

**MESQUITE GENERATING STATION
TECHNICAL SUPPORT DOCUMENT
PERMIT RENEWAL
Permit Number V99-017
Date: xxxxxxxxxxxx**

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This is a support document intended to provide additional information associated with the issuance of a Title V air quality permit renewal to Mesquite Generating Station (MGS). However, this Technical Support Document (TSD) is not part of the Permit and is not a legally enforceable document.

1. IDENTIFYING INFORMATION:

Facility Name: Mesquite Power, LLC
Address: 37625 West Elliot Road
City, State, Zip: Arlington, AZ 85322

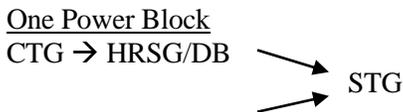
The Mesquite Generating Station is located in the unincorporated community of Arlington, Arizona, in Maricopa County. The site is located approximately 40 miles west of Phoenix and approximately 8 miles south of Interstate 10. The approximately 276-acre site is situated south of the existing Palo Verde nuclear generating station on a 400-acre parcel. The description of the site is: the west half of Section 15, Township 1 South, Range 6 west of the Gila and Salt River base and meridian, Maricopa County, Arizona, excepting the east half of the Northeast quarter of the Northwest quarter of said Section 15.

Benchmark Universal Transverse Mercator (UTM) coordinates for the plant (North American Datum, NAD27), corresponding to the Mesquite Generating Station CTG stack 1, and site elevation are as follows:

Zone Number	12
UTM E (m):	326,602
UTM N (m):	3,691,016
Site Elevation	890 feet above mean sea level

2. PROJECT DESCRIPTION:

The MSG provides electricity to the grid for sale on the open market. The plant is a natural gas-fired combined cycle power plant with two power blocks. Each block includes two GE 7FA combustion turbines driving electrical generators (CTG), two heat recovery steam generators (HRSGs), and one steam turbine. The exhaust from the combustion turbine is routed through the HRSG to generate steam, making this configuration a combined cycle system (CCS). The CCS consists of one combustion turbine with the associated HRSG system. Each HRSG is equipped with a duct burner (DB) rated at 593 million British Thermal Units (Btus) per hour, to enable the generation of additional steam. Steam produced in the HRSG is routed to the steam turbine generator (STG). This configuration of two combined cycle systems with one steam turbine generator is referred to as a power block as depicted below:



CTG → HRSG/DB

Mesquite operates two of these power blocks. The CTGs are each rated at 185 megawatts (MW) and the two STGs are rated at approximately 320 MW each. Only the combustion turbines and duct burner portions of the power block consume fuel; they are, therefore, the primary sources of air pollution at the facility.

The plant uses dry low-NO_x burners and selective catalytic reduction (SCR) for the control of nitrogen oxides (NO_x) emissions. Oxidation catalysts are used to control carbon monoxide (CO) and, to a lesser extent, VOC emissions. Only pipeline natural gas with a maximum sulfur content of 0.5 grains of total sulfur per 100 standard cubic foot is used to fuel the CTGs and duct burners.

Mesquite maintains continuous emission monitoring systems (CEMS) for measuring CO and NO_x outlet concentration and emission rates of the combined cycle systems. Oxygen is the diluent used in the NO_x CEMS.

Support Equipment: Two mechanical draft cooling towers provide heat rejection for the steam cycle. Each cooling tower is comprised of 11 cells and is equipped with high efficiency drift eliminators. One 265 horsepower (HP) diesel-fired compression ignition engine drives an emergency fire-water pump.

Miscellaneous insignificant and trivial activities are also conducted at the facility. The site uses one remote reservoir solvent cleaner for maintenance. The liquid surface area is less than one square foot and therefore this qualifies as insignificant under the County Rules Appendix D.

3. INTRODUCTION:

The MGS is a major source for nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter 10 microns or less (PM₁₀), and volatile organic compounds (VOCs) pollutants because the potential to emit these pollutants exceeds 100 tons per year.

a. Major Source Status with Regard to Ozone:

i. 1-Hour Standard:

On April 21, 2004, the State submitted the One-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa County Non-attainment Area (assumed to include the Phoenix metropolitan non-attainment area). On March 21, 2005, EPA proposed to approve Arizona's request to redesignate the Phoenix metropolitan 1-hour ozone non-attainment area from non-attainment to attainment (see 70 FR 13425), and gave final approval of the redesignation on June 14, 2005 with an effective date of June 14, 2005 (see 70 FR 34362).

The 1-hour standard was revoked effective June 15, 2005 for all areas in Arizona (see 40 CFR 81.303 as amended by 70 FR 44470 - 44478) and no longer applies.

ii. 8-Hour Standard:

On July 18, 1997 (62 FR 38856), EPA revised the ozone national ambient air quality standard (NAAQS) to establish an 8-hour standard; however, in order to ensure an effective transition to the new 8-hour standard, EPA also retained the 1-hour NAAQS for the area until such time as it determines that the area meets the 1-hour standard. See revised 40 CFR 50.9 at 62 FR 38894 and the above discussion regarding the status of the 1-hour standard for the Phoenix metropolitan 1-hour ozone non-attainment area. As a result of the actions described above, the 8-hour standard has replaced the 1-hour standard for ozone in the Maricopa County non-attainment area.

Mesquite Power, LLC is located in an area that is inside of the area that has been designated as basic non-attainment for the 8-hour standard (see July 1, 2004 version of 40 CFR 81.303).

MCAQD Rule 240 §210.2 (5/7/03 version) states that “Any stationary source located in an attainment or unclassifiable area that emits, or has the potential to emit, 100 tons per year or more of any conventional air pollutant, if the source is classified as a Categorical Source, or 250 tons per year or more of any pollutant subject to regulation under the Act if the source is not classified as a Categorical Source.” Mesquite Power, LLC is classified as a Categorical Source and has the potential to emit greater than 100 tons of VOC and NO_x emissions. Thus, the facility is a major source for VOC and NO_x emissions.

b. Major Source Status with Regard to Remaining Criteria Pollutants:

Based on the July 1, 2005 version of 40 CFR 81.303, Mesquite Power, LLC is located in an area designated as unclassified/attainment with respect to National Ambient Air Quality Standards (NAAQS). This includes CO, sulfur dioxide (SO₂), nitrogen dioxide (NO₂), PM₁₀ and particulate matter with a nominal aerodynamic diameter smaller than or equal to 2.5 microns (PM_{2.5}). The physical location is approximately 15 miles west of the PM₁₀ non-attainment area boundary.

It should be noted that EPA has recently deleted Arizona attainment status designations (attainment, unclassifiable, and non-attainment) affected by the original NAAQS for particulate matter measured as Total Suspended Particulate (TSP). On June 3, 1993 EPA published a final rulemaking action revising the prevention of significant deterioration particulate matter increments, so that the increments are measured in terms of PM₁₀. Section 107(d)(4)(B) of the Clean Air Act authorizes EPA to eliminate all area TSP designations once the increments for PM₁₀ become effective.

Based on the above listed designations, the major source definitions of the MCAQD, and the MGS facility’s potential to emit (as limited by permit condition and PTE for SO₂), the Mesquite Power, LLC facility is a major source of CO and PM₁₀.

c. Major Source Status with Regard to Hazardous Air Pollutants (HAPs):

Mesquite estimates that emission rates of HAPs are below the major source threshold of 10 tpy for any individual HAP or 25 tons per year for any combination of HAPs with emission rates of:

12.6 tons per year – Total HAPs

4.5 tons per year – Highest Individual HAP (formaldehyde)

4. PERMITTING HISTORY:

Mesquite began operating at its location under permit V99-017 and is currently authorized to operate under that permit. The following timeline presents a summary of the history on file:

April 21, 2001: Title V/PSD permit was issued to the MGS. MGS was a new facility and was required to install BACT which included a selective catalytic reduction and an oxidation catalyst at the facility. Emission rates of NO_x, CO, PM₁₀, and VOC were all estimated to be greater than the applicable PSD thresholds.

February 11, 2002: MGS provided notice of the start of construction stated “as of December 17, 2001”.

May 6, 2003: This modification included requests to eliminate the ISO correction requirement for NO_x Continuous Emissions Monitoring (CEM) data, remove the condition to install a flue gas measurement device, and clarify that the CEM system for measuring NO_x emissions will be subject to the 40 CFR 75 requirements and the CEM system for measuring CO emissions will be subject to the 40 CFR 60 requirements.

July 7, 2003: The purpose of these minor modifications (includes minor modifications 4-18-03-01 and 6-25-03-01) was to revise the definitions of Startup and Shutdown based on the turbine achieving "Mode 6" operation. Mode 6 operation indicates that the Low NO_x burner systems are functional and the turbine is in normal operations. Ammonia injection will be initiated prior to achieving Mode 6 and all other systems affecting emission controls will be operational at this point. Achieving Mode 6 is a more accurate indication of the earliest point when the combustion turbine system can reliably operate in compliance with the emission limits. Prior to these modifications, the startup/shutdown (SU/SD) definitions were based on an operating load 60% of the rated nameplate generating capacity and SCR catalyst temperature above or below 600 °F.

Incorporating the Mode 6 condition as the SU/SD definitions was expected to maximize the periods that the facility must meet the more restrictive "normal" operating limits. Emission limits during "normal" operations are significantly lower than the startup and shutdown limits of this permit.

Other administrative changes were requested by the Permittee in these minor modifications, due to 40 CFR 60 Subparts Da and GG revisions since the issuance of this permit. The Permittee requested that the affected sections of the permit be revised to the current requirements of the Subparts.

June 8, 2004: A significant permit revision was approved in order to increase the allowable emissions for NO_x, CO and VOC during SU/SD. The original permit included allowable emissions during periods of SU/SD based on estimates from the manufacturer. After the original Title V permit was issued these estimates were found to be underestimated. This modification changed SU/SD emissions in two ways. It changed the allowable emissions from a pound per hour per turbine basis to a pound per event per block (2 combustion turbines). The modification also changed the allowable annual emissions.

Mesquite's annual allowable NO_x emissions were increased to 408 tons per year (tpy) from 369 tpy. This increase was 39 tpy. Because the increase was just below the threshold for a major modification, the County imposed a 365-day rolling emission limit for NO_x. Mesquite's annual allowable CO emissions were increased to 384 tpy from 359 tpy. This increase was 25 tpy. Mesquite's annual allowable VOC emissions were increased to 295 tpy from 259 tpy. This increase was 36 tpy.

January 19, 2007: Permit renewal and modifications.

June 22, 2011: Submitted Permit renewal and requested changes.

5. MAJOR EMITTING EQUIPMENT:

Table 1: Major Emitting Equipment

Facility Reference	Description
Power Block 1	CTG #1 – General Electric, 7FA, 185 MW, natural gas-fired
	HRSG #1
	Duct Burner #1
	SCR #1
	Oxidation Catalyst #1
	CTG #2 – General Electric, 7FA, 185 MW, natural gas-fired
	HRSG #2
	Duct Burner #2
	SCR #2
	Oxidation Catalyst #2
	Steam Turbine 3
	Cooling Tower 1
Power Block 2	CTG #5 – General Electric, 7FA, 185 MW, natural gas-fired
	HRSG #5
	Duct Burner #5
	SCR #5
	Oxidation Catalyst #5
	CTG #6 – General Electric, 7FA, 185 MW, natural gas-fired
	HRSG #6
	Duct Burner #6
	SCR #6
	Oxidation Catalyst #6
	Steam Turbine 4
	Cooling Tower 2
Fire-Water Pump	Fire-Water Pump – 265 HP, diesel-fired engine

6. INSIGNIFICANT ACTIVITIES:

Table 2: List of Insignificant Activities

Storage and Distribution:
<ul style="list-style-type: none"> • Chemical or petroleum storage tanks or containers that hold 250 gallons or less and would have emissions of a regulated air pollutant. • Any emissions unit, operation, or activity that handles or stores no more than 12,000 gallons of a liquid with a vapor pressure less than 1.5 psia (includes diesel fuel oil storage tank and lube and used oil storage tanks). • Any equipment used exclusively for the storage of unheated organic material with: (1) an initial boiling point of 150° Centigrade (C) (302° Fahrenheit (F)) or greater, as determined by ASTM test method 1078-86; or (2) a vapor pressure of no more than 5 millimeters mercury (mmHg) (0.1 pound per square inch (psi) absolute), as determined by ASTM test method D-2879-86. • Any equipment used exclusively for the storage of fresh, commercial, or purer grade of: (1) sulfuric or phosphoric acid with acid content of no more than 99% by weight; or (2)

nitric acid with acid content of no more than 70% by weight.
Miscellaneous Activities:
<ul style="list-style-type: none"> • Any brazing, soldering, welding, or cutting torch equipment used in manufacturing and construction activities and with the potential to emit HAP metals, provided the total emissions of HAPs do not exceed 0.5 tons per year. • Hand-held or manually operated equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, or turning of ceramic art work, precision parts, leather, metals, plastics, fiberboard, masonry, carbon, glass, or wood. • Any aerosol can puncturing or crushing operation that processes less than 500 cans per day, provided such operation uses a closed loop recovery system. • Any laboratory fume hood or vent, provided such equipment is used exclusively for the purpose of teaching, research, or quality control.
Activities not subject to source-specific requirements or fees and with emissions < 0.5 tpy HAP and < 2 tpy regulated pollutant approved by the Control Officer and the EPA
<ul style="list-style-type: none"> • Water treatment and storage for use as process water and in cooling systems and cooling towers. • Chemical storage associated with water and wastewater treatment. • Transferring chemicals. • Power generation unit gas vents including lube oil extractor vents, and mist eliminator vents. • Solvent cleaning equipment. • Unheated storage tanks containing aqueous acid or caustic solutions that have minimal fumes that would not emit HAPs.

The list of insignificant activities included in Table 2 is based on the County Rules Appendix D. The insignificant activities and documentation provided herein is similar to the information provided during the prior permit renewal period and, therefore, were previously determined by the Control Officer and the Administrator of the Environmental Protection Agency (EPA) to meet the requirements for insignificant activities.

Storage and Distribution:

Examples of the equipment and activities covered by this insignificant category are summarized herein as described during the prior renewal process:

- a. Gasoline and diesel fuel used at Mesquite Generating Station is stored in 5-gallon containers, a 120-gallon gasoline tank, and a 240-gallon diesel tank.
- b. The lube, hydraulic, and used oil storage and distribution (i.e., lube oil recirculation system on each turbine) also are an insignificant activity. All oils meet the criteria given in MCAQD Appendix D for unheated organic material with a vapor pressure of less than 5 mmHg. The MSDSs for lube and hydraulic oil are attached for reference. The Mobile DTE 832 serves as both lube oil and hydraulic oil for the combustion turbines. The Fyrquel serves as hydraulic oil only for the steam turbines.
- c. Chemical tanks associated with water and wastewater treatment include:

Water Pretreatment:

Sodium Hypochlorite: 6,000 gallon tank
Sulfuric Acid Storage: 15,000 gallon tank
Lime Slurry Mixing: (2) 12,000 gallon tanks
Lime Slurry Hydrated: 23,000 gallon tank
Lime Slurry Polymer: 265 gallon tote
Magnesium Chloride: 11,600 gallon tank
Flocculant polymer: 265 gallon tote

Water Treatment:

Antiscalant: 250 gallon tote
Sodium Hypochlorite: 330 gallon tote

Boiler Water Treatment:

Ammonium Hydroxide: (2) 275 gallon totes
Phosphates: (2) 265 gallon totes

Circulating Water:

Cooling Tower Inhibitor: (2) 2,000 gallon tanks

Wastewater:

Oil/water separators: (2) 12,000 gallon tanks

The sulfuric acid meets the criteria given in the County Rules Appendix D (i.e., acid content not to exceed 99% by weight). The MSDS reports 75 to 99% by weight.

d. Miscellaneous Activities:

The facility may use hand-held acetylene, butane, and propane torches. MGS uses less than 122 cu. ft. bottles for an operator-controlled cutting torch assembly and, therefore, this cutting torch is considered hand-held. The unit is used infrequently for plant maintenance and upkeep and emissions will be negligible. This activity may emit negligible amounts of HAP metals but the use of this equipment is for maintenance, which is not related to the facility's primary business activity of power generation, and is considered trivial or insignificant.

The facility has an aerosol can puncturing system and processes well under the limit of 500 cans per day as defined in the County Rules Appendix D for insignificant activities. Records of organic materials are used to demonstrate compliance with this limit. The can puncturing system is designed to be a closed loop system. The hatch is opened only to insert and remove cans. The hatch is closed for puncturing the cans and the materials released from the cans are accumulated in a closed drum. The drum is equipped with a filter vent to prevent materials from being released to the atmosphere.

e. Activities not subject to source-specific requirements:

The water treatment and storage for the cooling towers consists of various chemicals. They are sulfuric acid, which is added for pH control, sodium hypochlorite for biological control, and an inhibitor product used for corrosion protection and as a scale inhibitor. The sulfuric acid and sodium hypochlorite are pumped into the make-up feed water to each cooling tower. The inhibitor product is stored in a tote located at each tower basin. It is injected with a small electric pump.

The criteria given in the County Rules Appendix D apply primarily to the storage of chemicals and not as explicitly to the chemical transfer activities (i.e., distribution). However, as shown by the list of tanks above and description of the materials handled, most of the tanks and totes will not emit a regulated pollutant and, therefore, meet the criteria given in the County Rules Appendix D (i.e., does not emit more than 0.5 ton

per year of HAPs or more than 2 tons per year of a regulated air pollutant). The low VOC solvent cleaning machines are listed as solvent cleaning equipment in Table 2 above.

The Steam Turbine and Gas Turbine lube oil vent system is designed to remove oil mist from the lube system vent lines allowing the effluent air stream to be vented to the atmosphere at an acceptable opacity level and the oil to be collected in a reservoir and returned to the lube oil tank. These oils meet the criteria given in the County Rules Appendix D for unheated organic material with a vapor pressure of less than 5 mmHg.

7. MAJOR REVISIONS MADE TO EXISTING PERMIT CONDITIONS:

Table 3: Proposed Changes

Item	Condition	Current Reference	Renewal Reference	Change
1	Reporting	16.F	16.f.i.1)	Allow required notification to be made by e-mail.
2	Allowable Emission Limits	18.E	deleted	Delete this condition since the PM ₁₀ limits of Table 18.2 are more stringent than the maximum allowable rate of PM ₁₀ calculated using the stated formula.
3	Fuel Sulfur Limit	19.B.1	19.b.i.	Changed to match 40 CFR 72.2 definition of pipeline natural gas.
4	Startup	19.B.2.ii	deleted	Modify language to remove temperature requirement.
5	Operational Requirements	19.B.2.e	19.b.ii.e)	Modify language since some shutdowns are control system initiated in order to protect equipment and personnel.
6	Operational Requirements		19.f	MACT ZZZZ and updated Rule 324 requirements were added for the fire pump engine.
7	Continuous Emission Monitoring	20.C.1.h.i	20.c.i.8)a)	Add language to only require calibration checks on days where fuel was combusted for consistency with Permit Condition 20.d.ii.
8	Monitoring/ Recordkeeping Requirements	20.F.1.	20.f.i.4)	Allow the use of ASTM Method D5504 as an alternative means of determining the sulfur content of natural gas which is consistent with 40 CFR Part 60 Subpart GG (§60.334(h)(1)).
9	Monitoring/ Recordkeeping Requirements	20.G.1.	20.g.i.	Modify language to remove contradiction with Condition 19.B.2 and to be consistent with the revised startup definition.
10	Monitoring/ Recordkeeping Requirements		20.j	Requirements for MACT ZZZZ and updated Rule 324 requirements were added.

Table 3: Proposed Changes

Item	Condition	Current Reference	Renewal Reference	Change
11	Monitoring/ Recordkeeping Requirements		19.g	New O&M Plan revision requirements were added for clarification.
12	Testing Requirements	Table 22.1	Table 22.1	Request to change Method to read Method 25A and/or Method 18
13	Appendix A	3	c.i.	Update horsepower rating of emergency fire-water pump engine.(Emission Summary Table A-1)

8. REGULATED ACTIVITIES:

- a. The power production operation consists of the following regulated activities/equipment:
 - i. Four General Electric 7FA Combustion Turbines equipped with dry low-NO_x burners. The turbines are fueled only by pipeline natural gas and equipped with dry low-NO_x burners.
 - ii. Four supplementary fired Heat Recovery Steam Generators HRSGs each equipped with duct burners. The duct burners are fueled only by pipeline natural gas.
 - iii. The four combustion turbine/DB/HRSG systems drive two steam turbines in a two-on-one configuration as described in Section 5. The steam turbines themselves are not sources of air pollution.
 - iv. Each combined cycle system (which includes one combustion turbine and one DB/HRSG) is equipped with a selective catalytic control system to reduce emissions of NO_x
 - v. Each combined cycle system is equipped with an oxidizing catalyst system to reduce emissions of CO. Note that the oxidizing catalyst also reduces emissions of VOCs, although the system was designed for CO removal.
 - vi. Each combined cycle system is equipped with a continuous emission monitoring system (CEMS) for NO_x and CO measurement
- b. Regulated support equipment includes:
 - i. Two mechanical draft cooling towers equipped with drift eliminators and a continuous cooling water conductivity monitoring system. Each cooling tower consists of eleven cells and has a cooling water circulating rate of 163,050 gallons per minute
 - ii. One 265-HP fire water pump engine, fueled by diesel fuel

9. ALTERNATIVE OPERATING SCENARIOS:

There are no alternative operating scenarios for the MGS. The sole purpose of the MGS is to produce electrical power for sale.

10. SUMMARY OF POTENTIAL TO EMIT:

Table 4 presents the allowable annual emission rates for the regulated pollutants emitted at the source. These limits are federally enforceable; therefore, the allowable emission limits establish the facility’s potential to emit.

Table 4: Emission Limits (tons per year)

Device	NO_x	CO	PM₁₀	SO₂	VOC
GE – Combined Cycle Systems #1 #2 Combined	204.0	191.8	253.2	17.6	147.5
GE – Combined Cycle System #5 and #6 Combined	204.0	191.8	253.2	17.6	147.5
Cooling Tower #1	NA	NA	16.89	NA	NA
Cooling Tower #2	NA	NA	16.89	NA	NA
Total limits for GE Combined Cycle Systems #1, #2, #5 and #6 and Cooling Towers as in Permit Table 18.1	408.0	384.0	540	35.0	295.0

11. PERMIT SHIELD

A permit shield was granted in the previous permit and has been included in this permit for specific applicable requirements. In addition to more generic requirements, the permit shield applies to:

- Rule 300, Visible Emissions
- Rule 310, Open Fugitive Dust Sources
- Rule 312, Abrasive Blasting
- Rule 315, Spray Coating Operations
- Rule 320, Odors and Gaseous Air Contaminants
- Rule 324, Stationary Internal Combustion (IC) Engines
- Rule 331, Solvent Cleaning
- Rule 335, Architectural Coatings
- Rule 360, New Source Performance Standards: Subparts A, Da, and GG
- Rule 371, Acid Rain
- Rule 600, Emergency Episodes

12. COMPLIANCE ASSURANCE MONITORING (CAM) APPLICABILITY

The previous Title V permit indicated that 40 CFR 64, Compliance Assurance Monitoring, would not apply to the facility. However, the permit application, page 5-6, indicates that §64.3 does apply.

40 CFR Part 64 applies to each pollutant-specific emissions unit at a major source if the unit satisfies all of the following:

- The unit is subject to an emission standard for the pollutant other than an exempted emission limit or standard under 40 CFR §64.2(b)(1)
- The unit uses a control device to achieve compliance
- The unit has a pre-control potential to emit of 100% of the major source threshold

Detailed review of 40 CFR 64 indicates that the CAM requirements do not apply to CO or NO_x emissions at Mesquite. Because these pollutants qualify for the exemption described in 40 CFR §64.2(b)(1)(vi) exempts units where the permit specifies a continuous compliance determination method, including a CEMS. Because a CEMS is required to monitor both CO and NO_x emissions, these pollutants are exempt from CAM.

The facility is, however, subject to CAM for VOC emissions because uncontrolled VOC emissions from each combine cycle system exceed the 100 ton-per-year major source threshold at 108 tons per year and the facility uses a control system to meet all VOC limits in the permit except for those limits that apply during startup, shutdown, testing, and tuning. The facility uses an oxidizing catalyst designed to control CO emissions but this system also removes VOC emissions by approximately 10%, according to the emission calculations. Because the oxidizing catalyst is designed to remove CO and the CO CEMS provides assurance that the oxidizing catalyst is functioning properly, Mesquite has proposed that compliance assurance with all VOC emission limits (except those that apply to startup, shutdown, testing, or tuning) be achieved through the CO CEMS requirements.

40 CFR §64.4(c) requires submittal of CO CEMS data taken at the time of the last VOC emission test.

According to 40 CFR §64.6(c), the permit must specify:

40 CFR §64.6 Requirement	Permit Requirement
Indicator(s) to be monitored	CO Emission Rate
Device(s) to be used to measure the indicator(s)	CO CEMS
Performance requirements established to satisfy §64.3(b) (Performance Criteria) or (d) (Special Criteria for the use of Continuous Emission, Opacity, or Predictive Monitoring Systems). According to §64.3(d), the use of a CEMS that satisfies 40 CFR §60.13, Appendix B is deemed to satisfy the general design criteria required by §64.3(a) and (b).	The CO CEMS must be operated according to 40 CFR §60.13, Appendix B and therefore, the system meets the performance criteria. However, because the CO CEMS does not directly VOC emissions, the permit defines an excursion of the VOC limit as any CO emission limit exceedance.
Means by which an exceedance or excursion is defined. The permit must specify the level at which an exceedance or excursion will be deemed to occur, including the appropriate averaging period associated with such exceedance or excursion. For defining an excursion from an indicator range, the permit may either include the specific values at which an excursion shall occur or the specific procedures that will be used to establish that value or condition. If the latter, the permit shall specify appropriate notice procedures for the operator to notify the permitting authority upon any establishment or re-establishment of the value.	Exceedance of the CO emission limit is an excursion of the VOC emission limit.
Obligation to conduct the monitoring and fulfill the other obligations specified in 40 CFR §§64.7 through 64.9.	Permit requires 40 CFR §64.7 to 64.9 to be followed.
If appropriate a minimum data availability requirement for valid data collection for each averaging period and if appropriate a minimum data availability requirement for the averaging periods in a reporting period.	40 CFR §60.13 and the permit require a sampling cycle every 15 minutes. The Permit imposes minimum of 18 of 24 hours of CO CEMS operation.
Compliance schedule	A compliance schedule is not required because the permit does not require any new monitoring equipment or systems.

13. HAP IMPACT ANALYSIS:

This renewal permit does not include any proposed increase in HAPs. Impact of HAPs was addressed in the previous permits. The section from the original impact analysis is presented below:

Air Toxics Impact analysis:

The potential of the facility to cause exceedances of the Arizona Ambient Air Quality Guidelines (AAAQGs) was evaluated by determining AAAQG compound emissions and inputting the emission rates into the worst case ambient impact scenario. AAAQG compound emission rates were obtained from the California Air Toxics emissions database (CATEF) and the USEPA emission factors in AP-42 for lead and other metal emissions (since CATEF does not include metal emission factors for gas turbines). The modeled impacts were compared to the most recent version (1999) of the annual and short term (1-hour and 24-hour) AAAQGs as published by ADEQ.

The model results provided in Table 8-1 indicated maximum impacts ranging from about 46 percent to much less than one percent of the AAAQGs.

**Table 5:
Annual and Short Term AAAQG Analysis for the Mesquite Generating Station**

Pollutant	CAS Number	Emission Rate (lb/h)	Annual Impact ($\mu\text{g}/\text{m}^3$) ^a	Annual AAAQG ($\mu\text{g}/\text{m}^3$) ^b	24 hour Impact ($\mu\text{g}/\text{m}^3$) ^a	24 hour AAAQG ($\mu\text{g}/\text{m}^3$) ^b	1 hour Impact ($\mu\text{g}/\text{m}^3$) ^a	1 hour AAAQG ($\mu\text{g}/\text{m}^3$) ^b
Acetaldehyde	75-07-0	1.07E-01	1.20E-02	4.50E-01	8.87E-02	1.70E+02	3.61E-01	6.30E+02
Acrolein	107-02-8	3.20E-02	-	-	2.65E-02	2.00E+00	1.07E-01	6.30E+00
Ammonia	7664-41-7	3.12E+01	-	-	2.58E+01	1.40E+02	1.05E+02	2.30E+02
Arsenic	7440-38-2	4.45E-04	4.99E-05	2.30E-04	3.67E-04	1.60E-02	1.49E-03	6.00E-02
Barium	7440-39-3	9.79E-03	-	-	8.08E-03	4.00E+00	3.28E-02	1.50E+01
Benzene	71-43-2	4.67E-03	5.24E-04	1.20E-01	3.86E-03	4.40E+01	1.57E-02	1.70E+02
Benz(a)anthracene	56-55-3	8.03E-06	9.00E-07	4.80E-03	6.63E-06	1.60E+00	2.69E-05	6.00E+00
Benzo(a)pyrene	50-32-8	1.03E-06	1.15E-07	4.80E-04	8.51E-07	1.80E-01	3.46E-06	6.70E-01
Beryllium	7440-41-7	2.67E-05	2.99E-06	4.20E-04	2.20E-05	1.60E-02	8.96E-05	6.00E-02
1,3-Butadiene	106-99-0	2.76E-04	3.09E-05	3.60E-03	2.28E-04	1.30E+00	9.26E-04	5.00E+00
Cadmium	7440-43-9	2.45E-03	2.74E-04	5.60E-04	2.02E-03	2.00E-01	8.21E-03	7.70E-01
Chromium	7440-47-3	3.11E-03	-	-	2.57E-03	4.00E+00	1.04E-02	1.50E+01
Cobalt	7440-48-4	1.87E-04	-	-	-	-	-	-
Copper	7440-50-8	1.89E-03	-	-	1.56E-03	7.90E-01	6.34E-03	3.00E+00
Dibenz(a,h)anthracene	53-70-3	6.74E-06	7.56E-07	4.80E-04	5.57E-06	1.80E-01	2.26E-05	6.70E-01
	100-41-4	2.17E-02	-	-	1.79E-02	3.50E+03	7.27E-02	4.50E+03
Ethylbenzene	50-00-0	1.88E-01	2.11E-02	7.60E-02	1.55E-01	1.60E+01	6.31E-01	2.50E+01
Formaldehyde	110-54-3	4.87E-01	-	-	4.02E-01	1.40E+03	1.63E+00	5.40E+03
Hexane	7439-96-5	8.45E-04	-	-	6.98E-04	7.90E+00	2.84E-03	2.50E+01
Manganese	7439-97-6	5.78E-04	-	-	4.78E-04	4.00E-01	1.94E-03	1.50E+00
Mercury	56-49-5	1.13E-05	-	-	-	-	-	-
2-Methylchloranthrene	91-20-3	2.06E-03	-	-	1.70E-03	4.00E+02	6.91E-03	6.30E+02
	7440-02-0	4.67E-03	5.24E-04	2.10E-03	3.86E-03	1.20E-01	1.57E-02	4.50E-01
Naphthalene	75-56-9	9.96E-02	1.12E-02	2.70E-01	8.23E-02	9.80E+01	3.34E-01	3.70E+02
Nickel	7782-49-2	5.34E-05	-	-	4.41E-05	1.60E+00	1.79E-04	6.00E+00
Propylene Oxide	108-88-3	1.31E-01	-	-	1.09E-01	3.00E+03	4.41E-01	4.40E+03
Selenium	7440-62-2	5.12E-03	-	-	4.23E-03	4.00E-01	1.72E-02	1.50E+00
Toluene	1330-20-7	4.29E-02	-	-	3.55E-02	3.50E+03	1.44E-01	5.40E+03
Vanadium								
Xylene (Total)								

^a Derived by multiplying the nominal 1 g/s annual, 24 hour, or 1 hour impact by the emission rate (g/s) of each pollutant.
 Nominal 1 g/s: annual impact = 0.8893 ($\mu\text{g}/\text{m}^3$)
 24 hour impact = 6.54986 ($\mu\text{g}/\text{m}^3$)
 1 hour impact = 26.61199 ($\mu\text{g}/\text{m}^3$)

Example calculation: acetaldehyde emission rate of 1.07E-01 lb/h * (453.59 g/lb / 3600 s/h) = 1.35E-02 g/s
 1.35E-02 * annual 1 g/s impact of 0.8893 ($\mu\text{g}/\text{m}^3$)
 = annual acetaldehyde impact 1.20E-02 $\mu\text{g}/\text{m}^3$

^b Obtained from draft guidance document *Arizona Ambient Air Quality Guidelines (AAAQGs) 1999 Update*.

The original HAP impact analysis addressed hexane and formaldehyde. However, estimates by County staff indicate that emissions of these pollutants may be higher than that presented in the permit application. The impact of these pollutants was, therefore, re-evaluated. The table below shows the impact predicted using the county's emission estimates. Note that the impact is still well below the AAAQGs for these pollutants.

<p><u>Hexane</u> Mesquite Emission Estimate: 0.000845lb/hr 24- hour impact: 6.98 E-04 µg/m³ 1-hour impact: 2.84E-03 µg/m³</p> <p>Annual hours of operation per year = 5525 hr/yr, based on Mesquite's application dated 10-27-05</p> <p>County Emission Estimate = 10.5 ton/yr x 2000 lb/ton x 1/(5525 hr/yr) = 3.80 lb/hr 24-hour County-estimated impact = 6.98 E-04 x (3.8/0.000845) = 3.13 µg/m³ 1-hour County-estimated impact: 2.84 E-03 x (3.80/0.000845) = 12.77 µg/m³</p> <p>24-hour AAAQG: 7.90 µg/m³ 1-hour AAAQG: 25 µg/m³</p>
<p><u>Formaldehyde</u> Mesquite Emission Estimate: 0.487 lb/hr 24- hour impact: 0.402 µg/m³ 1-hour impact: 1.63µg/m³</p> <p>County Emission Estimate: 12.3 ton/yr x 2000 lb/ton x 1/(5525 hr/yr) = 4.45 lb/hr 24-hour County-estimated impact: 0.402 x (4.45/0.487) = 3.67 µg/m³ 1-hour County-estimated impact: 1.63 x (4.45/0.487) = 14.9 µg/m³</p> <p>24-hour AAAQG: 1400 µg/m³ 1-hour AAAQG: 5400 µg/m³</p>

14. TITLE IV APPLICABILITY

MGS is subject to the acid rain provisions of the Clean Air Act. The permitted emission limits, monitoring, recordkeeping, reporting and other requirements of the Permit include the acid rain provisions of 40 CFR Parts 72, 73 and 75 that apply to MGS. The proposed Permit serves as a combined PSD, Title V, and Title IV acid rain permit. MGS's Acid Rain Permit application is incorporated by reference into the proposed Permit.

15. CONCLUSION AND PROPOSED ACTION

Based on the information supplied by the Mesquite Generating Station, and on the analyses conducted by the Maricopa County Air Quality Department, the MCAQD has concluded that the requested Permit Renewal and permit changes are consistent with Federal, State, and County regulations and rules and will not cause or contribute to a violation of any federal ambient air quality standard, will not cause any Arizona Ambient Air Quality Guidelines to be exceeded, and will not cause additional adverse air quality impacts.

MCAQD proposes to issue the Permit Renewal subject to the proposed permit conditions.