



## Internal Combustion Engine Form 11 (Continued)

### Operation

**17. Application:**

- Electric generation  
\_\_\_\_\_ Base load \_\_\_\_\_ Peaking
- Emergency Generator
- Driving pump/compressor
- Exhaust heat recovery
- Other (specify) \_\_\_\_\_

**18. Cycle**

- Simple cycle
- Regenerative cycle
- Cogeneration
- Combined cycle

### Emissions Data

19. Manufacturer's Emissions in grams per hour (gr/hp-hr): \_\_\_\_\_ NO<sub>x</sub> \_\_\_\_\_ CO \_\_\_\_\_ VOC  
\_\_\_\_\_ Formaldehyde

20. Attach manufacturer's information showing emissions of NO<sub>x</sub>, CO, VOC, SO<sub>x</sub>, CH<sub>2</sub>O, PM<sub>10</sub>, PM<sub>2.5</sub>, CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O for each proposed fuel at engine loads and site ambient temperatures representative of the range of proposed operation. The information must be sufficient to determine maximum hourly and annual emission rates. Annual emissions may be based on a conservatively low approximation of site annual average temperature. Provide emissions in pounds per hour and except for PM<sub>10</sub> and PM<sub>2.5</sub> parts per million by volume (ppmv) at actual conditions and corrected to dry, 15% oxygen conditions.

**Method of Emission Control:**

- Lean premix combustors       Oxidation catalyst       Water injection       Other (specify) \_\_\_\_\_
- Other low-NO<sub>x</sub> combustor       SCR catalyst       Steam injection

### Additional Information

21. On separate sheets provide the following:

- A. Details regarding principle of operation of emission controls. If add-on equipment is used, provide make and model and manufacturer's information. Example details include: controller input variables and operational algorithms for water or ammonia injection systems, combustion mode versus engine load for variable mode combustors, etc.
- B. Exhaust parameter information on attached form.
- C. All calculations used for the annual emission estimates must be submitted with this form to be deemed complete.
- D. All formaldehyde emissions must be modeled as per Utah Administrative Code R307-410-5 using SCREEN3.
- E. If this form is filled out for a new source, forms 1 and 2 must be submitted also.

## INSTRUCTIONS – Form 11 Internal Combustion Engine

NOTE: 1. **Submit this form in conjunction with Form 1 and Form 2.**

2. Call the Division of Air Quality (DAQ) at **(801) 536-4000** if you have problems or questions in filling out this form. Ask to speak with a New Source Review engineer. We will be glad to help!

1. Indicate the manufacturer, the model number and the date the engine was constructed or reconstructed.
2. Complete the fuel burning equipment's average and maximum operating schedule in hours per day, days per week, and weeks per year.
3. Specify the manufacturer's rated output and heat rate at baseload corresponding to International Standard Organization (ISO) conditions in megawatts (MW) or horsepower (hp). Also indicated what the proposed site operating range is in megawatts or horsepower.
4. Indicate the origin of the gas used in the engine.
5. Indicate if the gas supply can be interrupted and what the backup fuel is in case this happens.
6. Specify what the annual consumption of fuel is in million standard cubic feet (MMscf).
7. Supply the maximum firing rate in BTU/hr.
8. Supply the average firing rate in BTU/hr.
9. Indicate the grade of oil being used.
10. Supply the annual consumption calculated in gallons of oil.
11. Indicate the heat content of the oil in BTU/lb or BTU/gal.
12. Indicate the sulfur content of the oil in percent by weight.
13. Indicate the ash content of the oil.
14. Supply the average firing rate of oil.
15. Supply the maximum firing rate of oil.
16. Indicate what the firing direction is.
17. Indicate what the engine will be used for.
18. Indicate what type of cycle the engine will have.
19. Indicate the manufacturer's emissions rate in grams/hp-hr
20. Provide manufacturer's emission information for the engine. Also indicate what method of emission control to be used.
21. Provide details of the operation of emission controls and exhaust parameter information.

**INTERNAL COMBUSTION ENGINE  
FORM 11 (continued)  
EMISSION SOURCES**

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this form.

AIR CONTAMINANT DATA						EMISSION POINT DISCHARGE PARAMETERS							
EMISSION POINT (1)		CHEMICAL COMPOSITION OF TOTAL STREAM		AIR CONTAMINANT EMISSION RATE		UTM COORDINATES OF EMISSION PT. (6)			STACK SOURCES (7)				
NUMBER	NAME	COMPONENT OR AIR CONTAMINANT NAME (2)	CONC. (%V) (3)	LB/HR (4)	TONS/YR (5)	ZONE	EAST (METERS)	NORTH (METERS)	HEIGHT ABOVE GROUND (FT)	HEIGHT ABOVE STRUCT. (FT)	EXIT DATA		
											DIA. (FT)	VELO. (FPS)	TEMP. (°F)

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL \_\_\_\_\_ feet.  
UTAH AIR CONSERVATION BOARD STANDARD CONDITIONS ARE 68° F AND 14.7 PSIA.

- General Instructions for this form.
1. Identify each emission; point with a unique number for this plant site on plot plan, previous permits and emission inventory questionnaire. Limit emission point number to 8 character spaces. For each emission point use as many lines as necessary to list air contaminant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are OK.
  2. Typical component names are: air, H<sub>2</sub>O, nitrogen, oxygen, CO<sub>2</sub>, CO, NO<sub>x</sub>, SO<sub>x</sub>, hexane, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), etc. Abbreviations are OK.
  3. Concentration data is required for all gaseous components. Show concentration in volume percent of total gas stream.
  4. Pounds per hour. (#/hr) is maximum emission rate expected by applicant.
  5. Tons per year (T/Y) is annual maximum emission rate expected by applicant, which takes into account process operating schedule.
  6. As a minimum applicant must furnish a facility plot plan drawn to scale showing a plant benchmark, latitude and longitude correct to the nearest second for the benchmark, and all emission points dimensioned with respect to the benchmark. Please show emission point UTM coordinates if known.
  7. Supply additional information as follows if appropriate:
    - (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
    - (b) Stack's height above supporting or adjacent structures if structure is within three "stack heights above ground" of stack.