



**Air Quality Registration**  
**Stationary Spark Ignition Internal Combustion Engine**  
 (Less than 400 Brake Horsepower)

| Permit No. | Project No. | Description | Date | Testing |
|------------|-------------|-------------|------|---------|
|            |             |             |      | No      |
|            |             |             |      |         |
|            |             |             |      |         |

**Plant Number:** \_\_\_\_\_

\_\_\_\_\_

Under the Direction of the Air Pollution Control Officer

Department Use Only

**Permit Holder**

**Company:** \_\_\_\_\_

**Contact Person:**

**Responsible Party:**

|  |                    |  |
|--|--------------------|--|
|  | (name)             |  |
|  | (title)            |  |
|  | (street)           |  |
|  | (city, state, zip) |  |
|  | (telephone)        |  |
|  | (e-mail address)   |  |

**Permitted Equipment**

**Emission Point ID:** \_\_\_\_\_

**Emission Unit(s) and Control Equipment:**

| EU ID | Description | Maximum Rated Capacity | Control Equipment Description and ID |
|-------|-------------|------------------------|--------------------------------------|
|       |             |                        |                                      |

**Equipment Location:** \_\_\_\_\_ (street)  
 \_\_\_\_\_ (city, state, zip)

Does your company own or operate another facility adjacent to or contiguous with this stationary spark ignition internal combustion engine?  Yes  No

If yes, identify the facility: \_\_\_\_\_

## TYPE OF EQUIPMENT BEING REGISTERED

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### Background & Instructions

The Linn County Code of Ordinances (LCCO) Sec. 10-58(k)(15) exemption from obtaining an Authorization to Install (construction) permit—for stationary internal combustion engines with a brake horsepower (bhp) rating of less than 400 measured at the shaft—**does not apply** to engines subject to federal New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP), pursuant to LCCO Sec. 10-58(k).

Completion of this form is intended to allow facilities to register each stationary spark ignition (SI) internal combustion engine rated less than 400 bhp instead of obtaining a standard air construction permit. It is also intended to assist facilities in complying with the federal NSPS and NESHAP requirements. An owner or operator planning to install, modify, or reconstruct a SI engine greater than or equal to 400 bhp must obtain a construction permit unless otherwise exempt, and may also be subject to NSPS and NESHAP requirements. If you are unclear as to whether or not your facility must obtain a standard air construction permit or qualifies for this registration, call (319) 892-6000.

### This Registration **MUST** be Completed if **ONE** of the Following is True<sup>1</sup>:

- A. The facility owner or operator is planning to install (or has installed) a stationary spark ignition internal combustion engine (SI engine)<sup>2</sup> that is rated less than 400 bhp after July 1, 2008; or
- B. The facility owner or operator has modified or reconstructed an installed SI engine after June 11, 2006.

<sup>1</sup> The owner or operator may choose to apply for a standard air construction permit in accordance with LCCO Sec. 10-58(b).

<sup>2</sup> *SI engine* is either a gasoline-fueled engine or an engine with a spark plug (or other sparking device) and with operating characteristics similar to the theoretical Otto combustion cycle. SI engines typically use a throttle to regulate intake air flow to control power during operation. SI engines using alcohol-based fuels are considered gasoline engines. A diesel engine is not an SI engine.

If your facility meets one of the conditions above, a registration is required. A registration must be submitted prior to installing the SI engine. Submit a completed form and registration fee for each SI engine to:

Linn County Public Health  
1240 26<sup>th</sup> Avenue Court SW  
Cedar Rapids, IA 52404

Retain a copy of the completed form for your records. The registration becomes effective upon Linn County's receipt of this signed registration and fee.

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**REGISTRATION PERMIT DISCLAIMER AND FACILITY CERTIFICATION**

Summaries and other statements in this registration permit are intended solely as guidance, cannot be used to bind the agency, and are not a substitute for reading applicable statutes, rules, and regulations (including, but not limited to, 40 CFR Part 60, Subpart JJJJ, and 40 CFR Part 63, Subpart ZZZZ). The federal regulations referenced in this registration permit are available online at <http://www.ecfr.gov>.

I certify that, based on information and belief formed after reasonable inquiry, the enclosed documents, including the attachments, are true, accurate, and complete and that legal entitlement to install and operate the equipment covered by the registration application and on the property identified in the permit application has been obtained.

I certify that this permit, as drafted, is for (and only for) a stationary spark ignition internal combustion engine with a brake horsepower rating of less than 400 measured at the shaft not otherwise "excluded" as noted above. I certify that there are no physical or chemical characteristics or pollutants in the air contaminants emitted for this facility which are atypical of this type of facility.

I certify that the requirements of 40 CFR Part 60, Subpart JJJJ (*Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*) and 40 CFR Part 63, Subpart ZZZZ (*National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*) will be met by the compliance date specified in Condition 4 of this permit and will be met at all times thereafter. I certify that all other terms and conditions of this permit will be met beginning with the issuance date of the permit and at all times thereafter.

**I certify that the terms and conditions of this permit will be met at all times.**

\_\_\_\_\_ (Responsible Party – Signature)

\_\_\_\_\_ (Title) \_\_\_\_\_ (Date)

## REGISTRATION CONDITIONS

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### 1. Applicability Determination

Standards of Performance for Stationary Spark Ignition Internal Combustion Engines – 40 Code of Federal Regulations (CFR) Part 60, Subpart JJJJ facility applicability questions (the provisions of this subpart are not applicable to SI engines being tested at a stationary test cell or stand or to temporary replacement engines that are at a facility for less than 1 year and are certified to comply with the emission standards):

1. Is this engine a portable engine<sup>1</sup> that meets the definition of a nonroad engine in 40 CFR §1068.30?
  - No. Go to Question 2.
  - Yes. Stop, this engine is not subject to NSPS Subpart JJJJ. You do not need to submit this registration.
  
2. Has this engine been modified<sup>2</sup> or reconstructed<sup>3</sup> after June 12, 2006?
  - No. Go to Question 3.
  - Yes. This engine is subject to NSPS Subpart JJJJ. Fill out the Engine Data in Condition 2; read Conditions 3, 4, & 5 of this form; sign and date the Registration Permit Disclaimer and Facility Certification; and submit to the Linn County Public Health Air & Water Quality Branch.
  
3. Is this engine an emergency stationary internal combustion<sup>4</sup> engine?
  - No. Go to Question 4.
  - Yes. Continue to Question 5.
  
4. Was the engine manufactured after July 1, 2008?
  - No. This engine is not subject to NSPS Subpart JJJJ. Go to Question 6.
  - Yes. This engine is subject to NSPS Subpart JJJJ. Fill out the Engine Data in Condition 2; read Conditions 3, 4, & 5 of this form; sign and date the Registration Permit Disclaimer and Facility Certification; and submit to the Linn County Public Health Air & Water Quality Branch.
  
5. Was the engine manufactured after January 1, 2009, and does it have a rating greater than 25 bhp?
  - No. Stop, this engine is not subject to NSPS Subpart JJJJ. Go to Question 6.
  - Yes. This engine is subject to NSPS Subpart JJJJ. Fill out the Engine Data in Condition 2; read Conditions 3, 4, & 5; sign and date the Registration Certification; and submit to the Linn County Public Health Air & Water Quality Branch.
  
6. Does the engine meet all of the following criteria: (1) manufactured after January 1, 2008; (2) a 4-stroke lean burn (4SLB) engine with a rating of 250 bhp or greater; and (3) located at a major source of hazardous air pollutants (HAP)?
  - No. Stop, you do not need to submit this registration. Instead, complete a Form EJ (Exemption Justification) and maintain a copy at your facility. Form EJ can be found at <http://www.linncleanair.org/content/business-industry/resources.aspx>.
  - Yes. Fill out the Engine Data in Condition 2; read Conditions 3, 4, & 5; sign and date the Registration Permit Disclaimer and Facility Certification; and submit to the Linn County Public Health Air & Water Quality Branch.

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<sup>1</sup> A *portable engine* that will remain at a location more than 12 months or a portable engine that operates more than 3 months per year as part of a seasonal source that returns to the same location is considered a stationary engine. Please contact the Linn County Public Health Air & Water Quality Branch if you are unsure if the portable engine should be considered a stationary engine or a nonroad engine.

<sup>2</sup> A *modification* is a physical or operation change that can increase the emissions of a regulated air pollutant. See 40 CFR §60.14 for a complete definition.

<sup>3</sup> *Reconstruction* is replacing the components on an existing engine and the cost of the replacement components exceeds 50% the cost of a new engine. See 40 CFR §60.15 for a complete definition.

<sup>4</sup> An *emergency stationary internal combustion engine* is a stationary engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary engines used to produce power for critical networks or equipment (including power supplied to portions of a facility) is interrupted, or stationary engines used to pump water in case of fire or flood, etc. Stationary SI engines used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

## 2. Engine Data

Date of Construction: \_\_\_\_\_ (the date of construction is the date the engine was ordered by the owner or operator)

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Is this engine certified by its manufacturer to meet emission standards of NSPS Subpart JJJJ?  Yes /  No

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Has the engine been modified or reconstructed?  Yes /  No      If yes, specify date: \_\_\_\_\_

Engine Manufacturer: \_\_\_\_\_      Model Year<sup>5</sup>: \_\_\_\_\_      Brake Horsepower (bhp): \_\_\_\_\_

Fuel(s) burned in the engine (check all that apply):  Gasoline       Natural Gas       LPG

Digester or Landfill Gas       Other (specify): \_\_\_\_\_

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Fuel Load Consumption Rate (gal/hr): \_\_\_\_\_

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If the engine is rated at 250 bhp or greater, is the engine a 4-stroke lean burn engine?  Yes /  No

## 3. Federal Standards

### A. New Source Performance Standards (NSPS):

The following subparts apply to the emission unit(s) in this permit:

| EU ID | Subpart | Title   | Type      | Local Reference (LCCO Sec.) | Federal Reference (40 CFR) |
|-------|---------|---|-----------|-----------------------------|----------------------------|
|       | A       | General Conditions                                    | NA        | 10-62(b)                    | §60.1 – §60.19             |
|       | JJJJ    | Stationary Spark Ignition Internal Combustion Engines | < 400 bhp | 10-62(b)(78)                | §60.4230 – §60.4242        |

Pursuant to 40 CFR §60.4230, the requirements of NSPS Subpart JJJJ are applicable to manufacturers, owners, and operators of stationary SI engines. For the purposes of this registration, applicability has been limited to owners and operators of stationary SI engines.

NOTE: The absence of the inclusion of any NSPS requirements as part of this permit does not relieve the owner or operator from any obligation to comply with all applicable NSPS conditions.

### B. National Emission Standards for Hazardous Air Pollutants (NESHAP):

The following subparts apply to this facility:

| EU ID | Subpart | Title  | Type      | Local Reference (LCCO Sec.) | Federal Reference (40 CFR) |
|-------|---------|--|-----------|-----------------------------|----------------------------|
|       | ZZZZ    | Stationary Reciprocating Internal Combustion Engines | < 400 bhp | 10-62(d)(104)               | §63.6580 – §63.6675        |

A stationary CI engine that subject to NSPS Subpart JJJJ shall comply with the requirements of NESHAP Subpart ZZZZ by complying with the requirements of NSPS Subpart JJJJ.

NOTE: The absence of the inclusion of any NESHAP requirements as part of this permit does not relieve the owner or operator from any obligation to comply with all applicable NESHAP conditions.

<sup>5</sup> Model year is either (1) the calendar year in which the engine was originally produced, or (2) the annual new model production period of the engine manufacturer if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For an engine that is converted to a stationary engine after being placed into service as a nonroad or other non-stationary engine, model year means the calendar year or new model production period in which the engine was originally produced.

#### 4. Operating Requirements with Associated Monitoring and Recordkeeping

Unless specified by a federal regulation, all records as required by this permit shall be kept on-site for a minimum of three (3) years and shall be available for inspection by the Department. Records shall be legible and maintained in an orderly manner. The operating requirements and associated recordkeeping for this permit shall be:

##### *General Requirements*

- A. Pursuant to 40 CFR §60.4233, stationary spark ignition (SI) engines are required to meet the emission standards listed in Attachment A to this form. The engine must be installed and configured according to the manufacturer's specifications and must be operated and maintained to meet the applicable emission standards over the life of the engine.
  1. SI engines  $\leq$  25 bhp and manufactured on or after July 1, 2008 must meet the emission limits specified in Table 1 of Attachment A (40 CFR §60.4233(a)).
  2. Non-emergency gasoline and rich burn<sup>6</sup> LPG SI engines  $>$  25 bhp and emergency gasoline and rich burn LPG SI engines  $\geq$  130 bhp manufactured on or after July 1, 2008 must meet the emission limits specified in Table 2 of Attachment A (40 CFR §60.4233(b) and (c)).
  3. Non-emergency SI engines  $>$  25 bhp and  $<$  100 bhp and manufactured on or after July 1, 2008 (except as specified in Condition 4.A(1) above) must meet the emission limits specified in Table 3 of Attachment A (40 CFR §60.4233(d)).
  4. Non-emergency SI engines  $\geq$  100 bhp and  $<$  400 bhp and manufactured on or after July 1, 2008 (except as specified in Condition 4.A(1) above) must meet the emission limits specified in Table 4 of Attachment A (40 CFR §60.4233(e)).
  5. Owners or operators of any modified or reconstructed SI engine must meet the emission limits specified in Table 5 of Attachment A of this form (40 CFR §60.4233(f)(1) through (5)).
- B. Pursuant to 40 CFR §60.4235, SI engines that burn gasoline must meet the per gallon sulfur limit of 30 ppm per gallon (as a refinery or importer average) and 80 ppm per gallon (as a per gallon cap).
- C. Owners and operators of SI engines that are not required to be certified must keep a maintenance plan and records of conducted maintenance; maintain and operate the engine in a manner consistent with good air pollution control practice to minimize emissions; and, for SI engines  $\geq$  100 bhp, conduct an initial performance test within 1 year of startup. Alternatively, you may purchase an engine that is certified by the manufacturer to comply with the emission standards (and comply with the *Certification Requirements* below).
- D. Owners and operators must keep documentation that the SI engine meets the emission standards of NSPS Subpart JJJJ. For owners and operators of certified engines, compliance with Condition 4.H satisfies this requirement.

##### *Certification Requirements*

- E. The following groups of SI engines must be certified by the manufacturer to comply with the emission standards in NSPS Subpart JJJJ:
  1. SI engines with a maximum engine power less than 25 bhp;
  2. SI engines that use gasoline and have a maximum engine power greater than 25 bhp; and
  3. SI engines that use LPG, are rich burn engines, and have a maximum engine power greater than 25 bhp.
- F. Other groups of engines may be certified by the manufacturer to comply with the emission standards in NSPS Subpart JJJJ.
- G. Owners and operators of SI engines that are required to be certified and who operate and maintain the engine according to the manufacturer's written instructions must keep records of maintenance performed.
- H. Owners and operators of a certified SI engine must maintain a record from the manufacturer that the engine meets the emission standards.
- I. SI engines that are required to be certified but are not operated and maintained according to the manufacturer's written instructions are considered to be non-certified engines. Owners and operators of such non-certified engines must:
  1. Keep a maintenance plan and records of conducted maintenance;
  2. Must maintain and operate the engine in a manner consistent with good air pollution control practice to minimize emissions; and
  3. For SI engines  $\geq$  100 bhp, complete an initial performance test within 1 year of startup.

<sup>6</sup> A *rich burn* engine is a four stroke spark-ignited engine where the manufacturer's recommended operating air/fuel ratio is divided by the stoichiometric air/fuel ratio at full load is less than or equal to 1.1.

#### 4. Operating Requirements with Associated Monitoring and Recordkeeping (Continued)

##### *Testing Requirements*

- J. Performance testing required by Conditions 5.C and 5.I of this form must be done in accordance with 40 CFR §60.4244. Owners and operators are required to notify the Linn County Public Health Air & Water Quality Branch thirty (30) days prior to the test date and are required to submit a stack test report to the Linn County Public Health Air & Water Quality Branch within six (6) weeks after the test has been conducted.

##### *Emergency Engine Requirements*

- K. Owners and operators of an emergency SI engine that is 130 bhp or greater and was built on or after January 1, 2011, and that does not meet the applicable standards for a non-emergency engine must install a non-resettable hour meter.
- L. Owners and operators of an emergency SI engine that is less than 130 bhp and does not meet the applicable standards for a non-emergency engine must install a non-resettable hour meter upon start-up.
- M. The SI engine may be operated for the purpose of maintenance checks and readiness testing for a maximum of 100 hours per year. There is no time limit on use for emergency situations<sup>7</sup>.
- N. The engine may be operated for up to 50 hours per year for non-emergency purposes. This operating time cannot be used to generate income for the facility (e.g., supplying power to the grid) and should be included in the total of 100 hours allowed for maintenance checks and readiness testing.
- O. Owners and operators of an emergency engine must keep records of all operation of the engine. The owner must record the date and time of operation of the engine and the reason the engine was in operation.
- P. Owners and operators of natural gas SI engines may use propane as an alternative fuel for up to 100 hours per year during emergency operations.

##### *4SLB Engines > 250 bhp Special Requirements*

- Q. Owners and operators of 4-stroke lean burn (4SLB) engines with a rating of 250 bhp or greater<sup>8</sup>, manufactured on or after January 1, 2008, and located at a major source of hazardous air pollutants (HAP), must meet the following additional requirements:
1. The emission standards and operating limits in Tables 6 and 7 of the Attachment to this form. Compliance with the emission standards must be shown through an initial performance test to be conducted 240 days after startup and subsequent semi-annual testing. Notification of the test must be submitted to the Linn County Public Health Air & Water Quality Branch at least sixty (60) days prior to the test date and the test report must be submitted to the Linn County Public Health Air & Water Quality Branch within six (6) weeks after the test date. Alternatively, a continuous emissions monitoring system (CEMS) to measure the carbon monoxide (CO) concentration at the inlet and outlet of the control equipment may be installed. The CEMS will comply with the requirements of Table 5 to 40 CFR Part 63, Subpart ZZZZ and 40 CFR §63.6625.
  2. Install a non-resettable hour meter on the engine prior to startup.
  3. Submit an Initial Notification to the Linn County Public Health Air & Water Quality Branch indicating the actual startup date of the SI engine within fifteen (15) days of startup. Submittal of this registration form will fulfill the Initial Notification requirement.
  4. Pursuant to 40 CFR §63.9(h), submit a Notification of Compliance Status of the SI engine.

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#### 6. Transferability

This permit is not transferable from one location to another, from one piece of equipment to another, or from one owner to another, pursuant to LCCO Sec. 10-58(g)(1) and (2). In the event the SI engine is relocated, replaced, or purchased by a new owner, a new registration permit must be submitted pursuant to LCCO Sec. 10-58(a).

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<sup>7</sup> Use the attached Engine Operation Log (or an equivalent form which captures all information necessary to comply with this NSPS requirement to record this information.

<sup>8</sup> Pursuant to LCCO Sec. 10-58(b), a stationary SI engine  $\geq$  400 bhp measured at the shaft requires the owner or operator to submit an Authorization to Install permit.

## ATTACHMENT A

### SI ENGINE EMISSION STANDARDS

#### 40 CFR, PART 60, SUBPART JJJJ

**Table 1. Emission Standards for Engines ≤ 25 bhp (19 kW)**

Pursuant to 40 CFR §60.4233(a), spark ignition (SI) engines rated at less than or equal to 25 brake horsepower (bhp, 19 kilowatts) are subject to the emission standards of 40 CFR Part 90 (*Control of Emissions from Nonroad Spark-Ignition Engines at or Below 19 Kilowatts*). Table 1 below consolidates the emission standards specified in 40 CFR §90.103, as it appears in 60 Federal Register (FR) 34598, published July 3, 1995, as amended in 61 FR 58300 (November 13, 1996), 62 FR 42643 (August 7, 1997), 64 FR 15236 (March 30, 1999), 65 FR 24305 (April 25, 2000), and 67 FR 68340 (November 8, 2002). Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

| Engine Class | Displacement <sup>1</sup> | Manufacture Date | HC + NO <sub>x</sub> <sup>2</sup> | NMHC + NO <sub>x</sub> <sup>3</sup> | CO <sup>4</sup>              |
|--------------|---------------------------|------------------|-----------------------------------|-------------------------------------|------------------------------|
| I-A          | < 66 cc                   | July 1, 2008 +   | 37 g/hp-hr<br>(50 g/kW-hr)        | --<br>--                            | 455 g/hp-hr<br>(610 g/kW-hr) |
| I-B          | 66 ≤ cc < 100             | July 1, 2008 +   | 30 g/hp-hr<br>(40 g/kW-hr)        | 27.6 g/hp-hr<br>(37 g/kW-hr)        | 455 g/hp-hr<br>(610 g/kW-hr) |
| I            | 100 ≤ cc < 225            | July 1, 2008 +   | 12 g/hp-hr<br>(16.1 g/kW-hr)      | 11 g/hp-hr<br>(14.8 g/kW-hr)        | 455 g/hp-hr<br>(610 g/kW-hr) |
| II           | ≥ 225 cc                  | July 1, 2008 +   | 9.0 g/hp-hr<br>(12.1 g/kW-hr)     | 8.4 g/hp-hr<br>(11.3 g/kW-hr)       | 455 g/hp-hr<br>(610 g/kW-hr) |

<sup>1</sup> Displacement is measured in cubic centimeters (cc).

<sup>2</sup> Hydrocarbons + nitrogen oxides.

<sup>3</sup> Non-methane hydrocarbons + nitrogen oxides. NMHC + NO<sub>x</sub> standards are applicable only to natural gas fuel engines at the option of manufacture in lieu of HC + NO<sub>x</sub> standards.

<sup>4</sup> Carbon monoxide.

**Table 2. Emission Standards for Non-Emergency Gasoline and Rich-Burn LPG Engines > 25 bhp (19 kW) and for Emergency Gasoline and Rich Burn LPG Engines ≥ 130 bhp (100 kW)**

Pursuant to 40 CFR §60.4233(b) and (c), non-emergency gasoline and rich-burn liquefied petroleum gas (LPG) engines rated at greater than 25 bhp (19 kW), and for emergency gasoline and rich-burn LPG engines rated at greater than or equal to 130 bhp (100 kW), are subject to the emission standards of 40 CFR Part 1048 (*Control of Emissions from New, Large Nonroad Spark-Ignition Engines*). Table 2 below consolidates the emission standards specified in 40 CFR §1048.101, as it appears in 67 FR 68347, published November 8, 2002, as amended in 70 FR 40466 (July 13, 2005), 73 FR 3613 (January 18, 2008), and 73 FR 59232 (October 8, 2008). Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

It should be noted that emission standards for engines with greater than or equal to 400 bhp were removed from this reproduction. The owner or operator of a stationary SI engine rated greater than or equal to 400 bhp measured at the shaft is required to obtain a standard air construction permit and may not use this registration form.

| Maximum Engine Power  | Manufacture Date <sup>1</sup> | Type                     | HC + NO <sub>x</sub>         | CO                            |
|---|-------------------------------|--------------------------|------------------------------|-------------------------------|
| <b>Non-Emergency Engines:</b><br>25 < bhp < 400 (19 < kW < 300) | July 1, 2008 +                | --                       | 2.0 g/hp-hr<br>(2.7 g/kW-hr) | 3.3 g/hp-hr<br>(4.4 g/kW-hr)  |
| <b>Emergency Engines:</b><br>160 < bhp < 400 (100 < kW < 300)   | July 1, 2008 +                | Severe Duty <sup>2</sup> | 2.0 g/hp-hr<br>(2.7 g/kW-hr) | 97.0 g/hp-hr<br>(130 g/kW-hr) |

<sup>1</sup> Date of manufacture for emergency engines is January 1, 2009.

<sup>2</sup> Severe duty engines are used, for example, in concrete saws, concrete pumps, and similar severe applications where air-cooled engines must be used.



**Table 3. Emission Standards for Non-Emergency SI Engines > 25 bhp (19 kW) and < 100 bhp (75 kW), Except for Gasoline and Rich Burn LPG Engines**

Pursuant to 40 CFR §60.4233(d), non-emergency engines rated at greater than 25 bhp (19 kW) and less than 100 bhp (75 kW) are subject to the emission standards for field testing in 40 CFR Part 1048. Table 3 below consolidates the emission standards specified in 40 CFR §1048.101(c). Non-emergency gasoline and rich burn LPG engines rated at greater than 25 bhp (19 kW) and emergency gasoline and rich burn LPG engines rated at greater than or equal to 130 bhp (100 kW) are subject to the emission limits in Table 2 above. Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

| Maximum Engine Power             | Manufacture Date | Type        | HC + NO <sub>x</sub>         | CO                           |
|----------------------------------|------------------|-------------|------------------------------|------------------------------|
| 25 < bhp < 100<br>(19 < kW < 75) | July 1, 2008 +   | --          | 2.9 g/hp-hr<br>(3.8 g/kW-hr) | 4.9 g/hp-hr<br>(6.5 g/kW-hr) |
|                                  | July 1, 2008 +   | Severe Duty | 2.9 g/hp-hr<br>(3.8 g/kW-hr) | 149 g/hp-hr<br>(200 g/kW-hr) |

Alternatively, owners and operators of non-emergency engines with a maximum engine power greater than 25 bhp (19 kW) and less than 100 bhp (75 kW) manufactured prior to January 1, 2011, and certified to the standards in Table 1 to Subpart JJJJ applicable to engines with a maximum power greater than or equal to 100 bhp (75 kW) and less than 400 bhp (300 kW) may choose to meet those standards instead.

**Table 4. Emission Standards for Emergency and Non-Emergency SI Engines ≥ 100 bhp (75 kW) and < 400 bhp (300 kW), Except for Gasoline and Rich Burn LPG Engines**

Pursuant to 40 CFR §60.4233(e), owners and operators of emergency and non-emergency SI engines rated at greater than or equal to 100 bhp (75 kW) and less than 400 bhp (300 kW), except as excluded below, are subject to the emission standards of Table 1 to 40 CFR Part 60, Subpart JJJJ. Table 4 below is a reproduction of the applicable emission standards specified in Table 1 to Subpart JJJJ, as it appears in 76 FR 37975, as published on June 28, 2011. Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

It should be noted that emission standards for engines with greater than or equal to 400 bhp were removed from this reproduction. The owner or operator of a stationary SI engine rated greater than or equal to 400 bhp measured at the shaft is required to obtain a standard air construction permit and may not use this registration form.

| Engine Type & Fuel  | Maximum Engine Power               | Manufacture Date  | Emission Standards                                   |  |   |
|---|------------------------------------|-------------------|--|--|---|
|   |                                    |                   | NO <sub>x</sub>                                      | CO   | VOC <sup>1</sup>                                    |
| Non-Emergency Natural Gas<br>and<br>Non-Emergency Lean Burn LPG | 100 ≤ bhp < 400<br>(75 ≤ kW < 300) | July 1, 2008 +    | 2.0 g/hp-hr<br>(160 ppm <sub>vd</sub> <sup>2</sup> ) | 4.0 g/hp-hr<br>(540 ppm <sub>vd</sub> <sup>2</sup> ) | 1.0 g/hp-hr<br>(86 ppm <sub>vd</sub> <sup>2</sup> ) |
|   |                                    | January 1, 2011 + | 1.0 g/hp-hr<br>(82 ppm <sub>vd</sub> <sup>2</sup> )  | 2.0 g/hp-hr<br>(270 ppm <sub>vd</sub> <sup>2</sup> ) | 0.7 g/hp-hr<br>(60 ppm <sub>vd</sub> <sup>2</sup> ) |
| Landfill / Digester Gas   | bhp < 400<br>(kW < 300)            | July 1, 2008 +    | 3.0 g/hp-hr<br>(220 ppm <sub>vd</sub> <sup>2</sup> ) | 5.0 g/hp-hr<br>(610 ppm <sub>vd</sub> <sup>2</sup> ) | 1.0 g/hp-hr<br>(80 ppm <sub>vd</sub> <sup>2</sup> ) |
|   |                                    | January 1, 2011 + | 2.0 g/hp-hr<br>(150 ppm <sub>vd</sub> <sup>2</sup> ) | 5.0 g/hp-hr<br>(610 ppm <sub>vd</sub> <sup>2</sup> ) | 1.0 g/hp-hr<br>(80 ppm <sub>vd</sub> <sup>2</sup> ) |
| Emergency   | 25 < bhp < 130<br>(19 < kW < 100)  | January 1, 2009 + | 10 g/hp-hr <sup>3</sup>                              | 387 g/hp-hr  | --  |
|   | bhp ≥ 130<br>(kW ≥ 100)            | January 1, 2009 + | 2.0 g/hp-hr<br>(160 ppm <sub>vd</sub> <sup>2</sup> ) | 4.0 g/hp-hr<br>(540 ppm <sub>vd</sub> <sup>2</sup> ) | 1.0 g/hp-hr<br>(86 ppm <sub>vd</sub> <sup>2</sup> ) |

<sup>1</sup> Volatile organic compounds. Formaldehyde emissions are not included in this standard.

<sup>2</sup> Parts per million, by dry volume basis, at 15% oxygen.

<sup>3</sup> This emission limit is for HC + NO<sub>x</sub>.

As specified in Condition 4.A(2) of this form, non-emergency gasoline and rich burn LPG engines rated at greater than 25 bhp (19 kW) and emergency gasoline and rich burn LPG engines rated at greater than or equal to 130 bhp (100 kW) are subject to the emission limits in Table 2 above.

**Table 5. Emission Standards for Modified or Reconstructed SI Engines**

Pursuant to 40 CFR §60.4233(f), modified or reconstructed SI engines are subject to different standards than certified and non-certified SI engines. Table 5 below consolidates the emission limits specified in 40 CFR §60.4233(f)(1) through (5), as it appears in 73 FR 3591, published on January 18, 2008, as amended in 76 FR 37973 (June 28, 2011). Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

It should be noted that emission standards for engines with greater than or equal to 400 bhp were removed from this reproduction. The owner or operator of a stationary SI engine rated greater than or equal to 400 bhp measured at the shaft is required to obtain a standard air construction permit and may not use this registration form.

| Maximum Engine Power                | Engine Type & Fuel                         | Emission Standards                                   |  |   |
|-------------------------------------|--|--|--|---|
|                                     |  | NO <sub>x</sub>                                      | CO   | VOC <sup>1</sup>                                    |
| ≤ 25 bhp (19 kW)                    | All  | Same as Table 1 of this Attachment                   |  |   |
|                                     | Gasoline                                   | Same as Table 2 and Table 4 of this Attachment       |  |   |
|                                     | Rich Burn LPG                              | Same as Table 2 and Table 4 of this Attachment       |  |   |
| 25 < bhp < 100<br>(19 < kW < 75)    | Emergency Natural Gas or Lean Burn LPG     | Same as Table 3 of this Attachment                   |  |   |
|                                     | Non-Emergency Natural Gas or Lean Burn LPG | 3.0 g/hp-hr<br>(250 ppm <sub>vd</sub> <sup>1</sup> ) | 5.0 g/hp-hr<br>(675 ppm <sub>vd</sub> <sup>1</sup> ) | 1.0 g/hp-hr<br>(86 ppm <sub>vd</sub> <sup>1</sup> ) |
| 100 ≤ bhp < 130<br>(75 ≤ kW < 100)  | Emergency Natural Gas or Lean Burn LPG     | Same as Table 4 of this Attachment                   |  |   |
| 130 ≤ bhp < 400<br>(100 ≤ kW < 300) | Emergency Natural Gas or Lean Burn LPG     | 3.0 g/hp-hr<br>(250 ppm <sub>vd</sub> <sup>1</sup> ) | 4.0 g/hp-hr<br>(540 ppm <sub>vd</sub> <sup>1</sup> ) | 1.0 g/hp-hr<br>(86 ppm <sub>vd</sub> <sup>1</sup> ) |
| > 25 bhp<br>(> 19 kW)               | Non-Emergency Natural Gas or Lean Burn LPG | 3.0 g/hp-hr<br>(250 ppm <sub>vd</sub> <sup>1</sup> ) | 4.0 g/hp-hr<br>(540 ppm <sub>vd</sub> <sup>1</sup> ) | 1.0 g/hp-hr<br>(86 ppm <sub>vd</sub> <sup>1</sup> ) |
|                                     | Landfill / Digester Gas                    | Same as Table 4 of this Attachment                   |  |   |

<sup>1</sup> Parts per million, by dry volume basis, at 15% oxygen.

**Table 6. Emission Standards for 4SLB SI Engine ≥ 250 bhp, Located at Major Sources of HAP**

Pursuant to 40 CFR §63.6600 and §63.6640, a new or reconstructed 4-stroke lean burn (4SLB) stationary engine rated at greater than or equal to 250 bhp located at a major source of hazardous air pollutants (HAP) is subject to the emission limits of 40 CFR Part 63, Subpart ZZZZ (*National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*). Table 6 below summarizes the requirements outlined in Table 2a to Subpart ZZZZ, as it appears in 75 FR 9680, published on March 3, 2010. Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

| For Each...    | You must meet the following emission limitation, except during periods of startup...   | During periods of startup you must... |
|----------------|--|---------------------------------------|
| 4SLB SI Engine | a. Reduce CO emissions by 93% or more; or  | --                                    |
|                | b. Limit concentration of formaldehyde in the SI engine exhaust to 14 ppm <sub>vd</sub> or less at 15 percent O <sub>2</sub> . | --                                    |

**Table 7. Operating Limits for 4SLB SI Engines  $\geq$  250 bhp, Located at Major Sources of HAP**

Pursuant to 40 CFR §63.6600 and §63.6640, a new or reconstructed 4-stroke lean burn (4SLB) stationary engine rated at greater than or equal to 250 bhp located at a major source of hazardous air pollutants (HAP) is subject to the emission limits of 40 CFR Part 63, Subpart ZZZZ. Table 7 below summarizes the requirements outlined in Table 2b to Subpart ZZZZ, as it appears in 78 FR 6707, published on January 30, 2013. Inclusion of this table does not relieve the owner or operator from complying with the regulations of Subpart JJJJ in subsequent amendments.

It should be noted that emission standards for engines with greater than or equal to 400 bhp were removed from this reproduction. The owner or operator of a stationary SI engine rated greater than or equal to 400 bhp measured at the shaft is required to obtain a standard air construction permit and may not use this registration form.

| For Each...  | Complying with the requirement to...   | During periods of startup you must...  |
|--|--|--|
| New or reconstructed 4SLB SI Engine $\geq$ 250 bhp | Reduce CO emissions or limit formaldehyde in the engine exhaust using an oxidation catalyst.             | a. Maintain your catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100% load or minus 10% from the pressure drop across the catalyst that was measured during the initial performance test; and<br>b. Maintain the temperature of your stationary SI engine exhaust so that the catalyst inlet temperature is $\geq$ 450 °F and $\leq$ 1,350 °F |
|  | Reduce CO emissions or limit the formaldehyde in the engine exhaust without using an oxidation catalyst. | a. Comply with any operating limitations approved by the administrator.  |

**END OF REGISTRATION**

# ENGINE OPERATION LOG FOR CALENDAR YEAR (\_\_\_\_)

**Instructions:** Completion of this form is intended to assist the owner or operator in complying with federal NSPS requirements. The engine may be operated for the purpose of maintenance checks and readiness testing a maximum of 100 hours per year. There is no time limit on use for emergency situations. The engine may be operated up to 50 hours per year for non-emergency purposes. This operating time cannot be used to generate income for the facility (e.g., supplying power to the grid) and should be included in the total 100 hours allowed for maintenance checks and readiness testing.

| Date <sup>1</sup> | Duration of Run<br>Time (Hours) <sup>1</sup> | Engine Hour Meter<br>Record | Reason Engine Was<br>Operated <sup>1</sup> | Operator Notes |
|-------------------|--|-----------------------------|--|----------------|
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<sup>1</sup> Denotes information required in order to comply with NSPS Subpart JJJJ.