

# **ENERGY COMMISSION STAFF ANALYSIS OF THE REQUEST TO AMEND THE OTAY MESA GENERATING PROJECT (OMGP) 99-AFC-5C Amendment Request 1B**

## **AMENDMENT REQUEST**

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The Otay Mesa Generating Company (OMGC) submitted the Amendment Request 1B for the Otay Mesa Generating Project (OMGP) on September 20, 2002 (OMGC 2002). This amendment request is comprised of the following modifications to project equipment:

- separating the two previously collocated turbine/heat recovery steam generator (HRSG) exhaust stacks and increasing the stack height from 144 to 160 feet;
- specifying the project turbines, which were not specified at the time of certification, as General Electric 7FA models, and specifying the associated power generator;
- adding duct firing capability (388 MMBtu/hr per HRSG) to the HRSG units and eliminating power augmentation (PAG) steam injection capability;
- adding an auxiliary boiler (87 MMBtu/hr);
- adding a wet surface air condenser; and
- modifying the equipment associated with the increase in steam production (i.e. steam condenser, steam turbine generator, air cooled condensers).

## **BACKGROUND**

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In August 1999, PG&E Generating filed an Application for Certification with the California Energy Commission to construct and operate a nominal 510 megawatt (MW) combined cycle project in Otay Mesa, California. The OMGP was certified in April 2001. The project sale to Calpine was approved October 2001. The original project design included two 7F type combustion turbine generators (CTG), a steam turbine generator, a dry cooling tower, and ancillary equipment. The project is under construction, albeit, at a measured pace. The fuel will be natural gas.

## **COMMISSION STAFF ANALYSIS**

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The analysis for facility design, biological resources and air quality are provided below.

## **FACILITY DESIGN ANALYSIS**

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## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS**

If the proposed changes are approved, no changes to the applicable engineering LORS will result and the project will remain in compliance with all the applicable engineering LORS.

## SUMMARY OF STAFF ANALYSIS

The analysis associated with the original application has not changed as a result of the above-proposed modifications except that the boiler and boiler stack will be added to the list of major structures and equipment, Table 1. This table has been provided in the California Energy Commission's approval letter to Ed Merrihew (Calpine Compliance Manager), dated December 27, 2001, to add a new Table 1 for Facility Design Condition of Certification Gen-2.

This amendment does not necessitate additional analysis or re-analysis of the project from an engineering perspective.

## CONCLUSIONS, FINDINGS, AND MITIGATION MEASURES

The requested modifications in this amendment will not result in impacts on facility design. Facility Design staff recommends approval of this request and proposes the following change to the new **Table 1** of the existing Conditions of Certification.

## ***CHANGE TO EXISTING CONDITIONS OF CERTIFICATION***

Added text is **bold and double underlined**.

**Facility Design Table 1: Major Structures and Equipment List**

<b>Equipment/System</b>	<b>Quantity (Plant)</b>
Combustion gas turbine (CT) Foundation & Connection	2
Steam turbine Foundation & Connection	1
Combustion Turbine Generator Foundation & Connection	2
Steam Turbine Generator Foundation & Connection	1
Heat Recovery Steam Generator (HRSG) Structure, Foundation & Connection	2
HRSG Stack Structure, Foundation & Connection	2
Generator Step-up Transformer	2
Auxiliary Transformer Foundation & Connection	2
Generator Breaker Foundation & Connection	2
CT Inlet Air Plenum Structure, Foundation & Connection	2
CT Inlet Air Evaporative Cooler Structure, Foundation & Connection	2
Cooling Tower/Air Cooled Condenser Structure, Foundation & Connection	2
CT & ST Building Structure, Foundation & Connection including generator auxiliary compartment (GAC), primary electrical center (PEC) & mechanical accessory compartment	1
Secondary Unit Substation/Transformer Foundation & Connection	2
Electrical Control Center (Switchgear) Structure, Foundation &	1

	<b>Quantity (Plant)</b>
Connection	
CEMS Building Structure, Foundation & Connection	1
Boiler Feed Water Pump Foundation & Connection	4
Condenser Foundation & Connection	2
Condensate Pump Foundation & Connection	4
CT Static Starter Motor Foundation & Connection	2
Fuel Gas Compressor Building Structure, Foundation & Connection	1
ST Lube Oil Package Foundation & Connection	1
Ammonia Tank Structure, Foundation & Connection	1
Ammonia Blower Injection Skid Structure, Foundation & Connection	1
Pipe Rack Structure, Foundation & Connection	N/A
Stairways, Ladders & Platforms	N/A
Fire/Service Water Storage Tank Structure, Foundation & Connection	2
Demineralized Water Storage Tank Structure, Foundation & Connection	2
<b><u>Auxiliary Boiler Structure, Foundation &amp; Connection</u></b>	<b><u>1</u></b>
<b><u>Auxiliary Boiler Stack Structure, Foundation &amp; Connection</u></b>	<b><u>1</u></b>
Fire Water Pump Skid Foundation & Connection	1
Demineralized Water Treatment Building Structure, Foundation & Connection	1
Demineralized Water Pump Foundation & Connection	2
Administration Building Structure, Foundation & Connection	1
Warehouse/Mechanical Shop Structure, Foundation & Connection	1
Fire Pump Building Structure, Foundation & Connection	1
Switchyard Control Building Structure, Foundation & Connection	1
Switchyard, Busses & Towers	1 Lot
Boiler Feed Pump Building Structure, Foundation & Connection	1 Lot
High Pressure and Large Diameter Piping	1 Lot
Potable Water Systems	1 Lot
Drainage Systems (Including sanitary drain and waste)	1 Lot
Building Energy Conservation Systems	1 Lot
Temperature Control and Ventilation Systems (Including water and sewer connections)	1 Lot
HVAC and Refrigeration Systems	1 Lot
Permanent Eye Stations	1 Lot
Chemical Feed System Containment	1 Lot
Water Treatment System Chemical Containment	1 Lot
Ammonia System	1 Lot
Electrical Systems	1 Lot

## **REFERENCE**

OMGC (Otay Mesa Generating Company). 2002a. Amendment 1B to Application for Certification, Otay Mesa Generating Project (99-AFC-5). Submitted to the California Energy Commission, September 25, 2003.

# BIOLOGICAL RESOURCES ANALYSIS

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## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The project owner will need to abide by all federal, state, or local laws, ordinances, regulations, or standards. For Biological Resources, the project will need to continue to abide by the federal Endangered Species Act and receive an amended Biological Opinion as part of the federal Section 7 consultation process.

## SUMMARY OF STAFF ANALYSIS

### Sensitive species impacts

All of the proposed project modifications will occur within the current project site, so there will not be any direct impacts to the Quino checkerspot butterfly (*Euphydryas editha quino*), a federally listed Endangered species, or its habitat. However, there may be indirect effects to its nearby critical habitat due to the project's proposed increase in nitrogen deposition that will result from proposed combustion equipment changes. The U. S. Fish and Wildlife Service identifies enhanced soil nitrogen along with habitat loss and fragmentation, invasion by non-native plants, off-road vehicle activity, grazing, fire, increased atmospheric carbon dioxide concentration, and climate change, as reasons for the species decline and current threats to this butterfly species.

New air modeling was done that accounts for the proposed project modifications covered for this amendment. However, the new predicted mean nitrogen deposition (calculated using the ISCST3 model in deposition mode) remains lower than the deposition predicted under the original modeling analysis (using the ISCST3 model in concentration mode). It is more appropriate to use the mean deposition of the ISCST3 model as an indicator of total N deposition, therefore, the original research and mitigation endowment of \$333,333 already established by the project owner with the San Diego Foundation for the benefit of the Quino checkerspot butterfly, that was based on the original modeling analysis, is considered adequate to cover the currently modeled nitrogen deposition.

To avoid the need for reinitiating the federal Endangered Species permit process each time there is a potential change in the nitrogen deposition, the project owner proposes that future mitigation fees be based on the nitrogen deposition modeling performed as part of this amendment (Amendment 1B). The mean nitrogen deposition rate of 0.0594 kilograms per hectare per year, averaged over the entire Quino checkerspot critical habitat area, the original fee of \$333,333 that was provided to mitigate for the indirect impacts of the modeled nitrogen deposition produces the following relationship - each future modeled deposition increase of 0.01 kilograms per hectare per year will require the project owner to add \$56,117 to the current research endowment. This calculation is independent of existing and future background nitrogen deposition rates and would be applied only to modeled increases from any future modification(s) to the Otay Mesa Generating project.

The U. S. Fish and Wildlife Service (USFWS) has determined that a depressed stock market during 2001 and 2002 produced a lower than expected annual payout for the

Quino checkerspot research endowment and therefore the payout may not provide the intended mitigation funding. Once the project begins commercial operation, the project owner has agreed to pay the difference in deficit years so that the anticipated 4.5% annual payout is realized. Staff expects that any such “truing up” of the mitigation account will cease when the power plant facility is closed or when the research endowment is converted to a different use by the USFWS and the Energy Commission. Only the remaining balance that is in the account at the time of the calculation will be used to calculate the annual payout.

## **CONCLUSIONS, FINDINGS, AND MITIGATION MEASURES**

Staff concludes that the proposed project changes will not cause any significant unmitigated biological resource impacts to state and federally listed species. However, staff also concludes that to be in compliance with the federal Endangered Species Act, the project owner will need to acquire an amended Biological Opinion from the U. S. Fish and Wildlife Service.

The project owner has provided an amended Biological Assessment for this amendment which is currently under review by the U. S. Fish and Wildlife Service. Once the Biological Assessment is deemed data adequate the U. S. Fish and Wildlife Service will provide an amended Biological Opinion to the project owner. Once the project owner receives this document, the project owner must make any necessary changes to the project’s Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and provide the revised BRMIMP (per Biological Resources Condition of Certification **BIO-9**) to the Commission Compliance Project Manager (CPM) for review and approval. In addition, the project owner must also provide a copy of the amended federal Biological Opinion to the CPM, per Biological Resources Condition of Certification **BIO-6**, for review. The project owner’s requested project amendment does not require that any existing Conditions of Certification be changed, however staff proposes that two new Conditions of Certification be added.

## **PROPOSED NEW BIOLOGICAL RESOURCES CONDITIONS OF CERTIFICATION**

**BIO-13** For future modeled nitrogen increases, the project owner will provide additional compensation funds to the Quino checkerspot research endowment, unless otherwise specified by the CPM.

The method to be used to calculate future mitigation fees, as proposed by the project owner and requested by the U.S. Fish and Wildlife Service, will use the following assumptions and methods.

Using the nitrogen deposition rate of 0.0594 kilograms per hectare per year, averaged over the entire critical habitat area, along with the mitigation fee of \$333,333, and normalizing the ratio of the two, produces the following mitigation calculation equation for each nitrogen deposition increase of 0.01 kilogram per hectare per year:

$$\frac{[0.0594 \text{ kilograms per hectare per year}/\$333,333]}{[0.01 \text{ kilograms per hectare per year}/X]} =$$

Solving for X = \$56,117

Thus, for each modeled increase of nitrogen deposition of 0.01 kilograms per hectare per year will require that \$56,117 be added to the research endowment by the project owner.

The ISCST3 model, or another model using similar assumptions and project parameters, will be used to calculate the deposition rate.

This calculation is independent of existing and future background nitrogen deposition rates and is only applied to modeled increases from future project related air emission modification(s).

**Verification:** No fewer than 30 days prior to commencement of project operation that will result in an increase in nitrogen emissions, the project owner will provide, to the CPM, written verification that the additional compensation funds have been provided to the San Diego Foundation or the current manager of the Quino checkerspot research endowment.

**BIO-14** For each year that the Quino checkerspot research endowment account does not return the desired 4.5 percent payout, the project owner will 'true up' the endowment.

The project owner will begin to make required compensation payments, when appropriate, after the Otay Mesa Generating Project has started commercial operation. Only the remaining balance that is in the account at the time of the calculation will be used to calculate the annual payout. Payments will cease when the facility is closed or when the U. S. Fish and Wildlife Service and the Energy Commission convert the research endowment to a different use.

**Verification:** As part of the Annual Compliance Report, the project owner will provide a copy of the San Diego Foundation Fund Advisory Statement, or similar fund statement by the current fund manager, for the Quino checkerspot research endowment.

If the fund advisor statement indicates that less than the 4.5 percent payout has occurred for the calendar year, then within 30 days of filing the Annual Compliance Report, the project owner must provide written verification to the CPM that the required additional compensation has been provided to the San Diego Foundation, or the current fund manager, for the Quino checkerspot research endowment.

## AIR QUALITY ANALYSIS

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The amendment request includes the following changes to project emissions, and requested revisions to permit conditions:

- deleting conditions related to the potential use of SCONO<sub>x</sub> emission controls, as the project is now defined as exclusively using selective catalytic reduction (SCR) oxides of nitrogen (NO<sub>x</sub>) emission controls;
- modifying conditions that discuss the installation/use of an oxidation catalyst, based on the contention that the use of an oxidation catalyst will not be necessary to meet current carbon monoxide (CO) emission limits for the project;
- revising the definition of a startup and increasing the startup/shutdown emission limits;
- revising operating emission limits based on new estimates and the new duct firing operating scenario, which decrease certain pollutant limits during certain operating scenarios/timeframes and increases pollutant limits under other operation scenarios/timeframes, including a large increase in volatile organic compound (VOC) emissions; and
- minor modifications to most other existing permit conditions.

Amendment 1B provides for a significant change in the project description, would significantly increase the project's short-term NO<sub>x</sub> and CO emission limits, would significantly increase the project's VOC and CO annual emission limits, and would significantly decreases the projects PM<sub>10</sub> and SO<sub>2</sub> emission limits. The amendment request also includes an impact analysis that concludes that the requested equipment modifications and emission limit revisions will not cause significant environmental impacts.

On May 22, 2003, the San Diego County Air Pollution Control District (District) issued a draft Determination of Compliance (DOC) for Amendment 1B (District 2003b). Staff, the project owner, and U.S. Environmental Protection Agency (USEPA) provided the District with comments on the draft DOC, and the District then completed a Preliminary Determination of Compliance (PDOC) for public notice and a response to comments on August 6, 2003 (District 2003c, 2003d), and subsequently addressed additional comments from the Energy Commission staff, the project owner, California Air Resources Board and USEPA and provided a Final Determination of Compliance and a revised response to comments on September 25, 2003 (District 2003e, 2003f).

USEPA withdrew the District's PSD permitting authority in April 2003; however, USEPA has subsequently provided the District a limited PSD permitting authority to process the permit revisions for this project.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

LORS identified in the Energy Commission decision for the OMGP also apply to this amendment request. Additional District LORS, beyond those identified in the Energy Commission decision, that apply to the revised project equipment are discussed in the District's FDOC (District 2003e).

## SUMMARY OF STAFF ANALYSIS

This analysis section is comprised of a summary of the petition as it affects air emissions. It also includes an emissions analysis of start up and shut down, normal operations emissions, and impacts analysis and mitigation assessments. The changes that affect OMGP air emissions and air dispersion modeling impacts include:

- An increase in stack height from 144 feet to 160 feet and separation of the adjacent/collocated turbine/HRSG stacks. The original modeling analysis modeled the adjacent/collocated stack as a single equivalent stack, while the revised modeling the two separated stacks;
- The addition of 388 MMBtu/hr duct firing capacity in each HRSG;
- The recalculation of NO<sub>x</sub>, VOC, CO, and sulfur dioxide (SO<sub>2</sub>) emissions;
- The addition of a wet surface air condenser (WSAC) structure and its 0.2 lbs/hour of PM<sub>10</sub> emissions;
- Reduction of the permitted PM<sub>10</sub> emission rates from each HRSG stack from a maximum of 19.1 lbs/hour to a new maximum of 9 lbs/hour when operating without duct firing and 11.5 lbs/hour when operating with duct firing;
- Requested changes in maximum startup emissions;
- Deletion of some diesel emergency equipment;
- Revising the project description to eliminate the potential use of SCONO<sub>x</sub> pollution controls (SCR will be used); and
- The reconfiguration of the site, which modifies the building downwash modeling inputs, including the addition of some site structures, and revision in the size of other site structures. This includes: increasing the size and moving the air cooled condenser structures; adding the WSAC and auxiliary boiler; and changing the dimensions of the demineralized water tanks, fire water tank, services water tank, medium voltage building, the steam turbine with pedestal, and several other small buildings.

The emissions and modeling impacts analysis necessarily includes all of these changes; therefore, the analysis discusses each of these requested revisions in the context of the entire project's new emission and impacts analysis.

## EMISSIONS ANALYSIS

### *STARTUP/SHUTDOWN*

A substantial increase to the turbine/HRSG startup emissions has been proposed. **Air Quality Table 1** provides the original startup emission estimate and the Amendment 1B proposed startup emissions.



**Air Quality Table 1**  
**Proposed Changes to the OMGP Startup Emission Limits**

Pollutant	Permitted Turbine Startup/Shutdown Emissions (lbs/hour)	Proposed Turbine/HRSG Startup Emissions (lbs/hour)	Percent Increase (Decrease) lbs/hr basis	Original Permitted Startup Event Emissions (lbs/event)	Proposed Turbine/HRSG Startup Emissions (lbs/event)	Percent Increase (Decrease)
NO <sub>x</sub> <sup>a b</sup>	44/44	240	445%	33/88	480	1,355%/445%
CO <sup>a b</sup>	600/887	2,706	351%/205%	450/1,774	5,412	1,103%/205%
VOC <sup>a b</sup>	39/49	48	23%/(-2%)	29.25/98	96	228%/(-2%)

Source: District 2000 and 2003e

Notes:

a. Hot or warm start / cold start emissions, respectively, where applicable.

b. Revised proposal does not separate hot, warm or cold starts.

Additionally, the Project Owner has requested specific shutdown emission limits as follows:

- NO<sub>x</sub> – 80 lbs/shutdown
- CO – 902 lbs/shutdown
- VOC – 16 lbs/shutdown

The requested changes to the startup/shutdown emission levels delete the different categories of startup (hot/warm-start and cold start) and combine all starts under a single category, and provide a separate shutdown category. The requested changes increase the quantity of emission allowed under startup, with the exception of the new VOC startup limit that is slightly less than the old cold startup limit. These changes cause a significant increase to the maximum emission potentials and impact the short-term modeling results. The project owner has requested these higher levels based on their experience with the Sutter Power Plant, which has a similar configuration, including an air-cooled condenser. Staff does not have enough data to support all of these higher startup/shutdown limits; however, staff is aware of the increased startup time and emissions that seem to be associated with power plants that have air cooling versus those with once-through or evaporative cooling. Therefore, since the District has approved these new startup/shutdown limits and since the new limits were not found to result in a significant ambient air quality impact, as shown below in the Impacts Analysis section, staff will agree to revise the startup/shutdown limits as requested.

***NORMAL OPERATING EMISSIONS***

The project owner's requested changes in the normal operating maximum hourly and annual emissions are shown in **Air Quality Table 2** and **3**.

**Air Quality Table 2**  
**Proposed Changes to the OMGP Hourly Emission Limits**

Pollutant	Original Permitted Turbine Emissions (lbs/hour)	Proposed Turbine/HRSG Emissions (lbs/hour)	Proposed Auxiliary Boiler Emissions (lbs/hour)	Proposed WSAC Emissions	Original Facility Emissions (lbs/hour) <sup>d</sup>	Proposed Facility Emissions (lbs/hour) <sup>d</sup>	Percent Increase (Decrease)
NO <sub>x</sub>	14.0/14.9 <sup>a</sup>	13.14 <sup>b</sup> /15.95 <sup>c</sup>	0.96	---	29.8	32.86	10.3%
CO	29.4/27.1 <sup>a</sup>	24.00 <sup>b</sup> /29.13 <sup>c</sup>	3.26	---	58.8	61.52	4.6%
VOC	3.1/3.3 <sup>a</sup>	4.58 <sup>b</sup> /5.56 <sup>c</sup>	0.37	---	6.6	11.49	74.1%
SO <sub>x</sub>	3.5/4.5 <sup>a</sup>	1.3 <sup>b</sup> /1.6 <sup>c</sup>	0.06	---	9.0	3.26	(-63.8%)
PM <sub>10</sub>	18/19.1 <sup>a</sup>	9.0 <sup>b</sup> /11.5 <sup>c</sup>	1.65	0.2	38.2	24.85	(-34.9%)

Source: District 2000 and 2003e

Notes:

- a. Emission limit per turbine without and with steam injection power augmentation, respectively.
- b. Non-duct firing emissions per turbine.
- c. Duct firing emissions per turbine/HRSG.
- d. Worst case hourly emissions during normal operations.

**Air Quality Table 3**  
**Proposed Changes to the OMGP Annual Emission Limits**

Pollutant	Original Permitted Turbine Emissions (tons/yr)	Proposed Turbine/HRSG Emissions (tons/yr)	Proposed Auxiliary Boiler Emissions (tons/yr)	Proposed WSAC Emissions	Proposed Facility Emissions (tons/yr)	Percent Increase (Decrease)
NO <sub>x</sub>	100	100	4.2	---	100 <sup>a</sup>	0%
CO	235.2	301.7	14.3	---	316.0	34.4%
VOC	27.2	45.9	1.6	---	47.5	67.2%
SO <sub>x</sub>	39.4	12.6	0.3	---	12.9	(-67.3%)
PM <sub>10</sub>	159.6	91.3	7.2	1.0	99.5	(- 37.7%)

Source: District 2000 and 2003e

<sup>a</sup> Annual emissions of NO<sub>x</sub> are capped at 100 tons/year.

The requested short-term operating emission limits for NO<sub>x</sub>, CO and VOC all increase, and the requested annual emissions of CO and VOC increase. The annual emissions of NO<sub>x</sub> remain capped at 100 tons/year. The requested SO<sub>x</sub> and PM<sub>10</sub> emission limits decrease. The SO<sub>x</sub> emission decrease is based on a lower fuel sulfur assumption.

The stack and facility-wide emission rates, shown in Air Quality Tables 2 and 3, decrease for PM<sub>10</sub>, even with the addition of the WSAC. Annually, PM<sub>10</sub> emissions decrease by 60.4 tpy, from 159.9 tpy to 99.5 tpy. During the OMGP siting case (CEC 2000), Staff identified the combustion turbine PM<sub>10</sub> emission factor as overly conservative. Recent PM<sub>10</sub> source tests on the same turbine model suggest that the new 9 lbs/hour and 11.5 lbs/hour PM<sub>10</sub> emission limits (without duct firing and with duct firing, respectively) are achievable with an adequate compliance margin.

The WSAC PM<sub>10</sub> emissions are from water droplets being entrained in the airflow through the WSAC. The droplets, generally referred to as "drift," contain dissolved solids and salts that are released to the atmosphere as PM<sub>10</sub> when the droplet evaporates. The WSAC emission rate of 0.2 lbs/hour PM<sub>10</sub> is based on a total dissolved solids concentration of 3,489 ppm, a maximum circulating water flow rate of 1.2 million gallons per hour, and 0.0006% efficiency drift eliminators (OMGC 2002). However, the project owner asserts that the WSAC will be operated with a more efficient drift eliminator (OMGC 2002), suggesting that the above assumptions result in a conservative PM<sub>10</sub> emission factor for the WSAC.

The FDOC indicates that the project owner has removed the diesel-fired emergency equipment from the project description. The emergency equipment apparently will be electrically driven.

Overall, the requested changes to the emission limits provide a net reduction of annual primary PM<sub>10</sub> and secondary PM<sub>10</sub> precursor pollutant emissions. However, the requested change to the emission limit for VOC, which is based on a revised calculation approach rather than a revised emission concentration limit, provides for a net increase

of annual secondary ozone precursor pollutants. More description of the ozone precursor emission impacts is provided in the Mitigation discussion.

## IMPACTS ANALYSIS

The project owner and the District completed air quality modeling impact analyses for the revised project. Staff reviewed this analysis, requested that the startup CO modeling analysis be corrected, and performed limited modeling runs to confirm the results of the project owner's analysis. The results of these analyses are provided in **Air Quality Tables 4 through 7**. **Air Quality Table 4** provides the worst-case short-term impacts under worst-case normal (non-startup/shutdown) operations and worst-case annual impacts.

**Air Quality Table 4**  
**“Normal” Operational Impact ISC Modeling Results**

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	95.5	205	300.5	470	CAAQS	64
	Annual	0.65	37.6	38.3	100	NAAQS	38
PM <sub>10</sub>	24-Hour	4.8	<b>103</b>	<b>107.8</b>	50	CAAQS	<b>216</b>
	Annual	0.98	<b>32</b>	<b>33</b>	20	CAAQS	<b>165</b>
CO	1-Hour	182.7	8,245	8,428	23,000	CAAQS	37
	8-Hour	76.2 <sup>b</sup>	4,398	4,474	10,000	CAAQS	45
SO <sub>2</sub>	1-Hour	9.1	392.6	401.7	655	CAAQS	61
	3-Hour	7.7	183.2	190.9	1300	NAAQS	15
	24-Hour	1.5	62.8	64.3	105	CAAQS	61
	Annual	0.08	10.5	10.6	80	NAAQS	13

Source: OMGC 2002, District 2003a, CEC staff modeling analysis

Notes: a. No adjustment to the modeled 1-hour NO<sub>x</sub> value was made. The annual modeled NO<sub>x</sub> concentration value is multiplied by the Annual NO<sub>x</sub> Ratio Method (ARM) of 0.75.

b. Does not include operation of the auxiliary boiler, which would slightly increase the results.

The startup operations worst-case modeling results are provided in **Air Quality Table 5**. The SO<sub>2</sub> and PM<sub>10</sub> emissions are not elevated during startup, so their startup impacts are not considered to be higher than the maximum normal operating impacts shown in Table 4.

**Air Quality Table 5**  
**Turbine Startup Short-Term Impact ISC Modeling Results**

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	201	205	406	470	CAAQS	86
CO	1-Hour	9,025	8,245	17,270	23,000	CAAQS	75
	8-Hour	1,797	4,398	6,195	10,000	CAAQS	62

Source: District 2003a

Note:

a. Value from ISC\_OLM.

The initial commissioning operations were remodeled by the District and the worst-case modeling results are provided in **Air Quality Table 6**. The SO<sub>2</sub> and PM<sub>10</sub> emissions are not elevated during initial commissioning, so their initial commissioning impacts are not considered to be higher than the maximum normal operating impacts shown in Table 4.

**Air Quality Table 6**  
**Initial Commissioning Short-Term Impact ISC Modeling Results**

Pollutant	Averaging Period	Project Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub> <sup>a</sup>	1-Hour	405 <sup>a</sup>	21 <sup>b</sup>	426	470	CAAQS	91
CO	1-Hour	8,035	8,245	16,280	23,000	CAAQS	71
	8-Hour	3,882	4,398	8,280	10,000	CAAQS	83

Source: District 2003a

Notes:

a. Value from ISC\_OLM.

b. Background values were adjusted by the District to show the background concentration during the hour with the highest impact (project impact plus background).

A comparison of the maximum project impacts from the original proposed project and Amendment 1B is shown in **Air Quality Table 7**.

**Air Quality Table 7**  
**Project Amendment Impacts Comparison**

Pollutant	Averaging Period	Original Project Impact ( $\mu\text{g}/\text{m}^3$ )	Amendment 1B Impact ( $\mu\text{g}/\text{m}^3$ )	Percent Increase (Decrease)
<b>Maximum "Normal" and Short-Term Turbine Startup Operating Impacts</b>				
NO <sub>2</sub> <sup>a</sup>	1-Hour	130	201	55%
	Annual	0.8	0.65	(-19%)
PM <sub>10</sub>	24-Hour	4.6	<b>4.8</b>	4%
	Annual	0.8	<b>0.98</b>	23%
CO	1-Hour	2,342	9,025	285%
	8-Hour	643	1,797	179%

Sources: District 2000 and District 2003a.

Notes:

a. The 1-hour NO<sub>x</sub> values are from ISC\_OLM. The annual NO<sub>x</sub> value is multiplied by the ARM of 0.75.

Air Quality Table 7 shows that the maximum modeled impacts from the amended project, for NO<sub>2</sub>, PM<sub>10</sub> and CO, are generally higher than the impacts determined for the original project. Most of the differences in the short-term (1-hour and 8-hour) impacts are due to the request to increase the maximum startup emissions limits. The increases in the PM<sub>10</sub> emission impacts are due to the new equipment proposed (WSAC and auxiliary boiler), which have lower stacks and higher near-field impact potential. The decrease in the annual NO<sub>2</sub> impact is due to the changes in the HRSG stack configuration and stack height.

The project's emissions do not cause new violations of ambient air quality standards, but even with the increased stack height and reduced PM<sub>10</sub> emission rates, they still contribute to existing violations of the State PM<sub>10</sub> standards (see discussion in CEC 2000). However, as noted below, the PM<sub>10</sub> emissions have been mitigated to a level of insignificance through the use of emission offsets.

The modeling performed by the project owner did not include the diesel emergency equipment that was modeled for the original licensing analysis. The District has indicated in their FDOC that these engines will now be electrically driven. However, in

case the project owner decides to use diesel-fired emergency equipment, Air Quality condition **AQ-4** requires that any and all ancillary combustion equipment, including emergency engines, obtain any necessary District permits prior to on-site delivery. Additionally, **AQ-17** and **AQ-18** require NO<sub>x</sub> emissions from all other combustion equipment and emergency generators to be included in the facility emissions and annual cap. Staff has added Condition of Certification **AQ-79** to require the project owner to provide future air permitting information to the Energy Commission for review.

## **MITIGATION MEASURES**

Increasing stack height is often used to reduce local air emission impacts; however, separating one stack into two separate stacks for the two turbine/HRSGs will have the opposite effect, due to lower exhaust buoyancy. Therefore, the overall effect of separating the stacks and increasing their height tend to counter each other and result in very little change in impact potential. The proposed stack height of 160 feet is still less than the Good Engineering Practice (GEP) stack height, determined to be 189 feet for this facility (District 2003e).

The proposed new equipment has been determined by the District to meet Best Available Control Technology (BACT) requirements. The addition of the duct burners caused an increase in the maximum NO<sub>x</sub> emissions of greater than 10 lbs/day; therefore, by District rule a new BACT analysis for the turbine/HRSGs was required. In re-evaluating the BACT requirements the District has revised the averaging period for the 2.0 ppm NO<sub>x</sub> emission limit from a 3-hour rolling average to a 1-hour rolling average with 15 hours per 12-month rolling period having conditionally allowed excursions. The conditions under which these limited excursions are allowed are specifically identified in the revised Condition of Certification AQ-36. Staff agrees with this assessment and believes that the proposed project's controls are adequate and that no additional emission control mitigation is necessary.

The project changes result in decreased project annual PM<sub>10</sub> and total PM<sub>10</sub> precursor (NO<sub>x</sub>, SO<sub>x</sub>, VOC and ammonia) emission limits and do not cause a significant increase in the modeled PM<sub>10</sub> impacts. Therefore, no additional PM<sub>10</sub> or PM<sub>10</sub> precursor emission mitigation (specified in Conditions of Certification AQ-55, AQ-75 and AQ-76) is warranted; and no reductions in the existing project mitigation package have been requested by the project owner. Therefore, staff finds that the existing PM<sub>10</sub> and PM<sub>10</sub> precursor mitigation is sufficient.

Ozone is not directly emitted from the OMGP facility. Rather, ozone is formed in complex reaction with NO<sub>x</sub>, VOC and sunlight. The project will contribute to an existing violation of the state and federal 1-hour ozone standard. Therefore, emissions of the ozone precursors (NO<sub>x</sub> and VOC) need to be mitigated. The revised annual emission limit total requested for NO<sub>x</sub> and VOC is 147.5 tons per year. The current mitigation package, specified in Conditions of Certification AQ-55, calls for a total of 166.45 tons per year of NO<sub>x</sub> and VOC emission reduction credits (ERCs), including the NO<sub>x</sub> ERCs from the Alternative Mobile Source Emission Reduction Credit (MERC) program. Additionally, Condition of Certification AQ-75 requires the project owner to pay a mitigation fee of \$1.2 million to the District to allocate to emission reduction programs, such as the Lower-Emissions School Bus Retrofit Program and the Carl Moyer Program, in order to reduce PM<sub>10</sub> and PM<sub>10</sub> precursor (i.e. NO<sub>x</sub>) emissions in the

District. Finally, Condition of Certification AQ-76 requires that all VOC emission reductions that occur intentionally or incidentally during the formation of the project's NO<sub>x</sub> MERC credits be assigned to the project. Staff believes that the existing mitigation package, considered in its entirety, will offset the project's NO<sub>x</sub> and VOC emissions at a ratio of at least 1:1, and therefore is sufficient.

No impacts from the project's revised CO emissions have been identified; therefore, no additional CO emissions mitigation is warranted.

## CONCLUSIONS AND FINDINGS

The Otay Mesa Generating Company is proposing a project Amendment 1B, which will add duct burners to the turbine/HRSGs, add an auxiliary boiler, and separate the stacks for the two turbine/HRSGs and further increase the stack heights. Additionally, as part of this amendment, staff has completed an assessment of the air quality impacts of the WSAC. The short-term startup/shutdown emission limits are requested to be substantially increased. Additionally, the assumed PM<sub>10</sub> and SO<sub>2</sub> emission rates for the turbine/HRSGs are being reduced and the diesel emergency equipment are being replaced with electric equipment. The proposed changes reduce turbine and facility PM<sub>10</sub> and SO<sub>2</sub> emission limits, increase project VOC and CO emission limits and increase short-term NO<sub>x</sub> emission limits (maximum annual NO<sub>x</sub> emission limits do not change).

The District does not regulate the WSAC, so staff has added recommended conditions AQ-77 and AQ-78 for the WSAC. Additionally, staff has added recommended condition AQ-79 that requires the project owner to provide the CPM with all District and USEPA permitting information for review.

The modeling analysis does not show any significant impacts from the revised project equipment modifications and requested revisions to the project's emission limits. Additionally, as previously noted the project's existing mitigation package is sufficient to mitigate the project's revised emission limits. Therefore, staff recommends approval of OMGP Amendment 1B with changes to conditions of certification as described below.

Proposed revised Conditions of Certification are attached below.

## CONDITIONS OF CERTIFICATION TABLE

**Air Quality Table 8** provides the rationale for the revisions and additions to the Conditions of Certification. The revision to or addition of Conditions AQ-5 through AQ-65 and AQ-80 through AQ-90 are based on revised or added District conditions, or conforming changes necessary in the verifications of these conditions due to the changes in the project design. The addition of Conditions AQ-77 through AQ-79 are new staff recommended conditions for the WSAC (AQ-77 and AQ-78), which is not regulated by the District, and to ensure that all subsequent District or USEPA air permitting information is provided to the CEC for review (AQ-79).

**Air Quality Table 8  
Revisions to Conditions of Certification**

	District	Purpose for Change
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CEC Condition	Condition	
AQ-5	5	District change in condition timing and deletion of reference to SCONOx.
AQ-6	6	Stack height and configuration change, and conforming change to verification deleting reference to SCONOx..
AQ-7	7	Conforming change to verification deleting reference to SCONOx.
AQ-9	---	Deletion of SCONOx based condition.
AQ-10	9	Deleted reference to portable CEMS that may have been used prior to final approval of the permanent CEMS. Now the permanent CEMS will be required at the time of initial firing.
AQ-16	15	Revision of source test report due date requirement.
AQ-17	16	Addition of annual CO emission limit and reporting requirements, addition of the auxiliary boiler into condition, and deletion of emergency engines.
AQ-18	18	Addition of VOC and CO into record keeping requirements of condition, and addition of auxiliary boiler into condition, and deletion of emergency engines.
AQ-21	22	District's revision of maximum hourly combined turbine NO <sub>x</sub> emissions limit.
AQ-22	23	Amended to note "rolling continuous 1-hour" averaging period.
AQ-23	24	Amended to increase CO hourly limit and to note "rolling continuous 1-hour" averaging period. Deletion of load and concentration requirements.
AQ-24	25	Conforming condition numbering changes only.
AQ-25	26	Editorial correction and addition of last sentence of condition.
AQ-26	27	Deletion of optimization period (i.e. SCONOx) requirement, and replacement of power augmentation with duct firing.
AQ-27	---	Deletion of SCONOx based condition.
AQ-28	---	Deletion of SCONOx based condition.
AQ-29	---	Deletion of SCONOx based condition.
AQ-30	---	Deletion of SCONOx based condition.
AQ-31	---	Deletion of SCONOx based condition.
AQ-32	---	Deletion of SCONOx based condition.
AQ-33	---	Deletion of SCONOx based condition.
AQ-34	---	Deletion of SCONOx based condition.
AQ-35	28	Deletion of optimization/replacement period (i.e. SCONOx) requirement. Conforming language changes.
AQ-36	31	Revises NO <sub>x</sub> limit from 3-hour to 1-hour rolling average under non-duct firing operation and allows 15 hours of excursions per 12-month period with specified language defining what constitutes an allowable excursion.
AQ-37	32	Amended to add more description regarding requirement timing, added shutdown and non-operations exception, and conforming condition number changes.
AQ-38	33	Revision of language governing the VOC limit compliance requirements.
AQ-39	34	Revisions in the hourly NO <sub>x</sub> , CO and VOC emission limits under non-duct firing conditions, and replacement of power augmentation with duct firing.
AQ-40	35	Revisions in the hourly NO <sub>x</sub> , CO and VOC emission limits under duct firing conditions, and replacement of power augmentation with duct firing.
AQ-41	36	Revised to include duct firing limitation and compliance requirements and delete power augmentation limitation and compliance requirements.
AQ-42	37	Revises condition from hot/warm startup hourly emission limit for NO <sub>x</sub> , CO and VOC to all inclusive startup hourly emission limits for NO <sub>x</sub> , CO and VOC.
AQ-43	38	Revises condition from cold startup hourly emission limits for NO <sub>x</sub> , CO and VOC to all inclusive startup event emission limits for NO <sub>x</sub> , CO and VOC, and adds a separate new shutdown event emissions limit.
AQ-44	39	Revises condition from providing a hot/warm startup definition to providing a revised all inclusive startup definition as requested by project owner.
AQ-45	40	Revises condition from providing a cold startup definition to providing a shutdown definition as requested by project owner.
AQ-46	41	Deletion of term cold in referring to startups. Auxiliary boiler startup included in non-simultaneous startup limitation.
AQ-47	42	Revises language to include the auxiliary boiler and shutdowns in the record

		keeping requirements.
AQ-48	43	Revision of hourly turbine PM <sub>10</sub> emission limits from 19.1 lbs/hr to 9.0 lbs/hour when operating without duct firing and 11.5 lbs/hour when operating with duct firing, and other minor editorial revisions.
AQ-49	51	Deletion of SCONOX system language, revisions to allow “equivalent” source test methods, addition of auxiliary boiler load requirement during source test, allowance of conditional lower turbine load requirements during source testing, replacement of power augmentation with duct firing and other editorial revisions.
AQ-50	52	Deletion of SCONOX system language and revised HAP emission limits.
AQ-53	55	Revisions to allow “equivalent” source test methods, addition of auxiliary boiler load requirement during source test, allowance of conditional lower turbine load requirements during source testing, replacement of power augmentation with duct firing and other editorial revisions.
AQ-59	61	Conforming change in verification to delete “optimization, replacement” and add “startup/shutdown”.
AQ-60	62	Conforming change in verification to delete “optimization, replacement” and add “startup/shutdown”.
AQ-61	63	Conforming change in verification to delete “optimization, replacement” and add “startup/shutdown”.
AQ-62	64	Conforming change in verification to delete “optimization, replacement” and add “startup/shutdown”.
AQ-65	67	Editorial correction.
AQ-77	---	New CEC condition that provides a PM <sub>10</sub> emissions limit for the WSAC.
AQ-78	---	New CEC condition that provides for WSAC circulating water testing for compliance demonstration.
AQ-79	---	New CEC condition requiring the project owner to provide air permit modification documentation to the CPM for review.
AQ-80	17	New District condition adding annual VOC emission limit and reporting requirements.
AQ-81	19	New District condition adding maximum auxiliary boiler NO <sub>x</sub> and CO emission concentration limits, and deletion of emergency engines.
AQ-82	29	New District condition with continuous monitoring requirements to record ammonia stack concentration, and ammonia injection rate.
AQ-83	30	New District condition providing ammonia slip concentration limit.
AQ-84	44	New District condition limiting auxiliary boiler fuel use and record keeping requirement.
AQ-85	45	Requires establishment of startup/shutdown parameters for the selected boiler.
AQ-86	46	New District condition providing auxiliary boiler NO <sub>x</sub> emission limit, and source test requirement.
AQ-87	47	New District condition providing auxiliary boiler CO emission limit, and source test requirement.
AQ-88	48	New District condition providing auxiliary boiler VOC emission limit, and source test requirement.
AQ-89	49	New District condition defining auxiliary boiler startups and limiting startup duration to 1 hour.
AQ-90	50	New District condition defining auxiliary boiler shutdowns and limiting shutdown duration to 1 hour.

The conditions are revised from those provided in the original Commission Decision (CEC 2001).



## PROPOSED CONDITIONS OF CERTIFICATION

### DETERMINATION OF COMPLIANCE CONDITIONS

#### **CONSTRUCTION (AT OR PRIOR TO INITIAL FIRING) CONDITIONS**

**AQ-5** The project owner shall submit to the District the final selection and design details of the gas turbines and associated equipment to be installed, including all proposed post-combustion control systems and the auxiliary boiler. Such information may be submitted to the District as Trade Secret and confidential pursuant to District Rules 175 and 176.

**Verification:** At least 90 days prior to on-site delivery of equipment, the project owner shall provide copies of design details of the gas turbines and associated equipment to be installed, including all proposed post-combustion control systems (SCR) and the auxiliary boiler to the CPM and the District.

**AQ-6** The exhaust stacks for each turbine power station shall be at least 160 feet (48.8 meters) in height.

**Verification:** The project owner shall provide copies of the design details of the gas turbines and associated equipment to be installed, including all proposed post-combustion control systems (SCR) to the CPM and the District at least 90 days prior to on-site delivery of equipment.

**AQ-7** The exhaust stacks for each turbine power station shall be equipped with source test ports and platforms to allow for the measurement and collection of stack gas samples consistent with all approved test protocols. The ports and platforms shall be constructed in accordance with District Method 3A, Appendix Figure 2.

**Verification:** The project owner shall provide copies of the design details of the gas turbines and associated equipment to be installed, including all proposed post-combustion control systems (SCR) to the CPM and the District at least 90 days prior to on-site delivery of equipment.

**AQ-9** Deleted.

**AQ-10** Prior to initial firing of each turbine, a Continuous Emission Monitoring System (CEMS) shall be installed and calibrated to measure the concentrations of oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), and oxygen (O<sub>2</sub>) in the exhaust gas on a dry basis, corrected to 15% oxygen. Upon initial firing the permanent CEMS system, which has been properly calibrated, shall be operational. At least 60 days prior to the operation of the permanent CEMS, the project owner shall submit an operating protocol to the District for written approval. The CEMS shall remain in full operation at all times when the turbine is in operation. The permanent CEMS shall be properly installed, certified, and in full operation prior to on-going operations.

**Verification:** The project owner shall provide copies of the operating protocol for the CEMS system to the District, for written approval, and to the CPM at least 60 days prior to operation of the CEMS system.

**AQ-16** No later than 90 days after each unit commences commercial operation, a Relative Accuracy Test Audit (RATA) shall be performed on the permanent CEMS in accordance with 40 CFR Part 75 Appendix A Specifications and Test Procedures. At least 45 days prior to the test date, the project owner shall submit a test protocol to the District for approval. Additionally, the District shall be notified a minimum of 45 days prior to the test so that observers may be present. Within 45 days of completion of the test, a written test report shall be submitted to the District for approval.

**Verification:** The project owner shall provide copies of the CEMS RATA test to the District and the CPM no later than 90 days after each unit commences commercial operation. The project owner shall provide notice of the CEMS RATA test date and provide a CEMS RATA test protocol to the District and the CPM at least 45 days prior to the tests. The project owner shall provide a written CEMS RATA test report to the District, for approval, and the CPM within 45 days of the test.

**AQ-17** The total aggregate annual emissions from all emission units at the stationary source shall not exceed 100 tons of oxides of nitrogen (NO<sub>x</sub>) and shall not exceed 316 tons of carbon monoxide (CO) for each consecutive 12-calendar month period. The NO<sub>x</sub> and CO emissions shall begin accruing at the initial firing of each turbine. Compliance with this limit shall be verified using the CEMS system on each gas turbine (Application Nos. 973880 and 973881) as well as EPA- or ARB-certified NO<sub>x</sub> emissions factors, testing results, or other representative emissions information for all other combustion equipment, including the auxiliary boiler.

**Verification:** The project owner shall maintain records, at least on a calendar monthly basis, of total aggregate mass emissions of NO<sub>x</sub> and CO, in tons per year, from all equipment, excluding exempt equipment, at this stationary source for the previous 12-month period. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-18** The project owner shall maintain records, at least on a calendar monthly basis, of total aggregate mass emissions of NO<sub>x</sub>, CO, and VOC, in tons per year, from all equipment, including the auxiliary boiler, at this stationary source for the previous 12-month period. These records shall be maintained on site for a minimum of five years and made available to District personnel upon request.

**Verification:** The project owner shall maintain records, at least on a calendar monthly basis, of total aggregate mass emissions of NO<sub>x</sub>, CO, and VOC, in tons per year, from all equipment, excluding exempt equipment, at this stationary source for

the previous 12-month period. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-21** The total emissions from both turbines combined shall not exceed 1133 pounds per hour of oxides of nitrogen (NO<sub>x</sub>), calculated as nitrogen dioxide and averaged over a rolling continuous 1-hour period. These emissions limits shall apply during startups and shutdowns.

**Verification:** The project owner shall maintain records of the NO<sub>x</sub> mass emissions of each gas turbine when operating without any post-combustion air pollution control equipment. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-22** When operating with post-combustion air pollution control equipment, the total emissions from both turbines combined shall not exceed 412 pounds per hour of oxides of nitrogen (NO<sub>x</sub>), calculated as nitrogen dioxide and averaged over a rolling continuous 1-hour period. Additionally, when operating with post-combustion air pollution control equipment, the total emissions when only one turbine is in operation shall not exceed 283 pounds per hour of NO<sub>x</sub>, calculated as nitrogen dioxide and averaged over a rolling continuous 1-hour period. These emissions limits shall apply during startups and shutdowns.

**Verification:** The project owner shall maintain records of the NO<sub>x</sub> emission concentrations of each gas turbine when operating with post-combustion air pollution control equipment. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-23** The total emissions from both turbines combined shall not exceed 2738 pounds per hour of carbon monoxide (CO), averaged over a rolling continuous 1-hour period. These limits shall apply during startups and shutdowns.

**Verification:** The project owner shall maintain records of the CO emission concentrations of each gas turbine when operating, including startup and shutdowns. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

## **COMMISSIONING PERIOD CONDITIONS**

**AQ-24** Beginning at initial firing of each turbine, a “Commissioning Period” for each turbine shall commence. This Commissioning Period shall end 120 days after initial firing or immediately after written acceptance of clear custody and control of the equipment is turned over to the project owner, whichever comes first. During this Commissioning Period, only the requirements specified in Condition Nos. AQ-10, -13, -17, -18, -19, -20, -21, -22, -23, -80 and -81 shall apply.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating during the commissioning period. These records shall be included in the Commissioning Period Progress Report required in AQ-24, and maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

**AQ-25** Within 30 days after initial firing of each turbine, the project owner shall install post-combustion air pollution control equipment to minimize emissions from this equipment. The project owner may request an extension, not to exceed an additional 30 days, in writing for District approval. This request shall include all technical reasons as to why the extension is needed. Such an extension will only be granted if the project owner can demonstrate that such extension:

- a. is not the result of neglect or disregard of any air pollution control requirement;
- b. is not intentional or the result of negligence, as defined in District Rule 98;
- c. is not the result of improper maintenance;
- d. will not cause a nuisance;
- e. is not likely to create an immediate threat or hazard to public health or safety;
- f. will not interfere with the attainment or maintenance of any National or California Ambient Air Quality Standard; and
- g. good cause is shown for the extension.

Once installed, the post-combustion air pollution control equipment shall be maintained in good condition and shall be in full operation at all times when the turbine is in operation. Note that any day in which fuel is burned in this equipment shall be considered an operating day.

**Verification:** The project owner shall install post-combustion air pollution control equipment to minimize emissions from this equipment within 30 days after the initial firing of the gas turbines, unless the project owner requests an extension, not to exceed an additional 30 days, in writing for District approval.

**AQ-26** Within 10 days after the end of the Commissioning Period for each turbine, the project owner shall submit a written progress report to the District. This report shall include, at a minimum, the date that the Commissioning Period ended, the periods of startup, the emissions of NO<sub>x</sub> and CO during startup, and the emissions of NO<sub>x</sub> and CO during steady state operation with and

without duct firing. Emissions shall be in both ppmv and lbs/hr. This report shall also detail any turbine or emission control equipment malfunction, upsets, repairs, maintenance, modifications, or replacements affecting emissions of air contaminants that occurred during the Commissioning Period.

**Verification:** The project owner shall submit a Commissioning Period Progress Report for each gas turbine to the District and the CPM within 10 days after the end of each gas turbine commissioning period.

#### ***OPTIMIZATION PERIOD CONDITIONS***

**AQ-27** Deleted.

**AQ-28** Deleted.

**AQ-29** Deleted.

**AQ-30** Deleted.

#### ***REPLACEMENT PERIOD CONDITIONS***

**AQ-31** Deleted.

**AQ-32** Deleted.

**AQ-33** Deleted.

**AQ-34** Deleted.

#### ***CONDITIONS FOR ON-GOING OPERATIONS***

**AQ-35** For the purposes of the District's Determination of Compliance and Authority to Construct, the period described as "on-going" operation of the turbines shall commence immediately following the end of the Commissioning Period. Condition Nos. AQ-10, -13, -17, 18, 19, 20, 21, 22 -80, and -81 shall continue to apply during on-going operations.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating. These records shall be

maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-36** The emissions of oxides of nitrogen (NO<sub>x</sub>) from each turbine, calculated as nitrogen dioxide, shall not exceed 2.0 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen. Compliance with the limit shall be based on CEMS data for each unit and averaged over each rolling continuous 1-hour period, excluding time when the equipment is operated under startup or shutdown conditions and time that the equipment is not in operation. Compliance with this limit shall also be verified through an initial source test and annual source testing thereafter. This limit shall not apply to the first fifteen 1-hour average NO<sub>x</sub> emissions measurements above 2.0 ppmvd corrected to 15% oxygen in any rolling 12-month period for each gas turbine provided the following requirements are met:

- a. This equipment operates under any one of the following:
  - i) Rapid combustion turbine load changes due to the following conditions:
    - A) Load changes initiated by the California Independent Systems Operator (ISO) or a successor entity when the plant is operating under Automatic Generation Control; or
    - B) Activation of a plant automatic safety or equipment protection system which rapidly decreases turbine load
  - ii) The first two 1-hour reporting periods following the initiation or shutdown of a system injection pump
  - iii) The first two 1-hour reporting periods following the initiation of HRSG duct burners
  - iv) Events as the result of technological limitation identified by the operator and approved in writing by the District.
- b. The 1-hour average NO<sub>x</sub> emissions above 2.0 ppmvd corrected to 15% oxygen did not occur as a result of operator neglect, improper operation or maintenance, or qualified breakdown under District Rule 98.
- c. The qualified operating conditions described in (a) above are recorded in the plant's operating log within 24 hours of the event, and in the CEMS by 5:00 pm the next business day following the qualified operating condition.

The notations in the log and CEMS shall describe the data and time of entry into the log/CEMS and the plant operating conditions responsible for NOx emissions exceeding the 2.0 ppmvd 1-hour average limit.

d. The 1-hour average NOx concentration for periods that result from a qualified operating condition does not exceed 25 ppmvd corrected to 15% oxygen.

All NOx emissions during these events shall be included in all calculations of hourly, daily, and annual mass emission rates as required by this FDOC.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition, including documentation of compliance of any NOx limit excursions that are allowed under this condition, shall be included in the quarterly reports required in Condition AQ-62.

**AQ-37** The emissions of carbon monoxide (CO) from each turbine shall not exceed 6.0 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen. Compliance with these limits shall be based on CEMS data for each unit and averaged over each rolling continuous 3-hour period, excluding time when the equipment is operated under startup or shutdown conditions and time that the equipment is not in operation. Compliance with this limit shall also be verified through an initial emissions source test and at least annual source testing thereafter.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-38** The emissions of volatile organic compounds (VOC) from each turbine, calculated as methane, shall not exceed 2.0 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen. Compliance with this limit shall be based on CO CEMS data for each unit, averaged over each rolling continuous 1-hour period or portion thereof, excluding time when the equipment is operated under startup or shutdown conditions and time that the equipment is not in operation, and the District approved CO/VOC surrogate relationship. The CO/VOC surrogate relationship shall be verified and/or modified, if necessary, based on an initial emissions source test and at least annual source testing thereafter.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-39** When operated without duct firing, the emissions from each turbine shall not exceed the following emission limits, except during startup conditions, as determined by the Continuous Emissions Monitoring System (CEMS) and continuous monitors and/or District approved emission source testing. Compliance with the NOx and CO limits shall be based on a rolling continuous 3-hour averaging period and compliance with the VOC limit shall be based on a rolling continuous 1-hour averaging period:

<u>Pollutant</u>	<u>Emission Limit, lbs/hr</u>
Oxides of Nitrogen, NOx (calculated as NO2)	13.14
Carbon Monoxide, CO	24.0
Volatile Organic Compounds, VOC	4.58

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating without duct firing. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-40** When operated with duct firing, the emissions from this equipment shall not exceed the following emission limits, except during startup or shutdown conditions, as determined by the Continuous Emissions Monitoring System (CEMS), the District approved CO/VOC surrogate relationship, and continuous monitors and/or District approved emission source testing. Compliance with the NOx and CO limits shall be based on a rolling continuous 3-hour averaging period and compliance with the VOC limit shall be based on a rolling continuous 1-hour averaging period.:

<u>Pollutant</u>	<u>Emission Limit, lbs/hr</u>
Oxides of Nitrogen, NOx (calculated as NO2)	15.95
Carbon Monoxide, CO	29.13
Volatile Organic Compounds, VOC	5.56

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating with duct firing. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.



**AQ-41** Fuel consumption by the duct burners for both turbines shall not exceed 3,881,000 MMBtu (HHV) per rolling 12-month period. Each time one or both turbines are operated with duct firing the CEMS shall record the total duct burner fuel usage for each rolling 12-month period (in MMBtu). The project owner shall maintain a log that contains, at a minimum, the dates and fuel usage when one or both turbines are operated with duct firing. These records shall be maintained on site for a minimum of five years and made available to District personnel upon request.

**Verification:** The project owner shall maintain records of the operation of the gas turbine with duct firing. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-42** When operated under startup conditions, the emissions from each turbine shall not exceed the following emission limits, averaged over each rolling continuous 1-hour period, as determined by the Continuous Emissions Monitoring System (CEMS), the District approved CO/VOC surrogate relationship, and continuous monitors and/or District approved emission source testing:

<u>Pollutant</u>	<u>Emission Limit, lbs/hr</u>
Oxides of Nitrogen, NO <sub>x</sub> (calculated as NO <sub>2</sub> )	240.0
Carbon Monoxide, CO	2706
Volatile Organic Compounds, VOC	48.0

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating during startup conditions. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-43** When operated under startup or shutdown conditions, the emissions from each turbine shall not exceed the following emission limits, totaled per event, as determined by the Continuous Emissions Monitoring System (CEMS), the District approved CO/VOC surrogate relationship, and continuous monitors and/or District approved emission source testing:

<u>Pollutant (during startups)</u>	<u>Emission Limit, lbs/event</u>
Oxides of Nitrogen, NO <sub>x</sub> (calculated as NO <sub>2</sub> )	480
Carbon Monoxide, CO	5412
Volatile Organic Compounds, VOC	96

  

<u>Pollutant (during shutdowns)</u>	<u>Emission Limit, lbs/event</u>
Oxides of Nitrogen, NO <sub>x</sub> (calculated as NO <sub>2</sub> )	80
Carbon Monoxide, CO	902
Volatile Organic Compounds, VOC	16

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating during startup and shutdown conditions. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-44** Startup for each gas turbine shall be defined as the period beginning with the introduction of fuel to the equipment and ending when the CEMS records two consecutive data points in compliance with the emission concentration limits of Condition AQ-36 for the gas turbine, not to exceed 6.0 hours.

**Verification:** The project owner shall maintain records of the duration of startups of each gas turbine. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-45** Shutdown for each gas turbine shall be defined as the period beginning when the CEMS records a single data point not in compliance with the emission concentration limits of Condition AQ-36 and ending with the termination of fuel flow to the gas turbine, not to exceed 1.0 hours.

**Verification:** The project owner shall maintain records of the duration of shutdowns of each gas turbine. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-46** Both gas turbines shall not be operated simultaneously in startup mode. Additionally, the auxiliary boiler shall not be operated in startup mode simultaneously with either turbine.

**Verification:** The project owner shall maintain records of the duration of startups of each gas turbine and the auxiliary boiler. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-47** The project owner shall maintain a log of all startups and shutdowns for each turbine and the auxiliary boiler. The log shall contain, at a minimum, the dates and times of each startup or shutdown, and the duration of each startup or shutdown. This log shall be maintained on site for a minimum of five years and made available to District personnel upon request.

**Verification:** The project owner shall maintain records of the duration of all startups and shutdowns of each gas turbine. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-48** The emissions of particulate matter less than 10 microns (PM<sub>10</sub>) shall not exceed 9.0 lbs/hr when operated without duct firing and shall not exceed 11.5 lbs/hr for each turbine when operated with duct firing. Compliance with this limit shall be based on an initial emissions source test and at least annual source testing thereafter.

**Verification:** The project owner shall provide copies of the initial emissions source test and annual source test reports to the District and the CEC CPM within 60 days after completion of the compliance or source tests.

**AQ-49** Within 30 days after completion of the Commissioning Period, an initial emissions source test shall be conducted on each turbine and on the auxiliary boiler by an independent, ARB approved tester at the project owner's expense to show compliance with all applicable emission limits. A source test protocol shall be submitted to the District for written approval at least 60 days prior to source testing. The source test protocol shall comply with the following requirements:

- a. Measurements of oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), and stack gas oxygen content shall be conducted in accordance with the San Diego Air Pollution Control District Method 100, or equivalent, as approved by the U.S. Environmental Protection Agency (EPA).
- b. Measurements of particulate matter less than 10 microns shall be conducted in accordance with the U.S. Environmental Protection Agency (EPA) Methods 201A and 202, or equivalent, as approved by the U.S. Environmental Protection Agency (EPA).
- c. Measurements of volatile organic compounds (VOC) shall be conducted in accordance with San Diego Air Pollution Control District Methods 18 and 25A, or equivalent, as approved by the U.S. Environmental Protection Agency (EPA).
- d. Source testing shall be performed at no less than 80% of the turbine rating duct firing, at no less than 80% of the turbine rating with duct firing, and at not less than 80% of the auxiliary boiler rating. If the project owner demonstrates to the satisfaction of the District that the turbine cannot operate at these conditions, then the source testing shall be performed at the highest achievable continuous power rating.
- e. The following additional operating characteristics shall also be measured or calculated and recorded:
  - natural gas flow rate (scfh),
  - fuel higher heating value (Btu/scf),
  - heat input rate (MMBtu/hr),
  - exhaust gas flow rate (dscfm),

- exhaust gas temperature (°F),
- power output (gross MW), if applicable.

**Verification:** The project owner shall provide copies of the source test protocol to the District, written approval, and the CPM at least 60 days prior to source testing.

**AQ-50** Within 30 days after completion of the Commissioning Period, an initial emissions source test shall be conducted by an independent, ARB approved tester at the project owner’s expense to determine the emissions of toxic air contaminants and federal hazardous air pollutants (HAPs). A source test protocol shall be submitted to the District for written approval at least 60 days prior to source testing. The source test shall demonstrate compliance with the following limits (for each turbine):

<u>Pollutant</u>	<u>Emission Limit, lbs/hr</u>
Acetaldehyde	0.09
Acrolein	0.01
Benzene	0.03
Ethyl Benzene	0.07
Formaldehyde	0.29
Naphthalene	3.66E-3
Polyaromatic Hydrocarbons (PAHs) (excluding naphthalene)	3.4E-4
Toluene	0.29
Xylene	0.14

**Verification:** The project owner shall provide copies of the source test protocol to the District, for written approval, and the CPM at least 60 days prior to source testing.

**AQ-53** This equipment shall be source tested on at least an annual basis to show continued compliance with all applicable emission limits, unless otherwise directed in writing by the District. If this testing will be performed by someone other than the District, a source test protocol shall be submitted to the District for written approval at least 60 days prior to source testing. The source test protocol shall comply with the following requirements:

- Measurements of oxides of nitrogen (NOx), carbon monoxide (CO), and stack gas oxygen content shall be conducted in accordance with the San Diego Air Pollution Control District Method 100, or equivalent, as approved by the U.S. Environmental Protection Agency (EPA).
- Measurements of particulate matter less than 10 microns shall be conducted in accordance with the U.S. Environmental Protection Agency (EPA) Methods 201A and 202, or equivalent, as approved by the U.S. Environmental Protection Agency (EPA).
- Measurements of volatile organic compounds (VOC) shall be conducted in accordance with San Diego Air Pollution Control District Methods 18 and 25A, or equivalent, as approved by the U.S. Environmental Protection Agency (EPA).

- d. Source testing shall be performed at no less than 80% of the turbine rating without duct firing, at no less than 80% of the turbine rating with duct firing, and at not less than 80% of the auxiliary boiler rating. If the project owner demonstrates to the satisfaction of the District that the turbine cannot operate at these conditions, then the source testing shall be performed at the highest achievable continuous power rating.
- e. The following additional operating characteristics shall also be measured or calculated and recorded:
  - natural gas flow rate (scfh),
  - fuel higher heating value (Btu/scf),
  - heat input rate (MMBtu/hr),
  - exhaust gas flow rate (dscfm),
  - exhaust gas temperature (°F),
  - power output (gross MW), if applicable.

**Verification:** This project owner provide copies of the annual source test reports to the District for review and written approval, and the CPM within 60 days after the completion of the initial compliance testing.

### ***EMISSION OFFSET CONDITIONS***

**AQ-59** No later than 20 years after the initial firing of the equipment, the emissions of oxides of nitrogen (NO<sub>x</sub>) shall not exceed 1.0 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen. Compliance with this limit shall be based on CEMS data for each unit and averaged over each 3-hour period, excluding hours when the equipment is operated under any startup condition. Additionally, the total annual emissions of oxides of nitrogen (NO<sub>x</sub>), calculated as nitrogen dioxide, shall not exceed 50 tons per rolling 12-month period. Compliance with this limit shall be verified using the CEMS system on each gas turbine (Application Nos. 973880 and 973881)

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine during commissioning, startup/shutdown, and operation. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

### ***ADDITIONAL GENERAL CONDITIONS***

**AQ-60** For each emission limit expressed as pounds per hour or parts per million based on a 1-hour averaging period, compliance shall be based on each rolling continuous 1-hour period using data collected at least once every 15 minutes when compliance is based on continuous emissions monitoring data.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine during commissioning, startup/shutdown and operation. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District,

California Air Resources Board (CARB) and the Commission. Quarterly reports shall be sent to the CEC CPM within 60 days after each calendar quarter.

**AQ-61** For each emission limit expressed as pounds per hour or parts per million based on a 3-hour averaging period, compliance shall be based on each rolling continuous 3-hour period using data collected at least once every 15 minutes when compliance is based on continuous emissions monitoring data.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine during commissioning, startup/shutdown and operation. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. Quarterly reports shall be sent to the CEC CPM within 60 days after each calendar quarter.

**AQ-62** All records required by these conditions shall be maintained on site for a minimum of five years and made available to District personnel upon request. In addition, quarterly reports of information recorded by these conditions, as specified, shall be sent to the CPM.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine during commissioning, startup/shutdown and operation. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. Quarterly reports shall be sent to the CEC CPM within 60 days after each calendar quarter.

**AQ-65** The project owner shall submit an application to the District for a Federal (Title V) Operating Permit, in accordance with District Regulation XIV within 12 months of initial startup of this equipment.

**Verification:** The project owner shall submit an application for a Title V Operating Permit to the District, and provide a copy of the application to the CPM, within 12 months prior to the initial startup.

CONDITIONS OF CERTIFICATION numbers AQ-66 through AQ-69 are reserved for future use.

## **PROPOSED NEW AIR QUALITY ENERGY COMMISSION STAFF CONDITIONS OF CERTIFICATION**

These conditions are not included in the District's Determination of Compliance.

**AQ-77** The emissions of particulate matter less than 10 microns (PM10) from the Wet Surface Air Cooler shall not exceed 0.1 lbs/hr, based on design specifications limiting circulating water flow rates to no more than 5 million gallons per hour and warranties limiting drift to no more than 0.0006% of the circulating water flow.

**Verification:** The project owner shall provide copies of Wet Surface Air Cooler specifications and a vendor warranty of the drift efficiency to the CPM 60 days prior to WSAC equipment delivery on-site.

**AQ-78** Compliance with the WSAC PM<sub>10</sub> emission limit shall be determined by circulating water sample analysis by independent laboratory within 60 days of initial operation and quarterly thereafter.

**Verification:** The results and field data collected from cooling tower blowdown water samples analysis shall be submitted to the CPM and the District as part of the quarterly reports required in Condition AQ-62.

**AQ-79** The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or EPA, and any revised permit issued by the District or EPA, for the project.

**Verification:** The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

## **PROPOSED NEW DISTRICT DETERMINATION OF COMPLIANCE CONDITIONS**

**AQ-80** The total aggregate emissions of volatile organic compounds (VOC) from all emission units at the stationary source shall not exceed 47.5 tons for each consecutive 12-calendar month period. The VOC emissions shall begin accruing at the initial firing of each piece of equipment. Compliance shall be verified using testing results, EPA- or ARB-certified VOC emissions factors, and/or other representative emissions information for all other combustion equipment, including the auxiliary boiler.

**Verification:** The project owner shall maintain records, at least on a calendar monthly basis, of total aggregate mass emissions of VOC, in tons per year, from all equipment, excluding exempt equipment, at this stationary source for the previous 12-month period. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-81** To ensure compliance with District Rule 69.2 and except during any period of time for which a variance from Rule 69.2 has been granted by the Air Pollution Control District Hearing Board, the emissions of oxides of nitrogen

(NO<sub>x</sub>), calculated as nitrogen dioxide, from the auxiliary boiler shall not exceed 30 parts per million by volume on a dry basis (ppmvd) calculated over a 1-hour averaging period and corrected to 3% oxygen and the emissions of carbon monoxide (CO) from the auxiliary boiler shall not exceed 400 parts per million by volume on a dry basis (ppmvd) calculated over a 1-hour averaging period and corrected to 3% oxygen.

**Verification:** The project owner shall maintain records of the NO<sub>x</sub> and CO emission concentrations from the auxiliary boiler for all operating conditions. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-82** Continuous monitors shall be installed on each turbine to monitor or calculate and record the following:

- ammonia stack concentration (ppmvd, corrected to 15% oxygen), and
- ammonia injection rate (lbs/hr).

The monitors shall be installed, calibrated, and maintained in accordance with an approved protocol. This protocol, which shall include calculation methodology, shall be submitted to the District for written approval at least 60 days prior to initial firing of the gas turbines with the SCR system. The monitors shall be in full operation at all times when the turbine is in operation.

**Verification:** The project owner shall provide copies of the CEMS installation, calibration and maintenance protocol, including the calculation methodology, to the District, for written approval, and the CPM at least 60 days prior to initial firing of the gas turbines with the SCR system.

**AQ-83** The emissions of ammonia (slippage) from each gas turbine exhaust stack shall not exceed 10.0 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen and averaged over a rolling continuous 1-hour period.

**Verification:** The project owner shall maintain records of the mass emissions and concentrations of each gas turbine when operating. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-84** Fuel consumption by the auxiliary boiler shall not exceed 762,120 MMBtu (HHV) per rolling 12-month period. The CEMS shall record the total auxiliary boiler fuel usage for each rolling 12-month period (in MMBtu). The project owner shall maintain a log that contains, at a minimum, the dates, times and fuel consumption during each auxiliary boiler startup and shutdown and the total auxiliary boiler fuel consumption for each rolling 12-



month period. These records shall be maintained on site for a minimum of five years and made available to District personnel upon request.

**Verification:** The project owner shall maintain records of the operation of the auxiliary boiler. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-85** Once final selection and design details of the auxiliary boiler have been submitted to the District, specific operating parameters defining auxiliary boiler startups and shutdowns shall be established.

**Verification:** At least 90 days prior to on-site delivery of equipment, the project owner shall provide copies of design details of the auxiliary boiler, including any proposed post-combustion control systems, to the CPM and the District.

**AQ-86** The emissions of oxides of nitrogen (NO<sub>x</sub>) from the auxiliary boiler, calculated as nitrogen dioxide, shall not exceed 9.0 parts per million by volume on a dry basis (ppmvd) corrected to 3% oxygen. Compliance with this limit shall be based on an initial emissions source test and annual source testing thereafter. The limit shall not apply during startups and shutdowns of the auxiliary boiler.

**Verification:** The project owner shall provide copies of the initial emissions source test and annual source test reports to the District and the CEC CPM within 60 days after completion of the compliance or source tests.

**AQ-87** The emissions of carbon monoxide (CO) from the auxiliary boiler shall not exceed 50 parts per million by volume on a dry basis (ppmvd) corrected to 3% oxygen. Compliance with this limit shall be based on an initial emissions source test and annual source testing thereafter. The limit shall not apply during startups and shutdowns of the auxiliary boiler.

**Verification:** The project owner shall provide copies of the initial emissions source test and annual source test reports to the District and the CEC CPM within 60 days after completion of the compliance or source tests.

**AQ-88** The emissions of volatile organic compounds (VOC) from the auxiliary boiler, calculated as methane, shall not exceed 10.0 parts per million by volume on a dry basis (ppmvd) corrected to 3% oxygen. Compliance with this limit shall be based on an initial emissions source test and annual source testing thereafter. The limit shall not apply during startups and shutdowns of the auxiliary boiler.

**Verification:** The project owner shall provide copies of the initial emissions source test and annual source test reports to the District and the CEC CPM within 60 days after completion of the compliance or source tests.

**AQ-89** Startup for the auxiliary boiler shall be defined as the period beginning with the introduction of fuel to the equipment and ending when the CEMS records two consecutive data points in compliance with the emission concentration limits of Conditions AQ-86, -87, and -88, not to exceed 1 hour.

**Verification:** The project owner shall maintain records of the duration of startups of the auxiliary boiler. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

**AQ-90** Shutdown for the auxiliary boiler shall be defined as the period beginning when the CEMS records two consecutive data points not in compliance with the emission concentration limits of Conditions AQ-86, -87 and -88, ending with the termination of fuel flow to the auxiliary boiler, not to exceed 1 hour.

**Verification:** The project owner shall maintain records of the duration of shutdowns of the auxiliary boiler. These records shall be maintained on site for a minimum of five years and shall be available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission. The information gathered in this condition shall be included in the quarterly reports required in Condition AQ-62.

## **REFERENCES**

California Energy Commission (CEC) 2000, Final Staff Assessment - Part II, Otay Mesa Generating Project (Docket No. 99-AFC-5), October 27, 2000.

California Energy Commission (CEC) 2001, Commission Decision, Otay Mesa Generating Project (Docket No. 99-AFC-5), April, 2001.

Otay Mesa Generating Company (OMGC) 2002, AMENDMENT 1B TO CEC LICENSE FOR THE OTAY MESA GENERATING PROJECT (Docket No. 99-AFC-5), September 2002.

Otay Mesa Generating Company (OMGC) 2003, Data Responses for CEC License Amendment 1B (Docket No. 99-AFC-5C), January 23, 2003.

San Diego County Air Pollution Control District (District) 2000. Final Determination of Compliance, Application Numbers 973880, 973881 and amended by 974980 and 974981, September 18, 2000.

San Diego County Air Pollution Control District (District) 2002. Final Determination of Compliance, Application No. 977623, May 14, 2002.

- San Diego County Air Pollution Control District (District) 2003a, Memorandum from Ralph Desiena (District) to Arthur Carbonell (District) providing Application No. 978379 Air Quality Impact Analysis. April 23, 2003.
- San Diego County Air Pollution Control District (District) 2003b, Otay Mesa Generating Project Draft Determination of Compliance, Modification 1B. May 22, 2003.
- San Diego County Air Pollution Control District (District) 2003c, Preliminary Determination of Compliance, Application Numbers 978379-80, August 6, 2003.
- San Diego County Air Pollution Control District (District) 2003d, District Response to Comments on the Otay Mesa Generating Project Draft Determination of Compliance, Modification 1B (Application Nos. 978379-80). August 6, 2003.
- San Diego County Air Pollution Control District (District) 2003e, Final Determination of Compliance, Application Numbers 978379-80, September 25, 2003.
- San Diego County Air Pollution Control District (District) 2003f, District Response to Comments on the Otay Mesa Generating Project Draft Determination of Compliance, Modification 1B (Application Nos. 978379-80). Revised September 25, 2003.