



Connecticut Department of Energy and Environmental Protection



National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE Rule)



40 CFR 63 Subpart ZZZZ
Area Source Existing Non-Emergency Compression Ignition Engine
>500 Horsepower



Connecticut Department of Energy and Environmental Protection

What emission standards apply?

- If engine was certified to meet Tier 3* emission standards in Table 1 of 40 CFR 89.112, you need only comply with the NSPS for CI engines. Therefore, owners of such engines need documentation of engine certification, and to adhere to the manufacturer's specifications for the engine. They are not required to perform any of the testing, monitoring, recordkeeping, or reporting described in this module.

*Tier 2 for engines >560 kW



What emission standards apply?

- Tier 1 and Tier 2 certified engines subject to state and local requirements that call for replacement of the engine can meet management practices until 1/1/2015, or 12 years after installation date (whichever is later), but not later than 6/1/2018, after which time the CO emission standards apply (limit the concentration of CO in the engine exhaust to ≤ 23 ppm at 15% O₂ **OR** reduce CO emissions by 70% or more).

–Management practices include:

- Changing oil and filter every 1,000 hours of operation or annually, whichever comes first
- Inspecting air cleaner (and replacing as necessary) every 1,000 hours of operation or annually, whichever comes first
- Inspecting hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary
- Minimizing engine time spent at idle and startup time (no more than 30 min)

–If you intend to meet management practices rather than meet emission limits, submit a notification by 3/3/2013 stating that you intend to use this provision and identifying the state or local regulation that the engine is subject to.



Engines located on offshore drilling vessels on the Outer Continental Shelf

•If your engine is located on an offshore drilling vessel on the Outer Continental Shelf, you are subject to the following management practices:

–Change oil every 1,000 hours of operation or annually, whichever comes first

•You may use an oil analysis program in order to extend the specified oil change requirement.

•Program must at a minimum analyze: Total Base Number, viscosity, and percent water content.

•Analysis must be conducted at the same frequency specified for changing the engine oil. If the condemning limits are not exceeded, you are not required to change the oil. If any condemning limits are exceeded, change the oil within two business days or before continuing to use the engine, whichever is later. Condemning limits are as follows:

–Total Base Number is <30% of the Total Base Number of the oil when new; or

–Viscosity of the oil has changed by more than 20% from the viscosity of the oil when new; or

–Percent water content (by volume) is >0.5.

–Inspect and clean air filters every 750 hours of operation or annually, whichever comes first, and replace as necessary;

–Inspect fuel filters and belts, if installed, every 750 hours of operation or annually, whichever comes first, and replace as necessary; and

–Inspect flexible hoses every 1,000 hours of operation or annually, whichever comes first, and replace as necessary.



Engines located on offshore drilling vessels on the Outer Continental Shelf

- If subject to these management practices, you must develop a maintenance plan specifying how the management practices will be met and keep supporting documentation/records.



What emission standards apply?

- If your engine is not certified and not on an offshore drilling vessel, you must either limit the concentration of CO in the engine exhaust to ≤ 23 ppm at 15% O₂ OR reduce CO emissions by 70% or more.

- Compliance with the limit is based on the results of testing the average of three 1-hour runs using the specified testing requirements and procedures.

- In order to achieve this standard, your unit will probably require an emissions control retrofit. For CI engines, this is an **oxidation catalyst**.

- Estimated capital cost of catalyst: $\$27.4 \times \text{HP} - \939

- Estimated annual cost of catalyst: $\$4.99 \times \text{HP} + \480

- (where HP = horsepower of the engine)

- Comply with emission limits and operating limits at all times

- At all times, operate/maintain all equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions. You don't need to make any further efforts to reduce emissions if levels required by this standard have been achieved.

Note: If your engine is located in a remote area of Alaska, you do not have to meet the numerical CO emission limits, but you must meet the management practices listed for non-emergency CI RICE ≤ 300 HP in Table 2d of the rule.



What fuel requirements must I meet?

- Use ultra low sulfur diesel

- If engine displacement <30 liters/cylinder, you must use diesel fuel that meets the following per-gallon standards:

- Sulfur content: 15 ppm maximum

- Cetane index or aromatic content:

- A minimum cetane index of 40; or

- A maximum aromatic content of 35 volume percent.

- Engines located in Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, areas of Alaska that are not accessible by the Federal Aid Highway System, remote areas of Alaska, or on offshore vessels (that meet 63.6603(c)) are exempt from the requirements of this section.



What are my operating limits?

- For each RICE **using an oxidation catalyst:**

- Maintain the catalyst so that the pressure drop across the catalyst does not change by more than 2" of water from the pressure drop across the catalyst that was measured during the initial performance test; and

- Maintain the temperature of the engine exhaust so that the catalyst inlet temperature is $\geq 450^{\circ}\text{F}$ and $\leq 1,350^{\circ}\text{F}$.*

Note: Pressure drop and temperature limits do not have to be met during startup.

OR

- For each RICE **not using an oxidation catalyst:**

- Comply with any operating limitations approved by EPA.

*Sources can petition EPA, pursuant to the requirements of 40 CFR 63.8(g), for a different temperature range.



Overview of Testing and Monitoring Requirements

1. Conduct initial performance test or monitor CO using a continuous emission monitoring system (CEMS)
2. Initially either:
 - Measure temperature and pressure drop
 - Apply to EPA for alternative operating parameters
 - Monitor CO using a CEMS
3. Continuously monitor operating parameters with a continuous parameter monitoring system (CPMS) or with a CEMS
4. Conduct subsequent performance testing or monitor CO using a CEMS



What tests must I perform?

You must perform:

- Initial emission performance test within 180 days after May 3, 2013

- You are not required to conduct an initial test on units for which a test has been previously conducted, but the test must meet the following conditions:

- Test must have been conducted using the same methods specified in the rule, and the methods must have been followed correctly.

- Test must not be older than 2 years.

- Test must be reviewed and accepted by EPA.

- Either no process or equipment changes must have been made since the test was performed, **or** you must be able to demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.

- Test must be conducted at a load condition within $\pm 10\%$ of 100% load.



What tests must I perform?

You must perform the following:

–Subsequent performance testing every 8,760 hours or 3 years, whichever comes first

•If engine is for limited use, conduct subsequent performance tests every 8,760 hours of operation or 5 years, whichever comes first.

*If your engine is currently non-operational:

-Do not startup the engine solely to conduct the performance test; conduct the test when the engine is started up again.



What are my testing requirements?

COMPLYING WITH THE REQUIREMENT TO...	YOU MUST...	USING...	ACCORDING TO THE FOLLOWING REQUIREMENTS...
Reduce CO emissions	Measure the O ₂ at the inlet and outlet of the control device; and	Method 3 or 3A or 3B of 40 CFR part 60, appendix A, or ASTM Method D6522-00 (Re-approved 2005) ^a	Measurements to determine O ₂ must be made at the same time as the measurements for CO concentration.
	Measure the CO at the inlet and the outlet of the control device	ASTM D6522-00 (Re-approved 2005) ^{a,b} or Method 10 of 40 CFR part 60, appendix A	The CO concentration must be at 15% O ₂ , dry basis.
Limit the concentration of CO in the engine exhaust	Select the sampling port location and the number of traverse points; and	Method 1 or 1A of 40 CFR part 60, appendix A 63.7(d)(1)(i)	If using a control device, the sampling site must be located at the outlet of the control device.
	Determine the O ₂ concentration of the engine exhaust at the sampling port location; and	Method 3 or 3A or 3B of 40 CFR part 60, appendix A, or ASTM Method D6522-00 (Re-approved 2005) ^a	Measurements to determine O ₂ concentration must be made at the same time and location as the measurements for CO concentration.
	Measure moisture content of the engine exhaust at the sampling port location; and	Method 4 of 40 CFR part 60, appendix A, or Test Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348-03 ^a	Measurements to determine moisture content must be made at the same time and location as the measurements for CO concentration.
	Measure CO at the exhaust of the engine	Method 10 of 40 CFR part 60, appendix A, ASTM Method D6522-00 (2005), ^a Method 320 of 40 CFR part 63, Appendix A, or ASTM D6348-03 ^a	CO concentration must be at 15% O ₂ , dry basis. Results of this test consist of the average of the three 1-hour or longer runs.

a. Incorporated by reference, see 40 CFR 63.14. You may also obtain copies from University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.

b. You may also use Method 320 of 40 CFR part 63, Appendix A, or ASTM D6348-03.



Testing Procedures

- Conduct three separate test runs for each performance test required in this section. Each run must last at least 1 hour.

- Use the following equation to determine compliance with the percent reduction requirement:

$$(C_i - C_o) / C_i \times 100 = R$$

C_i = concentration of CO at the control device inlet,

C_o = concentration of CO at the control device outlet, and

R = percent reduction of CO emissions.



Testing Procedures

•You must normalize the CO concentrations at the inlet and outlet of the control device to a dry basis and to 15% O₂, or an equivalent percent CO₂. If pollutant concentrations are to be corrected to 15% O₂ and CO₂ concentration is measured in lieu of O₂ concentration measurement, a CO₂ correction factor is needed. Calculate the CO₂ correction factor as described in (i) through (iii):

(i) Calculate the fuel-specific F_o value for the fuel burned during the test using values obtained from Method 19, section 5.2, and the equation: $F_o = (0.209F_d)/F_c$

F_o = Fuel factor based on the ratio of O₂ volume to the ultimate CO₂ volume produced by the fuel at 0% excess air.

0.209 = Fraction of air that is O₂, percent/100.

F_d = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm³ /J (dscf/10⁶ Btu).

F_c = Ratio of the volume of CO₂ produced to the gross calorific value of the fuel from Method 19, dsm³ /J (dscf/10⁶ Btu).

(ii) Calculate the CO₂ correction factor for correcting measurement data to 15% O₂, as follows: $X_{CO_2} = 5.9/F_o$

X_{CO₂} = CO₂ correction factor, percent.

5.9 = 20.9% O₂ - 15% O₂, the defined O₂ correction value, percent.

(iii) Calculate the CO gas concentrations adjusted to 15% O₂ using CO₂ as follows: $C_{adj} = C_d(X_{CO_2}/\%CO_2)$

C_{adj} = Calculated concentration of CO adjusted to 15% O₂.

C_d = Measured concentration of CO, uncorrected.

%CO₂ = Measured CO₂ concentration measured, dry basis, percent.



Testing Procedures

If you comply with the emission limitation to reduce CO and you are not using an oxidation catalyst, you must petition EPA for operating limitations to be established during the initial performance test and continuously monitored thereafter, or for approval of no operating limitations. **You cannot conduct the initial performance test until the petition has been approved by EPA.**

•If you petition EPA for approval of operating limitations, petition must include:

- (1) Parameters you propose to use as operating limitations;
- (2) Relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limits on these parameters will serve to limit HAP emissions;
- (3) How you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;
- (4) Methods you will use to measure and instruments you will use to monitor these parameters, as well as relative accuracy and precision of these methods/instruments; and
- (5) Frequency and methods for recalibrating the instruments you will use for monitoring these parameters.



Testing Procedures

•If you petition EPA for approval of no operating limitations, petition must include:

- (1) Parameters associated with operation of the engine and any emission control device which could change intentionally (*e.g.*, operator adjustment, automatic controller adjustment, etc.) or unintentionally (*e.g.*, wear and tear, error, etc.) on a routine basis or over time;
- (2) Relationship between changes in the parameters and changes in HAP emissions;
- (3) For parameters which could change in such a way as to increase HAP emissions, a discussion of whether establishing limits on the parameters would serve to limit HAP emissions;
- (4) For parameters which could change in such a way as to increase HAP emissions, a discussion of how you could establish upper and/or lower values for the parameters which would establish limits on the parameters in operating limits;
- (5) For the parameters, a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods/instruments;
- (6) For the parameters, a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and
- (7) Why you feel it is infeasible or unreasonable to adopt the parameters as operating limits.



Testing Procedures

- The engine percent load during a performance test must be determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. A report of the average percent load determination must be included in the Notification of Compliance Status. The following must be included in the report:
 - Engine model number
 - Engine manufacturer
 - Year of purchase
 - Manufacturer's site-rated brake HP
 - Ambient temperature, pressure, and humidity during the performance test
 - Explanation of all assumptions that were made to estimate or calculate percent load during the performance test
 - If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accurate in percentage of true value



How do I demonstrate initial compliance with the emission limits and operating limits?

Complying with the requirement to reduce CO emissions and using oxidation catalyst, and using a CPMS:

- You have demonstrated initial compliance if:
 - The average reduction of CO emissions determined from the initial performance test achieves the required CO percent reduction; and
 - You have installed a CPMS to monitor catalyst inlet temperature according to the monitoring requirements in this module; and
 - You have recorded the catalyst pressure drop and catalyst inlet temperature during the initial performance test.

Complying with the requirement to limit the concentration of CO, using oxidation catalyst, and using a CPMS:

- You have demonstrated initial compliance if:
 - The average CO concentration determined from the initial performance test is \leq CO emission limit; and
 - You have installed a CPMS to monitor catalyst inlet temperature according to the monitoring requirements in this module; and
 - You have recorded the catalyst pressure drop and catalyst inlet temperature during the initial performance test.

Complying with the requirement to reduce CO emissions and **NOT** using an oxidation catalyst:

- You have demonstrated initial compliance if:
 - The average reduction of emissions of CO determined from the initial performance test achieves the required CO percent reduction; and
 - You have installed a CPMS to monitor operating parameters approved by EPA (if any) according to the monitoring requirements in this module; and
 - You have recorded the approved operating parameters (if any) during the initial performance test.



How do I demonstrate initial compliance with the emission limits and operating limits?

Complying with the requirement to limit the concentration of CO and **NOT** using an oxidation catalyst:

- You have demonstrated initial compliance if:
 - The average CO concentration determined from the initial performance test is \leq CO emission limit and
 - You have installed a CPMS to monitor operating parameters approved by EPA (if any) according to the monitoring requirements in this module; and
 - You have recorded the approved operating parameters (if any) during the initial performance test.

Complying with the requirement to reduce CO emissions and using a CEMS:

- You have demonstrated initial compliance if:
 - You have installed a CEMS to monitor CO and either O₂ or CO₂ at the inlet and outlet of the oxidation catalyst according to 63.6625(a); and
 - You have conducted a performance evaluation of your CEMS using PS 3 and 4A of 40 CFR part 60, Appendix B; and
 - The average reduction of CO calculated using 63.6620 equals or exceeds the required percent reduction. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average percent reduction achieved during the 4-hour period.

Complying with the requirement to limit the concentration of CO and using a CEMS:

- You have demonstrated initial compliance if:
 - You have installed a CEMS to monitor CO and either O₂ or CO₂ at the outlet of the oxidation catalyst according to 63.6625(a); and
 - You have conducted a performance evaluation of your CEMS using PS 3 and 4A of 40 CFR part 60, Appendix B; and
 - The average concentration of CO calculated using 63.6620 is \leq CO emission limit. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average concentration measured during the 4-hour period.



How do I demonstrate initial compliance with the emission limits and operating limits?

During the initial performance test, meet one of the following limits:

- Reduce CO emissions by 70% or more
- OR
- Limit the concentration of CO in the engine exhaust to ≤ 23 ppm at 15% O₂

Submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the following:

- Notification must be sent before the close of business on the 60th day following the completion of the initial compliance demonstration activity. For example, the notification shall be sent before close of business on the 60th day following completion of the initial performance test and again before the close of business on the 60th day following the completion of any subsequent required performance test.
- Notifications may be combined as long as the due date requirement for each notification is met.

Example Notification of Compliance Status Report^a
 National Emission Standards for Hazardous Air Pollutants:
 Stationary Reciprocating Internal Combustion Engines
 40 CFR part 63, subpart ZZZZ

Note: The information to be provided in the Notification of Compliance Status Report will vary depending on the engine type. Affected sources should refer to 40 CFR part 63, subpart ZZZZ for engine-specific compliance requirements. The sample responses provided in this report are for existing stationary spark ignition (SI) 4-stroke rich burn (4SRB) engines above 500 horsepower (HP) located at an area source.

SECTION I: GENERAL INFORMATION

A. If you have been issued a Title V permit, do not complete this form. Submit your NOCS in accordance with your Title V permit. [§63.9(h)(3)]

B. If you have not been issued a Title V permit, complete the remaining portions of this section and also complete Sections II-IX. [§63.9(h)(2)(i)]

C. Print or type the following information for each facility for which you are making notification of compliance status:

Permit Number (OPTIONAL)		Facility I.D. Number (OPTIONAL)	
Responsible Official's Name/Title			
Street Address			
City		State	ZIP Code
Facility Name (if different from Responsible Official's Name)			
Facility Street Address (If different than Responsible Official's Street Address)			
Facility Local Contact Name		Title	Phone (OPTIONAL)
City		State	ZIP Code

D. Indicate the relevant standard or other requirement that is the basis for this notification and the source's compliance date. [§63.9(b)(2)(iii)]

^a This is an example of the type of information that must be submitted to fulfill the Notification of Compliance Status requirement of 40 CFR part 63, subpart ZZZZ. This Notification of Compliance Status is being made in accordance with 40 CFR §63.9(n).

1



What are my monitoring requirements?

-If you install a CEMS, you must install, operate, and maintain a CEMS to monitor CO and either O₂ or CO₂ at both the inlet and outlet* of the control device according to the following requirements:

- (1) Each CEMS must be installed, operated, and maintained according to the applicable performance specifications of 40 CFR part 60, appendix B.
- (2) Conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) of each CEMS according to the requirements in §63.8 and according to the applicable performance specifications of 40 CFR part 60, appendix B as well as daily and periodic data quality checks in accordance with 40 CFR part 60, appendix F, procedure 1.
- (3) Each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. You must have at least two data points, with each representing a different 15-minute period, to have a valid hour of data.
- (4) CEMS data must be reduced as specified in §63.8(g)(2) and recorded in ppm or ppb (as appropriate for the applicable limit) at 15% O₂ or the equivalent CO₂ concentration.

*If complying with the requirement to limit the concentration of CO, a CEMS is required at the outlet only



What are my monitoring requirements?

-If required to install a CPMS, you must install, operate, and maintain each CPMS according to the following:

(1) Prepare a monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in (1)(i) through (v) of this section and in §63.8(d). You may request approval of monitoring system quality assurance and quality control procedures alternative to those specified in (1) through (6) of this section in your site-specific monitoring plan.

(i) The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations;

(ii) Sampling interface (e.g., thermocouple) location such that the monitoring system will provide representative measurements;

(iii) Equipment performance evaluations, system accuracy audits, or other audit procedures;

(iv) Ongoing operation and maintenance procedures in accordance with provisions in §63.8(c)(1)(ii) and (c)(3); and

(v) Ongoing reporting/recordkeeping procedures in accordance with provisions in §63.10(c), (e)(1), and (e)(2)(i).



Monitoring requirements, continued

-If required to install a CPMS, you must install, operate, and maintain each CPMS according to the following:

- (2) Install, operate, and maintain each CPMS in continuous operation according to the procedures in your monitoring plan.
- (3) CPMS must collect data at least once every 15 minutes.
- (4) For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8°C (5°F) or 1% of the measurement range, whichever is larger.
- (5) Conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in your monitoring plan at least annually.
- (6) Conduct a performance evaluation of each CPMS in accordance with your monitoring plan.



Monitoring requirements, continued

- **If your engine is not equipped with a closed crankcase ventilation system, comply with either (1) or (2) of this section.** Follow the manufacturer's maintenance requirements for operating and maintaining the crankcase ventilation systems and replacing the crankcase filters, or you can request that EPA approve different maintenance requirements that are as protective as manufacturer requirements. If your engine is in a remote area of Alaska, you do not have to meet the requirements of (1) or (2) below.

- (1) Install a closed crankcase ventilation system or

- (2) Install an open crankcase filtration emission control system.

- **Minimize the engine's time spent at idle during startup and minimize the startup time** to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup apply.



- **You have the option of utilizing an oil analysis program in order to extend the specified oil change requirement.**

- Analysis program must at a minimum analyze: Total Base Number, viscosity, and percent water content.
- Condemning limits for these parameters are: Total Base Number is <30% of the Total Base Number of the oil when new; viscosity of the oil has changed by >20% from the viscosity of the oil when new; or percent water content (by volume) is >0.5.
- If all condemning limits are not exceeded, you are not required to change the oil.
- If any limits are exceeded, change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results are received, change the oil within 2 days or before commencing operation, whichever is later.
- Keep records of the parameters that are analyzed, the results, and the oil changes.
- Analysis program must be part of the engine maintenance plan.



Continuous Compliance Requirements



Photo credit: EPA

- Except for monitor malfunctions, associated repairs, required performance evaluations and required quality assurance or control activities, you must monitor continuously at all times that the engine is operating. Monitoring failures caused in part by poor maintenance or careless operation are not malfunctions.
- You may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. You must, however, use all the valid data collected during all other periods.



Continuous Compliance Requirements

How do I demonstrate continuous compliance with emission and operating limits?

Complying with the requirement to reduce CO emissions or limit the concentration of CO in the exhaust and using a CEMS, demonstrate continuous compliance by:

- Collecting the monitoring data according to 63.6625(a), reducing the measurements to 1-hour averages, calculating the percent reduction or concentration of CO emissions according to 63.6620; and
- Demonstrating that the catalyst achieves the required percent reduction of CO emissions over the 4-hour averaging period, or that the emissions remain at or below the CO concentration limit; and
- Conducting an annual RATA of your CEMS using PS 3 AND 4a OF 40 CFR Part 60, Appendix B, as well as daily and periodic data quality checks in accordance with 40 CFR part 60, Appendix F, procedure 1.

Complying with the requirement to reduce CO emissions, or limit the concentration of CO in the exhaust, and using oxidation catalyst:

- Conduct performance tests every 8,760 hours or 3 years (5 years if limited use), whichever comes first, for CO to demonstrate that the required CO percent reduction is achieved or that your emissions remain at or below the CO limit; and
- Collect the catalyst inlet temperature data according to 63.6625(b); and
- Reduce these data to 4-hour rolling averages; and
- Maintain the 4-hour rolling averages within the operating limitations for the catalyst inlet temperature; and
- Measure the pressure drop across the catalyst once per month and demonstrate that the pressure drop across the catalyst is within the operating limit established during the performance test.

Complying with the requirement to reduce CO emissions, or limit the concentration of CO in the exhaust, and NOT using oxidation catalyst:

- Conduct performance tests every 8,760 hours or 3 years (5 years if limited use), whichever comes first, to show that the required CO percent reduction is achieved or that your emissions remain at or below the CO limit; and
- Collect the approved operating parameter (if any) data according to 63.6625(b); and
- Reduce these data to 4-hour rolling averages; and
- Maintain the 4-hour rolling averages within the operating limits for the operating parameters established during the performance test.



What records must I keep?

Keep records of:

- Each notification and report that you submit and all supporting documentation
- Occurrence and duration of each malfunction
- Performance tests and evaluations
- Required maintenance performed on air pollution control and monitoring equipment
- Actions taken during malfunctions to minimize emissions and corrective actions
- Maintenance conducted on the engine to demonstrate that it was operated and maintained according to the maintenance plan

For each CEMS or CPMS, keep:

•Records:

- Each period during which a CMS is malfunctioning/inoperative/out-of-control
- All required measurements needed to demonstrate compliance with a relevant standard
- All CMS performance test results and evaluations
- All measurements as may be necessary to determine the conditions of performance tests/evaluations
- All CMS calibration checks
- All adjustments and maintenance performed on the CMS
- Previous versions of the performance evaluation plan
- Requests for alternatives to the RATA

- Keep records for 5 years from the date of creation.



What notifications should I submit?

Notification of:

- Applicability (120 days after effective date) or construction/reconstruction
- Intent to Conduct Performance test (60 days prior to test)
- Compliance Status (60 days after compliance demonstrated)



What reports should I submit?

Semi-Annual Compliance Report

- Due January 31st and July 31st each year:

- First compliance report must cover the period beginning on May 3, 2013 and ending on December 31, 2013.
- Covers the period from January 1-June 30 or July 1-December 31
- Report must contain:

- Statement by responsible official certifying the accuracy of the report

- If any malfunctions occurred during the reporting period, including the number, duration, and a brief description for each type of malfunction which occurred and which caused or may have caused any limits to be exceeded. Also include actions taken during malfunction to minimize emissions and correct malfunctions.

- If no deviations occurred, a statement indicating so.

- If there were no periods during which the CMS was out-of-control, a statement indicating so.

- For each deviation that occurs where you are NOT using a CMS, the report must *also* include:

- Total operating time of the engine at which the deviation occurred
- Information on the number, duration, and cause of deviations, and the corrective action taken.



What reports should I submit?

Semi-Annual Compliance Report

- For each deviation that occurs where you are using a CMS, the report must *also* include:
 - Date and time each malfunction started and stopped.
 - Date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.
 - Date, time, and duration that each CMS was out-of-control, using the information in 40 CFR 63.8(c)(8).
 - Date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.
 - Summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.
 - Breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.
 - Summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the engine at which the CMS downtime occurred during that reporting period.
 - Identification of each parameter and pollutant (CO) that was monitored at the engine.
 - Brief description of the engine and CMS.
 - Date of the latest CMS certification or audit.
 - Description of any changes in CMS, processes, or controls since the last reporting period.



What reports should I submit?

- Report each instance in which you did not meet each emission limit or operating limit. If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limit applicable to your engine.
- Report each instance in which you did not meet the requirements of any of the General Provisions



Where do I send notifications and reports?



US Environmental Protection Agency
5 Post Office Square, Suite 100, Mail code: OES04-2
Boston, MA 02109-3912
Attention: Air Clerk



Connecticut Department of Energy and Environmental Protection

By when must I comply with the rule?

Your compliance date
is: **May 3, 2013**



Photo credit: EPA

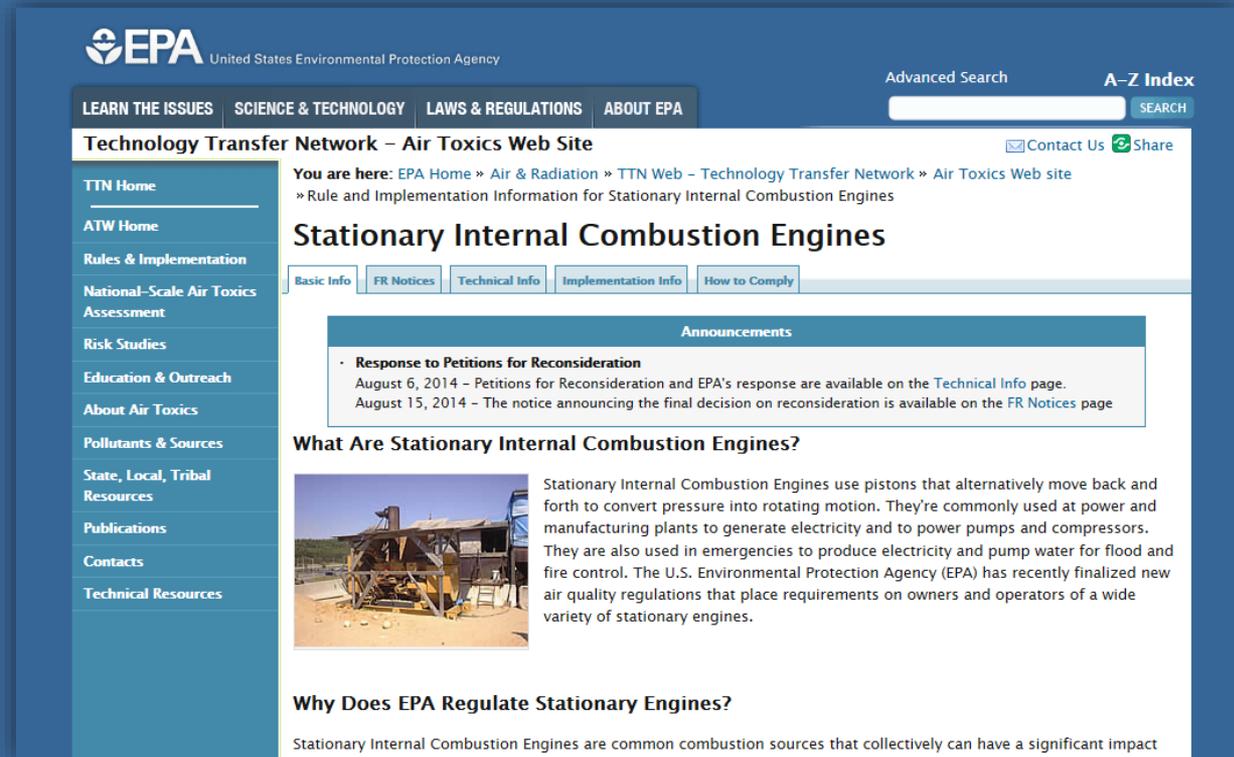


Connecticut Department of Energy and Environmental Protection

Visit the EPA RICE Compliance Page

www.epa.gov/ttn/atw/icengines/

- ▶ Fact sheets
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- ▶ Q & A documents
- ▶ Testing advice
- ▶ Recorded webinars
- ▶ ...and more!



The screenshot shows the EPA website's Technology Transfer Network (TTN) Air Toxics Web Site. The page is titled "Stationary Internal Combustion Engines" and is part of the "Rule and Implementation Information for Stationary Internal Combustion Engines" section. The page features a navigation menu on the left with links to TTN Home, ATW Home, Rules & Implementation, National-Scale Air Toxics Assessment, Risk Studies, Education & Outreach, About Air Toxics, Pollutants & Sources, State, Local, Tribal Resources, Publications, Contacts, and Technical Resources. The main content area includes an "Announcements" section with a link to "Response to Petitions for Reconsideration" and a "What Are Stationary Internal Combustion Engines?" section with a photograph of a stationary engine and a brief description. The page also includes a search bar, a contact us link, and a share button.



Connecticut Department of Energy and Environmental Protection

Take Aways

Engine Type:

- An existing non-emergency compression ignition engine at an area source with a site rating greater than 500 horsepower

Emission Standards:

- If engine was certified to meet Tier 3 (Tier 2 for engines >560 kW) emission standards in Table 1 of 40 CFR 89.112, your engine is in compliance. You have no requirements other than to maintain documentation of engine certification and to follow the manufacturer's specifications.
- Tier 1 and Tier 2 certified engines subject to state and local requirements that call for replacement of the engine can meet management practices until 1/1/2015, or 12 years after installation date (whichever is later), but not later than 6/1/2018, after which time the CO emission standards in Table 2d of the rule apply.
- If located on an offshore drilling vessel on the Outer Continental Shelf, follow management practices.
- If engine is not certified as described above and not on an offshore drilling vessel, limit the concentration of CO in the exhaust to 23 ppm at 15% O₂ or reduce CO emissions by 70% or more**
- Emissions control retrofit probably needed- oxidation catalyst
- If displacement <30 l/cyl, use ultra low sulfur diesel

Testing:

- Initial emission performance test within 180 days after May 3, 2013
- Subsequent performance testing

Monitoring:

- If you install a CEMS, you must install, operate, and maintain a CEMS to monitor CO and either O₂ or CO₂ at both the inlet and outlet of the control device
- If required to install a CPMS, you must install, operate, and maintain each CPMS according to the requirements listed in this module.
- If your engine is not equipped with a closed crankcase ventilation system, either install a closed crankcase ventilation system or install an open crankcase filtration emission control system.
- Minimize the engine's time spent at idle during startup and minimize the engine's startup time
- Can use an oil analysis program in order to extend the specified oil change requirement



Take Aways

Recordkeeping:

- Keep records of notifications, testing, maintenance, malfunction and corrective actions taken, etc.
- Retain records for 5 years

Notifications:

- Applicability
- Intent to Conduct Performance Test
- Compliance Status
- If Tier 1 or Tier 2 certified, submit Notification of Intent to Use Management Practices, including applicable state/local regulation

Report:

- Semi-Annual Compliance Report

Compliance Date:

- May 3, 2013

