



Enhanced Regulatory Outreach Program Maricopa County Air Quality Department Notice of Stakeholder Workshop

AQ-2015-002 Rule 322: Power Plant Operations
Date/Time: Wednesday, February 24, 2016 at 9:00 am
Location: 1001 N. Central Avenue, Floor 5 Classroom*

The Maricopa County Air Quality Department (department) will conduct a Stakeholder Workshop to discuss proposed revisions to AQ-2015-002-Rule 322 (Power Plant Operations). The draft rule to be discussed during this workshop is attached to this announcement.

Discussion will focus on:

- PROPOSE to retain current title of the rule instead of proposing rule title to be "Electric Utility Stationary Gas Turbines, Electric Utility Steam Generating Units"
- PROPOSE to add in Section 101 (Purpose) "cogeneration steam generating units"
- PROPOSE to delete from Section 102 (Applicability) "for which construction commenced prior to May 10, 1996" and propose to add "except for equipment that is already subject to more stringent federally enforceable standards"
- PROPOSE to re-format Section 104 (Partial Exemptions) and propose to add Section 104.4 – a partial exemption for equipment that operates less than or equal to 10 percent annual capacity
- PROPOSE in Section 200 (Definitions) to add the definition of "emergency standby unit" and the definition of "operating day" and propose to revise the definition of "emission control system (ECS)"
- PROPOSE to delete Section 301 (Limitations-Particulate Matter) and to re-number Section 301.3 to 301 (Good Combustion Practices For Turbines) and to re-number Section 301.4 to 302 (Cooling Towers) and to re-number subsequent sections
- PROPOSE to revise Section 305 (Limitations-Nitrogen Oxides); propose the same NO_x emission limits as proposed in draft Rule 322 dated September 15, 2015, i.e., 42 ppm_{dv} for gaseous fossil fuel and 65 ppm_{dv} for liquid fossil fuel; are not proposing "Table 1" as was proposed in draft Rule 322 dated September 15, 2015
- PROPOSE in Sections 307.4(a) and (b) (Continuous Emission Monitoring Systems (CEMS)) to not add "or associated cooling tower" in the first sentence and to add instead "or cogeneration steam generating unit used to generate electric power"
- PROPOSE to add "40 CFR Part 60" in Sections 307.4(a) and (b) (Continuous Emission Monitoring Systems (CEMS))
- PROPOSE in Section 308 (Emergency Fuel Use Notification) to not add "or associated cooling tower" in the first sentence and to add instead "or cogeneration steam generating units used to generate electric power"
- PROPOSE in Section 400 (Administrative Requirements) to add Section 401 (In Existence And In Compliance), Section 402 (In Existence And Non-Compliant), and Section 403 (Emergency Standby Units)
- PROPOSE to not add Section 501.1 (Operation And Maintenance (O&M) Plan Record Requirements)

Additional information is available on the Enhanced Regulatory Outreach Program (EROP) website (www.maricopa.gov/regulations). The Stakeholder Workshop is an informal meeting for all interested parties, is free of charge and no advance registration or RSVP is required. If you would like to remotely attend this workshop, please contact Michelle Mada at (602) 372-1465.

*If you will be attending this workshop in-person, when you arrive at 1001 North Central Avenue, please check-in in Suite #125 then proceed to the Floor 5 classroom. Thank you for participating in the rulemaking process.



The following is a summary of revisions to draft Rule 322 (Power Plant Operations) dated February 24, 2016, since the previous workshop for draft Rule 322 was conducted on September 3, 2015:

- PROPOSE to retain current title of the rule instead of proposing rule title to be “Electric Utility Stationary Gas Turbines, Electric Utility Steam Generating Units”
- PROPOSE to add in Section 101 (Purpose) “cogeneration steam generating units”
- PROPOSE to delete from Section 102 (Applicability) “for which construction commenced prior to May 10, 1996” and propose to add “except for equipment that is already subject to more stringent federally enforceable standards”
- PROPOSE to re-format Section 104 (Partial Exemptions) and propose to add Section 104.4 – a partial exemption for equipment that operates less than or equal to 10 percent annual capacity
- PROPOSE in Section 200 (Definitions) to add the definition of “emergency standby unit” and the definition of “operating day” and propose to clarify the definition of “emission control system (ECS)”
- PROPOSE to delete Section 301 (Limitations-Particulate Matter) and to re-number Section 301.3 to 301 (Good Combustion Practices For Turbines) and to re-number Section 301.4 to 302 (Cooling Towers) and to re-number subsequent sections
- PROPOSE to revise Section 305 (Limitations-Nitrogen Oxides); propose the same NO_x emission limits as proposed in draft Rule 322 dated September 15, 2015, i.e., 42 ppmv for gaseous fossil fuel and 65 ppmv for liquid fossil fuel; are not proposing “Table 1” as was proposed in draft Rule 322 dated September 15, 2015
- PROPOSE in Sections 307.4(a) and (b) (Continuous Emission Monitoring Systems (CEMS)) to not add “or associated cooling tower” in the first sentence and to add instead “or cogeneration steam generating unit used to generate electric power”
- PROPOSE to add “40 CFR Part 60” in Sections 307.4(a) and (b) (Continuous Emission Monitoring Systems (CEMS))
- PROPOSE in Section 308 (Emergency Fuel Use Notification) to not add “or associated cooling tower” in the first sentence and to add instead “or cogeneration steam generating units used to generate electric power”
- PROPOSE in Section 400 (Administrative Requirements) to add Section 401 (In Existence And In Compliance), Section 402 (In Existence And Non-Compliant), and Section 403 (Emergency Standby Units)
- PROPOSE to not add Section 501.1 (Operation And Maintenance (O&M) Plan Record Requirements)



MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS
REGULATION III - CONTROL OF AIR CONTAMINANTS

RULE 322
POWER PLANT OPERATIONS

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~~Adopted 7/02/03~~
~~Revised 10/17/07~~

Adopted 07/02/2003; Revised 10/17/2007; Revised xx/xx/xxxx

**MARICOPA COUNTY
 AIR POLLUTION CONTROL REGULATIONS
 REGULATION III - CONTROL OF AIR CONTAMINANTS**

**RULE 322
 POWER PLANT OPERATIONS**

SECTION 100 - GENERAL

- 101 PURPOSE:** To limit the discharge of nitrogen oxides, sulfur oxides, particulate matter and carbon monoxide emissions into the atmosphere from stationary fossil-fuel-fired equipment at ~~existing power plants and existing cogeneration plants~~ electric utility stationary gas turbines, electric utility steam generating units or cogeneration steam generating units and to limit particulate matter emissions from cooling towers associated with this equipment.
- 102 APPLICABILITY:** This rule applies to any of the following types of equipment that burn fossil fuel ~~for which construction commenced prior to May 10, 1996, except for equipment that is already subject to more stringent federally enforceable standards:~~
- 102.1** Each electric utility steam generating unit or cogeneration steam generating unit used to generate electric power that has a heat input of equal to or greater than 100 million (MM) Btu/hour (29 megawatts (MW)).
 - 102.2** Each electric utility stationary gas turbine with a heat input at peak load equal to or greater than 10 MMBtu/hour (2.9 MW) based upon the lower heating value of the fuel.
 - 102.3** Each cooling tower associated with the type of equipment listed in ~~subsections 102.1 and 102.2~~ Sections 102.1 and 102.2 of this rule.
- 103 EXEMPTIONS:** This rule shall not apply to the following types of equipment:
- 103.1** Combustion equipment associated with nuclear power plant operations; or
 - 103.2** Reciprocating internal combustion equipment.
- 104 PARTIAL EXEMPTIONS:**
- ~~104.1 Stationary gas turbines that meet any of the following criteria listed below are exempt from Sections 304 and 305 and subsections 301.1, 301.2, 306.4, and 501.4 of this rule:~~
 - ~~a. Used for fire fighting; or~~
 - ~~b. Used for flood control; or~~
 - ~~c. Used in the military at military training facilities or military gas turbines for use in other than a garrison; or~~
 - ~~d. Engaged by manufacturers in research and development of equipment for either gas turbine emission control techniques or gas turbine efficiency improvements.~~
 - ~~104.2 All equipment listed in Section 102 fired with an emergency normally fired with natural gas is exempt from Sections 304 and 305 and subsections 301.1, 301.2, and 306.4, 501.4 of this rule.~~
 - ~~104.3 All equipment listed in Section 102 shall be exempt from Sections 304 and 305 and subsections 301.1, 301.2, and 306.4 306.6, of this rule for 36 cumulative hrs. of firing emergency fuel per year, per unit for testing, reliability, training, and maintenance purposes.~~



- 104.1** Stationary gas turbines that meet any of the criteria listed below are exempt from Sections 305, 306, 307.4, and 501.4 of this rule:
- a.** Used for fire-fighting
 - b.** Used for flood control
 - c.** Used in the military at military training facilities or military gas turbines for use in other than a garrison
 - d.** Engaged by manufacturers in research and development of equipment for either gas turbine emission control techniques or gas turbine efficiency improvements
- 104.2** Any equipment listed in Section 102 of this rule fired with an emergency fuel but normally fired with natural gas is exempt from Sections 305, 306, 307.4, and 501.4 of this rule.
- 104.3** Any equipment listed in Section 102 of this rule that fires emergency fuel for 36 cumulative hours per year, per unit for testing, reliability, training, and maintenance purposes is exempt from Sections 305, 306, 307.4 of this rule.
- 104.4** Any equipment listed in Section 102 of this rule that operates less than or equal to 10 percent annual capacity is exempt from Sections 305, 306, and 307.4 of this rule.

SECTION 200 - DEFINITIONS: ~~For the purpose of this rule, the following definitions shall apply: See Rule 100 (General Provisions and Definitions) of these rules for definitions of terms that are used but not specifically defined in this rule.~~ For the purpose of this rule, the following definitions shall apply, in addition to those definitions found in Rule 100 (General Provisions and Definitions) of these rules. In the event of any inconsistency between any of the Maricopa County air pollution control rules, the definitions in this rule take precedence.

- 201** **COGENERATION STEAM GENERATING UNIT:** A steam or hot water generating unit that simultaneously produces both electrical (or mechanical) and thermal energy (such as heat or steam) from the same primary energy source and supplies more than one-third of its potential electric output to any utility power distribution system for sale.
- 202** **COMBINED CYCLE GAS TURBINE:** A type of stationary gas turbine wherein heat from the turbine exhaust is recovered by a steam generating unit to make steam for use in a steam-electric turbine.
- 203** **CONTINUOUS EMISSION MONITORING SYSTEM (CEMS):** The total equipment required to sample and analyze emissions or process parameters such as opacity, nitrogen oxide, and oxygen or carbon dioxide, and to provide a permanent data record.
- 204** **COOLING TOWERS:** Open water recirculating devices that use fans or natural draft to draw or force air through the device to cool water by evaporation and direct contact.
- 205** **CORRECTIVE ACTION PLAN (CAP):** A methodical procedure that is used to evaluate and correct a turbine operational problem and that includes, at a minimum, improved preventative maintenance procedures, improved ECS operating practices, possible operational changes, and progress reports.
- 206** **DISTILLATE OIL:** A petroleum fraction of fuel oil produced by distillation that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials in ASTM D396-01, "Standard Specification for Fuel Oils."
- 207** **DRIFT:** Water droplets, bubbles, and particulate matter that escape from cooling tower stacks.
- 208** **DRIFT ELIMINATOR:** Device used to remove drift from cooling tower exhaust air, thus reducing water loss by relying on rapid changes in velocity and direction of air-droplet mixtures by impaction on eliminator passage surfaces. A drift eliminator is not categorized as an emission control system but is an inherent part of the cooling tower's design requirements.



- 209 **DRIFT RATE:** Percentage (%) of circulating water flow rate that passes through a drift eliminator on a cooling tower.
- 210 **ELECTRIC UTILITY STATIONARY GAS TURBINE:** Any stationary gas turbine that is constructed for the purpose of supplying more than 1/3 of its potential electric output capacity to any utility power distribution system for sale. Both simple and combined cycle gas turbines are types of electric utility stationary gas turbines.
- 211 **ELECTRIC UTILITY STEAM GENERATING UNIT:** Any steam electric generating unit that uses fossil fuel and is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electric output to any utility power distribution system for sale.
- 212 **EMERGENCY FUEL:** Fuel fired only during circumstances such as natural gas emergency, natural gas curtailment, or breakdown of delivery system such as an unavoidable interruption of supply that makes it impossible to fire natural gas in the unit. Fuel is not considered emergency fuel if it is used to avoid either peak demand charges or high gas prices during on-peak price periods or due to a voluntary reduction in natural gas usage by the power company.
- 213 **EMERGENCY STANDBY UNIT:** A stationary gas turbine that is limited by permit condition to be operated only as a mechanical or electrical power source for a facility when the primary power source for a facility has been rendered inoperable due to failure beyond the reasonable control of the operator, except due to power interruption pursuant to an interruptible power supply agreement. Electricity generated by such a unit cannot be sold.
- 213 **214** **EMISSION CONTROL SYSTEM (ECS):** A system, technology, or method of operation approved in writing by the Control Officer, designed and operated in accordance with good engineering practice to reduce emissions.
- 214 **215** **FOSSIL FUEL:** Naturally occurring carbonaceous substances from the ground such as natural gas, petroleum, coal and any form of solid, liquid, or gaseous fuel derived from such material for the purpose of creating energy.
- 215 **216** **FUEL SWITCHING STARTUP PROCESS:** The act of changing from one type of fuel to a different type of fuel.
- 216 **217** **HEAT INPUT:** Heat derived from the combustion of fuel, not including the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, and kilns.
- 217 **218** **HIGHER HEATING VALUE (HHV) OR GROSS HEATING VALUE:** The amount of heat produced by the complete combustion of a unit quantity of fuel determined by a calorimeter wherein the combustion products are cooled to the temperature existing before combustion and all of the water vapor is condensed to liquid.
- 218 **219** **LOW SULFUR OIL:** Fuel oil containing less than or equal to 0.05% by weight of sulfur.
- 219 **220** **LOWER HEATING VALUE (LHV) OR NET HEATING VALUE:** The amount of heat produced by the complete combustion of a unit quantity of fuel determined by a calorimeter wherein the combustion products are cooled to the temperature existing before combustion and all of the water vapor remains as vapor and is not condensed to a liquid. The value is computed from the higher heating value by subtracting the water originally present as moisture and the water formed by combustion of the fuel.
- 220 **221** **NATURAL GAS CURTAILMENT:** An interruption in natural gas service, such that the daily fuel needs of a combustion unit cannot be met with natural gas available due to one of the following reasons, beyond the control of the owner or operator:



- ~~220.1~~ **221.1** An unforeseeable failure or malfunction, not resulting from an intentional act or omission that the governing state, federal or local agency finds to be due to an act of gross negligence on the part of the owner or operator; or
- ~~220.2~~ **221.2** A natural disaster; or
- ~~220.3~~ **221.3** The natural gas is curtailed pursuant to governing state, federal or local agency rules or orders; or
- ~~220.4~~ **221.4** The serving natural gas supplier provides notice to the owner or operator that, with forecasted natural gas supplies and demands, natural gas service is expected to be curtailed pursuant to governing state, federal or local agency rules or orders.
- ~~221~~ **222** **OPACITY:** A condition of the ambient air, or any part thereof, in which an air contaminant partially or wholly obscures the view of an observer.
- 223** **OPERATING DAY:** A 24-hour period between 0000 and 2359 during which any fuel is combusted at any time in the unit. It is not necessary for fuel to be combusted continuously for the entire 24-hour period.
- ~~222~~ **224** **PARTICULATE MATTER EMISSIONS:** Any and all particulate matter emitted to the ambient air as measured by applicable state and federal test methods.
- ~~223~~ **225** **PEAK LOAD:** 100% of the manufacturer’s design capacity of a gas turbine at 288° Kelvin, 60% relative humidity, and 101.3 kilopascals pressure (ISO standard day conditions).
- ~~224~~ **226** **POWER PLANT OPERATION:** An operation whose purpose is to supply more than one-third of its potential electric output capacity to any utility power distribution system for sale.
- ~~225~~ **227** **RATED HEAT INPUT CAPACITY:** The heat input capacity in million Btu/hr. as specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different than the heat input capacity on the name plate, the maximum heat input shall be considered the rated heat input capacity.
- ~~226~~ **228** **REGENERATIVE CYCLE GAS TURBINE:** Any stationary gas turbine that recovers thermal energy from the exhaust gases and utilizes the thermal energy to preheat air prior to entering the combustion unit.
- ~~227~~ **229** **RESIDUAL OIL:** The heavier oils that remain after the distillate oils and lighter hydrocarbons are distilled off in refinery operations. This includes crude oil or fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 % by weight, and all fuel oil numbers 4, 5, and 6, as defined by the American Society of Testing and Materials in ASTM D396-01, “Standard Specifications for Fuel Oils.”
- ~~228~~ **230** **SIMPLE CYCLE GAS TURBINE:** Any stationary gas turbine that does not recover heat from the gas turbine exhaust gases to preheat the inlet combustion air to the gas turbine, or that does not recover heat from the gas turbine exhaust gases to heat water or generate steam.
- ~~229~~ **231** **STATIONARY GAS TURBINE:** Any simple cycle gas turbine, regenerative gas turbine or any gas turbine portion of a combined cycle gas turbine that is not self-propelled or that is attached to a foundation.
- ~~230~~ **232** **SULFUR OXIDES (SO_x):** The sum of the oxides of sulfur emitted from the flue gas from a combustion unit that are directly dependent upon the amount of sulfur in the fuel used.
- ~~231~~ **233** **THIRTY (30) DAY ROLLING AVERAGE:** An arithmetic mean or average of all hourly emission rates for 30 successive combustion equipment operating days and calculated by a CEMS every hour.
- ~~232~~ **234** **THREE (3) HOUR ROLLING AVERAGE:** An arithmetic mean or average of the most recent three one (1) hour tests, or an arithmetic mean or average over a period of three hours which is newly calculated with each hourly measurement.



- 233 **235** **TOTAL DISSOLVED SOLIDS (TDS):** The amount of concentrated matter reported in milligrams/liter (mg/l) or parts per million (ppm) left after filtration of a well-mixed sample through a standard glass fiber filter. The filtrate is evaporated to dryness in a weighed dish and dried to constant weight at 180° C and the increase in dish weight represents the total dissolved solids.
- 234 **236** **UNCOMBINED WATER:** Condensed water containing no more than analytical trace amounts of other chemical elements or compounds.

SECTION 300 – STANDARDS

301 LIMITATIONS – PARTICULATE MATTER:

- 301.1 **Fuel Type:** ~~An owner or operator of any combustion equipment listed in Section 102 shall burn only natural gas except when firing emergency fuel per subsections 104.2 and 104.3 of this rule. An owner or operator may burn a fuel other than natural gas for non-emergency purposes providing that the fuel shall not cause to be discharged more than 0.007 lbs. of particulate matter per MMBtu, demonstrated and documented through performance testing of this alternate fuel using Test Method 5. This usage of different fuels other than natural gas shall be approved by the Control Officer prior to usage.~~
- 301.2 **Particulate Matter Testing:** ~~A backhalf analysis shall be performed, using Reference Method 202 referenced in subsection 504.6, each time a compliance test for particulate matter emissions to meet the standard in subsection 301.1 of this rule is performed using Test Method 5.~~

301.3 **301** **GOOD COMBUSTION PRACTICES FOR TURBINES:** ~~An~~ During steady state operations, an owner or operator of any stationary gas turbine listed in subsection 102.2 ~~Section 102.2 of this rule, regardless of fuel type, shall use operational practices recommended by the manufacturer and parametric monitoring to ensure good combustion control as listed below. One of the following procedures may be used. For the purposes of this rule, if a CEMS or another approved monitoring method is used, good combustion practices for turbines are considered to have been met.~~

- a. **301.1** Monitor the maximum temperature differential across the combustion burners or at locations around the back end of the turbine, dependent upon the particular unit, to ensure no more than a 100°F difference using a thermocouple. If a valid maximum temperature differential of greater than 100°F is observed across the burners, investigation and corrective action shall be taken within three hours to reduce the temperature difference to 100°F or less; or
- b. **301.2** If the manufacturer recommends that the maximum numerical temperature differential to ensure good combustion is a temperature that is greater than 100°F, then proof of this maximum alternate temperature shall be submitted to the Control Officer. The procedure to measure the maximum temperature differential listed ~~above~~ in ~~subsection 301.3a~~ Section 301.1 of this rule shall then be followed using this alternate recommended maximum temperature differential after approval by the Control Officer.
- e. **301.3** If the frequency of failure to meet the proper temperature differential of 100°F or to meet the alternate temperature differential recommended by the manufacturer reflects a pattern that the turbine is not being operated in a manner consistent with good combustion practices, then the Control Officer may require the owner or operator to submit a Corrective Action Plan (CAP).

301.4 **302** **COOLING TOWERS:** An owner or operator of a cooling tower associated with applicable units listed in Section 102 of this rule shall:

- a. **302.1** Equip the cooling tower with a drift eliminator. The drift eliminator shall not be manufactured out of wood.
- b. **302.2** The concentration of Total Dissolved Solids (TDS) multiplied by the percentage of drift rate shall not exceed the maximum numerical limit of 20.



- e- **302.3** Visually inspect the drift eliminator on a monthly basis only if the drift eliminator can be viewed safely and does not require an owner or operator to walk into the tower. If the drift eliminator cannot be safely inspected monthly then ~~subsection 301.4~~ Section 302.4 of this rule shall apply:
- d- **302.4** Visually inspect the drift eliminator for integrity during a regularly scheduled outage when the cooling tower is not operating, if it cannot be inspected on a monthly basis. This visual inspection shall be no less than once per year.

302 **303 LIMITATIONS – OPACITY:**

- 302.1 **303.1** ~~No person shall~~ An owner or operator shall not discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20% opacity, except as provided in ~~subsection 302.2~~ Section 303.2 of this rule.
- 302.2 **303.2** Opacity may exceed the applicable limits established in ~~subsection 302.1~~ Section 303.1 of this rule for up to one hour during the startup ~~of or~~ switching fuels; however, opacity shall not exceed 40% for any six (6) minute averaging period in this one hour period, provided that the Control Officer finds that the owner or operator has, to the extent practicable, maintained and operated the source of emissions in a manner consistent with good air pollution control practices for minimizing emissions. The one hour period shall begin at the moment of startup of fuel switching.
- 302.3 **303.3** Determination of whether good air pollution control practices are being used shall be based on information provided to the Control Officer upon request, which may include, but is not limited to, the following:
 - a. Monitoring results.
 - b. Opacity observations.
 - c. Review of operating and maintenance procedures.
 - d. Inspection of the source.

303 **304 LIMITATIONS - SULFUR IN FUEL:** An owner or operator of any applicable equipment listed in Section 102 of this rule that burns fuel oil alone or in combination with any other fuel as either emergency fuel or non-emergency fuel ~~that meets the standards in subsection 301.1~~ shall use only low sulfur oil.

304 **305 LIMITATIONS – NITROGEN OXIDES:** ~~No~~ An owner or operator of any applicable equipment listed in ~~subsection 102.1~~ Section 102.1 and 102.2 of this rule ~~that commenced construction or a major modification after May 30, 1972~~ shall not cause to be discharged into the atmosphere nitrogen oxides in excess of the following limits:

- 304.1 **305.1** ~~155 ppmv~~ 42 ppmdv, calculated as nitrogen dioxide when burning gaseous fossil fuel. During steady state operations, this test result using EPA Reference Method(s) 7 or as otherwise designated by the Control Officer shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour. If a ~~Continuous Emission Monitoring System (CEMS)~~ is used, the ~~test result~~ compliance demonstration shall be based upon a 30-day rolling average.
- 304.2 **305.2** ~~230 ppmv~~ 65 ppmdv calculated as nitrogen dioxide when burning liquid fossil fuel. During steady state operations, this test result using EPA Reference Method(s) 7 or as otherwise designated by the Control Officer, shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour. If a CEMS is used, the ~~test result~~ compliance demonstration shall be based upon a 30-day rolling average.
- 304.3 **305.3** The nitrogen oxides concentration shall be measured dry and corrected to 3% oxygen for electric utility steam generating units and cogeneration steam generating units. The nitrogen oxides concentration shall be measured dry and corrected to 15% oxygen for stationary gas turbines and for combined cycle gas turbines.



305 **306** **LIMITATIONS - CARBON MONOXIDE:** An owner or operator of any equipment listed in Section 102 of this rule shall not cause to be discharged into the atmosphere carbon monoxide (CO) measured in excess of 400 ppmv at any time. ~~This~~ During steady state operations, this test result, using EPA Reference Method 10, and performed during steady state compliance source testing shall be based upon the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour. The CO concentration shall be measured dry and corrected to 3% oxygen for electric utility steam generating units, ~~and~~ cogeneration steam generating units, and combined cycle gas turbines. The CO concentration shall be measured dry and corrected to 15% oxygen for stationary gas turbines, during steady state operations.

306 **307** **REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND ECS MONITORING EQUIPMENT:**

306.1 **307.1** ~~Emission Control System Required:~~ For affected operations which may exceed any of the applicable standards set forth in Section 300 of this rule, an owner or operator may comply by installing and operating an emission control system (ECS).

306.2 **307.2** ~~Providing and Maintaining ECS Monitoring Devices:~~ ~~No~~ An owner or operator required to use an approved ECS pursuant to this rule shall not do so without first properly installing, operating, and maintaining in calibration and in good working order, devices for indicating temperatures, pressures, transfer rates, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly and is properly maintained as described in an approved Operation and Maintenance (O&M) Plan.

306.3 **307.3** **Operation and Maintenance (O&M) Plan Required For ECS:**

- a. **General Requirements:** An owner or operator shall provide and maintain an O&M Plan for any ECS, any other emission processing equipment, and any ECS monitoring devices that are used pursuant to this rule or to an air pollution permit.
- b. **Approval by Control Officer:** An owner or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used pursuant to this rule.
- c. **Initial Plans:** An owner or operator ~~that~~ who is required to have an O&M Plan pursuant to this rule shall comply with all O&M Plans that the owner or operator has submitted for approval, but which have not yet been approved, unless notified by the Control Officer in writing. Once the initial plan has been approved in writing by the Control Officer, an owner or operator shall then comply with the approved plan.
- d. **Revisions to Plan:** If revisions to the initial plan have been approved by the Control Officer in writing, an owner or operator shall comply with the revisions to the initial plan. If revisions to the plan have not yet been approved by the Control Officer, then an owner or operator shall comply with the newest recent O&M plan on file at Maricopa County Air Quality Department.
- e. **Control Officer Modifications to Plan:** After discussion with the owner or operator, the Control Officer may modify the plan in writing prior to approval of the initial O&M plan. An owner or operator shall then comply with the plan that has been modified by the Control Officer.

306.4 **307.4** **Continuous Emission Monitoring Systems (CEMS):**

- a. An owner or operator of ~~a combustion unit~~ an electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power subject to Section ~~304~~ 305 of this rule with a heat input of greater than 250 MMBtu/hr, regardless of fuel type, shall install, calibrate, maintain, and operate a CEMS, PEMS, LME, or conduct stack tests as approved by the Control Officer for measuring nitrogen oxides. ~~and recording the output of the system.~~ Where nitrogen oxide emissions are monitored by a CEMS, then a CEMS shall also be required for the measurement of the oxygen content of the flue gases. All CEMS shall comply with the provisions in ~~40 CFR Subpart Da, Part 60, 60.47 (a)~~ 40 CFR Part 60.



- b. An owner or operator of any affected ~~unit~~ electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power listed above that requires a CEMS for nitrogen oxides that meets and is continuing to meet the requirements of 40 CFR Part 75 or Part 60 may use that CEMS or other monitoring system approved by the Control Officer to meet the requirements of ~~subsection 306.4 a~~ Section 307.4(a) of this rule.

307 **308** **EMERGENCY FUEL USE NOTIFICATION:** An owner or operator of a ~~unit~~ electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power that is fired with emergency fuel but is normally fired with natural gas shall notify the Control Officer verbally no later than 24 hours after declaration of the emergency that necessitates its use in compliance with ~~subsections 104.2 and 212~~ Section 104.2 of this rule. This verbal report shall be followed by a written report within 48 hours of initial emergency fuel usage. The written report shall also include identification of the nature of the emergency, initial dates of usage, and the expected dates of usage.

SECTION 400 - ADMINISTRATIVE REQUIREMENTS (~~NOT APPLICABLE~~)

401 **IN EXISTENCE AND IN COMPLIANCE:** The owner or operator of any electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power in existence on [date of rule adoption] in compliance with the emission limits in Section 305 of this rule shall submit a Notification of Compliance within [6 months of rule adoption]. This Notification shall indicate how compliance with the NO_x limits has been determined and if performance testing is required to demonstrate compliance. If performance testing is required to demonstrate compliance, the Notification shall include a timeline for the test. Performance test results from a past test may be used for this determination, as long as the test was conducted within 5 years before [date of rule adoption]. All performance tests shall follow the Department's Guidelines.

402 **IN EXISTENCE AND NON-COMPLIANT:**

402.1 When air pollution control equipment is required to achieve the emission limits in Section 305 of this rule, the owner or operator shall comply with the increments of progress in Section 402.2 of this rule and be in compliance with the emission limits by the date specified in Section 402.2 of this rule. Interim compliance with the emission limits in Sections 305 of this rule does not exclude the owner or operator from final compliance with the emission limits in Section 305 of this rule and the increments of progress in Section 402.2 of this rule.

402.2 **Increments of Progress:** The owner or operator of any electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power subject to the emission limits in Section 305 of this rule shall comply with the following increments of progress. The following compliance schedule does not apply to units already compliant with this rule as of [date of rule adoption]:

- a.** [Within 6 months of rule adoption], submit a compliance schedule to the Control Officer.
- b.** [Within 30 months of rule adoption], be fully compliant with the emission limits in Section 305 of this rule. This shall include the submittal to the Control Officer of a complete source test report indicating compliance.

402.3 **Removal From Service:** The owner or operator of any electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power in existence on [date of rule adoption] that is expected to be removed from service by [within 14 months of rule adoption] shall comply with the following:

- a.** [Within 6 months of rule adoption], submit to the Control Officer a notification requesting an exemption from the emission limits in Section 305 of this rule.
- b.** [Within 10 months of rule adoption], submit to the Control Officer a decommissioning plan and a permit revision to have the unit removed from the permit.



- c. [Within 14 months of rule adoption], discontinue operation of the electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power, disconnect the fuel supply line(s), and notify the Control Officer in writing of the removal from service. Operation of any electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power beyond [14 months of rule adoption], shall be done in compliance with the emission limits in Section 305 of this rule.

- 403** **EMERGENCY STANDBY UNITS:** The owner or operator of any electric utility stationary gas turbine, electric utility steam generating unit or cogeneration steam generating unit used to generate electric power in existence prior to [date of adoption] shall, [within 2 months of rule adoption], submit to the Control Officer a notification requesting an exemption from the requirements of Section 300 of this rule.

SECTION 500 - MONITORING AND RECORDS

- 501** **RECORDKEEPING AND REPORTING:** Any owner or operator subject to this rule shall comply with the requirements set forth in this section. Any records and data required by this section shall be kept on site at all times in a consistent and complete manner and be made available without delay to the Control Officer or his designee upon request. Records shall consist of the following information:

- 501.1** **Equipment Listed In Section 102 of this Rule:** Type of fuel used, amount of fuel used, amount of sulfur in the fuel if using liquid fuel, and the days and hours of operation.
- 501.2** **Cooling Towers:** Monthly gravimetric testing reports for TDS shall be recorded for six months in succession and thereafter quarterly reports shall be recorded. Results of the monthly or yearly visual inspection of the drift eliminator shall also be recorded. If the drift eliminator cannot be visually inspected monthly, then documentation of the physical configuration of the drift eliminator shall be submitted to the Control Officer to demonstrate that the drift eliminator cannot be inspected monthly.
- 501.3** **Emergency Fuel Usage:** Type and amount of emergency fuel used, dates and hours of operation using emergency fuel, nature of the emergency or reason for the use of emergency fuel as stated in subsections 104.2 and 104.3 Sections 104.2 and 104.3 of this rule.
- 501.4** **Fuel Switching:** Monthly records of fuel switching including stop and start times, monthly records of hours of operation for testing, reliability and maintenance purposes per subsection 104.3 Section 104.3 of this rule, and a yearly log total of these hours.
- 501.5** **CEMS:** All CEMS measurements, results of CEMS performance evaluations, CEMS calibration checks, and adjustments and maintenance performed on these systems.
- 501.6** **Good Combustion Practices:** Measurements of the temperature differential across the burners of turbines per ~~subsection 301.3 a, b, or c~~ Section 301 of this rule, results of evaluation and of corrective action taken to reduce the temperature differential or a finding that the temperature differential returned to the range listed in ~~subsection 301.3 a or b~~ Sections 301.1 or 301.2 of this rule without any action by the owner or operator. For the purposes of this rule, if a CEMS or other approved monitoring method is used, good combustion practices for turbines are considered to have been met.

- 502** **RECORDS RETENTION:** Copies of reports, logs, and supporting documentation required by the Control Officer shall be retained for at least 5 years. Records and information required by this rule shall also be retained for at least 5 years.

- 503** **COMPLIANCE DETERMINATION:**

503.1 **Low Sulfur Oil Verification:**

- a. An owner or operator shall submit fuel oil or liquid fuel receipts from the fuel supplier indicating the sulfur content of the fuel or verification that the oil used to generate electric power meets the 0.05% sulfur limit if requested by the Control Officer; or



- b. If fuel receipts are not available then an owner or operator shall submit a statement of certification or proof of the sulfur content of the oil or liquid fuel from the supplier to the Control Officer; or
- c. An owner or operator may elect to test the fuel for sulfur content in lieu of certification from the fuel supplier or fuel receipts using one of the test methods listed in ~~subsections 504.11, 504.12, 504.13 or 504.14~~ Sections 504.11, 504.12, 504.13, or 504.14 of this rule.

503.2 Drift Rate Verification: An owner or operator shall submit design drift rate verification from the manufacturer of the drift eliminator used in the cooling towers to the Control Officer if proof of the design drift rate is requested by the Control Officer.

504 TEST METHODS INCORPORATED BY REFERENCE: The EPA test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 2004), as listed below, are incorporated by reference in Appendix G of the Maricopa County Air Pollution Control Regulations. Copies of test methods referenced in this section are available at the Maricopa County Air Quality Department, 1001 N. Central Avenue, Suite ~~595~~125, Phoenix, AZ 85004-1942. The Standard Methods listed below (1995) are also incorporated by reference. When more than one test method as listed in ~~subsections 504.11 through 504.14~~ Sections 504.11 through 504.14 of this rule is permitted for the same determination, an exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation.

- 504.1** EPA Reference Methods 1 (“Sample and Velocity Traverses for Stationary Sources”), and 1A (“Sample and Velocity Traverses for Stationary Sources with Small Stacks and Ducts”) (40 CFR 60, Appendix A).
- 504.2** EPA Reference Methods 2 (“Determination of Stack Gas Velocity and Volumetric Flow Rate”), 2A (“Direct Measurement of Gas Volume Through Pipes and Small Ducts”), 2C (“Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts”), and 2D (“Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts”) (40 CFR 60, Appendix A).
- 504.3** EPA Reference Methods 3 (“Gas Analysis for the Determination of Dry Molecular Weight”), 3A (“Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources (Instrumental Analyzer Procedure)”), 3B (“Gas Analysis for the Determination of Emission Rate Correction Factor of Excess Air”), and 3C (“Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.4** EPA Reference Method 4 (“Determination of Moisture Content in Stack Gases”) (40 CFR 60, Appendix A).
- 504.5** EPA Reference Method 5 (“Determination of Particulate Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.6** EPA Reference Method 202 (“Determination of Condensable Particulate Emissions from Stationary Sources”) (40 CFR 51, Appendix M).
- 504.7** EPA Reference Methods 7 (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7A (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7B (“Determination of Nitrogen Oxide Emissions from Stationary Sources - Ultraviolet Spectrometry”), 7C (“Determination of Nitrogen Oxide Emissions from Stationary Sources - Alkaline-Permanganate Colorimetric Method”), 7D (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate Chromatographic Method”), and 7E (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Instrumental Analyzer Method”) (40 CFR 60, Appendix A).
- 504.8** EPA Reference Method 9 (“Visual Determination of the Opacity of Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 504.9** EPA Reference Method 10 (“Determination of Carbon Monoxide Emissions from Stationary Sources”) (40 CFR 60, Appendix A).



- 504.10** EPA Reference Method 20 (“Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines”) (40 CFR 60, Appendix A).
- 504.11** American Society of Testing Materials, ASTM Method D2622-98, (“Standard Test Method for Sulfur in Petroleum Products by Wavelength Disperse X-Ray Fluorescence Spectrometry”), 1998.
- 504.12** American Society of Testing Materials, ASTM Method D1266-98, (“Standard Test Method for Sulfur in Petroleum Products - Lamp Method”), 1998.
- 504.13** American Society of Testing Materials, ASTM Method D2880-00, (“Standard Specification for Gas Turbine Fuel Oils”), 2000.
- 504.14** American Society of Testing Materials, ASTM Method D4294-90 or 98 (“Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry”), 1990 or 1998.
- 504.15** Standard Methods for the Examination of Water and Wastewater, (“Dissolved Solids Dried at 180°C, Method #2540C”), American Public Health Association, 19th edition, 1995.