Utah Division of Air Quality
New Source Review Section

Form 22
Combustion Turbines

Company_____
Site/Source_____
Date_____

Equipment Information

1. Manufacturer: _____
   Model Number: _____

2. Operating time of Emission Source:

	AVERAGE	MAXIMUM
Hours/day	_____	_____
Days/week	_____	_____
Weeks/year	_____	_____

3. Manufacturer's rated output at baseload, ISO: _____ ☐ MW or ☐ hp
   Proposed site operating range: _____ ☐ MW or ☐ hp
   Manufacturer's rated heat rate at baseload, ISO: _____ (BTU/kW-hr)

4. Percent of annual heat input:
   Dec-Feb _____% Mar-May _____% Jun-Aug _____% Sep-Nov _____%

Gas Firing

5. Origin of gas:
   ☐ Pipeline ☐ Distillate fuel oil gasification ☐ Other liquid fuel gasification ☐ Solid fuel gasification ☐ Byproduct, specify source: _____

6. Are you on an interruptible gas supply:
   ☐ Yes ☐ No
   If "yes", specify alternate fuel:
   _____

7. Annual consumption of fuel: _____ scf

*8. Heat content: _____ BTU/scf

*9. Sulfur content: _____% by wt.

10. Maximum firing rate: _____ scf/hr

11. Average firing rate: _____ scf/hr

*If the gas fired is pipeline grade natural gas, these items need not be completed.

Oil Fired

12. Grade of oil, Number: ☐ 1 ☐ 2 ☐ 4 ☐ 5 ☐ 6 ☐ Other: specify _____

13. Annual consumption: _____ gallons

14. Heat content: _____ ☐ BTU/lb ☐ BTU/gal

15. Sulfur content: _____ % by wt.

16. Ash content _____ % by wt.

17. Direction of firing: ☐ horizontal ☐ tangential ☐ other: specify _____

18. Average firing rate: _____ gal/hr

19. Maximum firing rate: _____ gal/hr

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Operation

20. Application: ☐ Electric generation
____Base load ____Peaking
☐ Driving pump/compressor
☐ Exhaust heat recovery
☐ Other – Specify _____

21. Cycle: ☐ Simple cycle
☐ Regenerative cycle
☐ Cogeneration
☐ Combined cycle

22. Is turbine equipped with exhaust heat recovery equipment? ☐ Yes ☐ No
If yes, supply the size, flow rate, steam output capacity and temperature profile.

23. Is turbine equipped with duct burners? ☐ Yes ☐ No
If yes, provide burner description, fuel usage, combustion air input and location of the burners. Show all heat transfer surface locations with the waste heat boiler and temperature profile.

Emissions Data

24. Attach manufacturer's information showing emissions of NO_x, CO, VOC, SO_x, PM_{10} and $PM_{2.5}$ for each proposed fuel at turbine 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_{10} and $PM_{2.5}$, parts per million by volume 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_x combustor ☐ SCR catalyst ☐ Steam injection _____

Additional Information

25. 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 turbine load for variable mode combustors, etc.
B. Exhaust parameter information on attached form.

Emissions Calculations (PTE)

26. Calculated emissions for this device

PM_{10} _____Lbs/hr_____ Tons/yr $PM_{2.5}$ _____Lbs/hr_____ Tons/yr
NO_x _____Lbs/hr_____ Tons/yr SO_x _____Lbs/hr_____ Tons/yr
CO _____Lbs/hr_____ Tons/yr VOC _____Lbs/hr_____ Tons/yr
CO_2 _____Tons/yr CH_4 _____Tons/yr
N_2O _____Tons/yr
HAPs_____ Lbs/hr (speciate)_____Tons/yr (speciate)

Submit calculations as an appendix. If other pollutants are emitted, include the emissions in the appendix.

Instructions Form 22 – Combustion Turbine

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 and the model number of the equipment.
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. Supply the percent of annual heat input by season for a year's time. The four seasons should total to 100%.
5. Indicate what the origin of the gas used in the turbine is.
6. Indicate if the gas supply can be interrupted and what the backup fuel is in case this happens.
7. Specify what the annual consumption of fuel is in standard cubic feet.
8. Indicate what the heat content is of the fuel.
9. Indicate what percent of sulfur is in the fuel.
10. Supply the maximum firing rate in standard cubic feet.
11. Supply the average firing rate in standard cubic feet.
12. Indicate the grade of oil being used.
13. Supply the annual consumption calculated in gallons of oil.
14. Indicate the heat content of the oil in BTU/lb or BTU/gal.
15. Indicate the sulfur content of the oil in percent by weight.
16. Indicate the ash content of the oil.
17. Indicate what the firing direction is.
18. Supply the average firing rate of oil.
19. Supply the maximum firing rate of oil.
20. Indicate what the turbine will be used for.
21. Indicate what type of cycle the turbine will have.
22. Indicate whether or not the turbine is equipped with exhaust heat recovery equipment and what the specifications of that equipment are.
23. Indicate whether or not the turbine is equipped with duct burners and provide specifications on the burners.
24. Provide manufacturer's emission information for the turbine. Also indicate what method of emission control will be used.
25. Provide details of the operation of emission controls and exhaust parameter information.
26. Supply calculations for all criteria pollutants, greenhouse gases and HAPs. Use AP42 or Submit the Manufacturers data used to complete your calculations.

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