart YYYY.

25. 40 C.F.R. § 63.6110 explains when a regulated entity must conduct initial performance tests or other initial compliance demonstrations, and 40 C.F.R. § 63.7 provides performance testing requirements specified in 40 C.F.R. part 63 subpart YYYY, Table 7 ("Applicability of General Provisions to Subpart YYYY").

26. 40 C.F.R. § 63.6135 explains how a regulated entity must conduct monitoring and collect data to demonstrate continuous compliance.

27. 40 C.F.R. § 63.6140 explains the ways in which a regulated entity may demonstrate continuous compliance with the emission and operating limitations. Table 2 of subpart YYYY provides the relevant operating limitations. For a stationary combustion turbine not equipped with an oxidation catalyst, 40 C.F.R. § 63.6120(e) requires a regulated entity to petition the EPA Administrator for operating limitations that the regulated entity will monitor to demonstrate compliance with the formaldehyde emission limitation listed in Table 1 of subpart YYYY, or alternatively, to petition the EPA Administrator for approval of no additional operating limitations. Table 5 of subpart YYYY explains that in order to operate a stationary combustion turbine without the use of an oxidation catalyst, a regulated entity must demonstrate continuous compliance with the formaldehyde emission limitation by continuously monitoring the specific operating limitations that have been approved in the regulated entity's petition to the EPA Administrator.

Puerto Rico Regulations for the Control of Atmospheric Pollution

28. Pursuant to Puerto Rico Regulations for the Control of Atmospheric Pollution ("RCAP") Rule 201 (Location Approval), no person shall cause, or permit the location or construction of a new major stationary source, or major modification or significant source, without first obtaining a location approval from the Puerto Rico Department of Natural and Environmental Resources ("DNER").

29. RCAP Rule 202 (Air Quality Impact Analysis) describes the circumstances and requirements for an air quality impact analysis, which include a demonstration that allowable emission increases from a proposed new source or modification, in conjunction with all other applicable emission increases or reductions, will not significantly cause or contribute to air pollution in violation of any NAAQS, and that a net ambient air quality benefit is demonstrated.

FINDINGS OF FACT

Based on the foregoing, EPA alleges as follows:

30. Respondent, a public corporation and government instrumentality organized pursuant to the laws of the Commonwealth of Puerto Rico, owns and operates a power generation plant (the "Plant") located at State Road PR-165, Km. 30.8, Toa Baja, Puerto Rico.

31. The Plant is an existing major source under the PSD program for NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOCs, greenhouse gases ("GHGs"), and H_2SO_4.

32. The Plant is located within the San Juan, Puerto Rico SO_2 non-attainment area that was designated on April 9, 2018.

33. The Plant is an existing major source for SO_2 under the Non-attainment NSR program currently implemented by the EPA under the Emission Offset Interpretative Ruling, 40 C.F.R. part 51, Appendix S.

34. On June 18, 2019, PREPA sent a letter to EPA via email (the "June 18 Letter"), proposing to install three new gas turbines of approximately 23 MW capacity each to provide emergency backup generation and maintain reliable service to the island in preparation for the 2019 hurricane season. PREPA requested EPA's assistance to determine an "appropriate vehicle" to install the units to ensure their availability as back-up/emergency power during the 2019 hurricane season. PREPA's letter included the following additional details about the three new gas turbines:

a. The three gas turbines would be MOBILEPAC®-branded gas turbine packages with FT8®-branded engines, with a capacity of approximately 23 MW each;

b. The MOBILEPAC® gas turbine package ("MobilePacs") would offer 22.5 MW (Fuel Oil) or 23.8 MW (Natural Gas) of movable power;

c. The MobilePacs would be dual-fuel ready, with the capability to use diesel (low-sulfur No. 2 fuel oil) or in the future natural gas as fuel;

c. That PREPA "hopes" to begin installation by June 26, 2019, with the commissioning of the first two units by August 10, 2019, the commissioning of the third unit by August 26, 2019, and normal operations of the MobilePacs expected by early September 2019;

d. The MobilePacs would have emissions controls in the form of water injection to control NOx;

e. The preliminary emission factors for the gas turbine units combusting natural gas and fuel oil with .05% sulfur by weight for the following pollutants: NOx, PM, PM_{10}, $PM_{2.5}$, SO_2, VOC, and CO; and

f. Emissions information, including performance specifications, performance curves, and emission rates for the gas turbine units.

g. PREPA planned to permit the MobilePacs for emergency use and peaking operations, with the objective of having these units replace three existing 21 MW GE Frame 5000 gas turbines in the current Palo Seco power block (Units PS-GT 2-2, 3-1, and 3-2).

35. On June 20, 2019, EPA Region 2's then-Regional Administrator, Peter D. Lopez, met with PREPA's representatives concerning the proposal contained in the June 18 Letter. As set forth in a letter from EPA to PREPA, dated July 23, 2019, in a subsequent telephone call with EPA staff on June 24, 2019, PREPA stated that it would supply EPA with the hourly emission rates of the MobilePacs, as well as the load levels, to determine whether it would be possible for PREPA to meet PSD non-applicability conditions for the three proposed units.

36. On October 11, 2019, PREPA sought a 90-day emergency variance from DNER under RCAP Rule 302 to install the MobilePacs without a DNER construction permit, in order to bolster PREPA's power grid generating capacity.

37. Under RCAP Rule 302, DNER "may grant emergency variances only under very special circumstances, e.g., to avoid an imminent health threat."

38. On October 24, 2019, DNER granted PREPA the 90-day emergency variance ("DNER Variance"). The variance allowed PREPA to install the MobilePacs and operate them without a construction permit for a period of 90 days, which expired on January 22, 2020. DNER was required to inform EPA of its decision to grant the emergency variance. EPA was not aware of either PREPA's application for, or DNER's order granting, the emergency variance until November 26, 2019, when PREPA emailed it to EPA upon EPA's request.

39. As authorized by the DNER Variance, PREPA began installation of the MobilePacs on October 25, 2019.

40. In December 2019 and January 2020, hundreds of earthquakes struck Puerto Rico. In particular, on January 7, 2020, a large earthquake caused an island-wide blackout and heavily damaged PREPA's Costa Sur Power Plant (820 MW); Costa Sur Unit 5 was inoperable for seven months, while Costa Sur Unit 6 was inoperable for even longer, not returning to service until January 2021.

41. The earthquakes resulted in the loss of approximately 1,000 MW of PREPA generating capacity, and PREPA faced system-wide instability and critical reserve deficits (hundreds of MW even with full utilization of available peaker units), of which it informed both EPA and DNER.

42. On January 8 and 9, 2020, the MobilePacs were brought online as a result of the power outages and shortages caused by the earthquakes.

43. Prior to the January 7, 2020 earthquakes, PREPA had operated the MobilePacs only for commissioning and testing purposes, as allowed by the DNER Variance, so that the MobilePacs would be available in the event of a hurricane; PREPA had not operated these units commercially.

44. On January 14, 2020, before the 90-day emergency variance expired, PREPA submitted a construction permit application to DNER for the MobilePacs, which remains pending before DNER.

45. The construction permit application includes the applicability analysis PREPA conducted to determine if its installation and operation of the MobilePacs as proposed in the permit application would trigger NSR/PSD permitting requirements. PREPA's analysis indicated that it would not exceed the relevant emissions thresholds and thus would not constitute a major modification for NSR/PSD purposes. Consistent with this analysis, PREPA's construction permit application sought for DNER to impose annual emission limits on the MobilePacs to keep them below the NSR/PSD significance thresholds for each pollutant.

46. The construction permit application asserts, and EPA finds, that the MobilePacs are subject to 40 C.F.R. part 60 subpart KKKK, 40 C.F.R. part 60 subpart TTTT, and 40 C.F.R. part 63 subpart YYYY.

47. On January 14, 2020, PREPA submitted a written no-action assurance ("NAA") request to EPA ("NAA Request") to waive several Clean Air Act requirements related to the Plant's MobilePacs, including PSD, NSPS, and NESHAPs requirements, due to the emergency situation created by the earthquakes.

48. Although EPA granted PREPA an NAA on January 31, 2020, it did not include relief related to the installation or operation of the MobilePacs.

49. PREPA installed the water-injection system to control pollution from the MobilePacs in June 2020, but has not been able to operate the system because its water quality was out of tolerance with original equipment manufacturer ("OEM") requirements for the MobilePacs. As of September 2, 2021, PREPA completed the construction of a new demineralized water tank and piping to rectify the water quality issue.

50. Because natural gas is not currently available at the Plant, PREPA has used only No. 2 diesel fuel oil to operate the MobilePacs.

51. The installation of the MobilePacs constitutes a "physical change" in the method of operation of the Plant, as that phrase is used pursuant to 40 C.F.R. §§ 52.21(b)(2)(i) and (iii).

52. When the MobilePacs were installed, the Plant was an existing major stationary source under 40 C.F.R. § 52.21(b)(1)(i) and 40 C.F.R. part 51, Appendix S, § II(A)(4)(i)(a) because it is a fossil-fuel fired steam electric plant of more than 250 MMBtu per hour heat input, with a potential to emit PM, NOx, VOC, CO, GHGs, and SO_2 in excess of 100 tons per year ("tpy").

53. The Plant is also a "major source" of hazardous air pollutant ("HAP") emissions because it emits or has the potential to emit at least 10 tpy in the aggregate of any HAP, or at least 25 tpy of any combination of HAPs. *See* 40 C.F.R. § 63.2.

54. The physical changes PREPA made through the installation and operation of the MobilePacs constitute a "major modification" pursuant to 40 C.F.R. § 52.21(b)(2)(i) and 40 C.F.R. part 51, Appendix S, § II(A)(5)(i)(a).

55. For informational purposes, the installation and operation of the MobilePacs resulted in a significant net emissions increase from the Plant, based on their actual emissions, instead of their potential to emit, as defined in 40 C.F.R. § 52.21, of NOx, PM, PM_{10}, $PM_{2.5}$, and CO_2e.

56. The installation and operation of the MobilePacs resulted in a significant net emissions increase from the Plant, assuming full calendar year operations (*i.e.*, 8,760 hours) of the MobilePacs, based on their potential to emit NOx, PM, PM_{10}, $PM_{2.5}$, CO_2e, CO, and H_2SO_4, as defined in 40 C.F.R. § 52.21, and SO_2 pursuant to 40 C.F.R. part 51, Appendix S, §§ II(A)(5)(i)(a) and (10)(i).

57. PREPA operated the MobilePacs for commissioning purposes during November and December 2019 as follows: MobilePac unit no. 1 - 28.73 hours in November and 6.46 hours in December; MobilePac unit no. 2 - 32.31 hours in November and 9.38 hours in December; MobilePac unit no. 3 - 27.35 hours in November and 8.17 hours in December. PREPA again operated the MobilePacs from January 8, 2020 until August 13, 2020, in response to the earthquakes and until Costa Sur Unit 5 returned to service. PREPA also operated the MobilePacs periodically in September 2020 and October 2020, to avoid load shedding due to generation deficiencies and to briefly conduct synchronization testing without providing power to the grid. The units were subsequently disconnected.

58. PREPA operated the three MobilePacs for a total of 15,011 hours, burned a total of 22,432,034 gallons of No. 2 diesel fuel oil, and burned a total of 3,095,618.7 MMBTU in 2019 and 2020.

59. Respondent asserts that water injection on the MobilePacs is a BACT-like control for NOx.

60. Respondent asserts that combustion controls on the MobilePacs are a BACT-like control for PM, PM_{10}, and $PM_{2.5}$.

61. Respondent asserts that burning ultra-low sulfur diesel fuel (15 ppm of sulfur or less) in the MobilePacs is a LAER-like control for SO_2 and a BACT-like control for H_2SO_4.

62. PREPA constructed a tank and piping and fittings system in order to use demineralized water of appropriate quality for proper functioning of the water-injection system. Its water-injection projects were completed on September 2, 2021, and commissioning of the MobilePacs will occur after the Effective Date of this Order, at which point, PREPA will be able to operate the water-injection system for the MobilePacs.

CONCLUSIONS OF LAW

Based on the Findings of Fact set forth above, the EPA alleges as follows:

63. PREPA is a "person" as defined by Section 302(e) of the CAA, 42 U.S.C. § 7602(e), and the Puerto Rico RCAP Rule 102.

64. PREPA is the "owner" and "operator" of the Plant within the meaning of Puerto Rico RCAP Rule 102.

65. PREPA emitted NOx, PM, PM_{10}, $PM_{2.5}$, and CO_2e in exceedance of PSD applicability thresholds in violation of 40 C.F.R. 52.21(b)(23)(i).

66. PREPA had the potential to emit SO_2 in exceedance of non-attainment area NSR applicability thresholds in violation of 40 C.F.R. part 51, Appendix S, § II(A)(10)(i).

67. PREPA is in violation of PSD requirements, Section 165 of the Act, 42 U.S.C. § 7475, and 40 C.F.R. § 52.21, for installing and operating the MobilePacs at the Palo Seco Facility.

68. PREPA violated non-attainment area NSR requirements, Sections 171 through 193 of the Act, 42 U.S.C. §§ 7501 through 7515, and 40 C.F.R. part 51, Appendix S, Emission Offset Interpretive Ruling, and RCAP Rules 201 and 202, which were approved into the SIP at the time the violations began to occur, by, among other things, failing to: (1) apply for and obtain a non-attainment area NSR permit to construct and operate the MobilePacs in a non-attainment area for SO_2, (2) implement the lowest achievable emissions rate ("LAER"), (3) obtain federally enforceable emission offsets for SO_2, and (4) submit an analysis demonstrating that the benefits of the MobilePacs significantly outweigh their environmental and social costs.

69. PREPA violated the NSPS, 40 C.F.R. part 60 subpart KKKK, because of its failure to: (1) employ good air pollution control practices, including by failing to install, calibrate, maintain, and operate the water injection system, or employ a continuous monitoring system, in contravention of 40 C.F.R. §§ 60.4333(a) and 60.4335; and (2) demonstrate continuous compliance for NOx emissions in contravention of 40 C.F.R. § 60.4340.

70. PREPA violated the NESHAPs, 40 C.F.R. part 63 subpart YYYY, by failing to conduct a performance test or demonstrate initial compliance in contravention of 40 C.F.R. §§ 63.6110, 63.6120(e) and 63.7.

71. These violations occurred through October 12, 2020, when PREPA discontinued operation of the MobilePacs.

ORDER

Consistent with the Findings of Fact and Conclusions of Law above, and pursuant to Sections 113(a)(3) and 114 of the CAA, EPA HAS DETERMINED AND ORDERS that:

I.

The provisions of this Order shall apply to Respondent and to its officers, agents, employees, successors, and to all persons, firms, and corporations acting pursuant to, through or for the Respondent.

II.

72. Respondent shall complete the water-injection projects described in paragraph 62 above by September 2, 2021, and shall commission the operation of the MobilePacs utilizing the water injection pursuant to this Order.

73. Following completion of the commissioning of the water-injection system, PREPA shall have a fully operational water-injection system in place such that the MobilePacs meet a NOx emission standard of: (i) at least 50 ppmvd NOx or better at 15% O_2 while burning fuel oil for each of the three MobilePacs, or (ii) 25 ppm NOx at 15% O_2 or 150 ng/J of useful output (1.2 lb/MWh) while burning natural gas. PREPA shall install, calibrate, maintain, and operate a continuous monitoring system to monitor and record fuel consumption and the ratio of water to fuel being fired in the turbine to demonstrate achievement of the NOx emission standard of 50 ppmvd or better. Upon completion of the commissioning of the water-injection system, PREPA can operate the MobilePacs, provided that it meets the conditions contained in this Order and all applicable and relevant environmental laws and regulations.

74. After the water-injection system is operational, Respondent shall conduct appropriate performance testing for the MobilePacs and submit the results to the EPA according to the schedule specified below:

a. Within 30 calendar days of the Effective Date of this Order, Respondent must submit a petition pursuant to the requirements contained in 40 C.F.R. §§ 63.6120(f) or (g), as appropriate.

b. Within 60 calendar days of the Effective Date of this Order, Respondent must submit a site-specific test plan to conduct a comprehensive performance test for NOx, SO_2, and formaldehyde, and a continuous monitoring system performance evaluation test plan for the continuous monitoring system for fuel consumption and water to fuel ratio, in accordance with 40 C.F.R. §§ 60.8 and 60.13. The performance testing must also comply with 40 C.F.R. § 63.6110, 40 C.F.R. § 60.4400, 40 C.F.R. § 60.4415, including any petitions obtained from EPA pursuant to 40 C.F.R. §§ 63.6120(f) or (g), and NSPS and NESHAP performance testing general requirements included in 40 C.F.R. §§ 60.8 and 63.7.

c. Within 60 calendar days of the Effective Date of this Order, Respondent must submit a site-specific test plan to conduct a comprehensive performance test for CO, PM, PM_{10}, $PM_{2.5}$, H_2SO_4, and VOC.

d. At least ten (10) calendar days before the site-specific performance test is scheduled to take place, Respondent must submit a notification to indicate when the test is scheduled to begin.

e. Within 90 calendar days of EPA's approval of the site-specific test plan, Respondent shall commence the performance testing. If Respondent does not receive notification as to whether the EPA grants or denies approval of the site-specific test plan within 270 calendar days of Respondent's submission of the test plan, Respondent is still required to initiate performance testing.

f. Within 60 calendar days of the completion of the performance test, Respondent shall submit the test report to the EPA. After conducting the performance test, Respondent shall meet

all other applicable requirements of 40 C.F.R. Part 60 Subpart KKKK and 40 C.F.R. Part 63 Subpart YYYY, according to the schedules contained therein.

g. The site-specific test plan shall include testing scenarios using fuel oil. PREPA will submit a new or revised site-specific test plan for liquified natural gas following installation and commissioning of natural gas. Performance testing for the units while combusting liquified natural gas will occur only after PREPA completes the installation and commissioning of natural gas for these units.

III.

Respondent shall use only ultra-low sulfur diesel fuel oil (containing 15 ppm of sulfur or less or 0.0015% sulfur by weight or less) or liquefied natural gas to power the MobilePacs, after Respondent has exhausted the current available supply of 33,712 barrels of diesel fuel as of October 30, 2021, which contain .013% (Tank D-1), .018% (Tank D-2), and .0082% (Tank D-3) sulfur by weight, currently at the Palo Seco facility. If, in the future, Respondent obtains liquefied natural gas for the MobilePacs, it shall notify the EPA within 15 calendar days of using it, and EPA will require stack testing using liquified natural gas within 120 days. Respondent shall submit the test report for liquified natural gas within 60 days of the test date. Respondent shall provide quarterly updates for the term of this Order regarding the progress of using liquified natural gas at the Facility.

IV.

Respondent shall comply with the following annual mass-based emission limits on a 365-day rolling basis for the three MobilePacs combined:

Pollutant	Annual Emission Limit (tpy)
NOx	191.3
PM	15
PM_{10}	15
$PM_{2.5}$	15
CO	99
VOC	7.85
SO_2	50
H_2SO_4	8
GHGs	146,500

Respondent shall secure emission reductions in the amount of 29 tons of SO_2 in the San Juan non-attainment area, as defined in 40 C.F.R. § 81.355. Respondent shall submit its proposed plan to secure these emission reductions to the EPA by one month from the Effective Date.

V.

Respondent shall install, certify, maintain, and operate a continuous monitoring system for the MobilePacs to monitor and record the fuel consumption and the ratio of water or steam to fuel being fired in the turbine when burning a fuel that requires water or steam injection for compliance with NOx emissions standards, in accordance with 40 C.F.R. § 60.4335(a) and § 60.4345.

VI.

Respondent shall modify its construction permit application to operate the MobilePacs to the DNER in order to include all of the aforementioned requirements in Parts I through V of this Order.

Respondent shall apply to modify its construction permit application within 90 days of the Effective Date. In addition, the permit application shall include the following total combined maximum 12-month rolling average fuel limit for all of the MobilePacs: (i) when burning diesel fuel oil only during the 12-month rolling period, 12,281,995 gallons of ultra-low sulfur diesel fuel oil (defined as 15 ppm or 0.0015% sulfur by weight or less), (ii) when burning natural gas only during the 12-month rolling period, 2,530,868,932 scf of natural gas, or (iii) when burning a combination of diesel fuel oil and natural gas during the 365-day rolling period, the above emission limits in Part IV are applicable and emissions will be determined in accordance with the following calculations:

PREPA shall assume a 138,000 Btu/gal HHV, a 7.05 lbs/gal density for diesel fuel, and a heat content of 1,020 Btu/SCF for natural gas. Emissions from the black start generators (BSGs) are included in the annual $PM_{2.5}$ and CO emission limits since these two are the PSD-limiting pollutants while burning oil and natural gas, respectively.

a) NOx 365 = MPs tons/day + Total NOx (previous 364 days) < 191.3 tons of NOx (365 rolling days)

   Where: MPs tons/day = [(Total gals diesel/day * .138 MMBtu/gal * $EF_{NOxDiesel}$lb/MMBtu) + (Total SCF Natural Gas/day *. 00102MMBtu/SCF * EF_{NOxGas}lb/MMBtu)] ÷ 2000 lbs/ton

b) CO 365 = MP+BSGs tons/day + Total CO (previous 364 days) < 99 tons of CO (365 rolling days)

   Where: MP+BSGs tons/day = [[(Total gals diesel/day * .138 MMBtu/gal * $EF_{CODiesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * EF_{COGas}lb/MMBtu)] ÷ 2000 lbs/ton + [(Total BSGs hours of operation/day* 3.056 lb/hr) ÷ 2000 lbs/ton]].

c) VOC 365 = MPs tons/day + Total VOC (previous 364 days) < 7.85 tons of VOC (365 rolling days)

   Where: MPs tons/day = [(Total gals diesel/day * .138 MMBtu/gal * $EF_{VOCDiesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * EF_{VOCGas}lb/MMBtu)] ÷ 2000 lbs/ton

d) PM 365 = MPs tons/day + Total PM (previous 364 days) < 15 tons of PM (365 rolling days)

   Where: MPs tons/day = [(Total gals diesel/day * .138 MMBtu/gal * $EF_{PMDiesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * EF_{PMGas}lb/MMBtu)] ÷ 2000 lbs/ton

e) PM_{10} 365 = MPs tons/day + Total PM_{10} (previous 364 days) < 15 tons of PM_{10} (365 rolling days)

Where: MPs tons/day = [(Total gals diesel/day * .138 MMBtu/gal * $EF_{PM10Diesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * $EF_{PM10Gas}$lb/MMBtu)] ÷ 2000 lbs/ton

f) $PM_{2.5}$ 365 = MP+BSGs tons/day + Total $PM_{2.5}$ (previous 364 days) < 15 tons of $PM_{2.5}$ (365 rolling days)

Where: MP+BSGs tons/day = [[(Total gals diesel/day * .138 MMBtu/gal * $EF_{PM2.5Diesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * $EF_{PM2.5Gas}$lb/MMBtu)] ÷ 2000 lbs/ton + [(Total BSGs hours of operation/day* .145 lb/hr) ÷ 2000 lbs/ton]].

g) SO_2 365 = MPs tons/day + Total SO_2 (previous 364 days) < 50 tons of SO_2 (365 rolling days)

Where: MPs tons/day = [(Total gals diesel/day * .138 MMBtu/gal * $EF_{SO2Diesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * EF_{SO2Gas}lb/MMBtu)] ÷ 2000 lbs/ton

Sulfur content shall be no greater than .0015%/wt on diesel fuel (as certified by fuel supplier)
Sulfur content shall be no greater than 5 gr/100 SCF on natural gas (as certified by fuel supplier)

h) H_2SO_4 365 = MPs tons/day + Total H_2SO_4 (previous 364 days) < 8 tons of H_2SO_4 (365 rolling days)

Where: MPs tons/day = [(Total gals diesel/day * .138 MMBtu/gal * $EF_{H2SO4Diesel}$lb/MMBtu) + (Total SCF Natural Gas/day * .00102MMBtu/SCF * $EF_{H2SO4Gas}$lb/MMBtu)] ÷ 2000 lbs/ton

PREPA shall assume a 10% conversion of SO_2 emissions to H_2SO_4 for both diesel and natural gas

i) CO_2e Yr = MPs tons/Yr < 146,500 tons of CO_2e (Yr)

Where: MPs tons/Yr = [(Total gals diesel/Yr * .138 MMBtu/gal * $EF_{CO2Diesel}$lb/MMBtu)+ (Total dSCF Natural Gas/Yr * .00102MMBtu/dSCF * EF_{CO2Gas}lb/MMBtu)] ÷ 2000 lbs/ton

Respondent shall specify in its revised construction permit application that the MobilePacs may be powered only with ultra-low sulfur diesel fuel or liquified natural gas, unless and until Respondent applies for and obtains a permit modification.

VII.

Within 90 days of obtaining its construction permit modification for the MobilePacs pursuant to Part VI of this Order, Respondent shall apply to modify its Title V permit to incorporate all of the foregoing provisions and restrictions in Parts I through VI of this Order, to ensure that all of the permit conditions required by this Order in connection with the MobilePacs are incorporated into a federally enforceable permit for the Plant.

VIII.

Unless otherwise stated herein, the deadline for Respondent to complete all of the foregoing requirements in Parts I through VII of this Order is one year from the Effective Date. On or before that date, Respondent shall provide a certification from a person with knowledge under penalty of perjury indicating that it is in full compliance with this Order and the Act as it relates to MobilePacs and the requirements discussed herein.

IX.

Notwithstanding this Administrative Compliance Order establishing a compliance schedule set forth in Parts I through VIII above, Respondent must meet all other applicable Federal and/or State requirements for the MobilePacs.

X.

All documents, reports, and results required by this Order may be submitted via email to:

Robert Buettner, Chief
Air Compliance Branch

Enforcement and Compliance Assurance Division
U.S. Environmental Protection Agency - Region 2
290 Broadway - 21st Floor
New York, NY 10007-1866
Buettner.Robert@epa.gov

Nancy Rodríguez, Chief
Multimedia Permits and Compliance Branch
Caribbean Environmental Protection Division
U.S. Environmental Protection Agency - Region 2
City View Plaza II – Suite 7000
#48 Road. 165 Km. 1.2
Guaynabo, Puerto Rico 00968-8073
rodriguez.nancy@epa.gov
Attn: Alex Rivera, Enforcement Officer
rivera.alex@epa.gov

Notices to PREPA may be submitted via email to:

director_ejecutivo@prepa.com

OTHER TERMS AND CONDITIONS

75. Respondent admits the jurisdictional allegations contained in this Order.

76. Respondent neither admits nor denies the findings contained in the sections of this order labeled "Findings of Fact" and "Conclusions of Law."

GENERAL PROVISIONS

77. Any failure to comply with the requirements of this Order shall constitute a violation of this Order and may result in a civil administrative or judicial action for an injunction or civil penalties of up to $102,638 per day per violation, or both, as provided in Sections 113(b)(2) and 113(d)(1) of the Act, 42 U.S.C. §§ 7413(b)(2) and 7413(d)(1), and 40 C.F.R. § 19.4, as well as criminal sanctions as provided in Section 113(c) of the Act, 42 U.S.C. § 7413(c). The EPA may use any information submitted under this Order in an administrative, civil judicial, or criminal action.

78. Nothing in this Order shall relieve Respondent of the duty to comply with all applicable provisions of the Act or other federal, state or local laws or statutes, nor shall it restrict the EPA's authority to seek compliance with any applicable laws or regulations, nor shall it be construed to be a ruling on, or determination of, any issue related to any federal, state, or local permit.

79. For purposes of the identification requirement in Section 162(f)(2)(A)(ii) of the Internal Revenue Code, and 26 C.F.R. § 1.162-21(b)(2), performance of the requirements of Sections I through X of this Order is restitution, remediation, or required to come into compliance with the law.

80. Nothing herein shall be construed to limit the power of the EPA to undertake any action against Respondent or any person in response to conditions that may present an imminent and substantial endangerment to the public health, welfare, or the environment.

81. The provisions of this Order shall apply to and be binding upon Respondent and its officers, directors, employees, agents, trustees, authorized representatives, successors, and assigns. From the Effective Date of this Order until the Termination Date as set forth below, Respondent must give written notice and a copy of this Order to any successors in interest prior to any transfer of ownership or control of any portion of or interest in the Plant or the MobilePacs. Simultaneously with such notice, Respondent shall provide written notice of such transfer, assignment, or delegation to the EPA. In the event of any such transfer, assignment, or delegation, Respondent shall not be released from the obligations or liabilities of this Order unless the EPA has provided written approval of the release of said obligations or liabilities. PREPA shall condition such transfer, assignment, or delegation upon agreement by transferee, assignee, or delegatee to be subject to the obligations under this Order.

82. Unless this Order states otherwise, whenever, under the terms of this Order, written notice or other document is required to be given, it shall be directed to the individuals specified at the address in

Section X of the Order above unless those individuals or their successors give notice of a change of address to the other party in writing. All notices and submissions shall be considered effective upon receipt.

83. To the extent this Order requires Respondent to submit any information to the EPA, Respondent may assert a business confidentiality claim covering part or all of that information, but only to the extent and only in the manner described in 40 C.F.R. Part 2, Subpart B. The EPA will disclose information submitted under a confidentiality claim only as provided in 40 C.F.R. Part 2, Subpart B. If Respondent does not assert a confidentiality claim, the EPA may make the submitted information available to the public without further notice to Respondent.

84. Each undersigned representative of the Parties certifies that he or she is authorized to enter into the terms and conditions of this Order to execute and bind legally the Parties to this document.

EFFECTIVE DATE AND OPPORTUNITY FOR A CONFERENCE

85. Pursuant to Section 113(a)(4) of the Act, an Order does not take effect until the person to whom it has been issued has had an opportunity to confer with the EPA concerning the alleged violations. By signing this Order, Respondent acknowledges and agrees that it has been provided an opportunity to confer with the EPA prior to issuance of this Order and expressly waives any right it may have to any further conference about the alleged violations. Respondent also agrees that this Order shall take effect without having any such conference. Accordingly, this Order will take effect immediately upon signature by the latter of Respondent or the EPA ("Effective Date").

86. Any inquiries concerning this Order should be made in writing to:

Amanda Prentice, Assistant Regional Counsel
Office of Regional Counsel
U.S. Environmental Protection Agency - Region 2
290 Broadway – 16th Floor
New York, New York 10007-1866
(212) 637-3209
prentice.amanda@epa.gov

87. Notwithstanding the Effective Date of this Order, Respondent must comply with all applicable requirements of the Act.

JUDICIAL REVIEW

88. Respondent waives any and all remedies, claims for relief, and otherwise available rights to judicial or administrative review that Respondent may have with respect to any issue of fact or law set forth in this Order, including any right of judicial review under Section 307(b)(1) of the Clean Air Act, 42 U.S.C. § 7607(b)(1).

TERMINATION

89. This Order shall terminate by the earlier of the following date (the "Termination Date"), at which point, Respondent shall operate in compliance with the Act:

a. one year from the Effective Date;

b. The date of any determination by the EPA that Respondent has achieved compliance with all terms of this Order; or

c. Immediately upon receipt by Respondent of notice from the EPA finding that an imminent and substantial endangerment to public health, welfare, or the environment has occurred.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

In the Matter of: Puerto Rico Electric Power Authority Palo Seco Steam Power Plant Toa Baja, Puerto Rico, Respondent, In a proceeding under Section 113(a) of the Clean Air Act

ADMINISTRATIVE COMPLIANCE ORDER
ON CONSENT
CAA-02-2022-1001

For United States Environmental Protection Agency, Region 2:

_____
Date

_____
Dore LaPosta, Director
Enforcement and Compliance Assurance Division

For Respondent:



Josue Colon Ortiz

November 9, 2021
Date

Printed Name: Josue A. Colon Ortiz

Title: Executive Director

Address: Puerto Rico Electric Power Authority
P.O. Box 364267
San Juan, PR 00936-4267

[redacted]

From: Kushner, Adam M.
Sent: Tuesday, November 9, 2021 11:52 AM
To: 'Prentice, Amanda' <Prentice.Amanda@epa.gov>
Cc: Fink, Hayley <hayley.fink@hoganlovells.com>
Subject: Administrative Compliance Order on Consent CAA 02-2022-1001 - EPA

Amanda:

Enclosed find the Palo Seco MobilePacs ACO (CAA-02-2022-1001) signed by PREPA's executive director, Eng. Josue Colón.

We very much appreciate EPA willingness to work with the Puerto Rico Electric Power Authority as it seeks to get on line additional power.

Sincerely,

Adam

Diaz, Fernando

From: Tompkins, Hilary
Sent: Friday, April 1, 2022 9:03 AM
To: Garcia Martino, Andres; Rodriguez Lopez, Jorge
Cc: McKee, John
Subject: RE: PREPA submission

Dear Gentlemen:

I am writing to provide you an update on PREPA's submission regarding the funding issue on the mega gens and water tank. Due to other, intervening matters requiring our attention this week, PREPA will be providing its submission to you on this topic next week.

Thank you,

Hilary

Hilary Tompkins
Partner

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004

Tel: +1 202 664-7831
Direct: +1 202 637 5617
Fax: +1 202 637 5910
Email: hilary.tompkins@hoganlovells.com
www.hoganlovells.com

Please consider the environment before printing this e-mail.

From: Tompkins, Hilary
Sent: Friday, March 25, 2022 2:13 PM
To: 'Javier Cotto, Monica' <monica.javiercotto@fema.dhs.gov>; McKee, John <john.mckee@fema.dhs.gov>
Cc: Garcia Martino, Andres <andres.garciamartino@fema.dhs.gov>; Rivera Ruiz, Daysha <daysha.rivera-ruiz@fema.dhs.gov>
Subject: RE: PREPA submission

Very good.

Thank you,

Hilary

Hilary Tompkins
Partner

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004

Tel: +1 202 664-7831
Direct: +1 202 637 5617

Fax: +1 202 637 5910
Email: hilary.tompkins@hoganlovells.com
www.hoganlovells.com

Please consider the environment before printing this e-mail.

From: Javier Cotto, Monica <monica.javiercotto@fema.dhs.gov>
Sent: Friday, March 25, 2022 1:47 PM
To: McKee, John <john.mckee@fema.dhs.gov>; Tompkins, Hilary <hilary.tompkins@hoganlovells.com>
Cc: Garcia Martino, Andres <andres.garciamartino@fema.dhs.gov>; Rivera Ruiz, Daysha <daysha.rivera-ruiz@fema.dhs.gov>
Subject: RE: PREPA submission

[EXTERNAL]
Good afternoon Hilary,
Please find mailing address within my signature. Cc'ed Daysha Rivera, DFDRC Executive Specialist.

V/r,

Respectfully,

Mónica Javier Cotto
Executive Assistant to FDRC-Joint Recovery Office Director for Puerto Rico|
FEMA-4339- DR -PR; FEMA-4473-DR-PR |
#50 165 Suite 3 Parque Industrial Buchanan |
Guaynabo, PR 00968 | FEMA-Region II | Department of Homeland Security

FEMA Cell: (202) 394-7009
Email: monica.javiercotto@fema.dhs.gov



From: McKee, John <john.mckee@fema.dhs.gov>
Sent: Friday, March 25, 2022 1:42 PM
To: Tompkins, Hilary <hilary.tompkins@hoganlovells.com>
Cc: Garcia Martino, Andres <andres.garciamartino@fema.dhs.gov>; Javier Cotto, Monica <monica.javiercotto@fema.dhs.gov>
Subject: RE: PREPA submission

Hi Hilary,

Please address correspondence to Andres Garcia Martino, Deputy Federal Disaster Recovery Coordinator, cc'd above. Also cc'd is Monica Javier Cotto who provides administrative support to Mr. Garcia. She can provide a mailing address if you prefer to respond by physical mail.

Regards,

John

JOHN J. McKEE
Regional Environmental Officer
U.S. Department of Homeland Security
Federal Emergency Management Agency, Region II
Mitigation/EHP

john.mckee@fema.dhs.gov
(202) 704-7160 iPhone

FEMA

From: Tompkins, Hilary <hilary.tompkins@hoganlovells.com>
Sent: Friday, March 25, 2022 12:42 PM
To: McKee, John <john.mckee@fema.dhs.gov>
Cc: Garcia Martino, Andres <andres.garciamartino@fema.dhs.gov>; Rodriguez Lopez, Jorge <jorge.rodriguezlopez@fema.dhs.gov>
Subject: RE: PREPA submission

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Dear John:

Thank you for the helpful information.

I am outside counsel for PREPA, and yes, the memorandum you referenced is the one at issue.

If you would be so kind as to provide me with the names of the individuals at FEMA that PREPA should direct its response to that would be much appreciated.

Best regards,

Hilary

Hilary Tompkins
Partner

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004

Tel: +1 202 664-7831
Direct: +1 202 637 5617
Fax: +1 202 637 5910
Email: hilary.tompkins@hoganlovells.com
www.hoganlovells.com

Please consider the environment before printing this e-mail.

From: McKee, John <john.mckee@fema.dhs.gov>
Sent: Friday, March 25, 2022 11:41 AM
To: Tompkins, Hilary <hilary.tompkins@hoganlovells.com>
Cc: Garcia Martino, Andres <andres.garciamartino@fema.dhs.gov>; Rodriguez Lopez, Jorge <jorge.rodriguezlopez@fema.dhs.gov>
Subject: RE: PREPA submission

[EXTERNAL]

Hi Hilary,

Thank you for your email. As we have never been introduced, I am assuming that you are a Contractor to PREPA, is that correct? I am also assuming by 'recommendation memorandum' that you mean our FEMA internal correspondence regarding Palo Seco Non-compliance for EHP laws and regulations, correct? Regardless, I request that any correspondence between PREPA and/or their Contractor, is addressed through the FEMA Joint Recovery Office and our partners in FEMA Recovery, rather than directly to me. We (EHP) support the FEMA Programs (e.g. Public Assistance-Recovery; or Mitigation) and work in unison with them regarding all projects.

Have a nice weekend.

Thanks and regards,

John

JOHN J. McKEE
Regional Environmental Officer
U.S. Department of Homeland Security
Federal Emergency Management Agency, Region II
Mitigation/EHP

john.mckee@fema.dhs.gov
(202) 704-7160 iPhone



From: Tompkins, Hilary <hilary.tompkins@hoganlovells.com>
Sent: Thursday, March 24, 2022 10:20 PM
To: McKee, John <john.mckee@fema.dhs.gov>
Subject: PREPA submission

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Dear Mr. McKee:

I am writing on behalf of PREPA to notify you that PREPA intends to submit to FEMA a response to the February 10, 2022 recommendation memorandum provided to you by Jorge Rodriquez Lopez, JRP EHP Division Director (Acting), regarding the FAASt Mobile Generation Units and FAASt Palo Seco Demin Water Tank 4.

PREPA respectfully requests that FEMA consider PREPA's submission as part of its consideration of this matter. We will be in touch in the near future.

Best regards,

Hilary

Hilary Tompkins
Partner

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004

Tel: +1 202 664-7831
Direct: +1 202 637 5617
Fax: +1 202 637 5910
Email: hilary.tompkins@hoganlovells.com
www.hoganlovells.com

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If you would like to know more about how we are managing the impact of the COVID-19 pandemic on our firm then take a look at our brief Q&A. If you would like to know more about how to handle the COVID-19 issues facing your business then take a look at our information hub.

About Hogan Lovells
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United States Environmental Protection Agency
Region 2 – Monitoring & Assessment Branch
2890 Woodbridge Avenue
Edison, New Jersey 08837-3597

June 15, 2022

Via Electronic Mail To: jose.santos@prepa.com

Mr. José A. Santos Jiménez
Manager / Technical Advisor
Environmental Protection & Quality Assurance Division
Puerto Rico Electric Power Authority
P.O. Box 364267
San Juan, PR 00936

Re: PREPA Palo Seco Power Plant, Toa Baja, PR
Simple Cycle Combustion Turbines Emissions Testing Protocol

Dear Mr. Santos:

The Puerto Rico Electric Power Authority submitted to the U.S. Environmental Protection Agency (EPA) a revised stack test protocol for testing three simple cycle combustion turbines at the Palo Seco Power Plant in April 2022[1]. The EPA requested additional clarification from PREPA via emails in April 2022. As a follow-up to these emails, a conference call was conducted on June 2, 2022, between PREPA (and its technical consultants) and the EPA to discuss the unique testing considerations at the facility. As follow-up to this conference call discussion, PREPA submitted an addendum[2] to version 6 of the protocol as well as an email confirming the option discussed during the conference call on June 2, 2022. After careful evaluation of version 6 of the test protocol, the email, and Addendum 1, received on June 10, 2022, the protocol and Addendum 1 are approved with the below conditions.

- PREPA must monitor and record unit fuel flow (or rate of energy input) and unit power output (MW) during the various load conditions.
- PREPA must establish a fuel-to-megawatt ratio at the same load points in the normal operating range of the gas turbine as those used to establish the water-to-fuel ratio for NOx control during the performance test.
- PREPA must adhere to the co-relation between the record unit fuel flow and the unit power output (MW) that was developed during the stack tests (i.e., operation of the turbine without the silencer baffles/box but with stack extensions) during normal operation (i.e., operation of the turbine with the silencer baffles/box but without stack extensions).

[1] Revised protocol dated April 1, 2022, submitted via email by PREPA (Mr. *José A. Santos Jiménez) on April 7, 2022*.
[2] Addendum 1 received via email on June 10, 2022.

Please note that based on test results, modifications to the operating/permit conditions will be needed to incorporate the unit fuel flow to unit megawatt output limitations, and the facility must submit an alternate monitoring compliance plan or any permit modifications.

If you have any questions regarding the approval of the protocol, please contact Supriya Rao, of my staff, at (732) 321-4461 or Rao.Supriya@epa.gov. For all other Clean Air Act matters, please contact Alex Rivera at Rivera.Alex@epa.gov of the EPA's Region 2 Caribbean Environmental Protection Division.

Sincerely,

Carol Lynes
Chief
Monitoring and Assessment Branch

Anejo A-3(b)

[*Presentado sellado*]