MIAMI-DADE COUNTY

Carlos Alvarez, Mayor

ADA Coordination
Agenda Coordination
Animal Services
Art in Public Places
Audit and Management Services
Aviation
Building
Building Code Compliance
Business Development
Capital Improvements
Citizens' Independent Transportation Trust
Commission on Ethics and Public Trust
Communications
Community Action Agency
Community & Economic Development
Community Relations
Consumer Services
Corrections & Rehabilitation
Cultural Affairs
Elections
Emergency Management
Employee Relations
Empowerment Trust
Enterprise Technology Services
Environmental Resources Management
Fair Employment Practices
Finance
Fire Rescue
General Services Administration
Government Information Center
Historic Preservation
Homeless Trust
Housing Agency
Housing Finance Authority
Human Services
Independent Review Panel
International Trade Consortium
Juvenile Services
Medical Examiner
Metro-Miami Action Plan
Metropolitan Planning Organization
Park and Recreation
Planning and Zoning
Police
Procurement Management
Property Appraisal
Public Library System
Public Works
Safe Neighborhood Parks
Seaport
Solid Waste Management
Strategic Business Management
Team Metro
Transit
Task Force on Urban Economic Revitalization
Vizcaya Museum And Gardens
Water & Sewer

Water & Sewer
P. O. Box 330316 • 3071 SW 38th Avenue
Miami, Florida 33233-0316
T 305-665-7471

miamidade.gov

November 29, 2007

Via FedEx Express
Tracking No. 8633 5235 2589

Mr. Al Linero, P.E.
Administrator, Air Permitting South
Division of Air Resource Management
2600 Blair Stone Road, M.S. 5500
Tallahassee, Florida 32399-2400

Subject: Application for Air Construction Permit for the Alexander Orr, Jr. Water Treatment Plant, Facility I.D. No. 0250314

Dear Mr. Linero:

In accordance with Rule 62-210.300, F.A.C., enclosed please find four (4) signed and sealed applications for an Air Construction Permit for the Alexander Orr, Jr. Water Treatment Plant.

Please note that this application also provides the information requested by the Florida Department of Environmental Protection in response to the August 20, 2007 request by Miami-Dade Water and Sewer Department (MDWASD) for an extension to the expiration date of Air Construction Permit 0250314-009-AC and serves as MDWASD's response to that request.

As the designated Responsible Official of this facility, I certify this application to be true, accurate, and complete based upon information and belief formed after reasonable inquiry. Please contact me at (786) 552-8112 or Mr. Richard M. O'Rourke, P.E. at (786) 552-8123 if there are any questions regarding this application.

Sincerely,

Rafael A. Terrero, P.E., BCEE, M.ASCE
Assistant Director, Water System Operations

RAT/RMO/JRP

c: Lee Hoefert, FDEP/SED
Teresa M. Heron, FDEP/TAL
Mallika Muthiah, MD-DERM

Enclosures: Application for Air Construction Permit for the Miami-Dade Water and Sewer Department Alexander Orr, Jr. Water Treatment Plant, Miami, Florida (4 copies)

Delivering Excellence Every Day

L07240

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

RECEIVED
NOV 30 2007
BUREAU OF AIR REGULATION

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for any air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial/revised/renewal Title V air operation permit.

Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Miami-Dade Water and Sewer Department
2. Site Name: Alexander Orr, Jr. Water Treatment Plant
3. Facility Identification Number: 0250314
4. Facility Location...
   Street Address or Other Locator: 6800 SW 87th Avenue
   City: Miami County: Miami-Dade Zip Code: 33173
5. Relocatable Facility? ☐ Yes ☑ No
6. Existing Title V Permitted Facility? ☑ Yes ☐ No

Application Contact

1. Application Contact Name: Richard M. O'Rourke, P.E.
2. Application Contact Mailing Address...
   Organization/Firm: Miami-Dade Water and Sewer Department
   Street Address: PO Box 330316
   City: Miami State: FL Zip Code: 33233-0316
3. Application Contact Telephone Numbers...
   Telephone: (786) 552 - 8123 ext. Fax: (786) 552 - 8640
4. Application Contact Email Address: rorou01@miamidade.gov

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 11/30/07
2. Project Number(s): 0250314-014-AC
3. PSD Number (if applicable):
4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☑ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This application is for an air construction permit to supersede previous Air Construction Permit 0250314-009-AC in accordance with Chapter 62-212 F.A.C. Specifically, this application modifies the equipment designated as emissions unit (E.U. ID) 025 and removes conditions 3.A.4.b., 3.A.4.d., and 3.A.4.e. for E.U. ID 009 – 012, 024, and 025 of the previous air construction permit and modifies conditions 3.A.4.c. and 3.A.5. of the referenced permit to reduce the federally enforceable combined fuel consumption limitation and lower the emissions limitation on NOx emissions from the subject emissions units. This application is in compliance with Chapters 62-210 and 62-212 as supported by the attached report.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
009	Diesel Engine Generator # 1, EMD model No. 20-645F4B		
010	Diesel Engine Generator # 2, EMD model No. 20-645F4B		
011	Diesel Engine Generator # 3, EMD model No. 20-645F4B		
012	Diesel Engine Generator # 4, EMD model No. 20-645F4B		
024	Diesel Engine Generator # 5, EMD model No. 20-645F4B		
025	Diesel Engine Generator # 6, EMD model No. 16-710G4C-T2		

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☑ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : Rafael A. Terrero, P.E., BCEE, M.ASCE

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: Miami-Dade Water and Sewer Department
   Street Address: PO Box 330316
   City: Miami State: FL Zip Code: 33233-0316

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: (786) 552 - 8112 ext. Fax: (786) 552 - 8639

4. Owner/Authorized Representative Email Address: TERRERO@miamidade.gov

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.

Signature

11/29/07
Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date:

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Richard M. O'Rourke, P.E.
   Registration Number: 42683
2. Professional Engineer Mailing Address...
   Organization/Firm: Miami-Dade Water and Sewer Department
   Street Address: PO Box 330316
   City: Miami State: FL Zip Code: 33233-0316
3. Professional Engineer Telephone Numbers...
   Telephone: (786) 552 - 8123 ext. Fax: (786) 552 - 8640
4. Professional Engineer Email Address: rorou01@miamidade.gov
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☑, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

29 Nov 2007
Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 565.9 North (km) 2843.3		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 25 / 42 / 28.0 Longitude (DD/MM/SS) 80 / 20 / 11.0	
3. Governmental Facility Code: 3	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4941
7. Facility Comment : Facility is a publicly-owned water treatment plant as more fully described in the attached report.			

Facility Contact

1. Facility Contact Name: Richard M. O'Rourke, P.E.
2. Facility Contact Mailing Address... Organization/Firm: Miami-Dade Water and Sewer Department Street Address: PO Box 330316 City: Miami State: FL Zip Code: 33233-0316
3. Facility Contact Telephone Numbers: Telephone: (786) 552 - 8238 ext. Fax: (786) 552 - 8640
4. Facility Contact Email Address: rorou01@miamidade.gov

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☑ Title V Source	
4. ☑ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☐ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☐ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	

12. Facility Regulatory Classifications Comment:

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, specifically nitrogen oxides (NOx) and carbon monoxide (CO), exceeds 100 tons per year (TPY).

This project is subject to the requirements of Chapter 62-212 Stationary Sources section 62-212.300, F.A.C., General Preconstruction Review Requirements but in accordance with–Preconstruction Review Rule 62-212.400(2)(a), MDWASD calculates that no significant emissions increase of a PSD pollutant results from the proposed modifications and construction, and no major modification to the source facility is engendered. Therefore subsections 62-212.400(4) through (12), F.A.C. do not apply to this modification. This determination by MDWASD is based on a baseline actual-to-potential/projected applicability test in accordance with Rule 62-212.400(2)(a)3 Hybrid Test for Multiple Types of Emissions Units as described herein and in the attached report.

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO Carbon Monoxide	A	N
NOx Nitrogen Oxides	A	Y
PM10 Particulate Matter	A	N
SO2 Sulfur Dioxide	B	Y
VOC Volatile Organic Compounds	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
NOx	N	009 – 012, 024, 025	N/A	281.52	ESCPSD
SO2	N	009 – 012, 024, 025	N/A	4.26	RULE

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

Currently under Title V Air Operation Permit 0250314-011 & 010-AV, the existing units E.U. ID 009, 010, 011 and 012 have a maximum allowable rate NOx emission of 4.12 lb/MMBtu each, and a combined fuel limitation of 1,415,000 gals/year which yields a maximum NOx emission rate of 403 tons NOx per 12-consecutive month. This application will modify those limits to a maximum allowable rate NOx emission of 3.40 lb/MMBtu each, and a combined fuel limitation of 1,200,000 gals/year which yields a maximum NOx emission rate of 281.52 tons NOx per 12-consecutive month. All units included in this permit (E.U. 009 – 012, 024, and 025) shall be subject to these modified conditions.

Under Title V Air Operation Permit 0250314-011 & 010-AV, all subject units are required to burn No. 2 low-sulfur diesel fuel containing not more than 0.05% sulfur by weight. In conjunction with the proposed fuel limitation of 1,200,000 gallons per year, this equates to a cap on SOx emissions of 4.26 tons per year.

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: A ☐ Previously Submitted, Date:_____
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date:_____
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: C ☐ Previously Submitted, Date:_____

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   ☐ Attached, Document ID:_____ ☑ Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
   ☑ Attached, Document ID: Report
3. Rule Applicability Analysis:
   ☑ Attached, Document ID: Report
4. List of Exempt Emissions Units (Rule 62-210.300(3), F.A.C.):
   ☑ Attached, Document ID: D ☐ Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification:
   ☐ Attached, Document ID:_____ ☑ Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
   ☐ Attached, Document ID:_____ ☑ Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
   ☐ Attached, Document ID:_____ ☑ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ ☑ Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ ☑ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    ☐ Attached, Document ID:_____ ☑ Not Applicable

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:_____ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
EMD Model 20-645F4B diesel-fueled standby generator # 1; existing unit in an existing bank of four such units.

3. Emissions Unit Identification Number: 009

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: General Motors Electro-Motive Division (EMD)
Model Number: 20-645F4B

10. Generator Nameplate Rating: 2.865 MW

11. Emissions Unit Comment: This emission unit consists of a 4,000 Bhp diesel fueled internal combustion prime mover coupled to a 2,865 kW generator. This is an existing unit and the only modifications under this application are a lowering of the federally enforceable combined fuel cap from 1,415,000 to 1,200,000 gallons per year and a lowering of the federally enforceable maximum NOx emissions rate from 4.12 lb/MMBtu to 3.40 lb/MMBtu. These existing conditions are a part of the current Title V Air Operating Permit 0250314-011 & 010-AV.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: None
2. Control Device or Method Code(s):

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate: 2.865 MW-h/hour	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	 days/week hours/year

6. Operating Capacity/Schedule Comment:

Maximum continuous production rate is 2.865 MW-h/hour and would normally not be exceeded. The unit can sustain peaking loads of 110% or 3150 MW-h/hour for periods not to exceed two hours in twenty-four. Emissions testing would be done at the maximum continuous rate, not the peaking rate.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EMDs	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Generator with a horizontal stack located on top of the enclosure structure.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: H	6. Stack Height: 18 feet	7. Exit Diameter: 1.75 feet
8. Exit Temperature: 735 °F	9. Actual Volumetric Flow Rate: 23000 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 565.9 North (km): 2,843.3	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel burned in industrial large bore internal combustion compression-ignition engine (emissions related to thousand gallons burned).		
2. Source Classification Code (SCC): 2-02-004-01	3. SCC Units: 1000 Gallons Diesel Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: 1,200 (combined)	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash:	9. Million Btu per SCC Unit: 138
10. Segment Comment: This unit is part of a bank of four existing and two proposed emissions units that are regulated in common but enumerated separately and not as a single unit. All six units shall be subject to a combined fuel limitation of 1,200,000 gallons in any consecutive 12-month period. This replaces the existing limit of 1,415,000 gallons in any consecutive 12-month period currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. The new limit corresponds to an maximum heat input value of 165,600 MMBtu/year as below: 1,200,000 gallons/year x 0.138 MMBtu/gal = 165,600 MMBtu/year		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM10			NS
SOX			EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 69.60 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 116 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 66.53 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 69.60 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 66.53 ton/year*

Projected: (1,200,000 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 69.60 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 281.52 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 3.40 lb/MMBtu Reference: Proposed federally enforceable limitation	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): 258.67 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 281.52 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(3.254 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 258.67 ton/year*

Projected: (1,200,000 gal/yr)(3.40 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 281.52 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application and a modified maximum NOx emissions rate of 3.40 lb/MMBtu.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.71 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.85 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 4.50 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.71 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.50 ton/year*

Projected: (1,200,000 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.71 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.26 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.10 lb/1000 gallons Reference: Mass balance based on 0.05% sulfur	7. Emissions Method Code: 2
8.a. Baseline Actual Emissions (if required): 4.07 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.26 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

For 0.05% low sulfur diesel fuel: (.0005 lb S/lb diesel)((64 lb SO2/lb-mol)/(32 lb S/lb-mol))(7.1 lb/gal diesel) = 0.0071 lb SO2/gal diesel

Baseline: (1,147,133 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.07 ton/year*

Projected: (1,200,000 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.26 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 6.90 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 11.5 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 6.60 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 6.90 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.60 ton/year*

Projected: (1,200,000 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.90 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.40 lb/MMBtu	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: Each unit shall be tested to demonstrate compliance with the NOx emission standard specified in accordance with EPA Method 7 or 7E as specified in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800, F.A.C. During each federal fiscal year (October 1st to September 30th), each unit shall be tested to demonstrate compliance with the NOx emission standard if the unit operated more than 400 hours during the previous 12 months.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1,200,000 gallons diesel/12-months	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: The owner or operator shall install, calibrate, operate and maintain monitoring devices to monitor and record the fuel flow and hours of operation. The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units. The owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit.	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.05% low-sulfur diesel fuel	4. Equivalent Allowable Emissions: lb/hour 4.26 tons/year
5. Method of Compliance: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving records from the fuel supplier that indicate the sulfur content of the fuel delivered complies with the sulfur limit specified.	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: VE 20	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 40 % Maximum Period of Excess Opacity Allowed: 2 min/hour	
4. Method of Compliance: Perform Initial VE Compliance monitoring using EPA Method 9	
5. Visible Emissions Comment: Exceptional conditions during deadline (emergency) start and initial loading until units reach normal operating conditions and temperatures.	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: E ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: F ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☑ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: G ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☑ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☑ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
      ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
EMD Model 20-645F4B diesel-fueled standby generator # 2; existing unit in an existing bank of four such units.

3. Emissions Unit Identification Number: 010

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: General Motors Electro-Motive Division (EMD)
Model Number: 20-645F4B

10. Generator Nameplate Rating: 2.865 MW

11. Emissions Unit Comment: This emission unit consists of a 4,000 Bhp diesel fueled internal combustion prime mover coupled to a 2,865 kW generator. This is an existing unit and the only modifications under this application are a lowering of the federally enforceable combined fuel cap from 1,415,000 to 1,200,000 gallons per year and a lowering of the federally enforceable maximum NOx emissions rate from 4.12 lb/MMBtu to 3.40 lb/MMBtu. These existing conditions are a part of the current Title V Air Operating Permit 0250314-011 & 010-AV.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: None
2. Control Device or Method Code(s):

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate: 2.865 MW-h/hour	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: hours/day weeks/year	 days/week hours/year

6. Operating Capacity/Schedule Comment:

Maximum continuous production rate is 2.865 MW-h/hour and would normally not be exceeded. The unit can sustain peaking loads of 110% or 3150 MW-h/hour for periods not to exceed two hours in twenty-four. Emissions testing would be done at the maximum continuous rate, not the peaking rate.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EMDs	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Generator with a horizontal stack located on top of the enclosure structure.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: H	6. Stack Height: 18 feet	7. Exit Diameter: 1.75 feet
8. Exit Temperature: 735 °F	9. Actual Volumetric Flow Rate: 23000 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 565.9 North (km): 2,843.3	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel burned in industrial large bore internal combustion compression-ignition engine (emissions related to thousand gallons burned).		
2. Source Classification Code (SCC): 2-02-004-01	3. SCC Units: 1000 Gallons Diesel Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: 1,200 (combined)	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash:	9. Million Btu per SCC Unit: 138
10. Segment Comment: This unit is part of a bank of four existing and two proposed emissions units that are regulated in common but enumerated separately and not as a single unit. All six units shall be subject to a combined fuel limitation of 1,200,000 gallons in any consecutive 12-month period. This replaces the existing limit of 1,415,000 gallons in any consecutive 12-month period currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. The new limit corresponds to an maximum heat input value of 165,600 MMBtu/year as below: 1,200,000 gallons/year x 0.138 MMBtu/gal = 165,600 MMBtu/year		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM10			NS
SOX			EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 69.60 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 116 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 66.53 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 69.60 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 66.53 ton/year*

Projected: (1,200,000 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 69.60 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 281.52 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 3.40 lb/MMBtu Reference: Proposed federally enforceable limitation	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): 258.67 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 281.52 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(3.254 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 258.67 ton/year*

Projected: (1,200,000 gal/yr)(3.40 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 281.52 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application and a modified maximum NOx emissions rate of 3.40 lb/MMBtu.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.71 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.85 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 4.50 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.71 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.50 ton/year*

Projected: (1,200,000 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.71 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.26 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.10 lb/1000 gallons Reference: Mass balance based on 0.05% sulfur	7. Emissions Method Code: 2
8.a. Baseline Actual Emissions (if required): 4.07 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.26 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

For 0.05% low sulfur diesel fuel: (.0005 lb S/lb diesel)((64 lb SO2/lb-mol)/(32 lb S/lb-mol))(7.1 lb/gal diesel) = 0.0071 lb SO2/gal diesel

Baseline: (1,147,133 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.07 ton/year*

Projected: (1,200,000 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.26 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 6.90 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 11.5 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 6.60 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 6.90 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.60 ton/year*

Projected: (1,200,000 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.90 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.40 lb/MMBtu	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: Each unit shall be tested to demonstrate compliance with the NOx emission standard specified in accordance with EPA Method 7 or 7E as specified in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800, F.A.C. During each federal fiscal year (October 1st to September 30th), each unit shall be tested to demonstrate compliance with the NOx emission standard if the unit operated more than 400 hours during the previous 12 months.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1,200,000 gallons diesel/12-months	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: The owner or operator shall install, calibrate, operate and maintain monitoring devices to monitor and record the fuel flow and hours of operation. The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units. The owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit.	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.05% low-sulfur diesel fuel	4. Equivalent Allowable Emissions: lb/hour 4.26 tons/year
5. Method of Compliance: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving records from the fuel supplier that indicate the sulfur content of the fuel delivered complies with the sulfur limit specified.	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: VE 20	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 40 % Maximum Period of Excess Opacity Allowed: 2 min/hour	
4. Method of Compliance: Perform Initial VE Compliance monitoring using EPA Method 9	
5. Visible Emissions Comment: Exceptional conditions during deadline (emergency) start and initial loading until units reach normal operating conditions and temperatures.	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: E ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: F ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☑ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: G ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☑ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☑ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
EMD Model 20-645F4B diesel-fueled standby generator # 3; existing unit in an existing bank of four such units.

3. Emissions Unit Identification Number: 011

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: General Motors Electro-Motive Division (EMD)
Model Number: 20-645F4B

10. Generator Nameplate Rating: 2.865 MW

11. Emissions Unit Comment: This emission unit consists of a 4,000 Bhp diesel fueled internal combustion prime mover coupled to a 2,865 kW generator. This is an existing unit and the only modifications under this application are a lowering of the federally enforceable combined fuel cap from 1,415,000 to 1,200,000 gallons per year and a lowering of the federally enforceable maximum NOx emissions rate from 4.12 lb/MMBtu to 3.40 lb/MMBtu. These existing conditions are a part of the current Title V Air Operating Permit 0250314-011 & 010-AV.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
   None

2. Control Device or Method Code(s):

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:
2. Maximum Production Rate: 2.865 MW-h/hour
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year hours/year
6. Operating Capacity/Schedule Comment: Maximum continuous production rate is 2.865 MW-h/hour and would normally not be exceeded. The unit can sustain peaking loads of 110% or 3150 MW-h/hour for periods not to exceed two hours in twenty-four. Emissions testing would be done at the maximum continuous rate, not the peaking rate.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EMDs	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Generator with a horizontal stack located on top of the enclosure structure.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: H	6. Stack Height: 18 feet	7. Exit Diameter: 1.75 feet
8. Exit Temperature: 735 °F	9. Actual Volumetric Flow Rate: 23000 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 565.9 North (km): 2,843.3	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel burned in industrial large bore internal combustion compression-ignition engine (emissions related to thousand gallons burned).		
2. Source Classification Code (SCC): 2-02-004-01	3. SCC Units: 1000 Gallons Diesel Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: 1,200 (combined)	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash:	9. Million Btu per SCC Unit: 138
10. Segment Comment: This unit is part of a bank of four existing and two proposed emissions units that are regulated in common but enumerated separately and not as a single unit. All six units shall be subject to a combined fuel limitation of 1,200,000 gallons in any consecutive 12-month period. This replaces the existing limit of 1,415,000 gallons in any consecutive 12-month period currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. The new limit corresponds to an maximum heat input value of 165,600 MMBtu/year as below: 1,200,000 gallons/year x 0.138 MMBtu/gal = 165,600 MMBtu/year		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM10			NS
SOX			EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 69.60 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 116 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 66.53 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 69.60 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 66.53 ton/year*

Projected: (1,200,000 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 69.60 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 281.52 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 3.40 lb/MMBtu Reference: Proposed federally enforceable limitation	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): 258.67 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 281.52 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(3.254 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 258.67 ton/year*

Projected: (1,200,000 gal/yr)(3.40 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 281.52 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application and a modified maximum NOx emissions rate of 3.40 lb/MMBtu.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.71 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.85 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 4.50 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.71 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.50 ton/year*

Projected: (1,200,000 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.71 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.26 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.10 lb/1000 gallons Reference: Mass balance based on 0.05% sulfur	7. Emissions Method Code: 2
8.a. Baseline Actual Emissions (if required): 4.07 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.26 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

For 0.05% low sulfur diesel fuel: (.0005 lb S/lb diesel)((64 lb SO2/lb-mol)/(32 lb S/lb-mol))(7.1 lb/gal diesel) = 0.0071 lb SO2/gal diesel

Baseline: (1,147,133 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.07 ton/year*

Projected: (1,200,000 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.26 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 6.90 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 11.5 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 6.60 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 6.90 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.60 ton/year*

Projected: (1,200,000 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.90 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.40 lb/MMBtu	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: Each unit shall be tested to demonstrate compliance with the NOx emission standard specified in accordance with EPA Method 7 or 7E as specified in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800, F.A.C. During each federal fiscal year (October 1st to September 30th), each unit shall be tested to demonstrate compliance with the NOx emission standard if the unit operated more than 400 hours during the previous 12 months.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1,200,000 gallons diesel/12-months	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: The owner or operator shall install, calibrate, operate and maintain monitoring devices to monitor and record the fuel flow and hours of operation. The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units. The owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit.	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.05% low-sulfur diesel fuel	4. Equivalent Allowable Emissions: lb/hour 4.26 tons/year
5. Method of Compliance: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving records from the fuel supplier that indicate the sulfur content of the fuel delivered complies with the sulfur limit specified.	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ___

1. Visible Emissions Subtype: VE 20	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 40 % Maximum Period of Excess Opacity Allowed: 2 min/hour	
4. Method of Compliance: Perform Initial VE Compliance monitoring using EPA Method 9	
5. Visible Emissions Comment: Exceptional conditions during deadline (emergency) start and initial loading until units reach normal operating conditions and temperatures.	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: E ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: F ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☑ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: G ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☑ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☑ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
      ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
EMD Model 20-645F4B diesel-fueled standby generator # 4; existing unit in an existing bank of four such units.

3. Emissions Unit Identification Number: 012

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: General Motors Electro-Motive Division (EMD)
Model Number: 20-645F4B

10. Generator Nameplate Rating: 2.865 MW

11. Emissions Unit Comment: This emission unit consists of a 4,000 Bhp diesel fueled internal combustion prime mover coupled to a 2,865 kW generator. This is an existing unit and the only modifications under this application are a lowering of the federally enforceable combined fuel cap from 1,415,000 to 1,200,000 gallons per year and a lowering of the federally enforceable maximum NOx emissions rate from 4.12 lb/MMBtu to 3.40 lb/MMBtu. These existing conditions are a part of the current Title V Air Operating Permit 0250314-011 & 010-AV.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
   None

2. Control Device or Method Code(s):

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:
2. Maximum Production Rate: 2.865 MW-h/hour
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year hours/year
6. Operating Capacity/Schedule Comment: Maximum continuous production rate is 2.865 MW-h/hour and would normally not be exceeded. The unit can sustain peaking loads of 110% or 3150 MW-h/hour for periods not to exceed two hours in twenty-four. Emissions testing would be done at the maximum continuous rate, not the peaking rate.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EMDs		2. Emission Point Type Code: 1
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Generator with a horizontal stack located on top of the enclosure structure.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: H	6. Stack Height: 18 feet	7. Exit Diameter: 1.75 feet
8. Exit Temperature: 735 °F	9. Actual Volumetric Flow Rate: 23000 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: 17 East (km): 565.9 North (km): 2,843.3		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel burned in industrial large bore internal combustion compression-ignition engine (emissions related to thousand gallons burned).		
2. Source Classification Code (SCC): 2-02-004-01	3. SCC Units: 1000 Gallons Diesel Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: 1,200 (combined)	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash:	9. Million Btu per SCC Unit: 138
10. Segment Comment: This unit is part of a bank of four existing and two proposed emissions units that are regulated in common but enumerated separately and not as a single unit. All six units shall be subject to a combined fuel limitation of 1,200,000 gallons in any consecutive 12-month period. This replaces the existing limit of 1,415,000 gallons in any consecutive 12-month period currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. The new limit corresponds to an maximum heat input value of 165,600 MMBtu/year as below: 1,200,000 gallons/year x 0.138 MMBtu/gal = 165,600 MMBtu/year		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM10			NS
SOX			EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 69.60 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 116 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 66.53 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 69.60 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 66.53 ton/year*

Projected: (1,200,000 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 69.60 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 281.52 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 3.40 lb/MMBtu Reference: Proposed federally enforceable limitation	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): 258.67 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 281.52 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(3.254 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 258.67 ton/year*

Projected: (1,200,000 gal/yr)(3.40 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 281.52 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application and a modified maximum NOx emissions rate of 3.40 lb/MMBtu.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.71 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.85 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 4.50 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.71 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.50 ton/year*

Projected: (1,200,000 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.71 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.26 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.10 lb/1000 gallons Reference: Mass balance based on 0.05% sulfur	7. Emissions Method Code: 2
8.a. Baseline Actual Emissions (if required): 4.07 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.26 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

For 0.05% low sulfur diesel fuel: (.0005 lb S/lb diesel)((64 lb SO2/lb-mol)/(32 lb S/lb-mol))(7.1 lb/gal diesel) = 0.0071 lb SO2/gal diesel

Baseline: (1,147,133 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.07 ton/year*

Projected: (1,200,000 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.26 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 6.90 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 11.5 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 6.60 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 6.90 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.60 ton/year*

Projected: (1,200,000 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.90 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.40 lb/MMBtu	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: Each unit shall be tested to demonstrate compliance with the NOx emission standard specified in accordance with EPA Method 7 or 7E as specified in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800, F.A.C. During each federal fiscal year (October 1st to September 30th), each unit shall be tested to demonstrate compliance with the NOx emission standard if the unit operated more than 400 hours during the previous 12 months.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1,200,000 gallons diesel/12-months	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: The owner or operator shall install, calibrate, operate and maintain monitoring devices to monitor and record the fuel flow and hours of operation. The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units. The owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit.	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.05% low-sulfur diesel fuel	4. Equivalent Allowable Emissions: lb/hour 4.26 tons/year
5. Method of Compliance: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving records from the fuel supplier that indicate the sulfur content of the fuel delivered complies with the sulfur limit specified.	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: VE 20	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 40 % Maximum Period of Excess Opacity Allowed: 2 min/hour	
4. Method of Compliance: Perform Initial VE Compliance monitoring using EPA Method 9	
5. Visible Emissions Comment: Exceptional conditions during deadline (emergency) start and initial loading until units reach normal operating conditions and temperatures.	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: E ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: F ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☑ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: G ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☑ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☑ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
EMD Model 20-645F4B diesel-fueled standby generator # 5; new unit added to an existing bank of four such units.

3. Emissions Unit Identification Number: 024

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C	10/20/2005	11/30/2007 (estimated)	49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: General Motors Electro-Motive Division (EMD)
Model Number: 20-645F4B

10. Generator Nameplate Rating: 2.865 MW

11. Emissions Unit Comment: This emission unit consists of a 4,000 Bhp diesel fueled internal combustion prime mover coupled to a 2,865 kW generator. This is a new unit installed under Air Construction Permit 0250314-009-AC and the only modifications under this application are a lowering of the federally enforceable combined fuel cap from 1,415,000 to 1,200,000 gallons per year and a lowering of the federally enforceable maximum NOx emissions rate from 4.12 lb/MMBtu to 3.40 lb/MMBtu. This unit is not yet included in the facility operating permit.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: None
2. Control Device or Method Code(s):

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:
2. Maximum Production Rate: 2.865 MW-h/hour
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year hours/year
6. Operating Capacity/Schedule Comment: Maximum continuous production rate is 2.865 MW-h/hour and would normally not be exceeded. The unit can sustain peaking loads of 110% or 3150 MW-h/hour for periods not to exceed two hours in twenty-four. Emissions testing would be done at the maximum continuous rate, not the peaking rate.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EMDs	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Generator with a vertical stack located on top of the enclosure structure.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: V	6. Stack Height: 21 feet	7. Exit Diameter: 1.75 feet
8. Exit Temperature: 635 °F	9. Actual Volumetric Flow Rate: 21350 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 565.9 North (km): 2,843.3	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel burned in industrial large bore internal combustion compression-ignition engine (emissions related to thousand gallons burned).		
2. Source Classification Code (SCC): 2-02-004-01	3. SCC Units: 1000 Gallons Diesel Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: 1,200 (combined)	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash:	9. Million Btu per SCC Unit: 138
10. Segment Comment: This unit is part of a bank of four existing and two proposed emissions units that are regulated in common but enumerated separately and not as a single unit. All six units shall be subject to a combined fuel limitation of 1,200,000 gallons in any consecutive 12-month period. This replaces the existing limit of 1,415,000 gallons in any consecutive 12-month period currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. The new limit corresponds to an maximum heat input value of 165,600 MMBtu/year as below: 1,200,000 gallons/year x 0.138 MMBtu/gal = 165,600 MMBtu/year		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM10			NS
SOX			EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 69.60 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 116 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 66.53 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 69.60 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 66.53 ton/year*

Projected: (1,200,000 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 69.60 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 281.52 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 3.40 lb/MMBtu Reference: Proposed federally enforceable limitation	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): 258.67 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 281.52 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(3.254 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 258.67 ton/year*

Projected: (1,200,000 gal/yr)(3.40 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 281.52 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application and a modified maximum NOx emissions rate of 3.40 lb/MMBtu.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.71 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.85 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 4.50 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.71 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.50 ton/year*

Projected: (1,200,000 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.71 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.26 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.10 lb/1000 gallons Reference: Mass balance based on 0.05% sulfur	7. Emissions Method Code: 2
8.a. Baseline Actual Emissions (if required): 4.07 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.26 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

For 0.05% low sulfur diesel fuel: (.0005 lb S/lb diesel)((64 lb SO2/lb-mol)/(32 lb S/lb-mol))(7.1 lb/gal diesel) = 0.0071 lb SO2/gal diesel

Baseline: (1,147,133 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.07 ton/year*

Projected: (1,200,000 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.26 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 6.90 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 11.5 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 6.60 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 6.90 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.60 ton/year*

Projected: (1,200,000 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.90 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.40 lb/MMBtu	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: Each unit shall be tested to demonstrate compliance with the NOx emission standard specified in accordance with EPA Method 7 or 7E as specified in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800, F.A.C. During each federal fiscal year (October 1st to September 30th), each unit shall be tested to demonstrate compliance with the NOx emission standard if the unit operated more than 400 hours during the previous 12 months.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1,200,000 gallons diesel/12-months	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: The owner or operator shall install, calibrate, operate and maintain monitoring devices to monitor and record the fuel flow and hours of operation. The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units. The owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit.	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.05% low-sulfur diesel fuel	4. Equivalent Allowable Emissions: lb/hour 4.26 tons/year
5. Method of Compliance: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving records from the fuel supplier that indicate the sulfur content of the fuel delivered complies with the sulfur limit specified.	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: VE 20	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 40 % Maximum Period of Excess Opacity Allowed: 2 min/hour	
4. Method of Compliance: Perform Initial VE Compliance monitoring using EPA Method 9	
5. Visible Emissions Comment: Exceptional conditions during deadline (emergency) start and initial loading until units reach normal operating conditions and temperatures.	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: E ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: F ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☑ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: G ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☑ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☑ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
      ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
      ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☑ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
EMD Model 16-710G4C-T2 diesel-fueled standby generator # 6; proposed unit added to a bank of four existing plus one new EMD Model 20-645F4B units.

3. Emissions Unit Identification Number: 025

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C	06/01/2008 (estimated)	06/01/2011 (estimated)	49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: General Motors Electro-Motive Division (EMD)
Model Number: 16-710G4C-T2

10. Generator Nameplate Rating: 2.865 MW

11. Emissions Unit Comment: This emission unit consists of a 4,000 Bhp diesel fueled internal combustion prime mover coupled to a 2,865 kW generator. This unit was permitted under Air Construction Permit 0250314-009-AC as a EMD Model 20-645F4B but the 16-710G4C-T2 is the current EMD offering for stationary engines and will be purchased and installed instead. Subject to the modifications under this application lowering the federally enforceable combined fuel cap from 1,415,000 to 1,200,000 gallons per year and lowering the federally enforceable maximum NOx emissions rate from 4.12 lb/MMBtu to 3.40 lb/MMBtu.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: None
2. Control Device or Method Code(s):

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:
2. Maximum Production Rate: 2.865 MW-h/hour
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year hours/year
6. Operating Capacity/Schedule Comment: Maximum continuous production rate is 2.865 MW-h/hour and would normally not be exceeded. The unit can sustain peaking loads of 110% or 3150 MW-h/hour for periods not to exceed two hours in twenty-four. Emissions testing would be done at the maximum continuous rate, not the peaking rate.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EMDs	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Generator with a vertical stack located on top of the enclosure structure.		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: V	6. Stack Height: 21 feet	7. Exit Diameter: 1.83 feet
8. Exit Temperature: 635 °F	9. Actual Volumetric Flow Rate: 24800 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 565.9 North (km): 2,843.3	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Diesel fuel burned in industrial large bore internal combustion compression-ignition engine (emissions related to thousand gallons burned).		
2. Source Classification Code (SCC): 2-02-004-01	3. SCC Units: 1000 Gallons Diesel Burned	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: 1,200 (combined)	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.05	8. Maximum % Ash:	9. Million Btu per SCC Unit: 138
10. Segment Comment: This unit is part of a bank of four existing and two proposed emissions units that are regulated in common but enumerated separately and not as a single unit. All six units shall be subject to a combined fuel limitation of 1,200,000 gallons in any consecutive 12-month period. This replaces the existing limit of 1,415,000 gallons in any consecutive 12-month period currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. The new limit corresponds to an maximum heat input value of 165,600 MMBtu/year as below: 1,200,000 gallons/year x 0.138 MMBtu/gal = 165,600 MMBtu/year		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
CO			NS
NOX			EL
PM10			NS
SOX			EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 69.60 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 116 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 66.53 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 69.60 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 66.53 ton/year*

Projected: (1,200,000 gal/yr)(0.116 lb CO/gal)(1 ton/2000 lb) = 69.60 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 281.52 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 3.40 lb/MMBtu Reference: Proposed federally enforceable limitation	7. Emissions Method Code: 0
8.a. Baseline Actual Emissions (if required): 258.67 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 281.52 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(3.254 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 258.67 ton/year*

Projected: (1,200,000 gal/yr)(3.40 lb NOX/MMBtu)(0.138 MMBtu/gal)(1 ton/2000 lb) = 281.52 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application and a modified maximum NOx emissions rate of 3.40 lb/MMBtu.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.71 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.85 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 4.50 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.71 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

Baseline: (1,147,133 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.50 ton/year*

Projected: (1,200,000 gal/yr)(0.00785 lb PM10/gal)(1 ton/2000 lb) = 4.71 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: SOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 4.26 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 7.10 lb/1000 gallons Reference: Mass balance based on 0.05% sulfur	7. Emissions Method Code: 2
8.a. Baseline Actual Emissions (if required): 4.07 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 4.26 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years

10. Calculation of Emissions:

For 0.05% low sulfur diesel fuel: (.0005 lb S/lb diesel)((64 lb SO2/lb-mol)/(32 lb S/lb-mol))(7.1 lb/gal diesel) = 0.0071 lb SO2/gal diesel

Baseline: (1,147,133 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.07 ton/year*

Projected: (1,200,000 gal/yr)(0.0071 lb SOX/gal)(1 ton/2000 lb) = 4.26 ton/year**

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour 6.90 tons/year**	4. Synthetically Limited? ☑ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 11.5 lb/1000 gallons Reference: WebFIRE accessed 2007-08-13 for SCC 20200401	7. Emissions Method Code: 3
8.a. Baseline Actual Emissions (if required): 6.60 tons/year*	8.b. Baseline 24-month Period: From: Nov 1997 To: Oct 1999
9.a. Projected Actual Emissions (if required): 6.90 tons/year**	9.b. Projected Monitoring Period: ☑ 5 years ☐ 10 years
10. Calculation of Emissions: Baseline: (1,147,133 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.60 ton/year* Projected: (1,200,000 gal/yr)(0.0115 lb CO/gal)(1 ton/2000 lb) = 6.90 ton/year**	

11. Potential, Fugitive, and Actual Emissions Comment:

* Baseline emissions is the total combined emissions for the bank of four (4) EMD standby generators (E.U. ID 009 – 012) which are subject to a combined fuel cap of 1,415,000 gallons per year under Title V Air Operation Permit 0250314-011 & 010-AV.

** Projected emissions is the total combined emissions for the bank of six (6) EMD standby generators consisting of the above-referenced bank of four (4) plus the two new units originally permitted under Air construction Permit 0250314-009-AC and which will be, as a bank of six (6), subject to a modified combined fuel cap of 1,200,000 gallons per year under this application.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.40 lb/MMBtu	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: Each unit shall be tested to demonstrate compliance with the NOx emission standard specified in accordance with EPA Method 7 or 7E as specified in Appendix A of 40 CFR 60 and adopted by reference in Rule 62-204.800, F.A.C. During each federal fiscal year (October 1st to September 30th), each unit shall be tested to demonstrate compliance with the NOx emission standard if the unit operated more than 400 hours during the previous 12 months.	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: ESCPSD	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 1,200,000 gallons diesel/12-months	4. Equivalent Allowable Emissions: lb/hour 281.52 tons/year
5. Method of Compliance: The owner or operator shall install, calibrate, operate and maintain monitoring devices to monitor and record the fuel flow and hours of operation. The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units. The owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit.	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.05% low-sulfur diesel fuel	4. Equivalent Allowable Emissions: lb/hour 4.26 tons/year
5. Method of Compliance: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving records from the fuel supplier that indicate the sulfur content of the fuel delivered complies with the sulfur limit specified.	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ___

1. Visible Emissions Subtype: VE 20	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 40 % Maximum Period of Excess Opacity Allowed: 2 min/hour	
4. Method of Compliance: Perform Initial VE Compliance monitoring using EPA Method 9	
5. Visible Emissions Comment: Exceptional conditions during deadline (emergency) start and initial loading until units reach normal operating conditions and temperatures.	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: B ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: E ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: F ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☑ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☑ Attached, Document ID: G ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☑ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☐ Attached, Document ID: _____ ☑ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☑ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:_
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

Additional Requirements Comment

Report

Report
Application for Air Construction Permit
Miami-Dade Water and Sewer Department
Alexander Orr, Jr. Water Treatment Plant
Facility ID No. 0250314

Executive summary

This Application for Air Construction Permit is submitted to supersede current Air Construction Permit No. 0250314-009-AC, issued October 20, 2005 for the installation of two new General Motors Electro-Motive Division (EMD) standby generators at the Alexander Orr, Jr. Water Treatment Plant (AOWTP). This application is necessary due to a change in equipment for proposed EMD Standby Generator # 6 (E.U. ID 025), and to modify permit conditions in alignment with Chapter 62-212 F.A.C., *Stationary Sources – Preconstruction Review*, to enable MDWASD facility managers to ensure that they have adequate reserves of electrical power to operate the water treatment plant in the case of an emergency.

Air Construction Permit No. 0250314-009-AC was issued for the installation of two EMD Model 20-645F4B standby generators. While an EMD Model 20-645F4B was purchased for use as Standby Generator # 5 (E.U. ID 024), and is complete and compliance tested as of September 2007, the purchase order for EMD Standby Generator # 6 (E.U. ID 025) was recently changed from the planned Model 20-645F4B to an EMD Model 16-710G4C-T2. The Model 16-710G4C-T2 is EMD's more current offering and is emissions certified to meet EPA Tier 2 requirements in accordance with 40 CFR Part 60 Subpart IIII *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.*

In view of the public health aspects of this facility and the need to ensure adequate standby electrical generating capacity and redundancy, Air Construction Permit No. 0250314-009-AC was issued with a number of conditions intended to "fast-track" the application and to avoid not only an air impact analysis under subsections 62-212.400(4) through (12), F.A.C. but also to avoid a baseline to projected or potential emissions

netting exercise. Instead, the permit was written to maintain all existing conditions under the air operating permit with the new generators, for all intents and purposes, simply stationed at the facility as "spares". For example, Condition 3.A.4.b. of Air Construction Permit No. 0250314-009-AC requires that "no more than four of the six units in the standby generator bank shall operate at any given time . . . " Although the inclusion of these conditions was acceptable to MDWASD at the time of issuance, changes in operating conditions at the facility have caused them to be a hardship that adversely affects the facility managers' abilities to adequately provide for the needs of the public and to maintain a safe and adequate drinking water supply under all conditions.

Accordingly, new permit conditions are proposed in this application that give the facility managers the capacity and flexibility they need while, based on a baseline actual-to-potential/projected applicability test in accordance with Rule 62-212.400(2)(a)3 *Hybrid Test for Multiple Types of Emissions Units*, not increasing emissions for the bank of generator or the facility as a whole to an extent that would constitute a significant increase in emissions for the purposes of Rule 62-212.400 *Prevention of Significant Deterioration (PSD)*.

1. Introduction

In accordance with Chapter 62-210 F.A.C. *Stationary Sources - General Requirements*; Section 62-210.300 *Permits Required*, Miami-Dade Water and Sewer Department (MDWASD) submits the attached Application for Air Construction Permit to supersede current Air Construction Permit No. 0250314-009-AC issued October 20, 2007 for the installation of two additional diesel-fueled standby generator sets (hereafter "generator" and "generator set" may be used interchangeably) to the existing bank of four such generators at the Alexander Orr, Jr. Water Treatment Plant (AOWTP) in Miami, Florida. The purpose of this application is provide for an equipment change and to modify conditions of the permit, in alignment with Chapter 62-212 F.A.C., *Stationary Sources – Preconstruction Review*, to enable MDWASD facility managers to ensure that they have adequate reserves of electrical power to operate the water treatment plant in the case of an emergency.

Alexander Orr, Jr. Water Treatment Plant is currently served by four 2.85 MW standby generators with two additional units permitted under Air Construction Permit No. 0250314-009-AC. This bank of generators provides backup power for the bulk of the plant and, in conjunction with backup diesel- and natural gas-fired high-service pump engines, can maintain full operational capacity for the entire water treatment plant in the event of an emergency, power loss from Florida Power & Light (FPL), or in the event that FPL requests the plant to come off the power grid, fully or partially, during periods of high power demand, a situation that is normally referred as "peak shaving".

MDWASD has purchased and installed EMD Standby Generator # 5 (E.U. ID 024) under Air Construction Permit No. 0250314-009-AC and is currently procuring EMD Standby Generator # 6 (E.U. ID 025). While EMD Standby Generator # 5, like the four existing units, is a Model 20-645F4B, EMD Standby Generator # 6 will be a Model 16-710G4C-T2. The Model 16-710G4C-T2 is EMD's more current offering and is emissions certified to meet EPA Tier 2 requirements in accordance with 40 CFR Part 60 Subpart IIII *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. This emissions unit was originally permitted as a Model 20-645F4B and this application reflects the change to a Model 16-710G4C-T2.

In view of the public health aspects of this facility and the need to ensure adequate standby electrical generating capacity and redundancy, Air Construction Permit No.

1. Introduction (cont'd)

0250314-009-AC was issued in October 2005 with a number of conditions intended to "fast-track" the application and to avoid not only an air impact analysis under subsections 62-212.400(4) through (12), F.A.C. but also to avoid a baseline to projected or potential emissions netting exercise. Instead, the permit was written to maintain all existing conditions under the air operating permit with the new generators, for all intents and purposes, simply stationed at the facility as "spares". For example, Condition 4.b. of Air Construction Permit No. 0250314-009-AC requires that "no more than four of the six units in the standby generator bank shall operate at any given time . . . " Although the inclusion of these conditions was acceptable to MDWASD at the time of issuance, changes in operating conditions at the facility have caused them to be a hardship that adversely affects the facility managers' abilities to adequately provide for the needs of the public and to maintain a safe and adequate drinking water supply under all conditions.

MDWASD facility managers had previously calculated that, under extreme emergency conditions (e.g., full FPL power loss to the plant along with major distribution water main breakage necessitating use of all pumps to minimize pressure drop), four 2.85 MW EMD standby generators would be sufficient to provide adequate electrical capacity for the plant and that the additional two generators would provide redundancy to the existing units under all possible scenarios. However, that prediction has proven to not be the case due to facility upgrades and unforeseen equipment failure. The most significant electrical loads at the facility are the electric motor-driven high service pumps that pump finished water from the plant to the county-wide water distribution system and which provide service to much of the southern portion of Miami-Dade County. The electric pumps are supplemented by two large engine-driven pumps, Pump Engine Nos. 5 and 6 (E.U. IDs 005 and 006) and two recently replaced smaller units, (new) Pump Engine Nos. 3 and 4 (E.U. IDs 018 and 019). In June 2005, Pump Engine No. 6 catastrophically failed and was deemed "beyond economical repair". As a result, facility managers have since relied more heavily on the electrical high service pumps. This, along with other expansions and improvements at the facility, have increased electrical loads and increased concomitant standby power requirements. MDWASD is submitting this application in order to ensure that the required electrical power to fully operate the plant is available at all times.

1. Introduction (cont'd)

Therefore, in addition to updating Standby Generator # 6 (E.U. ID 25) from a Model 20-645F4B to a Model 16-710G4C-T2, this application will not include conditions 3.A.4.b., 3.A.4.d., and 3.A.4.e. for E.U. IDs 009 – 012, 024, and 025 of the previous air construction permit and will modify conditions 3.A.4.c. and 3.A.5. of the referenced permit to reduce the federally-enforceable combined fuel consumption limitation and lower the emissions limitation on NOx emissions from the subject emissions units.

The replacement of Air Construction Permit No. 0250314-009-AC with a new permit incorporating the conditions proposed in this application will give the facility managers the capacity and flexibility they need while, based on a baseline actual-to-potential/projected applicability test in accordance with Rule 62-212.400(2)(a)3 *Hybrid Test for Multiple Types of Emissions Units*, not increasing emissions for the bank of generator or the facility as a whole to an extent that would constitute a significant increase in emissions for the purposes of Rule 62-212.400 *Prevention of Significant Deterioration (PSD)*. Therefore subsections 62-212.400(4) through (12), F.A.C. do not apply to this application.

Questions regarding the application can be addressed to the individual listed below at Miami-Dade Water and Sewer Department in Miami, Florida:

Mr. Richard M. O'Rourke, P.E.
Miami-Dade Water and Sewer Department
P.O. Box 330316 Miami, Florida 33233-0316

Telephone: (786) 552-8123
FAX: (786) 552-8640

2. Facility information

Description

The Alexander Orr, Jr. Water Treatment Plant (AOWTP) is a major regional facility that processes up to 214 million gallons per day (MGD) and serves over one million people in southern Miami-Dade County. It was originally constructed in 1954 with a capacity of 40 MGD and has been enlarged and upgraded a number of times. The facility is a lime softening plant with an on-site lime kiln that recovers calcium carbonate from the treatment process and converts it to lime for reuse. The facility draws its raw water from a number of onsite and offsite wellfields. Finished water is pumped out of the plant to the service area distribution system by a combination of electric and engine-driven high-service pumps located in two onsite pumps rooms. The facility is required to maintain adequate standby electrical power which is provided by an onsite bank of generators that is the subject of this permit application.

The Miami-Dade Water and Sewer Department (MDWASD) is the largest public utility in the southeast United States and the sixth largest in the country, providing direct services to approximately 410,000 retail customers. Additionally, wholesale water and/or wastewater service is provided to 18 municipalities in the county. Miami-Dade County's current population of 2.4 million is expected to reach the 3 million mark by the year 2015.

The facility is located at 6800 SW 87th Avenue in unincorporated Miami-Dade County, Florida. UTM coordinates are: Zone 17; 565.9 km E and 2843.3 km N.

Title V status

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM10), sulfur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).
This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD) and currently operates under PSD-FL-249 and Title V Air Operation Permit 0250314-011 & 010-AV.

2. Facility information (cont'd)

Recent permitting activity

The facility is currently permitted under Title V Air Operation Permit 0250314-011 & 010-AV. This is a renewed permit that expires on January 1, 2011.

Replacement of a number of engine-driven pumps in the facility's West Pump Room has been ongoing since 1999 with Air Construction Permit No. 0250314-003-AC being issued on March 5, 1999. That permit was superseded by Air Construction Permit No. 0250314-005-AC on October 30, 2002 and again by Air Construction Permit No. 0250314-007-AC on December 30, 2003. This permit expires on October 30, 2007.

In a separate and more recent business decision, MDWASD applied for and received Air Construction Permit No. 0250314-009-AC on October 20, 2005 for the addition of two new backup standby generators rated at 2685 kW each to the existing bank of four standby generators. This application addresses this air construction permit.

3. New standby generators

Under Air Construction Permit No. 0250314-009-AC, issued October 20, 2005, two new General Motors Electro-Motive Division (EMD) Model 20-645F4B diesel-fueled standby generators are being added to the existing bank of four similar generators. The new units, EMDs # 5 and 6, are designated as emissions units (E.U.) ID Nos. 24 and 25. A copy of the original air construction application and report for the subject units along with a copy of Air Construction Permit No. 0250314-009-AC is included in the Appendices to this report.

As of September 2007, EMD # 5 (E.U. ID No. 24), an EMD Model 20-645F4B, is complete and has passed initial compliance testing. EMD # 6 (E.U. ID No. 25) is in the procurement process with a purchase order for the unit to be placed with the vendor. E.U. ID 025 was also originally permitted under Air Construction Permit No. 0250314-009-AC as a General Motors Electro-Motive Division (EMD) Model 20-645F4B however EMD's current offering for stationary applications and the engine that EMD has certified to current USEPA Tier 2 standards under 40 CFR 60 Part IIII is the Model 16-710G4C-T2.

EMD Model 20-645F4B Standby Generator (E.U. ID 024)

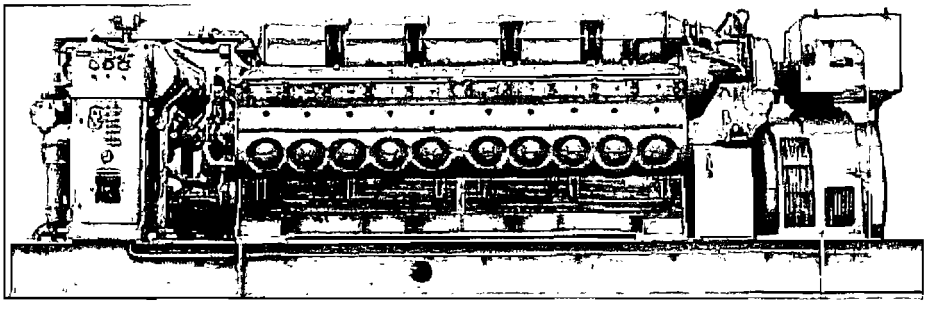


Figure 3-1 General Motors Electro-Motive Division Model 20-645F4B Generator

Under Air Construction Permit No. 0250314-009-AC and as also under this application, new AOWTP EMD Standby Generator # 5 (E.U. ID 024) shall be a General Motors Electro-Motive Division Model 20-645F4B. This unit is being added to an existing bank of four (4) similar Model 20645F4B engines. This generator set is rated to produce 2,865 kilowatts (kW) of electric power at continuous full-load operating conditions, and is driven by a 4,000-brake horsepower (bhp) diesel-fired prime mover. The 2-cycle, 20

3. New standby generators (cont'd)

cylinder engine is turbocharged and normally operates at 900 revolutions per minute (rpm). It is capable of operating at load conditions ranging from 20 percent to 110 percent (peaking duty for durations not to exceed 2 hours per 24-hour period). The engine burns low-sulfur diesel fuel, which has a sulfur content of 0.05 weight percent.

The new 20-645F4B generator, E.U. ID 024, was modified at the factory to reduce NOx emissions. These modifications to the standard 20-645F4B for the control of NOx emissions consist of utilizing injectors with fixed timing, changing the fuel injection timing, and using a 4-pass combustion air aftercooler to increase intake air cooling. The engine was fitted with CBOI (constant beginning of injection) injectors by EMD. The standard injector used by EMD is designed so that as engine loads increase, the point at which fuel injection into the cylinder begins is advanced. The CBOI injector has fixed timing and there is no advance based on engine load. The standard injection timing on an EMD engine is 0 degrees before top dead center (BTDC) and advances under load. CBOI injectors, as their name implies, have the injection timing fixed at 1 degree BTDC. The intercoolers cool the turbocharged intake air before it enters the air box and the cylinders. The standard EMD intercooler is a 2-pass heat exchanger. In order to achieve additional cooling and assist in NOx reduction, this engine is fitted with a 4-pass intercooler. Additionally, the engine will also burn low sulfur (0.05 weight %) diesel fuel, representative of BACT for sulfur dioxide (SO2). Use of these combustion control techniques is anticipated to reduce the emissions of NOx in the engine exhaust by approximately 28 percent from uncontrolled levels.

The new EMD 20-645F4B standby generator set is located within an individual enclosure structure. The exhaust silencer is mounted horizontally on top of the enclosure structure and the exhaust stack terminates vertically with a rain cap fitted to the end of the exhaust. The stack has a 21-inch inside diameter and terminates approximately 21 feet above ground level.

Tables 3-1 and 3-2 summarize the operating characteristics of the new and the existing generator sets, respectively. Table 3-1 demonstrates that brake-specific fuel consumption (BSFC) increases as the engine loads are decreased.

3. New standby generators (cont'd)

Table 3-1.
Summary of Exhaust and Operating Characteristics
of the new EMD Model 20-645F4B Standby Generator Set
Miami-Dade WASD Alexander Orr, Jr. WTP

Number of Units	1 (under construction)
Generator Capacity	
Peaking (110% load-2 hours max)	3,150 kW
Continuous (full load-100%)	2,865 kW
Brake Specific Fuel Consumption (lb/bhp-hr)	
Peaking-110%	0.346, each
Full Load-100%	0.346, each
Partial Load-75%	approx. 0.363
Partial Load-50%	approx. 0.381
Operating Speed	900 rpm
Exhaust Characteristics – Vertical Exhaust	
Height	21 ft
Diameter	1.75 ft
Flow	21,350 acfm
	148 fps
Temperature	635°F

3. New standby generators (cont'd)

Table 3-2. Summary of Exhaust and Operating Characteristics of the Existing EMD Model 20-645F4B Standby Generator Sets Miami-Dade WASD Alexander Orr, Jr. WTP	
Number of Units	4
Generator Capacity	
Peaking (110% load-2 hours max)	3,150 kW, each
Continuous (full load-100%)	2,865 kW, each
Brake Specific Fuel Consumption (lb/bhp-hr)	
Peaking-110%	0.353, each
Full Load-100%	0.353, each
Partial Load-75%	N/A
Operating Speed:	900 rpm
Exhaust Characteristics – Horizontal Exhaust	
Height	18 ft
Diameter	1.75 ft
Flow	23,000 acfm
	148 fps
Temperature	735°F

EMD Model 16-710G4C-T2 Standby Generator (E.U. ID 025)

The second new diesel engine for this project, AOWTP EMD Standby Generator # 6 (E.U. ID 025), will be an EMD Model 16-710G4C-T2. This engine will join AOWTP EMD Standby Generator # 5 (E.U. ID 024) in being added to an existing bank of four (4) Model 20645F4B engines. E.U. ID 025 was also originally permitted under Air Construction Permit No. 0250314-009-AC as a General Motors Electro-Motive Division (EMD) Model 20-645F4B however EMD's current offering for stationary applications and

3. New standby generators (cont'd)

the engine that EMD has certified to current USEPA Tier 2 standards under 40 CFR 60 Part IIII is the Model 16-710G4C-T2.

The Model 16-710G4C-T2 generator set consists of a turbocharged diesel engine as the prime mover driving a single bearing generator. The engine is manufactured by Electro-Motive Diesel (EMD), LaGrange, Illinois. The turbocharged diesel engine is a vertical frame, 2-cycle, 45°-vee type, of welded steel crankcase and oil pan construction incorporating the advantages of positive scavenging air system, unit injection, and high compression.

The diesel engine is cold starting, compression ignition, and has needle valve electronically controlled unit fuel injectors. The pistons are oil-cooled from a direct pressure stream supplied by an engine driven piston cooling oil pump. Cylinder liners are individually removable or can be replaced as part of the power assembly during overhaul level maintenance.

The assembled diesel generator set is solidly mounted to a rigid structural steel base. A carefully balanced generator and the inherent smooth operating characteristics of the 2-cycle engine produce minimum equipment vibrations throughout the operating speed range.

The diesel generator set is located within an individual enclosed structure. An exhaust silencer is mounted horizontally on top of the enclosure structure and the exhaust stack terminates vertically with a rain cap fitted to the end of the exhaust.

The diesel engine is equipped with EMD's engine control (EMDEC) system and electronic unit injectors (EUI), and is emissions certified for compliance with federal EPA Tier 2 regulations in accordance with 40 CFR 60 Part IIII.

EMD's electronic fuel injection system is an electronic engine speed control and fuel management system. The system is a combined electrical and mechanical system that replaces the traditional governor, mechanical unit injectors and associated linkages. These devices are replaced with solenoid operated electronic unit injectors, engine sensors, wiring harnesses, and an EMDEC control box including several electronic

control modules (ECMs). For the 16-cylinder engine, there are two (2) ECMs, a sender ECM and a receiver ECM. Fuel injector timing and duration are precisely controlled by the ECMs, while the power to stroke the injector plunger is provided by a camshaft lobe and follower arrangement.

The diesel engine output at 900 rpm is:

• Continuous (100%):	4000 bhp
• Peaking (110%), 1 hour out of any 12-hour period:	4400 bhp

The generator output at 900 rpm and 4.16 kV, 0.8 pf, 3-phase, 4-wire, 60 hertz is:

• Continuous (100%):	2865 kW
• Peaking (110%), 1 hour out of any 12-hour period:	3150 kW

Unless specifically stated otherwise, all engine and generator ratings contained herein are based upon the following ISO 15550, ISO 3046/1 and EMD standard operating conditions:

77°F air intake temperature	6" H20 max air intake depression
29.61" Hg barometric pressure	6" H2O max exhaust back pressure
#2 diesel fuel oil (low sulfur)	7.1 lb/gal fuel specific gravity (0.855)
18,360 BTU/lb diesel fuel (LHV)	

<u>EMD 710 Series Engines - Basic Specifications</u>

Type	2 cycle - 45° Vee
Crankcase and oil pan construction	Welded steel
Bore x stroke	9-1/16" x 11"
Displacement per cylinder	710 cubic inches
Full load speed	900 RPM
Average Piston speed	1650 ft/min
Compression ratio	18:1
Air system type	Uniflow

3. New standby generators (cont'd)

Scavenging air supply	Centrifugal Flow turbocharger driven by exhaust gas turbine and/or engine gear drive through over-running clutch; two air aftercoolers
Cylinder air inlet	Ports in cylinder liner
Exhaust	Four valves in cylinder head
Piston cooling	Oil - direct pressure stream
Main bearing lubrication	Full pressure
Lube Oil Pumps	Main oil, piston cooling, scavenging, engine driven, positive displacement, helical gear type
Engine Overspeed Trip	Electronic
Fuel Supply Pump	Positive displacement, engine driven
Fuel Injectors	Electronically Controlled Unit Injectors, needle valve
Engine Starting	Turbine Starter (left & right redundant banks)
Engine Cooling Water Pumps	Engine driven centrifugal, One for engine jacket water cooling, independent pump for separate circuit aftercooling
Crankshaft Main Bearing Diameter	8-1/2"
Crankpin Diameter	6-1/2"
Piston Pin Diameter	3.68"
Rotation Facing the Flywheel	Counterclockwise
Cylinders	16
Main Bearings	10
BHP – continuous	4000 BHP
BMEP	155 psi

Lubricating Oil System

Lube main pressure flow	229 gpm
Lube piston cooling flow	115 gpm
Lube scavenging flow	450 gpm

Cooling Water System

3. New standby generators (cont'd)

Engine jacket water flow .....965 gpm
Separate Circuit Aftercooler water flow...225 gpm

Fuel Oil System

Fuel supply pump capacity.....7.6 gpm

Air Intake System

Intake air at 14.7 psi - 115° F.....13,000 acfm
Air intake (total system)
suction-max. clean filters.....6 inches H2O

Exhaust System

Exhaust temperature.....635°F
Exhaust volume @ exhaust temperature 24,800 acfm
Exhaust flow.....157 fps
Exhaust stack height.....21 feet
Exhaust stack diameter.....22 inches
Exhaust back pressure (total system)
maximum allowable.....6 inches H2O

Engine Heat Radiation

Heat Load (approximately).....19,200 BTU/min

Table 3-3 EMD Model 16-710G4C-T2 Fuel Consumption

Engine Load	Brake Specific Fuel Consumption (lb/bhp-hr)
Peaking - 110%	0.339
Full Load - 100%	0.336
Partial Load - 75%	0.348
Partial Load - 50%	0.375

3. New standby generators (cont'd)

Exhaust Emissions

The EMD 16-710G4C-T2 engine will be emissions certified to meet EPA Tier 2 requirements in accordance with 40 CFR 60 Part IIII, as stated below in g/kW-hr:

Table 3-4 EMD Model 16-710G4C-T2 Emissions

Engine Load	NOx + HC (g/kW-hr)	PM (g/kW-hr)	CO (g/kW-hr)
Peaking - 110%	7.0	0.17	0.2
Full Load - 100%	7.0	0.17	0.2
Partial Load - 75%	6.5	0.15	0.2
Partial Load - 50%	8.6	0.18	0.2

4. Permit limitations

The Alexander Orr, Jr. WTP is currently permitted under Title V Air Operation Permit Revision & Renewal FINAL Permit No.: 0250314-011 & 010-AV with the bank of EMD standby generators (E.U. IDs 009 – 012) covered under Section III Subsection B of that permit. Section III Subsection B includes two conditions that serve to limit NOx emissions from the generator bank. They are:

B.2. Methods of Operation - (i.e., Fuels): These emission units shall be fired with diesel fuel (i.e., No. 2 fuel oil) with a maximum sulfur content of 0.05 percent by weight. Fuel consumption of all emission units combined shall not exceed 1,415,000 gallons of diesel fuel in any consecutive 12-month period.
[Rule 62-210.200, F.A.C.; PSD-FL-249]
{Permitting note: At 100% engine load, each model 20-645F4B engine has a fuel consumption of approximately 197.1 gallons per hour, based on a heat input of 27.2 MMBtu/hr, and a 36-degree API diesel fuel higher heating value of 19,640 Btu/lb. and density of 7.034 lb./gal.}

B.5. Nitrogen Oxides (NOx) Emissions: Emissions of NO, shall not exceed 4.12 lb./MMBtu, per engine.
[Rule 62-212.400, F.A.C. and BACT Determination for PSD-FL-249]
{Permitting note: This equivalent to an emission rate of approximately 112.1 lb./hr at 100% engine load for each of the model 20-645F4B engines. Emission of NOx is limited to 403 tons per year by the conditions of the PSD-FL-249 and this permit.)

Under these conditions the maximum annual NOx emissions permitted would be equal to approximately 403 tons per year as shown below:

(1,415,000 gal/year) x (.138 MMBtu/gal) x (4.12 lb. NOx/MMBtu) x (1 ton/2000 lb) = 402.3 ton/year

This permit will modify those conditions to reduce the permitted maximum annual NOx emissions to 281.52 tons per year so that this permit application will be exempt from preconstruction review under subsections 62-212.400(4) through (12), F.A.C. as discussed in the next section. Specifically, the 12-month fuel limitation in condition B.2 will be reduced from 1,415,000 to 1,200,000 gallons and the maximum NOx emissions rate in condition B.5 will be reduced from 4.12 lb./MMBtu to 3.40 lb./MMBtu.

4. Emissions calculations (cont'd)

MDWASD has analyzed both historical fuel usage over a 9-year period from 1997 to 2006 and emissions stack test results for the bank of EMD generators over a 12-year period from 1996 to 2007 and these modifications are based on that analysis and include adequate margins. Both fuel usage and stack emissions have been trending downward over the periods with the reduction in fuel usage due to ongoing cost-cutting efforts and the reduction in stack emission due to retrofits of emission-reducing equipment including CBOI injection and 4-pass intercoolers as discussed in the preceding section. Fuel usage is currently level at under 900,000 gallons per year and the trend line for NOx emissions rate is below the 2007 average value of 2.18 lb/MMBtu. Data and graphs from this analysis are included in the appendix to this report.

5. Emissions calculations

As this application involves both new EMD standby generator units and a modification to the federally-enforceable limitations for the existing EMD standby generator units presently included in Title V Air Operation Permit 0250314-011 & 010-AV, a baseline actual-to-potential/projected applicability test in accordance with Rule 62-212.400(2)(a)3 *Hybrid Test for Multiple Types of Emissions Units* is presented herein.

In accordance with Rule 62-210.200(36)(b), emissions were calculated using the average annual emissions during a 24-month period from November 1997 to October 1999. Table 4-1 below represents the emissions from the bank for the subject period using actual fuel use and emissions rate.

Table 4-1 - Actual Emissions

Miami-Dade Water and Sewer Department

Alexander Orr, Jr. Water Treatment Plant (facility ID 0250314)

EMD generators (emissions units 009-012, 024, 025)

Fuel usage (x 1000 gallons)[1] 1.147 10^3 gallons/year

Criteria pollutant	Factor	Unit	Source	Emissions (tpy)
Carbon monoxide	116	lb/1000 gallons	WebFIRE[2]	66.53
Nitrogen oxides (NOx)	3.268	lb/mmBTU	Testing[3]	258.67
PM10, primary	7.85	lb/1000 gallons	WebFIRE[2]	4.50
Sulfur oxides (SOx)	7.08	lb/1000 gallons	Mass balance	4.07
Volatile organic compounds (VOC)	11.5	lb/1000 gallons	WebFIRE[2]	6.60

Notes

1. Average annual fuel usage of the period from November 1997 to October 1999.
2. WebFIRE accessed 2007-08-13 for SCC 20200401 Internal Combustion Engines > Industrial > Large Bore Engine > Diesel.
3. NOx emissions factor is a weighted average based on engine testing and usage.

5. Emissions calculations (cont'd)

Table 4-2 below shows the potential emissions under the proposed fuel restriction of 1,200,000 gallons/year and the proposed NOx emissions rate of 3.40 lb/mmBTU. These federally enforceable conditions modify the existing federally-enforceable fuel restriction of 1,415,000 gallons/year and NOx emissions rate of 4.12 lb/mmBTU.

Table 4-2 – Projected/Potential Emissions

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. Water Treatment Plant (facility ID 0250314)
EMD generators (emissions units 009-012, 024, 025)

Fuel cap (x 1000 gallons)[1] 1.200 10^3 gallons/year

Criteria pollutant	Factor	Unit	Source	Emissions (tpy)
Carbon monoxide	116	lb/1000 gallons	WebFIRE[3]	69.60
Nitrogen oxides (NOx)	3.40	lb/mmBTU	Permit[2]	281.52
PM10, primary	7.85	lb/1000 gallons	WebFIRE[3]	4.71
Sulfur oxides (SOx)	7.08	lb/1000 gallons	Mass balance	4.26
Volatile organic compounds (VOC)	11.5	lb/1000 gallons	WebFIRE[3]	6.90

Notes

1. Proposed federally enforceable limitation.
2. Proposed federally enforceable limitation.
3. WebFIRE accessed 2007-08-13 for SCC 20200401 Internal Combustion Engines > Industrial > Large Bore Engine > Diesel.

As can be seen, NOx is the only pollutant of concern for the purpose of Chapter 210 F.A.C. The potential emissions are 281.52 tons/year NOx versus actual past emissions of 258.67 tons/year, a increase of 22.85 tons/year. This increase is not significant under

5. Emissions calculations (cont'd)

the definition given in Chapter 62-210 and the modification is exempt from preconstruction review under subsections 62-212.400(4) through (12), F.A.C.

Table 4-3 - Net Emissions Change

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. Water Treatment Plant (facility ID 0250314)
EMD generators (emissions units 009-012, 024, 025)

Criteria pollutant	Baseline	Projected	Net change
Carbon monoxide	66.53	69.60	3.07
Nitrogen oxides (NOx)	258.67	281.52	22.85
PM10, primary	4.50	4.71	0.21
Sulfur oxides (SOx)	4.07	4.26	0.19
Volatile organic compounds (VOC)	6.60	6.90	0.30

6. Regulatory analysis

Under Chapter 62-210 F.A.C. *Stationary Sources - General Requirements*, section 62-210.300(1), unless exempt from permitting pursuant to paragraph 62-210.300(3)(a) or (b), F.A.C., or Rule 62-4.040, F.A.C., an air construction permit shall be obtained by the owner or operator of any proposed new, reconstructed, or modified facility or emissions unit prior to the beginning of construction or modification of the facility or emissions unit.

Section 62-210.300(3) covers both categorical and generic exemptions, neither of which apply to this modification. Therefore this modification is subject to Chapter 62-212 F.A.C., *Stationary Sources – Preconstruction Review*. The preceding analysis shows that this modification is not major for the purposes of the referenced Chapter and this modification is therefore, not subject to preconstruction review under subsections 62-212.400(4) through (12), F.A.C.

The emission units covered by this application (E.U. IDs 009 – 012, 024, 025) are subject to the Reasonable Available Control Technology (RACT) requirements of 62-296.570(4)(b)7 which limits the emissions of NOx to 4.75 lb/MMBtu from oil fired diesel generators. The proposed NOx limitation, at 3.40 lb/MMBtu, is below that requirement.

This project is not subject to Subpart ZZZZ – *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* of 40 CFR Part 63 because the Alexander Orr, Jr. WTP is not a major sources of HAP emissions. The Subpart applies to stationary reciprocating internal combustion engines (RICE) located at major sources of HAP emissions.

7. Conclusion

In accordance with Chapter 62-212 *Stationary Sources – Preconstruction Review* Rule 62-212.400(2)(a), and based on a baseline actual-to-potential/projected applicability test in accordance with Rule 62-212.400(2)(a)3 *Hybrid Test for Multiple Types of Emissions Units* as described herein, no emissions increase of a PSD pollutant results from the proposed modifications and construction, and no major modification to the source facility is engendered by this application. Therefore subsections 62-212.400(4) through (12), F.A.C. do not apply to this modification.

This application to supercede existing Air Construction Permit No. 0250314-009-AC is compliant with Chapters 62-210 and 62-212 F.A.C. and will provide the Alexander Orr, Jr. Water Treatment Plant with the standby electrical generation capacity, flexibility, and redundancy to ensure that the water needs of the most populous county in the Florida can be met under all emergency conditions.

List of appendices

The following appendices form a part of this report:

* Table A-1 Fuel Consumption
* Table A-2 NOx Calculations
* Chart A-1 EMD 12-month fuel usage
* Table A-3 EMD standby generator fuel usage
* Chart A-2 EMD NOx emission rate
* Table A-4 EMD Stack test results
* Air Construction Permit No. 0250314-009-AC
* Title V Air Operation Permit 0250314-011 & 010-AV

Chart A-1
EMD 12-month fuel usage

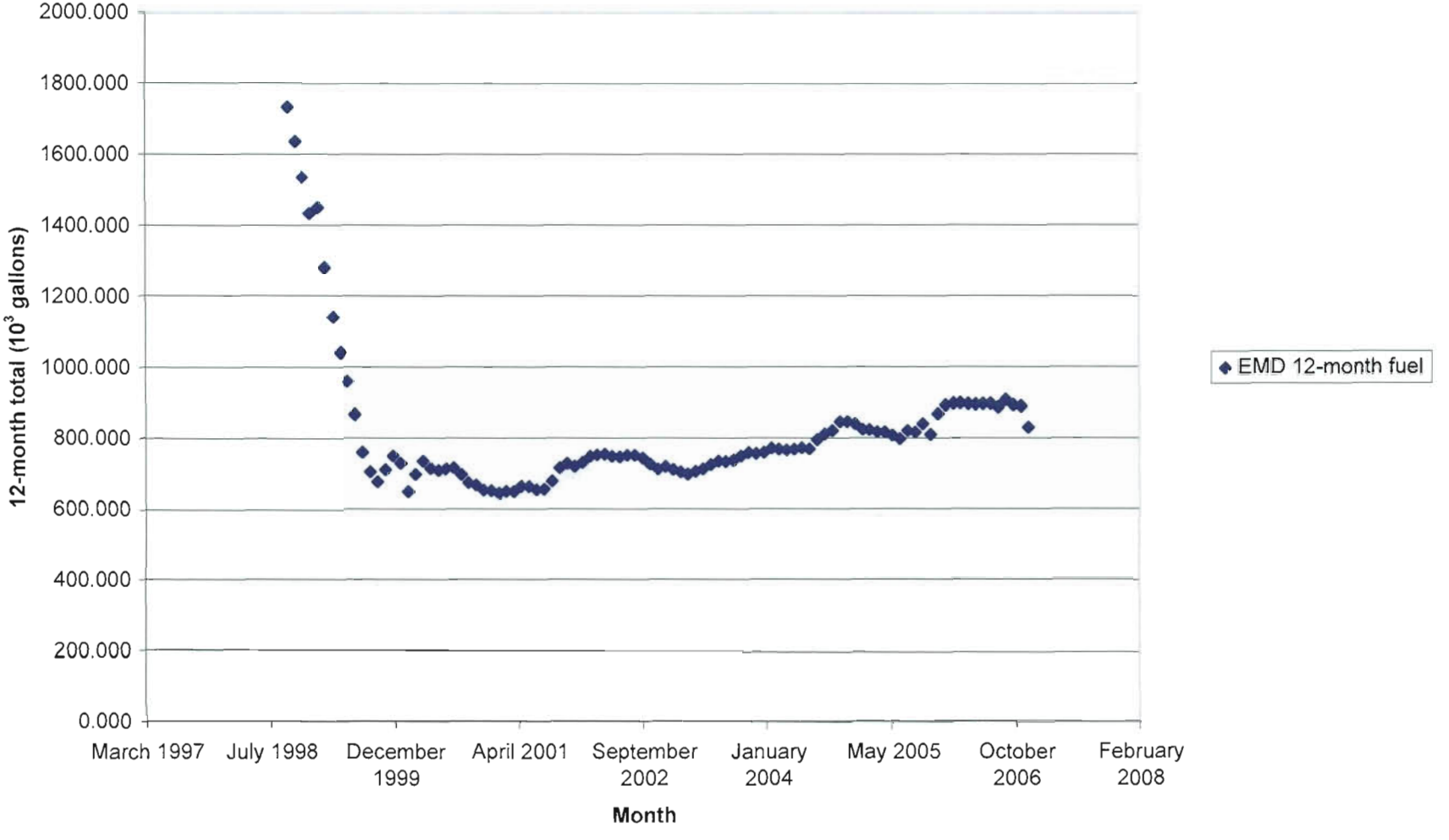


Chart A-2
EMD NOx emission rates

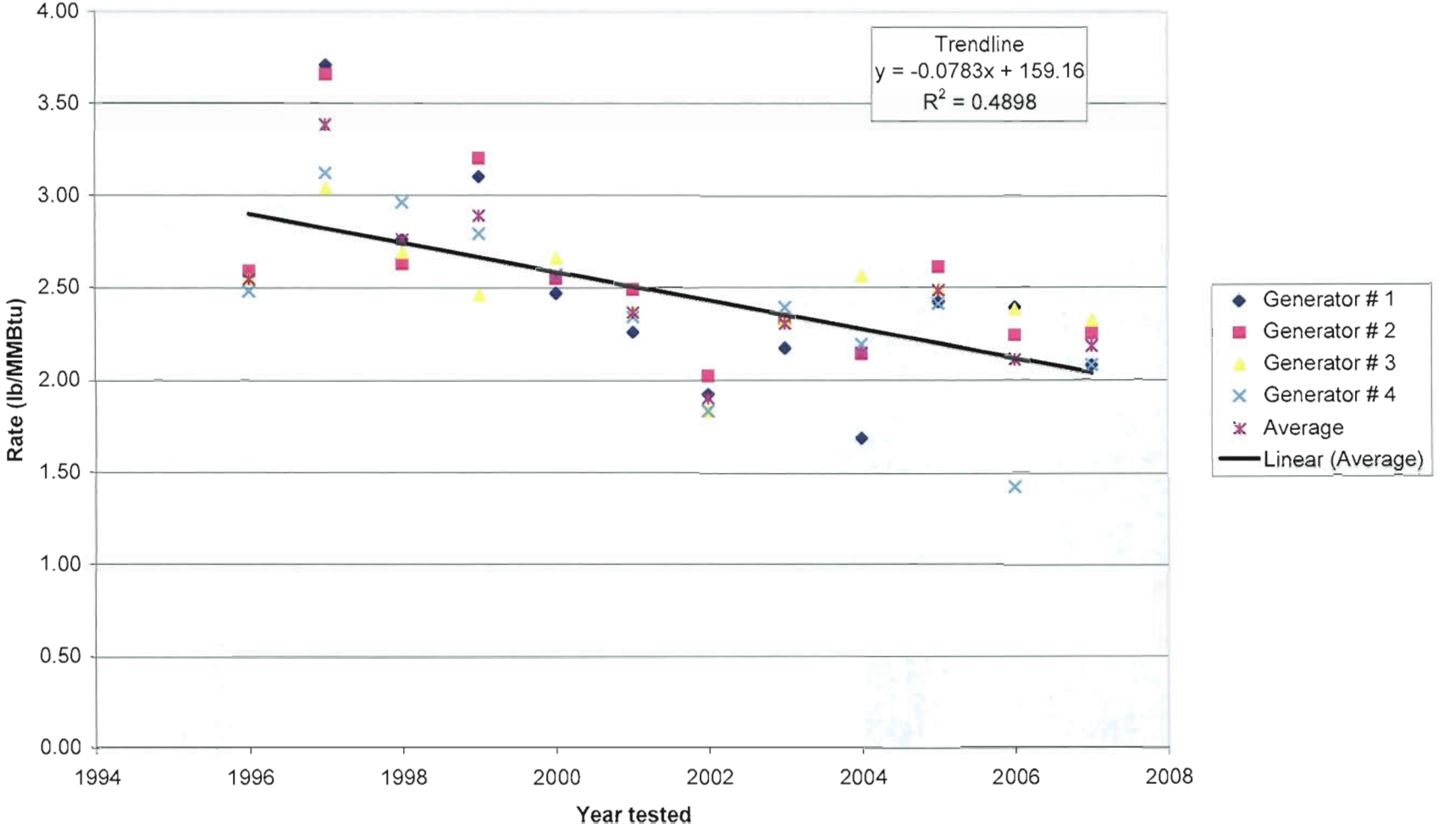


Table A-1 Fuel Consumption
EMD Standby Generators
Alexander Orr, Jr. Water Treatment Plant

Emissions Unit ID	009	010	011	012
	Fuel Consumption (10^3 gallons Diesel)			
	Emer-gency Diesel Gen. #1	Emer-gency Diesel Gen. #2	Emer-gency Diesel Gen. #3	Emer-gency Diesel Gen. #4
September 1997	45.903	47.619	19.448	23.309
October 1997	40.040	42.900	26.598	29.601
November 1997	45.903	46.332	50.050	33.033
December 1997	40.898	37.323	19.734	24.167
January 1998	78.936	74.646	0.000	22.308
February 1998	60.060	70.642	0.000	23.595
March 1998	68.640	68.211	0.858	26.598
April 1998	17.303	49.192	37.609	36.608
May 1998	0.000	61.061	24.024	67.782
June 1998	0.000	73.216	18.447	69.498
July 1998	0.000	47.762	37.180	47.333
August 1998	17.303	47.476	7.722	16.016
September 1998	20.449	0.000	13.442	5.434
October 1998	23.309	0.000	15.587	0.000
November 1998	73.788	1.144	0.000	0.000
December 1998	57.343	15.301	65.637	0.000
January 1999	5.276	3.480	2.133	0.561
February 1999	6.278	4.218	1.079	1.275
March 1999	36.965	14.850	3.953	8.226
April 1999	39.864	12.451	3.557	3.348
May 1999	35.050	0.431	15.099	9.383
June 1999	32.242	19.518	2.264	0.647
July 1999	45.174	10.972	4.200	1.800
August 1999	40.494	12.069	3.891	3.652
September 1999	36.470	18.384	6.227	12.453
October 1999	42.121	16.105	7.588	11.614
November 1999	37.449	13.472	0.865	2.596
December 1999	35.151	14.261	2.712	6.930

Table A-2 NOx Calculations
EMD Standby Generators
Alexander Orr, Jr. Water Treatment Plant

Emissions Unit ID	009			010			011			012			EMD totals	
	Emergency Diesel Gen. #1			Emergency Diesel Gen. #2			Emergency Diesel Gen. #3			Emergency Diesel Gen. #4				
	Fuel	Factor	NOx	Fuel	Factor	NOx	Fuel	Factor	NOx	Fuel	Factor	NOx	NOx	Fuel
October 1997	40.040	3.71	10.250	42.900	3.66	10.834	26.598	3.04	5.579	29.601	3.12	6.373	33.036	139.139
November 1997	45.903		11.751	46.332		11.701	50.050		10.498	33.033		7.111	41.061	175.318
December 1997	40.898		10.469	37.323		9.426	19.734		4.139	24.167		5.203	29.237	122.122
January 1998	78.936		20.207	74.646		18.851	0.000		0.000	22.308		4.802	43.860	175.890
February 1998	60.060		15.375	70.642		17.840	0.000		0.000	23.595		5.080	38.294	154.297
March 1998	68.640		17.571	68.211		17.226	0.858		0.180	26.598		5.726	40.703	164.307
April 1998	17.303		4.429	49.192		12.423	37.609		7.889	36.608		7.881	32.622	140.712
May 1998	0.000		0.000	61.061		15.420	24.024		5.039	67.782		14.592	35.052	152.867
June 1998	0.000		0.000	73.216		18.490	18.447		3.869	69.498		14.962	37.321	161.161
July 1998	0.000		0.000	47.762		12.062	37.180		7.799	47.333		10.190	30.051	132.275
August 1998	17.303		4.429	47.476		11.990	7.722		1.620	16.016		3.448	21.487	88.517
September 1998	20.449		5.235	0.000		0.000	13.442		2.820	5.434		1.170	9.224	39.325
October 1998	23.309		5.967	0.000		0.000	15.587		3.270	0.000		0.000	9.236	38.896
November 1998	73.788		18.889	1.144		0.289	0.000		0.000	0.000		0.000	19.178	74.932
December 1998	57.343	2.76	10.920	15.301	2.63	2.777	65.637	2.69	12.183	0.000		0.000	25.880	138.281
January 1999	5.276		1.005	3.480		0.632	2.133		0.396	0.561		0.121	2.153	11.451
February 1999	6.278		1.196	4.218		0.765	1.079		0.200	1.275	2.96	0.260	2.422	12.851
March 1999	36.965		7.040	14.850		2.695	3.953		0.734	8.226		1.680	12.148	63.995
April 1999	39.864		7.592	12.451		2.259	3.557		0.660	3.348		0.684	11.195	59.220
May 1999	35.050		6.675	0.431		0.078	15.099		2.802	9.383		1.916	11.472	59.963
June 1999	32.242		6.140	19.518		3.542	2.264		0.420	0.647		0.132	10.234	54.671
July 1999	45.174		8.603	10.972		1.991	4.200		0.780	1.800		0.368	11.741	62.147
August 1999	40.494		7.712	12.069		2.190	3.891		0.722	3.652		0.746	11.370	60.106
September 1999	36.470	3.10	7.801	18.384	3.20	4.059	6.227	2.46	1.057	12.453	2.79	2.397	15.314	73.534
October 1999	42.121		9.010	16.105		3.556	7.588		1.288	11.614		2.236	16.089	77.428
Totals	**823.868**		**188.015**	**704.784**		**170.261**	**340.281**		**68.366**	**425.333**		**90.705**	**517.347**	**2294.266**

Notes:
1. "Factor" is NOx emissions rate in lb. NOx/MMBtu fuel intake and is based on stack testing.
2. "Totals" represent the totals for the 24-month period from November 1997 through October 1999.

Table A-3
EMD standby generator fuel usage
Alexander Orr, Jr. WTP

	Fuel Consumption (10^3 gallons Diesel)					
	Standby EMD Gen. #1	Standby EMD Gen. #2	Standby EMD Gen. #3	Standby EMD Gen. #4	EMD total fuel	EMD 12-month total fuel
September 1997	45.903	47.619	19.448	23.309	136.279	
October 1997	40.040	42.900	26.598	29.601	139.139	
November 1997	45.903	46.332	50.050	33.033	175.318	
December 1997	40.898	37.323	19.734	24.167	122.122	
January 1998	78.936	78.936	0.000	22.308	180.180	
February 1998	60.060	70.642	0.000	23.595	154.297	
March 1998	68.640	68.211	0.858	26.598	164.307	
April 1998	17.303	49.192	37.609	36.608	140.712	
May 1998	0.000	61.061	24.024	67.782	152.867	
June 1998	0.000	73.216	18.447	69.498	161.161	
July 1998	0.000	32.032	37.180	47.333	116.545	
August 1998	17.303	47.476	7.722	16.016	88.517	1731.444
September 1998	20.449	0.000	13.442	5.434	39.325	1634.490
October 1998	23.309	0.000	15.587	0.000	38.896	1534.247
November 1998	73.788	1.144	0.000	0.000	74.932	1433.861
December 1998	57.343	15.301	65.637	0.000	138.281	1450.020
January 1999	5.276	3.480	2.133	0.561	11.451	1281.291
February 1999	6.278	4.218	1.079	1.275	12.851	1139.845
March 1999	36.965	14.850	3.953	8.226	63.995	1039.533
April 1999	39.864	12.451	3.557	3.348	59.220	958.041
May 1999	35.050	0.431	15.099	9.383	59.963	865.137
June 1999	32.242	19.518	2.264	0.647	54.671	758.647
July 1999	45.174	10.972	4.200	1.800	62.147	704.249
August 1999	40.494	12.069	3.891	3.652	60.106	675.838
September 1999	36.470	18.384	6.227	12.453	73.534	710.047
October 1999	42.121	16.105	7.588	11.614	77.428	748.579
November 1999	37.449	13.472	0.865	2.596	54.382	728.029
December 1999	35.151	14.261	2.712	6.930	59.053	648.801
January 2000	44.998	9.485	2.978	2.206	59.667	697.017
February 2000	41.957	6.760	0.537	0.966	50.220	734.386
March 2000	37.910	3.842	1.087	0.725	43.564	713.955
April 2000	42.195	7.961	2.521	1.460	54.137	708.872
May 2000	43.075	15.857	3.313	1.302	63.547	712.456
June 2000	46.499	9.957	0.580	0.193	57.229	715.014
July 2000	35.803	5.376	1.720	0.000	42.899	695.766
August 2000	29.221	7.747	0.544	0.612	38.124	673.784
September 2000	32.131	21.455	5.851	6.878	66.315	666.565
October 2000	49.278	4.491	6.500	3.073	63.342	652.479
November 2000	46.391	5.924	0.201	0.100	52.616	650.713
December 2000	39.036	6.765	2.107	3.660	51.568	643.228
January 2001	40.578	14.705	5.863	4.747	65.893	649.454
February 2001	44.018	4.019	0.392	1.078	49.507	648.741
March 2001	48.538	6.579	1.490	1.241	57.848	663.025

April 2001	49.054	3.201	1.036	0.565	53.856	662.744
May 2001	45.838	8.646	0.000	0.000	54.484	653.681
June 2001	44.597	14.153	0.000	0.000	58.750	655.202
July 2001	54.333	11.469	0.000	0.000	65.802	678.105
August 2001	11.656	58.103	0.000	5.651	75.410	715.391
September 2001	39.664	19.201	5.606	13.875	78.346	727.422
October 2001	42.108	11.229	0.702	1.544	55.583	719.663
November 2001	38.812	16.251	3.441	4.780	63.284	730.331
December 2001	39.751	11.741	1.839	15.702	69.033	747.796
January 2002	47.536	11.426	3.557	7.545	70.064	751.967
February 2002	37.001	14.272	0.317	0.000	51.590	754.050
March 2002	19.414	19.414	6.544	6.217	51.589	747.791
April 2002	42.396	7.001	1.167	1.685	52.249	746.184
May 2002	38.076	13.416	4.535	3.023	59.050	750.750
June 2002	40.055	13.283	3.372	2.248	58.958	750.958
July 2002	45.999	10.971	1.409	0.101	58.480	743.636
August 2002	32.977	18.358	4.986	1.020	57.341	725.567
September 2002	35.880	20.815	4.945	2.415	64.055	711.276
October 2002	48.062	11.896	2.111	0.672	62.741	718.434
November 2002	47.034	4.781	0.000	4.135	55.950	711.100
December 2002	40.278	5.478	16.218	0.000	61.974	704.041
January 2003	37.914	15.454	6.079	4.224	63.671	697.648
February 2003	39.114	13.202	3.744	3.448	59.508	705.566
March 2003	49.141	8.473	0.261	0.130	58.005	711.982
April 2003	37.724	12.388	6.613	8.104	64.829	724.562
May 2003	52.366	13.437	2.075	0.790	68.668	734.180
June 2003	38.526	12.541	4.519	1.808	57.394	732.616
July 2003	33.037	16.048	9.278	4.388	62.751	736.887
August 2003	40.006	16.532	7.033	5.572	69.143	748.689
September 2003	51.645	15.180	5.115	1.320	73.260	757.894
October 2003	48.450	7.645	2.686	1.343	60.124	755.277
November 2003	30.821	23.115	2.809	2.970	59.715	759.042
December 2003	54.190	6.201	8.762	4.448	73.602	770.670
January 2004	47.104	8.020	3.728	1.581	60.433	767.432
February 2004	31.122	18.320	3.090	5.408	57.939	765.863
March 2004	39.267	7.459	3.839	9.104	59.668	767.526
April 2004	30.490	17.274	10.318	10.434	68.515	771.212
May 2004	37.268	11.979	8.271	8.081	65.600	768.144
June 2004	40.727	17.238	14.113	11.694	83.772	794.522
July 2004	48.199	15.995	8.424	6.611	79.230	811.001
August 2004	38.888	20.973	9.171	9.598	78.630	820.488
September 2004	49.607	22.292	13.658	12.088	97.645	844.873
October 2004	41.777	11.206	3.808	3.264	60.055	844.804
November 2004	37.581	12.566	0.582	3.840	54.568	839.657
December 2004	36.448	13.780	3.894	3.096	57.218	823.273
January 2005	48.011	7.922	2.521	0.840	59.293	822.133
February 2005	46.544	3.971	2.206	0.000	52.720	816.914
March 2005	31.589	20.474	3.593	4.095	59.751	816.997
April 2005	44.634	9.156	2.632	2.174	58.597	807.079
May 2005	24.115	16.688	6.143	9.215	56.162	797.641
June 2005	42.589	33.693	16.468	13.439	106.189	820.058
July 2005	0.000	27.786	8.747	38.591	75.124	815.952

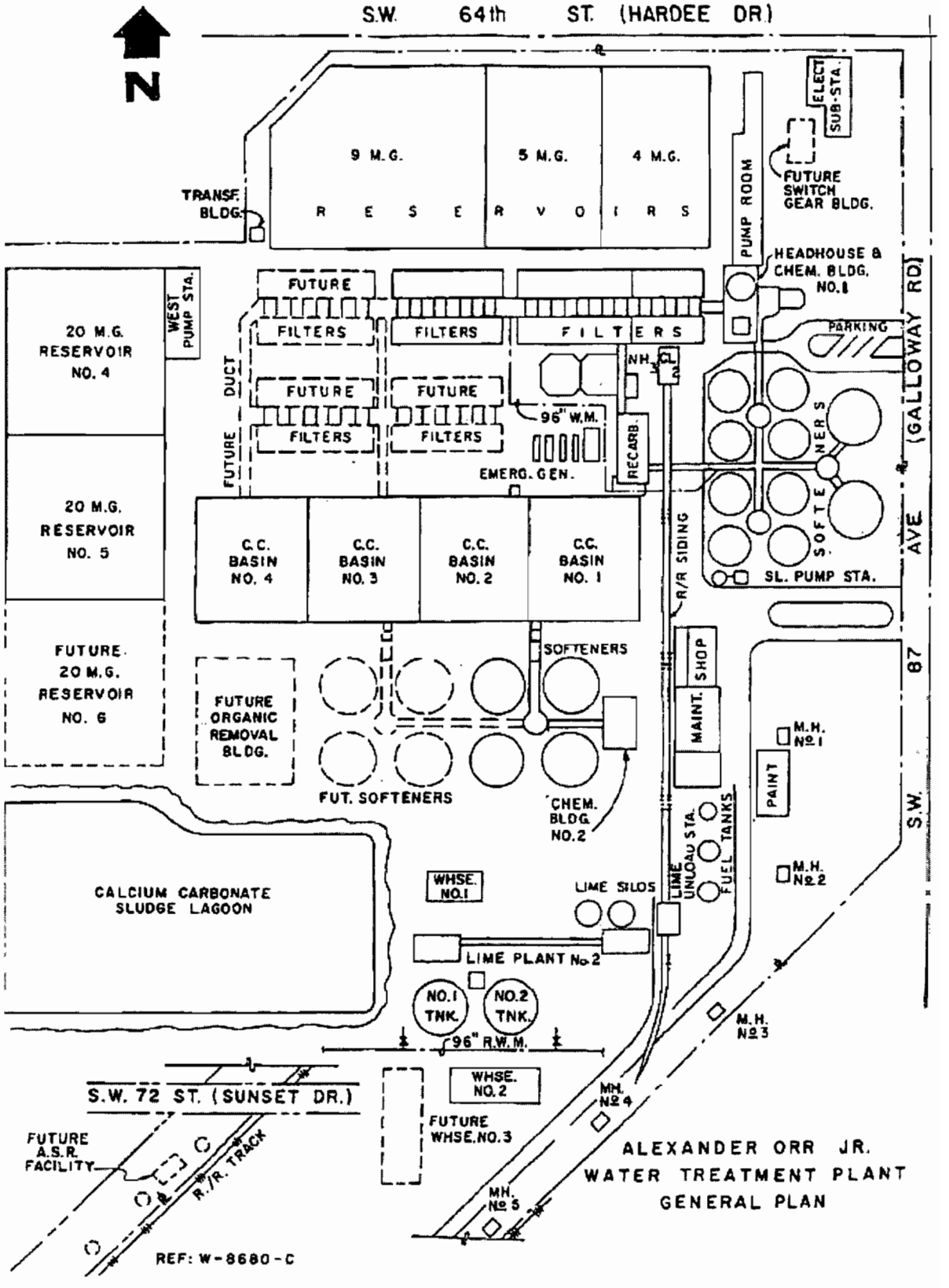
August 2005	33.789	30.511	19.794	17.903	101.997	839.319
September 2005	26.687	22.894	11.381	6.672	67.634	809.308
October 2005	51.021	26.816	16.256	23.493	117.586	866.839
November 2005	45.400	17.070	12.167	4.177	78.814	891.085
December 2005	38.106	15.691	3.362	4.707	61.867	895.734
January 2006	36.878	21.685	0.909	0.779	60.251	896.692
February 2006	32.867	10.340	1.883	5.429	50.519	894.491
March 2006	23.031	25.794	3.132	6.817	58.774	893.514
April 2006	22.927	25.706	3.995	7.121	59.749	894.666
May 2006	4.354	42.044	7.090	3.483	56.971	895.475
June 2006	6.910	55.840	19.236	14.193	96.179	885.465
July 2006	10.888	45.659	20.839	18.263	95.649	905.990
August 2006	8.270	33.516	28.583	17.556	87.924	891.917
September 2006	6.179	23.969	21.412	12.357	63.917	888.200
October 2006	5.171	21.856	19.905	11.611	58.543	829.157
November 2006	1.309	43.920	13.331	5.951	64.511	814.854
December 2006	2.304	41.785	7.045	5.495	56.629	809.616

Table A-4
EMD Stack test results
Alexander Orr, Jr. WTP

Date	Generator # 1	Generator # 2	Generator # 3	Generator # 4	Average
9/16/1996	2.57	2.59	2.55	2.48	2.55
9/23/1997	3.71	3.66	3.04	3.12	3.38
12/17/1998	2.76	2.63	2.69	2.96	2.76
9/28/1999	3.10	3.20	2.46	2.79	2.89
5/18/2000	2.47	2.55	2.66	2.57	2.56
9/25/2001	2.26	2.49	2.37	2.34	2.37
9/16/2002	1.92	2.02	1.83	1.83	1.90
9/8/2003	2.17	2.33	2.32	2.39	2.30
9/22/2004	1.69	2.14	2.56	2.19	2.15
9/14/2005	2.42	2.61	2.49	2.41	2.48
4/18/2006	2.39	2.24	2.38	1.42	2.11
6/11/2007	2.08	2.25	2.32	2.08	2.18
Average	2.46	2.56	2.47	2.38	

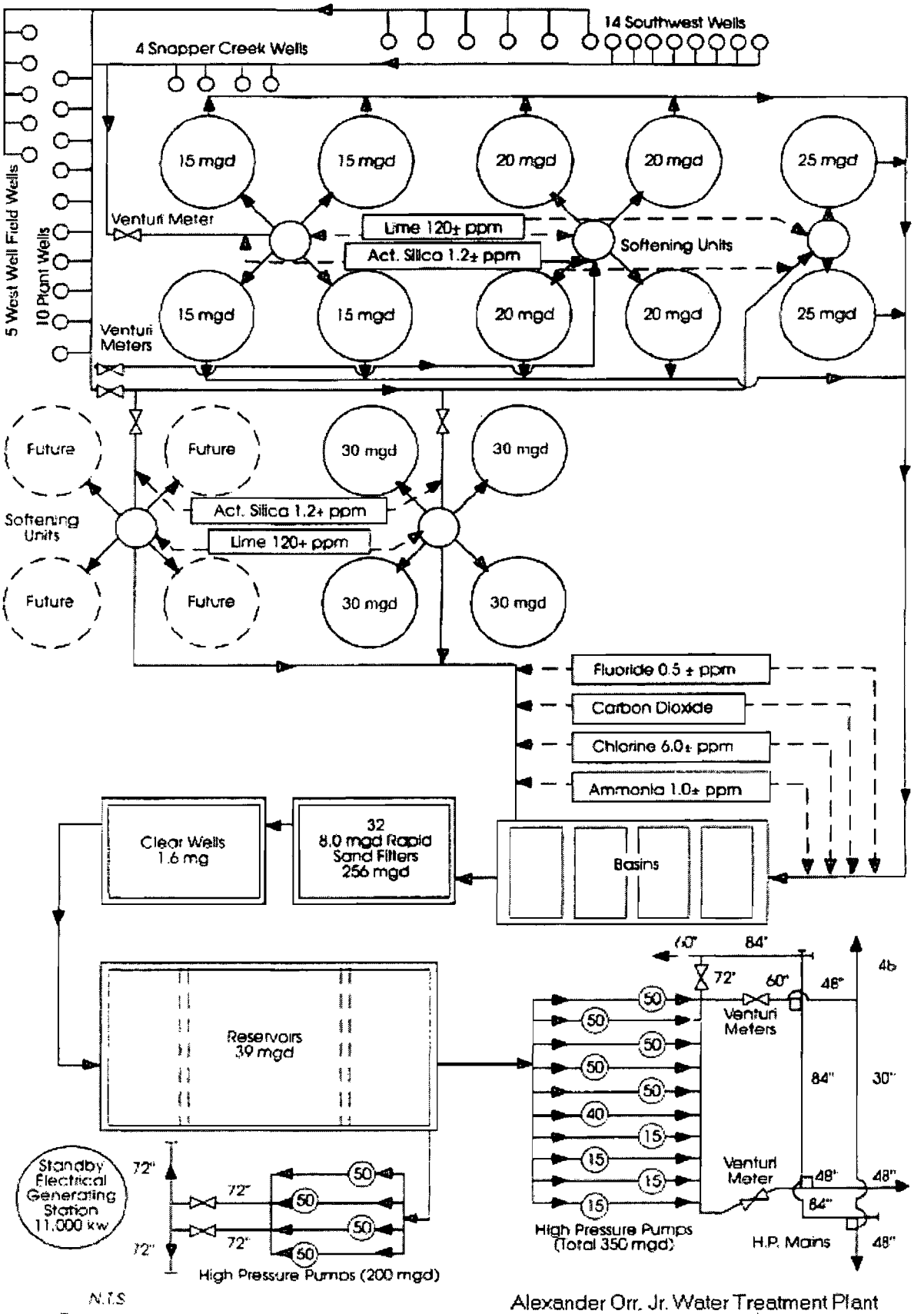
Attachment A
Facility Plot Plan

Attachment A: Facility Plot Plan– Alexander Orr, Jr. Water Treatment Plant



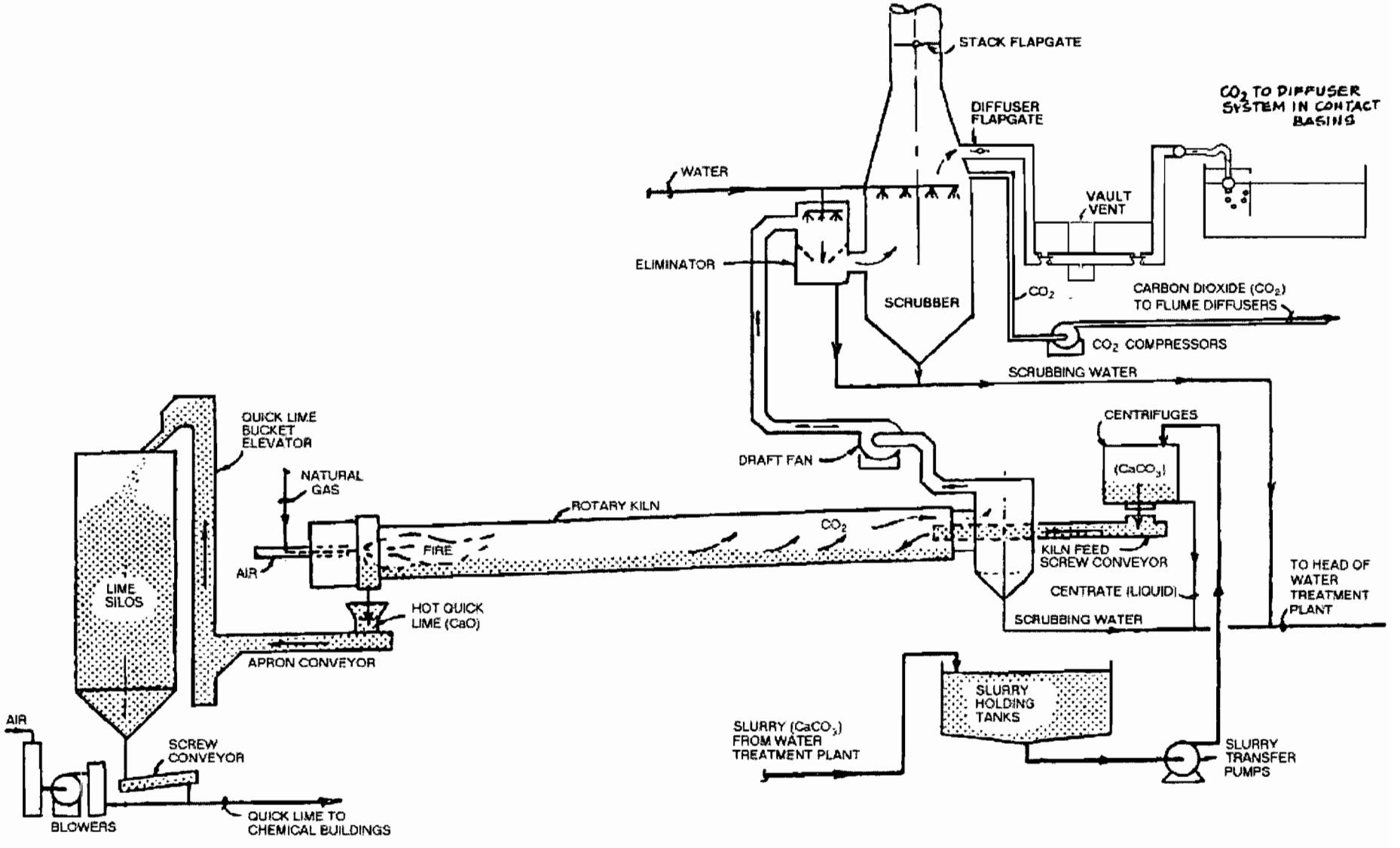
Attachment B
Process Flow Diagram

Attachmnet B: Process Flow – Alexander Orr, Jr. Water Treatment Plant – Water Treatment



Alexander Orr, Jr. Water Treatment Plant
Simplied Process Diagram

Attachment B: Process Flow – Alexander Orr, Jr. Water Treatment Plant – Solids Recovery and Reuse, Rotary Kiln



Attachment C
Precautions to Prevent Emissions of Unconfined Particulate Matter

Attachment C

Precautions To Prevent Emissions of Unconfined Particulate Matter
Alexander Orr, Jr. Water Treatment Plant

The Alexander Orr, Jr. Water Treatment Plant will take the following reasonable precautions to control the emissions of unconfined particulate matter:

- Paving and maintenance of roads, parking areas, and yards.
- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Application of asphalt, water, oil, chemicals, or other dust suppressants to unpaved roads, yards, open stock piles, and similar sources.
- Removal of particulate matter from buildings or work area to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain and or vent particulate matter.
- Confining abrasive blasting, where possible.
- Enclosure or covering of conveyor systems

The below listed emission units and/or activities are considered insignificant pursuant to Rule 62-213.430(6), F.A.C.

1 Fluoride Feeders, gravimetric belt type.
Note: While fluoride feeders are still installed they have not been used in the past two years and are to be removed once the replacing fluorosilicic acid feed system is online.

2 Lime Feeders, (6) gravimetric belt type, 2,083 lb/hr each.

3 Diesel Fuel Oil Storage Tanks, 360,000 gallons total capacity.

4 Diesel Fuel Oil Storage Tank (day tank at pump room), 1000 gallons.

5 LPG Storage Tank for Kiln Backup Engine (Auxiliary Motor), (500 gallons).

5 Aboveground Waste Oil Tank (300 gallons).

6 Lime Rejects Ball Mill.
Note: All ball mills have been removed. Rejects from the lime slakers are disposed of as waste.

7 Lime Solids Discharge Screw, Bucket Elevator and Screw Conveyor, 5 ton/hr.

8 Lime Storage Bins, (3) Chemical House No. 1, 1,050 tons.

9 Lime Storage Bins, (3) Chemical House No. 2, 1,050 tons.

10 Lime Transfer from truck loading chute from silos at lime plant.

11 Exhaust Units (Chemical House No. 1).

12 Exhaust Units (Chemical House No. 2).

13 Kiln Backup Engine (Auxiliary Motor).

14 Emergency Diesel Engine Driven Starting Air Compressor - Hatz 2M40LZ.

15 Emergency Diesel Engine Driven Starting Air Compressor - Lister H15TX20.

16 Two (2) 1,050 tons each lime silos.

17 Relocatable emergency generators stored and maintained for off-site use.

	List of Insignificant Emission Units and/or Activities **Alexander Orr, Jr. WTP**	**Attachment D** Revised 10/20/2007

Attachment E
Fuel Analysis and Specification

Non-Negotiable Bill of Lading

MATERIAL SAFETY DATA SHEET AVAILABLE FROM THE TERMINAL FOR THESE PRODUCTS ON REQUEST

CUSTOMER NOTICE – THE PRODUCT TRANSFER DOCUMENTS FOR THIS TRANSACTION INCLUDE OTHER DOCUMENTS WHICH MAY CONTAIN ADDITIONAL AND/OR CORRECTING REFORMULATED GASOLINE INFORMATION. IF IN CONFLICT, THE INFORMATION IN THE OTHER DOCUMENTS WILL CONTROL.

Form 50605-A Rev. 11/97

SEE REVERSE SIDE FOR HAZARD WARNING INFORMATION & NOTES

DRIVER SIGNATURE:

ALL ITEMS SUBJECT TO CONDITIONS ON REVERSE SIDE HEREOF.

TRUCK SEAL NUMBERS:	SHIPMENT RECEIVED BY:

For Product Emergency
Spill, Leak, Fire, Exposure or Accident, CALL
CHEMTREC - Day or Night 800-424-9300

COPY 6

MARATHON ASHLAND PETROLEUM LLC, 539 S. MAIN STREET FINDLAY OHIO 45840 EPA 4268
*** CONVENTIONAL GASOLINES - THESE PRODUCTS DO NOT MEET THE REQUIREMENTS FOR REFORMULATED GASOLINES (RFG) AND MAY NOT BE USED IN ANY RFG COVERED AREA. *** SHIPPED FROM: 1601 S.E. 20TH STREET, FT. LAUDERDALE, FL 33316

DATE 08/14/01
NUMBER 549224-226
TIME IN 0940
TIME OUT 0955

SOLD TO (CONSIGNEE)	SHIPPED FROM	LOC CODE
BP OIL COMPANY EX MANSFIELD OIL CO (DWB) FL, DEST,	FT LAUDERDALE TERMIN 1601 SE 20TH ST FT LAUDERDALE FLA	0000489450

DATE SHIPPED	SHIPPED VIA
08/14/01	BILL FREIGHT UNKNOWN 3947 PENN TANK LINES

DESTINATION	CUSTOMER NUMBER	ITEM NUMBER
UNKNOWN FL	220413436000000	

DRIVER	TRAILER	COMPANY	CUSTOMER P.O. AND RELEASE NUMBER	TRANSMITTED CUSTOMER AND RELEASE NUMBER
11604	4559	0305		
LOUIS EIBER				

CARGO TANK COMPARTMENT PRODUCT DESCRIPTIONS	GROSS GAL.	NET GAL.	TEMP./API GR.	COMMENTS
NO2 LOW SULFUR, .05% MAX SULFUR, 40 CETANE MIN, DYED DIESEL FUEL, NONTAXABLE USE ONLY, PN. ENABLED FOR TAXABLE USE FUEL OIL, 3, NA1993, PG III 137	2200 ** 2200	2172 ** 2172	68.1/033.6	Meter 1? Preset 2200 Code 072 100.0%
NO2 LOW SULFUR, .05% MAX SULFUR, 40 CETANE MIN, DYED DIESEL FUEL, NONTAXABLE USE ONLY, PN. ENABLED FOR TAXABLE USE FUEL OIL, 3, NA1993, PG III 137	2800 ** 2800	2764 ** 2764	68.3/033.6	Meter 1? Preset 2800 Code 072 100.0%
NO2 LOW SULFUR, .05% MAX SULFUR, 40 CETANE MIN, DYED DIESEL FUEL, NONTAXABLE USE ONLY, PN. ENABLED FOR TAXABLE USE FUEL OIL, 3, NA1993, PG III 137	520 ** 520	513 ** 513	68.2/033.6	Meter 1? Preset 520 Code 072 100.0%
		5449		

CONV GASOLINE / 7.8 RVP GASOLINE / CLEAR L.S. #2 / DYED L.S. #2 / H.S. #2

(** - Batch Total)

Attachment F
Detailed Description of Control Equipment

STEWART & STEVENSON
DISTRIBUTED ENERGY SOLUTIONS
4516 HARRISBURG BLVD. • HOUSTON, TEXAS 77011-4016
(713) 923-2161 • (800) 527-3246
SALES & ADMINISTRATION FAX: (713) 923-0375 • SERVICE FAX: (713) 924-0610

100 STEWART & STEVENSON 1902-2001

July 18, 2003

To: Miami Dade Water and Sewer Department

Subject: Engine NOx emissions

Engine Model: 20-645F4B

Engine Manufacturer: Electromotive Diesel (EMD)

Engines Included: Serial Numbers 03-D1-1011 (South District)
03-D1-1007 (Central District)
03-D1-1010 (Central District)
03-A1-1035 (Orr Plant)

Engine Rating: 4000 BHP Continuous at 900 RPM based on ISO 3046/1 conditions

Overview:

The specification from Miami Dade Water and Sewer Department included a maximum NOx output of 7.6 gram per BHP-Hr at full load. In order to meet this requirement, modifications to the standard 20-645F4B engines were required. The changes included utilizing injectors with fixed timing, changing the fuel injection timing and using 4 pass combustion air aftercoolers to increase the cooling of the air. As a result of these modifications, the NOx levels were substantially below the Miami Dade requirements when EMD tested the engines.

Conclusion

The NOx levels measured on these 4 engines was between 5.11 and 5.83 grams per BHP-hr. All engines exceed the Miami Dade requirements. Test results are attached.

Detailed Description:

Injectors. The injectors used on these engines are called CBOI injectors by EMD. This stands for constant beginning of injection. A standard injector is designed so that as the engine load increases, the point at which fuel injection into the cylinder starts advances (happens further before top dead center). The CBOI injector has fixed timing and there is no advance based on engine load.

2. Injection Timing. The standard timing on an EMD engine is 0 degrees before top dead center (BTDC). In order to achieve the proper operation with the CBOI injectors, the timing on these

engines is set for 1 degree BTDC.

3. Intercoolers. The intercoolers cool the combustion air before it enters the air box and the cylinders. The standard EMD intercooler is a 2-pass type heat exchanger. In order to achieve additional cooling and assist in NOx reduction, these engines have 4-pass intercooler.

Submitted by:

George R Mattiuzzi

Stewart & Stevenson Distributed Energy Solutions
George R. Mattiuzzi
Project Manager

Attachments: EMD Test Results

ELECTRO-MOTIVE

EMD TECHNICAL PAPER
40020885 Four Pass Aftercooler

The four pass aftercooler is an increased capacity aftercooler developed in response to the demands placed on the two pass aftercooler by greater combustion air flows required by the 710 engine series. In early testing of 710 engines equipped with the two pass aftercooler, it was found that the temperatures in the engine airbox (intake manifold) were higher than that of the 645 engine. The four pass aftercooler has improved heat transfer properties reducing the power assembly charging temperature (air box temperature at full load). It can be applied to 710G engines, 16 and 20 cylinder 645E and 645F engine series.

FEATURES

The four pass aftercooler attained greater thermal capacity due to the following improvements:

- **A water flow path which passes the water through the tube bundle 4 times**
- **A 50% increase in fin heat transfer area,** yielding improved heat transfer
- **A change in the fin material** from aluminium to copper further improving heat conductivity. Copper as utilized in the four pass aftercooler has 83% greater thermal conductivity (k)* than aluminum
- **An improvement in the aftercooler's side baffle** which assures that air is not permitted to leak around the core and escape cooling
- **Identical exterior dimensions** which allow the four pass to be installed in any application where either the P/N 9541961 or P/N 8365645 had been applied. The four pass aftercooler is field retrofitable to the 645 engine. (It can not be installed in place of the smaller p/n 8288974 unit.)

BENEFITS

With the above five improvements, the four pass aftercooler retains several advantages over it's two pass version including:

- **A reduction in airbox temperatures.** A 30-35 degree reduction in airbox temperature at the engine's rated horsepower has been measured; in the 710 engine, temperatures were restored to the levels attained in the 645 engine
- **Reduced Oxides of Nitrogen (NOx) emissions.** Previous test results have demonstrated a reduction in NOx emissions up to 15% at full horsepower
- **Fuel economy savings.** At full load, substituting the four pass aftercooler for the two pass has produced fuel savings measured from .75% to 1.5% for 710 engines and approximately .5% for 645 engines
- **Identical System Design, as a result of identical water capacity,** (approximately 85 gpm in the 16-710 engine) permits installation of the four pass aftercooler without alteration of the engine's cooling water pumps or piping circuit. This also assures that water flow to the engine's power assemblies is not altered by diversion of a greater quantity of water to the aftercoolers

ENGINE EMISSIONS

The four pass aftercooler lowers the airbox charge temperature, engine peak combustion temperatures and exhaust temperatures and therefore reduces NOx emissions from our engines. The NOx formation reactions are highly thermal sensitive, so an enhanced charge cooling is an effective way to reduce NOx emissions.

* ref. Keith, Frank, Principles of Heat Transfer, 2nd Ed., International Textbook Co., Scranton PA., 1965,p. 569

ENGINE FUEL ECONOMY

The application of aftercooling to a turbocharged Diesel engine is known to have advantages in the areas of fuel economy and in the emissions of oxides of nitrogen (NOx). The fuel economy advantages of the four pass aftercooler in the 710 engine series has shown to produce fuel economy improvements in the range of .75% to 1.5% at the engine's rated speed and load. When these improvements are applied to the annual fuel consumption of a locomotive, they will show an attractive return on the investment represented by the price premium of the four pass aftercooler over its two pass predecessor. The investment payback periods of the four pass aftercooler used in 645 and 710 engines have ranged from one to two years, depending on annual fuel consumption.

PERFORMANCE ADVANTAGE CONDITIONS

The four pass aftercooler provides superior performance over the two pass at the following conditions:

- High engine air flow rates, such as in the 710 engine series (particularly the 16 and 20 cylinder versions of the 710)
- Operating conditions which produce high air flows. For example:
  - At throttle settings six through eight. These are the conditions at which the turbocharger is operating "off the geartrain" and air flow rates and air compression ratios are highest
  - High ambient temperatures and/or high altitudes result in particularly high turbocharger discharge temperatures. Under these especially demanding conditions, the benefits of the four pass are even greater than that of the two pass

PRODUCT RELIABILITY

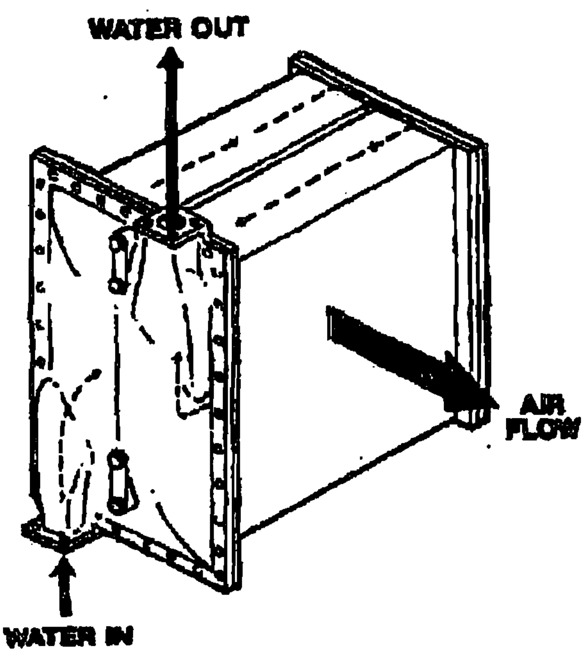
The superior construction of the four pass aftercooler makes it a reliable, high performance heat transfer product built to last. The four pass and two pass aftercoolers have identical major features of construction, such as retention of the reliable rolled mechanical bond between the aftercooler's red brass tubes and the tube bundle's header plates. This method of construction has proved reliable in the two pass aftercooler design and in the premium mechanically-bonded radiators.

CONCLUSION

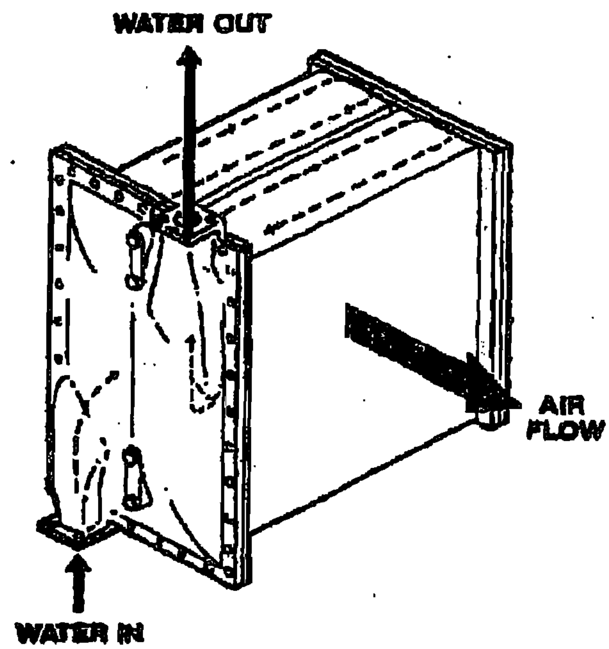
The value of the four pass aftercooler is evident in the areas of improved air box temperatures, engine emission reductions and improved fuel economy. Electro-Motive, in partnership with Young Radiator, has demonstrated their commitment to accepting and meeting the performance challenges of the rail industry. It is this partnership that continues to provide the best heat transfer products to the industry. The four pass aftercooler is the latest product of this commitment.

Note: A performance comparison of the four pass and two pass aftercooler depends on which particular engine it is installed in and on the power at which they are compared. EMD welcomes the opportunity to provide technical expertise to discuss individual railroad needs.

2-PASS AFTERCOOLER



4-PASS AFTERCOOLER
(Baffles not shown for clarity)



ELECTRO-MOTIVE

Electro-Motive Division
General Motors Corporation
LaGrange, IL 60525
Telex: 270041 McCook, IL USA
Telephone: (708) 387-6000
Fax: (708) 387-[illegible]

Diesel Division
General Motors of Canada Limited
Box 5160, London, Ontario N6A 4N5
Telex: 064-5607 Canada
Telephone: (519) 452-5182
Fax: (519) 452-5290

GM ELECTRO-MOTIVE

Order # 20023614E1- Engine S/N 03D1-1007 - ESI/S&S/MIAMI DADE – VIRG KEYS/BLK PT - SE20F4B

Customer requested test information

Engine RPM	Engine load	Turbo RPM	Turbine inlet temp. ^{0}F	NOx emissions (GMS/BHP-HR)
900	100% of rated (4000 BHP)	20444	848.6	5.53
815	75% of rated (3000)	17106	766.0	N/A
720	60% of rated (2400)	14329	758.7	N/A
640	40% of rated (1600)	11476	620.9	N/A

Witnessed by:

Senior Project Engineer

Test Date: 4/17/2003

GM ELECTRO MOTIVE

Order # 20023614E2- Engine S/N 03D1-1010 - ESI/S&S/MIAMI DADE – VIRG KEYS/BLK PT - SE20F4B

Customer requested test information

Engine RPM	Engine load	Turbo RPM	Turbine inlet temp. ^{0}F	NOx emissions (GMS/BHP-HR)
900	100% of rated (4000 BHP)	20313	N/A	5.55
815	75% of rated (3000)	16898	N/A	N/A
720	60% of rated (2400)	14089	651.3	N/A
640	40% of rated (1600)	11482	617.2	N/A

Witnessed by:

Timothy J. Paulsen

Senior Project Engineer

Test Date: 4/24/2003

GM ELECTRO-MOTIVE

Order # 20023614E3- Engine S/N 03D1-1011 - ESI/S&S/MIAMI DADE – VIRG KEYS/BLK PT - SE20F4B

Customer requested test information

Engine RPM	Engine load	Turbo RPM	Turbine inlet temp. ^{0}F	NOx emissions (GMS/BHP-HR)
900	100% of rated (4000 BHP)	20269	941.3	5.11
815	75% of rated (3000)	16767	859.1	N/A
720	60% of rated (2400)	14040	854.4	N/A
640	40% of rated (1600)	11493	668.5	N/A

Witnessed by:

Senior Project Engineer

Test Date: 4/25/2003

GM ELECTRO MOTIVE.

Order # 20023613 – Engine S/N 03A1-1045 - ESI/S&S/MIAMI DADE – ORR - SE20F4B 1 UNIT(S)

Customer requested test information

Engine RPM	Engine load	Turbo RPM	Turbine inlet temp. ^{0}F	NOx emissions (GMS/BHP-HR)
900	100% of rated (4000 BHP)	20089	848.5	5.83
900	75% of rated (3000)	16827	780.3	N/A
900	50% of rated (2000)	16249	586.1	N/A
900	25% of rated (1000)	16189	411.8	N/A

Witnessed by:

Timothy J. Carlson

Senior Project Engineer

Test Date: 2/12/2003

Attachment G
Operation and Maintenance Plan

MAINTENANCE

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

TABLE OF CONTENTS (Cont)

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SERVICING

1.1 OVERVIEW

WARNING

Always use caution when working around rotating equipment. Serious injury to personnel or damage to equipment could occur.

WARNING

Always use caution when working around electrical equipment. Serious injury to personnel or damage to equipment could occur

WARNING

Clean or service only when the equipment is shut down, isolated, and tagged "Out of Service."

This section contains instructions for the care and recommended maintenance of the diesel engine generator set fabricated by Stewart & Stevenson Services.

1.2 MAINTENANCE BENEFITS

1.2.1 Best Performance Your generator set is ensured of its best performance and reliability when a scheduled preventive maintenance program is followed. A small cost and effort expended for a preventive maintenance program yields improved performance, efficiency, and reliability.

1.2.2 Benefits These benefits are realized by:

a. Understanding the nature of preventive maintenance.

b. Following the lubrication and preventive maintenance schedule that has been established.

1.2.3 Intended Use If a generator system is intended for emergency use at times of utility power failure, preventive maintenance is the key to standby service of the generator set. A program of regular preventive maintenance can assure the ready availability of the generator set in emergency situations. A complete log of all maintenance and repairs should be kept to help pinpoint future problem areas. Corrective action can then be taken to prevent breakdowns during operation of the generator sets.

Major mechanical or electrical repairs should be referenced in the EMD 645 Series Turbo Marine Engine Maintenance Manual and the Baylor Generator Instruction Manual in Chapter 6 of this manual.

1.3 NATURE OF PREVENTIVE MAINTENANCE

1.3.1 Preventive Maintenance should be preventive in nature, whereby potential failures are detected and corrected before they cause the equipment to break down.

1.3.2 Awareness The nature of preventive maintenance demands operator awareness of the generator set's operation. Awareness demands consciousness of abnormalities such as knocks or smoke. Awareness also demands knowing the generator set's equipment capabilities and perceiving the equipment's service needs. Being aware can also be described as being watchful, or being alert.

1.3.3 Degree of Awareness The degree to which awareness of the generator set's operation is necessary depends upon the extent of the generator set's automatic sensors, controls, and indicators.

1.3.4 Promptly Corrected Regardless of the method and manner of detection, the potential failure should be promptly corrected, in order to prevent a shutdown or a breakdown. The corrective actions taken or the service rendered constitute preventive maintenance.

CAUTION

If the operator has ANY QUESTIONS about the safe use or maintenance of the generator set, ASK THE SUPERVISOR - NEVER GUESS - ALWAYS CHECK.

1.4 ACTIONS

1.4.1 Preventive The nature of preventive maintenance calls for actions which will prevent major repair work. These actions can be performed at an operator level, and can usually be categorized into (1) adjusting, (2) servicing, and (3) treating for corrosion. All preventive actions should be referenced in the specific equipment manuals in Chapter 6.

1.4.2 Adjusting The action of correcting misalignments, testing for the proper set points (calibrating), and tightening loose components.

1.4.3 Servicing The action of maintaining the proper amounts (levels) of lubricating grease, oil, coolant, fuel oil, etc. Servicing also encompasses replacing or cleaning filter elements, as well as performing minor repair work. An example of minor mechanical repair work is replacing a gasket or seal, etc. An example of minor electrical repair work is replacing a light bulb or fuse, etc. Minor repair work can be accomplished by operator-level personnel and by use of this manual. While performing maintenance on equipment, refer to the specific equipment service manuals supplied in Chapter 6.

1.4.4 Treating for Corrosion This necessary, ongoing process consists of thorough cleaning, lubrication, and assurance of protective finish integrity. Generator sets located where high humidity or high temperatures are prevalent require extra awareness.

1.5 SCHEDULED MAINTENANCE

1.5.1 Maintenance Intervals Table 1.1 is intended as a guide for establishing a preventative maintenance schedule. The intervals, indicated on the table, represent time measured in elapsed hours of operation for a generator set being used for prime power. A generator set, which is standby power for emergency usage in the event of normal electrical power failure, accumulates little actual operating time. A time schedule should be established at the operator's discretion depending on the individual workloads and environmental constraints for their unit. Generally, the following schedule may be used for generator sets according to hours operated or elapsed time.

TABLE 1.1 Maintenance Intervals

Items Marked Under Interval of Hours of Operation	Perform Instead Every
8	week
50	month
100	2 months
150	3 months
200	4 months
350	6 months
500	10 months
700	12 months
1400	24 months
2100	36 months
2800	48 months

Perform preventive maintenance on items daily, weekly or when the hourmeter registers the recommended scheduled hours of operation.

1.5.2 Guideline Because operating requirements for this generator set will vary from standby to weekly operation, this maintenance program should be used as a guideline in conjunction with an ongoing oil analysis program.

1.5.3 Maintenance Schedule Table 1.2 summarizes recommended inspection, checks and maintenance procedures for the major pieces of equipment. The service and scheduled maintenance instructions that follow have been developed to ensure satisfactory engine operation and economical maintenance costs. Preventive maintenance is necessary to ensure reliable equipment operation with minimal down times.

The following information is furnished only as a guide for a preventative maintenance program, actual programs should be established by the operating personnel for the installation site.

NOTE

Refer to the EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual for detailed engine maintenance procedures.

Table 1.2 Maintenance Inspection/Check Schedule

Inspection Check Recommended	Inspection Frequency	Remarks/Reference
General Conditions	Daily	Check for general appearance and integrity of unit. Inspect for leaks in the cooling, fuel, lube oil, exhaust and air start systems.
Lube Oil Level	Daily	Check oil level in pan and add oil if required. Refer to EMD Marine Propulsion Unit Operating Manual in Chapter 6 of this manual.
Engine Coolant	Daily	Check coolant level and add coolant at expansion tank if required. Refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.
Fuel Supply	Daily	Check fuel supply.
Air Start System	Daily	Drain Condensate from lines and tanks. Refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.
Governor	Daily	Check oil level and add oil if required. Refer to EMD Marine Propulsion Operating Manual I in Chapter 6 of this manual.
Engine Lubrication	50 hours initially and 100 hours thereafter	Take lube oil sample for analysis in a certified laboratory. Monitor for suitability of oil for continued use according to Specifications, Section 2 of this chapter. Refer to EMD Maintenance Instructions in Chapter 6 of this manual.

Table 2.2 Engine Maintenance Inspection/Check Schedule (Cont)

Inspection Check Recommended	Inspection Frequency	Remarks/Reference
Generator Set	Every 50 hours	Inspect for corrosion on all exposed surfaces and treat if necessary. Refer to EMD Maintenance Instructions in Chapter 6 of this manual.
Lube Oil Circulating Pump	Every 50 hours	Check for proper operation. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Immersion Heater	Every 50 hours	Check for proper operation. Refer to Watlow vendor data in Chapter 6 of this manual.
Intake Air Filter	Every 50 hours	Check restriction filter minder for proper differential pressure. Replace if necessary. Refer to Farr vendor data in Chapter 6 of this manual.
Generator	Every 50 hours	Clean housing, ventilation screens; inspect for loose or damaged windings, insulation and mounting components and check for any signs of moisture. Refer to Baylor Generator Instruction Manual in Chapter 6 of this manual.
Turbocharger Filter	Every 100 hours	Replace element. Refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.
Lube Oil Strainer	Every 100 hours	Clean strainer screen. Refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.
Generator Bearings	Every 100 hours	Inspect for excessive leakage of oil or grease and lubricate if necessary. Refer to Baylor Generator Instruction Manual in Chapter 6 of this manual.
Lube Oil Filter	Every 350 hours	Check lube oil pressure at filter input with engine at rated rpm and replace filter elements if tank pressure so indicates. Refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.
Fuel Filter (EMD)	Every 350 hours	Check fuel pressure with engine at rated rpm with gauge connected to filter input side and change filter elements if pressure is greater than 50 psi (345 kPa). Refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.
General Inspection	Every 350 hours	Check the following components of the engine assembly. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual: • Inspect air box • Inspect crankcase • Inspect crankshaft and connecting rods • Inspect pistons and piston rings • Inspect cylinder liners • Inspect cylinder head mechanism at operating temperature

Table 2.2 Engine Maintenance Inspection/Check Schedule (Cont)

Inspection Check Recommended	Inspection Frequency	Remarks/Reference
Engine Nut & Bolt Tightness	Every 350 hours	Check that the following nuts and bolts are tightened to the correct values as specified in EMD Maintenance Instructions in Chapter 6 of this manual: • Cylinder head crab nuts • Exhaust manifold flange bolts • Cylinder liner water inlet line nuts and bolts • Head frame to crankcase bolts • Turbocharger to air duct bolts • Examine mounting bolts • All piping connection nuts and bolts
Lube Oil Circulating Pump and Motor	Every 700 hours	Inspect and clean with dry air, remove and clean check valve and replace brushes (if DC motor). Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Radiator	Every 700 hours	Reverse flush radiator and inspect and clean radiator coil assembly if necessary. Refer to Air X Changer Maintenance Instructions in Chapter 6 of this manual.
Cooling System	Every 700 hours	Check operation and settings of engine water temperature controls. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Lube Oil Filters	Every 700 Hours	Check and clean filter housing and strainers. Fill strainer box with oil before starting engine. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Lube Oil Coolers	Every 700 Hours	Check temperature differential between lube oil and cooling water into engine and clean cooler if necessary. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.

Table 2.2 Engine Maintenance Inspection/Check Schedule (Cont)

Inspection Check Recommended	Inspection Frequency	Remarks/Reference
Soak Back Pump and Motor	Every 700 hours	Check operation with engine shut down and soak back pump running; remove left rear hand hole covers and check oil flow through gear train. Observe camshaft bearings. If lube oil flows from camshaft bearings with turbo lube pump running and engine shut down, inspect turbo filter outlet check valve for proper operation.
Turbocharger and Soak Back Oil Filters	Every 700 hours	Check and clean housing and strainers. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Fuel Filters (EMD)	Every 1400 hours	Clean or replace suction strainer element. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Lube Oil Circulating Pump and motor	Every 1400 hours	Replace unit. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Cooling System	Every 2100 hours	Check inhibitor concentration and general condition of water coolant. Refer to EMD Maintenance Instructions in Chapter 6 of this manual.
Cooling System Thermostatic Valve	Every 2100 hours	Replace 'O' rings and thermostatic elements. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual.
Generator Bearings	Every 2100 hours	Replace the bearing grease with proper amounts and type. Refer to Baylor Generator Instruction Manual in Chapter 6 of this manual.

Table 2.2 Engine Maintenance Inspection/Check Schedule (Cont)

Inspection Check Recommended	Inspection Frequency	Remarks/Reference
Expansion Tank Pressure Cap	Every 2800 hours	Replace unit.
Exhaust System	Every 3500 hours	Remove exhaust manifold to turbocharger adapter assembly and clean screen and trap box. Check for cracks and leaks. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Lubricating Oil	According to Lube Oil Analysis	Change engine-lubricating oil. Evaluation of engine oil condition should dictate the frequency of this item. Type of service, oil and filter element quality, and condition of the engine will influence the frequency of the oil change. Refer to EMD Propulsion Operating Manual in Chapter 6 of this manual. Refer to EMD Maintenance Instruction 1760 in Chapter 6 of this manual. Clean oil suction screens, scavenging oil screens, oil pan, and filter housing when changing lubricating oil. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Engine Components	Every 4200 hours	Replace the following components. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual: • Top deck covers (check latches) • Cylinder head grommets inlet and outlet seals • Lower liner seals
Engine Components	Every 8400 hours	Perform the following procedures. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual: • Qualify injectors • Check injector timing and rack length • Check engine speed • Check overspeed trip • Remove and clean oil separator element • Check pressure drop • Inspect crankshaft damping device • Remove, clean, inspect and replace if necessary: - Soak back check valve - Soak back oil pressure relief valve in filter head - Soak back filter bypass valve - Turbo oil filter check valve
Exhaust System	Every 8400 hours	Inspect manifold sections for possible cracking of leg baffles or expansion joints and replace if necessary. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Lube Oil Filter	Every 8400 hours	Remove oil filter bypass valve, clean, inspect and replace if necessary. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.

Table 2.2 Engine Maintenance Inspection/Check Schedule (Cont)

Inspection Check Recommended	Inspection Frequency	Remarks/Reference
Starting Motors	Every 8400 hours	Disassemble, clean, inspect and lubricate. Refer to Ingersoll Rand manual in Chapter 6 of this manual.
Fuel Pump	Every 16000 hours	Replace coupling spider. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Soak Back Pump	Every 16000 hours	Replace coupling spider. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Engine Components	Every 16000 hours	Perform the following procedures. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual: • Replace cylinder assemblies • Replace injectors • Inspect and qualify connecting rod bearings • Inspect and qualify piston cooling tubes • Check rocker arms, arm bushings, and cam followers • Check lash adjusters • Check exhaust valve timing
Engine Components	24000 hours	Perform the following procedures. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual: • Install new thrust collars • Install new lower main bearings Replace water pump seals and worn parts
Turbocharger	24000 hours	Replace unit. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Cooling System	24000 hours	Replace flexible coupling seals. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Heat Exchanger	24000 hours	Inspect, clean, and test. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Fuel Pump	32000 hours	Replace unit. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Soak Back pump	32000 hours	Replace unit. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.
Engine components	48000 hours	Perform the following procedures. Refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual: • Replace oil pumps • Replace lower liner inserts • Inspect injector control linkage; replace links, seals and bearings if necessary.
Engine	96000 hours	Replace unit.

1.5.4 Ancillary Equipment Maintenance Ancillary equipment includes the systems that support the diesel engine and generator. Consult the vendor documentation in Chapter 6 for maintenance details and schedules on the pieces of equipment that support the generator set.

1.5.5 Information For details on the engine, refer to the EMD vendor manuals in Chapter 6 of this manual. For details on the generator, refer to the Baylor manual in Chapter 6 of this manual. Maintenance information for the auxiliary systems of this generator set can be found in Chapter 6 of this manual.

1.6 FUEL SYSTEM

1.6.1 Leak Check Make a visual check for evidence of fuel leaks at the fuel oil tank, lines and interconnections. A major cause of poor starting or power loss is the result of clogged filter element or a fuel oil system air leak. If your unit will not prime, fails to hold a prime, check that the lid and drain are properly tightened. Next, check all fitting connections and ensure none of the fuel oil lines are pinched or clogged with contaminants. If the remote fuel oil tank is equipped with an in-tank strainer assembly, check it for potential clogging.

CAUTION

Follow the manufacturer's recommendations to properly maintain equipment.

A major cause of poor starting or power loss is the result of clogged filter element or a fuel system air leak. If your unit will not prime, fails to hold a prime, or if air bubbles are present, check all fitting connections and ensure none of the fuel oil lines are pinched or clogged with contaminants. If the remote fuel oil tank is equipped with an in-tank strainer assembly, check it for potential clogging.

CAUTION

Follow the manufacturer's recommendations to properly maintain equipment.

1.6.2 Fuel Filters Each filter is a disposable type that is screwed directly to a common head. The filter is a pleated paper type around a metal perforated tube providing 1100 sq. in. filtering area. A tapered cock-type control valve in the head assembly directs the flow of fuel oil to either or both filters. One filter can be cut out of service to permit replacement without stopping the engine. The inlet and outlet connections are located in the head assembly.

The flow of fuel oil is directed and regulated by the position of the control valve. Centering the control valve lever or placing it in the "BOTH" position allows for use of both filter elements. When it is necessary to change filters, the flow of fuel oil can be directed through one filter while changing the other one. Move the control lever to the "L" or "R"; left or right position, depending on which filter is to be replaced. The position chosen, left or right, will determine which filter is replaced. The right position is for changing the left filter and the left position is for changing the right filter.

To change the elements, refer to the following procedure:

NOTE

Do not overtighten the filter body to the assembly as leaking may occur.

a. To change a filter while the engine is running, move the filter selector lever to the letter representing the opposite filter.

b. Unscrew and discard elements. Use strap wrench if necessary.

c. Apply a new filter to the filter head and tighten until the neoprene gasket is sealed.

d. With the engine running, move the selector lever to the position of the filter that was changed and check for leakage.

For complete details, refer to EMD 645/710 Operating Manual in Chapter 6 of this manual.

1.6.3 Manual Priming Pump The fuel oil priming pump is manually operated and located on the accessory rack. No scheduled maintenance is required. If the pump is not operating properly, it can be disassembled for inspection. Remove the crank, and then separate the shell from the lid and inspect for problems. For complete details, refer to EMD 645/710 Marine Propulsion Operating Manual in Chapter 6 of this manual.

1.6.4 Electric Priming Pump The electric fuel oil priming pump is also located on the engine rack. The electric fuel oil priming pump does not require routine maintenance under normal operating conditions. Proper maintenance of the fuel, storage, and delivery systems prevent problems in the manual and electric fuel oil priming pumps.

1.7 LUBRICATING OIL SYSTEM

1.8.1 Lubricating Oil Level Engine oil level should be checked with the engine hot and running at idle speed. A dipstick extends from the side of the oil pan into the oil pan sump. The dipstick should show a level between LOW and FULL. The oil level with the engine stopped should be above the FULL mark.

CAUTION

After draining and refilling the lube oil system, it is imperative that the strainer housing be filled with oil before starting the engine. Failure to do this may result in serious engine damage.

1.7.2 Adding Lubricating Oil Oil may be added with the engine running or stopped; however, the FULL level of oil on the dipstick is determined with the engine hot and running at idle speed. If the oil pan is overfilled with the engine stopped, oil will run out between the crankshaft and oil pan at the flywheel.

Lubricating oil may be poured into the strainer housing through the opening having the square cover.

CAUTION

If the round covers are removed from the strainer housing while the engine is running, hot oil under pressure will flow out of the opening and possibly cause personal injury.

For lube oil system capacities, refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.

1.7.3 Draining Lubricating Oil To drain the lubricating oil, it is first necessary to open both valves located under the square filler cover of the strainer housing. The front valve drains the oil from the lube oil filter into the engine sump and rear valve drains the oil from the strainer into the engine sump.

CAUTION

After draining and refilling the lube oil system it is imperative that the strainer housing be filled with oil before starting the engine. Failure to do this may result in serious engine damage.

1.7.4 Lubricating Oil Filter The lube oil filter is equipped with threaded holes that are piped internally to the inlet and outlet oil compartments. If the ½" NPT pipe plugs are removed and replaced with gauges, the oil filter inlet and outlet oil pressure can be monitored to determine the condition of the filter elements.

Periodic pressure readings will help prevent undue engine wear by indicating when filter element plugging and bypass are about to occur. Oil filter element replacement should be made as determined by scheduled pressure monitoring of the oil filter tank pressure. The replacement interval as determined by laboratory analysis of the lube oil can dictate earlier replacement of the elements.

NOTE

Readings must be taken with the lube oil temperature at least 150 °F (66 °C). Adequate water temperature will assure adequate oil temperature.

Readings should be taken with the engine at rated speed and load. The manufacturer's recommends that the filter elements be renewed if filter tank differential pressure reaches outlet/inlet pressures of 1.37 bar (20 psi). Tank pressure readings can be taken with engine speed at idle, but readings taken at rated speed are more reliable.

NOTE

If a marginal pressure reading is taken at idle speed, verify element condition at rated engine speed.

1.7.5 Lube Oil Filter Element Replacement The following is the procedure for changing the element of the lubricating oil filter (EMD).

a. Operate the diesel engine until oil is warm and circulating freely, then stop the engine.

b. Remove the square cap from the engine mounted lube oil strainer housing.

NOTE

Depending upon the temperature of the oil and the system at the time the drain valve is opened, adequate drainage of the lube oil filters can take from ½ hour for hot oil to several hours for a cold system.

NOTE

If the system is fully charged at the time the system is to be drained, the oil level will rise above the bottom of the oil pan inspection covers.

c. Raise and latch the gate valve handle in the strainer housing to drain oil from the filter housing into the engine sump. It is not necessary to move the valve handle that drains the oil strainer housing.

d. After enough time has elapsed to allow adequate drainage and easier handling of the filters, slightly loosen the nuts on the filter housing cover. Oil remaining at the bottom of the housing will leak into the drain trough.

e. After oil has stopped draining from under the flat filter housing cover, loosen the retaining nuts and swing the hinge bolts clear of the cover. Swing the cover open. Remove and quickly dispose of the used filter elements.

f. Using only clean towels, clean up the interior of the filter housing. Clean out the drain pan and surrounding area.

g. Insert a set of new filter elements. Make certain that the elements are fully seated over the standpipes.

h. When the filter elements are properly inserted, inspect the "O" ring in the circular groove in the housing cover. Replace if necessary.

i. Close the cover. A guide hole in the filter cover must be aligned with the dowel on the filter housing body before the cover can be closed.

j. Swing the hinge bolts into place and tighten the hold-down nuts to EMD specifications of 60 ft-lbs (81 Nm).

NOTE

Approved pleated paper elements have a red casing.

1.7.6 Bypass Valve Assembly The filter bypass valve assembly should be checked periodically or whenever improper oil circulation is suspected.

1.7.7 Cleaning Operation of the valve assembly cannot be effectively checked on the unit. It is recommended that qualified spare assemblies be available for exchange with the assembly in use. If a spare is not available, the valve assembly should be removed from the filter housing and cleaned of sludge and varnish by washing in solvent. The assembly should be carefully inspected after cleaning. If the poppet stem or valve body guide is worn, these pieces should be replaced.

1.7.8 Location The bypass valve is located between the inlet and outlet compartments. The current valve is mounted on the separator plate within the filtering compartment.

For complete details, refer to EMD Marine Propulsion Operating Manual in Chapter 6 of this manual.

1.7.9 Lube Oil Cooler Service the lube oil cooler at intervals specified in the Engine Maintenance Inspection/Check Schedule at the beginning of this section.

1.8 COOLING SYSTEM

The cooling system consists of three separate systems: a remote mounted expansion tank, a plate type lubricating oil heat exchanger, and a water cooling system including engine driven water pumps and Alfa Laval watermaker assembly with incorporated sterilizer for fresh water disinfection. These systems require differing types of maintenance for optimum performance.

The following procedures and principles are generalized for all radiator/heat exchanger equipment.

1.8.1 Coolant Level Check the coolant level weekly. The water level should not be allowed to go below the applicable "LOW" mark. Under the normal operating conditions, there should be no need to add coolant to the sealed cooling system except at extended intervals. However, this does not mean that the cooling system should not be checked on a weekly basis.

A clear tube low water indicator is mounted on the water expansion tank on the accessory rack.

1.8.2 Filling System The cooling system is filled through the filler opening at the top of the expansion tank. Add coolant as necessary. Do not overfill.

CAUTION

Allow system to cool down before opening filler cap. System under pressure could cause severe injury. Partially open the filler cap to relieve pressure prior to complete removal of the cap.

CAUTION

If the cooling system of a hot engine has been drained, do not fill until the engine cools. A sudden change in temperature may cause damage to the engine.

Make a visual check for cooling system leaks. Inspect all of the cooling system hoses at least once every 700 hours of operational service for signs of deterioration. Replace the hoses if necessary.

Refer to EMD 645 Series Engine Maintenance Manual and EMD 645/710 Operating Manual, found in Chapter 6 of this manual for servicing details.

1.8.3 Flushing and Refilling Radiator Clean the cooling system every 1000 hours of operational service. Use a good radiator cleaning solution designated as an inner coil cleaner/flushing agent and use in accordance with the instructions on the container. After the cleaning operation, flush the cooling system with soft water, adding a good grade of rust inhibitor or high boiling point type antifreeze. Refer to EMD 645 Series Turbo Marine Engine Maintenance Manual in Chapter 6 of this manual for complete details.

Refer to EMD Maintenance Instructions for details on the specifications of the cooling system and coolant selections.

With the use of a proper antifreeze or rust inhibitor, this interval may be lengthened to every six (6) months if no corrosion is evident before this. The length of the interval will depend upon an inspection for rust and other deposits on the internal walls of the cooling system. When a thorough cleaning of the cooling system is required, it should always be reverse flushed for maximum cleansing effect on the coolant galleries and lines.

1.8.4 Coolant Analysis Take a sample of the coolant at least every 2100 hours of operating time, and have a complete analysis run to determine needed additives

1.8.5 Radiator Inspect the exterior of the radiator core every 700 hours and, if necessary, clean it with a quality grease solvent that is designated for use as a coil cleaner. Direct the solvent through the fin assembly in the opposite direction of the normal airflow. Dry with compressed air in the same manner.

WARNING

Do not use fuel oil, kerosene or gasoline as a solvent.

It may be necessary to clean the radiator more frequently if the unit is being operated in an extremely dusty or caustic environment.

The inside of the tubes should be inspected periodically and cleaned as necessary. Removal of access plugs allows visual inspection and, if necessary, the use of mechanical tube cleaners. Tapered plugs that are removed for tube inspection or cleaning should be replaced in the same hole. Should tapered plugs develop leaks, additional tightening is normally all that is required. Thread dope may be used if tightening alone is not sufficient. If shoulder type plugs develop leaks, the gaskets should be replaced immediately. The repair of tube leaks depends on the location of the leak. If the leak occurs in the tube wall, it is usually most practical to use tapered tube sealing pins to plug both ends of the tube. When numerous tubes have become plugged and performance is affected, re-tubing will be necessary. If leaks develop in the tube-to-tube sheet joints, the tubes may either be plugged off or re-rolled. If re-rolling is attempted, care must be used in selection of the proper tube expander for the size and gauge of the tube being rolled.

CAUTION

If it is ever necessary to re-roll the tubes, care must be taken with this procedure. Do not over-roll as this will weaken the tube.

The unit's operating technician should be aware of operating conditions and note when the coolant temperature gauge reading begins to rise as the operating time for the unit progresses. The radiator coil should be cleaned well in advance of the coolant temperature safety warning initiation.

A daily inspection should be made of the liquid level glass at the coolant inlet of the radiator. Be sure the coolant is the proper level before operating the unit.
For complete details on the radiator and related assemblies, refer to the vendor data/manuals supplied with the equipment.

1.9 AIR INTAKE AND EXHAUST SYSTEMS

1.9.1 Turbocharger The turbocharger assembly is primarily used to increase engine horsepower and provide better fuel oil economy through utilization of the exhaust gases. The turbocharger is a single stage turbine with a connecting gears train that is driven by the engine gear train.

Inspect the mountings, intake, and exhaust ducting and connections for tightness and possible leaks. Check the oil inlet and outlet lines for leaks and corrosion causing restrictions to the oil flow. Check for unusual noises or vibrations and, if excessive, remove the turbocharger assembly and correct the cause (starting with the gaskets). For complete details on the turbocharger, refer to EMD 645 Series Engine Maintenance Manual in Chapter 6 of this manual.

WARNING

Turbocharger service should ONLY be performed by qualified personnel.

CAUTION

Follow the manufacturer's recommendations to properly maintain equipment.

It is not recommended or practical to attempt any reconditioning of the turbocharger in the field. It is recommended that it be returned to EMD for service. However, if this is not possible, refer to the EMD 645 Series Engine Maintenance Manual for details on the removal and installation procedures for the turbocharger.

1.9.2 Air Box Drains Accumulation of liquids from the engine air box is removed through drain holes in the base rails of the crankcase which are aligned with pipes located on each side of the oil pan at the front of the engine. Both pipes connect to the main drain flange mounted on the oil pan. The flange places pressures from each pipe in opposition in order to prevent excessive loss of air from the box.

The air box drains should be cleaned as follows:

a. Disconnect external piping connected to the drain flange.

b. Remove the drain flange from the oil pan and clean with brush and solvent.

c. Remove air box hand-hole covers nearest the drain holes.

d. Feed cleaning tool into the drain hole in the base rail, turning it and using a "rodding" motion to loosen carbon and sludge from inside the drain pipes.

e. Once both drains have been completely cleared, flush piping with fuel oil or similar solvent to remove loose debris and residue.

f. Mount drain flange to oil pan, reconnect external piping and reinstall air box hand-hole covers.

WARNING

Always use caution when working around electrical equipment. Serious injury to personnel or damage to equipment could occur

CAUTION

Follow the manufacturer's recommendations to properly maintain equipment.

1.9.3 Exhaust Manifold

The exhaust manifold is made up of chamber assemblies, expansion joints, and an adapter assembly. The expansion joints are used between chamber assemblies and between the adapter and screen assembly and the turbocharger, to compensate for expansion and contraction of the manifold due to temperature changes. The adapter assembly contains a stainless steel screen and trap to prevent entry of foreign objects/debris.

The screen/trap must be maintained according to the following procedure:

a. Inspect the adapter and trap screen assembly between the rear expansion joint and the chamber assembly for the condition of the screen.

b. Check exhaust manifold base flange bolts for proper tightness.

For a detailed description of the exhaust manifold assembly, refer to the EMD 645 Series Engine Maintenance Manual and EMD 645/710 Operating Manual in Chapter 6 of this manual.

1.10 AIR START SYSTEM

1.10.1 General The air start system components should be checked periodically for loose connections and/or corrosion. Repair or replace, if necessary.

1.10.2 Air Starter The air starting motors require no scheduled maintenance. The airline lubricator is the only component on the engine skid that requires scheduled maintenance. If equipped, the lubricator in the air line to the starting motors should be checked regularly for oil, refilled, and adjusted when necessary. Oil is added to the lubricator through a filler cone at the top of the bowl on the lubricator. Use of a clean, high quality grade of an SAE No. 10 oil is recommended for ambient temperatures between 60-120 °F (16-49 °C).

Adjustment procedure for the inline lubricator is as follows, (disregard if not equipped):

a. Inspect the air start motor exhaust for excessive oil, as air is moving through system.

b. Adjust needle valve on the lubricator assembly to permit only one or two drops of oil per second when the air is moving. The adjustment ratio is approximately two (2) drops of oil per turn of the needle valve.

c. Re-inspect air exhaust.

1.10.3 Strainer The strainer in the air line should be checked and cleaned of any debris regularly. If strainer becomes clogged prematurely, check air tanks and connections for possible leaks.

For complete details on maintaining the engine mounted air start components, refer to EMD 645 Series Engine Maintenance Manual and EMD 645/710 Operating Manual in Chapter 6 of this manual. For details on the air start motor, refer to the manual in Chapter 6 of this manual.

1.11 GENERATOR

For complete servicing procedures, refer to the Baylor Generator Instruction Manual in Chapter 6 of this manual.

1.12 ENGINE TUNE-UP

There is no scheduled interval for performing an engine tune-up. As long as the engine performance is satisfactory, no tune-up should be needed. Minor adjustments in the valve and injector operating mechanisms, governor, etc., should only be required periodically to compensate for normal wear on the parts. For complete details on tune-up procedures, refer to EMD 645 Series Turbo Marine Engine Maintenance Manual, in Chapter 6 of this manual.

1.13 CONTROLS AND INDICATORS

There is no set schedule interval for inspecting and cleaning the control panels, gauges, and switches. With the DC potential disconnected, the control cabinet and panels should be blown out with air and/or wiped clean, inside and out. A light coat of a corrosion-preventive spray solution is recommended on unpainted/untreated surfaces. A non-oil base cleaner/lubricant spray is recommended, as an oil base spray will eventually fog the glass covers on the gauges/indicators, making them unreadable.

During the cleaning process, a visual inspection should be made of any loose components, terminal screws, and soldered connections. This inspection is especially beneficial for the skid-mounted local control panels and electrical enclosures that are constantly exposed to vibration from the engine. In addition, inspect the vibration absorbing neoprene panel and cabinet mounts for elasticity and resiliency. If hardened or cracked, replace immediately.

Refer to the applicable vendor manuals in Chapter 6 of this manual for complete details.

1.14 CORROSION CHECK

Treating for corrosion before it becomes a problem is a necessary, ongoing process. A weekly inspection for corrosion damage consists of thoroughly cleaning and preserving or lubricating all exposed metal surfaces. The generator set is sealed with several coats of industrial sealant paint but this protective shell can breakdown at vibration sensitive areas or places exposed to extreme heat for long periods of operation. Inspection for signs of rust should always be conducted and ongoing during the course of routing maintenance procedures.

When the unit is not in service, every precaution should be taken against corrosion. For further storage details, refer to Chapter 3, Section 3 of this manual.

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TROUBLESHOOTING

2.1 DEFINITION

WARNING

For your own protection, do not use substitute parts without the approval of Stewart & Stevenson Services.

CAUTION

If the operator has ANY QUESTIONS about the safe use or maintenance of the generator set, ASK THE SUPERVISOR - NEVER GUESS - ALWAYS CHECK.

Troubleshooting can be defined as the act of locating a trouble or defect in the equipment. Various troubleshooting techniques have been developed, but all pertinent data is used to locate a defect.

WARNING

Do not wear loose clothing, unbuttoned shirts, or neckties while working on moving equipment.

CAUTION

Follow the manufacturer's recommendations to maintain equipment properly.

2.2 ENGINE

The troubleshooting tables provided in this section (Tables 2-1 through 2-4) are intended to serve as a guide by which the technician can locate a malfunctioning component in an assembly or system. The engine manual, located in Chapter 6 of this manual, is devoted entirely to troubleshooting the engine and turbocharger. Chapter 1, Section 2 of this manual gives specifications and capacities of the engine systems that may be helpful in determining a problem.

TABLE 2.1 FUEL OIL SYSTEM

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Fuel oil not reaching engine	Malfunctioning check valve	Replace check valve.
	Faulty engine-driven fuel oil pump	Replace fuel oil pump, as outlined in Chapter 6 of this manual.
	Clogged filters and/or strainers	Clean strainers and/or replace filter elements.
Low fuel oil pressure at engine	Refer to "Fuel oil not reaching engine"	
Excessively high fuel oil pressure at engine	Faulty return line check valve	Replace check valve.
	Clogged return line	Clear obstructions from return line.
Fuel oil not reaching fuel oil tank during refill operation	Faulty solenoid valve	Replace fuel oil solenoid valve.
	Faulty fuel oil level switch	Replace fuel oil level switch.
	Faulty fuel oil transfer pump	Check pump motor switch starter for "ON" position.
	Clogged fuel oil strainer	Clean strainer.

TABLE 2.2 COOLING SYSTEM

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Excessively high temperatures in system	Faulty thermostatic valve	Replace thermostatic valve.
	Faulty jacket water cooler	Check fan belt for tightness. Check motor starter switch for "ON" position. Clean core and tubes if dirty.
	Faulty water pump	Repair or replace water pump, as outlined in Chapter 6 of this manual.
	Clogged lube oil cooler	Disassemble and clean lube oil cooler.

TABLE 2.3 LUBRICATION SYSTEM

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Low lube oil delivery pressure at engine lube oil manifold during engine operation.	Clogged oil strainer	Clean or replace strainer element. Replace filters.
	Faulty main lube oil pump	Repair or replace pump.
	Clogged oil line	Remove obstructions.
Low piston cooling oil pressure during engine operation.	Clogged oil strainer	Clean or replace strainer element. Replace filters.
	Faulty piston cooling pump	Repair or replace pump.
	Clogged oil line	Remove obstructions.
Low oil pressure to lube oil manifold and turbocharger during pre-lube operation.	Clogged "Y"-type strainer	Clean strainer element. Replace filters.
	Faulty circulating pump or soak-back pump	Repair faulty pump.
Low oil pressure to lube oil manifold during pre-lube operation.	Malfunction in solenoid valve	Repair or replace solenoid valve.
	Faulty ball valve or check valve	Replace valve. Replace filter.
Low oil pressure at turbocharger during pre-lube operation.	Clogged strainer	Clean strainer element.
	Faulty check valve	Replace faulty check valve.
	Faulty relief valve	Replace faulty relief valve. Replace turbocharger filter.
Excessively high pressure at lube oil manifold and turbocharger during pre-lube operation.	Faulty relief valve	Replace relief valve.

CAUTION

Use only specified fluid types. Do not mix fluids.

TABLE 2.4 AIR START SYSTEM

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Loss of input air.	Air supply not connected	Reconnect air supply through flexible connector at skid.
Low air pressure at pressure gauge.	Clogged input line	Remove obstruction.
Low air pressure at starter motor.	Clogged air filter	Clean or replace element.
	Faulty air relay valve	Repair or replace valve.
	Faulty ball valve	Repair or replace ball valve.
	Faulty lubricator	Repair or replace lubricator.
Air pressure normal but still won't start.	Worn Bendix mechanism	Replace Bendix mechanism.

2.3 UNIT TROUBLESHOOTING

2.3.1 Introduction This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set and its components. Common malfunctions that may occur are listed in Table 2.5. Each malfunction stated is followed by a list of probable causes of the trouble. Corrective action recommended is described opposite each probable cause. This table does not list all malfunctions; refer to the manufacturer's literature in Chapter 6 for more specific and detailed troubleshooting information.

WARNING

Always use caution when working around electrical equipment. Serious injury to personnel or damage to equipment could occur.

Table 2.5 Unit Troubleshooting

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
1. Starting aid does not operate.	a. Defective switch	a. Test/replace switch.
	b. Defective solenoid.	b. Replace solenoid.
	c. Defective wiring.	c. Refer to wiring diagram.
2. Engine fails to crank.	a. Improper starting procedure.	a. Perform starting procedure according to Operation section.
	b. Defective starter switch.	b. Test/replace starter switch.
	c. Defective starting circuit or break in starting circuit wiring.	c. Refer to wiring diagram.
	d. Defective starter assembly.	d. Defective starter assembly.
3. Engine cranks but fails to start.	a. Improper starting procedure.	a. Perform starting procedure as outlined in Operation Section.
	b. Low or no fuel oil supply.	b. Service fuel oil tank.
	c. Water in fuel oil, contaminated or incorrect grade of fuel oil.	c. Service fuel oil filter/water separator. Drain tank of fuel oil and clean/service with clean, proper grade of fuel oil.
	d. Air in fuel oil lines.	d. Bleed fuel oil system. Tighten any loose fuel oil supply line connections.
	e. Obstruction in fuel oil supply line.	e. Clean fuel oil supply lines by flushing with clean fuel oil.
	f. Defective fuel oil pump.	f. Test/replace fuel oil pump.

Table 2.5 Unit Troubleshooting (Cont)

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
4. Engine starts correctly, but stops when START switch is released.	a. Defective STOP switch	a. Test/replace switch
	b. Defective or low oil pressure	b. Test/replace switch.
	c. Defective high engine temperature switch.	c. Test/replace switch.
	d. Defective wiring.	d. Notify direct support.
	e. Defective low fuel oil level switch.	e. Test/replace switch.
5. Engine stops suddenly.	a. Protective device tripped.	a. Check fault indicator for malfunction indication. Refer to the appropriate maintenance section.
	b. Fuel oil support exhausted.	b. Refill fuel oil tank.
	c. Air lock in fuel oil supply line.	c. Bleed fuel oil system. Tighten any loose fuel oil line connections.
	d. Obstruction in fuel oil line.	d. Service fuel oil system.
	e. Water in fuel oil.	e. Drain fuel oil tank. Service fuel oil system with clean fuel oil.
	f. Defective engine-protective device.	f. Test replace engine protective device.
6.Engine runs roughly or misfires.	a. Improper grade or contaminated fuel oil.	a. Check for fuel oil contamination. Drain fuel oil tank. Change fuel oil filters. Service with clean fuel oil of proper grade.
	b. Dirty air filter.	b. Service air filter.
	c. Obstruction in fuel oil line.	c. Clean or replace fuel oil supply line.
	d. Defective fuel oil injector(s).	d. Refer to Engine Service Manual.

Table 2.5 Unit Troubleshooting (Cont)

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
7. Engine does not develop full power.	a. Cylinder misfiring.	a. Refer to malfunction 6.
	b. Exhaust pipe or muffler restricted.	b. Clean or replace exhaust pipe, muffler, or turbocharger screen.
	c. Defective fuel oil injector(s).	c. Refer to Engine Service Manual..
8. Engine knocks.	a. Oil picked up by airstream.	a. Refer to Engine Service Manual.
	b. Low coolant temperature.	b. Refer to Engine Service Manual.
	c. Defective fuel oil injector(s).	c. Refer to Engine Service Manual.
	d. Improper grade of fuel oil.	d. Check for fuel oil contamination. Drain fuel oil tank. Change fuel oil filters. Service with clean fuel oil of proper grade.
9. Black or gray smoke in exhaust.	a. Dirty air filter.	a. Service air filter.
	b. Generator set overloaded.	b. Reduce load to rated level.
	c. Defective fuel oil injector(s).	c. Refer to Engine Service Manual.
	d. Improper grade of fuel oil.	d. Check for fuel oil contamination. Drain fuel oil tank. Change fuel oil filters. Service with clean fuel oil of proper grade.
10. Blue smoke in exhaust.	Faulty lube oil control.	Refer to Engine Service Manual.
11. White smoke in exhaust.	Misfiring cylinders.	Refer to Engine Service Manual.
12. Low oil pressure.	a. Low oil level.	a. Add oil to proper level on dipstick.
	b. Defective low oil pressure switch.	b. Test/replace switch.
	c. Clogged oil filter.	c. Service oil filter.

Table 2.5 Unit Troubleshooting (Cont)

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
12. Low oil pressure (Cont).	d. Improper oil viscosity.	d. Drain crankcase and refill with oil of proper viscosity.
	e. Internal engine fault.	Refer to Engine Service Manual.
13. Engine overheats.	a. Air inlet blocked.	a. Remove blockage.
	b. Cooling air fan defective.	b. Test/replace cooling air fan.
	c. Generator set overloaded.	c. Reduce load.
	d. Defective high engine temperature switch.	d. Test/replace switch.
	e. Loose or defective V-belt.	e. Adjust/replace V-belt.
	f. Coolant loss	f. Replenish coolant.
14. Frequency fluctuates.	a. Erratic engine operation.	a. Refer to Engine Service Manual
	b. Defective frequency meter.	b. Test/replace hertz meter.

REPAIRS AND ADJUSTMENTS

3.1 REPAIRS

WARNING

For your own protection, do not use substitute parts without the approval of Stewart & Stevenson Services.

WARNING

Do not wear loose clothing, unbuttoned shirts, or neckties while working on moving equipment.

3.1.1 Engine Repairs to the engine should be carried out in accordance with the procedures outlined in the EMD 645 Series Engine Maintenance Manual, and EMD 645/710 Operating Manual, included in Chapter 6 of this manual.

3.1.2 Generator Repairs to the generator should be made by qualified individuals using the Baylor Generator Service Manual located in Chapter 6 of this manual.

3.1.3 Systems Repairs to the various systems and controls furnished by Stewart & Stevenson should be done using this manual and various vendor information contained in Chapter 6. A detailed Parts List is contained in Chapter 4 of this manual, to help with procurement of replacement parts. All other ancillary equipment repairs should be referenced in the applicable vendor data in Chapter 6 of this manual and under separate cover.

3.2 ADJUSTMENTS

3.2.1 Engine Adjustments needed for the engine are contained in EMD 645 Series Engine Maintenance Manual, and EMD 645/710 Operating Manual, included in Chapter 6 of this manual.

3.2.2 Generator The generator should not need any adjustments, except for alignment checks on a 2-year basis. Refer to Baylor Generator Service Manual located in Chapter 6 of this manual for alignment instructions.

3.2.3 Systems Adjustments to the fuel, oil, and water systems need to be made only when some pressure or volume becomes out of tolerance. Refer to the specifications in Chapter 1, Section 2; the drawings in Chapter 5 and vendor data in Chapter 6 for procedures of adjustment of the particular item.

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LUBRICATION

4.1 OVERVIEW

WARNING

Always use caution when working around rotating equipment. Serious injury to personnel or damage to equipment could occur.

WARNING

Lubricate only when the equipment is shut down, isolated, and tagged "Out of Service."

This section contains instructions for the lubrication of the diesel engine generator set fabricated by Stewart & Stevenson Services. For convenience, lubrication details in this section pertain to major components supplied by others so that the service technicians have a single, abbreviated source for interval lubrication of the generator set as a unit. For complete details on a certain component, refer to the vendor data sets contained in Chapter 6 of this manual.

4.2 LUBRICATION BENEFITS

4.2.1 Best Performance Your generator set is ensured of its best performance and reliability when a scheduled preventive maintenance program is followed. A small cost and effort expended for a preventive maintenance program yields improved performance, efficiency, and reliability.

4.2.2 Benefits These benefits are realized by:

a. Understanding the nature of lubrication as a part of preventive maintenance.

b. Following the lubrication and preventive maintenance schedule that has been established.

4.2.3 Intended Use This generator system is intended for emergency use at times of utility power failure. Preventive maintenance that includes lubrication is the key to any standby service generator set. A program of regular lubrication can assure the ready availability of the generator sets in emergency situations. A complete log of all lubrication, as part of maintenance and repairs, should be kept to help pinpoint future problem areas.

4.3 NATURE OF PREVENTIVE LUBRICATION

CAUTION

If the operator has ANY QUESTIONS about the safe use of lubricants or lubrication of the generator set, ASK THE SUPERVISOR - NEVER GUESS - ALWAYS CHECK.

4.3.1 Lubrication Service The action of maintaining the proper amounts (levels) of lubricating grease, or oil. Lubrication service can be performed as part of a repair service to a specific component that requires lubrication as part of the installation procedure. While performing lubrication service on repaired/replaced equipment, refer to the specific equipment service manuals supplied in Chapter 6 of this manual. Lubrication service can also be a part of an interval maintenance program.

4.3.2 Lubrication Maintenance This necessary, ongoing process consists of thorough checking, assurance of protective lube coating, and the lubrication procedure. Generator sets located where high humidity or high temperatures are prevalent require extra awareness of the lubrication needs of the unit.

4.4 LUBRICATING OIL

4.4.1 Check Check the lubricating oil level with the engine stopped. If the engine has just been stopped, wait approximately twenty (20) minutes to allow the oil to drain back into the oil pan.

Add the proper grade oil, as required, to maintain the correct level on the dipstick. Refer Chapter 1, Section 2 of this manual and the EMD Maintenance Instructions in Chapter 6 of this manual for complete details on oil specifications.

Make a visual check for leaks around the filters and the external oil lines. Change the oil at the intervals shown in Chapter 2, Section 1, Table 2.2. The drain interval may be established on the recommendations of an independent oil analysis laboratory or the oil supplier until the most practical oil change period has been determined.

CAUTION

Avoid excessive lubrication and do not lubricate the governor while the engine is running.

4.5 GENERATOR

WARNING

***Always use caution when working around electrical* equipment. Serious injury to personnel or damage to equipment could occur**

CAUTION

Follow the manufacturer's recommendations to properly maintain equipment.

For complete details on the lubrication of the Baylor generator, refer to the Baylor Generator Instruction Manual located in Chapter 6 of this manual. Refer to Chapter 1, Section 2 of this manual for specifications on the lubricant used.

4.6 ANCILLARY EQUIPMENT

For complete details on the lubrication of equipment and systems of the generator set, refer to the applicable vendor data in Chapter 6 of this manual.

4.7 LUBRICATION SCHEDULE

NOTE

The following Lubrication Schedule form has been included as an example and/or reproducible copy for use by attending service personnel. Additional components should be added by maintenance personnel on-site.

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STEWART & STEVENSON SERVICES, INC.
DIESEL ENGINE GENERATOR SETS

PROJECT LUBRICATION SCHEDULE

PROJECT NAME: Alexander Orr Water Treatment Plant ISSUE DATE:

EQUIPMENT NO.	REF. PS /DRAWING	B/Q TITLE	PART TO BE LUBRICATED	LUBRICANT TYPE/BRAND	REQUIREMENTS					TYPE/GRADE SELECTED	REMARKS
					INITIAL	COMM.	AT 6 MON.	AT 1 YEAR	SERVICE TEN/QTY		

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