This policy applies to units which are regulated by the State. It does not apply to units for which Federal requirements are applicable.

Initial Compliance Test

Engines and turbines which are greater than 500 maximum rated horsepower and operate more than 720 hours in a semiannual period are required by the State to test for NO_x, O_2 and CO.

Purpose:

The purpose of the initial test is to demonstrate compliance with the permit limits, and to re-establish permit limits if necessary. Initial tests are also required after a major engine overhaul.

Method:

EPA Methods 1-4, 7E and 10 from 40 CFR 60 Appendix A shall be used.

Three test runs at maximum load will be conducted for each unit. Testing may be done at a lower load, but future operation at higher loads may require testing to be repeated. Load is determined by effective horsepower, which is calculated using the Gas Processor's Association (GPA) formula, or other calculation as approved by DEQ Engineering Support.

For engines, each of three runs is at least one hour long. For turbines, each run is at least 20 minutes long.

The following operating conditions are recorded every 15 minutes and included in the report: engine speed, fuel rate, effective horsepower, intake manifold temperature, suction pressure, discharge pressure, fuel header pressure, spark ignition time, stack temperature, ambient temperature, and compressed gas throughput.

In cases where there are several engines of the exact make and model at a facility, a representative subset may be tested rather than all the engines. A representative subset is at least 50% of the affected units.

Alternatives:

Alternate methods which have comparable accuracy and reliability to the EPA methods above may be approved by DEQ Engineering Support on a case-by-case basis, at the pretest meeting. Alternate methods which may be approved are:

1. Use of a portable analyzer in lieu of a reference method analyzer to measure concentration. The analyzer model must be approved. Calibrations must be done

using EPA Protocol 1 gases according to the procedures for drift and bias limits outlined in Method 7E and Method 10. Up to 5% drift may be allowed. Data shall be recorded at least once every 5 minutes.

2. Use of F-factors to calculate flow rate through the stack. The F-factor method is described within EPA Method 19. The fuel flow rate is measured using a dedicated fuel meter. The fuel meter chart should be included in the report, along with the calculations.
3. If a dedicated fuel meter is not available, manufacturer's data may be used to estimate stack flow rate. The manufacturer's chart should be included in the test report, along with the calculations. The flow rate should be based on the operating conditions at the time of the test.

Overhauls

An initial test is also required after a major engine overhaul. "Major engine overhaul" means that the entire engine combustion section is dismantled, parts are replaced/reconditioned as needed, and the engine restarted. This includes the disassembly of cylinder heads; removal of intake and exhaust valve assemblies; removal of power piston bodies, pins, and connecting rods; disconnecting intake and exhaust manifolds; and disassembly of the fuel aspiration system such as carburetors and/or turbo chargers.

Semi-Annual Test

Semi-annual testing is required for engines after the initial compliance test. In lieu of semi-annual testing, parametric monitoring or preventative maintenance may be done if allowed by the permit.

Purpose:

The purpose of the semi-annual test is to demonstrate that the emissions are maintained in the same range as during the initial stack test.

Method:

Pretest meetings are not required for semi-annual tests. Advance notification of the test date, and observation by the DEQ is not required. The test results, calibration procedures, and operating conditions during the test shall be kept on site at a location accessible to the DEQ inspector.

The model of portable analyzer must be approved and it must be calibrated with EPA Protocol 1 gas for CO, NO, and NO_2 before and after the test. For CO and NO, it shall be calibrated with less than 2% calibration error using three concentrations as defined in 40 CFR 60 Appendix A, Method 6C Sec 5.3. For O_2, it may be calibrated at 0 and 20.9%. Alternate calibration procedures may be approved in advance by Engineering Support. The calibrations may be done off-site, but the analyzer must not drift more than 5%. If it

drifts more than 5%, the test must be re-done. At least 20 minutes of data shall be collected on each engine. In cases where there are several engines of the exact make and model at a facility, all the engines must be tested.

The engine's effective horsepower must be recorded during the test. If the engine is running at the same load as during the initial compliance test, the flow rate out of the stack can be assumed to be the same as during the initial compliance test and need not be measured. If the engine is running at a load which is more than 10% higher or lower than during the initial test, the flow rate shall be measured or estimated during the semi-annual test.

Annual Test

Annual tests are required for units with catalytic converters.

The same guidelines as for the semi-annual test apply.