CALIFORNIA ENERGY COMMISSION 1516 NINTH STREET GRAY DAVIS, Governor



STATE OF CALIFORNIA State Energy Resources Conservation and Development Commission

In the Matter of:

Calpine Corporation Company LOS MEDANOS ENERGY CENTER PROJECT Docket No. 98-AFC-1C Order No. 01-0124-03

ORDER APPROVING a Petition to Amend Air Quality Conditions of Certification

The Calpine Corporation (Calpine), owner/operators of the Los Medanos Energy Center Project Los Medanos), has requested the California Energy Commission to modify various Air Quality Conditions of Certification. The modifications to the Commission Decision for Los Medanos will allow Calpine to maximize the generating capability of the plant and add reliability to steam and power production.

Specifically, Calpine is requesting the following changes:

- Increase the fuel consumption limits of the combustion turbine and the heat recovery steam generator from 2,012 million British Thermal Unit per hour (MMBtu/Hr) to 2,225.1 MMBtu/Hr to allow full operation of the combustion turbines during those times when temperatures are lower than the annual average;
- Revise allowable mass emission rates for carbon monoxide (CO), oxides of nitrogen (NO_X), precursor organic compounds (POC), particulate matter less than ten microns (PM10) and sulfur oxides (SO_X) so that they are consistent with new fuel consumption limits;
- Revise the permitted NO_X, CO, and POC emission levels for the combustion turbine during shutdown and start-up conditions;
- Increase the size of the duct burners from 83 to 300 MMBtu/Hr to allow for increased plant performance and additional electrical generation during periods of increased electrical demand;
- Increase the size of the auxiliary boiler from 266 to 320 MMBtu/Hr to better meet the demand of the steam host (USS –POSCO), as well as provide onsite steam to facilitate the start up of the combustion turbines;
- Increase the allowable amount of total dissolved solid concentrations in water used in the cooling tower;
- Increase allowable emissions during the Commissioning Period (the operation that starts with the first firing of a major system in the power plant to the beginning of commercial operation);
- Install a selective catalytic reduction control system in the auxiliary boiler for NO_X control;

- Add a 600 kilowatt natural gas-fired emergency generator and a diesel fuel fire pump to satisfy insurance requirements for onsite protection capability; and
- Revise air emission offset requirement to reflect the new emission limits.

Increasing the size of the auxiliary boiler and the duct burner will cause an increase in the $\$ emission rate of CO, NO_X, POC, PM10 and SO_X. However, Calpine is proposing to submit additional emission reduction credits to mitigate for the increased emission limits.

The Commission approves Calpine's proposed amendment and the proposed modified conditions in accordance with Title 20, Section 1769 (a) (3) of the California Code of Regulations.

COMMISSION FINDINGS

Based on staff's analysis, the Commission concludes that the proposed changes will not result in any significant impact to public health and safety, or the environment. The Commission finds that:

- There will be no new or additional significant environmental impacts associated with the proposed changes.
- The project will remain in compliance with all applicable laws, ordinances, regulations and standards, subject to the provisions of the Public Resources Code section 25525.
- The changes will benefit the project owner by providing Calpine the means to operate a more efficient project and provide additional electricity during peak demand periods. The changes will also enable Calpine to better meet the demand of their steam host, USS-POSCO.
- There has been a substantial change in circumstances resulting in information that was not available to the parties prior to the Commission certification. The substantial change is that Calpine purchased the Los Medanos project following Commission certification and could not make these changes during the siting process.

CONCLUSION AND ORDER

The California Energy Commission hereby adopts the following changes to the Los Medanos Energy Center Project Decision:

Changes to Air Quality Conditions of Certification:

(Deleted language is shown as strike through. New language is shown as bold and underlined.)

AQ-1. The owner/operator of the Pittsburg District Energy Facility (PDEF) shall minimize emissions of carbon monoxide and nitrogen oxides from S-1 & S-3 Gas Turbines, S-2 & S-4 Heat Recovery Steam Generators (HRSG), and S-5 Auxiliary Boiler to the maximum extent possible during the commissioning period. Conditions 1 through 13 shall only apply during the commissioning period as defined above. Unless otherwise indicated, Conditions 14 through 51 shall apply after the commissioning period has ended.

<u>Verification:</u> The owner/operator shall submit a monthly compliance report to the California Energy Commission (CEC) Compliance Project Manager (CPM). In this report the owner/operator shall indicate how this condition is being implemented.

AQ-5 The owner/operator of the PDEF shall submit a plan to the District Permit Services Division and the CEC CPM at least four weeks prior to first firing of S-1 and S-3 Gas Turbines describing the procedures to be followed during the commissioning of the turbines, HRSGs, auxiliary boiler, and steam turbine. 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 Dry-Low-NO_x combustors, the installation and operation of the SCR systems and oxidation catalysts, the installation, calibration, and testing of the CO and NO_x continuous emission monitors, and any activities requiring the firing of S-1 and S-3 Gas Turbines and S-2 and S-4 HRSGs without abatement by the SCR Systems or oxidation catalysts.

<u>Verification:</u> Submission of a complete plan including information required that useful to establish the procedures to follow for conditions 1 through 3 shall be deemed a verification of this condition.

AQ-6. During the commissioning period, the owner/operator of the PDEF shall demonstrate compliance with conditions 11 and 12 through the use of properly operated and maintained continuous emission monitors and recorders for the following parameters:

- firing hours
- fuel flow rates
- stack gas nitrogen oxide emission concentrations
- stack gas carbon monoxide emission concentrations
- stack gas oxygen concentrations.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for S-1 and S-3 Gas Turbines, S-2 and S-4 HRSGs, and S-5 Auxiliary Boiler. The owner/operator shall use District-approved methods to calculate heat input rates, nitrogen oxide mass emission rates, carbon monoxide mass emission rates, and NO_x and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least 5 years from the date of entry and made available to District personnel or CEC CPM upon request.

<u>Verification</u>: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

AQ-11. Combined pollutant emissions from S-1 & S-3 Gas Turbines and S-2 & S-4 Heat Recovery Steam Generators shall not exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of S-1 & S-3 Gas Turbines.

- NO_x (as NO₂) $\frac{1,360 \cdot 3,511}{3,511}$ pounds per calendar day 616 pounds/hour
- CO $6,800 \underline{10,848}$ pounds per calendar day
- POC (as CH₄) 720 pounds per calendar day
- PM₁₀ 816 pounds per calendar day
- SO₂ 268 pounds per calendar day

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

5,053.8 pounds/hour

9.74 14 pounds per hour

AQ-12. Pollutant emissions from S-5 Auxiliary Boiler shall not exceed the following limits during the commissioning period. These emission limits shall include emissions that occur during S-5 Auxiliary Boiler start-ups.

- NO_x (as NO₂) 69.8 268 pounds per calendar day 2.91 21 pounds per hour
- CO 233.8 pounds per calendar day
- POC (as CH₄)⁻ 8.64 <u>16</u> pounds per calendar day
- PM_{10} $31 \underline{60}$ pounds per calendar day
- SO₂ 3.6 <u>8</u> pounds per calendar day

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

Conditions for the Gas Turbines (S-1 & S-3) and the Heat Recovery Steam Generators (HRSGs) (S-2 & S-4).

AQ-14. The Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall be fired exclusively on natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. (BACT for SO₂ and PM₁₀)

<u>Verification:</u> The owner/operator shall submit to the CEC CPM an Air Quality Report every January and July. The Air Quality Report shall include two components: an exceptions report, and a complete data report. The exceptions report shall be written, and shall identify all instances where any of the Conditions of Certification have not been met. The complete data report shall be submitted in electronic form, and shall contain all of the data required to demonstrate compliance with the daily and annual limitations on heat inputs and air pollutant emissions. The owner/operator may submit monthly reports in substitution of the semiannual reports with prior approval from the CEC CPM. To demonstrate compliance with respect to the maximum sulfur content of the fuel, the owner/operator shall maintain on site the records of all the guarantees received from its natural gas suppliers indicating that the fuel delivered to PDEF complies with the above limitation. These monthly reports could be coordinated with the reports required in Condition 43. These records shall be made available to the District or the CEC CPM upon request during on-site compliance inspections.

AQ-15. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) shall not exceed 2,012 2,225.1 MM BTU per hour, averaged over any rolling 3-hour period. (PSD for NO_x)

<u>Verification:</u> As part of the Air Quality Reports, the owner/operator shall includeinformation on the date and time when the hourly fuel consumption exceeds this hourly limit. The owner/operator must also report any violations of permit_conditions in a timely manner, as required in condition 45.

AQ-16. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) shall not exceed 48,288 50,738.4 MM BTU per calendar day. (PSD for PM₁₀)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceed this daily limit.

AQ-17. The combined cumulative heat input rate for both Gas Turbines (S-1 and S-3) and both HRSGs (S-2 and S-4) shall not exceed 32,500,000 34,010,400 MM BTU per year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall report any violation of this condition.

AQ-19. The Gas Turbine (S-1) and HRSG (S-2) shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-12) and Selective Catalytic Reduction System (A-21), in series. (BACT for NO_x and CO)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction Systems for the Gas Turbines and HRSGs. The information shall include, at a minimum, the date and description of the problem and the steps taken to resolve the problem.

AQ-20. The Gas Turbine (S-3) and HRSG (S-4) shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-3 4) and Selective Catalytic Reduction System (A-4 3), in series. (BACT for NO_x and CO)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction Systems for the Gas Turbines and HRSGs. The information shall include at a minimum the date and description of the problem and the steps taken to resolve the problem.

- AQ-21. The owner/operator of the Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall meet all of the requirements listed in (a) through (f) (h) below, except during a Gas Turbine Start-up or a Gas Turbine Shutdown. (BACT, PSD, and Toxic Risk Management Policy)
 - (a) Nitrogen oxide emissions at P-1 (the combined exhaust point for the S-1 Gas Turbine and the S-2 HRSG after control by the A-1 SCR System and A-2 Oxidation Catalyst) shall not exceed 17.5 20.0 pounds per hour, calculated as NO₂, nor 0.009 lbs/MM BTU of natural gas fired. Nitrogen oxide emissions at P-2 (the combined exhaust point for the S-3 Gas Turbine and the S-4 HRSG after control by the A-3 SCR System and A-4 Oxidation Catalyst) shall not exceed 17.5 20.0 pounds per hour, calculated as NO₂, nor 0.009 lbs/MM BTU of natural gas fired. (PSD for NO_x)
 - (b) The nitrogen oxide concentration at P-1 and P-2 each shall not exceed 2.5 ppmv, -corrected to 15% O₂, on a dry basis, averaged over any 1-hour period. (BACT for NO_x)
 - (c) Carbon monoxide emissions at P-1 and P-2 each shall not exceed 26.56 29.2 pounds per hour, nor 0.0132 lb/MM BTU of natural gas fired. (PSD for CO)
 - (d) The carbon monoxide concentration at P-1 and P-2 each shall not exceed 6 ppmv, corrected to 15% O₂, on a dry basis, averaged over any rolling 3-hour period. (BACT for CO)
 - (e) Ammonia (NH₃) emissions at P-1 and P-2 each shall not exceed 10 ppmv, corrected to 15% O₂, on a dry basis, averaged over any rolling 3-hour period. This ammonia emission concentration shall be verified by the continuous records of the ammonia injection rate to A-1 and A-2-A-3 SCR Systems. The correlation between the gas turbine and HRSG heat input rates, A-1 and A-2 A-3 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-1 and P-2 shall be determined in accordance with permit condition 38. (TRMP for NH₃)
 - (f) Precursor organic compound (POC) emissions at P-1 and P-2 each shall not exceed 3.43 3.8 pounds per hour, nor 0.0017 lb/MM BTU of natural gas fired. (BACT)
 - (g) Sulfur dioxide (SO₂) mass emissions at P-1 and P-2 each shall not exceed 6.2 pounds per hour or 0.00277 lb/MM BTU of natural gas fired. (BACT)
 - (h) Particulate matter (PM10) mass emissions at P-1 and P-2 each shall not exceed 16.3 pounds per hour or 0.0073 lb/MM BTU of natural gas fired. (BACT)

<u>Verification:</u> As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date, time, and duration of any violation of this Condition. The owner/operator shall also include quantitative information on the severity of the violation.

AQ-23. The pollutant emission rates from each of the Gas Turbines (S-1 and S-3) during a start-up or shutdown shall not exceed the limits established below. These limits apply to any 60 minute period, not a three hour average. (PSD)

Start Up (lbs/hr) Shutdown (lbs/hr)

44.1

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| Oxides of Nitrogen (as NO ₂) — Carbon Monoxide (CO) — Precursor Organic Compounds (a | <u> </u> | <u>58</u> 238 253 |
|--|----------------------------------|----------------------------------|
| · · · | | |
| × | <u>Start-Up</u> (lb/start-up) | <u>Shutdown</u> (lb/shutdown) |
| Oxides of Nitrogen (as NO ₂) | 240 — | - 20 |

Carbon Monoxide (CO)

Precursor Organic Compounds (as CH₄) 48

Within three months of the end of the Commissioning period, the owner/operator shall submit a plan designed to minimize emissions during the transient conditions encountered during gas turbine start-ups and shutdowns. This plan shall indicate what steps will be taken to start controlling NO_X emissions as soon as feasible, including when ammonia can be fed to the SCR system without producing ammonia slip in excess of 10 ppmvd @ 15% O₂. This plan shall be based upon the experience gathered from the source tests performed per condition 13 and actual operating experience gained during the first six-months of operation. This plan shall also be developed in consultation with the manufacturers of the gas turbines, HRSGs, control systems, and air pollution control units. This plan shall be submitted to the CEC CPM for approval. After the plan has been approved, the owner/operator shall use the procedures included in the plan to minimize NO_x emissions during gas turbine start-ups and shutdowns.

2.514

Within 24 months of the end of the Commissioning period, the owner/operator shall submit a report to the District and the CEC CPM that establishes reasonable maximum hourly mass emission rates for start-up and shutdown conditions during the combustion process. The revised mass emission rates shall be based upon source test and continuous emission monitoring data. Pending approval of the District and the CEC CPM, these revised mass emission rates shall be established as new emission limitations that will supersede the limits included in this condition.

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<u>Verification:</u> This permit condition will be verified with the implementation of Conditions 13, 35, 36, and 45. In the semiannual Air Quality Reports, the owner/operator shall indicate the date, times and duration of any violation to the NOx or CO limits presented in this condition. Approval of the plan and receipt of the report required by this condition are also part of the verification of compliance with this condition.

Conditions for the Auxiliary Boiler (S-5)

AQ-25. The Auxiliary Boiler (S-5) shall be fired exclusively on natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. (BACT for SO₂ and PM₁₀)

<u>Verification:</u> Since the Auxiliary Boilers use the same source of natural gas as the Gas Turbines and the HRSGs, compliance with condition 14 is deemed as compliance with this condition with respect to the sulfur content of the fuel.

AQ-26. The heat input rate to the Auxiliary Boiler (S-5) shall not exceed 266 320 million BTU per hour, averaged over any rolling 3-hour period. (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption rate exceeds this hourly limit.

AQ-27. The cumulative heat input rate to the Auxiliary Boiler (S-5) shall not exceed 399,000 <u>480,000</u> million BTU per year. (Cumulative Increase)

<u>Verification</u>: As part of the Air Quality Reports, the owner/operator shall include information on any violations of this annual fuel consumption limit.

- AQ-28. The owner/operator of the Auxiliary Boiler (S-5) shall meet all of the requirements listed in (a) through (d) (g) below, except during an Auxiliary Boiler Start-up or an Auxiliary Boiler Shutdown. (BACT, PSD)
- (a) Nitrogen oxide emissions at P-3 (the exhaust point for the Auxiliary Boiler) shall not exceed 2.9 3.5 pounds per hour, calculated as NO₂. (PSD for NO_x)
- (b) The nitrogen oxide concentration at P-3 shall not exceed 9.0 ppmv, measured as NO_x, corrected to 3% O₂, on a dry basis, averaged over any rolling 3-hour period. (BACT for NO_x)
- (c) Carbon monoxide emissions at P-3 shall not exceed 9.8 <u>11.8</u> pounds per hour. (PSD for CO)

- (d) The carbon monoxide condentration at P-3 shall not exceed 50 ppmv, corrected to 3% O₂, on a dry basis, averaged over any rolling 3-hour period. (BACT for CO)
- (e) Precursor organic compound (POC) emissions at P-3 shall not exceed 0.36 pounds per hour. (cumulative increase)
- (f) Sulfur dioxide (SO₂) mass emissions at P-3 shall not exceed 0.5 pounds per hour. (cumulative increase)
- (g) Particulate matter (PM10) mass emissions at P-3 shall not exceed 1.6 pounds per hour (cumulative increase)
- (h) Ammonia (NH₃) emissions at P-3 shall not exceed 10 ppmv, corrected to 3% O₂, on a dry basis, averaged over any rolling 3-hour period. This ammonia concentration shall be verified by the continuous recording of the ammonia injection rate at the A-5 SCR System. The correlation between the auxiliary boiler heat input rate, A-5 SCR System ammonia injection rate, and corresponding ammonia emission concentration at P-3 shall be determined in accordance with permit condition AQ-<u>38. (TRMP)</u>

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date, time, and duration of any violation of this condition. The owner/operator shall also include quantitative information on the severity of the violation.

AQ-29. The Auxiliary Boiler (S-5), its burners, combustion chamber, and exhaust system shall be designed and constructed so that the boiler can be retrofitted with an SCR system and/or oxidizing catalyst in the event the Auxiliary Boiler cannot consistently comply with the emission limitations specified in condition 28. (BACT for NO_x and CO)

<u>Verification:</u> 45 days prior to the final order for the auxiliary boiler, the owner/operator shall submit a report to the CEC CPM with enough technical information to demonstrate that the boiler could be retrofitted with SCR and/or oxidizing catalyst.

Conditions for All Sources (S-1, S-2, S-3, S-4, and S-5)

AQ-30. The combined heat input rate to the Gas Turbines (S-1 and S-3), HRSGs (S-2 and S-4), and Auxiliary Boiler (S-5) shall not exceed 102,960 109,157 million BTU per calendar day. (PSD, CEC Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date when the daily fuel consumption exceeds this limit.

AQ-31. The cumulative heat input rate to the Gas Turbines (S-1 and S-3), HRSGs (S-2 and S-4), and Auxiliary Boiler (S-5) combined shall not exceed 32,900,000 34,490,400 million BTU per year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which this annual limit was exceeded.

AQ-32. Total combined emissions from the Gas Turbines, HRSGs, and Auxiliary Boiler (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler Start-ups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any calendar day:

| 1190 | 1,342 pounds of NO _x (as NO ₂) per day | | (CEQA) | |
|------------------|---|---|---|---|
| 522 4 | 6,445 pounds of CO per day | | (PSD) | |
| 892 | 271.3 pounds of POC (as CH ₄) per day | | (CEQA) | |
| 842 | <u>742</u> pounds of PM_{10} per day | - | (PSD) | |
| 272.4 | <u>282.6</u> pounds of SO_2 per day | | (BACT) | |
| | 1190 5224 892 842 272.4 | 1190 $1,342$ pounds of NOx (as NO2) per day 5224 $6,445$ pounds of CO per day 892 271.3 pounds of POC (as CH4) per day 842 742 pounds of PM10 per day 272.4 282.6 pounds of SO2 per day | 1190 $1,342$ pounds of NOx (as NO2) per day 5224 $6,445$ pounds of CO per day 892 271.3 pounds of POC (as CH4) per day 842 742 pounds of PM10 per day 272.4 282.6 pounds of SO2 per day | 1190 1.342 pounds of NOx (as NO2) per day(CEQA) 5224 6.445 pounds of CO per day(PSD) 892 271.3 pounds of POC (as CH4) per day(CEQA) 842 742 pounds of PM10 per day(PSD) 272.4 282.6 pounds of SO2 per day(BACT) |

During days with two cold start-ups (the Gas Turbines have been out of service for more than 72 hours) daily combined NO_X emissions (as NO_2) from the Gas Turbines, HRSGs, and Auxiliary Böiler (S-1, S-2, S-3, S-4, and S-5) shall not exceed 1330 pounds per day. The number of days where the combined NO_X emissions are greater 1190 lb/day and less than 1330 lb/day shall be limited to 10 per consecutive twelve month period.

<u>Verification:</u> As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date of any violation of this Condition including quantitative information on the severity of the violation. The reports should also identify the days on which two cold start-ups occurred and the associated maximum emissions.

AQ-33. Cumulative emissions from the Gas Turbines, HRSGs, and the Auxiliary Boiler combined (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, and Gas Turbine Shutdowns, shall not exceed the following limits during any consecutive twelve-month period:

| (a) | 153.2 | <u>175.7</u> tons of NO_x (as NO_2) per year | (Offsets, PSD) |
|-----|-------------------|---|-----------------------|
| (b) | 487.5 | 506.4 tons of CO per year | (Cumulative Increase) |
| (c) | 97.61 | 33.9 tons of POC (as CH ₄) per year | (Offsets) |
| (d) | 123.55 | <u>131.6</u> tons of PM_{10} per year | (Offsets, PSD) |
| (e) | 39.86 | 47.11 tons of SO ₂ per year | (Cumulative Increase) |

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which these annual limits were exceeded.

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- AQ-34. The maximum projected annual toxic air containinant emissions from the Gas Turbines, HRSGs, and the Auxiliary Boiler combined (S-1, S-2, S-3, S-4, and S-5) shall not exceed the following limits:
 - (a) 3,668 3,817 pounds of formaldehyde per year
 - (b) 41.7 <u>460.9</u> pounds of benzene per year
 - (c) 76.2 78.5 pounds of Specified polycyclic aromatic hydrocarbons (PAHs) per year;

unless the owner/operator meets the requirements of (d), (e), and (f) below:

- (d) The owner/operator shall perform a health risk assessment using the emission rates determined by source test and the most current Bay Area Air Quality Management District (District) approved procedures and unit risk factors in effect at the time of the analysis. The calculated excess cancer risk shall not exceed 1.0 in one million.
- (e) The owner/operator shall perform a second risk analysis using the emission rates determined by source test and the procedures and unit risk factors in effect when the Determination of Compliance was issued. The calculated excess cancer risk shall not exceed 1.0 in one million.
- (f) Both of these risk analyses shall be submitted to the District and the CEC CPM within 60 days of the source test date. The owner/operator may request that the District and the CEC CPM revise the carcinogenic compound emission limits specified above. If the owner/operator demonstrates to the satisfaction of the APCO that these revised emission limits will satisfy the conditions stated in parts (d) and (e) above, the District and the CEC CPM may, at their discretion, adjust the carcinogenic compound emission limits listed above. (TRMP)

Verification: Compliance with condition 37 shall be deemed as compliance with this condition. In addition, approval by the District and the CEC CPM of the reports prepared for this condition will constitute a verification of compliance with this condition.

- AQ-35. The owner/operator shall demonstrate compliance with conditions 15 through 18, 21(a) through 21(d), 23, 24, 26, 28(a) through 28(d), 32(a), 32(b), 33(a), and 33(b) by using properly operated and maintained continuous monitors (during all hours of operation including equipment Start-up and Shutdown periods) for all of the following parameters:
 - (a) Firing Hours and Fuel Flow Rates for each of the following sources: S-1 and S-2 combined, S-3 and S-4 combined, and S-5.
 - (b) Oxygen (O2) Concentrations, Nitrogen Oxides (NOx) Concentrations, and Carbon Monoxide (CO) Concentrations at each of the following exhaust points: P-1, P-2 and P-3.
 - (c) Ammonia injection rate at A-1 and A = 2 A = 3 SCR Systems

The owner/operator shall record all of the above parameters every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the owner/operator shall calculate and record the total Firing Hours, the average hourly Fuel Flow Rates, and pollutant emission concentrations.

The owner/operator shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

- (d) Heat Input Rate for each of the following sources: S-1 and S-2 combined, S-3 and S-4 combined, and S-5.
- (e) Corrected NOx concentrations, NOx mass emissions (as NO2), corrected CO concentrations, and CO mass emissions at each of the following exhaust points: P-1, P-2, and P-3.

For each source, source grouping, or exhaust point, the owner/operator shall record the parameters specified in conditions 35(c) and 35(d) at least once every 15 minutes (excluding normal calibration periods). As specified below, the owner/operator shall calculate and record the following data:

- (f) total Heat Input Rate for every clock hour and the average hourly Heat Input Rate for every rolling 3-hour period.
- (g) on an hourly basis, the cumulative total Heat Input Rate for-each calendar day for the following: each Gas Turbine and associated HRSG combined, the Auxiliary Boiler, and all five sources (S-1, S-2, S-3, S-4, and S-5) combined.
- (h) the average NOx mass emissions (as NO2), CO mass emissions, and corrected NOx and CO emission concentrations for every clock hour and for every rolling 3-hour period.
- (i) on an hourly basis, the cumulative total NOx mass emissions (as NO2) and the cumulative total CO mass emissions, for each calendar day for the following: each Gas Turbine and associated HRSG combined, the Auxiliary Boiler, and all five sources (S-1, S-2, S-3, S-4, and S-5) combined.
- (j) For each calendar day, the average hourly Heat Input Rates, Corrected NOx emission concentrations, NOx mass emissions (as NO2), corrected CO emission concentrations, and CO mass emissions for each Gas Turbine and associated HRSG combined and the Auxiliary Boiler.
- (k) on a daily basis, the cumulative total NOx mass emissions (as NO2) and cumulative total CO mass emissions, for each calendar year for all five sources (S-1, S-2, S-3, S-4, and S-5) combined.

1-520.1, 9-9-501, BACT, Offsets, NSPS, PSD, Cumulative Increase)

<u>Verification:</u> At least 60 days before the initial operation, the owner/operator shall submit to the CEC CPM a plan on how the measurements and recordings required by this condition will be performed. Submittal of the reports will also provide verification of compliance with this condition.

AQ-37. To demonstrate compliance with Condition 34, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions of: Formaldehyde, Benzene, and Specified PAH's. Maximum projected annual emissions shall be calculated using the maximum Heat Input Rate of 32,912920 39/390,400 MM BTU/year and the highest emission factor (pounds of pollutant per MM BTU of Heat Input) determined by any source test at the Gas Turbine, HRSG, or Auxiliary Boiler. (TRMP)

<u>Verification:</u> The owner/operator shall include these calculations in the semiannual reports submitted to the CEC CPM.

AQ-38. Within 60 days of start-up of the PDEF project, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 and P-3 to determine the corrected ammonia (NH3) emission concentration to determine compliance with condition 21(e) and 27(g). The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-1 or A-2 A-3 SCR System ammonia injection rate, and the corresponding NH₃ emission concentration at emission point P-1 or P-2 and the correlation between the heat input rate of the auxiliary boiler, A-5 SCR System ammonia injection rate, and the corresponding NH₃ emission concentration at emission point P-3. The source test shall be conducted over the expected operating range of the turbine (at a minimum, 60%, 80%, and 100% load) to establish the range of ammonia injection rates necessary to achieve NO_x emission reductions while maintaining ammonia slip levels. Continuing compliance with condition 21(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. (TRMP)

<u>Verification:</u> Approval of the source test protocols and the source test reports shall be deemed as verification for this condition.

AQ-39. Within 60 days of start-up of the PDEF project and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum load to determine compliance with Conditions 21(a), (b), (c), (d), (f), (g), & (h) and while each Gas Turbine and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with Conditions 21(c), (d), & (f) and to verify the accuracy of the continuous emission monitors required in condition 35. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and emissions, methane, ethane, and particulate matter (PM_{10}) emissions including condensable particulate matter. (BACT, offsets)

<u>Verification:</u> Approval of the source test protocols, as required in condition 41, and the source test reports shall be deemed as verification for this condition. The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the

execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CEC CPM within 30 days of the date of the tests.

AQ-40. Within 60 days of start-up of the PDEF project and on an annual basis thereafter, the owner/operator shall conduct a District approved source test on exhaust point P-3 while the Auxiliary Boiler (S-5) is operating at maximum allowable operating rates to determine compliance with the emission limitations of Condition 28(a) through 28(d) and to verify the accuracy of the continuous emission monitors required in condition 35. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and emissions, and particulate matter (PM₁₀) emissions including condensable particulate matter. (BACT, offsets)

Verification: Approval of the source test protocols, as required in condition 41, and the source test reports shall be deemed as verification for this condition. The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CEC CPM within 30 days of the date of the tests.

- AQ-42. Within 60 days of start-up of the PDEF project and on an biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 while the Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with Condition 34. Unless the requirements of condition 42(b) have been met, the owner/operator shall determine the formaldehyde, benzene, and Specified PAH emission rates (in pounds/MM BTU). If any of the above pollutants are not detected (below the analytical detection limit), the emission concentration for that pollutant shall be deemed to be one half (50%) of the detection limit concentration. (TRMP)
 - (a) The owner/operator shall calculate the maximum projected annual emission rate for each pollutant by multiplying the pollutant emission rate (in pounds/MM BTU; determined by source testing) by 32,912,920 <u>34,490,400</u> MM BTU/year.
 - (b) If three consecutive biennial source tests demonstrate that the emission rates calculated pursuant to part (a) for any of the compounds listed below are less than the annual emission rates shown, then the owner/operator may discontinue future testing for that pollutant: (TRMP)

| Benzene | \leq | 221 pounds/year |
|-----------------|-------------------|-----------------|
| Formaldehyde ≤ | 1,834 pounds/year | |
| Specified PAH's | \leq | 38 pounds/year |

<u>Verification:</u> The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the owner/operator plans to conduct source testing as required by this condition. Source test results shall be submitted to the District and the CEC CPM within thirty (30) days of conducting the test.

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AQ-47. The Owner/Operator of PDEF shall provide adequate stack sampling ports and platfon hs to enable the performance of source testing. The location and configuration of the stack sampling ports shall be subject to BAAQMD review and approval. (Regulation 1-501)

<u>Verification</u>: One hundred and twenty (120) days before initial operation, the Owner/Operator shall submit to the BAAQMD and the CEC CPM a plan for the installation of stack sampling ports and platforms. Within sixty (60) days of receipt of the plant, the BAAQMD will advise the Owner/Operator and the CEC CPM of the acceptability of the plan; otherwise the plan shall be deemed approved.

AQ-49. Prior to the issuance of the BAAQMD Authority to Construct for the Pittsburg District Energy Facility project, the Owner/Operator shall demonstrate that valid emission reduction credits in the amount of 176.18 tons/year of Nitrogen Oxides, 112.25 tons/year of Precursor Organic Compounds, and 123.55 tons/year of PM₁₀ or equivalent as defined by District Regulations 2-2-302.1, 2-2-302.2, and 2-2-303.1 are under their control through option to purchase contracts or equivalent binding legal documents. Prior to the issuance of a revised BAAQMD Authority to Construct for the project, the Owner/Operator shall demonstrate that valid emission reductions credits in the amount of 25.88 tons/year of Nitrogen Oxides, and 8.05 tons/year of PM10 or equivalent as defined by District Regulations listed above are under their control. (Offsets)

<u>Verification:</u> No more than 30 days after the issuance <u>or a revision</u> of an Authority to Construct, the owner/operator shall provide a copy of the ATC to the CEC CPM for review.

AQ-50. Prior to the start of construction issuance of the BAAQMD Permit to Operate for the Pittsburg District Energy Facility project, the owner/operator shall provide emission reduction credits in the amount of 176.18 tons/year of Nitrogen Oxides, 112.25 tons/year of Precursor Organic Compounds, and 123.55 tons/year of PM₁₀ or equivalent as defined by District Regulations 2-2-302.1, 2-2-302.2, and 2-2-303.1. Prior to the issuance of a BAAQMD Permit to Operate, the owner/operator shall provide additional emission reduction credits in the amount of 25.88 tons/year of Nitrogen Oxides, and 8.05 tons/year of PM10 or equivalent as defined by District Regulations listed above. (Offsets)

<u>Verification:</u> At least 30 days prior to the <u>start of construction</u> issuance of the <u>BAAQMD Permit to Operate</u>, the owner/operator must submit a copy of the required offsets or emission reduction credits (ERCs) to the CEC CPM. <u>At most 15 days after the</u> revised conditions of certifications are adopted, the owner/operator must submit a copy of the required offsets or emission reduction credits (ERCs) to the CEC CPM.

AQ-51. Pursuant to BAAQMD Regulation 2, Rule 6, section 404.1, the owner/operator of PDEF shall submit an application to the District for a Federal (Title V) Operating Permit within

12 months of the date of issuance of the BAAQMD Permit to Operate for the PDEF project. (Regulation 2-6-404.1)

<u>Verification:</u> The owner/operator shall notify the CEC CPM of the submittal of this application. In addition, the owner/operator shall submit to the CPM a copy of the Federal (Title V) Operating Permit within 30 days after it is issue by the District.

Conditions Not Included in the District's Permit Conditions

AQ-52. The cooling towers shall be properly installed and maintained to minimize drift losses. The cooling towers shall be equipped with high efficiency mist eliminators with a maximum guarantee drift rate of 0.0005%. The maximum total dissolved solids (TDS) sampled at the based of the cooling tower or at the point of return to the wastewater facility shall not be higher than 2550 3765 mg/l. The owner/operator shall sample the water at least once a day.

<u>Verification:</u> The owner/operator shall submit to the CEC CPM a guarantee letter from the cooling tower manufacturer prior to its installation. As part of the compliance record, the owner/operator shall keep records on-site on the TDS content of water in the cooling tower.

IT IS SO ORDERED.

STATE OF CALIFORNIA ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

y &4, 2001

WILLIAM J. KEESE, Chairman