

John
G60-C076
059-00116

Application for General Permit G60-C

**for Construction, Modification, Relocation,
Administrative Update and Operation of**

One (1) Emergency Electrical Generator

Prepared for:

**Williamson Memorial Hospital
859 Alderson Street
Williamson, WV 25661**

Prepared by:

**Amec Foster Wheeler Environment & Infrastructure, Inc.
271 Mill Road
Chelmsford, Massachusetts 01824
Amec Foster Wheeler Project No. 7362152176**

March 2015

APR 27 2015

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Table of Contents

APPLICATION FOR GENERAL PERMIT REGISTRATION

G60-C REGISTRATION

ATTACHMENTS AND SUPPORTING DOCUMENTS

Attachment A: Current Business Certificate

Attachment B: Process Description

Attachment C: Description of Fugitive Emissions

Attachment D: Process Flow Diagram

Attachment E: Plot Plan

Attachment F: Area Map

Attachment G: General Permit G60-C Registration Section Applicability Form

Attachment H: Air Pollution Control Device Data Sheet

Attachment I: Emissions Calculations

Attachment J: Class I Legal Advertisement

Attachment K: Electronic Submittal (Optional)

Attachment L: General Permit Registration Application Fee

Attachment M: Siting Criteria Waiver

Attachment N: Material Safety Data Sheet (MSDS)

Attachment O: Emissions Summary Sheets

EMERGENCY GENERATOR ENGINE DATA SHEET

STORAGE TANK DATA SHEET

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS

Other Supporting Documentation Not Described Above (Equipment Drawings, Etc.)

**APPLICATION FOR
GENERAL PERMIT REGISTRATION**



WEST VIRGINIA
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF AIR QUALITY
 601 - 57th Street
 Charleston, WV 25304
 Phone: (304) 926-0475 www.dep.wv.gov/daq

APPLICATION FOR GENERAL PERMIT REGISTRATION
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE
 A STATIONARY SOURCE OF AIR POLLUTANTS

- CONSTRUCTION MODIFICATION RELOCATION CLASS I ADMINISTRATIVE UPDATE
 CLASS II ADMINISTRATIVE UPDATE

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- | | |
|---|--|
| <input type="checkbox"/> G10-D – Coal Preparation and Handling | <input type="checkbox"/> G40-C – Nonmetallic Minerals Processing |
| <input type="checkbox"/> G20-B – Hot Mix Asphalt | <input type="checkbox"/> G50-B – Concrete Batch |
| <input type="checkbox"/> G30-D – Natural Gas Compressor Stations | <input checked="" type="checkbox"/> G60-C - Class II Emergency Generator |
| <input type="checkbox"/> G33-A – Spark Ignition Internal Combustion Engines | <input type="checkbox"/> G65-C – Class I Emergency Generator |
| <input type="checkbox"/> G35-A – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | <input type="checkbox"/> G70-A – Class II Oil and Natural Gas Production Facility |

SECTION I. GENERAL INFORMATION

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE): Williamson Memorial Hospital		2. FEDERAL EMPLOYER ID NO. (FEIN): 55-0592845	
3. APPLICANT'S MAILING ADDRESS: Williamson Memorial Hospital 859 Alderson Street Williamson, WV 25661		4. APPLICANT'S PHYSICAL ADDRESS: Williamson Memorial Hospital 859 Alderson Street Williamson, WV 25661	
5. IF APPLICANT IS A SUBSIDIARY CORPORATION, PLEASE PROVIDE THE NAME OF PARENT CORPORATION: Community Health Systems Professional Services Corporation			
6. WV BUSINESS REGISTRATION. IS THE APPLICANT A RESIDENT OF THE STATE OF WEST VIRGINIA? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – IF YES, PROVIDE A COPY OF THE CERTIFICATE OF INCORPORATION / ORGANIZATION / LIMITED PARTNERSHIP (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER BUSINESS CERTIFICATE AS ATTACHMENT A. – IF NO, PROVIDE A COPY OF THE CERTIFICATE OF AUTHORITY / AUTHORITY OF L.L.C. / REGISTRATION (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER BUSINESS CERTIFICATE AS ATTACHMENT A.			

SECTION II. FACILITY INFORMATION

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.): Standby/Emergency Generator at a General Medical/Surgical Hospital	8a. Standard Industrial Classification (SIC) Code: 8062 8b. North American Industry Classification System (NAICS) for the facility: 622110
9. DAQ plant ID No. (for an existing facility): N/A	10. List all current 45CSR13 and other General permit numbers associated with this process (for existing facility only): N/A

A: PRIMARY OPERATING SITE INFORMATION

11A. Name of primary operating site: Williamson Memorial Hospital		12A. Address of primary operating site: 859 Alderson Street Williamson, WV 25661	
13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - IF YES, PLEASE EXPLAIN: <u>OWNER</u> - IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.			
14A. - For MODIFICATIONS or ADMINISTRATIVE UPDATES at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road; - For Construction or Relocation permits, please provide directions to <i>the proposed new site location</i> from the nearest state road. From the south, take Rte. 52 North and take a right on Pike Street. Follow Pike Street which turns into Alderson Street. Follow Alderson Street to the end. From the north, take Rte. 52 South and take a left on Hospital Road. Take a left on Alderson Street and follow to the end. Include a Map as Attachment F.			
15A. Nearest city or town: Williamson		16A. County: Mingo	
		17A. UTM Coordinates: Northing (km): 4170.842 Easting (km): 387.842 Zone: 17	
18A. Briefly describe the proposed new operation or change (s) to the facility: Permitting of one diesel-fired emergency generator.		19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: 37.67884 Longitude: -82.27191	

B: 1ST ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)

11B. Name of 1 st alternate operating site: N/A		12B. Address of 1 st alternate operating site: 	
13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the <i>proposed site</i> ? <input type="checkbox"/> YES <input type="checkbox"/> NO - If YES, please explain: - If NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.			

<p>14B. - For modifications or administrative updates, at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road;</p> <p>- For construction or relocation permits, please provide directions to <i>the proposed new site location</i> from the nearest state road. Include a MAP as Attachment F.</p>		
15B. Nearest city or town:	16B. County:	17B. UTM Coordinates: Northing (km): Easting (km): Zone:
18B. Briefly describe the proposed new operation or change (s) to the facility:		19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: Longitude:

B: 2nd ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)

11C. Name of 2 ND alternate operating site: N/A	12C. Address of 2 ND alternate operating site:	
<p>13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the <i>proposed site</i>? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>- If YES, please explain:</p> <p>- If NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>		
<p>14C. - For modifications or administrative updates, at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road;</p> <p>- For construction or relocation permits, please provide directions to <i>the proposed new site location</i> from the nearest state road. Include a MAP as Attachment F.</p>		
15C. Nearest city or town:	16C. County:	17C. UTM Coordinates: Northing (km): Easting (km): Zone:
18C. Briefly describe the proposed new operation or change (s) to the facility:		19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: Longitude:

20. Provide the date of anticipated installation or change:

If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: October 2005

21. Date of anticipated start-up if registration is granted:

N/A

22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:

Hours per day: 24 Days per week: 3 Weeks per year: 7 Percentage of operation: 5.7

Note: The anticipated maximum operations are < 500 hours per year and will be approximately 52 hours per year under non-emergency situations.

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

23. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

24. Include a **Table of Contents** as the first page of your application package.

All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.

Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.

- ATTACHMENT A : CURRENT BUSINESS CERTIFICATE**
- ATTACHMENT B: PROCESS DESCRIPTION**
- ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS**
- ATTACHMENT D: PROCESS FLOW DIAGRAM**
- ATTACHMENT E: PLOT PLAN**
- ATTACHMENT F: AREA MAP**
- ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM**
- ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS**
- ATTACHMENT I: EMISSIONS CALCULATIONS**
- ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT**
- ATTACHMENT K: ELECTRONIC SUBMITTAL**
- ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE**
- ATTACHMENT M: SITING CRITERIA WAIVER**
- ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)**
- ATTACHMENT O: EMISSIONS SUMMARY SHEETS**
- OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)**

Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

- I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

- I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

- I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

- I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

- I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

- I certify that I am the Owner and Proprietor
- I hereby certify that (please print or type) _____
is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible

Signature Dennis Smith 4/23/15
(please use blue ink) Responsible Official Date

Name & Title Dennis Smith, Plant Operations Director
(please print or type)

Signature _____
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name Williamson Memorial Hospital

Phone & Fax (304) 899-6301 (304) 235-0598
Phone Fax

Email: dennis.smith@hma.com

Attachments and Supporting Documents

Attachment A: Current Business Certificate

If the registrant is a resident of the State of West Virginia the registrant should provide a copy of the registrant's current Business Registration Certificate issued to them from the West Virginia State Tax Department. If the registrant is not a resident of the State of West Virginia, the registrant should provide a copy of the Certificate of Authority/Authority of LLC/Registration.

See attached Business Certificate

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE

ISSUED TO:
WILLIAMSON MEMORIAL HOSPITAL LLC
PO BOX 1980
WILLIAMSON, WV 25661-1980

BUSINESS REGISTRATION ACCOUNT NUMBER: 1037-1965

This certificate is issued on: **07/17/2010**

*This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with W.Va. Code s. 11-12.*

*The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.

*This certificate shall be permanent until cessation of the business for which the certificate of registration
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.*

*Change in name or change of location shall be considered a cessation of the business and a new
certificate shall be required.*

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of
this certificate displayed at every job site within West Virginia.

Attachment B: Process Description

Provide a detailed written description of the operation, plant and/or affected facilities. The Process Description is used in conjunction with the Process Flow Diagram to provide the reviewing engineer a complete understanding of the activity at the operation or plant. Describe in detail and order the complete process.

Use the following guidelines to ensure a complete Process Description:

1. The Process Flow Diagram should be prepared first and used as a guide when preparing the Process Description. The written description shall follow the logical order of the Process Flow Diagram.
2. All sources, affected facilities, and air pollution control devices must be included in the Process Description.
3. When modifications are proposed, describe the modifications and the effect the changes will have on affected facilities, equipment or operation.
4. Proper Source Identification Numbers are used consistently in the Process Description.
5. Additional information that may facilitate the reviewer's understanding of the Process Flow Diagram and/or Process Description is included.

Williamson Memorial Hospital installed in 2005 a diesel-fired, standby/emergency generators (EG-1) for the purpose of producing emergency electrical power at Williamson Memorial Hospital located in Williamson, West Virginia.

The Kohler emergency electrical generator is driven by a Volvo 4-cycle, turbocharged and charge air-cooled engine as shown in Attachment D and as provided in the attached manufacturers' specifications. There is one 5,000-gallon aboveground tank which stores diesel fuel to supply the emergency generator (as well as the facility's dual-fired boilers). Additionally, the generator has its own 100-gallon diesel fuel day tank.

Attachment C: Description of Fugitive Emissions

This information is not required for General Permit G60-C. However, the Director may require a detailed written description of fugitive emissions associated with the process if there is reason to believe the affected facility is close to major source thresholds.

Not Applicable

Attachment D: Process Flow Diagram

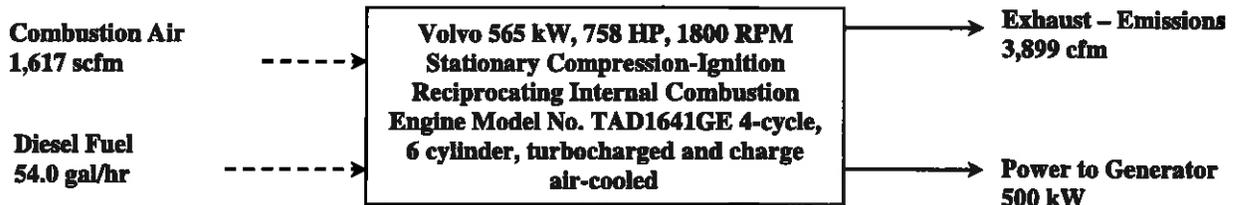
Provide a diagram or schematic that supplements the Process Description of the operation or plant. The Process Flow Diagram shall show all sources, components or facets of the operation or plant in an understandable line sequence of operation. Appropriate sizing and specifications of equipment should also be shown on the Process Flow Diagram. For a proposed modification, clearly identify the process areas, affected facilities and equipment that will be modified or added, and specify the nature and extent of the modification.

Use the following guidelines to ensure a complete Process Flow Diagram:

1. The Process Flow Diagram shall logically follow the entire process from beginning to end.
2. Identify each source, air pollution control device and transfer point with proper and consistent Source Identification Numbers, Control Device Identification Numbers and Transfer Point Identification Numbers.
3. Include material handling rates for all lines of the Process Flow Diagram. If applicable, include pre- and post-modification material handling rates and identify accordingly.
4. Transfer Point Identification Numbers, consistent with assignments in any emission calculation sheet, should be shown at each transfer point.
5. The process flow lines may appear different for clarity. For example, dot-dash-dot for raw material, and a solid line for finished product. Refuse flow may be identified by a dotted line
6. The process flow lines may be color coded. For example, new or modified equipment may be red, old or existing equipment may be blue; different stages of preparation such as raw material may be green and finished product or refuse another color.

PROCESS FLOW DIAGRAM

EG-1



Attachment E: Plot Plan

Provide an accurately scaled and detailed Plot Plan showing the locations of all process equipment and/or affected facilities and air pollution control devices. Show all equipment, affected facilities, enclosures, buildings and plant entrances and exits from the nearest public road(s) as appropriate. Note height, width and length of proposed or existing buildings and structures.

A scale between 1"=10' and 1"=200' should be used with the determining factor being the level of detail necessary to show operation or plant areas, affected facilities, sources, transfer points, etc. An overall small scale plot plan (e.g., 1"=300') should be submitted in addition to larger scale plot plans for process or activity areas (e.g., 1"=50') if the plant is too large to allow adequate detail on a single plot plan. Process or activity areas may be grouped for the enlargements as long as sufficient detail is shown.

Use the following guidelines to ensure a complete Plot Plan:

1. Operation, plant or facility name
2. Company name
3. Company ID number
4. Plot scale, north arrow, date drawn, and submittal date.
5. Fence lines
6. Property lines
7. Base elevation
8. UTM reference coordinates from the Area Map and corresponding reference point elevation
9. Location of all sources labeled with proper and consistent Source Identification numbers

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

See attached Figure 1

387585 387685 387785 387885



4171050 4170950 4170850 4170750

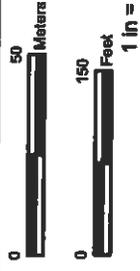
PLOT PLAN

Williamson Memorial Hospital

Figure 1

Legend

- Emergency Generator



Prepared For:



Prepared By:



AmeC Foster Wheeler
 Environment & Infrastructure, Inc.
 271 Hill Road
 Chelmsford, MA 01824
 (978) 682-0000

Imagery: ESRI, 2012
 Projection: NAD 1983 UTM Zone 17N
 Drawn by: AKM, Submitted: 02-28-2015

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community. Esri, HERE, DeLorme, MapmyIndia, ©OpenStreetMap contributors

387585 387685 387785 387885

Attachment F: Area Map

Provide a USGS 7.5 minute topographic Area Map showing the current or proposed location of the operation or plant. On this map, identify plant or operation property lines, access roads and any adjacent dwelling, business, public building, school, church, cemetery, community or institutional building or public park.

Mark and reference UTM coordinates (not latitude and longitude) and the corresponding elevation above mean sea level for the operation or plant. UTM coordinates may be acquired from the USGS 7.5" topographical map. UTM coordinates are marked as blue tick marks along the outside edges of the map. These coordinates must be provided for a point inside the plant boundary near the center of the property and be accurate to within fifty meters.

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

See attached Figure 2

388562

387562

386562

4171772

4171772

4170772

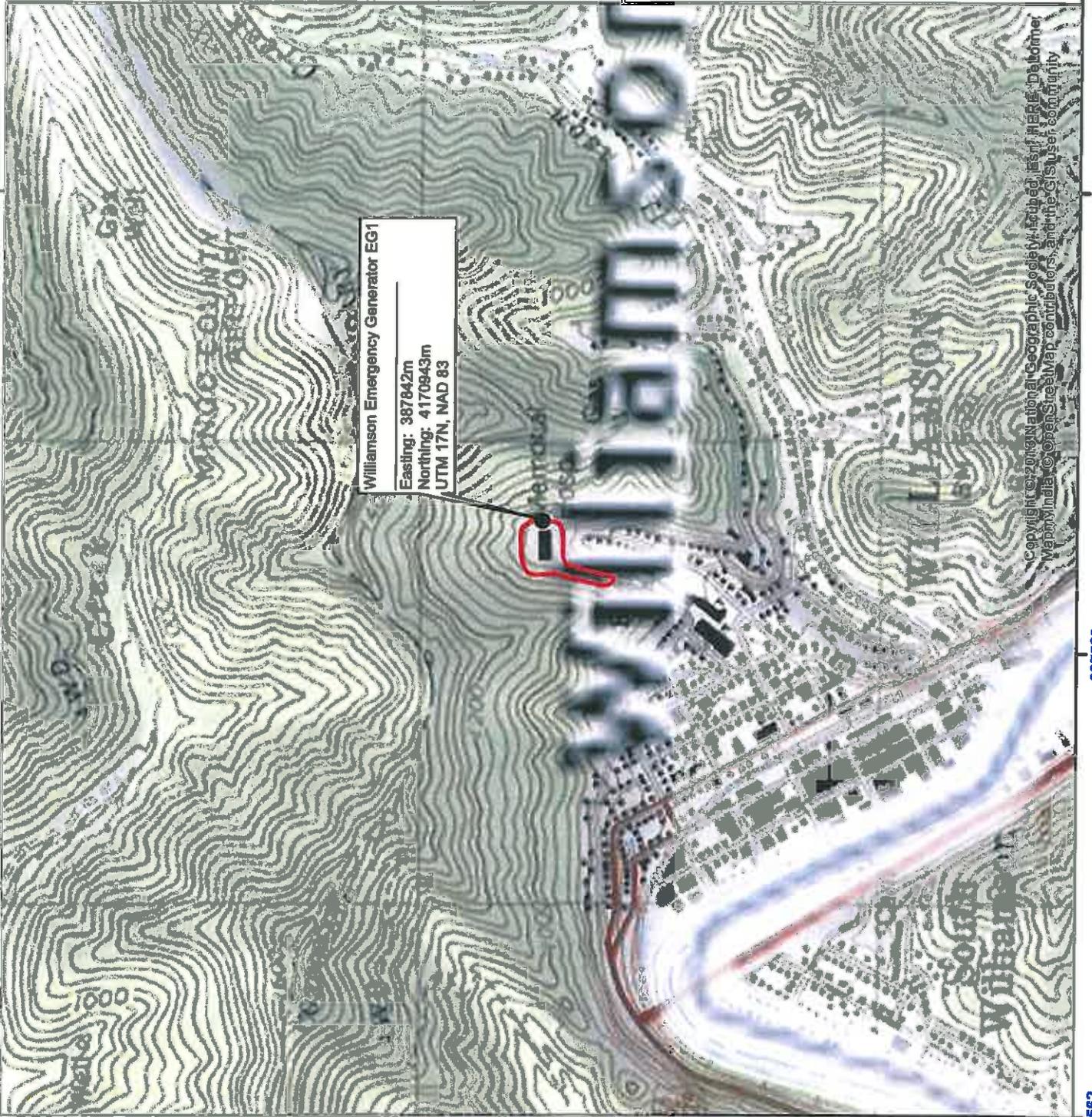
4170772

4169772

388562

387562

386562



Williamston Emergency Generator EG1
 Easting: 387642m
 Northing: 4170943m
 UTM 17N, NAD 83

Copyright © 2010 National Geographic Society. Map data © 2010 DeLorme, GeoEye, © 2010 ESRI, DigitalGlobe, GeoEye, © 2010 Earthstar Geographics, CNES/Airbus DS, AeroGRID, IGN, © 2010 Swire, © 2010 Bing, © 2010 Microsoft, © 2010 OpenStreetMap contributors, and the GIS User community

<p>AREA MAP</p> <p>Williamson Memorial Hospital</p>	<p>Figure 2</p>	<p>Legend</p> <ul style="list-style-type: none"> ● Emergency Generator □ Williamson Memorial Hospital Boundary 	<p>0 375 Meters</p> <p>0 1,000 Feet</p> <p>1 in = 1,000 ft</p>	<p>Prepared For:</p> 	<p>Prepared By:</p>  <p>Amec Foster Wheeler Environment & Infrastructure, Inc. 271 Mill Road Chelmsford, MA 01824 (978) 682-0000</p>	<p>Imagery: ESRI, 2012 Projection: NAD 1983 UTM Zone 17N Drawn by: AKM, Submitted: 02-28-2015</p>
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Attachment G: General Permit G60-C Registration Section Applicability Form

General Permit G60-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G60-C allows the registrant to choose which sections of the permit that they wish to seek registration under. Therefore, please mark which sections that you are applying for registration under. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

Section 5	Reciprocating Internal Combustion Engines (R.I.C.E.)*	<input checked="" type="checkbox"/>
Section 6	Tanks	<input checked="" type="checkbox"/>
Section 7	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII)	<input type="checkbox"/>
Section 8	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)	<input type="checkbox"/>

* Affected facilities that are subject to Section 5 may also be subject to Sections 7 or 8. Therefore, if the applicant is seeking registration under both sections, please select both.

Attachment H: Air Pollution Control Device Data Sheet

This information is not required for General Permit G60-C.

Not Applicable.

Attachment I: Emissions Calculations

Provide detailed emission calculations which lists the plant or operation's potential to emit (PTE) for criteria and hazardous/toxic pollutants.

Use the following guidelines to ensure complete emission calculations

- 1. All emission sources are included in the emission calculations, as well as all methods used in the emissions calculations.**
- 2. Proper Source Identification Numbers and Control Device Identification Numbers are used consistently in the Emission Calculations.**
- 3. A printout of the Emission Summary Sheets is attached to the Registration Application.**

**Emission Calculations for Diesel Generators > 600 HP
Williamson Memorial Hospital**

Emission Calculations for Diesel Generators > 600 HP

Emission Unit	Generating Unit	Gross Engine Power Output	
		(kW)	(hp)
G1	Volvo TAD1841GE	565	758
Total:		565	758

Oil Firing Rate	54.0 gal/hr
Heat content of fuel -	140,000 BTU/gal
Sulfur content of fuel -	0.50 wt%

Emission Factors for Tier 2 Certified Engines > 600 kW from 40 CFR 89.112

Constituent	Emission Factor (g/kW-hr)	Emission Factor (lb/hp-hr)
CO	3.5	0.008
NOx*	6.08	0.010
PM-10	0.20	0.0003
VOC*	0.32	0.001

* The NMHC+NOx Tier 2 emission standard has been divided into 85% NOx and 15% VOC

Emission Factors for Criteria Pollutants, from AP-42, Section 3.4, Tables 3.4-1 and 3.4-2

Constituent	Emission Factor (g/kW-hr)	Emission Factor (lb/hp-hr)
SO ₂ *	2.46	0.004

* Sulfur content is < 0.6%, per the SDS

GHG Emission factors, from Table C-1 and C-2 to Subpart C of 40 CFR 88

Constituent	Emission Factor
CO ₂	73.96 kg/MMBtu
CH ₄	3.0E-03 kg/MMBtu
N ₂ O	6.0E-04 kg/MMBtu

Calculation of Criteria Pollutant Emissions

Constituent	Emergency Gen. Hourly PTE (lb/hr)	Annual Restricted Potential to Emit ¹ TPY	Annual Unrestricted Potential to Emit TPY
CO	4.36	1.09	19.1
NOx	7.57	1.89	33.2
PM-10	0.25	0.06	1.1
SO ₂	3.08	0.77	13.4
VOC	0.40	0.10	1.7
CO ₂	1,232.90	308.22	5,400.1
CH ₄	0.05	0.01	0.2
N ₂ O	0.01	0.003	0.04

(1) Annual potential to emit is based on 500 hr/yr for emergency generators.

Calculation of Hourly PTE:

Emission Factor (lb/hp-hr) x Generator Rating (hp) = Emissions (lb/hr)
Emission Factor (kg/mmBtu) x 2.205 lb/kg x Heat Content of Fuel (mmBtu/gal) x Oil Firing Rate (gal/hr) = Emissions (lb/hr)

Calculation of Annual Restricted PTE:

Hourly PTE (lb/hr) x 500 hr/yr = Emissions (lb/yr)

Calculation of Annual Unrestricted PTE:

Hourly PTE (lb/hr) x 8,760 hr/yr = Emissions (lb/yr)

Calculation of HAP Emissions

HAP constituent emission factors obtained from AP-42, Section 3.4, Table 3.4-3

Constituent	Emission Factor (lb/MMBtu)	Emergency Gen. Hourly PTE (lb/hr)	Annual Restricted Potential to Emit ¹ TPY	Annual Unrestricted Potential to Emit TPY
Acetaldehyde	2.52E-05	1.91E-04	4.76E-05	8.34E-04
Acrolein	7.88E-06	5.96E-05	1.48E-05	2.61E-04
Benzene	7.76E-04	5.87E-03	1.47E-03	2.67E-02
Formaldehyde	7.89E-05	5.96E-04	1.49E-04	2.61E-03
Naphthalene	1.30E-04	9.83E-04	2.48E-04	4.30E-03
Toluene	2.81E-04	2.12E-03	5.31E-04	9.30E-03
Xylenes	1.93E-04	1.46E-03	3.65E-04	6.39E-03
Total:		0.01	0.003	0.05

¹ Annual restricted potential to emit is based on 500 hr/yr for emergency generators.

Calculation of Hourly PTE:

Emission Factor (lb/MMBtu) x Heat Content of Fuel (MMBtu/gal) x Fuel Firing Rate (gal/hr) = Emissions (lb/hr)

Calculation of Annual Restricted PTE:

Hourly PTE (lb/hr) x 500 hr/yr = Emissions (lb/yr)

Calculation of Annual Unrestricted PTE:

Hourly PTE (lb/hr) x 8,760 hr/yr = Emissions (lb/yr)

Summary of Stationary Source Potential Emissions Williamson Memorial Hospital							
Activities	Annual Potential Emissions¹ (tons/yr)						
	CO	NOx	PM	SO₂	VOCs	HAPs	CO_{2e}
Combustion Sources							
Diesel-Fired Emergency Generators > 600 HP	1.1	1.9	0.1	0.8	0.1	0.003	309.3
Total, Stationary Sources, ton/yr	1.1	1.9	0.1	0.8	0.1	0.003	309.3

¹ Potential emissions are based on 500 hours per year for the emergency generator

Attachment J: Class I Legal Advertisement

Publication of the below Class I legal advertisement is a requirement of the application process and will be submitted to the Williamson Daily News (or other newspaper with largest local circulation) for publication.

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Williamson Memorial Hospital has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a General Permit Registration for an existing emergency generator located on 859 Alderson Street in Williamson, in Mingo County, West Virginia. The latitude and longitude coordinates are 37.679 °N and -82.272 °E.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be: 1.9 tons per year nitrogen oxides, 1.1 tons per year carbon monoxide, 309.3 tons per year carbon dioxide equivalent emissions, 0.1 tons per year volatile organic compounds, 0.1 tons per year particulate matter, 0.8 tons per year sulfur dioxide, and 0.003 tons per year hazardous air pollutants.

Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the Division of Air Quality at (304) 926-0499, extension 1227, during normal business hours.

Dated this the 26th day of March 2015.

By: Williamson Memorial Hospital
Dennis Smith
Plant Operations Director
859 Alderson Street
Williamson, West Virginia 25661

Attachment K: Electronic Submittal (Optional)

Provide an Electronic Submittal Diskette(s) for all files that are available electronically. The Electronic Submittal Diskette should have the following files in their respective formats (if available):

1. Registration Application file (Microsoft Word or Word Perfect format)
2. Affected Source Sheets (Microsoft Word or Word Perfect format)
3. Process Flow Diagram file
4. Process Description file (Microsoft Word or Word Perfect format)
5. Area Map file
6. Plot Plan file
7. Emission Calculations Spreadsheet (Microsoft Excel format)
8. Air Pollution Control Device Sheet, if required (Microsoft Word or Word Perfect format)

Not Applicable.

Attachment L: General Permit Registration Application Fee

A person submitting a Class II General Permit Registration Application to construct, modify, relocate or administratively update an emergency generator shall pay a Class II General Permit registration fee pursuant to 45CSR13. The registration fee shall be paid by a negotiable instrument (check, draft, warrant or money order) to DEP - Division of Air Quality. The fees associated with General Permit G60-C include:

- a. \$500.00 for Class II General Permit Registrations (Construction/Modification)
- b. \$300.00 for Class II administrative updates
- c. \$1000.00 for New Source Performance Standard (NSPS) fee for applicable emergency generators.

Any submitted Registration Application shall not be deemed to have been received nor administratively complete unless payment of the proper Class II General Permit registration fee(s) is (are) included (45CSR22);

Any General Permit registration fee paid hereunder is not refundable (45CSR22).

General Permit Levels Construction, Modification, Relocation, Administrative Update

Class II General Permits – G10-C (Coal Preparation and Handling), G20-B (Hot Mix Asphalt), G30-D (Natural Gas Compressor Stations), G35-A (Natural Gas Compressor Stations with Flares/Glycol Dehydration Units), G40-B (Nonmetallic Minerals Processing), G50-B (Concrete Batch Plant), G60-C (Emergency Generators), and Class I General Permit - G65-C (Emergency Generators)

General Permit	Public Notice	Review Period as per 45CSR13	Application Fee	Criteria	Application Type
Class II General Permit (Construction)	30 days (applicant)	90 days	\$500 applicable NSPS fees +	6 lb/hr and 10 tpy of any regulated air pollutant OR 144 lb/day of any regulated air pollutant, OR 2 lb/hr of any hazardous air pollutant OR 5 tpy of aggregated HAP OR 45CSR27 TAP (10% increase if above BAT triggers or increase to BAT triggers) or subject to applicable standard or rule, but subject to specific eligibility requirements	Registration Application
Class II General Permit (Modification)	30 days (applicant)	90 days	\$500 applicable NSPS fees +	Same as Class II General Permit (Construction) but subject to specific eligibility requirements	Registration Application
Administrative Update (Class I)	None	60 days	None	Decrease in emissions or permanent removal of equipment OR more stringent requirements or change in MRR that is equivalent or superior	Registration Application or Written Request
Administrative Update (Class II)	30 days (applicant)	60 days	\$300 applicable NSPS fees +	No change in emissions or an increase less than Class II Modification levels	Registration Application
Relocation	30 days (applicant)	45 days	\$500 applicable NSPS fees +	No emissions increase or change in facility design or equipment	Registration Application
Class I General Permit	None	45 days	\$250	Same as Class II General Permit (Construction) but subject to specific eligibility requirements	Registration Application

Fees applicable to this Application:

- a. \$500 for Class II General Permit Registration
- b. \$1,000 for New Source Performance Standard (NSPS) fee for emergency generators

Attachment M: Siting Criteria Waiver

If registrant is seeking a waiver from the siting criteria in G60-C Section 2.1, please complete the siting criteria waiver. This waiver needs to be completed by the registrant and person(s) granting the waiver, and notarized by an authorized West Virginia Notary Public. The waiver is only good for the submitted registration application. Therefore, any further modification or administrative update requiring public notice will require a new waiver.

Not Applicable.

Attachment N: Material Safety Data Sheet (MSDS)

Material Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

DIESEL FUEL No. 2

Product Use: Fuel [See Section 16 for Additional Product Numbers]

Synonyms: 15 S Diesel Fuel 2, Alternative Low Aromatic Diesel (ALAD), Calco LS Diesel 2, CALCO ULS C-B0-B5 DF2, CALCO ULS C-B0-B5 DF2 DYED, CALCO ULS C-B2 DF2, CALCO ULS C-B2 DF2 DYED, CALCO ULS C-B5 DF2, CALCO ULS C-B5 DF2 DYED, Calco ULS DF2, Calco ULS Diesel 2, CALCO ULS S-B0-B5 DF2 DYED, Calco ULS S-B5 DF2, Calco ULS S-B5 DF2 DYED, CALCO ULS TX-B1 DF2, CALCO ULS TX-B1 DF2 DYED, CALCO ULS TX-B2 DF2, CALCO ULS TX-B2 DF2 DYED, CALCO ULS TX-B3 DF2, CALCO ULS TX-B3 DF2 DYED, CALCO ULS TX-B4 DF2, CALCO ULS TX-B4 DF2 DYED, CALCO ULS TX-B5 DF2, CALCO ULS TX-B5 DF2 DYED, Chevron LS Diesel 2, Chevron ULS Diesel 2, CT ULS C-B0-B5 DF2, CT ULS C-B0-B5 DF2 DYED, CT ULS C-B2 DF2, CT ULS C-B5 DF2, CT ULS S-B0-B5 DF2 DYED, CT ULS S-B5 DF2, CT ULS S-B5 DF2 DYED, CT ULS S-B0-B5 DF2, CT ULS SPECIAL DF2 DYED, CT ULS TX-B1 DF2, CT ULS TX-B2 DF2, CT ULS TX-B3 DF2, CT ULS TX-B4 DF2, CT ULS TX-B5 DF2, Diesel Fuel Oil, Diesel Grade No. 2, Diesel No. 2-D S15, Diesel No. 2-D S500, Diesel No. 2-D S5000, Distillates, straight run, Gas Oil, HS Diesel 2, HS Heating Fuel 2, Light Diesel Oil Grade No. 2-D, LS Diesel 2, LS Heating Fuel 2, Marine Diesel, RR Diesel Fuel, Texaco Diesel, Texaco Diesel No. 2, ULS C-B0-B5 DF2, ULS C-B0-B5 DF2 DYED, ULS C-B2 DF2, ULS C-B2 DF2 DYED, ULS C-B5 DF2, ULS C-B5 DF2 DYED, ULS S-B0-B5 DF2 DYED, ULS S-B5 DF2, ULS S-B0-B5 DF2, ULS TX-B1 DF2, ULS TX-B1 DF2 DYED, ULS TX-B3 DF2, ULS TX-B3 DF2 DYED, ULS TX-B4 DF2, ULS TX-B4 DF2 DYED, ULS TX-B5 DF2, ULS TX-B5 DF2 DYED, Ultra Low Sulfur Diesel 2

Company Identification

Chevron Products Company
Marketing, MSDS Coordinator
6001 Bollinger Canyon Road
San Ramon, CA 94583
United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

MSDS Requests: <http://www.chevron.com/contact/>

Technical Information: (510) 242-5357

SPECIAL NOTES: This MSDS covers all Chevron, Texaco and Calco CARB & non-CARB Diesel No. 2 Fuels. The sulfur content is less than 0.5% (mass). Red dye is added to non-taxable fuel. (MSDS 6894)
SPECIAL NOTES: This MSDS covers all Chevron and Calco CARB Low Sulfur Diesel No. 2 Fuels. Red dye is added to non-taxable fuel. (MSDS 7098)

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
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Diesel Fuel No. 2	68476-34-6	95 - 100 %vol/vol
Fatty Acid Methyl Esters (FAME)	Mixture	0 - 5 %vol/vol
Total sulfur	Mixture	0 - 0.5 %weight
Naphthalene	91-20-3	0.02 - 0.2 %weight

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

- COMBUSTIBLE LIQUID AND VAPOR
- CAUSES SKIN IRRITATION
- MAY CAUSE RESPIRATORY TRACT IRRITATION IF INHALED
- MAY CAUSE LUNG DAMAGE IF SWALLOWED
- MAY CAUSE DIZZINESS, DROWSINESS AND REDUCED ALERTNESS
- CONTAINS MATERIAL THAT MAY CAUSE DAMAGE TO:
- LIVER
- BLOOD/BLOOD FORMING ORGANS
- THYMUS
- MAY CAUSE CANCER BASED ON ANIMAL DATA
- TOXIC TO AQUATIC ORGANISMS. MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin causes irritation. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: The vapor or fumes from this material may cause respiratory irritation. Mists of this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing. Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Cancer: Whole diesel engine exhaust has been classified as a Group 2A carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Prolonged or repeated exposure to this material may cause cancer. Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Diesel exhaust particulate has been classified as reasonably anticipated to be a human carcinogen in the National Toxicology Program's Ninth Report on Carcinogens. The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. Diesel engine exhaust is known to the State of California to cause cancer. **Target Organs:** Contains material that may cause damage to the following organ(s) following repeated skin contact based on animal data: Liver Blood/Blood Forming Organs Thymus
See Section 11 for additional information. Risk depends on duration and level of exposure.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

See Section 7 for proper handling and storage.

FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Combustible liquid.

NFPA RATINGS: Health: 1 Flammability: 2 Reactivity: 0

FLAMMABLE PROPERTIES:

Flashpoint: (Pensky-Martens Closed Cup) 52 °C (125 °F) Minimum

Autoignition: 257 °C (494 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 29C (85F).

Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Do not breathe mist. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death. Slow heat generation may occur with oil-soaked rags, spent filter aids and spent absorbent material and may cause spontaneous combustion if stored near combustibles and not handled properly. Store biodiesel soaked rags, filter aids, and spill absorbent material in approved safety disposal containers and dispose of properly. Biodiesel soaked rags may be washed with soap and water and allowed to dry in well ventilated area.

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted.

Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated

Polyethylene), Nitrile Rubber, Polyurethane, Viton.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Diesel Fuel No. 2	ACGIH	100 mg/m ³	--	--	Skin A3 total hydrocarbon
Diesel Fuel No. 2	CVX	--	1000 mg/m ³	--	--
Naphthalene	ACGIH	10 ppm (weight)	15 ppm (weight)	--	Skin
Naphthalene	OSHA Z-1	50 mg/m ³	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Varies depending on specification

Physical State: Liquid

Odor: Petroleum odor

pH: Not Applicable

Vapor Pressure: 0.04 kPa (Approximate) @ 40 °C (104 °F)

Vapor Density (Air = 1): >1

Boiling Point: 175.6°C (348°F) - 370°C (698°F)

Solubility: Soluble in hydrocarbons; insoluble in water

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.8 - 0.88 @ 15.6°C (60.1°F) (Typical)

Viscosity: 1.9 cSt - 4.1 cSt @ 40°C (104°F)

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains naphthalene. **GENERAL TOXICITY:** Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts. **REPRODUCTIVE TOXICITY AND BIRTH DEFECTS:** Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. **GENETIC TOXICITY:** Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests. **CARCINOGENICITY:** In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day. This product contains gas oils.

CONCAWE (product dossier 95/107) has summarized current health, safety and environmental data available for a number of gas oils, typically hydrodesulfurized middle distillates, CAS 64742-80-9, straight-run middle distillates, CAS 64741-44-2, and/or light cat-cracked distillate CAS 64741-59-9.

CARCINOGENICITY: All materials tested have caused the development of skin tumors in mice, but all featured severe skin irritation and sometimes a long latency period before tumors developed. Straight-run and cracked gas oil samples were studied to determine the influence of dermal irritation on the carcinogenic activity of middle distillates. At non-irritant doses the straight-run gas oil was not carcinogenic, but at irritant doses, weak activity was demonstrated. Cracked gas oils, when diluted with mineral oil, demonstrated carcinogenic activity irrespective of the occurrence of skin irritation. Gas oils were tested on male mice to study tumor initiating/promoting activity. The results demonstrated that while a straight-run gas oil sample was neither an initiator or promotor, a blend of straight-run and FCC stock was both a tumor initiator and a promotor.

GENOTOXICITY: Hydrotreated & hydrodesulfurized gas oils range in activity from inactive to weakly positive in in-vitro bacterial mutagenicity assays. Mouse lymphoma assays on straight-run gas oils without subsequent hydrodesulfurization gave positive results in the presence of S9 metabolic activation. In-vivo bone marrow cytogenetics and sister chromatic exchange assay exhibited no activity for straight-run components with or without hydrodesulphurization. Thermally or catalytically cracked gas oils tested with in-vitro bacterial mutagenicity assays in the presence of S9 metabolic activation were shown to be mutagenic. In-vitro sister chromatic exchange assays on cracked gas oil gave equivocal results both with and without S9 metabolic activation. In-vivo bone marrow cytogenetics assay was inactive for two cracked gas oil samples. Three hydrocracked gas oils were tested with in-vitro bacterial mutagenicity assays with S9, and one of the three gave positive results. Twelve distillate fuel samples were tested with in-vitro bacterial mutagenicity assays & with S9 metabolic activation and showed negative to weakly positive

results. In one series, activity was shown to be related to the PCA content of samples tested. Two in-vivo studies were also conducted. A mouse dominant lethal assay was negative for a sample of diesel fuel. In the other study, 9 samples of No 2 heating oil containing 50% cracked stocks caused a slight increase in the number of chromosomal aberrations in bone marrow cytogenetics assays. **DEVELOPMENTAL TOXICITY:** Diesel fuel vapor did not cause fetotoxic or teratogenic effects when pregnant rats were exposed on days 6-15 of pregnancy. Gas oils were applied to the skin of pregnant rats daily on days 0-19 of gestation. All but one (coker light gas oil) caused fetotoxicity (increased resorptions, reduced litter weight, reduced litter size) at dose levels that were also maternally toxic.

This product may contain significant amounts of Polynuclear Aromatic Hydrocarbons (PAH's) which have been shown to cause skin cancer after prolonged and frequent contact with the skin of test animals. Brief or intermittent skin contact with this product is not expected to have serious effects if it is washed from the skin. While skin cancer is unlikely to occur in human beings following use of this product, skin contact and breathing, of mists, vapors or dusts should be reduced to a minimum.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. The ecotoxicity hazard is based on an evaluation of data for the components or a similar material.

ENVIRONMENTAL FATE

Ready Biodegradability: This material is not expected to be readily biodegradable. On release to the environment the lighter components of diesel fuel will generally evaporate but depending on local environmental conditions (temperature, wind, mixing or wave action, soil type, etc.) the remainder may become dispersed in the water column or absorbed to soil or sediment. Diesel fuel would not be expected to be readily biodegradable. In a modified Strum test (OECD method 301B) approximately 40% biodegradation was recorded over 28 days. However, it has been shown that most hydrocarbon components of diesel fuel are degraded in soil in the presence of oxygen. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1202, GAS OIL, COMBUSTIBLE LIQUID, III **ADDITIONAL INFORMATION:** NON-BULK PACKAGES ARE NOT REGULATED IN THE U.S.A. SEE 49 CFR 173.150 (F) FOR SPECIAL PROVISIONS FOR VESSEL AND AIRCRAFT.

IMO/MDG Shipping Description: UN1268, PETROLEUM DISTILLATES, N.O.S. (DIESEL FUEL, GASOIL), 3, III, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (DIESEL FUEL, GASOIL)

ICAO/IATA Shipping Description: UN1202, GAS OIL, 3, III

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	YES
	3. Fire Hazard:	YES
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.
Diesel Fuel No. 2 07
Naphthalene 01-2B, 02, 03, 04, 05, 06, 07

NEW JERSEY RTK CLASSIFICATION:

Refer to components listed in Section 2. Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: DIESEL FUEL

WHMIS CLASSIFICATION:

Class B, Division 3: Combustible Liquids
Class D, Division 2, Subdivision A: Very Toxic Material -
Chronic Toxic Effects
Carcinogenicity
Class D, Division 2, Subdivision B: Toxic Material -
Skin or Eye Irritation

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 2 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

Additional Product Number(s): CPS203408, CPS203410, CPS203413, CPS203417, CPS203431, CPS203436, CPS203437, CPS203441, CPS203443, CPS203447, CPS203449, CPS203450, CPS220122, CPS225114, CPS225115, CPS225150, CPS266176, CPS270000, CPS270005, CPS270030, CPS270031, CPS270032, CPS270033, CPS270034, CPS270040, CPS270041, CPS270042, CPS270043, CPS270044, CPS270045, CPS270046, CPS270047, CPS270048, CPS270049, CPS270050, CPS270051.

CPS270052, CPS270053, CPS270054, CPS270058, CPS270059, CPS270060, CPS270062, CPS270063, CPS270064, CPS270065, CPS270068, CPS270069, CPS270070, CPS270081, CPS270082, CPS270083, CPS270084, CPS270085, CPS270086, CPS270087, CPS270088, CPS270089, CPS270090, CPS270091, CPS270094, CPS270095, CPS270096, CPS271006, CPS272006, CPS272007, CPS272008, CPS272009, CPS272010, CPS272011, CPS272012, CPS272013, CPS272093, CPS272102, CPS272126, CPS272129, CPS272130, CPS272131, CPS272152, CPS272185, CPS272190, CPS272195, CPS272593, CPS272601, CPS272602, CPS272693, CPS272793, CPS273003, CPS273030, CPS273053, CPS275000

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet:
1, 16

Revision Date: MAY 01, 2012

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/MDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Attachment O: Emissions Summary Sheets

EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		EG-1	
Engine Manufacturer and Model		Volvo Engine TAD1641GE	
Manufacturer's Rated bhp/rpm		758 HP	
Source Status ²		ES	
Date Installed/Modified/Removed ³		October 2005	
Engine Manufactured/Reconstruction Date ⁴		2005	
Is this a Certified Stationary Compression Ignition Engine according to 40CFR60 Subpart III? (Yes or No) ⁵		No	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJ? (Yes or No) ⁶		No	
Engine, Fuel and Combustion Data	Engine Type ⁷	RB4S	
	APCD Type ⁸	NA	
	Fuel Type ⁹	2FO	
	H ₂ S (gr/100 scf)	NA	
	Operating bhp/rpm	757 HP @ 1800 RPM	
	BSFC (Btu/bhp-hr)	9,987	
	Fuel throughput (ft ³ /hr)	54.0 gals diesel/hr.	
	Fuel throughput (MMft ³ /yr)	< 27,000 gals diesel/yr.	
	Operation (hrs/yr)	< 500	
Reference ¹⁰	Potential Emissions ¹¹	lbs/hr	tons/yr
Engine Certification	NO _x	7.57	1.89
Engine Certification	CO	4.36	1.09
Engine Certification	VOC	0.40	0.10
AP-42 and MSDS	SO ₂	3.06	0.77
Engine Certification	PM ₁₀	0.25	0.06
AP-42	Formaldehyde	5.96E-04	1.49E-04

STORAGE TANK DATA SHEET

Source ID # ¹	Status ²	Content ³	Volume ⁴	Dia ⁵	Throughput ⁶	Orientation ⁷	Liquid Height ⁸
T01	EXIST	2FO	5,000	Cylindrical 8' high x 13.3' long	< 27,000	HORZ	~6.4'
T02	EXIST	2FO	100	Rectangular 28" deep x 36" wide x 41.5" high	< 27,000	VERT	~32"

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS										
Emergency Generator Location: <u>Williamson Memorial Hospital</u>						Registration Number (Agency Use) <u>G60-C</u>				
		Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)			
Source ID No.	NOx	CO	VOC	SO ₂	PM ₁₀	NOx	CO	VOC	SO ₂	PM ₁₀
EG-1	7.57	4.36	0.40	3.06	0.25	1.89	1.09	0.10	0.77	0.06
Total	7.57	4.36	0.40	3.06	0.25	1.89	1.09	0.10	0.77	0.06

EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS												
Emergency Generator Location: <u>Williamson Memorial Hospital</u>						Registration Number (Agency Use) <u>G60-C</u>						
		Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)					
Source ID No.	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde
EG-1	0.0059	Not Available	0.0021	0.0015	Not Available	0.0006	0.0015	Not Available	0.0005	0.0004	Not Available	0.00015
Total	0.0059	Not Available	0.0021	0.0015	Not Available	0.0006	0.0015	Not Available	0.0005	0.0004	Not Available	0.00015

**Other Supporting Documentation Not Described Above
(Equipment Drawings, Etc.)**

VOLVO PENTA GENSET ENGINE

TAD1641GE

484 kW (658 hp) at 1500 rpm, 565 kW (768 hp) at 1800 rpm, acc. to ISO 3046

The TAD1641GE is a powerful, reliable and economical Generating Set Diesel Engine built on the dependable in-line six design.

Durability & low noise

Designed for easiest, fastest and most economical installation. Well-balanced to produce smooth and vibration-free operation with low noise level.

To maintain a controlled working temperature in cylinders and combustion chambers, the engine is equipped with piston cooling. The engine is also fitted with replaceable cylinder liners and valve seats/guides to ensure maximum durability and service life of the engine.

Low exhaust emission

The state of the art, high-tech injection and charging system with low internal losses contributes to excellent combustion and low fuel consumption.

The TAD1641GE complies with EU Stage 2 exhaust emission regulations.

Easy service & maintenance

Easily accessible service and maintenance points contribute to the ease of service of the engine.

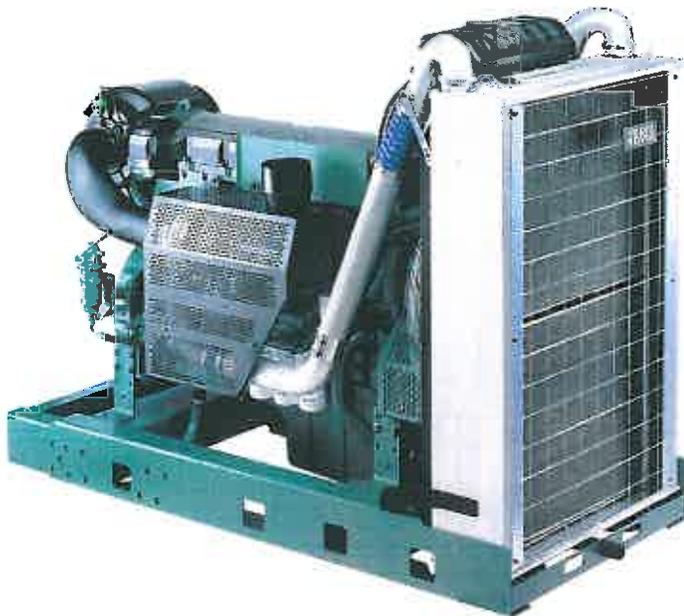
Technical description

Engine and block

- Optimized cast iron cylinder block with optimum distribution of forces without the block being unnecessary heavy.
- Wet, replaceable cylinder liners
- Piston cooling for low thermal load on pistons and reduced ring temperature
- Tapered connecting rods to reduce risk of piston cracking
- Crankshaft induction hardened bearing surfaces and fillets with seven main bearings for moderate load on main and big-end bearings
- Nitrocarburized transmission gears for heavy duty operation
- Keystone top compression rings for long service life
- Viscous type crankshaft vibration damper
- Replaceable valve guides and valve seats
- Over head camshaft and four valves per cylinder equipped with camshaft damper to reduce noise and vibrations.

Lubrication system

- Full flow oil cooler
- Full flow disposable spin-on oil filters, for extra high filtration
- The lubricating oil level can be measured during operation (Standard dipstick only)
- Gear type lubricating oil pump, gear driven by the transmission



Features

- Fully electronic with Volvo Penta EMS 2
- Dual frequency switch (between 1500 rpm and 1800 rpm)
- High power density
- Emission compliant
- Low noise levels
- Gen Pac configuration

Fuel system

- Self de-aerating system. When replacing filters all fuel stays in the engine.
- Non-return fuel valve
- Electronic unit injectors
- Fuel prefilter with water separator and water-in-fuel indicator / alarm
- Gear driven low-pressure fuel pump
- Fine fuel filter with manual feed pump and fuel pressure switch
- Fuel shut-off valve, electrically operated

Cooling system

- Efficient cooling with accurate coolant control through a water distribution duct in the cylinder block. Reliable sleeve thermostat with minimum pressure drop
- Belt driven, maintenance-free coolant pump with high degree of efficiency

Turbo charger

- Efficient and reliable turbo charger
- Extra oil filter for the turbo charger

Electrical system

- Engine Management System 2 (EMS 2), an electronically controlled processing system which optimizes engine performance. It also includes advanced facilities for diagnostics and fault tracing
- The instruments and controls connect to the engine via the CAN SAE J1939 interface, either through the Control Interface Unit (CIU) or the Digital Control Unit (DCU). The CIU converts the digital CAN bus signal to an analog signal, making it possible to connect a variety of instruments. The DCU is a control panel with display, engine control, monitoring, alarm, parameter setting and diagnostic functions. The DCU also presents error codes in clear text.
- Sensors for oil pressure, oil temp, boost pressure, boost temp, coolant temp, fuel temp, water in fuel, fuel pressure and two speed sensors. Crank case pressure, piston cooling pressure, oil level and air filter pressure drop sensors.
- Alternator 24V / 80A

KOHLER Power Systems

190-600 V

Diesel



Tier 2 EPA-Certified for Stationary Emergency Applications

Ratings Range

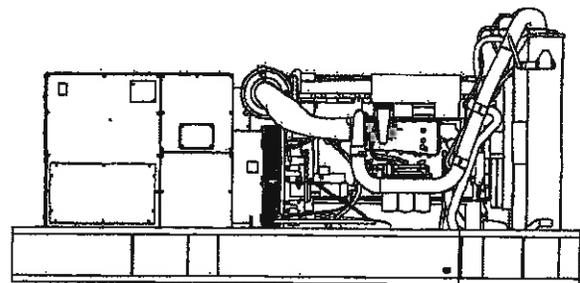
Standby:	kW	60 Hz	50 Hz
		kVA	kVA
Prime:	kW	405-515	364-440
	kVA	506-644	455-550

Generator Set Ratings

Alternator	Voltage	Ph	Hz	Standby Rating		Prime Rating	
				150°C Rise	130°C Rise	125°C Rise	105°C Rise
				kW/kVA	kW/kVA	kW/kVA	kW/kVA
5M4024	120/208	3	60	450/563	440/550	440/550	435/544
	127/220	3	60	465/581	465/581	450/563	450/563
	139/240	3	60	505/631	475/594	450/563	450/563
	240/416	3	60	450/563	440/550	440/550	435/544
	277/480	3	60	505/631	475/594	450/563	450/563
	110/190	3	50	404/506	400/500	400/500	372/465
	115/200	3	50	404/506	388/485	380/475	360/450
	120/208	3	50	380/475	364/455	352/440	328/410
5M4027	220/380	3	50	404/506	400/500	400/500	372/465
	230/400	3	50	404/506	388/485	380/475	360/450
	240/416	3	50	380/475	364/455	352/440	328/410
	120/208	3	60	500/625	475/594	450/563	445/556
	127/220	3	60	505/631	500/625	450/563	460/563
	139/240	3	60	505/631	505/631	455/569	455/569
	220/380	3	60	405/506	405/506	405/506	405/506
	240/416	3	60	500/625	475/594	450/563	445/556
5M4028	277/480	3	60	505/631	505/631	455/569	455/569
	110/190	3	50	432/540	408/510	400/500	380/475
	115/200	3	50	436/545	424/530	400/500	392/490
	120/208	3	50	424/530	408/510	400/500	372/465
	220/380	3	50	432/540	408/510	400/500	380/475
	230/400	3	50	436/545	424/530	400/500	392/490
	240/416	3	50	424/530	408/510	400/500	372/465
	120/208	3	60	510/638	510/638	455/569	455/569
5M4030	127/220	3	60	510/638	510/638	455/569	455/569
	139/240	3	60	510/638	510/638	455/569	455/569
	220/380	3	60	470/588	470/588	455/569	455/569
	240/416	3	60	510/638	510/638	455/569	455/569
	277/480	3	60	510/638	510/638	455/569	455/569
	110/190	3	50	440/550	440/550	400/500	400/500
	115/200	3	50	440/550	440/550	400/500	400/500
	120/208	3	50	440/550	432/540	400/500	400/500
5M4032	220/380	3	50	440/550	440/550	400/500	400/500
	230/400	3	50	440/550	440/550	400/500	400/500
	240/416	3	50	440/550	432/540	400/500	400/500
	120/208	3	60	510/638	510/638	455/569	455/569
	127/220	3	60	510/638	510/638	455/569	455/569
	139/240	3	60	515/644	510/638	480/575	455/569
	220/380	3	60	485/606	485/606	455/569	455/569
	240/416	3	60	510/638	510/638	455/569	455/569
5M4162	277/480	3	60	515/644	510/638	480/575	455/569
	110/190	3	50	440/550	440/550	400/500	400/500
	115/200	3	50	440/550	440/550	400/500	400/500
	120/208	3	50	440/550	440/550	400/500	400/500
	220/380	3	50	440/550	440/550	400/500	400/500
	230/400	3	50	440/550	440/550	400/500	400/500
	240/416	3	50	440/550	440/550	400/500	400/500
	120/208	3	60	515/644	515/644	480/575	460/575
5M4164	127/220	3	60	515/644	515/644	480/575	460/575
	139/240	3	60	515/644	515/644	480/575	460/575
	220/380	3	60	510/638	510/638	480/575	455/569
	240/416	3	60	515/644	515/644	480/575	460/575
	277/480	3	60	515/644	515/644	480/575	460/575
	110/190	3	50	440/550	440/550	400/500	400/500
	115/200	3	50	440/550	440/550	400/500	400/500
	120/208	3	50	440/550	440/550	400/500	400/500
5M4270	220/380	3	60	500/625	485/606	455/569	455/569
	230/400	3	60	515/644	515/644	480/575	460/575
	240/416	3	60	505/631	505/631	450/563	450/563
	277/480	3	60	515/644	515/644	455/569	455/569
	110/190	3	50	440/550	440/550	400/500	400/500
	115/200	3	50	440/550	440/550	400/500	400/500
	120/208	3	50	440/550	440/550	400/500	400/500
	220/380	3	60	515/644	515/644	480/575	460/575
5M4272	230/400	3	60	505/631	505/631	450/563	450/563
	347/600	3	60	515/644	515/644	455/569	455/569

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A standard one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Alternator features:
 - The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
 - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
 - Kohler designed controllers for guaranteed system integration and remote communication. See Controllers on page 3.
 - The low coolant level shutdown prevents overheating (standard on radiator models only).
 - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
 - An electronic, isochronous governor delivers precise frequency regulation.
 - Multiple circuit breaker configurations.



RATINGS: All three-phase units are rated at 0.8 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. *Prime Power Ratings:* At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIS-101) for ratings guidelines, complete ratings definitions, and site condition criteria. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet
Leads: quantity, type	10/12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load (with < 0.5% drift due to temp. variation)	3-Phase Sensing, 0.25%
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 380 V 5M4024 (10 lead)	1350 (60Hz), 880 (50Hz)
480 V, 380 V 5M4027 (12 lead)	1575 (60Hz), 1100 (50Hz)
480 V, 380 V 5M4028 (10 lead)	1800 (60Hz), 1250 (50Hz)
480 V, 380 V 5M4030 (10 lead)	1800 (60Hz), 1125 (50Hz)
480 V, 380 V 5M4032 (10 lead)	2200 (60Hz), 1400 (50Hz)
380 V 5M4162 (4 lead)	2100 (60Hz)
380 V 5M4164 (4 lead)	2300 (60Hz)
600 V 5M4270 (4 lead)	1250 (60Hz)
600 V 5M4272 (4 lead)	1750 (60Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and drip-proof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Digital solid-state, volts-per-hertz voltage regulator with $\pm 0.25\%$ no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Engine manufacturer	Volvo	
Engine model	TAD1641GE	
Engine type	4-Cycle, Turbocharged, Charge Air-Cooled	
Cylinder arrangement	6, Inline	
Displacement, L (cu. in.)	16.12 (984)	
Bore and stroke, mm (in.)	144 x 165 (5.67 x 6.50)	
Compression ratio	16.5:1	
Piston speed, m/min. (ft./min.)	594 (1949)	495 (1624)
Main bearings: quantity, type	7, Precision Half-Shell	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	565 (757)	484 (649)
Cylinder head material	Cast Iron	
Piston: type, material	Swirl Chamber, Graphite-Coated Aluminum	
Crankshaft material	Forged Steel	
Valve material	Nimonic	
Governor: type, make/model	EMS II	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	$\pm 0.25\%$	
Frequency	Field-Convertible	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, m ³ /min. (cfm)	110.4 (3899)	92.0 (3249)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	478 (893)	455 (851)
Maximum allowable back pressure, kPa (in. Hg)	10 (3.0)	
Engine exhaust outlet size, mm (in.)	See ADV Drawing	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)		Negative
Volts (DC)		24
Ampere rating		80
Starter motor rated voltage (DC)		24
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating each		Two, 950
Battery voltage (DC)		12

Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	8 (0.31)	
Fuel return line, min. ID, mm (in.)	6 (0.25)	
Max. fuel flow, Lph (gph)	204.4 (54)	181.7 (48)
Max. fuel pump restriction, kPa (in. Hg)	30 (8.9)	
Max. return line restriction, kPa (in. Hg)	20 (5.9)	
Fuel prime pump	Manual	
Fuel filter: quantity, type	2, Primary, 10 Micron/Secondary w/Water Separator, 3 Microns	
Recommended fuel	#2 Diesel	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	42.0 (44.4)	
Oil pan capacity with filter, L (qt.)	48.1 (50.8)	
Oil filter: quantity, type	3, Cartridge	
Oil cooler	Water-Cooled	

Application Data

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)*	50 (122)	
Engine jacket water capacity, L (gal.)	33 (8.7)	
Radiator system capacity, including engine, L (gal.)	60 (15.9)	
Engine jacket water flow, Lpm (gpm)	463.3 (122.4)	383.8 (101.4)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	231 (13137)	184 (10469)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	147 (8360)	110 (6256)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	890 (35)	
Fan, kWm (HP)	19 (25.5)	11 (14.7)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)	

* Weather and sound enclosures with internal silencer and weather housing with external silencer reduce ambient temperature capability by 5°C (9°F).

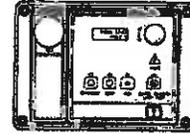
Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m ³ /min. (scfm)†	598 (21120)	488 (17248)
Combustion air, m ³ /min. (cfm)	46 (1617)	38 (1342)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	24 (1365)	20 (1137)
Alternator, kW (Btu/min.)	29 (1660)	26 (1480)

† Air density = 1.20 kg/m³ (0.075 lbm/ft³)

Fuel Consumption	60 Hz	50 Hz
Diesel, Lph (gph) at % load	Standby Rating	
100%	139.3 (36.8)	113.6 (30.0)
75%	101.4 (26.6)	83.6 (22.1)
50%	68.1 (18.0)	56.0 (14.8)
25%	38.6 (10.2)	30.7 (8.1)
Diesel, Lph (gph) at % load	Prime Rating	
100%	121.9 (32.2)	103.0 (27.2)
75%	89.7 (23.7)	76.5 (20.2)
50%	60.6 (16.0)	51.5 (13.6)
25%	33.7 (8.9)	28.0 (7.4)

Controllers

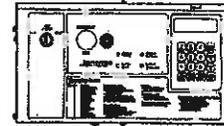


Decision-Maker® 3000 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-100 for additional controller features and accessories.



Decision-Maker® 550 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities.

- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-46 for additional controller features and accessories.



Decision-Maker® 6000 Paralleling Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities for paralleling multiple generator sets.

- Paralleling capability with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-107 for additional controller features and accessories.

Standard Features

- Alternator Protection
- Battery Rack and Cables
- Customer Connection
(standard with Decision-Maker® 6000 controller)
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

Available Options

Approvals and Listings

- California OSHPD Approval
- CSA Approval
- IBC Seismic Certification
- UL 2200 Listing

Enclosed Unit

- Sound Enclosure/Fuel Tank Packages
- Weather Enclosure/Fuel Tank Packages

Open Unit

- Exhaust Silencer, Hospital (kit: PA-354907)
- Exhaust Silencer, Critical (kit: PA-354894)
- Flexible Exhaust Connector, Stainless Steel

Fuel System

- Flexible Fuel Lines, Rubber
- Flexible Fuel Lines, Stainless Steel
- Fuel Pressure Gauge

Controller

- Common Failure Relay
(Decision-Maker® 550 and 6000 controllers only)
- Communications Products and PC Software
- Customer Connection (Decision-Maker® 550 controller only)
- Decision-Maker® Paralleling System (DPS)
(Decision-Maker® 6000 controller only)
- Dry Contact (isolated alarm)
(Decision-Maker® 550 and 6000 controllers only)
- Input/Output Module (Decision-Maker® 3000 controller only)
- Remote Audiovisual Alarm Panel (Decision-Maker® 550 only)
- Remote Emergency Stop
- Remote Mounting Cable
- Remote Serial Annunciator Panel
- Run Relay

Cooling System

- Block Heater, 4000 W, 190/208 V, 1 Ph
- Block Heater, 4000 W, 210/240 V, 1 Ph
- Block Heater, 4000 W, 380/480 V, 1 Ph
Recommended for ambient temperatures below 4°C (40°F)
- Radiator Duct Flange

Electrical System

- Alternator Strip Heater
- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater
- Bus Bar
- Line Circuit Breaker (NEMA1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

Paralleling System

- Manual Speed Adjust (Decision-Maker® 550 controller only)
- Remote Voltage Adjustment Control
(Decision-Maker® 550 controller only)
- Voltage Sensing (Decision-Maker® 6000 controller only)

Miscellaneous

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Closed Crankcase Ventilation
- Engine Fluids (oil and coolant) Added
- Rated Power Factor Testing

Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

Warranty

- 2-Year Basic
- 2-Year Prime
- 5-Year Basic
- 5-Year Comprehensive
- 10-Year Major Components

Other Options

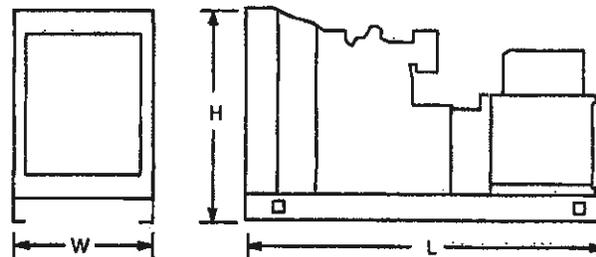
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Dimensions and Weights

Overall Size, L x W x H, mm (in.): 4229 x 1939 x 1942
 (166.5 x 76.3 x 76.5)

Weight (radiator model), wet, kg (lb.): 4082 (9000)

Note: See ADV drawing for specific dimensions based on accessory selections.



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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