Bay Area Air Quality Management District

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Permit Evaluation
and
Statement of Basis
for

RENEWAL
of
MAJOR FACILITY REVIEW PERMIT

For

Dynegy Oakland, LLC
Facility #B1887

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Application #28617

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Permit Evaluation and Statement of Basis for Renewal of a Major Facility Review Permit

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a "major facility" as defined by BAAQMD Regulation 2-6-212. It is a "major facility" because it has the potential to emit as defined by BAAQMD Regulation 2-6-218 more than 100 tons per year of a regulated air pollutant.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

Pursuant to Regulation 2, Rule 6, section 416, the District has reviewed the terms and conditions of this Major Facility Review permit and determined that they are still valid and correct. This review included an analysis of applicability determinations for all sources, including those that have been modified or permitted since the issuance of the initial Major Facility Review Permit. The review also included an assessment of all monitoring in the permit for sufficiency to determine compliance. The statement of basis documents for permit revisions that have occurred since the initial Major Facility Review permit was issued are hereby incorporated by reference and are available upon request.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is B1887.

This facility received its initial Major Facility Review permit on March 22, 2000. The permit was renewed on September 22, 2005 and October 24, 2012. This application is for the third renewal of the Title V permit. The proposed renewal permit shows all changes to the permit in strikeout/underline format. The facility has eight permitted sources and one exempt source.

All revisions are described below in the permit content section. The proposed permit shows all changes to the permit in strikeout/underline format.

The facility has not submitted any New Source Review applications since the Major Facility Review permit was last renewed on October 24, 2012.

B. Facility Description

The facility is a power plant. It has six 365 MMbtu/hr gas turbines (S-1 through S-6) that have permits to burn distillate oil or lighter fuel oil. Each turbine runs less than 877 hours/yr pursuant to District Regulation 9-9-302. It also has one Wipe Cleaning Operation (S-9) and one Emergency Standby Diesel Engine (S-20). Total solvent evaporation from S-9 is limited to 20 gallons in any consecutive twelve-month period. Discretionary operation of S-20, Emergency Standby Engine, is limited to 20 hours per calendar year. There has been no significant change in emissions from this facility since the last renewal permit was issued.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for certain fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

Changes to permit:

- The dates of adoption and approval of rules in Standard Condition I.A have been updated as necessary
- E-mail addresses have been added to the sections I.F. and I.G. to allow electronic submittal of semi-annual monitoring reports and annual compliance certifications

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S-9).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, per year or 400 pounds of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210, per year.

All abatement (control) devices that control permitted or significant sources are listed. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls

VOC emissions, it will be listed in the abatement device table but will have an "S" number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to control emissions, it is considered an abatement (or "A") device. If the primary function of a device is a non-control function, the device is considered a source (or "S").

Major Facility Review permits list all abatement (control) devices. This facility has no control devices.

The equipment section is considered part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types and capacities of turbines etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued an authority to construct or a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District's regulations. The capacities in the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

There are no differences between the equipment list in the permit and the equipment list in the original Title V permit application.

Changes to permit:
None.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Major Facility Review permit if they are considered significant sources pursuant to the definition in BAAQMD Rule 2-6-239.

Changes to permit:

The dates of adoption or approval of the rules and their "federal enforceability" status in Table III have been updated as necessary.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan (SIP). SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the "Federally Enforceable" column will have a "Y" for "yes". If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements for particular sources. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements.

Complex Applicability Determinations

S-1, S-2, S-3, S-4, S-5 and S-6 Turbines

The turbines are not subject to **40 CFR 63, Subpart YYYY, Stationary Combustion Turbines**, because the facility is not a major source of hazardous air pollutants.

The turbines are not subject to the Acid Rain program contained in 40 CFR Parts 72 through 78 because they are simple combustion turbines that commenced commercial operation before November 15, 1990, and are thus exempted by 40 CFR 72.6(1).

The turbines are subject to **40 CFR 68, Compliance Assurance Monitoring**, because the turbines have a potential to emit more than 100 tons NOx per year before control by water injection and water injection is considered a control method by the regulation. The compliance assurance-monitoring plan is contained in BAAQMD Condition #2571.

Since the NOx emissions after control are less than 100 tons per year, the frequency of monitoring will continue to be daily in accordance with 40 CFR 64.3(b)(4)(iii).

Similar CAM plans were approved for PG&E (A0024) and Mirant (A0026) for identical turbines. During the public comment period for PG&E, EPA Region 9 commented that in other jurisdictions, 40 CFR 64, Compliance Assurance Monitoring, had been imposed on turbines using water injection to comply with federally-enforceable NOx limits. The District examined the issue and determined that the potential to emit for NOx before control was 139.5 tons per year for each turbine based on the following assumptions:

- 0.88 lb NOx/MM btu
- 877 hours/yr (limit in BAAQMD Regulation 9-9-302)
- 2,600 gal fuel oil/hr
- 137,000 btu/gal fuel oil

Water injection is defined as a control device in 40 CFR 64.2. Based on the definition and the pre-control emissions, the District has concluded that the S1-S6, Turbines, are subject to this requirement.

BAAQMD Condition #2571 includes the CAM plan required by 40 CFR 64. Following are the elements of the plan:

- Minimum water to fuel ratio of 60% to 75% (volume basis) during all periods of operation
- Accuracy of water and fuel meters of plus or minus 5 percent
- Calibration of meters every two years
- Daily record of water to fuel ratio
- Monitoring for sulfur and nitrogen content of every batch delivery of fuel
- Recordkeeping for hours of operation for each turbine

This CAM plan is based on the example in the EPA document entitled “Draft Supplement to Compliance Assurance Monitoring Tech. Guidance Document. 12 New Case Studies.” It differs in that recordkeeping will be on a daily basis, not hourly, and that the flow meters will be calibrated every two years, not every year. The District finds this plan approvable because the more rigorous plan is based on a 150-MW turbine with no limit on hours of operation, whereas this facility has six 25-MW turbines that are limited to 877 hours of operation per calendar year.

The monitoring of water injection to determine compliance with the NOx limitation is acceptabler because the water injection reduces NOx by 70 to 90 percent and is the method used to comply with the 65 ppmv NOx limit in BAAQMD Regulation 9-9-302. The facility has submitted results of test at one of their six turbines that show that the water injection rate is sufficient to meet the limit.

Since the tests submitted do not show a high margin of compliance, a requirement for source testing pursuant to 40 CFR 64.6(b) will be added. Source testing shall be performed within the first 877 hours of operation after issuance of the renewal permit or two years after issuance of the renewal permit, whichever is earlier. The reason for this extended schedule is that the turbines typically run only about 100 hours per year when required by the California Independent System Operator, so source testing may be difficult to schedule.

Duke Energy/Dynegy concurred with the Compliance Assurance Monitoring requirements listed above.

40 CFR 60 Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)

S-20 Emergency Standby Engine is an emergency engine. S-20 is a compression ignition, diesel fired, 69.5 HP engine. It is not subject to emission and operating limitations, fuel requirements, performance testing, initial compliance, and notification requirements in this subpart. The engine is subject to the following requirements: (1) maintenance procedures of Table 2d, Part 4; (2) general maintenance for safety and to minimize emissions; (3) limited operation for non-emergency maintenance checks and testing; and (4) continuous compliance and recordkeeping.

S-20 is subject to the HAP area source requirements since the HAP PTE emissions calculation demonstrates that the facility is not considered Major for HAPs.

Facility HAP PTE Calculations:

There are 6 gas turbines with a limit of 2,610 gallons per year for each. Total distillate oil usage is therefore (6)(2,610) = 15,660 gallons per year
Heat content of distillate oil no. 2 is 139 MM Btu/thousand gallons
Total combined heat rate = (139 MM Btu/thou. gal.)(15.66 thou. gal. = 2,176.74 MM Btu/year

HAP emissions from Gas Turbines

Pollutant	Emission Factor (lb/MM Btu)	Annual Emissions (lb/year)
1,3-Butadiene	1.6 E-05	0.035
benzene	5.5 E-05	0.12
formaldehyde	2.8 E-04	0.61
naphthalene	3.5 E-05	0.08
PAH	4.0 E-05	0.09
	Total:	0.935

Emission Factors are from AP-42, "Table 3.1-4. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM DISTILLATE OIL-FIRED STATIONARY GAS TURBINES"

The HAP and diesel particulate emissions from S-20 Emergency Standby Diesel Engine are assumed to be negligible based upon the maximum bhp rating of 69.5 bhp and the assumed 500 hours of operation per year per EPA PTE guidance.

As shown, the single and combined facility HAP emissions do not exceed the major source thresholds of 10 tpy per HAP or 25 tpy for any combination of HAPs.

Changes to permit:

The dates of adoption or approval of the rules and the "federal enforceability" status have been updated as necessary.

Table IV-A for S-1 through S-6 Gas Turbines

- SIP Regulation 9-1-301 and 9-1-304 were added

Table IV-C for S-20 Emergency Standby Diesel Engine

- The hours of operation limitation of the ATCM for stationary CI engines was added
- Future effective requirements of the ATCM that have passed were deleted
- The bases for the condition #22820 citations have been revised to agree with current standard version of condition in District data bank.

V. Schedule of Compliance

A schedule of compliance is required in all Major Facility Review permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;

10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and

10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

Changes to permit:

None

VI. Permit Conditions

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and, as appropriate, revised the conditions for clarity and enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits.

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting requirements have been added to the permit.

All changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all "strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review. Permit conditions may also be derived from periodic monitoring requirements pursuant to BAAQMD Regulation 2-5-503, Monitoring.

Each permit condition is identified with a unique numerical identifier, up to five digits. Each part of the condition is also identified by a part number and each subpart is identified by a letter (for example, Condition 789, part 1a).

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.

Any changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all "strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

Changes to permit:

Condition #22820 for S-20 Emergency Standby Diesel Engine is a standard condition that applies to numerous engines permitted in the BAAQMD. The basis of each condition part has been revised to agree with the current standard condition in the data bank.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The District has reviewed all monitoring and has determined the existing monitoring is adequate with the following exception. Sources S-1 through S-6, Turbines, are subject to 40 CFR 68, Compliance Assurance Monitoring, because the NOx emissions at each turbine would exceed 100 tons per year without control, the turbines are subject to a federally enforceable NOx limit, and NOx emissions are controlled by water injection.

The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements**.** It follows that, although Title V calls for a re-examination of all monitoring**,** there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation**.** Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. Therefore, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate**.**

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1 through S-6, Turbines	SIP Regulation 6-301	Ringelmann 1.0 for less than 3 min/hr	Visible emissions monitoring on every turbine for every 400 hours of operation

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1 through S-6 Turbines	SIP Regulation 6-310	0.15 gr/dscf	None
S-20 Emergency Standby Diesel Engine	SIP Regulation 6-303	Ringelmann 2.0	None
S-20 Emergency Standby Diesel Engine	SIP Regulation 6-310	0.15 gr/dscf	None

PM Discussion:

BAAQMD Regulation 6 "Particulate Matter and Visible Emissions"

Visible Emissions

Visible emissions monitoring for every 400 hours of operation was imposed on S-1 through S-6, Turbines, when the Title V permit was first issued in 2000. This monitoring continues to be the most rigorous visible emissions monitoring imposed on a source of this size for opacity.

The potential to emit for PM for each turbine, using AP-42 factors, is:
(0.012 lb PM/MMbtu) x (2600 gallons fuel oil/hr) x (139,000 btu/gallon) x (877 hr/yr) = 3803 lb PM10/yr = 1.9 tons/yr

Particulate Weight Limitation

BAAQMD Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. Section 310.3 limits filterable particulate emissions from "heat transfer operations" to 0.15 gr/dscf @ 6% O_2. These are the "grain loading" standards.

S-1 through S-6, Turbines

S-1 through S-6, Turbines are subject to BAAQMD Regulation 6-1-310, 0.15 gr PM /dscf. No monitoring has been imposed because the margin of compliance is high, as shown by the following calculations.

Using the AP-42 emission factor and diesel oil data, and a typical diesel oil flue gas production rate of 9190 dscf/MMbtu at 0% oxygen, the particulate grain loading in each turbine's exhaust is expected to be less than 0.01 grains/dscf at 15% oxygen.

(0.012 lb PM/MMbtu) x (7000 gr/lb) / (9190 dscf/MMbtu) = 0.009 gr/dscf

The ratio of the limit to the calculated grain loading is 16:1; therefore, no additional monitoring is necessary to assure compliance.

S-20, Emergency Standby Diesel Engine

S-20, Emergency Standby Diesel Engine is subject to BAAQMD Regulations 6-303, Ringelmann 2.0 limitation and 6-310, 0.15 gr PM/dscf. No monitoring has been imposed because this engine will be used only in case of emergency-related activities like loss of regular electric power supply, fire and during maintenance of a primary motor.

SO_2 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1 through S-6, Turbines	SIP Regulation 9-1-301	Ground level concentrations of SO2 shall not exceed: 0.5 ppm for 3 consecutive minutes AND 0.25 ppm averaged over 60 consecutive minutes AND 0.05 ppm averaged over 24 hours	None
S-1 through S-6, Turbines	SIP Regulation 9-1-304	Sulfur content of fuel < 0.5% by weight	Fuel certification
S-20, Emergency Standby Diesel Engine	SIP Regulation 9-1-301	Ground Level SO_2 Limits: $\leq$ 0.5 ppm for 3 minutes and $\leq$ 0.25 ppm for 60 min. and $\leq$ 0.05 ppm for 24 hours	None
S-20, Emergency Standby Diesel Engine	SIP Regulation 9-1-304	Fuel Sulfur Content Limit: $\leq$ 0.5% sulfur by weight	Fuel Certification Records

SO2 Discussion:

SIP Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO2 concentration requirements of Regulation 9-1-301 is at the discretion of the APCO (per BAAQMD Regulation 9-1-501). This facility does not have equipment that emits large amounts of SO2 and therefore is not required to have ground level monitoring by the APCO.

S-1 through S-6, Turbines, and S-20, Emergency Standby Diesel Engine, are subject to BAAQMD Regulation 9-1-304, a limit of no more than 0.5% sulfur in liquid fuels, because they burn fuel oil. The standard monitoring, fuel certification, has been imposed on these sources.

Lead Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1 through S-6, Turbines	SIP Regulation 11-1-301	6.75 kg/day	None
S-1 through S-6, Turbines	SIP Regulation 11-1-302	1.0 ug/m3 averaged over 24 hours	None

Following are detailed citations of the lead standards:

11-1-301 **Daily Limitation:** A person shall not discharge any emission of lead, or compound of lead calculated as lead, from any emission point in excess of 6.75 kg (15 lbs) per day.

11-1-302 **Ground Level Concentration Limit Without Background:** A person shall not discharge any emission of lead, or compound of lead calculated as lead, that will result in ground level concentrations in excess of 1.0 ug/m^3 averaged over 24 hours.

These limits shall be compared with the potential to emit for lead from each emission point.

Compliance with 11-1-301

The AP-42 emission factor for lead from fuel oil combustion at S-1 through S-6, Turbines, is 1.4 x 10^{-5} lb/MMbtu. Each turbine can burn 2,600 gallons of fuel oil per hour or 62,400 gallons of fuel oil per day, which is equivalent to 8,674 MM btu/day. The maximum amount of lead that could be emitted per turbine is 0.12 lb/day or 0.05 kg/day.

Since the potential to emit in this case is at least 125 times lower than the limit, no additional monitoring is required.

Compliance with 11-1-302

The maximum lead emission levels above and the dispersion calculations prescribed in BAAQMD Regulation 11-1-601 were used to determine compliance with 11-1-302. The maximum 24-hr average ground level lead concentration caused by the facility at maximum operation is expected to be about 0.11 micrograms/cubic meter, which complies with the 1.0 micrograms/cubic meter limit. The calculations are attached in Appendix A and form part of this Statement of Basis. These calculations are based on fuel oil combustion at the turbines.

POC Sources

POC Discussion: POC limits for S-20, Wipe Cleaning Operation are contained in permit conditions, which also contain adequate monitoring- daily records, and quarterly summations.

Changes to permit:

Table VII-A for S-1 through S-6 Gas Turbines

- SIP Regulation 9-1-301 and 9-1-304 were added

Table VII-C for S-20 Emergency Standby Diesel Engine

- The federal-enforceability column was corrected from Y to N for several non-SIP approved District regulations
- SIP Regulation 9-1-301 and 9-1-304 were added
- The hours of operation limitation of the ATCM for stationary CI engines was added

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements as defined by Regulation 2-6-202.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

Changes to permit

None

IX. Permit Shield

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit that identifies and justifies specific federally enforceable regulations and standards are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting which are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Major Facility Review permits. The District's program does not allow other types of streamlining in Major Facility Review permits.

This facility has no permit shields.

X. Revision History

A citation for the issuance of this renewal permit will be added.

XI. Glossary

Additions and corrections have been made to the glossary as necessary.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Compliance Status:

The responsible official for Dynegy Oakland, LLC submitted a signed Certification Statement form dated April 21, 2017. On this form, the responsible official certified that the following four statements are true:

Based on information and belief formed after reasonable inquiry, the sources identified in the Applicable Requirements and Compliance Summary form that are in compliance will continue to comply with the applicable requirements;

Based on information and belief formed after reasonable inquiry, the sources identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirements, on a timely basis;

Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete;

All fees required by Regulation 3, including Schedule P have been paid.

APPENDIX A

DISPERSION CALCULATIONS FOR LEAD

Regulation 11-1-302 states that a person shall not discharge any emission of lead, or compound of lead, that will result in ground level concentrations in excess of 1.0 $\mu g/m^3$, averaged over 24 hours.

Regulation 11-1-601 states that ground level emissions limited by Section 11-1-302 shall be determined by use of dispersion calculations described in the Manual of Procedures, Volume VI, Section 2.

Based on the potential to emit calculations provided, the analysis (see Appendix 1) shows that the maximum 24-hr average ground level lead concentration caused by Duke Energy is expected to be approximately 0.11 $\mu g/m^3$. Therefore, it is shown that Duke Energy complies with Regulation 11-1-302.

CALCULATION OF GROUND LEVEL LEAD CONCENTRATION

Duke Energy Oakland LLC, Plant 11887

Methodology

According to the Manual of Procedures, Volume VI, Section 2.:

> *"Emission limitations required to meet Regulation 11-1-302 shall be determined by use of formulas 4.1 and 5.13, and figures 3-3 and 3-9, in "Workbook of Atmospheric Dispersion Estimates," by D. Bruce Turner, Public Health Service Publication No. 999-AP-26, Revised 1969, published by the U.S. Department of Health, Education and Welfare. In using said equations and figures, a neutral or "D" stability category shall be assumed, a wind shall be assumed that remains throughout the averaging period directed within a 22.5 ^{o} sector of the compass rose at an average speed of two meters per second, and an ambient air temperature of 293 K shall be assumed.*

Calculations

1. Stack parameters:

	S1	S2	S3	S4	S5	S6
V_S	16.9 m/s	16.9 m/s	16.9 m/s	16.9 m/s	16.9 m/s	16.9 m/s
T_S	722 K	722 K	722 K	722 K	722 K	722 K
d	3.9 m	3.9 m	3.9 m	3.9 m	3.9 m	3.9 m
H_S	20.9 m	20.9 m	20.9 m	20.9 m	20.9 m	20.9 m

2. Calculate plume rise using formula 4.1 (Holland's Equation) in Turner's workbook.

$\delta H = (V_S\ d/u)(1.5 + (2.68\ E\text{-}3)(p\ d)((T_S - T_A)/T_S))$

using

$u = 2$ m/s
$T_a = 293$ K
$p = 1013$ mb

	S1	S2	S3	S4	S5	S6
δH	235 m	235 m	235 m	235 m	235 m	235 m

3. Determine X_{MAX} from Figure 3-9 in Turner's Workbook.

H = Effective height of emission

$H = H_S + \delta H$

	S1	S2	S3	S4	S5	S6
H	256 m	256 m	256 m	256 m	256 m	256 m

From Fig. 3-9, assuming "D" stability as specific in the MOP and H from above:

	S1	S2	S3	S4	S5	S6
X_{MAX}	14 km	14 km	14 km	14 km	14 km	14 km

4. Determine Vertical Dispersion Coefficient (σ_z) from Figure 3-3 in Turner's workbook.

From Fig. 3-3, assuming "D" stability and X_{MAX} from above:

	S1	S2	S3	S4	S5	S6
σ_z	160 M	160 M	160 m	160 m	160 m	160 m

5. Calculate maximum annual average (X_{AN}) and 24-hour average (X_{24}) concentrations using Formula 5.13 in Turner's Workbook:

$X_{AN} = (2.03\ Q)(\exp[\ -0.5\ (H/\sigma_z)^2\ ])/(\ \sigma_z\ u\ X_{MAX})$

Using Q = 2.9 E-3 g/sec lead [from Title V potential to emit calculation]

X_{AN} = g/m^3, maximum annual average

X_{24} = 4 X_{AN} = g/m^3, maximum 24-hr average

	S1	S2	S3	S4	S5	S6	Maximum Total
Q	2.9 E-3 g/s	2.9 E-3 g/s	2.9 E-3 g/s	2.9 E-3 g/s	2.9 E-3 g/s	2.9 E-3 g/s	
X_{AN}	4.7 E-3 ug/m^3	4.7 E-3 ug/m^3	4.7 E-3 ug/m^3	4.7 E-3 ug/m^3	4.7 E-3 ug/m^3	4.7 E-3 ug/m^3	
X_{24}	0.0188 ug/m^3	0.0188 ug/m^3	0.0188 ug/m^3	0.0188 ug/m^3	0.0188 ug/m^3	0.0188 ug/m^3	0.11 ug/m^3

APPENDIX B

GLOSSARY

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

AP-42
EPA's Compilation of Air Pollutant Emission Factors

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

Basis
The underlying authority that allows the District to impose requirements.

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEQA
California Environmental Quality Act

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO
Carbon Monoxide

Cumulative Increase
The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

District
The Bay Area Air Quality Management District

dscf
Dry Standard Cubic Feet

EPA
The federal Environmental Protection Agency.

Excluded
Not subject to any District regulations.

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

Grains
1/7000 of a pound

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

IERC
Interchangeable Emission Reduction Credit, as defined by BAAQMD Regulation 2-9-212.

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MFR
Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP
The District's Manual of Procedures.

NAAQS
National Ambient Air Quality Standards

NESHAPS
National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC
Non-methane Hydrocarbons (Same as NMOC)

NMOC
Non-methane Organic Compounds (Same as NMHC)

NOx
Oxides of nitrogen.

NSPS
Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR
New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility
A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

SIP
State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2
Sulfur dioxide
THC
Total Hydrocarbons (NMHC + Methane)

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC
Total Organic Compounds (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Plan

TSP
Total Suspended Particulate

VOC
Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
F	=	degrees Fahrenheit
G	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m2	=	square meter
min	=	minute
ug	=	micro-gram, one millionth of a gram
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

Symbols:

<	=	less than
>	=	greater than
≤	=	less than or equal to
≥	=	greater than or equal to