



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS TX 75202-2733

Ms. Michelle Fiedler  
Senior Environmental Specialist  
New Mexico Gas Company  
7120 Wyoming Blvd., N.E. Suite 20  
Albuquerque, New Mexico 87109

NOV 21 2016

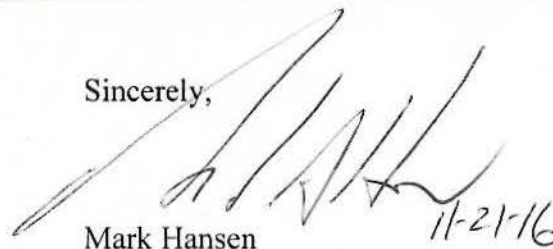
Dear Ms. Fiedler:

In accordance with the Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.), the U.S. Environmental Protection Agency has reviewed your application for a Synthetic Minor New Source Review (MNSR) Permit. The EPA proposed a draft permit for public comment regarding the above application on September 28, 2016. We did not receive any public comments during the comment period that ended on October 27, 2016.

After consideration of the pertinent Federal statutes and regulations and additional material relevant to the application contained in our Administrative Record, the EPA hereby issues the enclosed Synthetic MNSR Permit for the Redonda Compressor Station. The final permit, technical support document and other key documents relevant to the final permit are also available online at: <https://www.epa.gov/caa-permitting/caa-permitting-epas-south-central-region>.

In accordance with 40 CFR § 49.159(c), this Permit becomes effective immediately upon issuance. If you have any questions regarding this matter, please contact Mr. Jeff Robinson, Chief, Air Permits Section at (214) 665-6435.

Sincerely,



Mark Hansen  
Associate Director for  
Air, Multimedia Division

Enclosures:

**FEDERAL SYNTHETIC MINOR NEW SOURCE REVIEW PERMIT  
ISSUED PURSUANT TO THE REQUIREMENTS OF 40 CFR § 49.158**

PERMITTING AUTHORITY United States Environmental Protection Agency, Region 6

PERMITEE: New Mexico Gas Company  
P. O. Box 97500  
Albuquerque, New Mexico 87199-7500

PERMIT NUMBER: R6NSR-NM- 003  
FACILITY: Redonda Compressor Station  
SIC 4922, NACIS 486210

FACILITY LOCATION: Highway 6, Pueblo of Laguna Reservation,  
Valencia County, New Mexico  
Latitude 34° 53'32.74"N and Longitude 107°06'23.82"W

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part A (42 U.S.C. Section 7410(a)(2)(c)), and the Code of Federal Regulations (CFR) Title 49, Sections 49.151-161, the U.S. Environmental Protection Agency, Region 6 is issuing a Synthetic Minor New Source Permit for an existing operating source to the New Mexico Gas Company (NMGC). This permit places enforceable restrictions on the potential to emit of the source so that the provisions and requirements for major sources in 40 CFR § 52.21 and § 71.2 will not apply to the source.

This authorization relates to an existing source consisting of two natural gas-fired compressors, one gas-fired emergency generator and four storage tanks. NMGC's Redonda compressor station is authorized to operate as a synthetic minor source in accordance with the terms and conditions set forth in this permit. Failure to comply with any term or conditions set forth in this permit may result in enforcement action pursuant to Section 113 of the CAA. The permit does not relieve NMGC of the responsibility to comply with any other applicable provisions of the CAA or other federal and tribal requirements.

No comments were received during the public comment period and therefore in accordance with 40 CFR § 49.159(a)(3) the permit is effective immediately upon issuance.

  
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Mark Hansen  
Associate Director, Air Branch  
Multimedia Planning and Permitting Division

11-21-16  
Date

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**I. PROJECT DESCRIPTION**

The Redonda compressor station (Redonda) is located on the Pueblo of Laguna tribal land in New Mexico. New Mexico Gas Company (NMGC) compresses natural gas from pipeline producers by operating two gas-fired compressors only when the need for additional compression and flow is required to provide service to the natural gas retail market. In addition to the two compressors, Redonda also has an emergency generator and ancillary tanks. The facility serves 19 tribes in New Mexico. The compressors operate on a remote unmanned station.

NMGC is applying for a synthetic minor source permit under 40 CFR § 49.158 for the purposes of both the Title V (Part 71) and Prevention of Significant Deterioration (PSD) permitting programs to seek federally enforceable conditions limiting the facility’s potential to emit NOx and CO emissions with the use of MIRATECH catalytic controls on one of the compressor engines. The operations at Redonda also include some tanks that store used oil from the compressors, liquids removed from the natural gas and some odorizing compounds used in the delivery of natural gas.

**II. EQUIPMENT LIST**

Table 1 lists the equipment at the Redonda facility that is subject to 40 CFR § 49.158

**Table 1**

| Equipment Type  | Equipment Identification Number (EPN) | Construction Date/Serial Number(SN)         | Capacity                        | Control Equipment              |
|---|---------------------------------------|---|---------------------------------|--------------------------------|
| Natural gas fired Waukesha 7042 GL, 4SLB engine.  | Unit 1                                | SN: 335791; Installed 1991                  | 1478 BHP<br>10.3 MMBtu/hr       | None                           |
| Natural gas fired Waukesha, L7044 - GSI naturally aspirated, 4SRB engine utilizing MIRATECH catalytic control MCS-3618C | Unit 2                                | SN: C-13018/2<br>Installed 2001             | 1680 BHP<br>12.3 MMBtu/hr       | Catalytic control for NOx & CO |
| Baldor/GM certified emergency generator; 4SRB engine.   | Unit 3                                | SN: 3903035<br>Installed 2013               | 50.8BHP<br>0.4MMbtu/hr          | None                           |
| Pipeline Liquids tank   | TK4                                   | Vertical fixed roof tank                    | 2000 gallons                    | None                           |
| 143 bbl Ambitrol & Lube oil tank  | TK3                                   | 3 compartmentalized fixed roof tank.        | 6000 gallons;<br>3000/2000/1000 | None                           |
| Wastewater tank   | TK2                                   | Partially buried, steel double walled tank  | 2940 gallons                    | None                           |
| Used oil tank   | TK1                                   | Partially buried, steel double walled tank. | 2940 gallons                    | None                           |

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**III. REGULATORY APPLICABILITY**

1. The applicant is limited through this synthetic minor permit under 40 CFR § 49.158 for the use of a catalyst at all times during the operation of the Unit 2 compressor engine. The NO<sub>x</sub> and CO emissions shall be below 100 tons per year each on a 12-month rolling average for operation of both compressor engines (Units 1 & 2).
  2. If the compressor engines are reconstructed or replaced, a PSD analysis will need to be performed. 40 CFR 52.21(r)(4).
  3. The Baldor emergency generator (Unit 3) is subject to 40 CFR § 60.4230(a), (40 CFR § 60-Subpart JJJJ) regulation and operates only during emergencies to power the remote terminal units for instrumentation (flow, pressure and speed of the compressors) as well as for general lighting, phone equipment, and for maintenance and “readiness” tests.
  4. The source is not major source for HAP emissions (calculated HAP is < 6 tpy), and is therefore an area source for applicability of MACT rules.
  5. As an area source of HAP, the compressor engines (Units 1 & 2) are subject to emission standards, monitoring, testing, recordkeeping and reporting rules in 40 CFR § 63.6585 (40 CFR § 63 - Subpart ZZZZ). These specifications are in Section V of the permit. The engines meet the definition of “remote stationary source” in 40 CFR § 63.6675.
  6. The issuance of this permit does not provide relief for any federal applicable regulations that the facility may have been subject to including 40 CFR § 52, 40 CFR § 60, 40 CFR § 63 or 40 CFR § 71, prior to issuance of this permit.
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**IV. GENERAL CONDITIONS**

1. This permit and any required attachments shall be retained and made available for inspection upon request at the site.
2. The Permittee shall abide by all representations, statements of intent and agreements contained in the application submitted by the Permittee. The EPA shall be notified ten (10) days in advance of any significant deviation from the permit application as well as any plans, specifications or supporting data furnished.
3. The Permittee, shall comply with all conditions of this permit, including emission limitations that apply to the affected emissions units at the permitted source. Noncompliance with any permit term or condition is a violation of the permit and may constitute a violation of the Clean Air Act and is grounds for enforcement action and for a permit termination or revocation.
4. The permitted source must not cause or contribute to a National Ambient Air Quality Standard (NAAQS) violation or in an attainment area, must not cause or contribute to a Prevention of Significant Deterioration (PSD) increment violation as in 40 CFR § 49.155(a)(7).

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5. Issuance of this permit does not relieve the Permittee, the owner, and/or the operator of the responsibility to comply fully with all other applicable Federal and Tribal rules, regulations, and orders now or hereafter in effect.
6. It is not a defense, for the Permittee, in an enforcement action, to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
7. For proposed modifications, as defined at 40 CFR § 49.152(d), that would increase an emissions unit's allowable emissions of a regulated NSR pollutant above its existing permitted annual allowable emissions limit, the Permittee shall first obtain a permit modification pursuant to 40 CFR § 49.154 and 49.155 approving the emission increase. For a proposed modification that is not otherwise subject to review under major NSR or MNSR such proposed increase in the annual allowable emissions limit shall be approved through an administrative permit revision as provided at 40 CFR § 49.159(f)(1)(v).
8. At such time that a new or modified source at the permitted facility or modification of the permitted facility becomes a major stationary source or major modification solely by virtue of a relaxation in any legally and practically enforceable limitation which was established after August 7, 1980, on the capacity of the permitted facility otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of 40 CFR § 52.21 shall apply to the source or modification as though construction had not yet commenced on the source or modification.
9. *Revise, Reopen, Revoke and Reissue, or Terminate for Cause:* The permit may be revised, reopened, revoked and reissued, or terminated for cause pursuant to 40 CFR § 49.155(a)(7)(iv). The filing of a request by the Permittee for a permit revision, revocation and re-issuance or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. The EPA may reopen a permit for a cause on its own initiative, e.g., if the permit contains a material mistake or the facility fails to assure compliance with the applicable requirements.
10. *Severability clause:* The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force.
11. *Property Rights:* The permit does not convey any property rights of any sort or any exclusive privilege.
12. *Information Requests:* The Permittee shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. For any such information claimed to be confidential, the Permittee shall also submit a claim of confidentiality in accordance with Part 2, Subpart B of Title 40 CFR.
13. *Inspection and Entry:* The EPA or its authorized representatives may inspect the permitted facility during normal business hours for the purpose of ascertaining compliance with all

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conditions of this permit. Upon presentation of proper credentials, the Permittee shall allow the EPA or its authorized representative to:

- a. Enter upon the premises where a source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;
  - b. Have access to and copy, at reasonable times, any records that are required to be kept as in the conditions of the permit;
  - c. Inspect, during normal business hours or while the source is in operation, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;
  - d. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and
  - e. Record any inspection by use of written, electronic, magnetic and photographic media.
14. *Permit Effective Date:* This permit is effective immediately upon issuance unless comments resulted in a change in the draft permit, in which case the permit is effective 30 days after issuance. The Permittee may notify the EPA, in writing, that this permit or a term or condition of it is rejected. Such notice should be made within thirty days of receipt of the permit and should include the reason or reasons for rejection.
15. *Permit Transfers:* Permit transfers shall be made in accordance with 40 CFR § 49.159(f). The Air Program Associate Director shall be notified in writing at the address shown below if the company is sold or changes its name.

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U.S. Environmental Protection Agency  
Region 6 Air Permitting, Multimedia Planning and Permitting Division  
Tribal Air Permitting, 6 MM-AP  
1445 Ross Ave, Dallas TX 75202  
[R6AirPermits@epa.gov](mailto:R6AirPermits@epa.gov)

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**V. SPECIAL CONDITIONS**

1. The standards and emission limits in Table 2 are enforceable:

**Table 2**

| Equipment Description   | (EPN) <sup>1</sup> | Standard and Emission Limits  | <sup>3</sup> Emissions in tpy (for all EPN)  |
|---|--------------------|---|--|
| Natural gas fired Waukesha 7042 GL, 4SLB engine.  | Unit 1             | <ol style="list-style-type: none"> <li>1. Work practice standards for maintenance and operation of the engines.</li> <li>2. Only pipeline quality natural gas will be used in the compressors.</li> <li>3. Annual natural gas fuel rate not to exceed 100.6 MMSCF on a 12-month rolling average.</li> <li>4. Emission limit for NOx is 6.23 lb/hr and CO is 9.11 lb/hr</li> </ol>   | NO <sub>x</sub> = 27.31<br>SO <sub>2</sub> = 0.72<br>CO = 39.89<br>PM <sub>2.5</sub> = 0.45<br>VOC = 13.69<br>HAP = 5.47 |
| Natural gas fired Waukesha L7044 - GSI naturally aspirated, 4SRB engine utilizing MIRATECH catalytic control MCS-363618 | Unit 2             | <ol style="list-style-type: none"> <li>1. Work practice standards for maintenance and operation of the engines.</li> <li>2. Catalyst will be used in the engine</li> <li>3. Only pipeline quality natural gas will be used in the compressors</li> <li>4. Annual natural gas fuel rate not to exceed 122.0 MMSCF on a 12-month rolling average.</li> <li>5. Emission limit for NOx is 7.09 lb/hr and CO is 10.73 lb/hr</li> </ol> | NO <sub>x</sub> = 32.09<br>SO <sub>2</sub> = 0.87<br>CO = 47.67<br>PM <sub>2.5</sub> = 1.59<br>VOC = 7.70<br>HAP = 1.52  |
| Baldor/GM emergency generator/4SRB engine   | Unit 3             | <ol style="list-style-type: none"> <li>1. Use of pipeline natural gas for 500 hours/year.</li> <li>2. Annual fuel flow rate of 3.77 MMSCF on a 12-month rolling average.</li> <li>3. No visible emissions.</li> <li>4. Work practice standard for maintenance of the engine.</li> </ol>   | NO <sub>x</sub> = 0.14<br>SO <sub>2</sub> = <0.01<br>CO = 0.59<br>PM <sub>2.5</sub> < 0.001<br>VOC < 0.001               |
| Used oil tank   | TK-1               | Maintain integrity of tank by annual inspections and ensure no leaks while filling or removing liquids from the tank  | VOC < 0.001  |
| Wastewater tank <sup>2</sup>  | TK-2               | Maintain integrity of tank by annual inspections of the exterior and all vents to ensure no leaks and no visible emissions.   | VOC < 0.001  |
| Lube oil and Ambritol tank <sup>2</sup>   | TK-3               | Maintain integrity of tank by annual inspections of the exterior and all vents to ensure no leaks and no visible emissions.   | VOC < 0.001  |
| Pipeline Liquids Tank <sup>2</sup>  | TK-4               | Maintain integrity of tank by annual inspections of the exterior and all vents to ensure no leaks and no visible emissions.   | VOC ≤ 0.51   |
| <b>Total</b>  |                    | <b>Practically enforceable limits based on a 12-month rolling average.</b>  | <b>NO<sub>x</sub> = 59.54<br/>CO = 88.15</b>   |

1. Emission Point Number
2. These are insignificant emission units that do not require monitoring for individual tank operations.
3. Emission in tpy are provided for informational purposes unless specified as practically enforceable limits.

2. The exhaust temperature of Unit 2 engine shall be maintained at 750° F and no more than 1,250°F at the inlet to the catalytic control system (MIRATECH) at all times the engine operates except during periods of startup which shall not exceed 30 minutes for each startup event.

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3. The Permittee shall install, operate, and maintain temperature-sensing devices (i.e. thermocouple or resistance temperature detectors) before the MIRATECH on Unit 2 to continuously monitor the exhaust temperature at the inlet of the catalyst bed. Each temperature-sensing device shall be calibrated and operated by the Permittee according to manufacturer specifications or equivalent specifications developed by the Permittee or vendor.
4. The Permittee shall follow, for each engine and any respective catalytic control system, the manufacturer's recommended maintenance schedule and procedures, or equivalent maintenance schedule and procedures developed by the Permittee or vendor, to ensure optimum performance of each engine and its respective catalytic control system.
5. Unit 3 shall operate less than 100 hours per year on a 12-month rolling average for readiness tests and maintenance, and must meet the 40 CFR § 60.4243(d)(2) requirements. Readiness testing of the generator should only be conducted between the afternoon hours of 1:00 pm to 3:00pm to ensure that the NAAQS for NO<sub>2</sub> and ozone is not in jeopardy with potential other emission sources.
6. The Permittee shall follow the respective control system for all engines that include the temperature range, air/fuel ratio, other specific operating range requirements, and procedures to ensure good air pollution control practices for minimizing emissions, not to exceed the emission limits in Table 2.
7. Only pipeline natural gas fuel can be used in all the engines (Units 1-3).
8. Unit 1, a 4SLB engine shall comply with 40 CFR § 63.6603(a) Table 2d.8; § 63.6605(a)-(b); § 63.6625 (e), (h), (j); and § 63.6640(a) and (b).
12. Unit 2, a 4SRB engine shall comply with 40 CFR § 63.6603(a) Table 2d.11; § 63.6605(a)-(b); § 63.6625 (e), (h), (j); and § 63.6640(a) and (b).

## VI. COMPLIANCE TESTS

1. An initial performance test for Unit 1 and Unit 2 shall be conducted within 90 days of receipt of permit.
2. The test results of the initial and periodic compliance tests shall be submitted to EPA within 60 days of completion of the tests.
3. The Permittee shall send a test plan to the EPA Region 6 Compliance Assurance and Enforcement Division at the address noted below at least 30 days in advance of all planned tests. The test plan should consist of:
  - a. Purpose of the test; (initial, annual, catalyst replacement etc.)
  - b. The proposed date, time and consultant that will be performing the test.
  - c. Engines and catalytic control systems to be tested;
  - d. Expected engine operating rate(s) during the test;



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- e. Sampling and analysis procedures (sampling locations, test methods, laboratory identification);
- f. Quality assurance plan (calibration procedures and frequency, sample recovery and field documentation, chain of custody procedures); and
- g. Data processing and reporting (description of data handling and quality control procedures, report content)

4. Initial Performance Testing Requirements:

- a. Tests shall be conducted on each engine for measuring CO, and NO<sub>x</sub> and to demonstrate compliance with each emission limitation in this permit.
- b. Tests will be conducted by EPA Reference Method 19 for NO<sub>x</sub> and CO, (40 CFR Part 60, Appendix A), and with the requirements of Subpart A, General Provisions, 60.8(f).
- c. The Permittee may submit to the EPA a written request for approval of an alternate test method, but shall only use that alternate test method after obtaining approval from the EPA. Alternative test methods may be requested by NMGC within 10 days of the tests.
- d. Tests will be conducted at 50%, 75% and 95% or greater of full load. The test will also include the exhaust volume flow rate in dry standard cubic feet (dscf) and the NO<sub>x</sub>, and CO emission rate in pounds per hour (lbs/hr)
- e. Each test shall consist of at least three 1-hour or longer valid test runs. Emission results shall be reported as the arithmetic average of all valid test runs and shall be in terms of the emission limits in this permit
- f. The temperature of the inlet to the catalyst bed for Unit 2 will also be demonstrated at the specific rates noted in VI.3.d. to determine compliance with the CO and NO<sub>x</sub> emission limits in Table 2.
- g. The pressure drop across the catalyst bed and the inlet temperature to the catalyst bed shall be measured and recorded at least once per test during all performance tests
- h. The accuracy of the portable NO<sub>x</sub> and CO analyzers that will be used later for the annual testing of the catalyst shall be compared to the EPA tests methods used for NO<sub>x</sub> and CO as indicated in IV.3.b. of this section.
- i. During each test run, data shall be collected on all parameters necessary to document how emissions were measured and calculated (such as test run length, minimum sample volume, volumetric flow rate, moisture and oxygen corrections, etc.)

5. Periodic Compliance Tests

- a. The test plan (as above) with appropriate test methods will be submitted to EPA Region 6 Compliance Assurance and Enforcement Division at the address noted below, 30 days in advance of the test to include the proposed date, time and consultant name that will be performing the test.
- b. Subsequent performance tests for CO and NO<sub>x</sub> emissions shall be conducted within 12 months of most recent performance test for Unit 2 using portable analyzers that have been approved by EPA.
- c. Annual performance tests for Unit 2 shall be conducted using the properly calibrated portable NO<sub>x</sub> and CO analyzers at a minimum of 90% of the maximum achievable load available on the test day, the exhaust volume flow rate in dscf and NO<sub>x</sub> and CO emission

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rates in lbs/hr, noting the temperature of the engine at the inlet of the MIRATECH catalytic controls.

- d. Performance tests for Unit 1 and Unit 2 shall be conducted whenever an overhaul of the engines is completed within 90 calendar days of operation.
  - e. Performance tests shall be conducted within 90 calendar days of replacement of the catalyst on Unit 2.
  - f. All performance tests shall be performed at a maximum operating rate (90% to 110% of the maximum achievable load available on the day of the test). The Permittee may submit to the EPA a written request for approval of an alternate load level for testing, but shall only test at that alternate load level after obtaining written approval from the EPA.
6. If the results of a complete and valid performance test of the emissions from any permitted engine demonstrate noncompliance with the emission limits in this permit, the engine shall be shut down as soon as safely possible, and appropriate corrective action shall be taken (e.g., repairs, catalyst cleaning, catalyst replacement). The Permittee shall notify the EPA in writing within 24 hours of this shut down. The engine must be retested within 7 days of being restarted and the emissions must meet the applicable limits in this permit. If the retest shows that the emissions continue to exceed the limits in this permit, the engine shall again be shut down as soon as safely possible, and the engine may not operate, except for purposes of startup and testing, until the Permittee demonstrates through testing that the emissions do not exceed the emission limits in this permit.
7. Periodic compliance tests for Unit 1 will be conducted at the request of EPA or its authorized agents, but at a minimum periodic compliance tests shall be conducted at least every 5 years unless such testing has occurred pursuant to condition VI.5.d. above resetting the 5-year periodic performance testing timeframe.
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## **VII. MONITORING REQUIREMENTS**

1. Monitor the air to fuel ratio that controls the catalyst efficiency for engine Unit 2 within 30 minutes of startup and at shutdown.
2. Monitor the fuel combusted to the compressor engines including the Baldor emergency engine (Unit 3) whenever used, and note the duration on the engines' operations that include startup and shutdown.
3. Unit 1 and Unit 2 shall meet the monitoring requirements in 40 CFR § 63.6625(j); § 63.6640(a), Table 6.9. Maintenance records of these units must be kept.
4. Monitor and document the duration in minutes, start and ending times, and date when readiness tests are done for the Baldor emergency engine (Unit 3) as in Section V.5. of this permit.

## **VIII. RECORDKEEPING REQUIREMENTS**

1. Maintain records of the pipeline natural gas flow rate to the engines on a monthly basis.

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2. Record the hours of operation for each compressor engine and generator engine on a monthly basis.
3. Records shall be kept of all calibration and maintenance conducted for each engine, catalytic control system, and temperature-sensing device. Unit 1 and Unit 2 shall comply with 40 CFR § 63.6603(f); § 63.6625(j); § 63.6655(a), (d), and (e); and § 6660(a)-(e).
4. Records shall be kept of all catalyst replacements, engine rebuilds and engine replacements. This will include the date and time of the catalyst replacement or engine rebuilds and engine replacements; the company performing the engine rebuilds/engine replacements and the operating conditions immediately prior to shutdown of the unit for catalyst replacement and/or engine rebuild/replacements. This needs to be reported as in Section IX.2.
5. Record all emergency events that utilize Unit 3 for power generation including duration for each event by recording the date with the beginning and ending time of the event.
6. Maintain records for Unit 3 as required in 40 CFR § 60.4245(a)(1-3)
7. Emissions from the engines shall be calculated using the manufacturers' specific factors for the compressor engines and the emergency generator as in the attached Appendix.
8. Units 1-3 emissions shall be calculated in tons (except for the emergency events of Unit 3), and recorded at the end of each month beginning with the first calendar month that permitted operations commence. Prior to 12 full months of data, the Permittee shall within seven (7) calendar days of the end of each month, add the emissions for that month to the calculated emissions for all previous months since production commenced and record the total. Thereafter, the Permittee shall, within 7 calendar days of the end of each month, add the emissions for that month to the calculated emissions for the preceding 11 months and record a new 12-month rolling total emissions in tons per year from all controlled and uncontrolled emission sources at the facility shall be included in the monthly calculations including, but not limited to the compressor and generator engines, and tanks.
9. All records shall be retained for a minimum of 5 years from the time such record was created and shall be available on site.

## IX. REPORTING REQUIREMENTS

Reports should be sent electronically to EPA Compliance Assurance and Enforcement Division at: [R6TribalNSRCompliance@epa.gov](mailto:R6TribalNSRCompliance@epa.gov), and a copy to [R6AirPermits@epa.gov](mailto:R6AirPermits@epa.gov)

1. The Permittee shall promptly submit to EPA a written report of any deviations of emission or operational limits and a description of any corrective actions or preventative measures taken. A "prompt" deviation report is one that is emailed to [R6TribalNSRCompliance@epa.gov](mailto:R6TribalNSRCompliance@epa.gov)
  - a. Thirty (30) days from the discovery of a deviation that would cause the Permittee to exceed the facility-wide emission limits if left un-corrected for more than five (5) days after discovering the deviation; and

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- b. Twelve (12) months from the discovery of a deviation of recordkeeping or other permit conditions that do not affect the permittee's ability to meet the facility-wide emission limits.
  2. Unit 1 and Unit 2 shall comply with the reporting requirements in 40 CFR § 63.6640(b). Any major overhaul of the compressor engines and/or catalyst replacement shall be promptly reported to EPA.
  3. An annual report documenting the twelve (12) month annual emissions for each previous calendar year no later than April 1<sup>st</sup> is to be submitted to EPA to the electronic addresses as indicated above. For the first calendar year the Permittee shall submit the cumulative facility wide limits. The report shall also document that no operational restriction (as noted in Table 2) has been exceeded.
  4. Annual emissions for Units 1-3 are to be calculated using the equation:  
$$E = EF * Hr * K$$
 Where:  
E = pollutant emissions in tons/year  
EF = emission factor from the manufacturer's data specifications (lbs/hr)  
Hr = No of hours of operation/year  
K = 1 ton/2000 lbs for conversion from pounds per year to tons per year
  5. The Permittee shall submit records of emergency events utilizing the emergency generator. These events should include the date, time period, and emissions for each event, and be submitted with the annual report.
  6. The Permittee shall submit any record or report required by this permit upon EPA request.
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## Table of Acronyms

|                 |   |
|-----------------|---|
| 4SLB            | 4 Stroke Lean Burn                      |
| 4SRB            | 4 Stroke Rich Burn                      |
| bhp             | Brake Horse Power                       |
| Btu/hr          | British Thermal Units per Hour          |
| CFR             | Code of Federal Regulations             |
| CH <sub>4</sub> | Methane                                 |
| CO              | Carbon Monoxide                         |
| dscf            | Dry Standard Cubic Foot                 |
| FIP             | Federal Implementation Plan             |
| FR              | Federal Register                        |
| GHG             | Greenhouse Gas                          |
| HHV             | High Heating Value                      |
| HAP             | Hazardous Air Pollutants                |
| hr              | Hour                                    |
| kW              | Kilowatt                                |
| lb              | Pound(s)                                |
| lb/yr           | Pounds Per Year                         |
| MMBtu/hr        | Million British Thermal Units per Hour  |
| NSPS            | New Source Performance Standards        |
| NO <sub>x</sub> | Nitrogen Oxides                         |
| PSD             | Prevention of Significant Deterioration |
| PTE             | Potential to Emit                       |
| SCF             | Standard Cubic Feet                     |
| tpy             | Tons Per Year                           |
| VOC             | Volatile Organic Compounds              |
| %               | Percent                                 |

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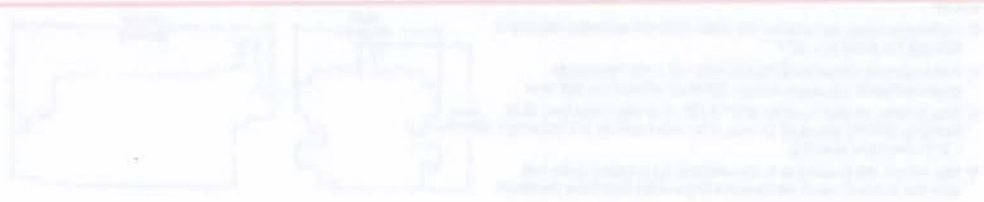
R6NSR-NM-003

APPENDIX

MANUFACTURER'S ENGINE SPECIFICATIONS AND EMISSION FACTORS

*(Faint, illegible text block containing manufacturer specifications and emission factors)*

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*(Faint, illegible text block containing manufacturer specifications and emission factors)*

L7042 Unit 1

POWER RATINGS: L7042GL VHP SERIES GAS ENGINES

| Model                         | I.C. Water Inlet Temp.<br>°F (°C) (Tcr) | C.R.   | Brake Horsepower (kWb Output) |            |            |             |             |
|-------------------------------|---|--------|-------------------------------|------------|------------|-------------|-------------|
|                               |   |        | 800 rpm                       | 900 rpm    | 1000 rpm   | 1100 rpm    | 1200 rpm    |
| High Speed Turbo <sup>1</sup> | 85° (29°)                               | 10.5:1 | 928 (692)                     | 1160 (865) | 1288 (961) | 1418 (1057) | 1547 (1154) |
| High Speed Turbo <sup>2</sup> | 130° (54°)                              | 10.5:1 | 866 (661)                     | 1108 (826) | 1232 (919) | 1365 (1010) | 1478 (1102) |
| Low Speed Turbo <sup>3</sup>  | 85° (29°)                               | 10.5:1 | 1031 (769)                    | 1160 (865) | 1289 (961) | ---         | ---         |
| Low Speed Turbo <sup>4</sup>  | 130° (54°)                              | 10.5:1 | 965 (735)                     | 1108 (826) | 1232 (919) | ---         | ---         |

<sup>1</sup>High speed turbocharger match - 1001-1200 rpm

<sup>2</sup>Low speed turbocharger match - 700-1000 rpm

**Rating Standard:** All models: Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and auxiliary water temperature Tcr (clause 10.1) as specified above limited to ± 10° F (± 5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

**ISO Standard Power/Continuous Power Rating:** The highest load and speed which can be applied 24 hours a day, seven days a week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or maximum load indicated by the intermittent rating, whichever is lower, for two hours in each 24 hour period.

All natural gas engine ratings are based on a fuel of 900 Btu/h<sup>3</sup> (35.3 MJ/m<sup>3</sup>) SLHV value, with a 91 Waukesha Knock Index<sup>4</sup>

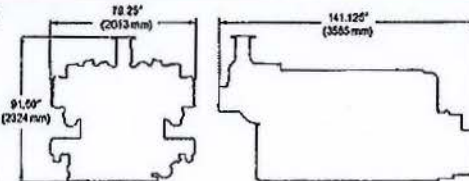
For conditions or fuels other than standard, the Waukesha Engine Sales Engineering Department.

PERFORMANCE: L7042GL VHP SERIES GAS ENGINES

|                               | English             |      |           |      |      | Metric                    |       |           |       |      |
|-------------------------------|---------------------|------|-----------|------|------|---------------------------|-------|-----------|-------|------|
|                               | 130° F ICW          |      | 85° F ICW |      |      | 54° C ICW                 |       | 29° C ICW |       |      |
| Low NO <sub>x</sub> Settings  | RPM                 | 1200 | 1000      | 1200 | 1000 | RPM                       | 1200  | 1000      | 1200  | 1000 |
|                               | Power (Bhp)         | 1478 | 1232      | 1547 | 1289 | Power (kWb)               | 1103  | 919       | 1154  | 962  |
|                               | BSFC (Btu/bhp-hr)   | 7155 | 6615      | 7160 | 6640 | BSFC (kJ/kW-hr)           | 10124 | 9543      | 10160 | 9678 |
|                               | NOx (grams/bhp-hr)  | 0.90 | 0.90      | 0.70 | 0.70 | NOx (g/nm <sup>3</sup> )  | 0.37  | 0.37      | 0.29  | 0.29 |
|                               | CO (grams/bhp-hr)   | 2.75 | 2.65      | 2.65 | 2.55 | CO (g/nm <sup>3</sup> )   | 1.14  | 1.10      | 1.10  | 1.05 |
| Low Fuel Consumption Settings | NMHC (grams/bhp-hr) | 1.00 | 1.00      | 1.10 | 1.10 | NMHC (g/nm <sup>3</sup> ) | 0.41  | 0.41      | 0.45  | 0.45 |
|                               | BSFC (Btu/bhp-hr)   | 6910 | 6615      | 6935 | 6640 | BSFC (kJ/kW-hr)           | 9778  | 9360      | 9813  | 9396 |
|                               | NOx (grams/bhp-hr)  | 1.50 | 1.60      | 1.30 | 1.40 | NOx (g/nm <sup>3</sup> )  | 0.62  | 0.65      | 0.54  | 0.58 |
|                               | CO (grams/bhp-hr)   | 3.00 | 2.75      | 2.90 | 2.55 | CO (g/nm <sup>3</sup> )   | 1.24  | 1.14      | 1.20  | 1.10 |
|                               | NMHC (grams/bhp-hr) | 0.70 | 1.00      | 0.80 | 1.10 | NMHC (g/nm <sup>3</sup> ) | 0.29  | 0.41      | 0.33  | 0.45 |

NOTES:

- Performance ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and Tcr limited to ± 10° F
- Fuel consumptions based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/h<sup>3</sup> saturated low heat value.
- Data based on standard conditions of 77° F (25° C) ambient temperature, 29.53 inches Hg (100kPa) barometric pressure, 30% relative humidity (0.3 inches Hg / 1 kPa water vapor pressure).
- Data will vary due to variations in site conditions. For conditions and/or fuels other than standard, consult the Waukesha Engine Sales Engineering Department.



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Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

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L7042 Unit 1

**ENVIRONMENTAL 9**

**AT-GL EMISSION LEVELS †**

| MODEL  | CARBURETOR SETTING | GRAMS/BHP-HR |      |          |     | % OBSERVED DRY |                | MASS AFR (2) | VOLUME AFR (2) | EXCESS AIR RATIO |
|--------|--------------------|--------------|------|----------|-----|----------------|----------------|--------------|----------------|------------------|
|        |                    | NOx (1)      | CO   | NMHC (4) | THC | CO             | O <sub>2</sub> |              |                |                  |
| AT25GL | Standard           | 1.0          | 2.25 | 1.0      | 8.0 | 0.06           | 9.8            | 28.0:1       | 16.8:1         | 1.74             |
| AT27GL | Standard           | 1.5          | 1.7  | 0.5      | 5.0 | 0.06           | 9.8            | 28.0:1       | 16.8:1         | 1.74             |
|        | Ultra Lean         | 1.25         | 1.5  | 0.4      | 3.5 | 0.05           | 11.2           | 32.0:1       | 19.2:1         | 2.00             |

† The AT-GL emission levels are based on 900 – 1000 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

**VHP EMISSION LEVELS**

| MODEL                | CARBURETOR SETTING                            | GRAMS/BHP-HR |      |          |     | % OBSERVED DRY |                | MASS AFR (2) | VOLUME AFR (2) | EXCESS AIR RATIO |
|----------------------|---|--------------|------|----------|-----|----------------|----------------|--------------|----------------|------------------|
|                      |   | NOx (1)      | CO   | NMHC (4) | THC | CO             | O <sub>2</sub> |              |                |                  |
| G, GSI               | Lowest Manifold (Best Power)                  | 8.5          | 32.0 | 0.35     | 2.3 | 1.15           | 0.30           | 15.5:1       | 9.3:1          | 0.97             |
|                      | Equal NOx & CO                                | 12.0         | 12.0 | 0.35     | 2.3 | 0.45           | 0.30           | 15.9:1       | 9.6:1          | 0.99             |
|                      | Catalytic Conv. Input (3-way <sup>(3)</sup> ) | 13.0         | 9.0  | 0.30     | 2.0 | 0.38           | 0.30           | 15.95:1      | 9.6:1          | 0.99             |
|                      | Standard (Best Economy)                       | 22.0         | 1.5  | 0.25     | 1.5 | 0.02           | 1.35           | 17.0:1       | 10.2:1         | 1.06             |
| F3524GSI, L7044GSI   | Equal NOx & CO                                | 14.0         | 14.0 | 0.25     | 1.1 | 0.45           | 0.30           | 15.85:1      | 9.5:1          | 0.99             |
|                      | Catalytic Conv. Input (3-way <sup>(3)</sup> ) | 15.0         | 13.0 | 0.20     | 1.0 | 0.38           | 0.30           | 15.95:1      | 9.6:1          | 0.99             |
|                      | Standard (Best Economy)                       | 23.0         | 2.0  | 0.20     | 0.8 | 0.02           | 1.35           | 17.0:1       | 10.2:1         | 1.06             |
| L5794GSI             | Equal NOx & CO                                | 13.5         | 13.5 | 0.45     | 3.0 | 0.45           | 0.30           | 15.85:1      | 9.5:1          | 0.99             |
|                      | Catalytic Conv. Input (3-way <sup>(3)</sup> ) | 14.5         | 11.0 | 0.45     | 2.9 | 0.38           | 0.30           | 15.95:1      | 9.6:1          | 0.99             |
|                      | Standard (Best Economy)                       | 22.0         | 3.0  | 0.35     | 2.4 | 0.02           | 1.35           | 17.0:1       | 10.2:1         | 1.06             |
| GL                   | Standard                                      | 1.5          | 2.65 | 1.0      | 5.5 | 0.06           | 9.8            | 28.0:1       | 16.8:1         | 1.74             |
| L5774LT <sup>‡</sup> | Standard                                      | 2.6          | 2.0  | 0.60     | 4.0 | 0.04           | 8.0            | 24.7:1       | 14.8:1         | 1.54             |
| L5794LT <sup>‡</sup> | Standard                                      | 2.8          | 2.0  | 0.60     | 4.0 | 0.04           | 7.8            | 24.5:1       | 14.7:1         | 1.52             |

‡ L5774LT and L5794LT emission levels are based on 1000 – 1200 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

NOTE: The above tables indicate emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V(0; 101.325)]) SLHV, Waukesha Knock Index™ of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI™ with an absolute humidity of 42 grains/lb. Refer to engine specific WKI™ Power & Timing curves for standard timing. Unless otherwise noted these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating. **Contact your local Waukesha representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.**

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|                                       |            |           |
|---------------------------------------|------------|-----------|
| GAS ENGINE<br>EXHAUST EMISSION LEVELS | EN: 125515 | Ref.<br>S |
|                                       | DATE: 4/01 | 8483-4    |



L 7042 Unit 1

**ENVIRONMENTAL 9**

**FORMALDEHYDE EMISSION LEVELS**

The following table provides formaldehyde (CH<sub>2</sub>O) levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/R<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V(0; 101.325)]) SLHV, Waukesha Knock Index™ of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Values are based on standard engine timing at 91 WKI™ with an absolute humidity of 42 grains/lb. Refer to engine specific WKI™ Power & Timing curves for standard timing. Unless otherwise noted, these emission levels can be achieved across the continuous duty speed range at the load levels tabulated. Contact your local Waukesha representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.

| MODEL              | CARB. SETTING | CH <sub>2</sub> O GRAMS/ BHP-HR |      | % OBSERVED DRY |                | MASS AFR <sup>2</sup> | VOLUME AFR <sup>2</sup> | EXCESS AIR RATIO |
|--------------------|---------------|---------------------------------|------|----------------|----------------|-----------------------|-------------------------|------------------|
|                    |               | PERCENT LOAD                    |      | CO             | O <sub>2</sub> |                       |                         |                  |
|                    |               | 100%                            | 75%  |                |                |                       |                         |                  |
| AT25GL             | Lean Burn     | 0.18                            | 0.20 | 0.06           | 9.8            | 28.0:1                | 16.8:1                  | 1.74             |
| AT27GL             | Lean Burn     | 0.18                            | 0.20 | 0.06           | 9.8            | 28.0:1                | 16.8:1                  | 1.74             |
|                    | Ultra Lean    | 0.18                            | 0.20 | 0.05           | 11.2           | 32.0:1                | 19.2:1                  | 2.00             |
| VHP G, GSI         | Rich Burn     | 0.05                            | 0.05 | 0.02 - 1.15    | 0.30 - 1.35    | 15.5:1 - 17.0:1       | 9.3:1 - 10.2:1          | 0.97 - 1.06      |
| VHP Series 4 GSI   | Rich Burn     | 0.05                            | 0.05 | 0.02 - 0.45    | 0.30 - 1.35    | 15.85:1 - 17.0:1      | 9.5:1 - 10.2:1          | 0.99 - 1.06      |
| L6774LT<br>L6784LT | Lean Burn     | 0.22                            | 0.25 | 0.04           | 7.8 - 8.0      | 24.5:1 - 24.7:1       | 14.7:1 - 14.8:1         | 1.52 - 1.54      |
| VHP GL             | Lean Burn     | 0.29                            | 0.34 | 0.06           | 9.8            | 28.0:1                | 16.8:1                  | 1.74             |
| VGF G, GSID        | Rich Burn     | 0.05                            | 0.05 | 0.20 - 1.1     | 0.18 - 2.4     | 15.5:1 - 18.0:1       | 9.3:1 - 10.8:1          | 0.97 - 1.12      |
| VGF GL, GLD, GLD/2 | Lean Burn     | 0.19                            | 0.22 | 0.03 - 0.04    | 7.8 - 9.0      | 21.5:1 - 25.4:1       | 13.9:1 - 15.2:1         | 1.53 - 1.65      |
| V6G G, GSI, GSID   | Rich Burn     | 0.05                            | 0.05 | 0.02 - 1.15    | 0.29 - 2.10    | 15.5:1 - 17.7:1       | 9.3:1 - 10.6:1          | 0.97 - 1.10      |
| F1197G             | Rich Burn     | 0.05                            | 0.05 | 0.04 - 1.35    | 0.30 - 1.35    | 15.5:1 - 17.0:1       | 9.3:1 - 10.2:1          | 0.97 - 1.06      |
| F817G              | Rich Burn     | 0.05                            | 0.05 | 0.04 - 1.30    | 0.30 - 1.35    | 15.5:1 - 17.0:1       | 9.3:1 - 10.2:1          | 0.97 - 1.06      |



|                                       |            |           |
|---------------------------------------|------------|-----------|
| GAS ENGINE<br>EXHAUST EMISSION LEVELS | EN: 125515 | Ref.<br>S |
|                                       | DATE: 4/01 | 8483-4    |

**L7044 GSI- Unit 2**

**GE Energy  
Gas Engines**

**Environmental**

**Gas Engine Exhaust Emission Levels**

Waukesha's approach to exhaust emission levels is to offer various stages of emission control technology. This approach allows the customer to select the exhaust emission level required for a particular installation.

The following tables indicate emission levels that are valid for new engines for the duration of the standard warranty period and are obtainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V(0; 101.325)]) SLHV, Waukesha Knock Index\* of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI\* with an absolute humidity of 42 grains/lb. Refer to engine specific WKI Power & Timing curves for standard timing. Unless otherwise noted, these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating. Contact the local Waukesha\* gas engine representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.

The tabulated emission levels for GI models are achieved at the standard engine settings. Trade off adjustments can be made to reduce emissions or fuel consumption, but not both. Contact the local Waukesha gas engine representative or Waukesha's Sales Engineering Department for more information.

As an aid in evaluating emission requirements, tables of approximate unit conversion factors for exhaust emission levels are included.

Both G and GSI engines that are manually adjusted have the potential to achieve the same emission values as engines equipped with an air/fuel ratio control device. The exhaust emissions, however, must be monitored and the engine adjusted to compensate for changes in ambient conditions and the heating value of the fuel gas. Particularly with catalytic exhaust after treatment, a Waukesha CEC AFM (Custom Engine Control\* Air/Fuel Module) is recommended to achieve optimum emissions control.

Waukesha emission control systems are designed for long life and consistent engine emission levels as listed in the following tables. It must be recognized, however, that engine condition and the quality of engine maintenance have a direct bearing on emission control. A control system cannot compensate for engine or maintenance deficiencies.

Some acceptable instruments for site engine adjustment of emissions are portable analyzers with two percent (2%) accuracy, for example:

- Horiba Mexa-201GE CO NDIR Analyzer with 0.5% and 2% ranges
- Teledyne Model 320A Oxygen Analyzer
- ECOM Model AC+
- Testo 335 Combustion Analyzer with overall auto-dilution\*\*.

\*\* Contact local Waukesha Distributor for specific part and ordering information. Reference Waukesha Form M398D, latest revision.

NOTE: Provision to lower the exhaust sample dew point to 40° F or less is required.



|  |                          |                     |
|--|--------------------------|---------------------|
| Gas Engine Exhaust And Emission Levels | EN: 152888<br>DATE: 3/11 | Ref.<br>S<br>8483-6 |
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**L7044-GSI Unit 2**

GE Energy  
Gas Engines

Environmental

**APG\* Series Emission Levels**

| MODEL               | NO <sub>x</sub> SETTING       | ENGINE SPEED (RPM) | GRAMS/BHP-HR                   |      |                     |      | % OBSERVED DRY              | EXCESS AIR RATIO |
|---------------------|-------------------------------|--------------------|--------------------------------|------|---------------------|------|-----------------------------|------------------|
|                     |                               |                    | NO <sub>x</sub> <sup>(1)</sup> | CO   | NMHC <sup>(2)</sup> | THC  | O <sub>2</sub> <sup>*</sup> |                  |
| 16V150LTD / APG1000 | T.A. Luft NO <sub>x</sub>     | 1500               | 1.0                            | 1.4  | 0.2                 | 2.4  | 9.6                         | 1.7              |
|                     | 1/2 T.A. Luft NO <sub>x</sub> |                    | 0.5                            | 1.6  | 0.2                 | 2.4  | 9.2                         | 1.7              |
|                     | 1.0 gm NO <sub>x</sub>        | 1800               | 1.0                            | 1.5  | 0.4                 | 2.2  | 9.5                         | 1.68             |
|                     | 0.6 gm NO <sub>x</sub>        |                    | 0.6                            | 1.60 | 0.42                | 2.59 | 9.5                         | 1.68             |

\* % O<sub>2</sub> is given as a reference number only. APG Series engines are set to a specific NO<sub>x</sub> value.

**NOTE:** The above table indicates emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V10; 101.325]) SLHV, Waukesha Knock Index of 94 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 94 WKI with an absolute humidity of 42 grains/lb. Unless otherwise noted these emission levels can be achieved from 75% to 100% of the ISO Standard Power (continuous duty) rating. Contact the local Waukesha gas engine representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.

| MODEL                                   | NO <sub>x</sub> SETTING       | ENGINE SPEED (RPM) | LT TEMP °C (°F) | GRAMS/BHP-HR                   |     |                     |      | % OBSERVED DRY              | EXCESS AIR RATIO |
|---|-------------------------------|--------------------|-----------------|--------------------------------|-----|---------------------|------|-----------------------------|------------------|
|   |                               |                    |                 | NO <sub>x</sub> <sup>(1)</sup> | CO  | NMHC <sup>(2)</sup> | THC  | O <sub>2</sub> <sup>*</sup> |                  |
| 12V220GL / APG2000 & 18V220GL / APG3000 | T.A. Luft NO <sub>x</sub>     | 1200               | 45 (113)        | 1.0                            | 1.7 | 0.9                 | 5.9  | 11.8                        | 2.1              |
|   |                               |                    | 55 (131)        | 1.0                            | 1.6 | 0.8                 | 5.1  | 11.5                        | 2.0              |
|   |                               | 1500               | 45 (113)        | 1.0                            | 1.7 | 0.9                 | 5.8  | 11.7                        | 2.1              |
|   |                               |                    | 55 (131)        | 1.0                            | 1.8 | 0.9                 | 6.1  | 11.2                        | 2.0              |
|   | 1/2 T.A. Luft NO <sub>x</sub> | 1200               | 45 (113)        | 0.5                            | 3.0 | 1.5                 | 9.9  | 12.7                        | 2.2              |
|   |                               |                    | 55 (131)        | 0.5                            | 3.1 | 1.6                 | 10.4 | 12.0                        | 2.1              |
|   |                               | 1500               | 45 (113)        | 0.5                            | 2.4 | 1.2                 | 8.2  | 11.6                        | 2.0              |
|   |                               |                    | 55 (131)        | 0.5                            | 2.5 | 1.2                 | 8.1  | 11.7                        | 2.1              |

\* % O<sub>2</sub> is given as a reference number only. APG Series engines are set to a specific NO<sub>x</sub> value.

**NOTE:** The above table indicates emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V10; 101.325]) SLHV, Waukesha Knock Index of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI with an absolute humidity of 42 grains/lb. These emission levels can be achieved at 100% of the ISO Standard Power (continuous duty) rating. Contact the local Waukesha gas engine representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.



|  |                          |                     |
|--|--------------------------|---------------------|
| Gas Engine Exhaust And Emission Levels | EN: 152886<br>DATE: 3/11 | Ref.<br>S<br>8483-6 |
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L7044-GSI- Unit 2

GE Energy  
Gas Engines

Environmental

VHP\* Emission Levels

| MODEL                            | CARBURETOR SETTING            | GRAMS/BHP-HR                   |      |                     |     | % OBSERVED DRY |                | MASS AFR <sup>#</sup> | VOLUME AFR <sup>#</sup> | EXCESS AIR RATIO |
|----------------------------------|-------------------------------|--------------------------------|------|---------------------|-----|----------------|----------------|-----------------------|-------------------------|------------------|
|                                  |                               | NO <sub>x</sub> <sup>(1)</sup> | CO   | NMHC <sup>(1)</sup> | THC | CO             | O <sub>2</sub> |                       |                         |                  |
| G, GSI                           | Lowest Manifold (Best Power)  | 8.5                            | 32.0 | 0.35                | 2.3 | 1.15           | 0.30           | 15.5:1                | 9.3:1                   | 0.97             |
|                                  | Equal NOx & CO                | 12.0                           | 12.0 | 0.35                | 2.3 | 0.45           | 0.30           | 15.9:1                | 9.6:1                   | 0.99             |
|                                  | Catalytic Conv. Input (3-way) | 13.0                           | 9.0  | 0.30                | 2.0 | 0.38           | 0.30           | 15.95:1               | 9.6:1                   | 0.99             |
|                                  | Standard (Best Economy)       | 22.0                           | 1.5  | 0.25                | 1.5 | 0.02           | 1.35           | 17.0:1                | 10.2:1                  | 1.06             |
| F3514GSI<br>F3524GSI<br>L5774GSI | Equal NOx & CO                | 14.0                           | 14.0 | 0.25                | 1.1 | 0.45           | 0.30           | 15.85:1               | 9.5:1                   | 0.99             |
|                                  | Catalytic Conv. Input (3-way) | 13.0                           | 13.0 | 0.20                | 1.0 | 0.38           | 0.30           | 15.95:1               | 9.6:1                   | 0.99             |
| L5794GSI                         | Equal NOx & CO                | 13.5                           | 13.5 | 0.45                | 3.0 | 0.45           | 0.30           | 15.85:1               | 9.5:1                   | 0.99             |
|                                  | Catalytic Conv. Input (3-way) | 14.5                           | 11.0 | 0.45                | 2.9 | 0.38           | 0.30           | 15.95:1               | 9.6:1                   | 0.99             |
| GL                               | Standard                      | 1.5                            | 2.65 | 1.0                 | 5.5 | 0.06           | 9.8            | 28.0:1                | 16.8:1                  | 1.74             |
| L5774LT*                         | Standard                      | 2.6                            | 2.0  | 0.60                | 4.0 | 0.04           | 8.0            | 24.7:1                | 14.8:1                  | 1.54             |
| L5794LT*                         | Standard                      | 2.6                            | 2.0  | 0.60                | 4.0 | 0.04           | 7.8            | 24.5:1                | 14.7:1                  | 1.52             |

\* L5774LT and L5794LT emission levels are based on 1000 - 1200 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

275GL+/275GL/AT-GL Emission Levels †

| MODEL        | CARBURETOR SETTING | GRAMS/BHP-HR                   |      |                     |     | % OBSERVED DRY |                | MASS AFR <sup>(1)</sup> | VOLUME AFR <sup>(1)</sup> | EXCESS AIR RATIO |
|--------------|--------------------|--------------------------------|------|---------------------|-----|----------------|----------------|-------------------------|---------------------------|------------------|
|              |                    | NO <sub>x</sub> <sup>(1)</sup> | CO   | NMHC <sup>(1)</sup> | THC | CO             | O <sub>2</sub> |                         |                           |                  |
| AT25GL       | 28:1               | 1.0                            | 2.25 | 1.0                 | 8.0 | 0.06           | 9.8            | 28.0:1                  | 16.8:1                    | 1.74             |
| AT27GL       | 28:1               | 1.5                            | 1.7  | 0.50                | 5.0 | 0.06           | 9.8            | 28.0:1                  | 16.8:1                    | 1.74             |
| 275GL/AT27GL | 32:1               | 2.0                            | 1.5  | 0.40                | 3.5 | 0.05           | 11.2           | 32.0:1                  | 19.2:1                    | 2.00             |
| 275GL+       | 34:1               | 0.5                            | 1.6  | 0.6                 | 6.0 | 0.04           | 11.6           | 34:1                    | 20.4                      | 2.12             |

† These AT-GL emission levels are based on 900 - 1000 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

**NOTE:** The above table indicates emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft<sup>3</sup> (35.38 MJ/m<sup>3</sup> [25, V(0; 101.325)]) SLHV, Waukesha Knock Index of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI with an absolute humidity of 42 grains/lb. Refer to engine specific WKI Power & Timing curves for standard timing. Unless otherwise noted these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating. Contact the local Waukesha gas engine representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.



|  |                          |                      |
|--|--------------------------|----------------------|
| Gas Engine Exhaust And Emission Levels | EN: 152888<br>DATE: 3/11 | Ref.<br>S<br>8483-6. |
|--|--------------------------|----------------------|

Federal Synthetic Minor New Source Review Permit

R6NSR-NM-003

**L 7044- GSI Unit 2**



**Emissions Control Equipment Specification Summary**  
 Ref: New Mexico (Duplicate of KC-930)

**APPLICATION**

# of Engines: 1  
 Engine Operation: Gas Compression  
 Fuel: Natural gas  
 Lubrication Oil: 0.6 wt% sulfated ash or less

**Engine Data:**  
 Engine: Waukesha 7044GSI  
 Power Output: 1620HP@ 1200rpm  
 Design Exhaust Temp: 1152°F ± 20 deg F  
 Design Exhaust Flow Rate: 11130 #/hr

**Catalytic Converter System Data:**  
 Catalytic Converter Model: MCS-363618-14-C1  
 Inlet / Outlet Pipe Size: 14"  
 Overall Length: 36"  
 Diameter: 109"  
 Converter Pressure Loss: 3.69" WC (Housing + Catalyst: Flange to Flange)  
 Sound Attenuation: 25-30 dBA

Catalyst Section Internals: 304 SS  
 Shell / Body Construction: CS  
 Inlet / Outlet Connection: Standard 125# ANSI Bolt Pattern Flanges -- FF  
 Instrumentation Ports: 1 inlet / 1 outlet (1/2" NPT)  
 Oxygen Sensor Ports: 1 outlet (18 mm)  
 Temperature Limits: 750-1250° F (inlet)/1,350° F (outlet)

**EMISSION REQUIREMENTS**

| Exhaust Gases   | Engine Outputs (gm/bhp-hr) | Reduction (%) | Converter Output (gm/bhp-hr) | Area Limits (gm/bhp-hr) |
|-----------------|----------------------------|---------------|------------------------------|-------------------------|
| NO <sub>x</sub> | 12.8                       | 88.3          | 1.50                         | 1.50                    |
| CO              | 14.0                       | 86.1          | 1.95                         | 1.95                    |
| NMHC            | 0.25                       | 84.0          | 0.04                         | 0.04                    |
| VOC (nmnethc)   | 0.15                       | 0.0           | 0.15                         | 1.00                    |
| Formaldehyde    | 0.05                       | 0.0           | 0.05                         | 0.05                    |
| Oxygen          | < 0.3 %                    | --            | --                           | --                      |

MIRATECH guarantees the performance of the converter, as stated above, if the engine output emissions and exhaust temperature at the catalyst are maintained as stated above using an air fuel ratio controller and the engine is operated in accordance with the manufacturer's recommended guidelines for maintenance and operations.

By: David Douthitt

Date: 10-16-02

## Baldor GM2.0 Emergency Engine



**POWER SOLUTIONS, INC.**  
 655 Wheat Lane - Wood Dale, IL 60191  
 630.350.9400 (M) - 630.350.9900 (F)  
[www.psilengines.com](http://www.psilengines.com) - [info@psilengines.com](mailto:info@psilengines.com)

**PSI 2009 Stationary 60 Hz Emergency "Stand-by"<sup>1</sup> Certified Power Generation Rating Data**

| Engine   | Speed<br>RPM | Freq<br>Hz | Fuel | Duty Cycle | Flywheel power <sup>3,1</sup> |       | Fan loss |      | Generator Loss |      | Electrical Rating <sup>4</sup> |       | Certification Spec | THC+NOx<br>(g/kW-hr)  | CO<br>(g/kW-hr) | bsfc <sup>5</sup><br>(g/kW-hr) | Catalyst |     |
|----------|--------------|------------|------|------------|-------------------------------|-------|----------|------|----------------|------|--------------------------------|-------|--------------------|-----------------------|-----------------|--------------------------------|----------|-----|
|          |              |            |      |            | HP                            | KW    | HP       | KW   | Efficiency     | HP   | KW                             | HP    |                    |                       |                 |                                |          | KW  |
| 1.6L     | 1800         | 60         | LP   | Emergency  | 27.6                          | 20.5  | 2        | 1.6  | 87%            | 3.6  | 2.7                            | 22.0  | 16.4               | 40 CFR Part 60 / 90   | 8.2             | 39.16                          | 256.2    | No  |
| 1.6L     | 1800         | 60         | NG   | Emergency  | 25.0                          | 18.6  | 2        | 1.6  | 87%            | 3.3  | 2.4                            | 19.8  | 14.7               | 40 CFR Part 60 / 90   | 8.89            | 33.7                           | 243.8    | No  |
| 1.6L     | 3600         | 60         | LP   | Emergency  | 56.8                          | 42.1  | 3        | 2.2  | 87%            | 7.3  | 6.5                            | 46.1  | 34.4               | 40 CFR Part 60 / 90   | 9.14            | 44.84                          | 266.1    | No  |
| 1.6L     | 3600         | 60         | NG   | Emergency  | 52.5                          | 39.1  | 3        | 2.2  | 87%            | 6.8  | 6.1                            | 42.7  | 31.8               | 40 CFR Part 60 / 90   | 6.6             | 37.44                          | 250.8    | No  |
| 3.0L     | 1800         | 60         | LP   | Emergency  | 51.5                          | 38.4  | 3        | 2.2  | 87%            | 6.7  | 6.0                            | 41.8  | 31.2               | 40 CFR Part 60 / 90   | 8.93            | 32.66                          | 263.0    | No  |
| 3.0L     | 1800         | 60         | NG   | Emergency  | 50.8                          | 37.9  | 3        | 2.2  | 87%            | 6.6  | 4.9                            | 41.2  | 30.7               | 40 CFR Part 60 / 90   | 7.22            | 29.47                          | 255.9    | No  |
| 4.3L     | 1800         | 60         | LP   | Emergency  | 71.4                          | 53.2  | 4.5      | 3.4  | 90%            | 7.1  | 6.3                            | 59.8  | 44.6               | 40 CFR Part 60 / 90   | 8.17            | 32.02                          | 234.1    | No  |
| 4.3L     | 1800         | 60         | NG   | Emergency  | 66.5                          | 49.6  | 4.0      | 3.4  | 90%            | 6.7  | 6.0                            | 55.4  | 41.3               | 40 CFR Part 60 / 90   | 7.03            | 21.06                          | 225.7    | No  |
| 5.0L     | 1800         | 60         | LP   | Emergency  | 85.3                          | 65.8  | 4.5      | 3.4  | 90%            | 8.8  | 6.8                            | 74.9  | 55.9               | 40 CFR Part 60 / 90   | 8.68            | 36.68                          | 248.2    | No  |
| 5.0L     | 1800         | 60         | NG   | Emergency  | 83.4                          | 62.2  | 4.5      | 3.4  | 90%            | 8.3  | 6.2                            | 70.6  | 52.6               | 40 CFR Part 60 / 90   | 7.72            | 31.57                          | 235.6    | No  |
| 5.7L     | 1800         | 60         | LP   | Emergency  | 113.2                         | 84.4  | 4.5      | 3.4  | 90%            | 11.3 | 8.4                            | 97.3  | 72.6               | 40 CFR Part 60 / 90   | 9.66            | 29.61                          | 232.1    | No  |
| 5.7L     | 1800         | 60         | NG   | Emergency  | 104.7                         | 78.1  | 4.5      | 3.4  | 90%            | 10.6 | 7.8                            | 89.7  | 66.9               | 40 CFR Part 60 / 90   | 7.72            | 26.73                          | 229.4    | No  |
| 8.1L     | 1800         | 60         | LP   | Emergency  | 164.4                         | 122.6 | 8.5      | 6.3  | 92%            | 13.2 | 9.8                            | 142.8 | 106.6              | 40 CFR Part 60 & 1048 | 0.1             | 0.59                           | 224.0    | Yes |
| 8.1L     | 1800         | 60         | NG   | Emergency  | 155.2                         | 115.7 | 8.5      | 6.3  | 92%            | 12.4 | 9.3                            | 134.2 | 100.1              | 40 CFR Part 60 & 1048 | 0.17            | 0.23                           | 222.8    | Yes |
| 8.1L T   | 1800         | 60         | LP   | Emergency  | 178.5                         | 133.4 | 11.5     | 8.6  | 92%            | 14.3 | 10.7                           | 153.1 | 114.2              | 40 CFR Part 60 & 1048 | 0.343           | 0.175                          | -        | Yes |
| 8.1L T   | 1800         | 60         | NG   | Emergency  | 202.0                         | 150.6 | 11.5     | 8.6  | 92%            | 16.2 | 12.1                           | 174.3 | 130.0              | 40 CFR Part 60 & 1048 | 0.166           | 0.417                          | -        | Yes |
| 8.1L CAC | 1800         | 60         | LP   | Emergency  | 189.0                         | 148.4 | 14       | 10.4 | 92%            | 15.9 | 11.9                           | 169.1 | 126.1              | 40 CFR Part 60 & 1048 | 0.343           | 0.175                          | 243.8    | Yes |
| 6.1L CAC | 1800         | 60         | NG   | Emergency  | 238.0                         | 177.5 | 14       | 10.4 | 92%            | 19.0 | 14.2                           | 205.0 | 152.8              | 40 CFR Part 60 & 1048 | 0.166           | 0.417                          | 221.6    | Yes |

<sup>1</sup> Standby and overload ratings based on ISO 3046. Continuous ratings based on ISO 8528.  
<sup>2</sup> All ratings are gross flywheel horsepower corrected to 77°F at an altitude of 328 feet with no cooling fan or alternator losses using heating value for NG of 1015 Btu/SCF.  
<sup>3</sup> Production tolerances in engines and installed components can account for power variations of +/- 5%. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations.  
<sup>4</sup> Electrical ratings are an estimate based on assumed fan and generator losses and may vary depending on actual equipment losses.  
<sup>5</sup> BSFC is based on 100% gross flywheel power rating and does not include fan or generator losses.

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