



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE  
GOVERNOR

PATRICIA W. AHO  
COMMISSIONER

**Texas Instruments Incorporated  
Cumberland County  
South Portland, Maine  
A-698-71-Y-M (SM)**

**Departmental  
Findings of Fact and Order  
Air Emission License  
Amendment #3**

**FINDINGS OF FACT**

After review of the air emissions license minor revision application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., §344 and §590, the Maine Department of Environmental Protection (Department) finds the following facts:

**I. REGISTRATION**

**A. Introduction**

Texas Instruments Incorporated (Texas Instruments) is licensed under Air Emission License A-698-71-U-R, issued on December 30, 2009, permitting the operation of emission sources associated with their semiconductor manufacturing facility. The license was subsequently amended on June 20, 2012 (A-698-71-W-M), and on January 10, 2013 (A-698-71-X-M).

Texas Instruments has requested a minor revision to their license in order to replace Emergency Generator 4, which is in need of substantial repair, with a similar unit from another Texas Instruments facility.

This minor revision also addresses the federal requirements applicable to all of the facility's generators since the federal regulations were not included in previous licenses.

The equipment addressed in this license is located at 5 Foden Road, South Portland, Maine.

AUGUSTA  
17 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
(207) 287-7688 FAX: (207) 287-7826  
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106 HOGAN ROAD, SUITE 6  
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312 CANCO ROAD  
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(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE  
1235 CENTRAL DRIVE, SKYWAY PARK  
PRESQUE ISLE, MAINE 04769  
(207) 764-0477 FAX: (207) 760-3143

B. Emission Equipment

The following equipment is addressed in this air emission license:

**Generator**

<u>Equipment</u>	<u>Max. input capacity MMBtu/hr</u>	<u>Firing Rate (gal/hr)</u>	<u>Fuel Type, % sulfur</u>	<u>Manufacture Date</u>	<u>Installation Date</u>
Emergency Generator 4 (replacement) *	6.49	47	Diesel, 0.0015%	1999	2013

\* Previously licensed Emergency Generator 4 was a diesel unit rated at 4.4 MMBtu/hr, installed at the facility in 1999.

C. Application Classification

This amendment will increase emissions by less than 4 ton/year for each single pollutant and less than 8 ton/year for all pollutants combined. The emission increases were determined by subtracting the current licensed emissions preceding the modification from the maximum future licensed allowed emissions, as follows:

<u>Pollutant</u>	<u>Current License (TPY)</u>	<u>Future License (TPY)</u>	<u>Net Change (TPY)</u>
PM	6.2	6.3	+0.1
PM <sub>10</sub>	6.2	6.3	+0.1
SO <sub>2</sub>	24.5	23.8	-0.7
NO <sub>x</sub>	48.4	50.1	+1.7
CO	20.1	20.6	+0.5
VOC	27.4	27.5	+0.1

The replacement has similar emissions and is located in the same area on-site as the unit it is replacing. This application is determined to be a minor revision and has been processed as such.

## II. BEST PRACTICAL TREATMENT (BPT)

### A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

### B. Emergency Generators

Replacement Emergency Generator 4 (6.49 MMBtu/hr) is a Kohler model 500 ROZD with a two stroke Detroit 12V92 engine, firing diesel fuel and manufactured in April 1999. The unit it replaces is an older model installed at the facility in 1999 which is in need of an overhaul to remain operational. Texas Instruments has decided to replace the original emergency generator 4 with the proposed replacement Emergency Generator 4 acquired from another Texas Instruments facility. The unit will be located in Building 1 North.

Texas Instruments has four other licensed diesel generators. Emergency Generator 1 (5.5 MMBtu/hr) is located in Building 1 South and was installed in 1982. Emergency Generator 2 (14.6 MMBtu/hr) and Emergency Generator 3 (18.8 MMBtu/hr) are located in Building 4 and were both manufactured and installed in 1996. Emergency Generator 5 (5.37 MMBtu/hr) was purchased and manufactured in 1999 and is currently being stored on-site near the loading dock. The emissions from these generators are addressed in air emission license A-698-71-Y-M. This license updates the units' allowable diesel fuel sulfur content from 0.05% to 0.0015% and includes the units' applicable federal requirements.

#### 1. BACT Findings

The BACT emission limits for the replacement Emergency Generator 4 are based on the following:

- PM/PM<sub>10</sub> - 0.12 lb/MMBtu from 06-096 CMR 103
- SO<sub>2</sub> - combustion of diesel fuel with a maximum sulfur content not to exceed 15 ppm (0.0015% sulfur)
- NO<sub>x</sub> - 3.2 lb/MMBtu from AP-42 Table 3.4-1 dated 10/96

CO - 0.85 lb/MMBtu from AP-42 Table 3.4-1 dated 10/96  
VOC - 0.09 lb/MMBtu from AP-42 Table 3.4-1 dated 10/96  
Opacity - 06-096 CMR 101

The BACT emission limits for the replacement Emergency Generator 4 are the following:

<u>Unit</u>	<u>PM (lb/hr)</u>	<u>PM<sub>10</sub> (lb/hr)</u>	<u>SO<sub>2</sub> (lb/hr)</u>	<u>NO<sub>x</sub> (lb/hr)</u>	<u>CO (lb/hr)</u>	<u>VOC (lb/hr)</u>
Emergency Generator 4 replacement (6.49 MMBtu/hr) Diesel	0.78	0.78	0.01	20.77	5.52	0.58

Visible emissions from the diesel emergency generator shall not exceed 20% opacity on a 6-minute block average, except for no more than two (2) six (6) minute block averages in a 3-hour period.

Replacement Emergency Generator 4 shall be limited to 500 hours of operation a year, based on a 12-month rolling total. Texas Instruments shall keep records of the hours of operation for the unit.

2. 40 CFR Part 63, Subpart ZZZZ

The federal regulation 40 CFR Part 63, Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines* is applicable to all five emergency generators. Based on the dates of manufacture and the relocation scenario for Emergency Generator 4 which is not considered new construction under the definitions of 40 CFR Part 63, §63.2, the units are considered existing, emergency stationary reciprocating internal combustion engines at an area HAP source and are not subject to New Source Performance Standards regulations. EPA's August 9, 2010 memo (*Guidance Regarding Definition of Residential, Commercial, and Institutional Emergency Stationary RICE in the NESHAP for Stationary RICE*) specifically does not exempt these units from the federal requirements.

a. Emergency Definition:

Emergency stationary RICE means any stationary reciprocating internal combustion engine that meets all of the following criteria:

- (1) The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or

equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.

- (2) Paragraph (1) above notwithstanding, the emergency stationary RICE may be operated for any combination of the purposes specified below for a maximum of 100 hours per calendar year:
  - (i) Maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE beyond 100 hours per calendar year.
  - (ii) Emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §63.14), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.
  - (iii) Periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.
- (3) Paragraphs (1) and (2) above notwithstanding, emergency stationary RICE may be operated for up to 50 hours per calendar year in non-emergency situations. These 50 hours are counted as part of the 100 hours per calendar year for maintenance checks and readiness testing, emergency demand response, and periods of voltage deviation or low frequency, as provided in paragraph (2) above.

The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity, except provided in the following paragraphs:

- (i) Prior to May 3, 2014, the 50 hours per year for non-emergency situations can be used for peak shaving or non-emergency demand

response to generate income for a facility, or to otherwise supply power as part of a financial arrangement with another entity if the engine is operated as part of a peak shaving (load management program) with the local distribution system operator and the power is provided only to the facility itself or to support the local distribution center.

- (ii) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:
  - (a) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.
  - (b) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.
  - (c) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.
  - (d) The power is provided only to the facility itself or to support the local transmission and distribution system.
  - (e) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

Emergency Generators 1, 2, 3, 4, and 5 shall be limited to the usage outlined in §63.6640(f) and therefore may be classified as existing emergency stationary RICE as defined in 40 CFR Part 63, Subpart ZZZZ. Failure to comply with all of the requirements listed in §63.6640(f) may cause these engines to not be considered emergency engines and therefore subject to all the requirements for non-emergency engines.

b. 40 CFR Part 63, Subpart ZZZZ Requirements:

(1) Operation and Maintenance Requirements

	<b>Compliance Dates</b>	<b>Operating Limitations* (40 CFR §63.6603(a) and Table 2(d))</b>
Compression ignition (diesel, fuel oil) units: Emergency Generators 1, 2, 3, 4, and 5	No later than May 3, 2013	<ul style="list-style-type: none"> <li>- Change oil and filter every 500 hours of operation or annually, whichever comes first;</li> <li>- Inspect the air cleaner every 1000 hours of operation or annually, whichever comes first, and replace as necessary; and</li> <li>- Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.</li> </ul>

\* Note: Due to the 500 hour operation limit on the generators, the inspections and oil/filter changes shall be performed annually to meet the requirements of 40 CFR Part 63, Subpart ZZZZ.

The generators shall each be operated and maintained according to the manufacturer's emission-related written instructions or facility shall develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engines in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR §63.6625(e)]

(2) Optional Oil Analysis Program

Texas Instruments has the option of utilizing an oil analysis program which complies with the requirements of §63.6625(i) in order to extend the specified oil change requirement. If this option is used, Texas Instruments must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 CFR §63.6625(i)]

(3) Non-Resettable Hour Meter Requirement

A non-resettable hour meter shall be installed and operated on each generator. [40 CFR §63.6625(f)]

(4) Startup Idle and Startup Time Minimization Requirements

During periods of startup the facility must minimize the engines' time spent at idle and minimize the engines' startup time to a period needed

for appropriate and safe loading of the engines, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR §63.6625(h) & 40 CFR Part 63, Subpart ZZZZ Table 2d]

**(5) Annual Time Limit for Maintenance and Testing**

The generators shall each be limited to 100 hours/year for maintenance checks and readiness testing, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity unless the conditions in §63.6640(f)(4)(ii) are met). [40 CFR §63.6640(f)]

**(6) Recordkeeping**

Texas Instruments shall keep records that include maintenance conducted on the generators and the hours of operation of each of the engines recorded through the non-resettable hour meter. Documentation shall include the hours spent for emergency operation, including what classified the operation as emergency and how many hours spent for non-emergency. If the generators are operated during a period of demand response or deviation from standard voltage or frequency, or supplying power during a non-emergency situation as part of a financial arrangement with another entity as specified in §63.6640(f)(4)(ii), Texas Instruments must keep records of the notification of the emergency situation, and the date, start time, and end time of generator operation for these purposes. [40 CFR §63.6655(e) and (f)]

**(7) Requirements for Demand Response Availability Over 15 Hours Per Year (and greater than 100 brake hp)**

If Texas Instruments operates or is contractually obligated to be available for more than 15 hours per calendar year in a demand response program, during a period of deviation from standard voltage or frequency, or supplying power during a non-emergency situation as part of a financial arrangement with another entity as specified in §63.6640(f)(4)(ii), the facility shall submit an annual report containing the information in §63.6650(h)(1)(i) through (ix). The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year. The annual report must be submitted electronically using the Compliance and Emissions Data Reporting

Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if the reporting form is not available in CEDRI at the time that the report is due, the written report must be submitted to the following address:

Director, Office of Ecosystem Protection  
 U.S. Environmental Protection Agency  
 5 Post Office Square, Suite 100  
 Boston, MA 02109-3912

[40 CFR §63.6650(h)]

C. Annual Emissions

Facility emissions from Texas Instruments are based on the boilers' fuel limits, 500 hours/year operation for each generator, and 25 tons/year of VOC from process sources. Texas Instruments shall be restricted to the following licensed annual emissions, based on a 12 month rolling total:

**Total Licensed Annual Emissions for the Facility (tons/yr)**  
 (used to calculate the annual license fee)

	<b>PM</b>	<b>PM<sub>10</sub></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOC</b>
Boilers and VOC unit*	4.7	4.7	23.8	9.5	9.8	1.4
Generator 1	0.2	0.2	0.002	4.4	1.2	0.1
Generator 2	0.4	0.4	0.01	11.7	3.1	0.3
Generator 3	0.6	0.6	0.01	15.0	4.0	0.4
Generator 4	0.2	0.2	0.002	5.2	1.4	0.2
Generator 5	0.2	0.2	0.002	4.3	1.1	0.1
VOC process emissions						25
<b>Total TPY</b>	<b>6.3</b>	<b>6.3</b>	<b>23.8</b>	<b>50.1</b>	<b>20.6</b>	<b>27.5</b>

\* Note: Boiler and VOC unit emissions were calculated using the worst-case from firing either 674,800 gallons/year of #2 fuel or 126,660,000 scf/year of natural gas (all but CO was based on oil firing; CO was based on natural gas firing).

<b>Pollutant</b>	<b>Tons/year</b>
Single HAP	9.9
Total HAP	24.9

<b>Pollutant</b>	<b>Short Tons/Year</b>
CO <sub>2</sub> e from fuel burning equipment	8,000
CO <sub>2</sub> e from the manufacturing process	91,999

**ORDER**

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-698-71-Y-M subject to the conditions found in Air Emission License A-698-71-U-R, in amendments A-698-71-W-M and A-698-71-X-M, and in the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

**SPECIFIC CONDITIONS**

**The following shall replace condition (18) in air emission license A-698-71-U-R:**

**(18) Emergency Generators 1-5**

- A. The emergency generators are each limited to 500 hours per year total operation, based on a 12-month rolling total. Compliance shall be demonstrated by a written log of all generator operating hours. [06-096 CMR 115]
- B. The fuel oil sulfur content for Emergency Generators 1-5 shall be limited to 0.0015% sulfur. Compliance shall be demonstrated by fuel records from the supplier documenting the type of fuel delivered and the sulfur content of the fuel. [06-096 CMR 115, BPT]
- C. Emissions from each of the emergency generators shall not exceed the following:

<u>Pollutant</u>	<u>lb/MMBtu</u>	<u>Origin and Authority</u>
PM	0.12	06-096 CMR 103(2)(B)(1)(a)

- D. Emissions from the emergency generators shall not exceed the following [06-096 CMR 115, BPT]:

Unit	PM (lb/hr)	PM <sub>10</sub> (lb/hr)	SO <sub>2</sub> (lb/hr)	NO <sub>x</sub> (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Emergency Generator 1 (5.5 MMBtu/hr)	0.66	0.66	0.01	17.60	4.68	0.50
Emergency Generator 2 (14.6 MMBtu/hr)	1.75	1.75	0.02	46.72	12.41	1.31
Emergency Generator 3 (18.8 MMBtu/hr)	2.26	2.26	0.03	60.16	15.98	1.69
Emergency Generator 4 (6.49 MMBtu/hr)	0.78	0.78	0.01	20.77	5.52	0.58
Emergency Generator 5 (5.37 MMBtu/hr)	0.64	0.64	0.01	17.18	4.56	0.48

E. Visible Emissions

Visible emissions from each of the diesel generators shall not exceed 20% opacity on a 6 minute block average, except for no more than two (2) six (6) minute block averages in a 3 hour period. [06-096 CMR 101]

F. Emergency Generators 1-5 shall meet the applicable requirements of 40 CFR Part 63, Subpart ZZZZ, including the following:

1. No later than May 3, 2013, Texas Instruments shall meet the following operational limitations for each of the compression ignition emergency generators (Emergency Generators 1-5):
  - a. Change the oil and filter annually,
  - b. Inspect the air cleaner annually and replace as necessary, and
  - c. Inspect the hoses and belts annually and replace as necessary.

A log shall be maintained documenting compliance with the operational limitations.

[40 CFR §63.6603(a) and Table 2(d); and 06-096 CMR 115]

2. Oil Analysis Program Option

Texas Instruments has the option of utilizing an oil analysis program which complies with the requirements of §63.6625(i) in order to extend the specified oil change requirement. If this option is used, Texas Instruments must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 CFR §63.6625(i)]

3. **Non-Resetable Hour Meter**

A non-resettable hour meter shall be installed and operated on each generator. [40 CFR §63.6625(f)]
4. **Maintenance, Testing, and Non-Emergency Operating Situations**
  - a. The generators shall each be limited to 100 hours/year for maintenance checks and readiness testing, emergency demand response, and periods of voltage or frequency deviation from standards. Up to 50 hours/year of the 100 hours/year may be used in non-emergency situations (this does not include peak shaving, non-emergency demand response, or to generate income for a facility by providing power to an electric grid or otherwise supply power as part of a financial arrangement with another entity unless the conditions in §63.6640(f)(4)(ii) are met). These limits are based on a calendar year. Compliance shall be demonstrated by a written log of all generator operating hours. [40 CFR §63.6640(f) and 06-096 CMR 115]
  - b. Texas Instruments shall keep records that include maintenance conducted on the generators and the hours of operation of each engine recorded through the non-resettable hour meter. Documentation shall include the hours spent for emergency operation, including what classified the operation as emergency and how many hours spent for non-emergency. If the generators are operated during a period of demand response or deviation from standard voltage or frequency, or supplying power during a non-emergency situation as part of a financial arrangement with another entity as specified in §63.6640(f)(4)(ii), the Texas Instruments must keep records of the notification of the emergency situation, and the date, start time, and end time of generator operation for these purposes. [40 CFR §63.6655(e) and (f)]
5. **Operation and Maintenance**

The generators shall be operated and maintained according to the manufacturer's emission-related written instructions or Texas Instruments shall develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR §63.6625(e)]
6. **Startup Idle and Startup Time Minimization**

During periods of startup the facility must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR §63.6625(h) & 40 CFR Part 63, Subpart ZZZZ Table 2d]

7. Requirements For Demand Response Availability Over 15 Hours Per Year  
(and greater than 100 brake hp)

If Texas Instruments operates or is contractually obligated to be available for more than 15 hours per calendar year in a demand response program, during a period of deviation from standard voltage or frequency, or supplying power during a non-emergency situation as part of a financial arrangement with another entity as specified in §63.6640(f)(4)(ii), the facility shall submit an annual report containing the information in §63.6650(h)(1)(i) through (ix). The first annual report must cover the calendar year 2015 and must be submitted no later than March 31, 2016. Subsequent annual reports for each calendar year must be submitted no later than March 31 of the following calendar year. The annual report must be submitted electronically using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) ([www.epa.gov/cdx](http://www.epa.gov/cdx)). However, if the reporting form is not available in CEDRI at the time that the report is due, the written report must be submitted to the following address:

Director, Office of Ecosystem Protection  
U.S. Environmental Protection Agency  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

[40 CFR §63.6650(h)]

DONE AND DATED IN AUGUSTA, MAINE THIS 9 DAY OF August, 2013.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:

*Marie Allen Robert Corne for*  
PATRICIA W. AHO, COMMISSIONER

**The term of this amendment shall be concurrent with the term of Air Emission License A-698-71-U-R.**

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: July 11, 2013

Date of application acceptance: July 12, 2013

Date filed with the Board of Environmental Protection:

This Order prepared by Kathleen E. Tarbuck, Bureau of Air Quality.

