

# **NORTH COAST UNIFIED AIR QUALITY MANAGEMENT DISTRICT**

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## **ENGINEERING EVALUATION FOR PROPOSED AMENDMENT TO AUTHORITY TO CONSTRUCT / PSD PERMIT THE HUMBOLDT BAY REPOWERING PROJECT**

**APPLICATION #:** ATC 443-1; HBGS  
**EVALUATION DATE:** September 30, 2009  
Rev. December 2, 2009  
**EVALUATION BY:** Jason L. Davis

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## **PURPOSE AND SCOPE OF EVALUATION**

The purpose of this document is to provide a discussion of salient points identified during the review of an application for an Authority To Construct and a Prevention of Significant Deterioration Permit for a facility located within the North Coast Unified Air Quality Management District (District). This document, along with the application submitted by the applicant and other supporting information contained in the project file, may be considered by the Air Pollution Control Officer during the permit decision making process. Action on a permit application results in either the issuance of a permit or in the denial of the application. If an application is approved, the permit subsequently issued serves as the APCO's final decision.

## **FACILITY NAME**

Pacific Gas & Electric Company (PG&E), Humboldt Bay Generation Station (HBGS).

## **LOCATION OF EQUIPMENT**

The project is located within a 143-acre site at 1000 King Salmon Ave, 3 miles southwest of the city of Eureka. It will be sited within the boundaries of PG&E's existing Humboldt Bay Power Plant complex.

## **PROPOSAL**

Since the mid 1950's, PG&E has operated various pieces of equipment at the facility to produce electricity for commercial distribution. Currently, two natural gas fired boilers and two turbines are authorized for use under Title V Permit To Operate NCU 059-12. These existing units are nearing the end of their service life. PG&E is proposing to install a 163 MW nominal power plant consisting of ten 16.3 MW nominal dual-fuel fired reciprocating engines to replace the existing equipment. PG&E will decommission the existing power plant following commissioning of the ten 16.3 MW Wärtsilä reciprocating engines described above. Authority To Construct and a Prevention of Significant Deterioration Permit (ATC / PSD 443-1) for construction of the reciprocating engines was issued by the District on April 14, 2008. The new engines were required to demonstrate compliance with Best Available Control Technology (BACT) requirements as well as Prevention of Significant Deterioration (PSD) requirements.

Recently, PG&E has applied for a series of modifications to ATC / PSD 443-1 in order to enhance their ability to comply with permit conditions. In addition, both the District and PG&E have proposed alterations to improve the consistency and enforceability of the permit. The proposed changes are the subject of this evaluation and are summarized below.

District Regulations require that before a unit may be operated, it must possess a Title V Permit To Operate. PG&E has applied for a significant modification of Title V Permit NCU 059-12 to allow operation of the existing equipment, to authorize simultaneous operation of the existing equipment and new units during the commissioning phase of the new engines, and to permit operation of the new units while the old units are decommissioned. The proposed significant modification is the subject of this evaluation.

## INTRODUCTION

The new plant will consist of ten Wärtsilä 18V50DF16.3 MW lean-burn reciprocating engines, equipped with selective catalytic reduction (SCR), oxidation catalyst, and associated support equipment including continuous emissions monitors. The primary fuel will be natural gas with diesel pilot injection, and the backup fuel will be diesel. The applicant will also install a diesel-fired emergency back-up generator and a diesel-fired fire pump. PG&E has identified and will be providing emission offsets for the project.

The District APCO issued a Final Determination of Compliance (FDOC) for the project pursuant to District Rule 110 §9.6 on April 14<sup>th</sup> 2008. As of the date of this evaluation, PG&E has initiated construction activities for the new facility under Authority To Construct / Prevention of Significant Deterioration Permit #443-1 (ATC #443-1). More recently, PG&E has proposed a series of modifications to ATC 443-1 in order to enhance their ability to comply with permit conditions. In addition, both the District and PG&E have proposed alterations to improve the consistency and enforceability of the permit. The proposed changes are the subject of this evaluation and are summarized below.

- Clarify what type of permit PG&E holds for HBGS, and include provisions for permit extension/renewal;
- Clarify definitions of “operational minute” and “operational mode transfer”;
- Revise procedure for monitoring ammonia slip to make it consistent with the SCR and ammonia injection system design;
- Revise operating and emissions limitations applicable to the commissioning period to make them consistent with modeled operating scenarios in original permit application;
- Clarify that some operating limitations are not applicable during the commissioning period;
- Add provisions for alternative compliance plans to conditions related to daily PM<sub>2.5</sub> emissions limits;
- Revise conditions related to compliance with daily PM<sub>10</sub> limit during Diesel Mode operation;
- Clarify procedure for submittal of revised screening health risk assessment;
- Clarify funding procedures for meteorological and ambient monitoring stations; and
- Correct typographic errors and inconsistencies.

District staff has evaluated the proposal in detail and is prepared to approve the elements of the request which do not result in emission increases, and the portions

which do not relax mechanisms established to ensure the protection of the environment and health and welfare of the public. Accordingly, the District APCO has prepared a draft permit for public distribution.

The Permittee has requested modifications to a PSD permit, therefore, the public participation procedures of District Reg I. Rule 110 Section 8 shall be followed. As this is a permit modification, only those conditions to be modified shall be reopened through this permitting action. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. During the reissuance proceeding, the Permittee shall comply with all conditions of the existing permit until a new final permit is reissued.

## **PERMIT TYPE & RENEWAL / EXTENSION MECHANISM / TEMPORARY PERMIT**

The title page of the original Authority to Construct / Prevention of Significant Deterioration Permit (ATC/PSD) document issued on April 14<sup>th</sup> 2008 included reference to a Title V Permit To Operate. The permitting action was not intended as the issuance of a Title V Permit To Operate, but merely an Authority to Construct and Prevention of Significant Deterioration preconstruction permit as stated in the permit summary section of the original document. Accordingly, conditions within the General Conditions Section and the language used in the title of the proposed amended document will be adjusted to clarify the intent.

~~4. The Permittee shall submit to the Air Pollution Control Officer timely updates to the Title V application as new requirements become applicable to the source, and in no event less than quarterly (i.e., every three months).  
— [40 CFR 70.5(b)]~~

~~4. 5. A The Permittee's responsible official shall promptly provide additional information in writing to the Air Pollution Control Officer upon discovery of submittal of any inaccurate information as part of the application or as a supplement thereto; or of any additional relevant facts previously omitted which are needed for accurate analysis of the application; and including inaccurate information known, or which should have been known or should be known, by the Permittee(s).  
[NCUAQMD Reg 5 Rule 420(c)] [NCUAQMD Reg V Rule 502 Sections 5.1, 5.3, 5.4 (5/19/05)] [40 CFR 70.5(a)(2) and (b) NCUAQMD Rule 103 Section 6.0]~~

~~5. 6. Upon written request of the Air Pollution Control Officer, the Permittee's responsible official shall supplement any complete application with additional information within the time frame specified by the Air Pollution Control Officer.  
[NCUAQMD Reg 5 Rule 420(b)] [NCUAQMD Reg V Rule 502 Section 5.2 (5/19/05)] [40 CFR 70.5(a)(2) and (b) NCUAQMD Rule 103 Section 6.0]~~

~~8. When submitting an application for a permit pursuant to Regulation 5, the Permittee's responsible official shall include the following information: A certification by a responsible official of all reports and other documents submitted for permit application; compliance progress reports at least every 6 months for, and submitted~~

~~no later than 30 days after, the periods January 1<sup>st</sup> through June 30<sup>th</sup> and July 1<sup>st</sup> through December 31<sup>st</sup> of each year; statements on compliance status with any applicable enhanced monitoring; and annual compliance plans, no later than January 30<sup>th</sup> of each year, which shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.~~

~~[NCUAQMD Reg 5 Rule 415(m)] [NCUAQMD Reg V Rule 502 Section 4.13 (5/19/05)] [40 CFR 70.5(c)(9) and (d)]~~

~~9. With the exception of acid rain units subject to Title IV of the Clean Air Act and solid waste incinerators subject to section 129(e) of the Clean Air Act, each permit issued pursuant to NCUAQMD Regulation 5 to operate for any source shall include a condition for a fixed term not to exceed five years from the time of issuance. A permit to operate for an acid rain unit shall have a fixed permit term of five years. A permit to operate for a solid waste incinerator shall have a permit term of 12 years; however, the permit shall be reviewed at least every five years.~~

~~[NCUAQMD Reg 5 Rule 660] [NCUAQMD Reg V Rule 504 Section 11 (5/19/05)]~~

~~11. Compliance with the conditions of this Title V permit shall be deemed compliance with all applicable requirements identified in the Title V permit.~~

~~[40 CFR 70.6(f)]~~

~~12. The Permittee may not assert or use as a defense, expressly, impliedly, or by operation of law or past practice, in any enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Authority to Construct/PSD permit.~~

~~[NCUAQMD Reg 5 Rule 610(g) (4)] [NCUAQMD Reg V Rule 504 Section 2.7.4 (5/19/05)]~~

~~13. 8. This permit may be modified, revoked, reopened, and reissued or terminated for cause.~~

~~[NCUAQMD Reg I Rule 102 (5/19/05)]~~

~~14. 9. The Permittee shall furnish to the Air Pollution Control Officer, within 10 (ten) days of the request, any information that the Air Pollution Control Officer may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with this Authority to Construct/PSD permit. Upon request, the permittee shall also furnish to the Air Pollution Control Officer copies of records required to be kept by conditions of this permit. For information claimed to be confidential, the permittee may furnish such records directly to the EPA along with a claim of confidentiality. [District Rule 103 Section 6]~~

~~20. 15. Compliance Reports~~

~~A. The Permittee shall submit to the Air Pollution Control Officer and to U.S. EPA (Air-3, U.S. EPA, Region IX) on an annual basis, unless required more frequently~~

by additional applicable federal requirements, a certification of compliance by the Permittee's responsible official with all terms and conditions contained in the Authority to Construct/PSD permit, including emission limitations, standards and work practices.

The original ATC / PSD permit contained conditions establishing a timeline for equipment construction, engine commissioning, and shutdown of pre-existing equipment. PG&E has stated that they will be unable to comply with the established timelines as a result of unanticipated regulatory delays. PG&E also foresees the possibility of additional adjustment to the construction schedule, and so has requested an extension of the ATC/PSD expiration date and to incorporate a mechanism by which the District may authorize additional extensions should they be necessary.

The proposed new source will result in a significant net increase in criteria pollutants in an area where ambient levels of those same pollutants are below the federal health protective standards, and accordingly, the project is subject to the District's SIP approved Prevention of Significant Deterioration regulations. Permit terms requiring compliance with District PSD regulations were necessary to establish project construction timelines. Permit Conditions #2 and #70 required that construction be completed within 545 days of the date of issue of the ATC/PSD. However, a mechanism for extension was not defined. District PSD rules give the APCO latitude to impose reasonable measures to ensure compliance. In developing the reasonable measures the following excerpt from 40 CFR 52.21(r)(2) was given considerable weight.

*“Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable amount of time. The Administrator may extend the 18-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction; each phase must commence construction within 18 months of the projected and approved commencement date.”*

The applicant has indicated and District Staff have confirmed that construction of the “engine hall foundation” has begun. Two additional elements of 40 CFR 52.21 (r)(2) remain: no lapses in construction of greater than 18 months, and completion of the project within a reasonable amount of time. The District proposes the following modifications to Conditions #2, #6, and #70 to ensure compliance.

2. This permit shall be valid for a period not to exceed 545 days from the date of issuance unless extended by the APCO for good cause shown. ~~Upon completion of the construction and the commissioning phase for Prior to the first operation of the internal reciprocating engines, the Permittee shall submit a Title V Permit to Operate application to the Air Pollution Control Officer. [40 CFR 52.21 (r)(2) District Reg. V.1~~

Rule 5102]"

6. ~~PSD preconstruction permit expiration terminates the Permittee's right to operate the stationary sources itemized in this permit unless a timely and complete Title V permit application has been submitted, in which case the existing PSD preconstruction permit will remain in effect until the Title V permit has been issued or denied. In order to be considered timely, a complete Title V permit application must be submitted prior to the expiration of the PSD preconstruction permit.~~  
~~[NCUAQMD Reg 5 Rule 400(b)(c) and (d)] [NCUAQMD Reg V Rule 502 Sections 1.2, 1.3, and 1.4] [40 CFR 70.7(b) and (e)(2) (v)]~~ Prior to first operation of the equipment authorized pursuant to this permit, the Permittee shall possess a valid Title V Permit to Operate for the engines. [NCUAQMD Reg V Rule 501]

~~7065.~~ The authorization for equipment installation and construction activities identified in this Permit shall expire no more than 545 days from date of issue, unless extended by the APCO for good cause shown. [NCUAQMD Rule 102 §5.0]

As required by Regulation V and as reflected in Condition 6, the applicant is required to possess a valid Title V Permit To Operate for the equipment prior to first operation. For purposes of satisfying local permitting requirements, compliance with the permit conditions must be demonstrated prior to the issuance of a local permit to operate. Condition 66 allows operation under a temporary permit to operate for a one hundred eighty (180) day period with the possibility of a ninety (90) day extension.

The applicant has indicated that the Commissioning Period will last one hundred eighty (180) days. District Regulation I, Rule 110 Section 8.8 limits simultaneous operation of the existing equipment and operation of the new or replacement equipment to a maximum of ninety (90) days. In order to be approved by the District, the Commissioning Plan required by Condition #103 will fully describe the method and manner by which the applicant will comply with Section 8.8. In discussions with District staff, the applicant stated the following; *"The engines will be split into two groups of five: Only one group will be commissioned at a time and the commissioning period should be 90 days or less for each group. After the first group completes commissioning, decommissioning of one of the existing boiler units will begin."* Accordingly, the Commissioning Plan requirements will be modified as follows.

~~123—103.~~ The Permittee shall develop, implement, and maintain a written Commissioning Plan for reciprocating engines S-1 through S-10 that describes specific procedures to be followed during the Commissioning Period. The Commissioning Plan shall be submitted ~~The Permittee shall submit a plan to the NCUAQMD at least four weeks~~ thirty (30) days prior to the first operation of the first of reciprocating engines S-1 through S-10, ~~describing the procedures to be followed during the Commissioning Period.~~ The plan shall include a description of each Commissioning Activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the tuning of the reciprocating engines, the installation and operation of the SCR systems and the oxidation catalysts, the installation, calibration, and testing of the NOx and CO continuous emissions

monitors, and any activities requiring the firing of each unit without abatement by an SCR system or oxidation catalyst. The plan shall provide that the reciprocating engines S-1 through S-10 shall be commissioned in two groups of five engines each; that each of the existing boilers [NCUAQMD Permit Units NS-020 (Boiler #1) and NS-021 (Boiler #2)] shall be replaced by one of the groups of engines; and that each boiler and its associated group of engines shall not be in operation simultaneously for more than 90 calendar days. Operation of a boiler and any of its associated engines for any portion of a calendar day shall accrue toward the maximum limit of 90 days applicable to that boiler. [40 CFR Part 63; NCUAQMD Rule 102 §5.0; Rule 110 Section 8.8 ]

104. The Commissioning Plan is subject to NCUAQMD review and approval. If after a thirty (30) day review period, the NCUAQMD does not act to approve, reject, or request additional information, the Compliance Plan submitted by the Permittee shall be considered to be approved. The Permittee shall not commission reciprocating engines S-1 through S-10 unless an NCUAQMD approved Commissioning Plan is in effect. [NCUAQMD Rule 102 §5.0]

105.–106. In accordance with the NCUAQMD approved Commissioning Plan required under the Startup, Commissioning & Simultaneous Operation Section of this Permit, the reciprocating engines shall be tuned to minimize emissions in the time frame specified in the approved Commissioning Plan. [NCUAQMD Rule 102 §5.0 ]

107. The existing generating units at Humboldt Bay Power Plant shall be shut down as soon as possible following the commercial operation of all of the reciprocating engines S-1 through S-10. The existing generating units at Humboldt Bay Power Plant [NCUAQMD Permit Units NS-020 (Boiler #1), NS-21 (Boiler #2) and NS-57 (Turbines)] and any of the new HBGS reciprocating engines S-1 through S-10 shall not be in simultaneous operation for more than 180 calendar days, including their individual Commissioning Periods; and shall be shutdown and their Permits to Operate (PTOs) surrendered once engines S-1 through S-10 have successfully completed their Commissioning Phase as defined elsewhere in this permit. Operation of the existing plant units and any engine or engines for any portion of a calendar day, shall accrue toward the maximum limit of 180 days. Commissioning Activities may be further limited in scope and duration by the NCUAQMD approved Commissioning Plan. [NCUAQMD Rule 110, Rule 102 §5.0]

## **DEFINITIONS: OPERATIONAL MINUTE & MODE TRANSFER**

The engines are capable of operating on different fuel types: natural gas and diesel. They are also capable of transitioning between fuel types without the need for a shut down. The emissions generated while firing on each of the fuel types is significantly different. One of the compliance approaches utilized in the permit was to establish a limit on the number of hours the engines may be operated for each fuel type. In order to afford more operational flexibility and to maximize utilization time, the applicant has proposed to modify the Operational Minute and Operational Mode Transfer definitions. The proposed modifications do not increase the number of hours the unit may be

operated nor do they increase the allowable amount of emissions which may be discharged. The modifications listed below clarify that the operational minutes shall be summed and divided by 60 which is consistent with the original proposed compliance approach for the Diesel Mode PM10 emission daily limit. The calculation method is established in Condition #98 and is discussed in the "Diesel mode Operation: Daily PM10 Limit" section of this evaluation.

**oo pp. Operational Minute:** a sixty (60) second period when the engines are being fired. Each Operational Minute shall be designated as either "Natural Gas Mode" or "Diesel Mode". The sum of the Operational Minutes in each mode shall be used for determining compliance with hours of operation limitations.

**pp qq. Operational Mode Transfer:** the switching of fuel mode while operating at engine loads greater than 50%. ~~If the units are operated in Diesel Mode for one Operating Minute or more during any Clock Hour, the entire hour shall be considered as operation in Diesel Mode for purposes of determining compliance with emission limits. The sum of the Operational Minutes shall be used for determining compliance with hours of operation limitations~~

**q. Diesel Mode Startup:** a Startup Period during which the reciprocating engine operates in Diesel Mode for ~~2 or more Operational Minutes~~ a period exceeding 120 seconds.

**II. Natural Gas Mode Startup:** the firing of natural gas and CARB diesel or alternative liquid fuel in the engines where the diesel fuel or alternative liquid fuel is used solely for pilot injection, and the engine operates under the theoretical Otto cycle. A Startup Period during which the engine operates in Diesel Mode for 120 seconds or less.

~~10498. For purposes of determining compliance of reciprocating engines S-1 through S-10 with the daily PM10 limit in Table 5.5, the Permittee shall not operate calculate and record PM10 emissions from each engine for each Calendar Day as follows: 0.180 pounds per minute times the number of reciprocating engines S-1 through S-10 in Diesel Mode Operational Minutes during that Calendar Day; plus 0.060 pounds per minute times the number of Natural Gas Mode Operational Minutes for more than 142 engine hours per day during that Calendar Day. In no event shall the Permittee operate the engines such that their combined hours of operation in Diesel Mode exceed 142 hours per Calendar Day. Following completion of the PM10 emissions testing required under Condition #163 on all 10 engines, the Permittee may request the use of an alternative compliance demonstration method. Such a request shall include, but not be limited to the following...[NCUAQMD Rule 102 §5.0]~~

~~135130.~~ The Permittee shall not operate the reciprocating engines S-1 through S-10 such that the combined hours of operation during Startup and Shutdown Periods exceeds 3,650 engine-hours per calendar year. Of the 3,650 engine-hours

available, the hours of operation during Startup and Shutdown Periods in Diesel Mode shall not exceed 500 engine-hours per calendar year. For the purpose of determining compliance with this condition, Startup and Shutdown Periods during the Commissioning Period shall not accrue toward these limitations. [NCUAQMD Rule 102 §5.0]

1361. The Permittee shall not operate any of the reciprocating engines S-1 through S-10 below 50% load except during Startup and Shutdown Periods. This limitation shall not apply during the Commissioning Period. [NCUAQMD Rule 102 §5.0]
1383. While operating the reciprocating engines S-1 through S-10 in Diesel Mode, the Permittee shall fire the engines:
- Only with CARB Diesel as specified in Table 1.4 Fuel Specifications for S-1 through S-10;
  - For not more than 50 hours per year for maintenance and testing per engine; and
  - Such that the combined engine operating hours do not exceed 1,000.0 engine hours per year on a 365 day rolling average basis.

### **AMMONIA SLIP MONITORING PROCEDURE & SOURCE TESTING REQUIRED**

Previously unidentified compatibility issues between the catalyst and sensor configuration originally proposed require modification. The proposed resolution is to modify the ammonia slip monitoring approach identified in the ATC/PSD. As the solution, the applicant has requested to use a feed-back system which does not incorporate the use of an upstream NO<sub>x</sub> monitor. The approach is technically feasible and is consistent with industry practice for the monitoring of emissions where SCR systems are used. Condition #82 will be modified as follows.

82. The Permittee shall demonstrate compliance with the ammonia slip limit by using the following calculation procedure: ~~The ammonia emission concentration shall be verified by the continuous recording of the ratio of the ammonia injection rate to each the NO<sub>x</sub> inlet rate into the SCR control system shall be continuously recorded (molar ratio). Correlations between the engine heat input rates, the SCR system ammonia injection rates, and corresponding ammonia emission concentration~~ The maximum allowable NH<sub>3</sub>:NO<sub>x</sub> molar ratio shall be determined for each fuel in accordance with the Testing and Compliance Monitoring Section of this Permit. ~~during any required source test, and shall not be exceeded until reestablished through another valid source test.~~ Alternatively, the Permittee may be required to install, operate and maintain a continuous in-stack emissions monitor for emissions of ammonia. The Permittee shall obtain APCO approval for the installation and use the ammonia CEMs equipment at least 60 days prior to the planned installation date. [NCUAQMD Rule 103 §6.0]

As a result of the modification, the Testing & Compliance Monitoring Section of the Permit requires the addition below.

161. Prior to the end of the Commissioning Period, the Permittee shall conduct District approved source testing on all of the reciprocating engines S-1 through S-10 to determine the maximum allowable ammonia (NH<sub>3</sub>) emission concentration necessary to demonstrate compliance with the Pollutant Limitations Section of this Permit. Each test shall be conducted over the expected operating range of the engines (including, but not limited to 50%, 75%, and 95% and greater loads) to establish the range of ammonia injection rates necessary to achieve NO<sub>x</sub> emission reductions while controlling ammonia slip to acceptable levels. Compliance with Pollutant Limitations Section of the Permit shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlations and continuous records of ammonia injection rates. The source tests shall determine the correlation between measured parameters which shall include, but need not be limited to: engine heat input rate, ammonia injection rate, NO<sub>x</sub> concentration upstream and downstream of the SCR catalyst, and the corresponding NH<sub>3</sub> ammonia concentration at the point of discharge (exhaust stack).

## **COMMISSIONING PERIOD OPERATIONS & EMISSION LIMITS**

The applicant has reported that the engine manufacturer has not yet provided sufficient information to allow the development of a site specific commissioning plan. However, general information has been released such that the activities which result in the highest production of criteria pollutants were able to be identified. PG&E has requested a series of modifications to the Commissioning Conditions as discussed below.

### **Hourly Limits**

Consistent with District permitting practice, the limits during the commissioning phase were established from potential to emit (PTE) information supplied by the applicant. Tables 8.1-9 and 8.1-10 of the Application For Certification (AFC revised Sept 07) state that the maximum emissions from the operation during crankshaft and generator coupling adjustments for 5 engines was 323.3 lbs/hr. of NO<sub>x</sub>. In light of new information pertaining to the decommissioning schedule supplied by the applicant, it is appropriate to revisit the PTE calculations.

Details of the plant decommissioning plan have now been released which were unknown at the time the ATC/PSD was first issued. At the time of preparation of the ATC/PSD, it was assumed that all 10 engines would be commissioned prior to the decommissioning of the any of the existing units (boilers and MEPs). Based upon new information from the engine manufacturer and PG&E operations staff, the applicant is now proposing to commission the engines in two groups of five. The first group will be constructed, tested, and begin commercial operation as expeditiously as possible. Immediately thereafter, decommissioning of one of the existing boiler units is to begin. At this stage in the construction of the facility, though only for a limited period of time and under extraordinary circumstances, a scenario where simultaneous operation of the two boilers, each of the MEPs, and both commissioned and non-commissioned engines is possible. The dispersion modeling analysis [Section 8.1 p.29 of the AFC - 9/07] prepared by the applicant captures this scenario and indicates that 392 lbs/hr of NO<sub>x</sub> is

the emission rate at which no violations of the ambient air quality standards will occur. Thus, having identified a higher PTE, the emission limit should be adjusted to the level identified by the dispersion analysis. The District intends to modify Condition #115 as follows.

~~119~~115. During the Commissioning Period ~~while any of the engines are being operated without an SCR system and oxidation catalyst~~, the Permittee shall not operate reciprocating engines S-1 through S-10, such that the combined emissions from all of the engines regardless of their commissioning status, exceed any of the limits in Table 5.9 below: [NCUAQMD Rule 102 §5.0]

**Table 5.9 S-1 through S-10 Combined Commissioning Emission Limits**

Pollutant	lbs/hr	lbs/day
CO	197.2	2,662
NOx	<del>323.3</del> <u>392</u>	4,365
PM <sub>10</sub>	54	1,296
ROC (as Methane)	86.6	1,559
SOx (SO <sub>2</sub> )	2.0	48.4

Because the PTE of the scenario discussed above is greater than the permissible level indicated by the modeling, additional operational conditions are required in order to ensure compliance with the 392 lb/hr limit. Under the current commissioning / decommissioning plan, simultaneous operation of the first group of 5 engines post commission phase in combination with the second group while still in the commissioning phase is planned. The PTE during any one hour is 1,012.5 lbs/hr of NOx based on five diesel starts and 5 engines operating in the “test run & tune” phase [AFC Table 8.1B-9].

5 engines \* 154 lbs NOx per Diesel Mode Start = 770 lbs NOx  
 5 engines \* 48.5 per hour NOx, test run & tune = 242.5 lbs NOx  
 Total 1,012.5 lbs NOx

While 5 engines are in the test run & tune phase, compliance is not shown with a single diesel mode start.

5 engines \* 48.5 per hour NOx, test run & tune = 242.5 lbs NOx  
 1 engines \* 154 lbs NOx per Diesel Mode Start = 154 lbs NOx  
 Total = 396.5 lbs. NOx

While 5 engines are in the test run & tune phase, compliance is shown with 5 natural gas mode starts.

5 engines \* 48.5 per hour NOx, test run & tune = 242.5 lbs NOx  
 5 engines \* 22 lbs NOx per Natural Gas Mode Start = 110 lbs NOx  
 Total = 352.5 lbs. NOx

The engines are capable of transitioning between fuel types without the need to enter into startup mode. Compliance is shown with diesel operation of 5 engines while 5 engines are in the test run & tune mode.

5 engines \* 48.5 per hour NOx, test run & tune = 242.5 lbs NOx

5 engines \* 19.92 per hour NOx, Diesel Mode = 99.6 lbs NOx

Total = 342.1 lbs. NOx

The following operational limitations will be imposed to prevent emissions in excess of 392 lbs/hr:

~~418~~114. A. When one or more reciprocating engines S-1 through S-10 are undergoing Commissioning Activities without an SCR system and oxidation catalyst installed, the Permittee shall not: *[NCUAQMD Rule 102 §5.0]*

- a. Fire more than five uncontrolled reciprocating engines simultaneously.
- b. Operate the uncontrolled engines such that their combined hours of operation exceed 90 engine-hours during any Calendar Day.
- c. ~~Operate the uncontrolled engines such that their combined hours of operation while in the "alignment phase" exceed 13 engines-hours during any Calendar Day.~~

B. When one or more reciprocating engines S-1 through S-10 are undergoing Commissioning Activities, the Permittee shall not:

- a. Simultaneously operate more than five units which have not yet completed commissioning.
- b. Initiate a Diesel Mode Startup in any unit which has completed commissioning while there are any non-commissioned units in operation.

~~420~~116. For each engine during its Commissioning Period, after ~~four hours of~~ steady-state operation of the SCR system and the oxidation catalyst has occurred, the NOx and CO emissions from that reciprocating engine shall thereafter comply with the limits specified in the Pollutant Limiting Section of this Permit Conditions #99 through #105. For purposes of compliance with this condition, steady-state operation shall mean: that the engine, SCR system, and oxidation catalyst all functioning according to manufacturer's specifications and operating in compliance with emission limits, ~~as determined by the CEMS~~ and are ready for performance testing in accordance with the requirements of the Testing and Compliance Monitoring Section of this Permit Condition #163. In no event shall the Commissioning Period for each engine exceed 180 consecutive calendar days beginning on the first day the engine is first fired. *[NCUAQMD Rule 102 §5.0]*

## Operational Conditions: Exceptions for Commissioning Period

Early on in the review of this project, it became evident that operation of the Wärtsilä engines during the construction and commissioning phase would be distinctly different than that of typical operation during the life of the project. As such, the need for separate operating condition sections for commissioning and normal operation was warranted. Many of the constraints listed in the “normal” operating conditions section were never intended to apply during the Commissioning Period. Language has been added to the conditions listed below to provide clarification toward that end. Unnecessary language in Condition 87 has also been deleted thereby clarifying the need to obtain a significant modification to the Title V Permit.

~~9486.~~ Visible emissions from reciprocating engines S-1 through S-12 shall not be as dark or darker in shade as that designated as No. 1 on the Ringleman Chart, or of such opacity so as to obscure an observer’s view to a degree equal to or greater than 20%, for any period or periods aggregating more than 3 minutes in any one hour. This visible emission limitation shall not apply during Startup or Shutdown Periods, or during the Commissioning Period.

~~9287.~~ ~~The Permittee~~ The Permittee shall not operate reciprocating engines S-1 through S-12 such that the emissions of NO<sub>x</sub>, from a combination of all engines, exceeds 392 lbs per hour. Furthermore, except during the Commissioning Period as ~~provided below~~, the Permittee shall not operate reciprocating engines S-1 through S-10 such that more than 2 units are in a Diesel Startup Period during any one Clock Hour. ~~Following completion of the emissions testing for all ten units required under Condition #163, the Permittee may request the use of an alternative compliance demonstration method. Such a request shall include, but not be limited to the following:~~

- ~~A. Identification of alternative operational limit(s) and/or alternative method(s) for determining compliance with the facility wide pound per hour NO<sub>x</sub> emission limit; and~~
- ~~B. Source test data and calculations demonstrating that revisions to emission factors, and/or utilization of an alternative compliance determination method, are appropriate.~~

~~Upon written approval by the District of the alternative compliance demonstration method, the permit limitation on the number of Diesel Mode Startups may be modified in accordance with District Rule 502. In no event shall the facility wide hourly limit of 392 lbs of NO<sub>x</sub> be increased, nor any operational activities permitted, which would allow an exceedance of any emission limitation. [NCUAQMD Rule 102 §5.0 ]~~

~~127.~~ ~~132.~~ The Permittee shall not operate reciprocating engines S-1 through S-10 such that Startup Periods exceed 60 minutes in length. This limitation shall not apply during the Commissioning Period. [NCUAQMD Rule 102 §5.0]

128. ~~433.~~ The Permittee shall not operate reciprocating engines S-1 through S-10 such that Shutdown Periods exceed 30 minutes in length. This limitation shall not apply during the Commissioning Period. [NCUAQMD Rule 102 §5.0]
129. ~~434.~~ The Permittee shall not operate the reciprocating engines S-1 through S-10 such that the combined hours of operation during Startup and Shutdown Periods exceeds 30 engine-hours per day. This limitation shall not apply during the Commissioning Period. [NCUAQMD Rule 102 §5.0]
130. ~~435.~~ The Permittee shall not operate the reciprocating engines S-1 through S-10 such that the combined hours of operation during Startup and Shutdown Periods exceeds 3,650 engine-hours per calendar year. Of the 3,650 engine-hours available, the hours of operation during Startup and Shutdown Periods in Diesel Mode shall not exceed 500 engine-hours per calendar year. For the purpose of determining compliance with this condition, Startup and Shutdown Periods during the Commissioning Period shall not accrue toward these limitations. [NCUAQMD Rule 102 §5.0]
131. ~~436.~~ The Permittee shall not operate any of the reciprocating engines S-1 through S-10 below 50% load. This limitation shall not apply except during Startup and Shutdown Periods or during the Commissioning Period. [NCUAQMD Rule 102 §5.0]
132. ~~437.~~ The Permittee shall not operate the reciprocating engines S-1 through S-10 for more than 80 engine-hours per Calendar Day at loads less than 12.0 MW. This limitation shall not apply during the Commissioning Period. [NCUAQMD Rule 102 §5.0]
135. ~~440.~~ The Permittee shall not operate reciprocating engines S-1 through S-10 if the inlet temperature of the oxidation catalyst is outside of the acceptable operating range for any period of time. The acceptable operating range of the oxidation catalyst is greater than or equal to 450 °F and less than or equal to 1350 °F. Each reciprocating engine is paired with a single oxidation catalyst unit. For purposes of compliance with this condition, each engine and catalyst pair is evaluated separately. This Condition does not apply during Startup or Shutdown Periods, during the Commissioning Period, or during malfunctions. [40 CFR 63 Subpart ZZZZ]
136. ~~441.~~ The Permittee shall not operate reciprocating engines S-1 through S-10 unless the CO emissions from the units are abated by the oxidation catalyst at a rate greater than or equal to 70% over uncontrolled emission levels, calculated on a 3 hour rolling average. Verification of the emissions reduction shall be completed in accordance with 40 CFR 63 Subpart ZZZZ. This Condition does not apply during Startup or Shutdown Periods, during the Commissioning Period, or during malfunctions. [40 CFR 63 Subpart ZZZZ]

## Alternative Compliance Plan for PM2.5 Limits

The Applicant anticipates that performance testing of the Wärtsilä engines will demonstrate that particulate emissions are significantly lower than the manufacturer's guaranteed performance levels which were used to establish the emission limits by the applicant in the AFC and by the District in the ATC/PSD. Consequently, the applicant has requested additional flexibility to modify the heat input limitations on the equipment based on actual performance test data. Once the data has been obtained, the applicant may apply for a modification to the permit to operate in accordance with District Rules. Absent additional information, further modification is not warranted at this time.

### Diesel Mode Operation: Daily PM10 Limit

While operating in Diesel Mode, the engines are subject to following three regulatory limits for particulate matter: 1) 0.15 grams per brake horse power per hour, 2) 10.8 pounds per hour (manufacturer's guarantee), and 3) 1,542 pounds per day (PM10 ambient air quality standard). Compliance with limits 1 and 2 are determined during a source test. Compliance with the pound per day limitation is accomplished through a permit condition restricting the number of hours of operation to 142 engine hours per day based upon the following calculation.

$$1,542 \text{ pounds per day} \div 10.8 \text{ pounds per hour} = 142.78 \text{ hours}$$

The applicant believes that the actual particulate emission rates for the engines will be significantly lower than the manufacturer's guaranteed level of 10.8 pounds per hour and has requested the ability to increase the hours of operation. The original ATC/PSD permit allowed the Permittee to establish a new hourly limit based upon source data obtained during performance testing required by the permit. The highest observed value was to then become the new hourly limit for the devices as long as it was less than 10.8 pounds per hour.

The applicant has expressed concern that the highest observed value may not incorporate a sufficient compliance margin and so has requested that the District revise the requirement to use the "highest observed value" and instead allow the applicant to subject the data obtained during the performance testing to statistical analysis with the goal of establishing a confidence interval. The difference between highest observed value and the upper bound of the confidence interval potentially could equal the compliance margin.

The District intends to modify the permit conditions establishing the applicant's ability to propose an alternate limit. The condition will not specify how the analysis will be prepared, however, it will be subject to District approval. Once the data has been obtained, the applicant may apply for a modification to the permit to operate in

accordance with District Rules.

Modifications to Condition 97 below also reflect changes made to the definition of Operational Minute and Operational Mode Transfer. The modifications listed clarify that the operational minutes shall be summed and divided by 60 which yields results consistent with the original proposed compliance approach for the Diesel Mode PM10 emission daily limit.

~~403. 97.~~ The discharge of Diesel Particulate Matter into the atmosphere from the reciprocating engines S-1 through S-10 while in Diesel Mode shall not exceed the emission limits identified in Table 5.4 below. The limits shall not apply during the Commissioning Period as defined in this permit. *[NCUAQMD Rule 102 §5.0]*

**Table 5.4 Diesel Particulate Matter Limitations**

Engines S-1 Through S-10	Diesel Particulate Matter (pounds)		
	Hourly 3 hr rolling average	Daily 24-hour rolling average (Calendar Day)	Annual 365 day rolling average
Per Engine	5.56	133.4	-
All Combined	55.6	1,334	5,560

The combined discharge of pollutants from the reciprocating engines S-1 through S-10 shall not exceed the limits listed in Table 5.5 below during any Calendar Day in which one or more of the engines are operated in diesel mode for any period of time.

~~404. 98.~~ For purposes of determining compliance of reciprocating engines S-1 through S-10 with the daily PM10 limit in Table 5.5, the Permittee shall ~~not operate~~ calculate and record PM10 emissions from each engine for each Calendar Day as follows: 0.180 pounds per minute times the number of reciprocating engines S-1 through S-10 in Diesel Mode Operational Minutes during that Calendar Day; plus 0.060 pounds per minute times the number of Natural Gas Mode Operational Minutes for more than 142 engine hours per day during that Calendar Day. In no event shall the Permittee operate the engines such that their combined hours of operation exceed 142 hours per Calendar Day. ~~Following completion of the PM10 emissions testing required under Condition #163 on all 10 engines, the Permittee may request the use of an alternative compliance demonstration method. Such a request shall include, but not be limited to the following:~~

~~C. Identification of the highest PM emission rates of the 10 units as determined during initial performance testing.~~

~~D.A. Identification of alternative operational limit(s) and/or alternative method(s) for determining compliance with the facility wide pound per day PM emission limit; and~~

~~E.B. Source test data and calculations demonstrating that revisions to emission~~

factors and/or compliance determination method(s) are appropriate.

~~Upon written approval by the District of the alternative compliance demonstration method, the permit limitation on the number of hours of operation in Diesel Mode may be modified in accordance with District Rule 502. Until an alternative compliance demonstration method is approved, the Permittee shall not operate the engines in Diesel Mode for more than 142 engine-hours per Calendar Day. The highest PM pollutant values identified during the initial performance testing shall become the permitted emission limits for all engine units. In no event, shall the newly established emission limits be in excess of 10.8 lbs/hr. (the manufacturer's guaranteed emission rates identified in the AFC), and in the ATC materials submitted by the applicant. In no event shall the facility wide daily limit of 1,542 pounds be increased, nor any operational activity permitted, which if such an increase would allow an exceedance of any emission limitation ambient air quality standard. Compliance with the daily facility wide PM emission limit shall be calculated as a function of engine hourly emission rate times the number of hours of operation per day. [NCUAQMD Rule 102 §5.0]~~

## **Health Risk Assessment: Clarification of Protocol & Submission**

The reporting requirements have been revised to remove the time required for processing by the District as reflected in the condition below.

~~149.~~ 154. The Permittee shall annually prepare and submit a comprehensive facility wide emission inventory report for all criteria pollutants and toxic air contaminants emitted from the facility. The inventory and report shall be prepared in accordance with the most recent version of the ~~CAPCOA / CARB reference document Emission Inventory Criteria Guidelines CARB and California Office of Health Hazard Assessment guidance documents.~~ The inventory report shall be submitted to the NCUAQMD APCO no later than March 1<sup>st</sup> of the following calendar year. The inventory report is subject to NCUAQMD APCO approval. [NCUAQMD Rule 102 §5.0]

~~150.~~ 155. The Permittee shall submit a ~~the~~ health risk assessment protocol to the NCUAQMD APCO for review no later than 9 months after the Commissioning Period for the reciprocating engines S-1 through S-10 has concluded. [NCUAQMD Rule 102 §5.0]

~~151.~~ 156. No later than 120 days ~~14 months~~ after the health risk assessment required pursuant to this Section has been approved by the APCO, ~~the Commissioning Period has concluded,~~ the Permittee shall submit to the NCUAQMD APCO a revised health risk assessment prepared pursuant to the approved protocol. ~~The health risk assessment shall be prepared pursuant to the NCUAQMD APCO approved protocol based upon CARB and California Office of Health and Hazard Assessment guidance documents.~~ [NCUAQMD Rule 102 §5.0]

## Ambient Monitoring Stations: Clarify Timing

The applicant has requested and the District concurs that the timing requirements require modifications to allow greater flexibility and utilization of District and PG&E resources as reflected in the condition below.

172. ~~176. No later than 180 days after construction of the equipment authorized pursuant to this permit begins, and concurrent with the commencement of operation,~~ The Permittee shall provide full funding for the purchase and installation of a new monitoring station (Shelter; CO, NOx, PM10/PM2.5, and other sampling equipment as determined by the APCO) to be installed at a location approved by the APCO. The funding shall include all costs associated with the purchase, installation, operation and maintenance (including personnel costs) of the monitoring station for an initial period of not less than five (5) years. PG&E shall reimburse the District for costs incurred within 30 days of receiving an invoice from the District. At the conclusion of that period, the APCO may extend the operation of the site if deemed in the best interest of the District, and PG&E will continue to fund all costs associated with its continued operation. The District shall manage the procurement, operation and maintenance of the site, ~~and~~ District staff will be responsible for collecting, securing, and quality assuring all data. [District Rule 102 §5.0]
173. ~~177. No later than 180 days after construction of the equipment authorized pursuant to this permit begins, and concurrent with the commencement of operation,~~ The Permittee shall provide full funding for the purchase and installation of a new meteorological monitoring station to be installed at a location approved by the APCO. The funding shall include all costs associated with the purchase, installation, operation and maintenance (including personnel costs) of the meteorological monitoring station for an initial period of not less than five (5) years. PG&E shall reimburse the District for costs incurred within 30 days of receiving an invoice from the District. At the conclusion of that period, the APCO may extend the operation of the site if deemed in the best interest of the District, and PG&E will continue to fund all costs associated with its continued operation. The District shall manage the procurement, operation and maintenance of the site, ~~and~~ District staff will be responsible for collecting, securing, and quality assuring all data. The data collected at the station shall meet the requirements of EPA-454/R-99-005 "Meteorological Monitoring Guidance for Regulatory Modeling Applications" February 2000. [District Rule 102 §5.0]

### Reporting

The applicant has requested and the District has deemed it appropriate to modify the reporting interval for daily emissions. The particulate matter standard is based on a "Calendar Day" as defined in the definition section of the permit. Emissions reported on a 24 hour rolling average would therefore not be necessary. The following changes are proposed to be made.

90. The Permittee shall not operate reciprocating internal combustion engines S-1 through S-10 in such a manner so as to exceed the heat input capacities listed in Table 4.0 on a per engine basis. [NCUAQMD Rule 102 §5.0]

**Table 4.0 Heat Input Limitations Per Engine**

Each Unit <sup>1</sup>	Heat Input, MMBtu (HHV)	
	Hourly 3 hr rolling average	Calendar Day Daily 24 hour rolling average
Natural Gas Mode <sup>2</sup> Natural Gas	143.9	3,454
Diesel (Pilot)	0.8	19
Diesel Mode              Diesel	148.9	3,574

**Notes:**

- 1) Each unit can only run in either Natural Gas or Diesel Mode, not both simultaneously.
- 2) Heat Input in Natural Gas Mode is the sum of natural gas and diesel pilot also.

92. The Permittee shall not exceed the diesel fuel firing limits while operating reciprocating engines S-1 through S-10 in the modes listed below. [NCUAQMD Rule 102 §5.0]

A. Natural Gas Mode.

**Table 4.2 Diesel Fuel Firing Limitations (Pilot)**

Engines S-1 Through S-10	Gallons of Diesel Fuel		
	Hourly 3 hr rolling average	Daily 24 hour rolling average (Calendar Day)	Annual 365 day rolling average
All Combined	58	1,402	376,734

B. Diesel Mode

**Table 4.3 Diesel Fuel Firing Limitations**

Engines S-1 Through S-10	Gallons of Diesel Fuel		
	Hourly 3 hr rolling average	Daily 24 hour rolling average (Calendar Day)	Annual 365 day rolling average
Per Engine	1,088	26,106	-
All Combined	10,876	221,877 <sup>1,2</sup>	1,087,630 <sup>1</sup>

**Notes:**

97. The discharge of Diesel Particulate Matter into the atmosphere from the reciprocating engines S-1 through S-10 while in Diesel Mode shall not exceed the

emission limits identified in Table 5.4 below. The limits shall not apply during the Commissioning Period as defined in this permit. [NCUAQMD Rule 102 §5.0; ]

**Table 5.4 Diesel Particulate Matter Limitations**

Engines S-1 Through S-10	Diesel Particulate Matter (pounds)		
	Hourly 3 hr rolling average	Daily 24-hour rolling average (Calendar Day)	Annual 365 day rolling average
Per Engine	5.56	133.4	-
All Combined	55.6	1,334	5,560

~~145.~~ 150. The Permittee shall maintain a ~~monthly~~ log of usage for the Emergency IC Diesel Generators S-11 and S-12 in accordance with applicable Reporting Requirements for Emergency Standby Engines, Item (e)(4)(I) of Section 93115, Title 17, California Code of Regulations, Air Toxic Control Measure (ATCM) for Stationary Compression Ignition (CI) engines. The ~~monthly~~ log of usage shall list and document the nature of use for each operational event category listed below ~~of the following by recording the hour meter readings for operational event listed below~~ by recording the beginning and ending hour meter readings and time of day of each operational event:

- a. Emergency use hours of operation;
- b. Maintenance and testing hours of operation (e.g., load testing, weekly testing, rolling blackout, general power outage, etc
- c. Hours of operation for emission testing to show compliance with §93115(e)(2)(A)3 and (e)(2)(B)3 of the ATCM;
- d. Hours of operation to comply with requirements of NFPA 25;
- e. Hours of operation for all other uses other than those specified in section (e)(2)(A)3 and (e)(2)(B)3 of the ATCM;
- f. Fuel used through the retention of fuel purchase records that account for all fuel used in the engine and all fuel purchased for use in the engine, and, at a minimum, contain the following information for each individual fuel purchase transaction:
  - i. Identification of the fuel purchased as either CARB Diesel, or an alternative diesel fuel that meets the requirements of the Verification Procedure;
  - ii. Sulfur content of the fuel;
  - iii. Amount of fuel purchased;
  - iv. Date when the fuel was purchased;
  - v. Signature of owner or operator or representative of Permittee who received the fuel; and
  - vi. Signature of fuel provider indicating fuel was delivered

## Miscellaneous Revisions

This section includes modifications to address miscellaneous issues including the use of consistent definitions, format of the general condition section, and various table formatting edits.

The Responsible Official has been re-designated as Randal S. Livingston, Vice President of Power Generation and an updated phone number is included. The facility contact is now Dena' Parish, Environmental Coordinator.

The NCUAQMD Rules and Regulations have been recodified, renumbered, and reorganized. ~~They are in the process of being incorporated into the NCUAQMD State Implementation Plan. Once incorporated,~~ The revisions were published in the Federal Register and became effective July 6, 2009. Therefore, the new regulatory references which are the same or similar to the ~~then-superseded~~ NCUAQMD rule citations, shall apply.

The project timeline was updated to reflect current developments as follows:

PG&E will decommission the existing power plant following commissioning of the ten 16.3 MW Wärtsilä reciprocating engines described above in accordance with District Rules and as outlined in this Permit. The new engines were required to demonstrate compliance with Best Available Control Technology (BACT) requirements before the ATC was issued.

### Definitions

**x. Facility:** the site of the Humboldt Bay Repower Project Generating Station at HBPP

**z. HBRPGS:** Humboldt Bay Repower Project Generating Station

~~ww~~ **xx. ROC:** reactive organic ~~carbon~~ compound consistent with NCUAQMD Rule 101 §1.2934

~~zz.~~ **bbb.Startup Period:** The lesser of the following: 1) the first 60 minutes of continuous fuel flow to the reciprocating engine after fuel flow is initiated, or 2) the period of time from reciprocating engine fuel flow initiation until the reciprocating engine achieves two consecutive valid 15-minute average CEM data points in compliance with the emission ~~concentration~~ limits of Tables 5.1 and 5.3 found in the Pollutant Limitations Section of this Permit conditions # 100 and #102.

### Conditions

~~41.-46. In the event that two or more conditions may apply, and such conditions both cannot apply without conflict, the condition(s) most protective of the environment~~

~~and the public health and and safety shall prevail. In the event that a condition(s) of the Permit and a requirement of a Federal, State or Local law, rule or regulation may also apply, and both cannot apply without conflict, the requirements most protective of the environment and the public health shall prevail. The Permit Conditions shall be liberally construed for the protection of the health, safety and welfare of the people of the NCUAQMD. In the event that two or more conditions may apply, and such conditions cannot apply without conflict, the condition(s) most restrictive shall prevail. [District Rule 100 §6.3; Rule 102 §5.0]~~

~~69-~~ 64. This Permit is issued pursuant to NCUAQMD Rule 110 Section 9 and shall only become effective after ~~a Final Determination of Compliance has been issued by the APCO~~ the California Energy Commission approved the project pursuant to NCUAQMD Rule 110 §9.6.

~~72-~~ 67. Authorized Equipment

All references to Table 1.40 Authorized Emission Devices have been updated throughout the document

All references to Table ~~2.0~~ 1.1 Authorized Control Devices have been updated throughout the document

~~73-~~ 68. Table ~~1.1~~ 2.0 S-1 through S-10 Engine Specifications

The following names of parameters in these tables were modified as follows:  
Nominal Exhaust Gas Flow Rate; Nominal Exhaust O2 Concentration; Nominal Exhaust CO2

Table ~~1.2~~ 2.1 S-11 Engine Specifications

Table ~~1.3~~ 2.2 S-12 Engine Specifications

~~79-~~ 74. The reciprocating engines S-11 and S-12 shall be certified to meet EPA Tier III emission ~~levels~~ standards for off-road engines. The Permittee shall submit documentation of EPA Tier III certification a minimum of 30 days prior to installation of the devices. [40 CFR 60 Subpart III]

~~82-~~ 77. The Permittee's request for approval of an equivalent engine shall be submitted to the NCUAQMD at least ~~90~~ thirty (30) days prior to the planned installation date. The Permittee shall also notify the NCUAQMD at least ~~30~~ ten (10) days prior to the actual installation of the NCUAQMD approved equivalent engine. [*NCUAQMD Rule 103 §6.0*]

~~88-~~ 83. Both onsite and offset emission credits were utilized for this project. Prior to commencement of construction, in accordance with Rule 106 §6.6, the Permittee shall provide to the APCO documentation of transfer of ownership of offsite Emission Reduction Credits sufficient to offset the emissions identified in Table 3. Prior to commencement of the Commissioning Period, the Permittee shall surrender to the NCUAQMD sufficient offsite emission credits to offset the increases listed in Table 3.0 below. NOx credits provided to offset PM<sub>10</sub> increases shall be at an inter-pollutant ratio of 3.58:1 after the appropriate distance ratio is applied. The Permittee shall permanently shut down NCUAQMD ~~the existing facility and all emission units permitted under Title V~~

~~Permit To Operate NCU 059-12 Permit Units No. NS-020 (Boiler #1), NS-021 (Boiler #2) and NS-057 (Gas Turbines) in accordance with the Startup, Commissioning & Simultaneous Operation Section of this Permit. Condition #109. [40 CFR 51, Appendix S; NCUAQMD Rule 110]~~

~~414. 108. Selective catalytic reduction (SCR) systems and oxidation catalysts shall serve each reciprocating engine except as provided for in the Startup, Commissioning & Simultaneous Operation Section of this Permit. Condition #113. Permittee shall submit SCR and oxidation catalyst design details to the NCUAQMD for review and approval at least 90 days prior to scheduled delivery of these systems to the site. The Permittee shall not install or operate the SCR and oxidation catalyst systems without authorization from the APCO. [NCUAQMD Rule 110, Rule 102 §5.0]~~

~~414. 110. In accordance with the NCUAQMD approved Commissioning Plan required under the Startup, Commissioning & Simultaneous Operation Section of this Permit Condition #122, the Selective Catalytic Reduction (SCR) system and the oxidation catalyst shall be installed, adjusted, and operated to minimize emissions from each reciprocating engine in the time frame specified in the Commissioning Plan. [NCUAQMD Rule 102 §5.0]~~

~~415. 111. The continuous monitors specified in the Authorized Equipment Section of this Permit Conditions #75, #83, and #86 shall be installed, calibrated, and operational prior to the first firing of reciprocating engines S-1 through S-10. After first firing, the detection range of the CEMS shall be adjusted as necessary to accurately measure the resulting range of NOx and CO emission concentrations. [NCUAQMD Rule 102 §5.0]~~

Performance testing to demonstrate compliance with 40 CFR 63 ZZZZ is only required to be performed on engines S-1 through S-10. Conditions 119 and 120 have been clarified accordingly.

119. Not later than 90 days prior to first operation, the Permittee shall prepare and submit to the NCUAQMD for approval a plan for complying with the requirements of 40 CFR 63 Subpart ZZZZ. This compliance plan shall provide for an initial performance test on each of the reciprocating engines S-1 through S-10 to demonstrate that each oxidation catalyst is achieving a minimum 70% reduction in CO over a four hour period. During the initial performance test, the Continuous Emission Monitors shall successfully complete a performance evaluation in accordance using PS3 and 4A of 40 CFR Part 60 Appendix B; the oxidation catalyst pressure drop and inlet temperature shall be measured using ASTM D6522-00 [§63.6625(a)]; and the CEMS data collected in accordance with §63.6625(a) with the data reduced to 1-hour averages.

120. Not later than 90 days prior to first operation, the Permittee shall prepare and submit to the NCUAQMD for approval a plan for complying with the requirements of 40 CFR 60 Subpart IIII. This compliance plan shall provide for an initial performance test on each of the reciprocating engines S-1 through S-10 to demonstrate compliance with the NOx and PM limitations of 40 CFR §60.4204(c)(1) and (c)(2) and shall establish

operating parameters to be monitored continuously to ensure that each reciprocating engine continues to meet the applicable emission standards.

~~422.~~ 118. The total mass emissions of NO<sub>x</sub>, CO, ROC, PM<sub>10</sub>, and SO<sub>x</sub> that are emitted from the reciprocating engines during the Commissioning Period shall accrue towards the annual emission limits specified in ~~Condition #106~~ Pollutant Limitations Section of this Permit. [NCUAQMD Rule 102 §5.0]

~~427.~~ 122. All equipment listed in Table 1.0 Authorized Emission Devices and ~~2.0~~ 1.1 Authorized Control Devices shall be operated and maintained by the Permittee in accordance with manufacturer's specifications for optimum performance; and in a manner so as to minimize emissions of air contaminants into the atmosphere. [NCUAQMD Rule 102 §5.0]

~~429.~~ 124. ... The plan shall include, but not be limited to, daily system integrity inspections and the recording of operational parameters. The Plan shall be submitted to the NCUAQMD not more than sixty (~~30~~60) calendar days following expiration of the Commissioning Period for any of reciprocating engines S-1 through S-10. ....

133. ~~438.~~ While operating the reciprocating engines S-1 through S-10 in Diesel Mode, the Permittee shall fire the engines:

- a. Only with CARB Diesel as specified in Table 2.3 ~~4.4~~ Fuel Specifications for S-1 through S-10;
- b. For not more than 50 hours per year for maintenance and testing per engine; and
- c. Such that the combined engine operating hours do not exceed 1000.0 engine hours per year on a 365 day rolling average basis.

~~443~~ 144 The Permittee shall provide to the NCUAQMD, a completed "Compliance Certification" form signed by the Facility's Responsible Official which certifies the compliance status of the facility twice per calendar year. The compliance certification form must be submitted to the NCUAQMD according to the following schedule: The semiannual certification (covering quarters 1 and 2) must be submitted prior to July 31<sup>st</sup> of the reporting year; and the annual certification (covering quarters 1, 2, 3, and 4) prior to March 1<sup>st</sup> of the following calendar year. The content of the Annual Certification shall include copies of the records designated in Table 7.0 to be kept "Annually".

~~451.~~ 146. Table 7.0 Required Records for Engines S-1 through S-10  
Hourly (for each engine) section

- A. NO<sub>x</sub> (ppmvd @ 15% O<sub>2</sub>) and lb/hr, on a ~~rolling 3~~ 1 hour average
- F. Natural gas fuel consumption (MMBtu HHV, ~~3-hr rolling~~ hourly average)

G. Diesel fuel consumption during Diesel Mode (MMBtu HHV, ~~3-hr rolling~~ hourly average)

### Daily Section

- I. Diesel fuel consumption during Diesel Mode (MMBtu HHV and gallons, for each engine and total for all engines)
- ~~L. Quantity of fuel combusted (therms and gallons for each engine and total for all engines)~~

### Quarterly Section

- I. Diesel fuel consumption during Diesel Mode (MMBtu HHV and gallons. Values for each engine and total for all engines)
- ~~L. Quantity of fuel combusted (therms, gallons)~~

### Annually Section

- ~~L. Quantity of fuel combusted (therms, gallons)~~

~~163.~~ 158. (d) Ammonia – Bay Area Air Quality Management District (NCUAQMD BAAQMD) Method ST-1B

~~164.~~ 159. The Permittee shall demonstrate compliance with all the emission limits identified in this Permit for the reciprocating engines S-1 through S-10 once per calendar year unless indicated below, using the following methods. For purposes of compliance with this Condition ~~Except as provided in Condition #166,~~ testing shall be conducted while the engines are operated in Natural Gas Mode. All compliance tests shall be conducted at an operating capacity of 50%, 75%, or 95% or greater during the testing of each reciprocating engine. Alternative test methods may be approved by the APCO. *[NCUAQMD Rule 102 §5.0]*

~~(b) Diesel Particulate Matter – CARB Method 5 (front half)~~

~~(d) Ammonia – Bay Area Air Quality Management NCUAQMD Method ST-1B~~

~~(j.) Liquid Fuel Sulfur Content ASTM D5453-93~~

## California Environmental Quality Act

The California Legislature enacted the California Environmental Quality Act (CEQA) in 1970 as a means to require public agency decision makers to document and consider the environmental implications of their actions. CEQA compels agencies to identify the environmental effects of potential projects (actions), to determine whether they are significant, and then require the effects to be mitigated either through the imposition of feasible measures or through the selection of alternatives. There are several types of environmental review documents, each of varying complexity, which may be prepared to record the agency's decision making process. CEQA affords the public the opportunity to comment on proposed projects and requires the agency to respond in writing.

The Air Pollution Control Officer (APCO) has proposed to modify the Authority to Construct and Prevention of Significant Deterioration Permit for this facility. The proposed action will not include a modification which authorizes an increase in the quantity of emissions from the facility nor a change in the nature or type of the emissions released. Thus, the APCO has determined that the proposed modifications to the ATC / PSD Permit will have no significant effect on the environment. Having made such a finding, in accordance with District Rule 103 §11.0, no further action is necessary.

### **Compliance Status**

In accordance with California Health & Safety Code Section 42331 and District Rule 103 §9.0, a review of the Facility's current compliance status was performed. At the time of preparation of this evaluation, there were no District records of pending Notices of Violations, or unresolved compliance issues with any of the permitted units or any operations at the Humboldt Bay Power Plant or the Humboldt Bay Generating Station. On November 16, 2009, Roy Wills of PG&E submitted a certification statement to the District indicating that to the best of his knowledge, all sources owned or operated by PG&E in the State of California that have the potential to emit in excess of 25 tons per year are either in compliance or on a schedule of compliance with all applicable state and federal air emission limitations and standards.

### **Conclusion**

The proposed modifications described in this evaluation should not impede or preclude the applicant's ability to comply with all local, state, and federal emission requirements when the equipment is operated in accordance with the Authority to Construct Temporary Permit Operate #443-1 as amended. Further, staff has evaluated the information presented by the applicant and applicable rules and regulations, and believes sufficient evidence exists for the APCO to make the determinations required under Rule 102 §1.2 and issue the proposed permit.

Evaluation prepared by:  Date: 12/2/09

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