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

RULE 324
STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES (RICE)

INDEX

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SECTION 100 – GENERAL

101 PURPOSE: To limit carbon monoxide (CO), nitrogen oxides (NO_X), sulfur oxides (SO_X), volatile organic compounds (VOCs), and particulate matter (PM) emissions from stationary reciprocating internal combustion engines (RICE).

102 APPLICABILITY:

102.1 This rule applies to:

a. Any stationary RICE, including stationary RICE used in cogeneration, with a rated brake horsepower (rated bhp) of greater than 125, if the stationary RICE is not located at a major source of NO_X emissions;

b. Any stationary RICE, including stationary RICE used in cogeneration, with a rated bhp of more than 50 if the stationary RICE is not located at a major source of NO_X emissions and the maximum aggregated rated bhp of all stationary RICE at the stationary source is more than 125 when all engines with a rated bhp of more than 50 are aggregated;

c. Any stationary RICE, including stationary RICE used in cogeneration, with a rated brake horsepower (rated bhp) of greater than 50, if the stationary RICE is located at a major source of NO_X emissions; and

d. Any nonroad engine, with a rated bhp of greater than 125, that is located at a stationary source that emits or has the potential to emit any regulated air pollutant greater than the permitting thresholds defined in Rule 100 of these rules. For the purpose of this Rule, a nonroad engine is any internal combustion engine that by itself or in or on a piece of equipment is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include but are not limited to, wheels, skids, carrying handles, dollies, trailers, or platforms.

102.2 NSPS: In addition to this rule, a stationary RICE may be subject to New Source Performance Standards (NSPS) in Rule 360 of these rules.

102.3 NESHAP: In addition to this rule, a stationary RICE may be subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) in Rule 370 of these rules.

103 EXEMPTIONS: The following types of stationary RICE are exempt from all of the requirements of this rule but shall comply with Rule 300 (Visible Emissions) of these rules:

103.1 A stationary RICE used directly and exclusively for engine research including engine development, and subsequent engine performance verification for the purpose of either engine emission control techniques or engine efficiency improvements.

103.2 A non-emergency engine when it is operated by a manufacturer or distributor of such equipment for the purpose of performance verification and testing at the production facility.

103.3 A compressed gas stationary RICE used for solar testing and research programs.

103.4 A stationary RICE test stand used for evaluating engine performance.

104 PARTIAL EXEMPTIONS FOR EMERGENCY ENGINES: A stationary RICE operated as an emergency engine, as defined in this rule, for any of the following reasons shall be exempt from Sections 304, 501.1, 501.2, 501.3, and 501.4 of this rule when:

104.1 Used only for power when normal power service fails from the serving utility or if onsite electrical transmission or onsite power generation equipment fails.

104.2 Used only for the emergency pumping of water resulting from a flood, fire, lightning strikes, police action or for any other essential public services which affect public health and safety.

104.3 Used for lighting airport runways.

104.4 Used for sewage overflow mitigation and/or prevention.

104.5 Used for reliability-related activities such as engine readiness, calibration, or maintenance or to prevent the occurrence of an unsafe condition during electrical system maintenance, as long as the total number of hours of the operation for these purposes does not exceed 100 hours per calendar year per engine as evidenced by an installed non-resetting totalizing hour meter. For the purposes of this rule, hours of operation during the commissioning period do not count towards the 100 hour per calendar year limit on hours of operation for reliability-related activities.

104.6 Used as the non-emergency engine when the non-emergency engine has failed, but only for such time as is needed to repair the non-emergency engine. For the purposes of this exemption, if the non-emergency engine is not repaired and returned to service within 12 months, or if the emergency engine is used as the non-emergency engine for more than 50 hours, whichever occurs first, the emergency engine shall be reclassified as a non-emergency engine and shall comply with all requirements of this rule that are applicable to non-emergency engines.

104.7 Used to operate standby emergency water pumps for fire control that activate when sensors detect low water pressure.

105 PARTIAL EXEMPTIONS FOR LOW USAGE NON-EMERGENCY ENGINES: The following low usage non-emergency engines onsite and in use before June 23, 2021 shall be exempt from Sections 304, 501.1, 501.2, 501.3, 501.4, and 502.6 of this rule:

105.1 Each engine with a rated bhp at or below 1000 that operates less than 200 hours per calendar year as evidenced by an installed non-resetting totalizing hour meter.

105.2 Each engine with a rated bhp above 1000 that operates less than 100 hours per calendar year as evidenced by an installed non-resetting totalizing hour meter.

106 PARTIAL EXEMPTION FOR NONROAD ENGINES: Each nonroad engine shall comply with Rule 300 of these rules and Section 502.6 of this rule, but shall be exempt from all other requirements of this rule.

107 PARTIAL EXEMPTION FOR NON-EMERGENCY ENGINES THAT ARE LOCATED AT A MAJOR SOURCE OF NO_X: A non-emergency engine that is located at a major source of NO_X shall not be required to comply with Section 501.2 of this rule during the five year period beginning on January 1st of the year in which the engine was manufactured, if the owner or operator provides documentation that the non-emergency engine is certified by the manufacturer to comply with emission limits in 40 CFR 60 subpart IIII or 40 CFR 60 subpart JJJJ that are more stringent than the applicable emission limit(s) in Table 324-3 of this rule, and provides documentation that the non-emergency engine is installed, operated, and maintained in accordance with the manufacturer's specifications.

108 PARTIAL EXEMPTION FOR STATIONARY RICE THAT ARE LOCATED AT A NUCLEAR POWER PLANT: A stationary RICE that is located at a nuclear power plant and is operated solely for the following reasons shall comply only with the provisions in Sections 301, 302, 306, 402, 501.5, 502.1, 502.3, 502.4, and 502.5 of this rule:

108.1 Used for safety reasons and for operational tests required by the Nuclear Regulatory Commission.

108.2 Used for power when normal power service fails from the serving utility or if onsite electrical transmission or onsite power generation equipment fails.

108.3 Used for the emergency pumping of water resulting from a flood, fire, lightning strikes, police action or for any other operation that is essential to public health and safety.

108.4 Used to initiate operation of onsite emergency power generation equipment.

108.5 Used for reliability-related activities such as engine readiness, calibration, or maintenance or to prevent the occurrence of an unsafe condition during electrical system maintenance. Hours of operation for reliability-related activities shall not exceed 100 hours per year unless the reliability-related activities are recommended or required by the federal, state, or local government and the owner or operator maintains records demonstrating that the reliability-related activities are recommended or required.

SECTION 200 – DEFINITIONS: 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 AFTERCOOLER/INTERCOOLER: A system that cools the engine intake air or air/fuel mixture after the air exits the turbocharger and prior to the introduction into the cylinder, thereby lowering NO_X emissions.

202 **ALTERNATIVE FUELS:** Substitutes for oil-derived and fossil-fuel derived fuels, including but not limited to biodiesel, propane, ethanol, or methanol.

203 **COGENERATION UNIT:** A stationary RICE unit that burns fuel to simultaneously produce electricity and heat in a single thermodynamic process and is usually located in close proximity to the equipment requiring the heat energy.

204 **COMMISSIONING PERIOD:** The final phase of the stationary RICE construction process during which all mechanical, electrical, and control systems for the RICE and all related equipment are checked, and all performance measures specified in the purchase agreement are confirmed. For the purposes of this rule, a stationary RICE may not be used for its intended purpose or any other beneficial use during the commissioning period. If a non-emergency engine subject to this rule is also subject to a condition in a Maricopa County Air Quality Permit limiting total hours of operation, the hours of operation during the commissioning period shall be included when determining compliance with the permitted limit on total hours of operation.

205 **COMPRESSION-IGNITION ENGINE:** A stationary RICE with operating characteristics wherein the principal mechanism of igniting the fuel and air mixture in the cylinders is the compression of air in the cylinder until it is so hot that any fuel injected into the air or mixed with the air ignites. In this type of engine, a separate ignition source, such as a spark plug, is not used.

206 **EMERGENCY ENGINE:** A stationary RICE that meets all of the following criteria:

206.1 Is operated solely for any of the reasons listed in Section 104 of this rule;

206.2 Does not exceed 500 hours of operation per any twelve consecutive months, including the 100 hours per calendar year listed in Section 104.5 of this rule and including any hours of operation that occur during the commissioning period; and

206.3 Is not operated to supply standby power due to a voluntary reduction in power by a utility or power company, or to supply power for distribution or sale to the grid, or to supply power at a source in order to avoid peak demand charges or high electric energy prices during on-peak price periods.

207 **GASOLINE:** Any fuel sold in any State for use in motor vehicles and motor vehicle engines, or nonroad or stationary engines, and commonly or commercially known or sold as gasoline.

208 **IDENTICAL REPLACEMENT ENGINE:** A stationary RICE that is substituted for another stationary RICE that is intended to perform the same or similar function as the original stationary RICE and where all of the following conditions exist:

208.1 The identical replacement engine results in equal or lower air contaminant emissions than the original stationary RICE; and

208.2 The identical replacement engine meets the emission control technology standards contained in Section 304 of this rule; and

208.3 The identical replacement engine has the same manufacturer type, model number, and manufacturer's rated bhp as the original stationary RICE.

209 **LEAN-BURN ENGINE:** A spark-ignition engine with an air-to-fuel operating range that has more air present than is needed to burn the fuel present and cannot be adjusted to operate with an exhaust oxygen concentration of less than or equal to 2%.

210 **LIQUEFIED PETROLEUM GAS (LPG):** Any liquefied hydrocarbon gas obtained as a by-product in petroleum refining or natural gas production.

211 **LOCATION:** Any single site at a building, structure, facility, or installation.

212 **LOW SULFUR OIL:** Fuel oil containing less than or equal to 0.05% sulfur by weight.

213 **NATURAL GAS:** A naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the Earth's surface, of which the principal constituent is methane.

214 **NON-EMERGENCY ENGINE:** A stationary RICE that is not an emergency engine.

215 **PARTS PER MILLION BY VOLUME DRY (PPMVD):** A unit of proportion used to express concentration that is corrected to a dry basis.

216 **RATED BRAKE HORSEPOWER (RATED BHP):** The maximum brake horsepower (bhp) specified by the engine manufacturer for the engine application, usually listed on the nameplate of the engine. If the engine has been altered so that the maximum brake horsepower is different than the rated brake horsepower on the nameplate, then the maximum brake horsepower shall be considered the rated brake horsepower.

217 **RECONSTRUCTED:** Repairs, changes, or improvements to a stationary RICE where the fixed capital cost of the new and refurbished engine components exceeds 75% of the fixed capital cost of purchasing an entirely new engine with the same brake horsepower rating; or construction of an engine on a previously used engine block if the engine is constructed using all new components except for the engine block. For the purposes of this rule, the cost of installing emission controls (such as a diesel particulate filter, a three-way catalyst, or a selective catalytic reduction system) is not included when determining whether or not an engine has been reconstructed.

218 **RICH-BURN ENGINE:** A spark-ignition engine that is not a lean-burn engine.

219 **SPARK-IGNITION ENGINE:** A stationary RICE wherein the fuel is usually mixed with intake air before introduction into the combustion chamber resulting in a relatively homogeneous air/fuel mixture in the combustion chamber, at which time a spark plug, or other device, then ignites the air/fuel mixture.

220 **STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINE (RICE):** A reciprocating, piston-driven internal combustion engine that is operated or intended to be operated at one specific location for more than 12 consecutive months or that is attached to a foundation at the location. An engine that replaces an engine at a location and is intended to perform the same or similar function as the engine being replaced will be included in calculating the consecutive time period. A stationary RICE is not a nonroad engine.

221 SULFUR OXIDES (SO_X): Oxides of sulfur calculated as equivalent sulfur dioxide.

222 ULTRA LOW SULFUR OIL: Fuel oil containing less than or equal to 0.0015% sulfur by weight.

223 WASTE DERIVED FUEL GAS: A gaseous fuel that is generated from the biodegradation of solid or liquid waste including, but not limited to, digester gas and landfill gas.

SECTION 300 – STANDARDS:

301 FUEL REQUIREMENTS: An owner or operator of a stationary RICE that meets the criteria listed in Section 102 of this rule shall comply with one of the following:

301.1 Use ultra low sulfur oil, except as provided in Sections 301.1a or 301.1b of this rule.

a. Engines that are not subject to the 40 CFR 60 Subpart IIII or 40 CFR 63 Subpart ZZZZ may use existing low sulfur oil purchased (or otherwise obtained) prior to November 2, 2016 until depleted.

b. Engines that are subject to 40 CFR 60 Subpart IIII or 40 CFR 63 Subpart ZZZZ must also comply with the fuel requirements in the applicable subpart.

301.2 Use any waste derived fuel gas that contains no more than 0.08% sulfur by weight, alone or in combination with other fuels.

301.3 Use gasoline that meets the sulfur standard of 80 ppm as a per-gallon cap.

301.4 Use natural gas, liquefied petroleum gas (LPG), or any alternative fuel that contains no more than 0.05% sulfur by weight, alone or in combination with other fuels.

302 MAINTENANCE REQUIREMENTS: An owner or operator of a stationary RICE shall maintain the stationary RICE in accordance with the manufacturer's written instructions or in accordance with the maintenance schedule provided by the manufacturer's authorized service provider. Alternatively, the owner or operator shall conduct preventative maintenance according to the following schedule, including all of the following tuning procedures, if the engine is so equipped, and if such procedures are appropriate to the type of engine.

302.1 The following maintenance procedures shall be completed no less frequently than every 300 hours of operation (for engines that operate 300 hours per year or more) or at least once every 12 months (for engines that operate less than 300 hours per year):

a. Clean the inlet air filter (if so equipped);

b. Change oil filter; and

c. Change the lubricating oil or conduct an oil analysis to determine Total Base Number, viscosity, and percent water content. The lubricating oil must be replaced within 2 business days after the analytical results are received if any of the following condemning limits are exceeded:

(1) Total Base Number is less than 30% of the Total Base Number of the oil when new;

(2) Viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or

(3) Percent water content (by volume) is greater than 0.5.

302.2 The following maintenance procedures shall be completed no less frequently than every 1,000 hours of operation (for engines that operate 1,000 hours per year or more) or at least once every 12 months (for engines that operate less than 1,000 hours per year):

a. Check the inlet air filter and replace as necessary;

b. Check all fuel filters and clean as necessary (except cartridge type fuel filters);

c. Check cartridge type fuel filters and replace as necessary;

d. Check and adjust the intake and exhaust valves;

e. Check and adjust the spark plugs (if so equipped);

f. Check and adjust the spark timing and dwell or fuel injection timing (if adjustable); and

g. Check and adjust the carburetor mixture (if adjustable).

302.3 The following maintenance procedures shall be completed no less frequently than every 3,000 hours of operation (for engines that operate 3,000 hours per year or more) or at least once every 12 months (for engines that operate less than 3,000 hours per year):

a. Check spark plugs and ignition points, and replace as necessary (if so equipped);

b. Check coolant and change as necessary (if so equipped); and

c. Check the exhaust system and repair all leaks and/or restrictions.

303 LIMITATIONS FOR STATIONARY RICE – OPACITY: An owner or operator of a stationary RICE shall not discharge into the ambient air from any such engine any air contaminant, other than uncombined water, in excess of 20% opacity.

304 LIMITATIONS FOR NON-EMERGENCY ENGINES:

304.1 Requirements for Non-Emergency Compression-Ignition Engines that are not Located at a Major Source of NO_X: An owner or operator of a non-emergency compression-ignition engine that is rated above 250 bhp and is not located at a major source of NO_X shall comply with the engine requirements in Table 324-1, as applicable, depending on the date the engine was manufactured or reconstructed (whichever occurred later) and the rated brake horsepower of the engine:

TABLE 324-1		
MANUFACTURED OR RECONSTRUCTED	**RATED BHP**	**ENGINE REQUIREMENTS***
Prior to October 22, 2003	250-399	770 ppmvd or 10 g/bhp-hr NO_X or turbocharger with aftercooler/intercooler or 4-degree injection timing delay
Prior to October 22, 2003	More than 399	550 ppmvd or 7.2 g/bhp-hr NO_X or turbocharger with aftercooler/intercooler or 4-degree injection timing delay
On or after October 22, 2003	More than 250	530 ppmvd or 6.9 g/bhp-hr NO_X; 1,000 ppmvd CO; 0.40 g/bhp-hr PM

* ppmvd emission standards are corrected to 15% oxygen.

304.2 Requirements for Non-Emergency Spark-Ignition Engines that are not Located at a Major Source of NO_X: An owner or operator of a non-emergency spark-ignition engine that is rated above 250 bhp and is not located at a major source of NO_X shall comply with the engine requirements in Table 324-2, as applicable, depending on the date the engine was manufactured or reconstructed (whichever occurred later) and whether it is a lean-burn or rich-burn engine:

TABLE 324-2			
LEAN-BURN ENGINES			
MANUFACTURED OR RECONSTRUCTED	**NO_X****	**VOC****	**CO****
Prior to October 22, 2003	280 ppmvd or 4.0 g/bhp-hr or three-way catalyst*	800 ppmvd or 5.0 g/bhp-hr or three-way catalyst*	4,500 ppmvd or three-way catalyst*
On or after October 22, 2003	110 ppmvd or 1.5 g/bhp-hr	Not Applicable	4,500 ppmvd
RICH-BURN ENGINES			
MANUFACTURED OR RECONSTRUCTED	**NO_X****	**VOC****	**CO****
Prior to October 22, 2003	280 ppmvd or 4.0 g/bhp-hr or three-way catalyst*	800 ppmvd or 5.0 g/bhp-hr or three-way catalyst*	4,500 ppmvd or three-way catalyst*
On or after October 22, 2003	20 ppmvd or 0.30 g/bhp-hr	Not Applicable	4,500 ppmvd

* The three-way catalyst shall provide a minimum of 80% control efficiency for NO_X and CO for engines fueled with natural gas, propane, or gasoline. In addition, the three-way catalyst shall also provide a minimum of 50% control efficiency for VOC for engines fueled by gasoline.

** ppmvd emission standards are corrected to 15% oxygen.

304.3 Emission Limits for Non-Emergency Engines that are Located at a Major Source of NO_X: An owner or operator of a non-emergency engine that is rated above 50 bhp and is located at a major source of NO_X shall comply with the engine requirements in Table 324-3, as applicable, depending on the engine type:

TABLE 324-3

ENGINE TYPE	NO_X*	VOC*	CO*	PM
Spark-Ignition Lean-Burn	110 ppmvd or 1.5 g/bhp-hr	800 ppmvd or 5.0 g/bhp-hr	4,500 ppmvd	Not Applicable
Spark-Ignition Rich-Burn	20 ppmvd3 pt or 0.30 g/bhp-hr	800 ppmvd or 5.0 g/bhp-hr	4,500 ppmvd	Not Applicable
Compression-Ignition	530 ppmvd or 6.9 g/bhp-hr	Not Applicable	1,000 ppmvd	0.40 g/bhp-hr

* ppmvd emission standards are corrected to 15% oxygen.

305 IDENTICAL REPLACEMENT ENGINE: An identical replacement engine shall be treated as the original stationary RICE that it replaces for the purposes of compliance with this rule.

306 NON-RESETTING TOTALIZING HOUR METER: The owner or operator of a stationary RICE, except for those engines being removed from service under Section 401 of this rule, shall install and operate a non-resetting totalizing hour meter. If the non-resetting totalizing hour meter is found to be malfunctioning, the owner or operator shall:

306.1 Record hours of operation daily until the function of the hour meter is restored; and

306.2 Restore the function of the hour meter within two weeks. Or, if it is not possible to restore the function of the hour meter within two weeks, the owner or operator shall notify the Control Officer in writing and provide a schedule for restoration of the function of the hour meter.

SECTION 400 – ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE-STATIONARY RICE BEING REMOVED FROM SERVICE: If a stationary RICE must be removed from service because such engine does not comply with the emission limits listed in Section 300 of this rule, then the stationary RICE shall be removed from service no later than June 23, 2022. The stationary RICE that replaces such engine shall comply with all applicable provisions of this rule upon installation.

402 COMPLIANCE SCHEDULE-NON-RESETTING TOTALIZING HOUR METER: The owner or operator of a stationary RICE that is not equipped with a non-resetting totalizing hour meter on June 23, 2021, and is not being removed from service under Section 401 of this rule, shall install and operate a non-resetting totalizing hour meter on each such engine no later than June 23, 2022.

403 COMPLIANCE SCHEDULE-ENGINES AT A SOURCE THAT BECOMES A MAJOR SOURCE: If a non-emergency engine is located at a source that becomes a major

source of nitrogen oxides after June 23, 2021, the owner or operator shall demonstrate compliance with the emission limits in Table 324-3 within one year after the source becomes a major source of nitrogen oxides.

SECTION 500 – MONITORING AND RECORDS

501 COMPLIANCE DETERMINATION:

501.1 Non-Emergency Engines that are not Located at a Major Source of NO_X: An owner or operator of a non-emergency engine which is subject to the requirements in Section 304.1 or 304.2 of this rule shall demonstrate compliance using one of the following methods, as applicable:

a. Provide documentation that the stationary RICE is certified by the manufacturer to comply with emission limits in 40 CFR 60 Subpart IIII or 40 CFR 60 Subpart JJJJ that are more stringent than the applicable emission limits in Table 324-1 or 324-2 of this rule, and provide documentation that the engine is installed, operated, and maintained in accordance with the manufacturer's specifications.

b. Conduct a performance test in accordance with Section 501.4 of this rule at least once every 5 years. The performance test shall demonstrate compliance with one of the following requirements:

(1) The applicable emission limits in units of grams per brake horsepower-hour (g/bhp-hr); or

(2) The applicable emission limits in units of ppmvd; or

(3) The three-way catalyst provides a minimum of 80% control efficiency for NO_X and CO for engines fueled with natural gas, propane or gasoline, and the three-way catalyst also provides a minimum of 50% control efficiency for VOC for engines fueled by gasoline.

c. Provide documentation that the non-emergency compression-ignition engine was manufactured or reconstructed (whichever occurred later) prior to October 22, 2003 and provide documentation that the non-emergency compression-ignition engine is equipped with a turbocharger with an aftercooler/intercooler.

d. Provide documentation that the non-emergency compression-ignition engine was manufactured or reconstructed (whichever occurred later) prior to October 22, 2003 and:

(1) Provide documentation that the injection timing has been set at 4 degrees below the factory setting for the engine. Written verification of the factory set timing, along with documentation that the engine timing has been delayed by 4 degrees must be submitted; or

(2) Provide documentation that the injection timing has been set at 4 degrees below the manufacturer's standard timing of the engine. Written verification of the manufacturer's standard timing of the engine prior to tuning for NO_X control, along with documentation that the timing has been delayed by 4 degrees must be submitted; or

(3) Provide documentation that the injection timing has been set at 16 degrees below top dead center or less (if information regarding the manufacturer's standard timing or factory set timing is not available).

501.2 Non-Emergency Engines that are Located at a Major Source of Nitrogen Oxides: An owner or operator of a non-emergency engine which is subject to emission limits in Section 304.3 of this rule shall demonstrate compliance by conducting a performance test in accordance with Section 501.4 of this rule at least once every 2 years. The performance test shall demonstrate compliance with the applicable emission limits in units of grams per brake horsepower-hour (g/bhp-hr) or ppmvd.

501.3 Representative Performance Testing: An owner or operator may demonstrate compliance with the applicable emission limits or control efficiency requirements in Table 324-1, Table 324-2, or Table 324-3 of this rule by conducting representative performance testing in accordance with Section 501.4 of this rule, provided all of the following requirements are satisfied:

a. The engines are located at the same stationary source;

b. The engines were produced by the same manufacturer, have the same model number or other manufacturer's designation in common, and have the same rated capacity and operating specifications;

c. The engines are operated and maintained in a similar manner;

d. At least one engine or one third of the engines in the specified group, whichever is greater, are tested each time a performance test is required;

e. Each time a performance test is required, different engines are tested so that all engines in the specified group are tested before any engines in the representative group are retested; and

f. If emissions from any engine in the specified group exceed an applicable emission limit, or if the control efficiency for any pollutant controlled by a three-way catalyst is lower than the required control efficiency, the owner or operator shall demonstrate that each engine in the specified group is in compliance with the applicable limits by conducting a performance test on each engine in the specified group.

501.4 Performance Test Conditions: Performance tests shall be conducted using the test methods listed in Section 503 of this rule. Testing for stationary RICE shall be completed at either the maximum operating load or no less than 80% of the rated bhp. If the owner or operator of an engine demonstrates to the Control Officer that the engine cannot operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous rated bhp or under the typical duty cycle or typical operational mode of the engine. The result of the performance test shall be the arithmetic mean of the results of three test runs. Each test run shall have a minimum sample time of one hour.

501.5 Fuel-Sulfur Verification: The owner or operator of an engine fueled with gasoline shall submit documentation that gasoline was purchased within the United States. The owner or operator of an engine fueled with diesel, natural gas, LPG, or an

alternative fuel shall submit one of the following documents listing the accurate sulfur content of the fuel based on enforceable test methods as approved by the Administrator to determine the sulfur content:

a. Fuel receipts, or

b. Contract specifications, or

c. Pipeline meter tickets, or

d. Fuel supplier information, or

e. Purchase records, or

f. Test results of the fuel for sulfur content.

501.6 Waste Derived Fuel Gas - Sulfur Verification: The owner or operator shall submit documentation of the sulfur content of the waste derived fuel gas to the Control Officer upon request. The sulfur content of gaseous fuels shall be determined by South Coast Air Quality Management District Method 307-91 Determination of Sulfur in a Gaseous Matrix.

502 RECORDKEEPING/RECORDS RETENTION: The owner or operator of a stationary RICE subject to this rule shall comply with the following requirements and retain records for at least 5 years:

502.1 Stationary RICE List: Maintain a list of stationary RICE that includes all of the following information for each stationary RICE: combustion type (compression-ignition, or lean-burn spark-ignition, or rich-burn spark-ignition); manufacturer; model designation, rated bhp, serial number, and the location of each engine at the facility. If the equipment list associated with the current permit includes all of the required information for each stationary RICE located at the facility, this requirement may be fulfilled by keeping a complete copy of the current permit, including the equipment list, in a readily accessible location at the facility where the engines are located, and by providing the equipment list to the Control Officer upon request.

502.2 Operation Records: An owner or operator of a stationary RICE shall maintain records of the monthly and 12-month rolling total hours of operation for each stationary RICE. For emergency engines, the operation records shall also include:

a. Monthly and annual hours of operation for reliability related activities such as engine readiness, calibration, or maintenance, or to prevent the occurrence of an unsafe condition during electrical system maintenance; and

b. The number of operating hours for emergency use and an explanation for the emergency use.

502.3 Maintenance Records: An owner or operator of a stationary RICE shall maintain records of all stationary RICE maintenance (including the date when maintenance was performed and the maintenance procedures that were performed). If an owner or operator of a non-emergency engine demonstrates compliance with the requirements in Section 304.1 of this rule using the method specified in Section 501.1(d) of this rule, the maintenance record shall include documentation of the injection timing setting each time maintenance is performed on the stationary RICE. In addition, one of the

following documents shall be available at all times at the facility where the stationary RICE is located:

a. The manufacturer's written instructions for operation and maintenance of each stationary RICE;

b. A written maintenance schedule provided by the manufacturer's authorized service provider; or

c. A written maintenance plan indicating which of the tuning procedures listed in Section 302 of this rule are applicable to each stationary RICE.

502.4 Fuel Records:

a. Maintain records of the type and amount of fuel purchased for use in the stationary RICE (e.g. receipts, pipeline tickets, or bills of lading); and

b. Maintain records of the sulfur content of any fuel that is used in the stationary RICE, excluding gasoline. For gasoline, maintain records that the fuel was purchased in the United States.

502.5 Manufacturer's Operation and Maintenance Instructions: An owner or operator of an engine that is subject to the requirements of Section 302 of this rule shall keep the manufacturer's written instructions for operation and maintenance of the engine available at the facility where the engine is located at all times. If the manufacturer's written instructions are not available, the owner or operator shall keep a preventative maintenance plan, indicating which procedures in Section 302 of this rule are appropriate to the engine, available at the facility where the engine is located at all times.

502.6 Nonroad Engine Records: An owner or operator of a nonroad engine shall maintain the following records for each non-road engine:

a. Date that each engine is brought to the stationary source; and

b. For engines located at a stationary source greater than 14 consecutive days:

(1) Make, model, serial number, and rated capacity (bhp hours) of the engine; and

(2) Date of each instance in which the engine is moved from its existing location, and the reason why the engine was moved; and

(3) Fuel type and sulfur content of the fuel.

503 COMPLIANCE DETERMINATION-TEST METHODS INCORPORATED BY REFERENCE: The following test methods are approved for use for the purpose of determining compliance with this rule. The test methods are incorporated by reference in Rule 360 and Appendix G of the Maricopa County Air Pollution Control Regulations. Alternative EPA-approved test methods may be used upon written approval from the Control Officer. When more than one test method is permitted for the same determination, an exceedance under any method will constitute a violation. Copies of test methods referenced in this section are available at the Maricopa County Air Quality Department.

503.1 EPA Reference Methods 1 ("Sample and Velocity Traverses for Stationary Sources") and 1A ("Sample and Velocity Traverses for Stationary Sources with Small Stacks or Ducts") (40 CFR 60, Appendix A).

503.2 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).

503.3 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 or Excess Air"), and 3C ("Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources") (40 CFR 60, Appendix A).

503.4 EPA Reference Method 4 ("Determination of Moisture Content in Stack Gases") (40 CFR 60, Appendix A).

503.5 EPA Reference Method 5 ("Determination of Particulate Emissions from Stationary Sources") (40 CFR 60, Appendix A)

503.6 EPA Reference Method 202 ("Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources") (40 CFR 51, Appendix M).

503.7 EPA Reference Methods 7 ("Determination of Nitrogen Oxide Emissions from Stationary Sources"), 7A ("Determination of Nitrogen Oxide Emissions from Stationary Sources - Ion Chromatographic Method"), 7B ("Determination of Nitrogen Oxide Emissions from Stationary Sources – Ultraviolet Spectrophotometry Method"), 7C ("Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline Permanganate/Colorimetric Method"), 7D ("Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate/Ion Chromatographic Method"), and 7E ("Determination of Nitrogen Oxide Emissions from Stationary Sources – Instrumental Analyzer Procedure"), (40 CFR 60, Appendix A).

503.8 EPA Reference Method 9 ("Visual Determination of the Opacity of Emissions from Stationary Sources") (40 CFR 60, Appendix A).

503.9 EPA Reference Method 10 ("Determination of Carbon Monoxide from Stationary Sources") (40 CFR 60, Appendix A).

503.10 EPA Reference Method 18 ("Measurement of Gaseous Organic Compound Emissions by Gas Chromatography") (40 CFR 60, Appendix A).

503.11 EPA Reference Method 25A ("Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer") (40 CFR 60, Appendix A).

503.12 ASTM D2622-05 ("Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-Ray Fluorescence Spectrometry").

503.13 ASTM D4294-02 or D4294-03 ("Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectrometry").

503.14 ASTM D5504-01 or D5504-08 ("Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence").

503.15 South Coast Air Quality Management District Method 307-91 ("Determination of Sulfur in a Gaseous Matrix"), revised 1994.