U.S. Environmental Protection Agency Air Quality Permit Application for the Main Pass Energy Hub™ Project

Submitted by

Freeport-McMoRan Energy LLC

February 2004

001683.MF03.03

Air Quality Permit Application
Main Pass Energy Hub™
Liquefied Natural Gas Import Terminal

February 2004

Prepared for:

FREEPORT-MCMORAN ENERGY LLC
1615 Poydras St
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List of Acronyms

µg	microgram
µm	micrometer
BOG	boil off gas
BSCF	billion standard cubic feet
BSCFD	billion standard cubic feet per day
BTU	British Thermal Unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CO	carbon monoxide
E & E	Ecology & Environment, Inc.
EPA	U.S. Environmental Protection Agency
FME	Freeport-McMoRan Energy LLC
g	grams
gal	gallon
GC	gas conditioning
GE	General Electric
GEP	Good Engineering Practice
GJ	gigajoule
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
hr	hour
hp	horsepower
HP	high-pressure (or horsepower)
LAC	Louisiana Administrative Code
LAER	Lowest Achievable Emission Rate

lb	pound
LCAA	Louisiana Clean Air Act
LDEQ	Louisiana Department of Environmental Quality
LNG	liquefied natural gas
LP	low-pressure
m^3	cubic meter
MACT	Maximum Achievable Control Technology
MMBTU	million British thermal units
MMSCF	million standard cubic feet
MMSCFD	million standard cubic feet per day
MP	Main Pass
MPEH™	Main Pass Energy Hub™
NAAQS	National Ambient Air Quality Standards
NNSR	Nonattainment New Source Review
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGL	natural gas liquids
NSPS	New Source Performance Standards
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NSR	New Source Review
OCS	Outer Continental Shelf
OEA-EED	Office of Environmental Assessment, Environmental Evaluation Division
ORV	open rack vaporizers
PM_{10}	particulate matter less than 10 microns
ppm	parts per million
PSD	Prevention of Significant Deterioration
psig	pressure standard inch gauge
PTE	potential to emit
s	second
SCF	standard cubic feet
SCR	selective catalytic reduction

SIP	State Implementation Plan
SO_2	sulfur dioxide
TAP	toxic air pollutant
tpy	tons per year
USC	United States Code
VOC	volatile organic compounds
yr	year

1 Introduction

Freeport-McMoRan Energy LLC (FME) proposes to construct the Main Pass Energy Hub™ (MPEH™) as a deepwater port to receive, vaporize, condition (process), store and transport liquefied natural gas (LNG) and constituent liquids derived from the conditioning process. The facility is designed to deliver an average of 1.0 billion standard cubic feet per day (BSCFD) and a peak of 3.0 BSCFD of pipeline-quality natural gas, and a peak of 85,000 barrels per day of natural gas liquids. The proposed terminal would be located in the Gulf of Mexico on the Outer Continental Shelf (OCS) approximately 16 miles offshore southeast Louisiana at Main Pass Block 299. The water is approximately 210 feet deep at the proposed deepwater port location.

This application is organized as follows:

- Section 1 - Introduction
- Section 2 – Area Maps and Plot Plans
- Section 3 – Project Overview
- Section 4 – Regulatory Overview
- Section 5 – Emissions Inventory
- Section 6 – Air Quality Modeling Analysis
- Section 7 – References
- Appendix A – Title V (Part 71) Permit Application Forms
- Appendix B – Emission Calculations
- Appendix C – Hazardous Air Pollutant (HAP) Emission Calculations
- Appendix D – SCREEN3 Model Input/Output

The U.S. Environmental Protection Agency (EPA) Region 6 is the regulatory authority responsible for reviewing the application and issuing the air quality permit.

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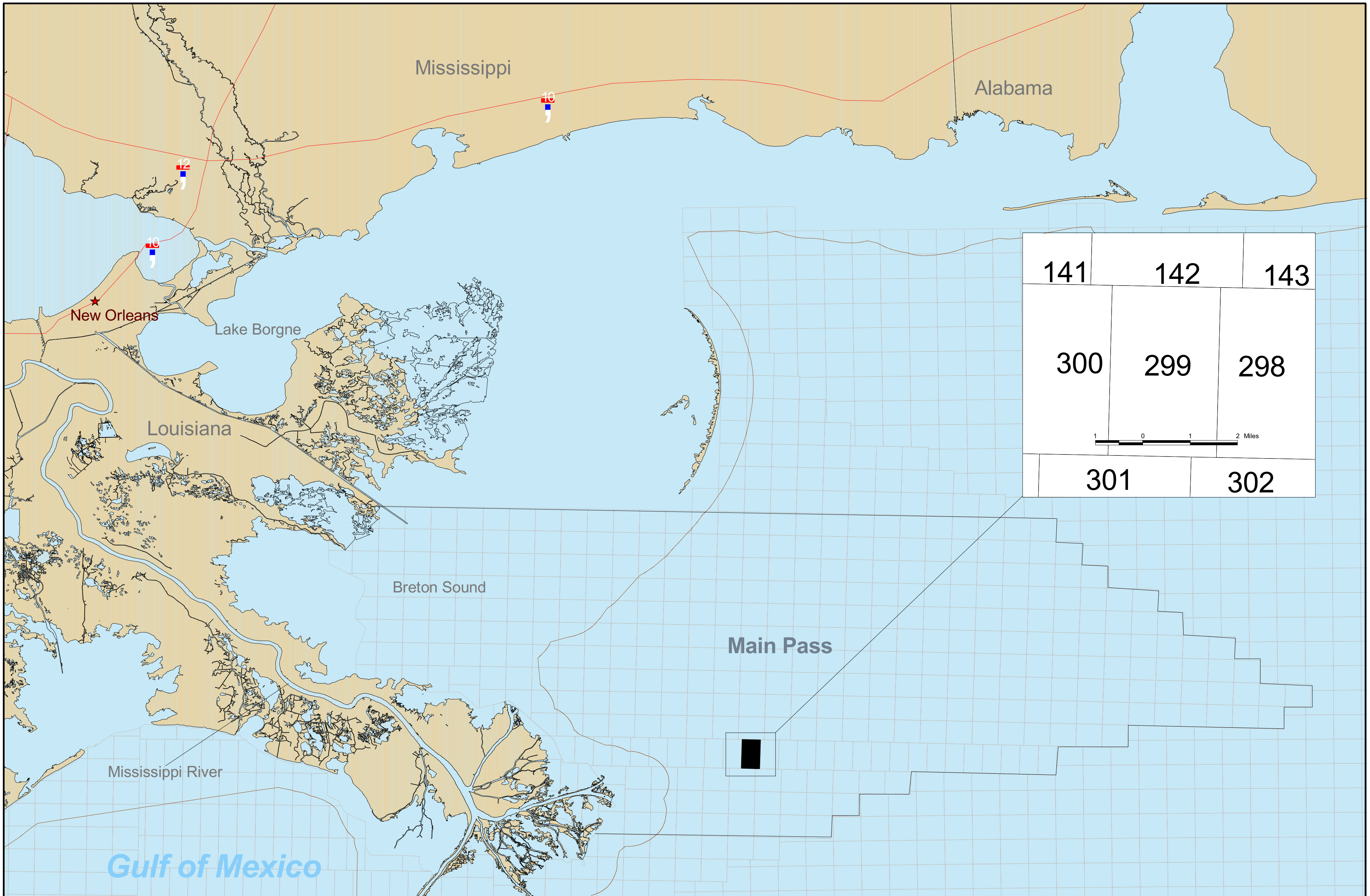
2 Area Map and Plot Plans

The following maps and plot plans show the layout of the site. (Aker Kvaerner drawing number is indicated in parentheses.)

- Figure 2-1: Area Map
- Figure 2-2: Process Flow Diagram
- Figure 2-3: Air Emissions Location Plan (AK-D-0013)
- Figure 2-4: Platforms No. 3 and 4 – Air Emissions Location Plan
- Figure 2-5: Platform No. 1 Layout (AK-D-0101)
- Figure 2-6: Platform No. 1 Elevation (AK-D-0104)
- Figure 2-7: Platform No. 2 Layout (AK-D-0201)
- Figure 2-8: Platform No. 2 Elevation (AK-D-0204)

Figure 2-1 shows the general area map of Main Pass Block 299 in the Gulf of Mexico. Figure 2-2 provides a block depiction of the process flow at the proposed terminal. Figure 2-3 shows the layout of the proposed facility (main platforms) with the location of air emission points identified, Figure 2-4 shows the emission points on Platforms No. 3 and 4. Figure 2-5 shows the layout of Platform No. 1, and Figure 2-6 is an elevation view of Platform No. 1. Figure 2-7 shows the layout of Platform No. 2, and Figure 2-8 is an elevation view of Platform No. 2.



LEGEND

Main Pass Block 299
City
State - Federal Boundary
MMS Lease Block
Interstate Highway
Water

N W E S

Scale

10 0 10 20 Miles

ecology and environment
International Specialist in the Environment
Baton Rouge, Louisiana

Figure 2-1

Area Map

Freeport-McMoRan Energy LLC

Main Pass 299

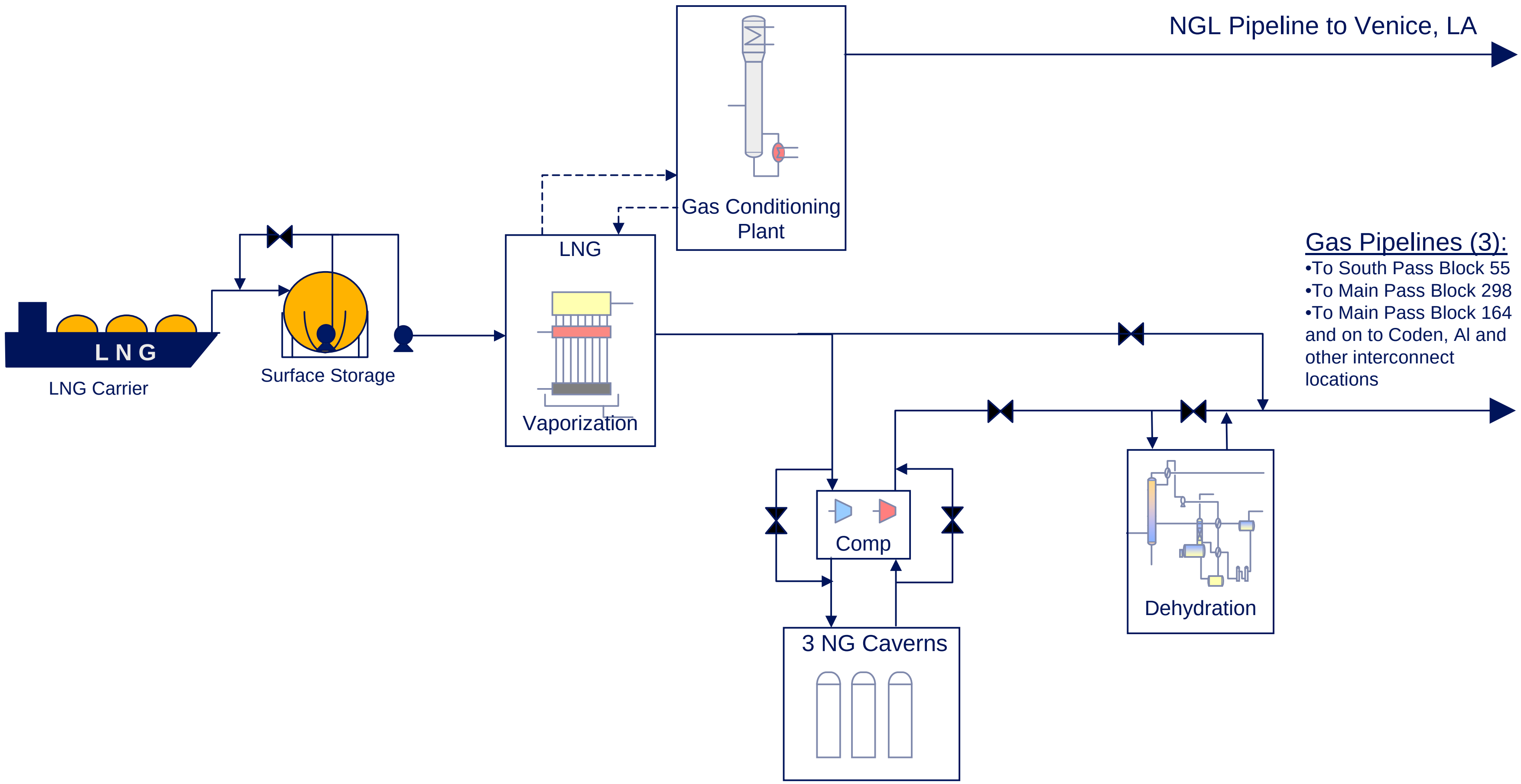
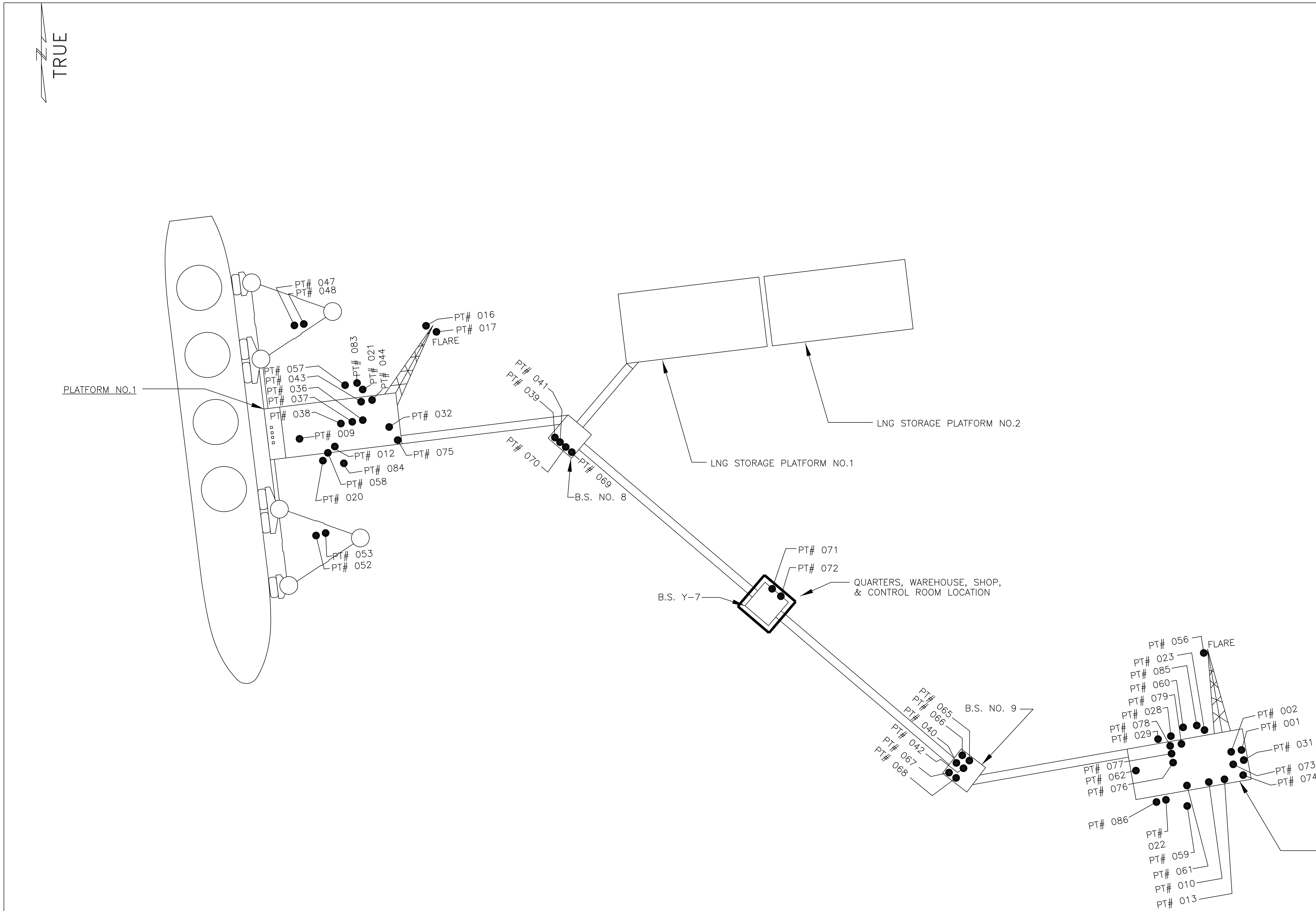


Figure 2-2
Process Flow Diagram



AIR EMISSIONS POINTS LIST

PT#	EQUIPMENT NAME	PLATFORM LOCATION
001	Gas Compressor	2
002	Gas Compressor	2
009	Oily Water Separator	1
010	Oily Water Separator	2
012	Waste Oil Storage Tank	1
013	Waste Oil Storage Tank	2
016	LP Flare TIP	1
017	HP Flare TIP	1
020	Diesel Crane (PP#1 South)	1
021	Diesel Crane (PP#1 North)	1
022	Diesel Crane (PP#2 South)	2
023	Diesel Crane (PP#2 North)	2
028	Glycol Regenerator	2
029	Glycol Regenerator	2
031	Pig Launcher	2
032	Hot Oil Expansion Tank	1
036	Gas Turbine Generator Package No.1	1
037	Gas Turbine Generator Package No.2	1
038	Gas Turbine Generator Package No.3	1
039	Firewater Pump	B.S.#8
040	Firewater Pump	B.S.#9
041	Diesel Day Tank For Firewater PBE-8010	B.S.#8
042	Diesel Day Tank For Firewater PBE-9010	B.S.#9
043	Emergency Power Generator	1
044	Emergency Power Generator Day Tank	1
047	Emergency Power Generator	Soft Berth
048	Emergency Power Generator Day Tank	Soft Berth
052	Emergency Power Generator	Soft Berth
053	Emergency Power Generator Day Tank	Soft Berth
056	HP Flare Stack	2
057	Diesel Oil Storage Tank	1
058	Diesel Oil Storage Tank	1
059	Diesel Oil Storage Tank	2
060	Diesel Oil Storage Tank	2
061	Temporary Diesel Storage Tank For Leaching	2
062	Temporary Leaching Power Generator	2
065	Emergency Power Generator	B.S.#9
066	Emergency Power Generator Day Tank	B.S.#9
067	Oily Water Separator	B.S.#9
068	Waste Oil Storage Tank	B.S.#9
069	Oily Water Separator	B.S.#8
070	Waste Oil Storage Tank	B.S.#8
071	Oily Water Separator	B.S.Y-7
072	Waste Oil Tank	B.S.Y-7
073	PIG Launcher	2
074	PIG Launcher	2
075	Liquid PIG Launcher	1
076	Methanol Storage Tank	2
077	Glycol Storage Tank	2
078	Glycol Storage Tank	2
079	Glycol Storage Tank	2
083	Diesel Storage Tank (crane pedestal)	1
084	Diesel Storage Tank (crane pedestal)	1
085	Diesel Storage Tank (crane pedestal)	2
086	Diesel Storage Tank (crane pedestal)	2
087*	Diesel Crane A	3
088*	Diesel Crane B	3
089*	Generators for Crane A&B	4
090*	Diesel Storage Tank	3
091*	Diesel Storage Tank	3
092*	Diesel Storage Tank	4
093*	Oily Water Separator	3
094*	Waste Oil Tank	3
095*	Oily Water Separator	4
096*	Waste Oil Tank	4

* LOCATION NOT SHOWN ON THIS DRAWING

Figure 2-3

NO.	REVISION	DRAWN	CHKD.	APPR. BY	DATE		BY	DATE
A	ISSUED FOR INFORMATION	DBB	RP	JPW	01/20/04	DRAWN	DBB	01/20/04
B	ISSUED FOR INFORMATION	DBB	RP	JPW	02/04/04	CHKD.		
C	ISSUED FOR INFORMATION	DBB	RP	JPW	02/20/04	APPR.		
						APPR.		
						SCALE: 1"=100'		

AKER KVAERNER

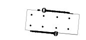
HOUSTON, TEXAS CONTRACT No. H0316900

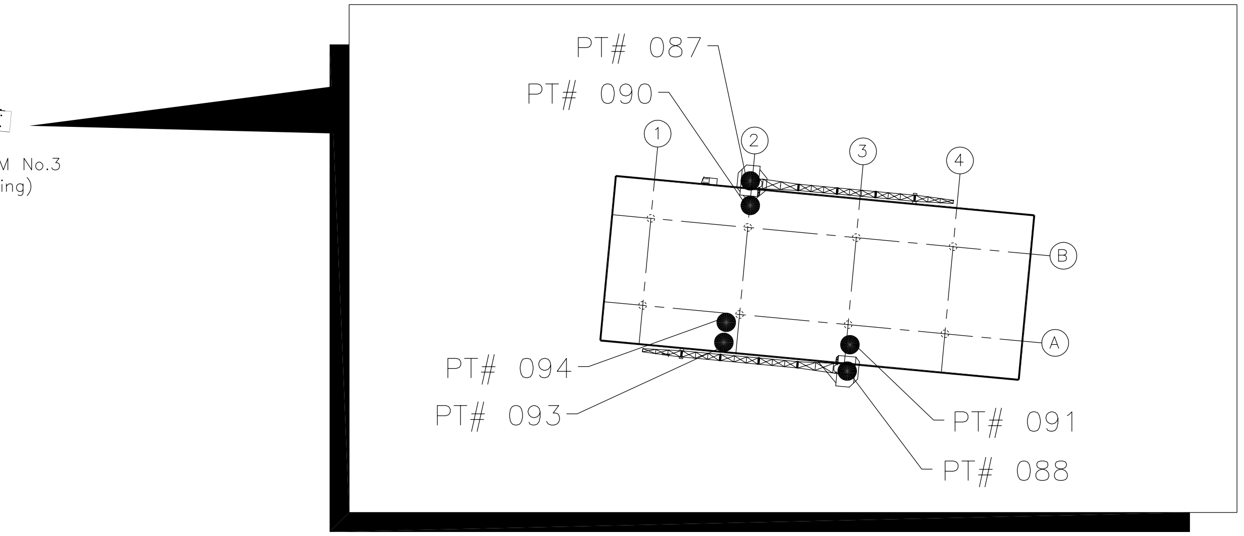
MAIN PASS ENGERY HUB™
AIR EMISSIONS
LOCATION PLAN

FOR: FREEPORT - MCMORAN ENERGY LLC

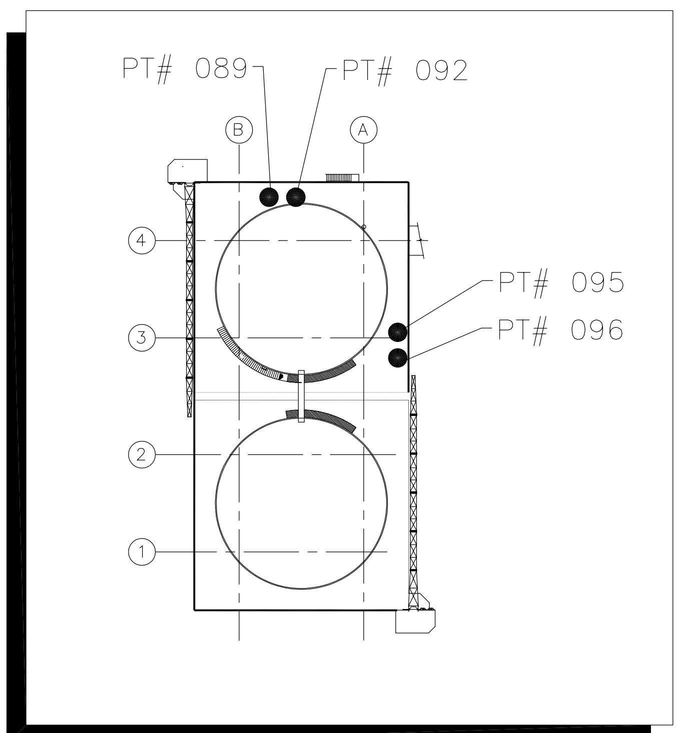
PROJECT NO.	DRAWING NO.	REV.
H0316900	AK-D-0013	C

AIR EMISSIONS POINT LIST		
PT#	EQUIPMENT NAME	PLATFORM LOCATION
087	DIESEL CRANE A	3
088	DIESEL CRANE B	3
089	GENERATOR FOR CRANES A & B	4
090	DIESEL STORAGE TANK (CRANE PEDESTAL)	3
091	DIESEL STORAGE TANK (CRANE PEDESTAL)	3
092	DIESEL STORAGE TANK (GENERATOR)	4
093	OILY WATER SEPARATOR	3
094	WASTE OIL TANK	3
095	OILY WATER SEPARATOR	4
096	WASTE OIL TANK	4

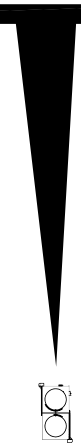


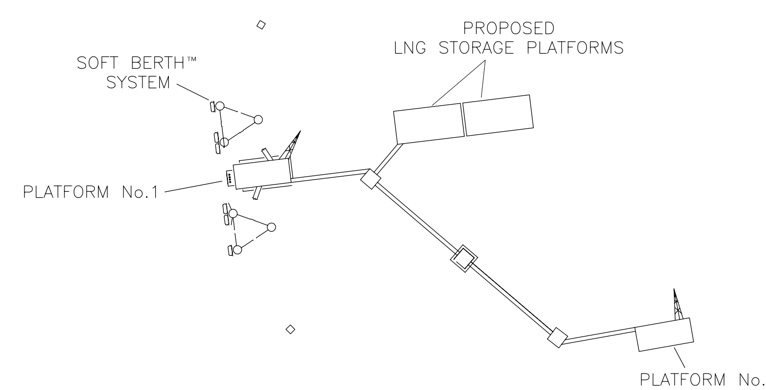


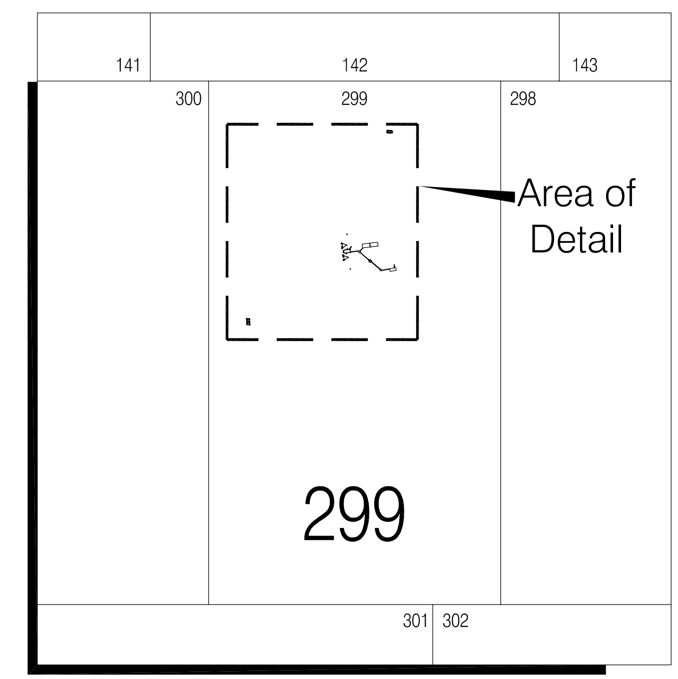
Platform No.3
(Existing)



Platform No.4
(Existing)







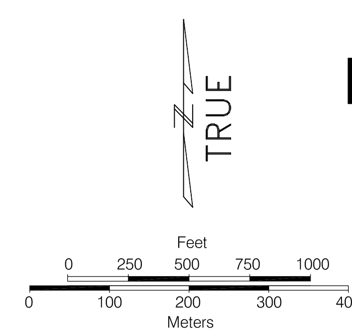


Figure 2-4

Approved ______	Date ______
Approved ______	Date ______
Approved ______	Date ______

REFERENCE DRAWINGS	Freeport McMoRan Energy LLC New Orleans, Louisiana
	MAIN PASS ENERGY HUB™ PLATFORMS No.3 & 4 AIR EMISSIONS LOCATION PLAN
DESIGNED HUNTER DATE 2/04 CHECKED DAUGHDRILL DATE 2/04 DRAWN FERNANDEZ DATE 2/04 CHECKED ______ DATE ______	SCALE · No. 02-29-0020 · B

REVISIONS	No. 7 BY: DATE:	No. 6 BY: DATE:	No. 5 BY: DATE:	No. 4 BY: DATE:	No. 3 BY: DATE:	No. 2 BY: DATE:	No. 1 BY: DATE:
REMARKS							

V:\DATA\ACAD\21(MPEH)\02\29\02290020.dwg [Layout1]
Last Edit: Feb 16, 2004 - 2:55pm mfernand

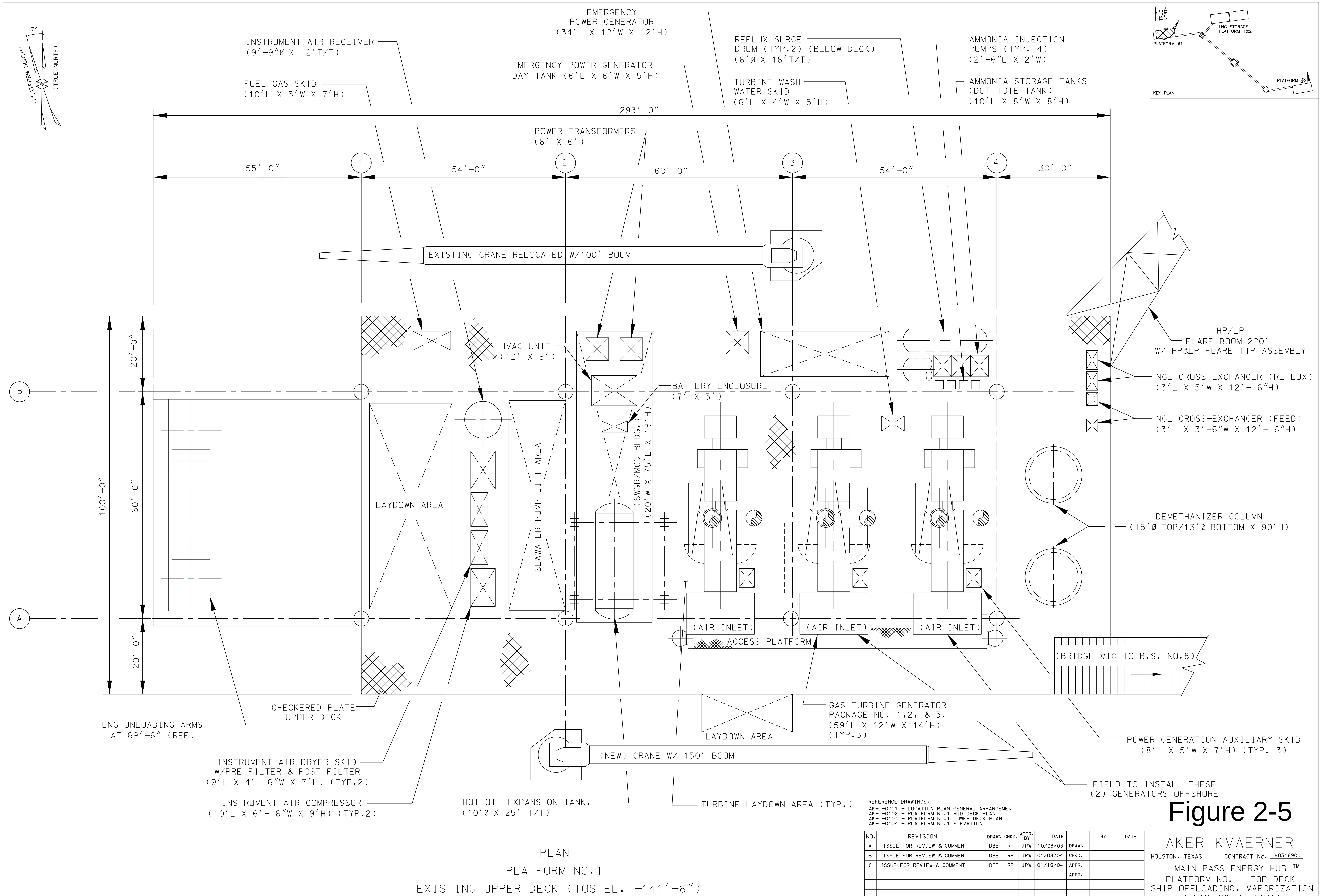


Figure 2-5

NO.	REVISION	DRAWN	CHKD.	APPR. BY	DATE		BY	DATE
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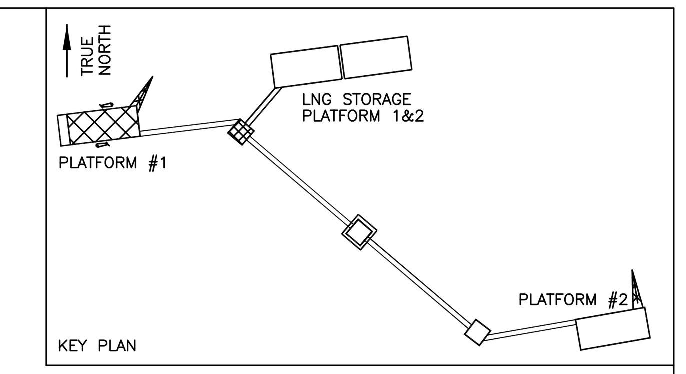
B	ISSUE FOR REVIEW & COMMENT	DBB	RP	JPW	01/08/04	CHKD.		
C	ISSUE FOR REVIEW & COMMENT	DBB	RP	JPW	01/16/04	APPR.		
						APPR.		
						SCALE: 3/32"=1'-0"		

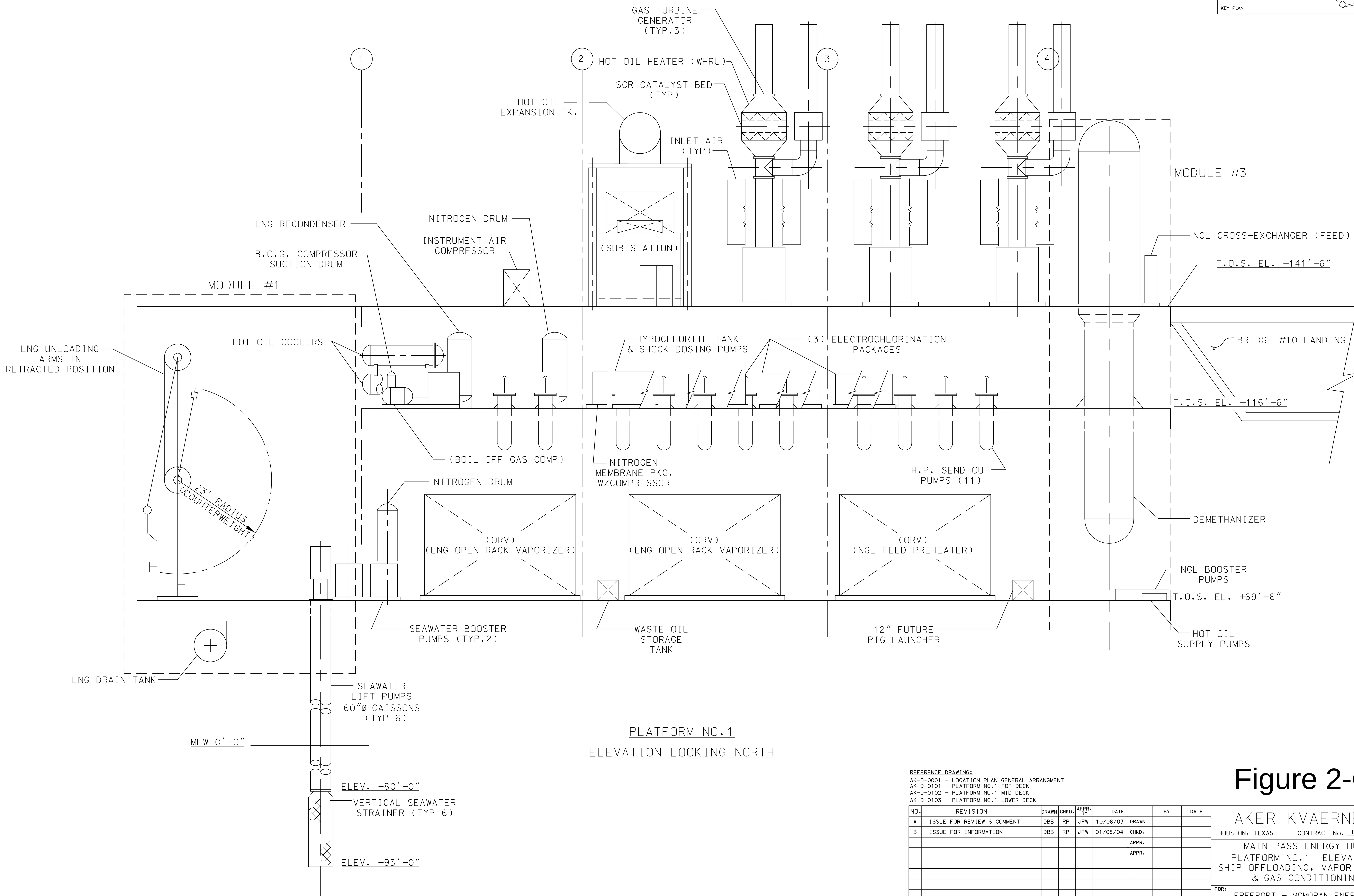
AKER KVAERNER
HOUSTON, TEXAS CONTRACT No. H0316900

MAIN PASS ENERGY HUB ™
PLATFORM NO.1 TOP DECK
SHIP OFFLOADING, VAPORIZATION & GAS CONDITIONING

FOR: FREEPORT - MCMORAN ENERGY LLC

PROJECT NO.	DRAWING NO.	REV.
H0316900	AK-D-0101	C





PLATFORM NO.1
ELEVATION LOOKING NORTH

REFERENCE DRAWING:
AK-D-0001 – LOCATION PLAN GENERAL ARRANGMENT
AK-D-0101 – PLATFORM NO.1 TOP DECK
AK-D-0102 – PLATFORM NO.1 MID DECK
AK-D-0103 – PLATFORM NO.1 LOWER DECK

Figure 2-6

NO.	REVISION	DRAWN	CHKD.	APPR. BY	DATE		BY	DATE
A	ISSUE FOR REVIEW & COMMENT	DBB	RP	JPW	10/08/03	DRAWN		
B	ISSUE FOR INFORMATION	DBB	RP	JPW	01/08/04	CHKD.		
						APPR.		
						APPR.		
						SCALE: 3/32"=1'-0"		

AKER KVAERNER
HOUSTON, TEXAS CONTRACT No. H0316900

MAIN PASS ENERGY HUB ™
PLATFORM NO.1 ELEVATION
SHIP OFFLOADING, VAPORIZATION
& GAS CONDITIONING

FOR: FREEPORT – MCMORAN ENERGY LLC

PROJECT NO.	DRAWING NO.	REV.
H0316900	AK-D-0104	B

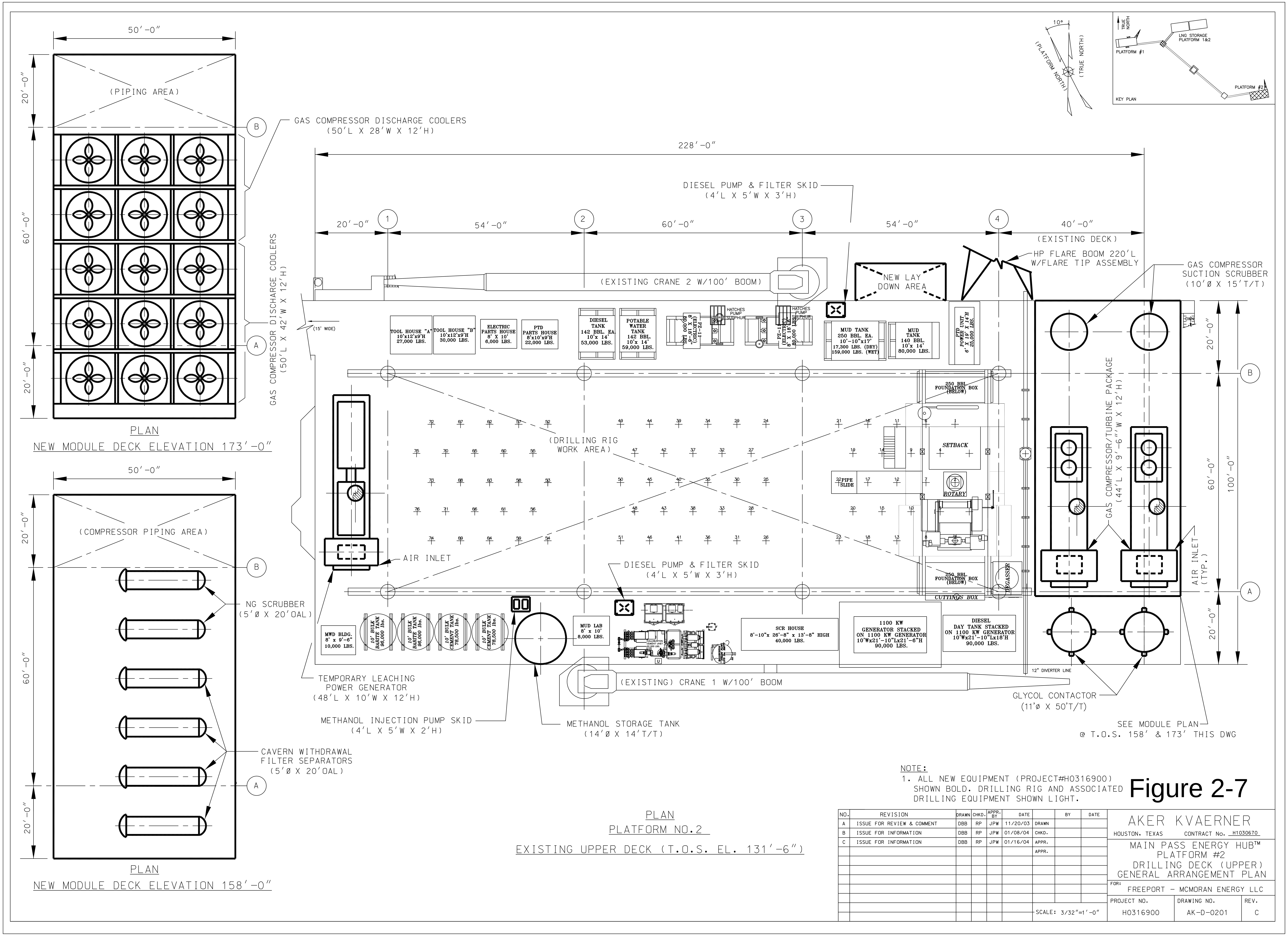
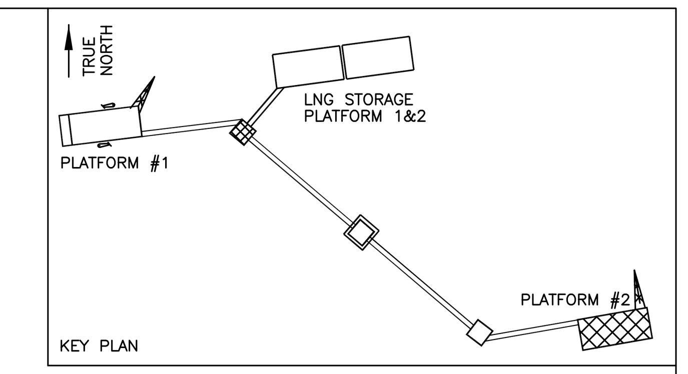
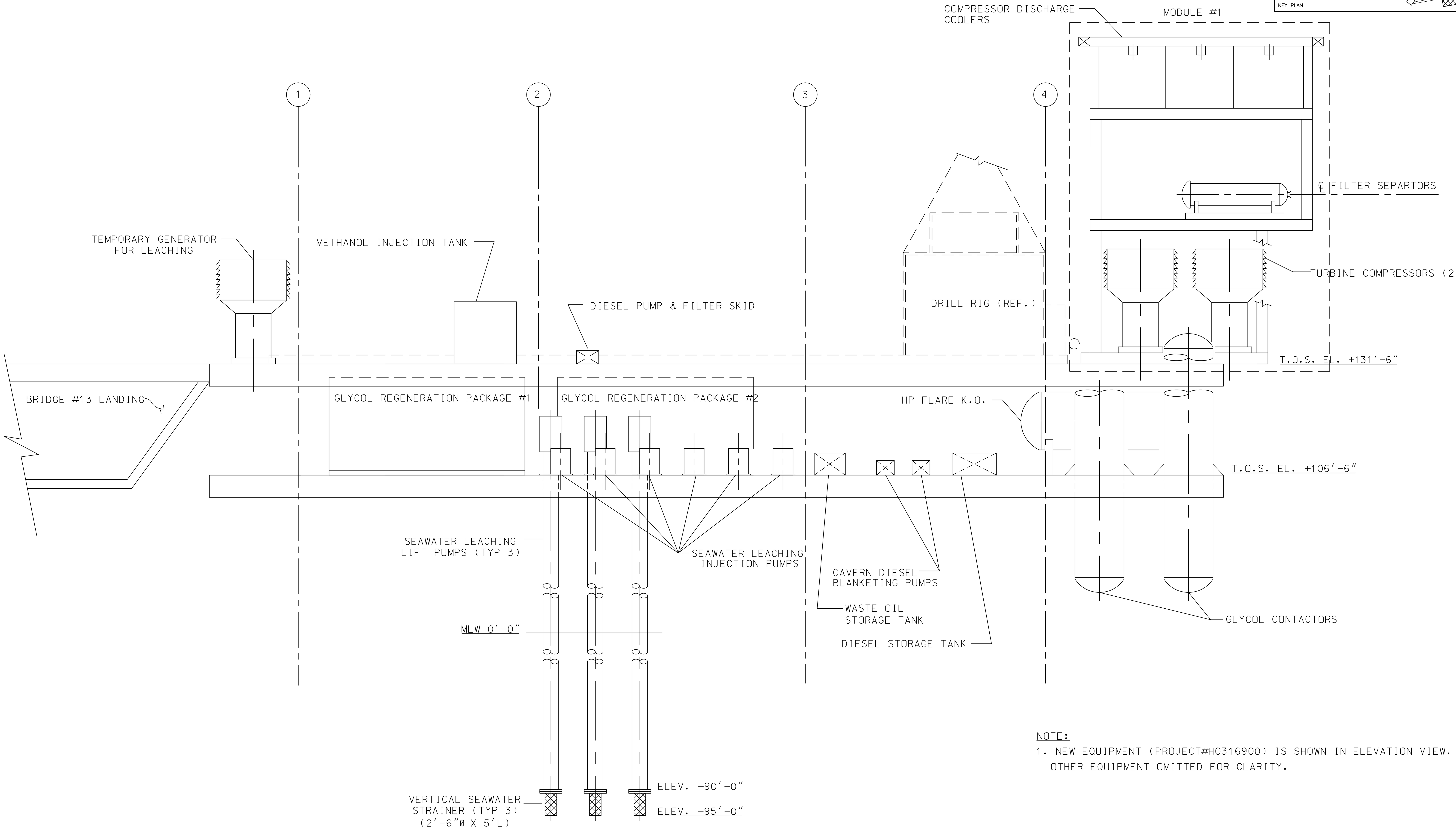

PLAN
NEW MODULE DECK ELEVATION 173'-0"
(PIPING AREA)
GAS COMPRESSOR DISCHARGE COOLERS
(50'L X 28'W X 12'H)
GAS COMPRESSOR DISCHARGE COOLERS
(50'L X 42'W X 12'H)
PLAN
NEW MODULE DECK ELEVATION 158'-0"
(COMPRESSOR PIPING AREA)
NG SCRUBBER
(5'Ø X 20'OAL)
CAVERN WITHDRAWAL
FILTER SEPARATORS
(5'Ø X 20'OAL)
228'-0"
DIESEL PUMP & FILTER SKID
(4'L X 5'W X 3'H)
20'-0"
54'-0"
60'-0"
54'-0"
40'-0"
(EXISTING DECK)
(EXISTING CRANE 2 W/100' BOOM)
NEW LAY
DOWN AREA
HP FLARE BOOM 220'L
W/FLARE TIP ASSEMBLY
GAS COMPRESSOR
SUCTION SCRUBBER
(10'Ø X 15'T/T)
TOOL HOUSE "A" 10'x12'x9'H 27,000 LBS.
TOOL HOUSE "B" 10'x12'x9'H 30,000 LBS.
ELECTRIC PARTS HOUSE 8' X 10' 6,000 LBS.
PTD PARTS HOUSE 8'x10'x9'H 22,000 LBS.
DIESEL TANK 142 BBL. EA. 10'x 14' 53,000 LBS.
POTABLE WATER TANK 142 BBL. 10'x 14' 59,000 LBS.
MUD TANK 250 BBL. EA. 10'-10"x17' 17,300 LBS. (DRY) 159,000 LBS. (WET)
MUD TANK 140 BBL. 10'x 14' 80,000 LBS.
PTD POWER UNIT 6' X 19' X 14'H 25,000 LBS.
GAS COMPRESSOR/TURBINE PACKAGE
(44'L X 9'-6"W X 12'H)
(DRILLING RIG
WORK AREA)
SETBACK
ROTARY
PIPE SLIDE
250 BBL FOUNDATION BOX (BELOW)
CUTTINGS BOX
DEGASSER
AIR INLET
AIR INLET
(TYP.)
DIESEL PUMP & FILTER SKID
(4'L X 5'W X 3'H)
MWD BLDG. 8' x 9'-6" 10,000 LBS.
10' BULK BARITE TANK 96,000 lbs.
10' BULK CEMENT TANK 78,500 lbs.
MUD LAB 8' x 10' 8,000 LBS.
SCR HOUSE 8'-10"x 26'-8" x 13'-8" HIGH 40,000 LBS.
1100 KW GENERATOR STACKED ON 1100 KW GENERATOR 10'Wx21'-10"Lx21'-6"H 90,000 LBS.
DIESEL DAY TANK STACKED ON 1100 KW GENERATOR 10'Wx21'-10"Lx18'H 90,000 LBS.
12" DIVERTER LINE
TEMPORARY LEACHING
POWER GENERATOR
(48'L X 10'W X 12'H)
(EXISTING) CRANE 1 W/100' BOOM
GLYCOL CONTACTOR
(11'Ø X 50'T/T)
METHANOL INJECTION PUMP SKID
(4'L X 5'W X 2'H)
METHANOL STORAGE TANK
(14'Ø X 14'T/T)
SEE MODULE PLAN
@ T.O.S. 158' & 173' THIS DWG
100'-0"
(PLATFORM NORTH)
(TRUE NORTH)
10°
TRUE NORTH
LNG STORAGE PLATFORM 1&2
PLATFORM #1
PLATFORM #2
KEY PLAN
NOTE:
1. ALL NEW EQUIPMENT (PROJECT#H0316900) SHOWN BOLD. DRILLING RIG AND ASSOCIATED DRILLING EQUIPMENT SHOWN LIGHT.
PLAN
PLATFORM NO.2
EXISTING UPPER DECK (T.O.S. EL. 131'-6")
NO. REVISION DRAWN CHKD. APPR. BY DATE
A ISSUE FOR REVIEW & COMMENT DBB RP JPW 11/20/03
B ISSUE FOR INFORMATION DBB RP JPW 01/08/04
C ISSUE FOR INFORMATION DBB RP JPW 01/16/04
AKER KVAERNER
HOUSTON, TEXAS CONTRACT No. H1030670
MAIN PASS ENERGY HUB™
PLATFORM #2
DRILLING DECK (UPPER)
GENERAL ARRANGEMENT PLAN
FOR: FREEPORT - MCMORAN ENERGY LLC
SCALE: 3/32"=1'-0"
PROJECT NO. H0316900
DRAWING NO. AK-D-0201
REV. C

Figure 2-7





NOTE:

1. NEW EQUIPMENT (PROJECT#H0316900) IS SHOWN IN ELEVATION VIEW. OTHER EQUIPMENT OMITTED FOR CLARITY.

PLATFORM #2

ELEVATION LOOKING NORTH

Figure 2-8

NO.	REVISION	DRAWN	CHKD.	APPR. BY	DATE		BY	DATE
A	ISSUE FOR REVIEW & COMMENT	DBB	RP	JPW	11/20/03	DRAWN		
B	ISSUE FOR INFORMATION	DBB	RP	JPW	01/08/04	CHKD.		
						APPR.		
						APPR.		
						SCALE: 3/32"=1'-0"		

AKER KVAERNER

HOUSTON, TEXAS CONTRACT No. H0316900

MAIN PASS ENERGY HUB™
PLATFORM #2 ELEVATION
DRILLING DECK
GENERAL ARRANGEMENT PLAN

FOR: FREEPORT - MCMORAN ENERGY LLC

PROJECT NO.	DRAWING NO.	REV.
H0316900	AK-D-0204	B

3 Project Overview

3.1 Facility Location

The proposed deepwater port would be located in the Gulf of Mexico on the OCS approximately 16 miles offshore southeast Louisiana at Main Pass Block 299. (The center of Platform No. 1 is located at approximately 29° 16' 3.16" latitude, and 88° 45' 47.53" longitude.) The water is approximately 210 feet deep at the proposed terminal location. An additional pipeline junction platform would be located at Main Pass Block 164.

3.2 Project Background

The construction of the proposed deepwater port involves the reuse of four large existing platforms along with interconnecting bridges, three smaller bridge support platforms, and two nearby storage platforms formerly used in sulfur mining operations at Main Pass Block 299. In addition to reusing the existing fixed platforms and interconnecting bridges, the proposed project also involves:

- Installing two new fixed platforms at Main Pass Block 299 with six tanks capable of storing a combined total of 145,000 cubic meters (m^3) of LNG;
- Installing a small four-pile pipeline junction platform at Main Pass Bock 164 to provide for natural gas metering equipment to support possible future connections to existing, nearby natural gas pipelines;
- Installing two new semi-submersible floating units to act as dolphins in a patent pending Soft Berth™ LNG carrier mooring system;
- Installing open rack vaporizers capable of vaporizing a maximum of 1.6 billion standard cubic feet (BSCF) of LNG per day;

- Installing a gas conditioning plant capable of processing up to 1.0 BSCFD of natural gas with recovery of 80% plus of ethane to reduce the British Thermal Unit (BTU) rating of the sales gas to meet pipeline sales specifications; Constructing three new salt dome based natural gas storage caverns that would each have a working gas capacity of 9.3 BSCF to act as temporary storage for vaporized natural gas;
- Installing approximately 192 miles of natural gas and natural gas liquids (NGL) export pipelines; and
- Installing miscellaneous additional facilities and equipment to assist with power generation, LNG offloading, gas compression, material handling, personnel accommodations and other support functions.

The terminal and the majority of the pipeline components would be located offshore of state waters on the federal Outer Continental Shelf (OCS). The proposed project includes the construction of four new pipelines. A 36-inch diameter natural gas pipeline would extend northeast for approximately 92.7 miles to connect the deepwater port to existing gas distribution pipelines near Coden, Alabama. Approximately five miles of this pipeline segment are proposed to be built on shore in Alabama (above the mean high water line).

A second new 16-inch diameter natural gas pipeline would originate at the deepwater port and extend east for 2.5 miles to Main Pass 298, and tie into an existing pipeline owned by Southern Natural. A third new natural gas pipeline, 20 inches in diameter, would extend south-southwest for approximately 51.5 miles connecting to existing natural gas transmission pipelines at South Pass 55. A fourth 12-inch diameter pipeline would carry natural gas liquids derived from natural gas conditioning at the deepwater port. This pipeline would originate at the deepwater port and extend approximately 45.7 miles westerly into Louisiana inland waters, and make a connection with an existing NGL facility near Venice, Louisiana.

The proposed deepwater port is being designed to accommodate LNG ships of up to 160,000-m^3 capacities. The terminal would be located approximately 5 miles from an existing designated shipping fairway with nearby water depths ranging from 140 to 230 feet. The location provides convenient access for LNG carriers without the need to formally designate new shipping fairways or channels. To enhance safety, the proposed terminal operations manual will include a detailed description of necessary tug escorts of the LNG carriers, the required use of professional mariners, and designated ship berthing and departure procedures.

Construction of the deepwater port would diversify the supply of natural gas in the eastern half of the Gulf of Mexico by providing alternative sources of supply. The LNG received at the deepwater port would most likely come from overseas LNG sources under long-term contract and spot market cargoes. As indicated above, the vaporized natural gas would be delivered into existing gas transmission pipelines located on the OCS and on-shore Alabama. The gas would then be redelivered by shippers into the national gas pipeline distribution grid through connections with other major interstate and intrastate pipelines. The deepwater port would be capable of delivering significant volumes of natural gas into the nation's gas distribution network and assist in meeting the increasing demand for this important commodity.

Commissioning of the deepwater port is anticipated in December 2007 with construction taking about 34 months. All of the new platforms, and most of the specialized modules can be built in existing U.S. construction yards. Some specialized modules and equipment may be built overseas. The deepwater port would be designed, constructed, and operated in accordance with applicable Federal, state, and local codes and standards.

3.3 Emission Generating Equipment

Table 3-1 lists the emission sources and annual emissions from MPEH™ during normal operations. Mobile sources, such as tugboats and supply vessels not actually part of the MPEH™ regasification terminal, are not included in Table 3-1. (Details and supporting calculations for each piece of equipment is shown in Appendix B.)

Sources to be permitted at MPEH™ include the following:

- Gas turbine generator sets (3);
- Gas turbine compressors (2);
- Glycol regenerators (2);
- Industrial cranes (6) – diesel-fired;
- Emergency firewater pumps (2) – diesel-fired;
- Emergency power generators (5) – diesel-fired;
- High pressure flares (2); and
- Low pressure flare (1).

Insignificant emissions units (that are not explicitly shown in Table 3-1) include the following:

- Fugitive emissions;
- Diesel fork trucks (2);
- Oil water separators (7);
- Waste oil storage tanks (7);
- Hot oil expansion tank (1);
- Diesel day tanks for firewater pumps (2);
- Diesel day tanks for electrical generators (5); and
- Diesel tanks for cranes (6).

Table 3-1 Summary of Potential Emissions from Facility Sources						
Emission Unit	**Emission Unit ID**	**NOx (tpy)**	**SO_2 (tpy)**	**CO (tpy)**	**VOC (tpy)**	**PM_{10} (tpy)**
Gas Turbine 1	TURB01	18.94	2.38	16.47	9.41	11.88
Gas Turbine 2	TURB02	18.94	2.38	16.47	9.41	11.88
Gas Turbine 3	TURB03	18.94	2.38	16.47	9.41	11.88
Gas Compressor 1	GASCOMP01	74.43	1.54	59.61	17.03	17.08
Gas Compressor 2	GASCOMP02	42.53	0.88	34.06	9.73	9.76
Glycol Regenerator 1	GLYCREG01	1.62	0.06	1.36	32.44	0.12
Glycol Regenerator 2	GLYCREG02	1.62	0.06	1.36	32.44	0.12
Crane 1	CRANE01	6.32	0.42	1.36	0.61	0.45
Crane 2	CRANE02	3.69	0.24	0.79	0.35	0.26
Crane 3	CRANE03	3.69	0.24	0.79	0.35	0.26
Crane 4	CRANE04	3.69	0.24	0.79	0.35	0.26
Crane 5	CRANE05	3.69	0.24	0.79	0.35	0.26
Crane 6	CRANE06	3.69	0.24	0.79	0.35	0.26
Crane Generator	CRANGEN	0.50	0.03	0.11	0.05	0.04
Firewater Pump 1	FWPUMP01	1.87	0.63	0.43	0.05	0.05
Firewater Pump 2	FWPUMP02	1.87	0.63	0.43	0.05	0.05
Emergency Generator 1	EMGEN01	4.99	1.68	1.14	0.15	0.15
Emergency Generator 2	EMGEN02	2.50	0.84	0.57	0.07	0.07
Emergency Generator 3	EMGEN03	2.50	0.84	0.57	0.07	0.07
Emergency Generator 4	EMGEN04	0.84	0.28	0.19	0.025	0.02
High Pressure Flare 1	HPFLAR01	4.85	0.00	26.37	9.98	35.44
High Pressure Flare 2	HPFLAR02	3.74	0.00	20.33	7.69	9.62
Low Pressure Flare	LPFLAR01	4.37	0.00	23.78	9.00	32.14
TOTAL (including insignificant emissions)		**238.40**	**16.73**	**227.88**	**153.26**	**142.80**

There are several different nomenclatures for the different pieces of emission generating equipment. The following table 3-2 shows the different references for the pieces of emission generating equipment, as well as its location on the facility (see Figure 2-1). A "-" indicates equipment on Insignificant Equipment List and does not require an Emission Unit ID as a requirement of the Title V permit.

Table 3-2 Equipment Nomenclature Cross Reference				
Emission Point No.	**Equipment No.**	**Emission Unit Description**	**Emission Unit ID**	**Platform Location**
001	CAE-2010 A	Gas Compressor	GASCOMP01	2
002	CAE-2010 B	Gas Compressor	GASCOMP02	2
009	ABH-1010	Oily Water Separator	-	1
010	ABH-2010	Oily Water Separator	-	2
012	ABH-1020	Waste Oil Storage Tank	-	1
013	ABH-2020	Waste Oil Storage Tank	-	2

Table 3-2
Equipment Nomenclature Cross Reference

Emission Point No.	Equipment No.	Emission Unit Description	Emission Unit ID	Platform Location
016	ZZZ-1080	LP Flare Tip	LPFLAR01	1
017	ZZZ-1090	HP Flare Tip	HPFLAR01	1
020	ZZZ-1150	Diesel Crane (PP # 1 South)	CRANE01	1
021	ZZZ-1160	Diesel Crane (PP # 1 North)	CRANE02	1
022	ZZZ-2060	Diesel Crane (PP # 2 South)	CRANE03	2
023	ZZZ-2070	Diesel Crane (PP # 2 North)	CRANE04	2
028	NBA-2010 A	Glycol Regenerator	GLYCREG01	2
029	NBA-2010 B	Glycol Regenerator	GLYCREG02	2
031	KAH-2010	Pig Launcher	-	2
032	ABJ-1030	Hot Oil Expansion tank	-	1
036	ZAN-1010 A	Gas Turbine Generator Package No.1	TURB01	1
037	ZAN-1010 B	Gas Turbine Generator Package No.2	TURB02	1
038	ZAN-1010 C	Gas Turbine Generator Package No.3	TURB03	1
036/37/38	ZAN-1010A/B/C	Gas Turbine Generator Start-up Emissions	-	1
039	PBE-8010	Firewater Pump	FWPUMP01	B.S.# 8
040	PBE-9010	Firewater Pump	FWPUMP02	B.S.# 9
041	ABJ-8010	Diesel Day Tank for PBE-8010	-	B.S.# 8
042	ABJ-9010	Diesel Day Tank for PBE-9010	-	B.S.# 9
043	ZZZ-1120	Emergency Power Generator	EMGEN01	1
044	ABJ-1010	Emergency Power Generator Day Tank	-	1
047	No Equipment No.	Emergency Power Generator	EMGEN02	Soft Berth System™
048	No Equipment No.	Emergency Power Generator Day Tank	-	Soft Berth System™
052	No Equipment No.	Emergency Power Generator	EMGEN03	Soft Berth System™
053	No Equipment No.	Emergency Power Generator Day Tank	-	Soft Berth System™
056	ZZZ-2030	HP Flare Tip	HPFLAR02	2
057	ABJ-1020 A	Diesel Oil Storage Tank	-	1
058	ABJ-1020 B	Diesel Oil Storage Tank	-	1
059	ABJ-2020 A	Diesel Oil Storage Tank	-	2
060	ABJ-2020 B	Diesel Oil Storage Tank	-	2
065	ZZZ-9010	Emergency Power Generator	EMGEN04	B.S.# 9
066	ABJ-9030	Emergency Power Generator Day Tank	-	B.S.# 9
067	ABH-9010	Oily Water Separator	-	B.S.# 9
068	ABH-9020	Waste Oil Tank	-	B.S.# 9
069	ABH-8010	Oily Water Separator	-	B.S.# 8
070	ABH-8020	Waste Oil Tank	-	B.S.# 8
071	ABH-7010	Oily Water Separator	-	B.S.Y-7

Table 3-2
Equipment Nomenclature Cross Reference

Emission Point No.	Equipment No.	Emission Unit Description	Emission Unit ID	Platform Location
072	ABH-7020	Waste Oil Tank	-	B.S.Y-7
073	KAH-2020	Pig Launcher	-	2
074	KAH-2030	Pig Launcher	-	2
075	KAH-1010	Liquid Pig Launcher	-	1
076	ABJ-2040	Methanol Storage Tank	-	2
077	ABJ-2010A	Glycol Storage Tank	-	2
078	ABJ-2010B	Glycol Storage Tank	-	2
079	ABJ-2010C	Glycol Storage Tank	-	2
080	No Equipment No.	Fork Truck # 1	-	All
081	No Equipment No.	Fork Truck # 2	-	All
082	Gas Cond. Plant	Fugitives	-	1
083	ABJ-1020A	Diesel Storage Tank (Crane Pedestal)	-	1
084	ABJ-1020B	Diesel Storage Tank (Crane Pedestal)	-	1
085	ABJ-2020A	Diesel Storage Tank (Crane Pedestal)	-	2
086	ABJ-2020B	Diesel Storage Tank (Crane Pedestal)	-	2
087	-	Diesel Crane A (P3)	CRANE05	3
088	-	Diesel Crane B (P3)	CRANE06	3
089	-	Generator for Crane A&B (P4)	CRANGEN	4
090	-	Diesel Storage Tank (P3 Crane Pedestal)	-	3
091	-	Diesel Storage Tank (P3 Crane Pedestal)	-	3
092	-	Diesel Storage Tank (P4 Generator)	-	4
093	-	Oily Water Separator	-	3
094	-	Waste Oil Tank	-	3
095	-	Oily Water Separator	-	4
096	-	Waste Oil Tank	-	4

3.3.1 Gas Turbine Generator Sets

Three gas turbine generators will be used to provide electrical power to the terminal. Emissions are based on an operational rating of 15,000 horsepower (hp) each. Emissions are estimated based on each generator set operating a maximum of 7,920 hours per year (hr/yr).

The power generation turbines will employ in-line exhaust stack selective catalytic reduction (SCR) using aqueous ammonia (19.5%) with an exhaust slip of less than 3 parts per million (ppm) of ammonia. An oxidation catalyst will also be used to reduce emissions of CO and

VOC. Vendor estimates based on this configuration are nitrogen oxides (NO_X) at 7 ppm; carbon monoxide (CO) at 10 ppm; and volatile organic compounds (VOCs) at 10 ppm.

3.3.2 Gas Turbine Compressors

Two gas compressors will be used to transfer gas in and out of storage in the caverns. Emissions are based on injection and withdrawal cycles from the caverns and an operational rating of 11,640 hp each. One gas compressor will operate a maximum of 8,400 hr/yr and the second gas compressor will operate a maximum of 4,800 hr/yr; therefore, the two gas compressors combined will be limited to operating 13,200 hr/yr. The gas compressors will be the largest source of NO_X and CO air emissions at the terminal.

The compression turbines will not utilize additional add-on control for NO_X, CO, and VOC due to their intermittent operation. Therefore, vendor estimates for the dry-low-NO_X combustors are NO_X at 38 ppm, CO at 50 ppm, and VOCs at 25 ppm.

3.3.3 Glycol Regenerators

Two glycol regenerators will be used to remove moisture from the natural gas before entering the pipeline. Emissions are based on the glycol regenerators operating a maximum of 7,200 hr/yr for both units combined.

3.3.4 Industrial Cranes

Six industrial cranes, one rated at 300 hp and five rated at 175 hp, will be used only occasionally through the year. The cranes will be diesel-fired, and each will operate a maximum of 1,360 hr/yr, for a combined 8,160 operational hours per year.

3.3.5 Emergency Firewater Pumps

Two firewater pumps, rated at 1,500 hp each, will only be used in emergency and training situations. The firewater pumps will be diesel-fired, and each will operate a maximum of 104 hr/yr.

3.3.6 Emergency Power Generators

Five diesel-powered electrical generators will be used to provide power generation for emergency use, and to power two electrical-driven cranes at Platform No. 4. One generator will be rated at 4,000 hp, two generators will be rated at 2,000 hp, one generator will be rated at 670 hp, and the fifth generator (for the cranes) will be rated at 310 hp. Each generator will be limited to 104 hr/yr of operation.

3.3.7 High Pressure Flares

There are two high pressure (HP) flares at the facility, one at platform No. 1 and one at platform No. 2. The HP flare and relief system design at platform No. 1 is sized based on one Gas Conditioning (GC) plant train relieving to the HP flare header during blocked-in conditions. The GC plant is currently sized as two trains operating at 500 million standard cubic feet per day (MMSCFD) each, totaling 1 BSCFD. The flare header and boom are sized for 500 MMSCFD. This is based on having upset conditions in one train only, which does not affect the second train.

The LNG Open Rack Vaporizers (ORV) operate at high pressure (up to 1,750 pressure standard inch gauge [psig]) and would relieve to the HP flare system. Each ORV vaporizes about 188 MMSCFD. Since only one vaporizer is considered to relieve at any given time, the LNG vaporization relief rate is less than the GC plant relief rate. Emissions from this flare are based on continuous pilot and purge gas emissions, plus upset conditions assumed to occur 2 hours per day for 3 days per year.

The HP flare and relief system design at platform No. 2 is sized based on one gas compression train relieving to the HP flare header. The compression system is currently sized as two trains operating at a maximum of 800 MMSCFD each, totaling 1.6 BSCFD of compression. The flare header and boom are sized for 750 MMSCFD. This is based on having upset conditions in one train only and the second train is not affected at the same time. Emissions from this flare are based on continuous pilot and purge gas emissions, plus upset conditions assumed to occur 1 hour per day for 3 days per year.

3.3.8 Low Pressure Flare

There is one low pressure (LP) flare located at platform No. 1. There is not a LP flare at platform No. 2 as there are no low pressure processing systems requiring a relief system. The low pressure (LP) system is sized for the maximum Boil-Off Gas (BOG) header and vapor return system capacity. This capacity is determined by considering the following conditions:

- Unloading of an LNG Carrier without gas return;
- The BOG recovery compressors are not in operation; and
- The In-Tank pumps are operating in recycle mode

During an unloading operation, the maximum total BOG and vapor return flowrate is estimated at 51.5 MMSCFD for the LNG unloading from the carrier. This maximum capacity is the basis for the LP flare system design. Emissions from this flare are based on continuous pilot and purge gas emissions, plus upset conditions assumed to occur 24 hours per day for 6 days per year.

3.3.9 Fugitive Emissions

Fugitive emissions will result in leaks from the many process valves, flanges, pump and compressor seals, and other fittings. The total number of these components estimated at the terminal is 310.

Emissions were calculated based on AP-42 “Oil and Gas Production Operations Average Emission Factors.” Ethane and methane emissions are not included as VOC emissions. To account for ethane and methane contained in the natural gas, light liquid fugitive components were multiplied by a factor of 0.3939, which is the mass fraction of non-methane and ethane components in NGL.

4 Emissions Inventory

This section provides a summary of emission rates for the proposed new LNG Terminal.

4.1 Emission Factors

Emissions calculations were performed using AP-42 emission factors, with the exception that vendor-supplied estimates were used for the gas turbines.

The basis for fuel consumption values are the following:

- Diesel fuel energy content – 145,000 BTU/gallon (gal);
- Diesel engine efficiency factor – 0.05 gal/hp-hr; and
- Natural gas fuel energy content – 1,046 BTU/SCF;

4.1.1 Gas Compression Turbines

Emission factors for the gas compression turbines were based on data from SOLAR Turbines for the MARS 100-15000S. The gas being combusted in the turbines is primarily from regasified LNG, which does not contain sulfur.

However, to conservatively estimate potential sulfur emissions from the turbines, it was estimated that the gas turbines could use natural gas fuel from the pipeline with a maximum content of 200 grains per 1,000 SCF of sulfur and 10 grains per SCF of hydrogen sulfide (H_2S). For the purposes of estimating sulfur dioxide (SO_2), it was assumed that a maximum of 33% of the natural gas used would come from the caverns, and of that portion, a maximum of 20% would come from the pipeline. Therefore, the total annual fuel gas rate for each piece of equipment was multiplied by 6.6% (33% x 20%) for the annual SO_2 estimate.

4.1.2 Power Generation Turbines

Emission factors for the power generation turbines were based on data from General Electric (GE) for the LM2500 turbine. Although each turbine is expected to operate at 65% capacity during normal operations, the greatest short-term emissions occur at 50% capacity. To conservatively estimate emissions, emission factors at 50% capacity were used to calculate emissions from the turbines. (A total of three turbines were used; thus, emissions are based on 150% power to be conservative.) The gas being combusted in the turbines is primarily from regasified LNG, which does not contain sulfur.

However, to conservatively estimate potential sulfur emissions from the turbines, it was estimated that the gas turbines could use natural gas fuel from the pipeline with a maximum content of 200 grains per 1,000 SCF of sulfur and 10 grains per 1,000 SCF of H_2S. For the purposes of estimating SO_2, it was assumed that a maximum of 33% of the natural gas used would come from the caverns, and of that portion, a maximum of 20% would come from the pipeline. Therefore, the total annual fuel gas rate for each piece of equipment was multiplied by 6.6% (33% x 20%) for the annual SO_2 estimate.

4.1.3 Cranes

Emissions for the diesel cranes were calculated based on emission factors from AP-42 Section 3.3 “Gasoline and Diesel Industrial Engines” Table 3.3-1.

4.1.4 Firewater Pumps and Emergency Power Generators

Emissions for the firewater pumps and emergency power generators were calculated based on emission factors from AP-42 Section 3.4 “Large Stationary Diesel and All Dual-Fuel Engines” Table 3.4-1. Sulfur emissions were calculated based on a conservative assumption of 1% sulfur in the fuel.

4.1.5 Glycol Regenerators

Combustion emissions for the glycol regenerators were calculated based on emission factors from AP-42 Section 1.4 “Natural Gas Combustion” Table 1.4-2.

4.1.6 Flares

Emissions for the flares were calculated based on emission factors from AP-42 Section 13.5 “Industrial Flares” Table 13.5-1.

4.1.7 Fugitive Emissions

Fugitive emissions were calculated based on emission factors from the AP-42 “Oil and Gas Production Operations Average Emission Factors.” Fugitive emissions were considered from the NGL end of the gas conditioning plant (light liquids), from the hot oil system (heavy liquids), and from the diesel oil system (heavy liquids). Since ethane and methane are not considered VOCs, to account for their contribution to fugitive emissions, NGL fugitives are multiplied by a factor of 0.3939, which is the mass fraction of non-methane and ethane components in NGL.

4.2 Operating Scenario

For purposes of determining the facility potential to emit (PTE), not all equipment is assumed to be operating continuously. Operational limitations are requested on Section G of Form GIS (Appendix A) to make these limitations federally enforceable. Operational limitations include the following:

- The three gas power generation turbines will operate a combined total of 23,760 hr/yr;
- The two gas compression turbines will operate a combined total of 13,200 hr/yr;
- The six diesel cranes will operate a combined total of 8,160 hr/yr;
- The two glycol regenerators will operate a combined total of 7,200 hr/yr;
- The two firewater pumps will operate a combined total of 208 hr/yr;
- The four emergency power generators will operate a combined total of 816 hr/yr; and
- The crane power generator will operate a maximum of 104 hr/yr.

4.3 Startup/Shutdown Emissions

Turbine generator startup operations are not expected to exceed 100 hr/yr for all three turbine generator units combined. Estimated yearly emissions from startup/shutdown operations are expected to be insignificant with annual NO_X emissions estimated at 1.37 tons per year (tpy), CO emissions at 1.25 tpy, VOC emissions at 0.30 tpy, and particulate matter less than 10 microns (PM_{10}) emissions at 0.15 tpy. (Startup/shutdown emissions were not explicitly calculated for the gas compressors since the exhaust concentration ppm values are the same as the operational emissions.)

4.4 Hazardous Air Pollutants

A summary of the hazardous air pollutants (HAPs) from the proposed MPEH™ terminal is shown, along with supporting calculations, in Appendix C. Emissions of HAPs for the turbine generators and gas compressors were calculated based on AP-42, Section 3.1 "Stationary Gas Turbines" Table 3.1-3 with the exception of formaldehyde and ammonia emissions.

Formaldehyde emissions were estimated based on an emissions factor recommended by the Louisiana Department of Environmental Quality (LDEQ), with 90% destruction efficiency from the SCR as recommended by the SCR vendor (actual destruction efficiency is expected to be greater than 99%). This results in a conservatively high estimate for both formaldehyde and total HAPs. Ammonia, though not a federal HAP, is regulated by LDEQ. Ammonia emissions were calculated based on 3 ppm in the exhaust stream of 415,927 pounds per hour (lb/hr) for each turbine.

HAP emissions for the glycol regenerator reboilers were calculated based on AP-42 Section 1.4 "Natural Gas Combustion" Table 1.4-3. HAP emissions for the glycol regenerator still vents were calculated based on the Aker Kvaerner Process Calculation, 02/16/2004, Issue H.

HAP emissions for the firewater pumps were calculated based on AP-42 Section 3.4 "Large Stationary Diesel and All Stationary Dual Fuel Engines" Table 3.4-3 and Table 3.4-4.

HAP emissions for the large (>600 HP) emergency power generators were also based on AP-42 Section 3.4 Table 3.4-3 and Table 3.4-4; however, total HAPs were calculated assuming that all four emergency power generators each operated at 4,000 hp to provide a conservative overestimate of HAP emissions from the facility. HAP emissions from the small electrical power generator (<600 HP to power cranes) were based on AP-42 Section 3.3 "Gasoline and Diesel Industrial Engines" Table 3.3-2.

HAP emissions for the diesel cranes were calculated based on AP-42 Section 3.3 "Gasoline and Diesel Industrial Engines" Table 3.3-2.

Total HAP emissions from the terminal are estimated to be 14.34 tpy, with the majority of HAPs attributed to benzene (4.44 tpy). Neither amount exceeds the HAP major source threshold for applying control technology (10 tpy of any single HAP and 25 tpy of any combination of HAPs). (Adding the 9 tpy of ammonia to the other HAPs yields a total of about 23 tpy for applicability determination of the LDEQ toxics program. Since this total is also below 25 tpy, the LDEQ toxics program is not applicable.)

HAPs are reported as part of the Title V application under Section J of Form GIS (Appendix A).

5 Regulatory Overview

The MPEH™ facility is subject to federal and state regulations governing the construction of new facilities. Because of the MPEH's™ proposed location in OCS waters, the governing agency is EPA Region 6. Additionally because MPEH™ would be located 16 miles off the coast of Louisiana, the facility must comply with Louisiana state regulations.

For regulatory review purposes, emission sources associated with the proposed MPEH™ facility include the following:

- Gas turbine generator sets (3);
- Gas turbine compressors (2);
- Glycol regenerators (2);
- Industrial cranes (6) – diesel-fired;
- Emergency firewater pumps (2) – diesel-fired;
- Emergency electrical generators (5) – diesel-fired;
- High pressure flares (2); and
- Low pressure flare (1).

The MPEH™ will comply with all federal and state air quality control requirements. The following sections describe the applicable federal and state air quality control regulations associated with the construction and operation of the facility.

5.1 Federal Air Quality Regulations

The Clean Air Act (CAA) of 1970, 42 United States Code (USC) 7401 *et seq*. amended in 1977 and 1990 and 40 Code of Federal Regulations (CFR) Parts 50-99 are the basic federal statutes and regulations governing air pollution. The following federal requirements have been reviewed to determine their applicability to the proposed MPEH™ facility.

5.1.1 New Source Review (NSR)

Separate procedures have been established for federal pre-construction review of certain large proposed projects in attainment areas versus nonattainment areas. The federal pre-construction review for new or modified major sources located in attainment areas is Prevention of Significant Deterioration (PSD). The review process is intended to prevent the new source from causing existing air quality to deteriorate beyond acceptable levels. The federal pre-construction review for a new or modified major source located in a nonattainment area is commonly called Nonattainment New Source Review (NNSR). NNSR only applies to major sources of the pollutants that are classified as nonattainment; therefore, a new facility could potentially undergo both types of review, depending on the emissions of the various pollutants and their respective attainment status.

5.1.1.1 Prevention of Significant Deterioration (PSD)

The emission threshold for "major stationary sources" varies under PSD according to the type of facility. As defined by 40 CFR Part 52.21(b)(1)(i), a facility is considered major under PSD if it emits or has the potential to emit 250 tpy or more of any criteria pollutant, or 100 tpy for specified source categories. The LNG process is not one of the specified source categories; therefore, the PSD threshold for this facility is 250 tpy. The proposed facility emissions will be below the PSD thresholds for all criteria pollutants and the facility will not be subject to PSD permitting.

Additional Impacts Analysis

Additional impacts analyses are conducted to determine the potential impact of facility emissions on soil and vegetation and visibility. Because the facility is not subject to PSD permitting, an additional impacts analysis is not required. However, in order to demonstrate that the project will not result in significant ambient impacts, a screening analysis (i.e., overestimates) was conducted for the area of maximum impact (near the terminal), and the nearest onshore area (near Venice, Louisiana) and the nearest Class I area (Breton National Wildlife Refuge).

5.1.1.2 Nonattainment New Source Review (NNSR)

If an Air Quality Control Region exceeds the National Ambient Air Quality Standards (NAAQS) for any criteria pollutant, it is deemed as a nonattainment area for that pollutant or pollutants. Depending on the severity of the nonattainment, EPA has established lower emission thresholds to be considered a major stationary source. Additionally, a source that triggers NNSR must apply control technologies capable of achieving the Lowest Achievable Emission Rate (LAER). MPEH™ would not be located in a nonattainment area and is not subject to NNSR.

5.1.2 New Source Performance Standards (NSPS)

The owner or operator of any stationary source that contains an affected facility that is constructed, reconstructed, or modified after the effective date of an applicable NSPS is subject to that NSPS. NSPS requirements are promulgated under 40 CFR Part 60, pursuant to Section 111 of the CAA. Each NSPS contains emission standards for the affected pollutants, defines compliance provisions such as the requirements for source testing and continuous emission monitors, and specifies the recordkeeping and reporting requirements.

5.1.2.1 Subpart GG: Standards of Performance for Stationary Gas Combustion Turbines

The NSPS Subpart GG, "Standards of Performance for Stationary Gas Turbines," (40 CFR Part 60, Subpart GG, as amended by EPA Final Rule April 14, 2003, published in the Federal Register at 68 FR 17990) are implemented by the EPA and are applicable to stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (GJ/hr). NO_X and SO_2 emission restrictions apply.

This regulation applies to stationary gas turbines with a heat input at peak load equal to or greater than 10 million British Thermal Units per hour (MMBTU/hr). The MPEH™ will utilize gas power turbines and gas compression turbines meeting the applicability criteria, thus this regulation applies to the five turbines. In summary, all turbines will:

- Comply with NO_X standards as specified in 40 CFR Part 60.332(a)(1);
- Compute the NO_X emissions rate utilizing the equation specified in 40 CFR Part 60.335(c)(1);
- Conduct initial testing of NO_X and O_2 and any subsequent testing under the requirements of 40 CFR Part 60.335(c)(3); and
- Maintain SO_2 emissions <0.015 % by volume at 15% oxygen on dry basis, or only burn fuel with sulfur <0.8% by weight (40 CFR Part 60.333(a) and (b)).

Form I-COMP presents MPEH's™ plan for maintaining compliance with Subpart GG. This form is included in Appendix A.

5.1.3 National Ambient Air Quality Standards (NAAQS)

Federal and state regulations protect ambient air quality. The EPA has developed primary and secondary NAAQS for six criteria air pollutants including: ozone, nitrogen dioxide (NO_2), CO, SO_2, and PM_{10}. Additionally, EPA recently promulgated a new standard for particle size of 2.5 micrometers (µm) or less ($PM_{2.5}$), along with a new 8-hour ozone standard. Areas of the country that are currently in violation of NAAQS are classified as nonattainment areas, and new sources to be located in or near these areas could be subject to more stringent air permitting requirements.

Diesel fuel combustion sources emit these criteria air pollutants, along with VOCs, a precursor of ozone. However, the gas used to fuel the turbines will be comprised primarily of methane, and VOC emissions will be very low.

The state of Louisiana is in attainment for all criteria pollutants, except the 1-hour ozone NAAQS, which is exceeded in five parishes (East Baton Rouge, West Baton Rouge, Livingston, Ascension and Iberville). These five nonattainment parishes surround the city of Baton Rouge, located approximately 170 miles from the proposed terminal. Therefore, emissions from MPEH™ are not expected to impact any onshore nonattainment areas.

The criteria pollutants and their air quality impact from MPEH™ are discussed in more detail below.

5.1.3.1 Ozone

Ozone is a photochemical oxidant and the major component of smog. Ozone is generated by a complex series of chemical reactions between VOCs and NO_X in the presence of ultraviolet radiation. High ozone levels result from VOCs and NO_X emissions from vehicles and industrial sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion, and intense sunlight. For this reason, VOC and NO_X are considered precursors to ozone and are consequently regulated as ozone. MPEH™ would emit VOCs and NO_X from three turbine generators, two turbine gas compressors, flares, glycol regenerators, diesel-powered equipment, and fugitives. However, these emissions, along with other minor sources associated with MPEH™, are not expected to adversely affect the onshore air quality because of the 16-mile distance to shore.

5.1.3.2 Nitrogen Dioxide (NO_2)

NO_2 emissions are primarily generated from the combustion of fuels. NO_x include nitric oxide and NO_2. Because nitric oxide converts to NO_2 in the atmosphere over time and NO_2 is the more toxic of the two, NO_2 is the listed criteria pollutant. The control of NO_X is also important because of its role in the formation of ozone, as stated above. Potential NO_X emissions from the terminal's natural gas and diesel combustion sources will total about 238 tpy.

5.1.3.3 Volatile Organic Compound (VOC)

VOCs are primarily generated at this site as unburned hydrocarbons from the turbines and engines, as well as fugitive emissions. As stated above, VOC is an ozone precursor. Potential VOC emissions from MPEH™ will total about 153 tpy.

5.1.3.4 Carbon Monoxide (CO)

CO is a product of inefficient combustion. Total potential CO emissions from MPEH™ are estimated at about 228 tpy.

5.1.3.5 Sulfur Dioxide (SO_2)

SO_2 is produced when any sulfur-containing fuel is burned. The regasified LNG from MPEH™ will not contain sulfur, as the sulfur is removed during the liquefaction process.

The turbines will therefore not emit SO_2 from regasified LNG. However, SO_2 emissions are calculated at 200 grains per 1,000 SCF to account for worst-case conditions. Potential emissions of SO_2 from MPEH™ will total about 17 tpy.

5.1.3.6 Particulate Matter

Particulates in the air may be caused by a combination of wind-blown fugitive dust, particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and NO_X. The diesel-powered equipment will be a source of PM_{10}, but will be operated on an intermittent basis only. Emissions of PM_{10} will also be generated from the five gas turbines. Total potential PM_{10} for MPEH™ is estimated to be about 143 tpy.

5.1.3.7 Lead

Lead will not be emitted from any of the project sources.

5.1.4 National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Maximum Achievable Control Technology (MACT)

National Emission Standards for HAPs (NESHAP) Parts 61 and 63 regulate the emission of hazardous air pollutants from existing and new sources. However, the proposed project is not expected to operate any processes that are regulated by Part 61.

Part 63 provides standards for major sources of HAPs. The CAA Amendments of 1990, under revisions to Section 112, required the EPA to list and promulgate NESHAPS to reduce the emissions of HAPs, (such as formaldehyde, benzene, xylene, and toluene) from categories of major and area sources. As these standards are promulgated, they are published in Title 40 CFR Part 63.

Stationary gas turbines are listed among the source categories that would be subject to emission standards. Standards for stationary gas turbines that were scheduled for promulgation by November 15, 2000 have missed the regulated deadline. Stationary gas turbines are now subject to the "MACT hammer" which means they are applicable to Maximum Achievable Control Technology (MACT) standards on a case-by-case basis as determined by the regulating agency.

The proposed project would not be subject to the standards unless it becomes a major source of HAPs, which is a facility-wide potential emissions threshold of 10 tpy or greater of any one HAP, or a combination of HAPs of 25 tpy or greater. However, as previously shown in Section 2.4 and HAP calculations located in Appendix C, the terminal will not be a major source of HAPS; therefore, Section 112 MACT standards do not apply. Potential federal HAP emissions from the facility will not exceed about 14 tpy, and potential LDEQ toxic air pollutant (TAP) emissions will not exceed 23 tpy.

The EPA recently promulgated NESHAPs for natural gas transmission and storage facilities (40 CFR 63 Subpart HHH). The proposed terminal will not be a major HAP source, and is not currently subject to NESHAP requirements; however, if the facility becomes a major HAP source, it would be subject to Subpart HHH.

5.1.5 Title V Operating Permit

Federal Title V of the CAA Amendments of 1990, as outlined in 40 CFR Part 71 (Part Operating Permit), requires a Federal Operating Permit for major sources of criteria pollutants as administered by the EPA. Part 70 Title V Permits are managed within state or local jurisdiction. Designation of a major source is contingent on the attainment status of the air basin. Since the proposed project is located in OCS waters and is subject to federal air quality permitting, it would fall under the jurisdiction of Part 71 as a major Title V source (having the PTE over 100 tpy of a criteria pollutant). The project will require a Title V Operating Permit under the jurisdiction of EPA Region 6, for which this application is submitted. (See Appendix A for Title V permit application forms.)

5.1.6 Compliance Assurance Monitoring (CAM)

The Federal Title V Operating Permit will list all federally enforceable air regulations and a compliance plan for meeting each regulatory requirement. In accordance with EPA, as published at 40 CFR Part 64, a Compliance Assurance Monitoring (CAM) Plan must be prepared for each piece of equipment proposed for operation at a new or modified facility. EPA requires CAM plans for all new major sources, as well as for existing sources at the required 5-year renewal application.

In order to demonstrate compliance with emission limitations, emission monitoring shall meet general criteria where the monitoring shall be designed to obtain data for appropriate indicators of emission control equipment performance. These indicators can include direct or predicted emissions, process and control device parameters affecting control efficiency, or records of inspection and maintenance activities. Appropriate ranges or conditions for the selected indicators shall be established so that equipment operation within the range or under the conditions demonstrates compliance with emission limitations. In addition, indicator ranges or conditions shall be designed as follows:

- based on a single value;
- expressed as a function of process variables;
- expressed as maintaining the applicable parameter in a particular operational status; or
- established as interdependent between more than one indicator.

Emission monitoring shall also meet performance criteria where data must be representative of the emissions or parameters being monitored, and for new equipment, verification procedures confirming operational status of the monitoring prior to the date by which monitoring is required. Adequate quality assurance and control practices must also be in place to ensure the continued validity of the data.

Documentation that satisfies the monitoring design criteria must be submitted to the appropriate permitting authority. The documentation must contain the following:

- indicators to be monitored and their ranges or conditions; and
- performance criteria, and if applicable, the performance criteria for any continuous emissions monitoring systems.

MPEH™ will comply with CAM for the turbine generators, which will have NO_X and SO_2 emission limits under NSPS Subpart GG. The project will comply with CAM for all diesel-powered equipment and for the emergency flare, as demonstrated by the Initial Compliance Plan and Compliance Certification forms (Form I-COMP) for the major source equipment (shown in Appendix A).

5.2 State Air Quality Regulations

Although MPEH™ is located outside the state jurisdictional boundary for Louisiana; EPA has determined that the facility is subject to Louisiana regulations pertaining to individual pollutants and sources, beyond the federal requirements. LDEQ's air quality regulations are codified in Louisiana Administrative Code (LAC) Title 33, Part III. Pursuant LAC 33:III.502, any facility that directly emits or has the PTE 100 tpy of any regulated air pollutant excluding HAPs is defined as a major source. Therefore, under Louisiana regulations, the facility is considered major. General application requirements are included in LAC 33:III.517. These requirements include citing and detailing compliance with all Louisiana and federal air quality requirements and standards and a review of proposed emission controls.

The remainder of this section provides the information necessary to show MPEH™ will comply with the requirements in LAC 33:III. The emissions and plant operations from the proposed new facility will comply with all rules and regulations of LDEQ and with the intent of the Louisiana Clean Air Act (LCAA), including the protection of the health and physical property of the people. A summary discussion on compliance with each applicable rule is included below.

5.2.1 Chapter 9 – General Regulations on the Control of Emissions and Emission Standards

Chapter 9 includes the general rules that are applicable to all sources. MPEH™ will comply with the applicable requirements of this chapter. The applicable sections within this chapter are:

- §913 – New Sources to Provide Sampling Ports.

- §915 – Emission Monitoring Requirements
  Since facility is subject to a federal new source performance standard, 40 CFR 60 Subpart GG, pursuant to LAC 33:III.915D, no additional monitoring requirements apply.

- §918 – Recordkeeping and Annual Reporting
  Emission reports for the preceding calendar year are required to be submitted to LDEQ Office of Environmental Assessment, Environmental Evaluation Division (OEA-EED) by March 31 of each year.

- §919 – Emission Inventory
  Facilities that are classified as major are required to submit an annual emissions inventory to LDEQ on magnetic media in a format specified by OEA-EED. Minimum Data Requirements and Calculation methodology are specified in LAC 33:III.919.B.5 and 919.C.

- §921 – Stack Heights
  The facility will not get credit for any control associated with utilizing a stack that exceeds good engineering practice (GEP) stack height as defined in LAC 33:III.921.A.

- §927 - Notification Required (Unauthorized Discharges)
  MPEH™ will submit written reports of the unauthorized discharge of any air pollutant in accordance with LAC 33:I.Chapter 39, Notification Regulations and Procedures for Unauthorized Discharges.

- §929 – Violation of Emission Regulations Cannot be Authorized
  MPEH™ will not cause or contribute to the violation of any NAAQS or emission standard included in LAC 33.III.

5.2.2 Chapter 11 – Control of Emissions of Smoke

The applicable sections within this chapter are:

- §1101 – Control of Air Pollution from Smoke
  Emissions of smoke from any combustion unit or any type of burning in a combustion unit (other than a flare) shall not exceed 20% opacity at any time, except in startup mode at which time one excess emission of 20% is allowed for one 6-minute period in any 60 consecutive minutes.

- §1105 – Smoke from Flaring shall not exceed 20% Opacity
  Flares used to control process upsets must be controlled to limit exceedences of 20% opacity to less than 6 hours in any 10 consecutive days.

5.2.3 Chapter 13 – Emission Standards for Particulate Matter (Including Standards for Some Specific Facilities)

5.2.3.1 Subchapter A – Emission Standards for Particulate Matter

- §1303 – Provisions Governing Specific Activities
  The MPEH™ terminal will not emit toxic substances that need additional control, nor will it impair visibility in the area such as to affect ship traffic.

- §1305 – Control of Fugitive Emissions
  No fugitive particulate emissions are expected to be generated by activities associated with the construction or operation of this facility.

- §1307 – Degradation of Existing Quality Restricted
  Particulate matter emitted from the processes at MPEH™ will be maintained at the prescribed levels guaranteed by the equipment manufacturer and will be lower than the regulatory limits established in this regulation.

- §1309 – Measurement of Concentration
  MPEH™ will measure particulate concentrations in the stack gases in accordance with LDEQ approved methods and standards.

5.2.3.2 Subchapter C – Fuel Burning Equipment

- §1313 – Emissions from Fuel Burning Equipment
  Particulate emissions generated by fuel burning equipment are limited to 0.6 pounds per million BTU of heat input.

5.2.4 Chapter 15 – Emission Standards for Sulfur Dioxide

- §1501 – Degradation of Existing Emission Quality Restricted
  SO_2 emitted from the processes at the MPEH™ terminal will be maintained at the prescribed levels guaranteed by the equipment manufacturer and will be lower than the regulatory limits established in this regulation.

- §1503 – Emission Limitations
  SO_2 emitted by this facility will not exceed 2,000 ppm by volume for any consecutive three-hour period. SO_2 concentrations in the stack gases will be measured in accordance with LDEQ approved methods and standards.

- §1511 – Continuous Emission Monitoring
  Since SO_2 emissions generated by this facility will not exceed 100 tpy, continuous emission monitoring is not required.

- §1513 – Recordkeeping and Reporting
  MPEH™ will record and retain data at the site for at least two years to show compliance with these regulatory requirements and permit limitations.

5.2.5 Chapter 17 – Control of Emissions of CO (New Sources)

- §1701 – Degradation of Existing Emission Quality Restricted
  CO emitted from the processes at the MPEH™ terminal will be maintained at the prescribed levels guaranteed by the equipment manufacturer and will be lower than the regulatory limits established in this regulation. CO emissions will be significantly reduced below uncontrolled levels due to the use of an oxidation catalyst in the exhaust stream of the turbine generator sets.

5.2.6 Chapter 21 – Control of Emissions of Organic Compounds

5.2.6.1 Subchapter A – General

- §2103 – Storage of VOCs
  MPEH™ is designed with storage vessels that will maintain working pressures sufficient at all times under normal operating conditions to prevent vapor or gas loss to the atmosphere. The tanks will have submerged pumps and all vapors are captured and controlled through the boil off gas (BOG) compression system or are flared in upset conditions.

- §2121 – Fugitive Emission Control
  This facility will maintain and monitor its LNG vaporization units and other equipment to minimize equipment leaks in accordance with the provisions of this requirement. Vapors from pressure relief valves (PRVs) are routed back to the storage tanks or to a flare providing control for these systems.

5.2.7 Chapter 22 – Control of Emissions of NO_X

- §2201 – Affected Facilities in the Baton Rouge Nonattainment Area and the Region of Influence
  MPEH™ Terminal is not located in the Baton Rouge Nonattainment Area or the Region of Influence; therefore, these rules are not applicable to this facility.

5.2.8 Chapter 29 – Odor Regulations

- §2901 – Odorous Substances
  MPEH™ will not emit odorous substances and therefore will comply with the provisions of this rule.

5.2.9 Chapter 51 – Comprehensive Toxic Air Pollutant Emission Control Program

5.2.9.1 Subchapter A – Applicability, Definitions and General Provisions

- §5101 – Applicability
  The facility will not generate 10 tpy of any toxic air pollutant (TAP) or 25 tpy of a combination of TAPs, therefore the facility will not be a major source (with respect to the TAP program) and the provisions of this chapter do not apply.

6 Air Quality Modeling Analysis

6.1 Modeling Approach

6.1.1 Model Selection

Atmospheric modeling has been performed in accordance with the procedures found in the EPA document, *Guidance on Air Quality Models* (revised) (EPA-450-2-78-027R, July 1986). Since the facility is not subject to PSD construction permitting, EPA's SCREEN3 model was used to perform screen modeling. (Model input/output for each SCREEN3 model run is provided in Appendix D.)

This model is appropriate for single and multiple sources in urban and rural areas composed of simple and complex terrain and the proposed maximum hourly emission rates for each pollutant were utilized.

Because the firewater pumps, elctrical power generators, cranes, and glycol generators will have limited hours of operation, emissions from these units were not included in evaluating annual impacts, only short-term impacts.

6.1.2 Modeling Analyses

Three analyses were performed to demonstrate that the facility will not result in any adverse air quality impacts. A NAAQS analysis was performed to ensure that the facility will meet federal air quality standards. The maximum impacts at the nearest on-shore area (Class II), and at the nearest Class I area (Breton National Wildlife Refuge) were also evaluated.

6.1.2.1 NAAQS Analysis

The purpose of the NAAQS Analysis is to demonstrate that emissions of criteria pollutants and selected non-criteria pollutants will not cause or contribute to an exceedence of the NAAQS. The criteria pollutants of concern are CO, SO_2, NO_2 (assumed to be NO_X), and PM_{10}.

A preliminary impact determination was conducted to predict whether the proposed sources could make a significant impact on existing air quality – that is, equal or exceed a NAAQS de minimis. The following Table 6-1 shows the NAAQS concentrations for each averaging period and de minimis values.

Table 6-1
NAAQS Concentrations

Pollutant	Averaging Period	NAAQS Primary (µg/m^3)	NAAQS Secondary (µg/m^3)	NAAQS De minimis (µg/m^3)
SO_2	3-Hour	-	1300	25
	24-Hour	365	-	5
	Annual	80	-	1
PM_{10}	24-Hour	150	150	5
	Annual	50	50	1
NO_X	Annual	100	100	1
CO	1-Hour	40,000		2,000
	8-Hour	10,000		500

All sources were modeled and the predicted high concentration at or beyond the property line (i.e. platform) for each pollutant and each averaging time were compared with the appropriate NAAQS de minimis level.

Pollutant concentrations that exceeded de minimis levels were then compared to the NAAQS concentrations. Because the facility is located in OCS waters 16 miles offshore, background monitoring data for the site is not readily available, but it was assumed that background concentrations off-shore are less than on-shore in Louisiana.

Because SCREEN3 only predicts the maximum 1-hour concentrations, appropriate multiplication factors were used to estimate maximum concentrations at other averaging periods as suggested in EPA's *"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised" EPA 454/R-92-019*.

Averaging Period	Multiplying Factor
3-Hour	0.9 (±0.1)
8-Hour	0.7 (±0.2)
24-Hour	0.4 (±0.2)
Annual	0.08 (±0.02)

The numbers in the parentheses are recommended limits to which one may diverge from the multiplying factors representing the general case. If aerodynamic downwash or terrain is a problem at the facility, or if the emission height is very low, then it may be necessary to increase the factors within the limits specified by the parentheses. If the stack height is relatively tall and there are no terrain or downwash problems, then it may be appropriate to decrease the factors.

A degree of conservatism is incorporated into the factors to provide reasonable assurance that the maximum concentrations for the 3-hour, 8-hour, 24-hour, and Annual impacts will not be underestimated. (*"Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised" EPA 454/R-92-019*). Since the facility is surrounded by water and is located on an elevated platform approximately 140 feet above the surrounding water, based on the factors mentioned in the previous paragraph, it is considered reasonable to decrease the above factors by half the amount shown in the parentheses to the following:

Averaging Period	Multiplying Factor
3-Hour	0.8
8-Hour	0.6
24-Hour	0.3
Annual	0.07

Maximum 1-hour concentration impacts were then multiplied by the appropriate factor and compared to the NAAQS de minimis and NAAQS primary and secondary concentrations. Section 6.4 discusses the modeling results.

6.1.2.2 On-Shore Impacts/Class II Impacts Analysis

The maximum impacts on-shore at a distance of 16 miles (25.7 kilometers [km]) from the facility were evaluated for additional information purposes to demonstrate that the air quality impacts on-shore will not cause or contribute to the exceedence of any air quality standards. The maximum on-shore impact was compared to the Class II Maximum Allowable Increases, which are shown in Table 6-2.

Table 6-2
Class II Maximum Allowable Impact Levels

Pollutant	Averaging Period	Class II Maximum Allowable Increase ($\mu g/m^3$)
SO_2	3-Hour	325
	24-Hour	91
	Annual	20
PM_{10}	24-Hour	30
	Annual	17
NO_2	Annual	25

6.1.2.3 Class I Impacts Analysis

There is one Class I Area in the state of Louisiana, the Breton National Wildlife Refuge, located on an island off the coast of Louisiana, south of New Orleans approximately 22 miles (35.2 km) from Main Pass Block 299. The maximum impact to the Breton National Wildlife Refuge, was evaluated for information purposes to demonstrate that there will not be any adverse air quality impacts to Class I areas. The maximum impact was compared to the Class I Maximum Allowable Increases, which are shown in Table 6-3.

Table 6-3
Class I Maximum Allowable Impact Levels

Pollutant	Averaging Period	Class I Maximum Allowable Increase ($\mu g/m^3$)
SO_2	3-Hour	25
	24-Hour	5
	Annual	2
PM_{10}	24-Hour	8
	Annual	4
NO_2	Annual	2.5

6.2 Input Data Requirements

6.2.1 Scaling Factors

A scaling factor was used to simplify the number of SCREEN3 runs to be performed. An emission rate of 1 gram per second (g/s) was used for each piece of equipment with different stack parameters. The actual emission rate for each pollutant for each piece of equipment was then multiplied by the maximum concentration impact to determine maximum impacts for each of the pollutants.

6.2.2 Selection of Dispersion Option

Generally to determine appropriate dispersion options the Auer method is employed, however, because the facility is located in OCS waters 16 miles offshore of the coast of Louisiana, it is determined that the surrounding 3-km land use is rural and the rural dispersion option was selected for all model runs.

6.2.3 Meteorology

SCREEN3 offers three options for meteorology:

1. Full meteorology (all stabilities and wind speeds)
2. Input single stability class
3. Input single stability class and wind speed

Option 1, full meteorology with all stabilities and wind speeds, was selected for all modeling runs.

6.2.4 Terrain

Terrain is important to air modeling because air concentrations are greatly influenced by the height of the plume above local ground level. Terrain is characterized by elevation relative to stack height.

Flat terrain is identified as terrain equal to the elevation of the stack base, simple terrain as terrain lower than the height of the stack top, and complex terrain as terrain above the height of the plume center line.

Because of the facility's location off-shore in OCS waters, the terrain surrounding the facility and for 16 miles toward shore is at approximately zero elevation. The loading facility is approximately 140 feet above sea level and the elevation on-shore in Louisiana is approximately sea level, so the terrain option selected was "simple" since there is not any terrain above the stack heights.

6.2.5 Distance Array

A distance array was automatically generated by SCREEN3 at a minimum distance of 1 meter to a maximum distance of 50,000 meters. The program generates receptors at 100-meter intervals out to 3,000 meters, 500-meter intervals out to 10,000 meters, 5,000-meter intervals out to 30,000 meters, and 10,000-meter intervals out to 50,000 meters. Two additional discrete receptors were added as well, one at 25,000 meters to represent the distance to Louisiana, and 35,200 meters to represent the distance to Breton National Wildlife Refuge, the closest Class I area.

6.2.6 Building Downwash and Good Engineering Practice (GEP)

Building wake effects may have a significant effect on the concentration of pollutants near the stack. Building wake effects are flow lines that cause plumes to be forced down to the ground much sooner than they would if the building were not there.

Section 123 of the CAA Amendments required EPA to promulgate regulations to assure that the control of any air pollutant under an applicable State Implementation Plan (SIP) was not affected by stack heights that exceeded GEP or any other dispersion technique. The EPA document *Guidance for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)* provides specific guidance for determining GEP stack height and for determining whether building downwash will occur.

GEP is defined as "the height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, and wakes that may be created by the source itself, or nearby structures, or nearby terrain obstacles."

The GEP definition is based on the observed phenomena of atmospheric flow in the immediate vicinity of a structure. It identifies the minimum stack height at which significant adverse aerodynamics (downwash) caused by nearby structures are avoided.

The GEP stack height for a given structure is calculated in the following manner:

$H_{GEP} = H_a + 1.5L$

Where:

H_{GEP}	=	GEP stack height
H_a	=	The height of adjacent or nearby structure
L	=	The lesser dimension (height or projected width) of the adjacent or nearby structures

There are not a large number of buildings or structures located at the facility that would result in building wake effects. The control room is located between platform 1 and platform 2, away from all the emission generating equipment. Building wake effects were not considered in the screen modeling.

6.3 Source Inventory

6.3.1 On-Property Sources to be Evaluated

Emissions from the gas compressors, power generation turbines, glycol regenerators, firewater pumps, cranes and emergency power generators were included in the modeling. Emissions from flares were not included in the modeling but are quantified in the air permit application, since they are not operational during normal operations. Table 6-4 shows the emission rates of the on-property sources to be evaluated.

6.3.2 Fugitive Emissions

Emissions from fugitives were not included in the modeling.

6.3.3 Flares

Flares were not considered for screen modeling because they were only be used intermittently in upset or emergency operating conditions and are not considered part of normal operations.

6.3.4 Stack Parameters

Table 6-5 includes stack parameters for all sources being modeled. Because the facility is located on a platform approximately 140 feet above sea level, stack heights were increased by 140 feet to account for the additional height above the surrounding terrain since base elevations are not accounted for in SCREEN3.

Table 6-4
Emission Rates from Facility Sources

	NO_X		CO		SO_2		VOC		PM_{10}	
Equipment	**lb/hr**	**g/s**	**lb/hr**	**g/s**	**lb/hr**	**g/s**	**lb/hr**	**g/s**	**lb/hr**	**g/s**
GASCOMP01	17.72	2.23	14.19	1.79	0.366	0.05	4.06	0.51	4.07	0.51
GASCOMP02	17.72	2.23	14.19	1.79	0.366	0.05	4.06	0.51	4.08	0.51
CRANE01	9.3	1.17	2	0.25	0.62	0.08	0.89	0.11	0.66	0.08
CRANE02	9.3	1.17	2	0.25	0.62	0.08	0.89	0.11	0.66	0.08
CRANE03	9.3	1.17	2	0.25	0.62	0.08	0.89	0.11	0.66	0.08
CRANE04	9.3	1.17	2	0.25	0.62	0.08	0.89	0.11	0.66	0.08
CRANE05	9.3	1.17	2	0.25	0.62	0.08	0.89	0.11	0.66	0.08
CRANE06	9.3	1.17	2	0.25	0.62	0.08	0.89	0.11	0.66	0.08
CRANGEN	9.61	1.21	2.07	0.26	0.64	0.08	0.92	0.12	0.68	0.09
GLYCREG01	0.9	0.11	0.76	0.10	0.04	0.01	18.02	2.27	0.07	0.01
GLYCREG02	0.9	0.11	0.76	0.10	0.04	0.01	18.02	2.27	0.07	0.01
TURB01	4.78	0.60	4.16	0.52	0.6	0.08	2.38	0.30	3.0	0.38
TURB02	4.78	0.60	4.16	0.52	0.6	0.08	2.38	0.30	3.0	0.38
TURB03	4.78	0.60	4.16	0.52	0.6	0.08	2.38	0.30	3.0	0.38
FWPUMP01	27.33	3.44	24.96	3.14	0.6	0.08	5.94	0.75	3.0	0.38
FWPUMP02	36	4.54	8.25	1.04	12.14	1.53	1.06	0.13	1.05	0.13
EMGEN01	36	4.54	8.25	1.04	12.14	1.53	1.06	0.13	1.05	0.13
EMGEN02	96	12.10	22	2.77	32.36	4.08	2.82	0.36	2.8	0.35
EMGEN03	48	6.05	11	1.39	16.18	2.04	1.41	0.18	1.4	0.18
EMGEN04	48	6.05	11	1.39	16.18	2.04	1.41	0.18	1.4	0.18

Table 6-5 Stack Parameters				
Equipment	**Stack Height Above Water (m)**	**Stack Inside Diameter (m)**	**Exit Velocity (m/s)**	**Stack Temperature (K)**
GASCOMP01	51.82	2.29	15.70	778.7
GASCOMP02	51.82	2.29	15.70	778.7
CRANE01	50.29	0.15	73.15	749.8
CRANE02	50.29	0.15	73.15	749.8
CRANE03	50.29	0.15	73.15	749.8
CRANE04	50.29	0.15	73.15	749.8
CRANE05	50.29	0.15	73.15	749.8
CRANE06	50.29	0.15	73.15	749.8
CRANGEN	48.77	0.30	73.15	749.8
GLYCREG01	50.29	0.56	5.00	394.0
GLYCREG02	50.29	0.56	5.00	394.0
TURB01	57.91	1.46	53.95	466.5
TURB02	57.91	1.46	53.95	466.5
TURB03	57.91	1.46	53.95	466.5
FWPUMP01	57.91	1.46	53.95	466.5
FWPUMP02	48.77	0.30	73.15	749.8
EMGEN01	48.77	0.30	73.15	749.8
EMGEN02	48.77	0.30	73.15	749.8
EMGEN03	48.77	0.30	73.15	749.8
EMGEN04	48.77	0.30	73.15	749.8

6.4 Model Results

6.4.1 NAAQS Analysis Results

The firewater pumps and emergency power generators are emergency-use only equipment and each piece of equipment will operate a maximum of 104 hr/yr. Because these operating hours will be federally enforceable as permit conditions, modeling results were adjusted accordingly to more accurately represent these restricted operating hours. Annual impacts did not include contributions from either the firewater pumps or the emergency power generators due to their restricted operational hours. Table 6-6 shows the results of maximum impact analysis for comparison to the NAAQS de minimis.

Table 6-6
NAAQS De Minimis Analysis

Pollutant	Averaging Period	De minimis ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	Exceeds De minimis?
SO_2	3-Hour	25	88.3	YES
	24-Hour	5	33.3	YES
	Annual	1	0.20	NO
PM_{10}	24-Hour	5	6.35	YES
	Annual	1	0.20	NO
NO_X	Annual	1	1.37	YES
CO	1-Hour	2,000	122.4	NO
	8-Hour	500	68.1	NO

Annual SO_2 impacts, PM_{10} annual impacts, and CO 1-hour and 8-hour impacts are below de minimis levels and the analysis for these pollutants is considered complete, since by definition of the de minimis the sources don't make a significant contribution to air quality.

Since maximum impacts for 3-hour and 24-hour SO_2, 24-hour PM_{10}, and annual NO_X were above de minimis values, the impacts were then compared to the NAAQS primary and secondary standards (as a percentage). This comparison is shown in Table 6-7.

Table 6-7
NAAQS Analysis

Pollutant	Averaging Period	Primary NAAQS ($\mu g/m^3$)	Secondary NAAQS ($\mu g/m^3$)	Maximum Impact ($\mu g/m^3$)	% NAAQS
SO_2	3-Hour	-	1300	88.3	7%
	24-Hour	365	-	33.3	9%
PM_{10}	24-Hour	150	150	6.35	4.2%
NO_X	Annual	100	100	1.37	1.4%

The maximum impacts for sulfur are based on extremely conservative estimates for sulfur content in both the natural gas and diesel fuels, and the maximum impact results from a conservative screening analysis are less than 10% of the NAAQS. While a representative background concentration is not available for the Gulf of Mexico near the terminal, it would have to be about 90% of the NAAQS (or 330 micrograms per cubic meter [$\mu g/m^3$]) before the NAAQS might be threatened. Since this is not likely to occur, the modeling demonstrates that the facility will not cause or contribute to an exceedence of the NAAQS.

Likewise, maximum impacts for NO_X and PM_{10} are very low. Therefore, background concentrations would have to be extremely high before the NAAQS would be threatened. Since this is not likely to occur, the modeling demonstrates that the facility will not cause or contribute to an exceedence of the NAAQS.

6.4.2 On-Shore Impact/Class II Analysis Results

The maximum impacts on-shore at a distance of 16 miles (25 km) from the facility were evaluated for additional information purposes to demonstrate that the air quality impacts on-shore will not cause or contribute to the exceedence of any air quality standards. The maximum on-shore impact compared to the allowable Class II impacts is shown in Table 6-8.

Table 6-8
Class II Analysis

Pollutant	Averaging Period	Class II Maximum Allowable Increase ($\mu g/m^3$)	Maximum Modeled Impact ($\mu g/m^3$)	% of Allowable Increase
SO_2	3-Hour	325	13.6	4.2%
	24-Hour	91	5.1	5.6%
	Annual	20	0.02	0.09%
PM_{10}	24-Hour	30	1.15	3.8%
	Annual	17	0.11	0.62%
NO_2	Annual	25	0.42	1.7%

The maximum modeled impacts for all pollutants were well below the maximum allowable Class II increases.

6.4.3 Class I Analysis Results

The maximum impact to the Breton National Wildlife Refuge, which is the nearest Class I area and is approximately 35.2 km away, was evaluated for information purposes to demonstrate that there will not be any adverse air quality impacts to Class I areas. The maximum impact was compared to the Class I Maximum Allowable Increases, which are shown in Table 6-9.

Table 6-9 Class I Analysis				
Pollutant	**Averaging Period**	**Class I Maximum Allowable Increase ($\mu g/m^3$)**	**Maximum Modeled Impact ($\mu g/m^3$)**	**% of Class I Allowable Increase**
SO_2	3-Hour	25	10.8	43%
	24-Hour	5	4.0	81%
	Annual	2	0.014	0.69%
PM_{10}	24-Hour	8	0.91	11.4%
	Annual	4	0.085	2.1%
NO_2	Annual	2.5	0.34	14%

The maximum modeled impacts for all pollutants were below the maximum allowable Class I increases.

7 References

Louisiana Administrative Code (LAC) Title 33, Part III.

United States Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, AP-42,* 1995.

United States Environmental Protection Agency*, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised EPA 454/R-92-019,* October 1992.

United States Environmental Protection Agency*, Guidance for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)*

U.S. Code of Federal Regulations, Title 40.

A

Title V (Part 71) Permit Application Forms

PERMIT APPLICATION FORMS

40 CFR PART 71
FEDERAL OPERATING PERMITS PROGRAM

US EPA
JANUARY, 2001

OMB Control No.
2060-0336

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM GIS - GENERAL INFORMATION AND SUMMARY

Instructions: Complete this form once for the part 71 source (facility).

A. Mailing Address and Contact Information

Facility name **Main Pass Energy Hub ™**

Mailing address: Street or P.O. Box **1615 Poydras St**

City **New Orleans** State **LA** ZIP **70112** - ________

Contact person: **David C. Landry** Title **Vice President**

Telephone (**504**) **582** - **4000** Ext. ________ Facsimile (________) ________ - ________

B. Facility Location

Temporary source? ___ Yes **X** No Plant site location **US Gulf of Mexico, Main Pass Block 299**

City **Offshore** State **LA** County **N/A** EPA Region **VI**

Is the facility located within:

Indian lands? ___YES **X** NO OCS waters? **X** YES _ _ NO

Nonattainment area? ___ YES **X** NO If yes, for what air pollutants? ________

Within 50 miles of affected State? **X** YES ___ NO If yes, What State(s)? **Louisiana**

C. Owner

Name **Freeport-McMoRan Energy, LLC** Street/ P.O. Box **1615 Poydras St**

City **New Orleans** State **LA** ZIP **70112** - ________

Telephone (**504**) **582** - **4000** Ext. ________

D. Operator

Name **Freeport-McMoRan Energy, LLC** Street/ P.O. Box **1615 Poydras St**

City **New Orleans** State **LA** ZIP **70112** - ________

Telephone (**504**) **582** - **4000** Ext. ________

Form **GIS** Continued

E. Application Type

Instructions: Mark only one permit application type and answer the supplementary question appropriate for the type marked.

_X_ Initial Permit ___ Permit Renewal ___ Significant Mod. ___ Minor Permit Mod. (MPM)

___ Group Processing, MPM ___ Administrative Amend.

For initial permits, when did operations commence? _**4th Quarter**_ / _**2007**__

For permit renewals, what is the expiration date of the existing permit? _____ /_____ /_____

F. Applicable Requirement Summary

Instructions: Mark all applicable requirements that apply.

___ SIP ___ FIP/TIP ___ PSD ___

___ Minor source NSR _X_ Section 111 ___ Phase I acid rain ___ Phase II acid rain

___ Stratospheric ozone _X_ OCS regulations ___ NESHAP ___ Sec. 112(d) MACT

___ Sec. 112(g) MACT ____Early reduction of HAP ___ Sec. 112(j) MACT ___ RMP [Sec.112(r)]

___ Tank vessel reqt., section 183(f) ___ Section 129 Standards/Reqts.

___ Consumer/ commercial prod. reqts., section 183(e) ___ NAAQS, increments or visibility (for temporary sources)

Has a risk management plan been registered? ___ YES _X_ NO Regulatory agency ___________________________

Has a phase II acid rain application been submitted? ___ YES _X_ NO Permitting authority_______________________

G. Source-Wide PTE Restrictions and Generic Applicable Requirements

Instructions: Cite and describe (1) any emissions-limiting requirements that apply to the facility as a whole, and (2) "generic" applicable requirements that apply broadly or in an identical fashion to all sources at the facility.

1) The three (3) gas turbines will operate a maximum combined total of 23,760 hrs/yr.
2) The six (6) diesel cranes will operate a maximum combined total of 8,160 hrs/yr.
3) The two (2) firewater pumps will operate a maximum combined total of 208 hrs/yr.
4) The two (2) gas compressor turbines will operate a maximum combined total of 13,200 hrs/yr.

5) The two (2) glycol regenerators will operate a maximum combined total of 7,200 hrs/yr.
6) The four (4) emergency generators will operate a maximum combined total of 416 hrs/yr.
7) The crane generator will operate a maximum of 104 hrs/yr.

H. Process Description

Instructions: List all processes, products, and SIC codes for normal operation, in order of priority. Also list any process, products, and SIC codes associated with any alternative operating scenarios, if different from those listed for normal operation

Process	Products	SIC
Marine Cargo Handling Facility	**LNG & Regasification Natural Gas**	**4491**

I. Emission Unit Identification

Instructions: Assign an emissions unit ID and describe each significant emissions unit at the facility. Control equipment and/or alternative operating scenarios associated with emissions units should by listed on a separate line. Applicants may exclude from this list any insignificant emissions units or activities.

Emissions Unit ID	Description of Unit
GASCOMP01	**Gas Compressor**
GASCOMP02	**Gas Compressor**
LPFLAR01	**Low Pressure Flare Tip**
HPFLAR01	**High Pressure Flare Tip**
CRANE01	**Diesel Crane (PP #1 South)**
CRANE02	**Diesel Crane (PP #1 North)**
CRANE03	**Diesel Crane (PP #2 South)**
CRANE04	**Diesel Crane (PP #2 North)**
CRANE05	**Diesel Crane A (P3)**
CRANE06	**Diesel Crane B (P3)**
CRANGEN	**Generator for Cranes A&B**
GLYCREG01	**Glycol Regenerator**
GLYCREG02	**Glycol Regenerator**
TURB01	**Gas Turbine Generator Package**
TURB02	**Gas Turbine Generator Package**
TURB03	**Gas Turbine Generator Package**
FWPUMP01	**Firewater Pump**
FWPUMP02	**Firewater Pump**
EMGEN01	**Emergency Generator (4000 HP)**
EMGEN02	**Emergency Generator (2000 HP)**
EMGEN03	**Emergency Generator (2000 HP)**
EMGEN04	**Emergency Generator (670 HP)**
HPFLAR02	**High Pressure Flare Tip**

Form **GIS** Continued

J. Facility Emissions Summary

Instructions: Enter potential to emit (PTE) for the facility as a whole for each air pollutant listed below. Enter the name of the single HAP emitted in the greatest amount and its PTE. For all pollutants stipulations to major source status may be indicated by entering "major" in the space for PTE. Indicate the total actual emissions for fee purposes for the facility in the space provided. Applications for permit modifications need not include actual emissions information

NOx **238** tons/yr VOC **153** tons/yr SO2 **17** tons/yr

PM-10 **143** tons/yr CO **228** tons/yr Lead **0** tons/yr

Total HAP **14.3** tons/yr

Which single HAP emitted in the greatest amount? **Benzene** PTE? **4.4** tons/yr

Total emissions of regulated pollutants (for fee calculation) from section F, line 5 of form **FEE?** **0** tons/yr

K. Existing Federally Enforceable Permits:

Permit number(s) _________________ Permit type ______________ Permitting authority ____________________

Permit number(s) _________________ Permit type ______________ Permitting authority ______________

L. Emission Unit(s) Covered by General Permits

Emission unit(s) subject to general permit ____

Check one: ___ Application made ___ Coverage granted

General permit identifier ______________________________________ Expiration Date ____/____/____

M. Cross-referenced Information

Does this application cross-reference information? ___ YES **X** NO
(If yes, see instructions)

OMB
Control No. 2060-0336

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM IE - INSIGNIFICANT EMISSIONS

INSTRUCTIONS: List each source eligible for insignificant treatment under § 71.5(c)(11)(ii). In the "number" column, indicate the number of units qualifying under each description. Each description must be specific enough to describe the source of emissions. List emission units separately if they have dissimilar descriptions, including dissimilar capacities or sizes and other factors. Please check the appropriate column to indicate whether the source meets the emissions criteria under § 71.5(c)(11)(ii)(A) and (B) for regulated air pollutants except hazardous air pollutant (RAP, except HAP), and for HAP, respectively.

Number	Description of Activities or Emission Units	RAP, except HAP	HAP
7	Oil Water Separators	x	x
7	Waste Oil Storage Tanks	x	x
1	Hot Oil Expansion Tank	x	x
2	Diesel Day Tanks for Firewater Pump	x	x
4	Diesel Day Tanks for Emergency Power Generator	x	x
1	Diesel Day Tank for Crane Generator	x	x
6	Diesel Storage Tanks for Cranes	x	x
3	Glycol Storage Tanks	x	x
1	Methanol Storage Tank	x	x
4	Diesel Oil Storage Tanks	x	x
2	Fork Trucks (Mobile Sources)	x	x
1	Fugitive Emissions	x	x

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **GASCOMP01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit Hourly (lb/hr)	Potential to Emit Annual (tons/yr)	
NO_x	**0**	**17.7**	**74.4**	
SO_2	**0**	**0.37**	**1.54**	
CO	**0**	**14.2**	**59.6**	
VOC	**0**	**4.1**	**17.0**	
PM_{10}	**0**	**4.07**	**17.1**	
HAP - TOTAL	**0**	**0.44**	**1.84**	

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **GASCOMP02**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	17.7	42.5	
SO_2	0	0.37	0.9	
CO	0	14.2	34.1	
VOC	0	4.1	9.7	
PM_{10}	0	4.07	9.8	
HAP - TOTAL	0	0.44	1.05	

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **LPFLAR01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	59.3	4.37	
SO_2	0	0	0	
CO	0	322.5	23.78	
VOC	0	122.0	9.00	
PM_{10}	0	435.8	32.14	

OMB Control No. 2060-0336

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **HPFLAR01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**1481.8**	**4.85**	
SO_2	**0**	**0**	**0**	
CO	**0**	**8062.9**	**26.37**	
VOC	**0**	**3050.8**	**9.98**	
PM_{10}	**0**	**10895.8**	**35.44**	

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANE01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	9.3	6.32	
SO_2	0	0.62	0.42	
CO	0	2.0	1.36	
VOC	0	0.89	0.61	
PM_{10}	0	0.66	0.45	
HAP - TOTAL	0	0.014	0.0095	

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANE02**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**5.43**	**3.69**	
SO_2	**0**	**0.36**	**0.24**	
CO	**0**	**1.17**	**0.79**	
VOC	**0**	**0.52**	**0.35**	
PM_{10}	**0**	**0.39**	**0.26**	
HAP - TOTAL	**0**	**0.008**	**0.006**	

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANE03**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	5.43	3.69	
SO_2	0	0.36	0.24	
CO	0	1.17	0.79	
VOC	0	0.52	0.35	
PM_{10}	0	0.39	0.26	
HAP - TOTAL	0	0.008	0.006	

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANE04**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	5.43	3.69	
SO_2	0	0.36	0.24	
CO	0	1.17	0.79	
VOC	0	0.52	0.35	
PM_{10}	0	0.39	0.26	
HAP - TOTAL	0	0.008	0.006	

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U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANE05**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	5.43	3.69	
SO_2	0	0.36	0.24	
CO	0	1.17	0.79	
VOC	0	0.52	0.35	
PM_{10}	0	0.39	0.26	
HAP - TOTAL	0	0.008	0.006	

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANE06**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	5.43	3.69	
SO_2	0	0.36	0.24	
CO	0	1.17	0.79	
VOC	0	0.52	0.35	
PM_{10}	0	0.39	0.26	
HAP - TOTAL	0	0.008	0.006	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **CRANGEN**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	9.61	0.50	
SO_2	0	0.64	0.03	
CO	0	2.07	0.11	
VOC	0	0.92	0.05	
PM_{10}	0	0.68	0.04	
HAP - TOTAL	0	0.015	0.00075	

OMB Control No. 2060-0336

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **GLYCREG01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	0.90	1.62	
SO_2	0	0.04	0.06	
CO	0	0.76	1.36	
VOC	0	18.02	32.44	
PM_{10}	0	0.07	0.12	
HAP - TOTAL	0	0.10	5.06	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **GLYCREG02**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**0.90**	**1.62**	
SO_2	**0**	**0.04**	**0.06**	
CO	**0**	**0.76**	**1.36**	
VOC	**0**	**18.02**	**32.44**	
PM_{10}	**0**	**0.07**	**0.12**	
HAP - TOTAL	**0**	**0.10**	**5.06**	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **TURB01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	4.78	18.94	
SO_2	0	0.60	2.38	
CO	0	4.16	16.47	
VOC	0	2.38	9.41	
PM_{10}	0	3.0	11.88	
HAP - TOTAL	0	0.10	0.41	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **TURB02**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	**4.78**	**18.94**	
SO_2	0	**0.60**	**2.38**	
CO	0	**4.16**	**16.47**	
VOC	0	**2.38**	**9.41**	
PM_{10}	0	**3.0**	**11.88**	
HAP - TOTAL	0	**0.10**	**0.41**	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **TURB03**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	4.78	18.94	
SO_2	0	0.60	2.38	
CO	0	4.16	16.47	
VOC	0	2.38	9.41	
PM_{10}	0	3.0	11.88	
HAP - TOTAL	0	0.10	0.41	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **FWPUMP01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**36.0**	**1.87**	
SO_2	**0**	**12.14**	**0.63**	
CO	**0**	**8.25**	**0.43**	
VOC	**0**	**1.06**	**0.05**	
PM_{10}	**0**	**1.05**	**0.05**	
HAP - TOTAL	**0**	**0.047**	**0.0025**	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID __**FWPUMP02**__

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_X	0	36.0	1.87	
SO_2	0	12.14	0.63	
CO	0	8.25	0.43	
VOC	0	1.06	0.05	
PM_{10}	0	1.05	0.05	
HAP - TOTAL	0	0.047	0.0025	

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **EMGEN01**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**96.00**	**4.99**	
SO_2	**0**	**32.36**	**1.68**	
CO	**0**	**22.00**	**1.14**	
VOC	**0**	**2.82**	**0.15**	
PM_{10}	**0**	**2.80**	**0.15**	
HAP - TOTAL	**0**	**0.13**	**0.0066**	

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **EMGEN02**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_X	0	48.00	2.50	
SO_2	0	16.18	0.84	
CO	0	11.00	0.57	
VOC	0	1.41	0.07	
PM_{10}	0	1.40	0.07	
HAP - TOTAL	0	0.063	0.0033	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **EMGEN03**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**48.00**	**2.50**	
SO_2	**0**	**16.18**	**0.84**	
CO	**0**	**11.00**	**0.57**	
VOC	**0**	**1.41**	**0.07**	
PM_{10}	**0**	**1.40**	**0.07**	
HAP - TOTAL	**0**	**0.063**	**0.0033**	

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **EMGEN04**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	0	16.08	0.84	
SO_2	0	5.42	0.28	
CO	0	3.69	0.19	
VOC	0	0.47	0.025	
PM_{10}	0	0.47	0.02	
HAP - TOTAL	0	0.021	0.0011	

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FORM EMISS - EMISSIONS CALCULATIONS

INSTRUCTIONS: Use this form to calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID **HPFLAR02**

B. Identification and Quantification of Emissions

Instructions: First, list each air pollutant that is either regulated at the unit or present in major amounts. Second, list any other regulated pollutant (for fee calculation) emitted at the unit that have not already been listed. Each HAP added to the list in this step may be simply listed as "HAP". Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each listed air pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives, including those that do not count towards applicability, when calculating actual emissions. At a minimum, round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values. Attach examples of calculations that illustrates the methodology used.

Air Pollutants (including regulated air pollutants and pollutants for which the source is major)	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NO_x	**0**	**2222.8**	**3.74**	
SO_2	**0**	**0**	**0**	
CO	**0**	**12094.4**	**20.33**	
VOC	**0**	**4576.3**	**7.69**	
PM_{10}	**0**	**16343.8**	**9.62**	

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FORM PTE - POTENTIAL TO EMIT SUMMARY

INSTRUCTIONS: Complete this form once for the facility. You may find it helpful to complete form **EMISS** for each emissions unit before completing this form. For each emissions unit with emissions that count towards applicability, list the emissions unit ID and the PTE for the air pollutants listed below. If there are other air pollutants not listed below for which the source is a major source, provide attachments naming the air pollutant and showing calculation of the total for that pollutant. Round values to the nearest tenth of a ton. Add all values together in each column and enter the total in the space provided at the bottom of the table. Also report these totals in section **J** of form **GIS.**

Emissions Unit ID	Regulated Air Pollutants and Pollutants for which the Source is Major						
	NOx (tons/yr)	VOC (tons/yr)	SO2 (tons/yr)	PM10 (tons/yr)	CO (tons/yr)	Lead (tons/yr)	HAP (tons/yr)
GASCOMP01	74.4	17.0	1.54	17.08	59.6	0	1.84
GASCOMP02	42.5	9.73	0.9	9.76	34.1	0	1.05
LPFLARE01	4.37	9.00	0	32.14	23.78	0	0
HPFLARE01	4.85	9.98	0	35.44	26.37	0	0
CRANE01	6.32	0.61	0.42	0.45	1.36	0	0.0095
CRANE02	3.69	0.35	0.24	0.26	0.79	0	0.006
CRANE03	3.69	0.35	0.24	0.26	0.79	0	0.006
CRANE04	3.69	0.35	0.24	0.26	0.79	0	0.006
CRANE05	3.69	0.35	0.24	0.26	0.79	0	0.006
CRANE06	3.69	0.35	0.24	0.26	0.79	0	0.006
CRANGEN	0.50	0.048	0.033	0.035	0.11	0	0.00075
GLYCREG01	1.62	32.44	0.06	0.12	1.36	0	5.06
GLYCREG02	1.62	32.44	0.06	0.12	1.36	0	5.06
TURB01	18.94	9.41	2.38	11.88	16.47	0	0.41
TURB02	18.94	9.41	2.38	11.88	16.47	0	0.41
TURB03	18.94	9.41	2.38	11.88	16.47	0	0.41
FWPUMP01	1.87	0.05	0.63	0.05	0.43	0	0.0024
FWPUMP02	1.87	0.05	0.63	0.05	0.43	0	0.0024
EMGEN01	4.99	0.15	1.68	0.15	1.14	0	0.0064
EMGEN02	2.50	0.07	0.84	0.07	0.57	0	0.0032
EMGEN03	2.50	0.07	0.84	0.07	0.57	0	0.0032
EMGEN04	0.84	0.025	0.28	0.02	0.19	0	0.0011
HPFLARE02	3.74	7.69	0	9.62	20.33	0	0
TOTALS	**238**	**153**	**17**	**143**	**228**	**0**	**14.3**

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**GASCOMP01**__ Description __**Gas Compressor**__________________

SIC Code (4-digit) _**4491**_____ SCC Code _**31000203**__

B. Emissions Unit Description

Primary use __**Gas Compression**______________________________ Temporary source ___ Yes _**X**_ No

Manufacturer __**Solar Turbines**_ Model No. _**MARS 100-15000S**__________

Serial Number __**To Be Determined**______________ Installation date _____/_____/ _**2007**__

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) _____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input __**97.1**___ MM BTU/hr Maximum design heat input __**97.1**__ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Natural Gas**__________ Standby fuel type(s) ______________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066%**	**0 %**	**1046 BTU/SCF**

Emission unit ID ____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**0.09 MMSCF/hr**	**779 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A__ Device type __N/A__

Air pollutant(s) Controlled __N/A__ Manufacturer __N/A__

Model No. __N/A__ Serial No. __N/A__

Installation date _____/_____/____ Control efficiency (%) __N/A__.____

Efficiency estimation method __N/A__

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __N/A__ Inside stack diameter (ft) __N/A__

Stack temp(^oF) __N/A__ Design stack flow rate (ACFM) __N/A__.____

Actual stack flow rate (ACFM) __N/A__.____ Velocity (ft/sec) __N/A__

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**GASCOMP02**__ Description __**Gas Compressor**__

SIC Code (4-digit) __**4491**__ SCC Code __**31000203**__

B. Emissions Unit Description

Primary use __**Gas Compression**__ Temporary source ___ Yes _**X**_ No

Manufacturer __**Solar Turbines**__ Model No. __**MARS 100-15000S**__

Serial Number __**To Be Determined**__ Installation date _____/_____/ __**2007**__

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input __**97.1**__ MM BTU/hr Maximum design heat input __**97.1**__ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Natural Gas**__ Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066%**	**0%**	**1046 BTU/SCF**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**0.09 MMSCF/hr**	**445 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**___________________________

Air pollutant(s) Controlled ___**N/A**_______________ Manufacturer _**N/A**______________________

Model No. __**N/A**_________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) __**N/A**___.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**__ Inside stack diameter (ft) _**N/A**___

Stack temp(^{o}F) _**N/A**___ Design stack flow rate (ACFM) _**N/A**______.____

Actual stack flow rate (ACFM) __**N/A**_______.____ Velocity (ft/sec) _**N/A**___

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**LPFLAR01**_ Description __**Low Pressure Flare Tip**_________

SIC Code (4-digit) _**4491**__ SCC Code _**31000215**_

B. Emissions Unit Description

Primary use __**Low Pressure Flare Tip**_____________________ Temporary source ___ Yes _**X**_ No

Manufacturer _**To Be Determined**________________ Model No. __**To Be Determined**________________

Serial Number __**To Be Determined**______________ Installation date _____/_____/ _**2007**_

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) _____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input _**14.33**___ MM BTU/hr Maximum design heat input _**871.7**_ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Natural Gas**_____ Standby fuel type(s) _____________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0 %**	**0%**	**1046 BTU/SCF**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**0.83 MMSCF/hr**	**7300 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A_______ Device type __N/A____

Air pollutant(s) Controlled __N/A_________________ Manufacturer __N/A______________________

Model No. __N/A__________________ Serial No. __N/A__________________

Installation date _____/_____/____ Control efficiency (%) _N/A____.____

Efficiency estimation method __N/A____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _N/A______._____ Inside stack diameter (ft) _N/A_____._____

Stack temp(^oF) _N/A______._____ Design stack flow rate (ACFM) _N/A______.____

Actual stack flow rate (ACFM) _N/A________.____ Velocity (ft/sec) _N/A________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**HPFLAR01**__ Description __**High Pressure Flare Tip**_________

SIC Code (4-digit) _**4491**__ SCC Code _**31000215**_

B. Emissions Unit Description

Primary use __**High Pressure Flare Tip**_____________________ Temporary source ___ Yes _**X**_ No

Manufacturer _**To Be Determined**________________ Model No. __**To Be Determined**________________

Serial Number __**To Be Determined**______________ Installation date _____/_____/ _**2007**_

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) _____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input _**14.93**__ MM BTU/hr Maximum design heat input _**21792**__ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Natural Gas**____ Standby fuel type(s) _____________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0 %**	**0 %**	**1046 BTU/SCF**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**20.8 MMSCF/hr**	**182500 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A__ Device type __N/A__

Air pollutant(s) Controlled __N/A__ Manufacturer __N/A__

Model No. __N/A__ Serial No. __N/A__

Installation date _____/_____/____ Control efficiency (%) __N/A__.____

Efficiency estimation method __N/A__

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __N/A__._____ Inside stack diameter (ft) __N/A__._____

Stack temp(^{o}F) __N/A__._____ Design stack flow rate (ACFM) __N/A__.____

Actual stack flow rate (ACFM) __N/A__.____ Velocity (ft/sec) __N/A__._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **CRANE01** Description **Diesel Powered Crane 300 HP**

SIC Code (4-digit) **4491** SCC Code **2270002045**

B. Emissions Unit Description

Primary use **Loading and unloading** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date ____/____/ **Existing**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________

Boiler horsepower rating ____________ Boiler steam flow (lb/hr) ____________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **0.34** MM BTU/hr Maximum design heat input **2.18** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) ____________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**15.0 gal/hr**	**20,400 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**_________________ Manufacturer __**N/A**______________________

Model No. __**N/A**__________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) _**N/A**____.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______._____ Inside stack diameter (ft) _**N/A**_____._____

Stack temp(^{o}F) _**N/A**______._____ Design stack flow rate (ACFM) _**N/A**_______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) __**N/A**_______._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **CRANE02** Description **Diesel Powered Crane 175 HP**

SIC Code (4-digit) **4491** SCC Code **2270002045**

B. Emissions Unit Description

Primary use **Loading and Unloading** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date ____/____/ **Existing**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating ____________ Boiler steam flow (lb/hr) ____________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **0.20** MM BTU/hr Maximum design heat input **1.27** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) ____________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**8.75 gal/hr**	**11,900 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**_________________ Manufacturer __**N/A**_______________________

Model No. __**N/A**__________________ Serial No. __**N/A**___________________

Installation date _____/_____/____ Control efficiency (%) _**N/A**____.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __**N/A**_____._____ Inside stack diameter (ft) __**N/A**____._____

Stack temp(^{o}F) __**N/A**_____._____ Design stack flow rate (ACFM) _**N/A**______.____

Actual stack flow rate (ACFM) __**N/A**_______.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **CRANE03** Description **Diesel Powered Crane 175 HP**

SIC Code (4-digit) **4491** SCC Code **2270002045**

B. Emissions Unit Description

Primary use **Loading and Unloading** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date ____/____/ **Existing**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating ____________ Boiler steam flow (lb/hr) ____________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **0.20** MM BTU/hr Maximum design heat input **1.27** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) ____________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**8.75 gal/hr**	**11,900 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**________________ Manufacturer __**N/A**______________________

Model No. __**N/A**_________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) _**N/A**____.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __**N/A**_____._____ Inside stack diameter (ft) __**N/A**____._____

Stack temp(^{o}F) __**N/A**_____._____ Design stack flow rate (ACFM) _**N/A**_______.____

Actual stack flow rate (ACFM) __**N/A**_______.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**CRANE04**___ Description __**Diesel Powered Crane 175 HP**______

SIC Code (4-digit) __**4491**_____ SCC Code __**2270002045**_

B. Emissions Unit Description

Primary use __**Loading and Unloading**____________________ Temporary source ___ Yes __**X**_ No

Manufacturer __**To Be Determined**________________ Model No. __**To Be Determined**________________

Serial Number __**To Be Determined**______________ Installation date _____/_____/ __**Existing**__

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) _____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input ___**0.20**___ MM BTU/hr Maximum design heat input ___**1.27**__ MM BTU/hr

C. Fuel Data

Primary fuel type(s) ___**Diesel**_____________ Standby fuel type(s) _____________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**8.75 gal/hr**	**11,900 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**________________ Manufacturer __**N/A**______________________

Model No. __**N/A**_________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) _**N/A**____.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __**N/A**_____._____ Inside stack diameter (ft) __**N/A**____._____

Stack temp(^{o}F) __**N/A**_____._____ Design stack flow rate (ACFM) _**N/A**_______.____

Actual stack flow rate (ACFM) __**N/A**_______.____ Velocity (ft/sec) _**N/A**________._______

OMB Control No. 2060-0336

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **CRANE05** Description **Diesel Powered Crane 175 HP**

SIC Code (4-digit) **4491** SCC Code **2270002045**

B. Emissions Unit Description

Primary use **Loading and Unloading** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date _____/_____/ **Existing**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ______________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **0.20** MM BTU/hr Maximum design heat input **1.27** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**8.75 gal/hr**	**11,900 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A_______ Device type __N/A__________________________

Air pollutant(s) Controlled __N/A________________ Manufacturer __N/A______________________

Model No. __N/A_________________ Serial No. __N/A__________________

Installation date _____/_____/____ Control efficiency (%) _N/A____.____

Efficiency estimation method __N/A____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __N/A_____._____ Inside stack diameter (ft) __N/A____._____

Stack temp(^{o}F) __N/A_____._____ Design stack flow rate (ACFM) _N/A_______.____

Actual stack flow rate (ACFM) __N/A_______.____ Velocity (ft/sec) _N/A________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **CRANE06** Description **Diesel Powered Crane 175 HP**

SIC Code (4-digit) **4491** SCC Code **2270002045**

B. Emissions Unit Description

Primary use **Loading and Unloading** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date _____/_____/ **Existing**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ______________________________

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) ____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **0.20** MM BTU/hr Maximum design heat input **1.27** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) ____________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**8.75 gal/hr**	**11,900 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**_________________ Manufacturer __**N/A**______________________

Model No. __**N/A**__________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) _**N/A**____.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __**N/A**_____._____ Inside stack diameter (ft) __**N/A**____._____

Stack temp(^{o}F) __**N/A**_____._____ Design stack flow rate (ACFM) _**N/A**_______.____

Actual stack flow rate (ACFM) __**N/A**_______.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **CRANGEN** Description **Generator 310 HP**

SIC Code (4-digit) **4491** SCC Code **10100501**

B. Emissions Unit Description

Primary use **Power Generation for Cranes A&B** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date ____/____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ________________

Boiler horsepower rating ________________ Boiler steam flow (lb/hr) ________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **0.03** MM BTU/hr Maximum design heat input **2.25** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) ________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**15.5 gal/hr**	**1,612 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A_______ Device type ___N/A_______________________________________

Air pollutant(s) Controlled ___N/A________________ Manufacturer __N/A________________

Model No. __N/A ________________ Serial No. __N/A____________________

Installation date _____/_____/____ Control efficiency (%) __N/A______.____

Efficiency estimation method ___N/A____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _N/A______._____ Inside stack diameter (ft) __N/A___

Stack temp(^{o}F) __N/A_____._____ Design stack flow rate (ACFM) _N/A_____.____

Actual stack flow rate (ACFM) _N/A________.____ Velocity (ft/sec) _N/A________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **GLYCREG01** Description **Glycol Regenerator**

SIC Code (4-digit) **4491** SCC Code **31000228**

B. Emissions Unit Description

Primary use **Remove moisture from Natural Gas Product** Temporary source ___ Yes _X_ No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date ___/___/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ______________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **3.87** MM BTU/hr Maximum design heat input **9.41** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Natural Gas** Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066%**	**0%**	**1046 BTU/scf**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**8997 scf/hr**	**32.39 mmscf/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A________ Device type __N/A____

Air pollutant(s) Controlled __N/A________________ Manufacturer __N/A______________________

Model No. __N/A__________________ Serial No. __N/A__________________

Installation date _____/_____/____ Control efficiency (%) __N/A___.____

Efficiency estimation method __N/A____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __N/A______._____ Inside stack diameter (ft) __N/A_____._____

Stack temp(^{o}F) __N/A______._____ Design stack flow rate (ACFM) __N/A______.____

Actual stack flow rate (ACFM) __N/A________.____ Velocity (ft/sec) __N/A________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **GLYCREG02** Description **Glycol Regenerator**

SIC Code (4-digit) **4491** SCC Code **31000228**

B. Emissions Unit Description

Primary use **Remove moisture from Natural Gas Product** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date _____/_____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ________________

Boiler horsepower rating ________________ Boiler steam flow (lb/hr) ________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **3.87** MM BTU/hr Maximum design heat input **9.41** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Natural Gas** Standby fuel type(s) ________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066%**	**0 %**	**1046 BTU/scf**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**8997 scf/hr**	**32.39 mmscf/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID **N/A** Device type **N/A**

Air pollutant(s) Controlled **N/A** Manufacturer **N/A**

Model No. **N/A** Serial No. **N/A**

Installation date _____/_____/____ Control efficiency (%) **N/A**.____

Efficiency estimation method **N/A**

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) **N/A**.____ Inside stack diameter (ft) **N/A**.____

Stack temp(^{o}F) **N/A**.____ Design stack flow rate (ACFM) **N/A**.____

Actual stack flow rate (ACFM) **N/A**.____ Velocity (ft/sec) **N/A**.____

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **TURB01** Description **Gas Combustion Turbine**

SIC Code (4-digit) **4491** SCC Code **20100201**

B. Emissions Unit Description

Primary use **Power Generation** Temporary source ___ Yes **X** No

Manufacturer **General Electric** Model No. **LM2500**

Serial Number **To Be Determined** Installation date _____/_____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **159.2** MM BTU/hr Maximum design heat input **159.2** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Natural Gas** Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066 %**	**0%**	**1046 BTU/SCF**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**0.15 MMSCF/hr**	**1205 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**SCR01**_______ Device type __**Selective Catalytic Reduction**________

Air pollutant(s) Controlled __**CO, VOC, NOx**________________ Manufacturer _**To Be Determined**_______

Model No. ___**To Be Determined**__ Serial No. __**To Be Determined**___

Installation date _____**Same as Unit**____ Control efficiency (%) _**7ppm NOx, 10 ppm CO, 10 ppm VOC**

Efficiency estimation method _**Vendor Supplied Data**___________

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______._____ Inside stack diameter (ft) _**N/A**_____._____

Stack temp(^{o}F) _**N/A**______._____ Design stack flow rate (ACFM) _**N/A**______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**TURB02**____ Description __**Gas Combustion Turbine**________

SIC Code (4-digit) _**4491**___ SCC Code __**20100201**_

B. Emissions Unit Description

Primary use __**Power Generation**____________________________ Temporary source ___ Yes _**X**_ No

Manufacturer _**General Electric**_______ Model No. _**LM 2500**_________________________

Serial Number _**To Be Determined**________________ Installation date _____/_____/ _**2007**__

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating ___________________ Boiler steam flow (lb/hr) ______________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input __**159.2**___ MM BTU/hr Maximum design heat input _**159.2**___ MM BTU/hr

C. Fuel Data

Primary fuel type(s) _**Natural Gas**___________ Standby fuel type(s) ______________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066 %**	**0%**	**1046 BTU/SCF**

Emission unit ID _____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**0.15 MMSCF/hr**	**1205 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**SCR02**_______ Device type __**Selective Catalytic Reduction**________

Air pollutant(s) Controlled __**CO, VOC, NOx**________ Manufacturer _**To Be Determined**_______

Model No. ___**To Be Determined**__ Serial No. __**To Be Determined**___

Installation date _____**Same as Unit**____ Control efficiency (%) _**7ppm NOx, 10 ppm CO, 10 ppm VOC**

Efficiency estimation method _**Vendor Supplied Data**___________

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______._____ Inside stack diameter (ft) _**N/A**_____._____

Stack temp(^{o}F) _**N/A**______._____ Design stack flow rate (ACFM) _**N/A**______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **TURB03** Description **Gas Combustion Turbine**

SIC Code (4-digit) **4491** SCC Code **20100201**

B. Emissions Unit Description

Primary use **Power Generation** Temporary source ___ Yes **X** No

Manufacturer **General Electric** Model No. **LM 2500**

Serial Number **To Be Determined** Installation date ____/____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating ____________ Boiler steam flow (lb/hr) ____________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **159.2** MM BTU/hr Maximum design heat input **159.2** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Natural Gas** Standby fuel type(s) ____________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0.066 %**	**0%**	**1046 BTU/SCF**

Emission unit ID _____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**0.15 MMSCF/hr**	**1205 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**SCR03**_______ Device type __**Selective Catalytic Reduction**________

Air pollutant(s) Controlled __**CO, VOC, NOx**________ Manufacturer _**To Be Determined**_______

Model No. ___**To Be Determined**__ Serial No. __**To Be Determined**___

Installation date _____**Same as Unit**____ Control efficiency (%) _**7ppm NOx, 10 ppm CO, 10 ppm VOC**

Efficiency estimation method _**Vendor Supplied Data**___________

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______._____ Inside stack diameter (ft) _**N/A**_____._____

Stack temp(^{o}F) _**N/A**______._____ Design stack flow rate (ACFM) _**N/A**______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**FWPUMP01**__ Description __**Diesel Engine Driven Firewater Pump**

SIC Code (4-digit) _**4491**_____ SCC Code _**20200107**__

B. Emissions Unit Description

Primary use __**Emergency Firewater Pump**____________________ Temporary source ___ Yes _**X**_ No

Manufacturer __**To Be Determined**________________ Model No. __**To Be Determined**________________

Serial Number _**To Be Determined**________________ Installation date _____/_____/ _**2007**__

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating ___________________ Boiler steam flow (lb/hr) ______________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input __**10.9**____ MM BTU/hr Maximum design heat input _**10.9**____ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Diesel**________________ Standby fuel type(s) ______________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

Emission unit ID _____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**75.0 gal/hr**	**7,800 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**_________________ Manufacturer __**N/A**______________________

Model No. __**N/A**__________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) __**N/A**___.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**_____._____ Inside stack diameter (ft) _**N/A**____

Stack temp(^{o}F) _**N/A**_______._____ Design stack flow rate (ACFM) _**N/A**_______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **FWPUMP02** Description **Diesel Engine Driven Firewater Pump**

SIC Code (4-digit) **4491** SCC Code **20200107**

B. Emissions Unit Description

Primary use **Emergency Firewater Pump** Temporary source ___ Yes _X_ No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date _____/_____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **10.9** MM BTU/hr Maximum design heat input **10.9** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) ____________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

Emission unit ID ____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**75.0 gal/hr**	**7,800 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type __**N/A**____

Air pollutant(s) Controlled __**N/A**________________ Manufacturer __**N/A**______________________

Model No. __**N/A**_________________ Serial No. __**N/A**__________________

Installation date _____/_____/____ Control efficiency (%) __**N/A**___.____

Efficiency estimation method __**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______._____ Inside stack diameter (ft) _**N/A**___

Stack temp(^{o}F) _**N/A**______._____ Design stack flow rate (ACFM) _**N/A**______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **EMGEN01** Description **Emergency Generator 4000 HP**

SIC Code (4-digit) **4491** SCC Code **10100501**

B. Emissions Unit Description

Primary use **Emergency Power Generation** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date _____/_____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ______________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **29.0** MM BTU/hr Maximum design heat input **29.0** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**200.0 gal/hr**	**20,800 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type ___**N/A**_______________________________________

Air pollutant(s) Controlled ___**N/A**________________ Manufacturer __**N/A**________________

Model No. __**N/A** ________________ Serial No. __**N/A**____________________

Installation date _____/_____/____ Control efficiency (%) __**N/A**______.____

Efficiency estimation method ___**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**__ Inside stack diameter (ft) _**N/A**__

Stack temp(^{o}F) _**N/A**_ Design stack flow rate (ACFM) __**N/A**____

Actual stack flow rate (ACFM) ____________.____ Velocity (ft/sec) ____________._______

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APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **EMGEN02** Description **Emergency Generator 2000 HP**

SIC Code (4-digit) **4491** SCC Code **10100501**

B. Emissions Unit Description

Primary use **Emergency Power Generation** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date ____/____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ______________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **14.5** MM BTU/hr Maximum design heat input **14.5** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**100.0 gal/hr**	**10,400 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A_______ Device type ___N/A_______________________________________

Air pollutant(s) Controlled ___N/A________________ Manufacturer __N/A________________

Model No. __N/A _______________ Serial No. __N/A____________________

Installation date _____/_____/____ Control efficiency (%) __N/A______.____

Efficiency estimation method ___N/A____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _N/A__ Inside stack diameter (ft) __N/A___

Stack temp(^{o}F) _N/A__ Design stack flow rate (ACFM) _N/A__

Actual stack flow rate (ACFM) __N/A_______.____ Velocity (ft/sec) __N/A_______._______

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID **EMGEN03** Description **Emergency Generator 2000 HP**

SIC Code (4-digit) **4491** SCC Code **10100501**

B. Emissions Unit Description

Primary use **Emergency Power Generation** Temporary source ___ Yes **X** No

Manufacturer **To Be Determined** Model No. **To Be Determined**

Serial Number **To Be Determined** Installation date _____/_____/ **2007**

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____________________

Boiler horsepower rating __________ Boiler steam flow (lb/hr) __________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input **14.5** MM BTU/hr Maximum design heat input **14.5** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Diesel** Standby fuel type(s) __________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

Emission unit ID _____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**100.0 gal/hr**	**10,400 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type ___**N/A**_______________________

Air pollutant(s) Controlled ___**N/A**_________________ Manufacturer __**N/A**________________

Model No. __**N/A** ________________ Serial No. __**N/A**_____________________

Installation date _____/_____/____ Control efficiency (%) __**N/A**______.____

Efficiency estimation method ___**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______._____ Inside stack diameter (ft) __**N/A**___

Stack temp(^{o}F) __**N/A**_____._____ Design stack flow rate (ACFM) _**N/A**_______.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**EMGEN04**____ Description __**Emergency Generator 670 HP**____

SIC Code (4-digit) __**4491**_____ SCC Code __**10100501**__

B. Emissions Unit Description

Primary use __**Emergency Power Generation**__________________ Temporary source ___ Yes _**X**_ No

Manufacturer __**To Be Determined**________________ Model No. __**To Be Determined**________________

Serial Number __**To Be Determined**______________ Installation date _____/_____/_**2007**__

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) _____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input __**4.86**____ MM BTU/hr Maximum design heat input __**4.86**____ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Diesel**________________ Standby fuel type(s) ______________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Diesel	**1.0%**	**0%**	**145,000 BTU/gal**

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Diesel	**0**	**33.5 gal/hr**	**3,484 gal/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __**N/A**_______ Device type ___**N/A**_______________________________________

Air pollutant(s) Controlled ___**N/A**________________ Manufacturer __**N/A**________________

Model No. __**N/A** ________________ Serial No. __**N/A**____________________

Installation date _____/_____/____ Control efficiency (%) __**N/A**______.____

Efficiency estimation method ___**N/A**____

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) _**N/A**______.______ Inside stack diameter (ft) __**N/A**___

Stack temp(^oF) __**N/A**_____.______ Design stack flow rate (ACFM) _**N/A**_____.____

Actual stack flow rate (ACFM) _**N/A**________.____ Velocity (ft/sec) _**N/A**________._______

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM EUD-1 - EMISSIONS UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES

INSTRUCTIONS: Complete this form for each significant emissions unit best described as a fuel combusting unit.

A. General Information

Emissions unit ID __**HPFLAR02**___ Description __**High Pressure Flare Tip**_________

SIC Code (4-digit) _**4491**____ SCC Code _**31000215**

B. Emissions Unit Description

Primary use __**High Pressure Flare Tip**_____________________ Temporary source ___ Yes _**X**_ No

Manufacturer _**To Be Determined**________________ Model No. __**To Be Determined**________________

Serial Number __**To Be Determined**______________ Installation date _____/_____/ _**2007**_

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

___ Other (describe) ____

Boiler horsepower rating __________________ Boiler steam flow (lb/hr) _____________________

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___ Spreader stoker ___ Underfeed stoker ___ Overfeed stoker

___ Traveling grate ___ Shaking grate ___ Pulverized, wet bed ___ Pulverized, dry bed

Actual (average) Heat Input _**11.19**___ MM BTU/hr Maximum design heat input _**32688**_ MM BTU/hr

C. Fuel Data

Primary fuel type(s) __**Natural Gas**_____ Standby fuel type(s) ______________________________

Instructions: Describe each fuel expected to be used during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (per cf, gal., or lb.)
Natural Gas	**0 %**	**0%**	**1046 BTU/SCF**

Emission unit ID _____________

D. Fuel Usage Rates

Instructions: For each fuel described above, enter actual and maximum fuel usage rates on a worst-case hourly and annual basis. Indicate the dimension for the fuel usage rate (e.g., gallons, cords, cubic feet).

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Natural Gas	**0**	**31.25 MMSCF/hr**	**273750 MMSCF/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID __N/A__ Device type __N/A__

Air pollutant(s) Controlled __N/A__ Manufacturer __N/A__

Model No. __N/A__ Serial No. __N/A__

Installation date _____/_____/____ Control efficiency (%) __N/A__.____

Efficiency estimation method __N/A__

F. Ambient Impact Assessment

Instructions: This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit.

Stack height (ft) __N/A__._____ Inside stack diameter (ft) __N/A__._____

Stack temp(^{o}F) __N/A__._____ Design stack flow rate (ACFM) __N/A__.____

Actual stack flow rate (ACFM) __N/A__.____ Velocity (ft/sec) __N/A__.______

OMB Control No. 2060-0336

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

FORM FEE - FEE CALCULATION WORKSHEET

INSTRUCTIONS: Use this form to initially or thereafter on a annual basis report actual emissions and calculate fees, consistent with § 71.9.

A. General Information

Instructions: All sources must complete this section.

Type of fee calculation worksheet (Check one):

__X__ Initial ___ Annual

Deadline for submitting fee calculation worksheet ___/__**2008**___

For initial fee calculation worksheets, emissions are based on (Check one):

__X__ Actual emissions for the preceding year

___ Estimates of actual emissions for the preceding year

___ Estimates of actual emissions for the current year

If you checked the last box, provide the date the facility commenced operations __**4th Quarter**/ **2007**__

B. Source Information

Instructions: Complete this section only if you are not applying for a permit at this time.

Source or facility name ____**Main Pass Energy Hub**____

Mailing address: Street or P.O. Box __**1615 Poydras St**__

City __**New Orleans**__ State __**LA**__ ZIP __**70112**__ - ________

Contact person __**David C. Landry**__ Title __**Vice President**__

Telephone (**504**) **582** - **4000** Ext. ________ Part 71 permit no. __**N/A**__

C. Certification of Truth, Accuracy and Completeness

Instructions: This form must be signed by the responsible official.

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this fee calculation worksheet (and attachments) are true, accurate and complete.

Name (signed) ____

Name (typed) __**David C. Landry**__ Date: ______ /______ /_________

D. Annual Emissions Report for Fee Calculation Purposes -- Non-HAP

Instructions: Report calendar-year actual emissions of regulated pollutants (for fee calculation) except for HAP, and use for both initial and annual fee calculation purposes. Section E is used to report actual emissions of HAP. Quantify all actual emissions, including fugitives, but do not include insignificant emissions. Round to the nearest tenth of a ton. Sum the emissions in each column and enter a subtotal at the bottom of the page. If a subtotal is greater than 4,000 tons, enter 4,000. Submit attachments showing calculations.

This data is for __2003______ (year).

Emissions Unit ID	Actual Emissions (Tons/Year)					
	NOx	VOC	SO2	PM10	Lead	Other
GASCOMP01	0	0	0	0	0	0
GASCOMP02	0	0	0	0	0	0
LPFLAR01	0	0	0	0	0	0
HPFLAR01	0	0	0	0	0	0
CRANE01	0	0	0	0	0	0
CRANE02	0	0	0	0	0	0
CRANE03	0	0	0	0	0	0
CRANE04	0	0	0	0	0	0
GLYCREG01	0	0	0	0	0	0
GLYCREG02	0	0	0	0	0	0
TURB01	0	0	0	0	0	0
TURB02	0	0	0	0	0	0
TURB03	0	0	0	0	0	0
FWPUMP01	0	0	0	0	0	0
FWPUMP02	0	0	0	0	0	0
EMGEN01	0	0	0	0	0	0
EMGEN02	0	0	0	0	0	0
EMGEN03	0	0	0	0	0	0
EMGEN04	0	0	0	0	0	0
HPFLAR02	0	0	0	0	0	0
FUG	0	0	0	0	0	0

SUBTOTALS	NOx	VOC	SO2	PM10	Lead	Other
	0	0	0	0	0	0

E. Annual Emissions Report for Fee Calculation Purposes -- HAP

Instructions: Use the first table below to identify each HAP meeting the definition of regulated pollutant (for fee calculation) emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. When assigning identifier codes, please use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No.	Identifier
Formaldehyde	**50-00-0**	HAP **1**
Benzene	**71-43-2**	HAP **2**
Toluene	**108-88-3**	HAP **3**
Xylenes	**1330-20-7**	HAP **4**
Acetaldehyde	**75-07-0**	HAP **5**
		HAP ____
		HAP ____
		HAP ____

Instructions: Now report the actual emissions of each individual HAP identified above. Use the identifiers assigned in the table above to identify each HAP. Include all emissions, including fugitives, but do not include insignificant emissions. Report emissions values to the nearest tenth of a ton. Sum the emissions in each column and show a subtotal at the bottom of the page. If a subtotal is greater than 4,000 tons, enter 4,000. Submit attachments showing calculations.

This data is for **2003** (year)

Emissions Unit ID	Actual Emissions (Tons/Year)							
	HAP **1**	HAP **2**	HAP **3**	HAP **4**	HAP **5**	HAP____	HAP____	HAP____
GASCOMP01	0	0	0	0	0			
GASCOMP02	0	0	0	0	0			
LPFLARE01	0	0	0	0	0			
HPFLARE01	0	0	0	0	0			
CRANE01	0	0	0	0	0			
CRANE02	0	0	0	0	0			
CRANE03	0	0	0	0	0			
CRANE04	0	0	0	0	0			
CRANE05	0	0	0	0	0			
CRANE06	0	0	0	0	0			
CRANGEN	0	0	0	0	0			
GLYCREG01	0	0	0	0	0			
GLYCREG02	0	0	0	0	0			
TURB01	0	0	0	0	0			
TURB02	0	0	0	0	0			
TURB03	0	0	0	0	0			
FWPUMP01	0	0	0	0	0			
FWPUMP02	0	0	0	0	0			
EMGEN01	0	0	0	0	0			
EMGEN02	0	0	0	0	0			
EMGEN03	0	0	0	0	0			
EMGEN04	0	0	0	0	0			
HPFLARE02	0	0	0	0	0			
SUBTOTALS	**0**	**0**	**0**	**0**	**0**	________	________	________

F. Fee Calculation Worksheet

Instructions: This section is used to calculate the total fee owed for initial application or annual fee payment purposes. Unless otherwise instructed to proceed to a different line, always proceed to the next line. If you do not need to reconcile estimated against actual emissions, complete the part for emissions calculation (lines 1 - 5) and then proceed to the part for fee calculation (lines 21 - 26). A final permit or permit revision will not be issued until all fees, interest, and penalties assessed against a source are paid. In addition, the initial application for a source will not be found complete unless the source pays all fees owed.

EMISSIONS CALCULATION

1.	Sum the subtotals from section D of this form and enter the result on this line.	________0________.___
2.	Sum the subtotals from section E of this form and enter the result on this line.	________0________.___
3.	Total lines 1 and 2 and enter the result on this line.	________0________.___
4.	Sources are not required to pay fees twice for the same emissions [see § 71.9(c)(5)(ii)]. Enter the amount of emissions that were counted twice. Attach supplementary information identifying the emissions units where double counting has occurred and explain why double counting has occurred. If there has been no double counting enter "0."	________0________.___
5.	Subtract the amount on line 4 from the amount on line 3, round to the nearest ton, and enter the result on this line.	________0___________

RECONCILIATION OF ESTIMATED EMISSIONS AGAINST ACTUAL EMISSIONS
(WHEN INITIAL ESTIMATES WERE BASED ON THE CURRENT CALENDAR YEAR)

Only complete lines 6 - 10 if you are now preparing the first annual fee worksheet and the initial fee worksheet included estimated emissions for the current calendar year. See §§ 71.9(e)(2) and 71.9(h)(3). Otherwise skip this part of the form and proceed to the next part of the form (starting at line 11) or to the fee calculation part of the form (starting at line 21).

6.	Enter the total estimated emissions previously reported on line 5 of the initial fee calculation worksheet. These are estimated emissions for the year that the initial fee worksheet was submitted.	____________________
7.	If the amount on line 5 of this form is greater than the amount on line 6, subtract line 6 from line 5, and enter the result on this line. Otherwise enter "0."	____________________
8.	If the amount on line 6 is greater than the amount on line 5, subtract line 5 from line 6, and enter the result on this line. Otherwise enter "0."	____________________
9.	Multiply the amount on line 7 by (last year's $/ton amount[1]), and enter the result on this line. This is the amount of underpayment. Go to line 21.	$____________.______
10.	Multiply the amount on line 8 by (last year's $/ton amount), and enter the result on this line. This is the amount of overpayment. Go to line 21.	$_____________.______

[1] $/ton amounts to be determined at the time of program implementation, see § 71.9(c)(1) - (3).

RECONCILIATION OF ESTIMATED EMISSIONS AGAINST ACTUAL EMISSIONS
(WHEN INITIAL ESTIMATES WERE BASED ON THE PRECEDING CALENDAR YEAR)

Only complete lines 11 - 20 if you are now preparing the first annual fee worksheet and the initial fee worksheet included estimated emissions for the preceding calendar year. See §§ 71.9(f)(2) and 71.9(h)(3). If you must complete this part of the form, you must also submit annual emission reports (sections D and E) for the year preceding initial worksheet submittal. Otherwise skip this part of the form and proceed to the fee calculation part of the form (lines 21 through 26).

11.	Sum the subtotals from section D for the calendar year preceding initial fee worksheet submittal and enter the result on this line.	_________________.___

12. Sum the subtotals from section E for the calendar year preceding initial fee worksheet submittal and enter the result on this line. ________0________.___

13. Total lines 11 and 12 and enter the result on this line. This is the total actual emissions for the calendar year preceding initial fee worksheet submittal. ________0________.___

RECONCILIATION OF ESTIMATED EMISSIONS AGAINST ACTUAL EMISSIONS (WHEN INITIAL ESTIMATES WERE BASED ON THE PRECEDING CALENDAR YEAR) --- CONTINUED ---

14. Sources are not required to pay fees twice for the same emissions [see § 71.9(c)(5)(ii)]. Enter the amount of emissions (actual emissions for the year preceding initial worksheet submittal) that were counted twice. Attach supplementary information identifying the emissions units where double counting has occurred and explain why double counting has occurred. If there has been no double counting enter "0." _________0_______.___

15. Subtract the amount on line 14 from the amount on line 13, round to the nearest ton, and enter the result on this line. _________0__________

16. Enter the total estimated emissions previously reported on line 5 of the initial fee calculation worksheet. These are estimated emissions for the calendar year preceding initial fee worksheet submittal. _________0___________

17. If the amount on line 15 is greater than the amount on line 16, subtract line 16 from line 15, and enter the result on this line. Otherwise enter "0." _________0___________

18. If the amount on line 16 is greater than the amount on line 15, subtract line 15 from line 16, and enter the result on this line. Otherwise enter "0." _________0___________

19. Multiply the amount on line 17 by (last year's $/ton amount[1]) and enter the result on this line. This is the amount of underpayment. $_________0____._____ _

20. Multiply the amount on line 18 by (last year's $/ton amount) and enter the result on this line. This is the amount of overpayment. $_________0____._____ _

FEE CALCULATION

21. Multiply the amount on line 5 on this form by (this year's $/ton amount) and enter the result on this line. $_________0_____.____ __

22. If you have reconciled estimated against actual emissions, enter the underpayment from line 9 or 19 on this line. Otherwise enter "0." $_________0_____.____ __

23. If you have reconciled estimated against actual emissions, enter the overpayment from line 10 or 20 on this line. Otherwise enter "0." $_________0_____.____ __

24. If the amount on line 22 is greater than "0," add this amount to the amount on line 21 and enter the result on this line. If the amount on line 23 is greater than "0," subtract this amount from the amount on line 21 and enter the result on this line. Otherwise enter the amount on line 21 on this line. This is the fee adjusted for reconciliation. $_________0_____.____ __

25. If your account was credited for fee assessment error [see § 71.9(j)] since the last time you submitted a fee calculation worksheet, enter the amount of the credit on this line. Otherwise enter "0." $_________0_____.____ __

26. Subtract the amount on line 25 from the amount on line 24 and enter the result on this line. Stop here. This is the total fee amount that you must remit to EPA. $_________0_____.____ __

PENALTIES AND INTEREST

Payment received later than the due date shall be assessed interest and, in certain cases, penalty charges. If payment is late, do not calculate penalties and interest at this time. The permitting authority will assess these and mail you an invoice.

OMB Control No. 2060-0336

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM FF - FEE FILING

Instructions: Complete this form once for the part 71 source (facility) and send it to the appropriate lockbox bank address, along with full payment. This form required at time of initial, and thereafter, annual fee payment.

A. Source or Facility Name **Main Pass Energy Hub™**

B. Mailing Address and Contact Person:

Street or P.O. Box **1615 Poydras St**

City **New Orleans** State **LA** ZIP **70112** - ______

Contact Person: **David C. Landry** Title **Vice President**

Telephone (**504**) **582** - **4000** Ext. ____________

C. Total Fee Payment Remitted: $ **0** . _____

U.S. ENVIRONMENTAL PROTECTION AGENCY
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FORM I-COMP - INITIAL COMPLIANCE PLAN & COMPLIANCE CERTIFICATION

INSTRUCTIONS: There are 3 pages to this form. On this page, complete Sections A, B, and C for each applicable requirement. If different portions of an applicable requirement or compliance methods vary from unit to unit, prepare a separate form for each unique set of requirements, methods, and units. For compliance plan purposes, assume permit issuance will occur by March 22, 2001, unless you are not required to submit an application until after March 22, 2000, in which case assume issuance will occur no later than 18 months after submittal.

A. COMPLIANCE STATUS OF EACH APPLICABLE REQUIREMENT (Describe each applicable requirement and determine its compliance status)

Cite and Describe the Applicable Requirement	Unit ID(s):	Compliance status at time of application :
1) 60.332(a)(2)- shall not discharge any gases which contain nitrogen oxide in excess of: **STD = 0.0015 x (14.4)(Y)+ F** **2) 60.333(b) – shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight**	**GASCOMP01** **GASCOMP02** **TURB01** **TURB02** **TURB03**	_X_ In Compliance ___ Not In Compliance

B. METHODS USED TO DETERMINE COMPLIANCE (Describe all methods you used to determine compliance with this requirement)

Monitor nitrogen and sulfur content of fuel being fired in the turbine.

C. COMPLIANCE PLAN STATEMENTS (Respond to one of these statements for this applicable requirement)

1. If in compliance at this time, I will continue to comply.
____ Yes _____ No

2. If not in compliance at this time, I will be in compliance by expected date of permit issuance.
___ Yes ___ No Expected Date _____/_____/_____

3. For future-effective requirements. I will meet this requirement on a timely basis.
_X_ Yes _____ No

A. COMPLIANCE STATUS OF EACH APPLICABLE REQUIREMENT (Describe each applicable requirement and determine its compliance status)

Cite and Describe the Applicable Requirement	Unit ID(s):	Compliance status at time of application :
		___ In Compliance ___ Not In Compliance

B. METHODS USED TO DETERMINE COMPLIANCE (Describe all methods you used to determine compliance with the requirement)

C. COMPLIANCE PLAN STATEMENTS (Respond to one of these statements for this applicable requirement)

1. If in compliance at this time, I will continue to comply.
____ Yes _____ No

2. If not in compliance at this time, I will be in compliance by expected date of permit issuance.
___ Yes ___ No Expected Date _____/_____/____

3. For future-effective requirements. I will meet this requirement on a timely basis.
____ Yes _____ No

D. ADDITIONAL INFORMATION FOR COMPLIANCE PLAN STATEMENT #2

Complete this section if you answered "YES" to the second statement in Section C. Complete this section for each such applicable requirement. Identify the applicable requirement and describe the actions you will take prior to permit issuance to come into compliance.

1. Applicable Requirement.

Unit(s) ___________________ Applicable Requirement ____

2. Narrative Description of how Source will Achieve Compliance.

____

____

E. SCHEDULE OF COMPLIANCE

Complete this section if you answered "NO" to any of the statements in Section C. Complete this section for each such applicable requirement. Identify the emission unit and the applicable requirement, the reasons for noncompliance, and describe how the source will achieve compliance. If there are consent decrees or administrative orders that apply to this requirement, attach a copy of them to this form. Finally, all sources required to complete this section must include a detailed schedule of compliance.

1. Applicable Requirement.

Unit(s) ___________________ Applicable Requirement ____

2. Reason for Noncompliance. Briefly explain why the source will not be in compliance at time of permit issuance or not meet future-effective requirements on a timely basis.)

____

3. Narrative Description of how Source will Achieve Compliance. Briefly explain what you will do to bring the source into compliance with this requirement.

____

____

4. Consent Decrees or Administrative Orders. Please attach a copy of any judicial consent decrees or administrative orders for this applicable requirement.

5. Schedule of Compliance. Provide a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance, including a date for final compliance.

Remedial Measure or Action	Date to be Achieved

INSTRUCTIONS: Complete sections E, F, and G once for each facility.

F. SCHEDULE FOR SUBMISSION OF PROGRESS REPORTS

This section need only be prepared if you are required to submit one or more schedules of compliance (by completing section E) or if an applicable requirement requires you to submit a progress report. For most sources, the time frame for submittal of progress reports will be at least every 6 months. One progress report may include information on multiple schedules of compliance.

Contents of Progress Report (describe)

____

Report Starting date ____/____/___ Submittal Frequency _______________

Contents of Progress Report (describe)

____

Report Starting date ____/____/___ Submittal Frequency _______________

G. SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS

This section must be prepared by every source. Indicate how often you are required to submit compliance certifications after your permit is issued and when the first one will be submitted. Compliance certifications are required to be submitted at least once per year during the term of the permit.

Frequency of submittal _**Annual**______________ Beginning _**3 months after operations commence**___

H. COMPLIANCE STATUS FOR ENHANCED MONITORING AND COMPLIANCE CERTIFICATION REQUIREMENTS

This section of the form must be completed for every source. Indicate compliance status for the requirement as a whole (to certify compliance with the requirement as a whole, you must be able to certify compliance with each individual requirement that can be categorized under this designation).

Enhanced Monitoring Requirements: _**X**_ In Compliance ____ Not In Compliance

Compliance Certification Requirements: _**X**_ In Compliance ____ Not In Compliance

OMB Control No. 2060-0336

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR FEDERAL OPERATING PERMIT, 40 CFR PART 71

APPLICATION FORM CTAC - CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS BY RESPONSIBLE OFFICIAL

INSTRUCTIONS: One copy of this form must be completed, signed, and sent with each submission of documents (i.e., application forms, including any updates to applications), and for every document required by a part 71 permit (e.g., annual compliance certification, 6-month monitoring reports, progress reports, and notices required by the terms of a part 71 permit).

Responsible Official. Identify the responsible official and provide contact information.

Name: (Last) **Landry** (First) **David** (Middle) **C**

Title **Vice President Freeport-McMoRan Energy LLC**

Street or Post Office Box **1615 Poydras St**

City **New Orleans** State **LA** ZIP **70112** - ________

Telephone (**504**) **582** - **4000** Ext. __________ Facsimile (_______) _______ - _________

Certification of Truth, Accuracy and Completeness. The Responsible Official must sign this statement.

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) ____

Name (printed or typed) **David C. Landry** Date: ______ /______ /______

B

Emission Calculations

Aker Kvaerner	PREP. BY	AB			
	CHKD. BY	GGR			
	APPROVE	JPW			
SUMMARY OF AIR EMISSIONS	DATE	2/16/2004			
	ISSUE	Rev H			

CLIENT:Freeport-McMoRan Energy LLC	PROJECT No.:H0316900
LOCATION:Gulf of Mexico	PROCESS AREA:All
PLANT: Main Pass Energy Hub™	DOCUMENT No.:AK-P-0201
SERVICE:Emissions	EQUIPMENT NAME:N/A

SUMMARY OF AIR EMISSIONS

PT. NO.	EQUIPMENT NO.	EQUIPMENT NAME	Platform Location	Run Time		Power HP	ALL VALUES ARE IN SHORT TONS/YEAR							NOx	NH3
				hrs/day	days/yr		NOx	SO_2	CO	VOC	PM	NH3	BTX	ppm	ppm
001	CAE-2010 A	Gas Compressor [1]	2	24	350	11,640	74.43	1.54	59.61	17.03	17.08	-	-	38	-
002	CAE-2010 B	Gas Compressor [1]	2	24	200	11,640	42.53	0.88	34.06	9.73	9.76	-	-	38	-
009	ABH-1010	Oily Water Separator	1	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
010	ABH-2010	Oily Water Separator	2	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
012	ABH-1020	Waste Oil Storage Tank	1	5 Turnovers Per Year		-	-	-	-	0.0002	-	-	-	-	-
013	ABH-2020	Waste Oil Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.0002	-	-	-	-	-
016	ZZZ-1080	LP Flare Tip	1			-	4.37	0.00	23.78	9.00	32.14	-	-	-	-
017	ZZZ-1090	HP Flare Tip	1			-	4.85	0.00	26.37	9.98	35.44	-	-	-	-
020	ZZZ-1150	Diesel Crane (PP # 1 South)	1	8	170	300	6.32	0.42	1.36	0.61	0.45	-	-	-	-
021	ZZZ-1160	Diesel Crane (PP # 1 North)	1	8	170	175	3.69	0.24	0.79	0.35	0.26	-	-	-	-
022	ZZZ-2060	Diesel Crane (PP # 2 South)	2	8	170	175	3.69	0.24	0.79	0.35	0.26	-	-	-	-
023	ZZZ-2070	Diesel Crane (PP # 2 North)	2	8	170	175	3.69	0.24	0.79	0.35	0.26	-	-	-	-
028	NBA-2010 A	Glycol Regenerator [3]	2	24	150	-	1.62	0.06	1.36	32.44	0.12	-	4.87	-	-
029	NBA-2010 B	Glycol Regenerator [3]	2	24	150	-	1.62	0.06	1.36	32.44	0.12	-	4.87	-	-
031	KAH-2010	Pig Launcher	2			-	-	-	-	-	-	-	-	-	-
032	ABJ-1030	Hot Oil Expansion tank	1	5 Turnovers Per Year		-	-	-	-	0.0002	-	-	-	-	-
036	ZAN-1010 A	Gas Turbine Generator Package No.1 [2]	1	24	330	15,000	18.94	2.38	16.47	9.41	11.88	3.00	-	7	3
037	ZAN-1010 B	Gas Turbine Generator Package No.2 [2]	1	24	330	15,000	18.94	2.38	16.47	9.41	11.88	3.00	-	7	3
038	ZAN-1010 C	Gas Turbine Generator Package No.3 [2]	1	24	330	15,000	18.94	2.38	16.47	9.41	11.88	3.00	-	7	3
036/37/38	ZAN-1010A/B/C	Gas Turbine Generator Start-up Emissions	1	2	50	-	1.37	Nil	1.25	0.30	0.15	-	-	40	-
039	PBE-8010	Firewater Pump	B.S.# 8	2	52	1,500	1.87	0.63	0.43	0.05	0.05	-	-	-	-
040	PBE-9010	Firewater Pump	B.S.# 9	2	52	1,500	1.87	0.63	0.43	0.05	0.05	-	-	-	-
041	ABJ-8010	Diesel Day Tank for PBE-8010	B.S.# 8	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
042	ABJ-9010	Diesel Day Tank for PBE-9010	B.S.# 9	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
043	ZZZ-1120	Emergency Power Generator	1	2	52	4000	4.99	1.68	1.14	0.15	0.15	-	-	-	-
044	ABJ-1010	Emergency Power Generator Day Tank	1	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
047	No Equipment No.	Emergency Power Generator	Soft Berth System™	2	52	2000	2.50	0.84	0.57	0.07	0.07	-	-	-	-
048	No Equipment No.	Emergency Power Generator Day Tank	Soft Berth System™	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
052	No Equipment No.	Emergency Power Generator	Soft Berth System™	2	52	2000	2.50	0.84	0.57	0.07	0.07	-	-	-	-
053	No Equipment No.	Emergency Power Generator Day Tank	Soft Berth System™	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
056	ZZZ-2030	HP Flare Tip	2				3.74	0.00	20.33	7.69	9.62	-	-	-	-
057	ABJ-1020 A	Diesel Oil Storage Tank	1	5 Turnovers Per Year		-	-	-	-	0.0011	-	-	-	-	-
058	ABJ-1020 B	Diesel Oil Storage Tank	1	5 Turnovers Per Year		-	-	-	-	0.0011	-	-	-	-	-
059	ABJ-2020 A	Diesel Oil Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.0011	-	-	-	-	-
060	ABJ-2020 B	Diesel Oil Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.0011	-	-	-	-	-
065	ZZZ-9010	Emergency Power Generator	B.S.# 9	2	52	670	0.84	0.28	0.19	0.025	0.02	-	-	-	-
066	ABJ-9030	Emergency Power Generator Day Tank	B.S.# 9	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
067	ABH-9010	Oily Water Separator	B.S.# 9	5 Turnovers Per Year		-	-	-	-	0.0001	-	-	-	-	-
068	ABH-9020	Waste Oil Tank	B.S.# 9	5 Turnovers Per Year		-	-	-	-	0.00003	-	-	-	-	-
069	ABH-8010	Oily Water Separator	B.S.# 8	5 Turnovers Per Year		-	-	-	-	0.0001	-	-	-	-	-
070	ABH-8020	Waste Oil Tank	B.S.# 8	5 Turnovers Per Year		-	-	-	-	0.00003	-	-	-	-	-
071	ABH-7010	Oily Water Separator	B.S.Y-7	5 Turnovers Per Year		-	-	-	-	0.0001	-	-	-	-	-
072	ABH-7020	Waste Oil Tank	B.S.Y-7	5 Turnovers Per Year		-	-	-	-	0.00003	-	-	-	-	-

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		ISSUE	Rev H
CLIENT:Freeport-McMoRan Energy LLC	PROJECT No.:H0316900		
LOCATION:Gulf of Mexico	PROCESS AREA:All		
PLANT: Main Pass Energy Hub[TM]	DOCUMENT No.:AK-P-0201		
SERVICE:Emissions	EQUIPMENT NAME:N/A		

SUMMARY OF AIR EMISSIONS

PT. NO.	EQUIPMENT NO.	EQUIPMENT NAME	Platform Location	Run Time		Power HP	ALL VALUES ARE IN SHORT TONS/YEAR							NOx	NH3
				hrs/day	days/yr		NOx	SO_2	CO	VOC	PM	NH3	BTX	ppm	ppm
073	KAH-2020	Pig Launcher	2			-	-	-	-	(6)	-	-	-	-	-
074	KAH-2030	Pig Launcher	2			-	-	-	-	(6)	-	-	-	-	-
075	KAH-1010	Liquid Pig Launcher	1			-	-	-	-	(6)	-	-	-	-	-
076	ABJ-2040	Methanol Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.1186	-	-	-	-	-
077	ABJ-2010A	Glycol Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.0	-	-	-	-	-
078	ABJ-2010B	Glycol Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.0	-	-	-	-	-
079	ABJ-2010C	Glycol Storage Tank	2	5 Turnovers Per Year		-	-	-	-	0.0	-	-	-	-	-
080	No Equipment No.	Fork Truck # 1	All	8	365	100	4.51	0.30	0.97	0.43	0.32	-	-	-	-
081	No Equipment No.	Fork Truck # 2	All	8	365	60	2.71	0.18	0.58	0.26	0.19	-	-	-	-
082	Gas Cond. Plant	Fugitives (Natural gas liquids & Hot oil)	1	-	-	-	-	-	-	2.75	-	-	-	-	-
083	ABJ-1020A	Diesel Storage Tank (Crane Pedestal)	1	-	-	-	-	-	-	0.0011	-	-	-	-	-
084	ABJ-1020B	Diesel Storage Tank (Crane Pedestal)	1	-	-	-	-	-	-	0.0011	-	-	-	-	-
085	ABJ-2020A	Diesel Storage Tank (Crane Pedestal)	2	-	-	-	-	-	-	0.0011	-	-	-	-	-
086	ABJ-2020B	Diesel Storage Tank (Crane Pedestal)	2	-	-	-	-	-	-	0.0011	-	-	-	-	-
087		Diesel Crane A (P3)	3	8	170	175	3.69	0.24	0.79	0.35	0.26	-	-	-	-
088		Diesel Crane B (P3)	3	8	170	175	3.69	0.24	0.79	0.35	0.26	-	-	-	-
089		Generator for Crane A&B (P4)	4	4	26	310	0.50	0.03	0.11	0.05	0.04	-	-	-	-
090		Diesel Storage Tank (P3 Crane Pedestal)	3	-	-	-	-	-	-	0.0011	-	-	-	-	-
091		Diesel Storage Tank (P3 Crane Pedestal)	3	-	-	-	-	-	-	0.0011	-	-	-	-	-
092		Diesel Storage Tank (P4 Generator)	4	-	-	-	-	-	-	0.0003	-	-	-	-	-
093		Oily Water Separator	3	5 Turnovers Per Year		-	-	-	-	0.0003	-	-	-	-	-
094		Waste Oil Tank	3	5 Turnovers Per Year		-	-	-	-	0.0002	-	-	-	-	-
095		Oily Water Separator	4	5 Turnovers Per Year		-	-	-	-	0.0001	-	-	-	-	-
096		Waste Oil Tank	4	5 Turnovers Per Year		-	-	-	-	0.0000	-	-	-	-	-
Total (tons/year)							238.40	16.73	227.88	153.26	142.80	9.00	9.74		

Notes:
1. - Emissions based on injection and withdrawal cycles for the Caverns.
2. - Includes turbine exhaust, lube oil tank and hydraulic oil tank vents
3. - Includes gas fired Regenerator and flash tank vents
4. - Emissions from Temporary Leaching Power Generator and Diesel Storage Tank is covered under the Construction Emissions and is not included in this list
5. - To account for the requirement store gas from external source, the following has been assumed
   a. For calculating the Glycol regenerator emissions (Point # 025 &026): 20% of the gas coming from the caverns originated from the pipeline.
   b. For fuel gas related emissions (Point # 001,002,028,029,036,037 & 038): 33% of the Fuel gas comes from the caverns.
6. - Pig launchers should not generate any emissions.

Emission Calculations for Pipeline Gas Recompressor Turbine

Emission Source Numbers 001 - 002

Reference : Vendor Data from SOLAR Turbines on MARS 100 - 15000s

Parameter	Units	Gas Compressor Turbine No.1	Gas Compressor Turbine No.2
Emission Source No.		001	002
Load (Net)	Hp	11640	11640
Run Time	Hrs/Day	24	24
	Days/Year	350	200
Fuel Flow	MMBTU/hr	97.06	97.06
	MMSCF/hr	0.09	0.09
	lb/hr	4626	4626
Inlet Air Flow	lb/hr	280265	280265
Exhaust Air Flow	lb/hr	283870	283870
	SCF/hr	3852521	3852521
NOx Emissions (assumed as NO2)	ppmv	38	38
	SCF/hr	146.40	146.40
	lb/hr	17.72	17.72
	Tons/Year	74	42.5
CO Emissions	ppmv	50	50
	SCF/hr	192.63	192.63
	lb/hr	14.19	14.19
	Tons/Year	60	34
VOC (assumed as methane)	ppmv	25	25
	SCF/hr	96.31	96.31
	lb/hr	4.06	4.06
	Tons/Year	17	9.7
PM_{10}	lb/hr	4.07	4.07
	Tons/Year	17.08	9.76

(LHV of fuel gas =1046.4Btu/scf)

Fuel from alternative source

Parameter	Units	Turbine No.1	Turbine No.2
Emission Source No.		001	002
Fuel Flow	MMSCF/year	51.42	29.39
Qty of sulphur tons/year		1.54	0.88

Basis for SO_2 Calculations

0.029916 Tons of SO_2 per MMSCF of alternative fuel gas
0.029916

Alternative Fuel has 200 grains / 1000 SCF of sulphur
and 10 grains / 1000scf of H_2S (data from SONAT gas analysis)

Sulfur dioxide (SO_2) Contribution calculations

From sulphur :

Assuming complete combustion and all Sulphur is converted to SO_2
32 grains of sulphur generate 64 grains of SO_2
200 grains of sulphur generate 400 grains of SO_2

From H_2S :

Assuming complete combustion and all H_2S is converted to SO_2
34 grains of H_2S generate 64 grains of SO_2
10 grains of sulphur generate 18.8 grains of SO_2

Total grains of SO_2 per 1000 SCF = 400+18.8 = 418.8

1 grain = 7.14 E-8 Tons

Qty of SO_2 per MMSCF = (418.8 X 7.14 E -8)X1000 = 0.0299 Tons

Calculations for exhaust duct velocity

Exhaust Temp (^oF)	954	
Exhaust duct dimensions = 7.5 ft X 7.5 ft		
Exhaust flow (lb/hr)	283870	
Actual flow	10,475,895	ACF/hr
Velocity	51.7	ft/sec
Equivalent Dia	101.58	inches

Emission Calculations for Storage Tanks

(For emission point nos. refer table below)

Methodology Adopted

The emissions from each of these sources is calculated as per the EPA Guideline (AP-42) and EPA programmed TANKS 4.0

The contents of these tanks were assumed as Diesel, except when noted (e.g. Methanol , Glycol etc)

Table for VOC Emissions

Emission Source No.	Equipment	Vapor Press psia	Capacity (Gal)	Emissions lb/ year	Emissions Tons/ year
067	Oily Water Separators		500	0.17	0.0001
069	Oily Water Separators		500	0.17	0.0001
071	Oily Water Separators		500	0.17	0.0001
009	Oily Water Separators		2,000	0.56	0.0003
010	Oily Water Separators		2,000	0.56	0.0003
068	Waste Oil Storage		100	0.06	0.0000
012	Waste Oil Storage		900	0.38	0.0002
013	Waste Oil Storage		900	0.38	0.0002
070	Waste Oil Storage		100	0.06	0.0000
072	Waste Oil Storage		100	0.06	0.0000
076	Methanol Storage Tank	4.631	15,000	237.13	0.1186
032	Hot Oil Expansion tank		15,000	0.30	0.0002
077	Glycol Storage Tank	0.000193	935	0.00	0.0000
078	Glycol Storage Tank	0.000193	935	0.00	0.0000
079	Glycol Storage Tank	0.000193	935	0.00	0.0000
041	Diesel day Tank for Firewater		1,300	0.59	0.0003
042	Diesel day Tank for Firewater		1,300	0.59	0.0003
044	EPG Day Tank		1,300	0.59	0.0003
046	Diesel Day Tank for Fire Water Pump (Soft Berth)		1,300	0.59	0.0003
048	EPG Day Tank (Soft Berth)		1,300	0.59	0.0003
051	Diesel Day Tank for Fire Water Pump (Soft Berth)		1,300	0.59	0.0003
053	EPG Day Tank (Soft Berth)		1,300	0.59	0.0003
083	Diesel Storage Tank (Crane Pedestal)		7,500	2.28	0.0011
084	Diesel Storage Tank (Crane Pedestal)		7,500	2.28	0.0011
085	Diesel Storage Tank (Crane Pedestal)		7,500	2.28	0.0011
086	Diesel Storage Tank (Crane Pedestal)		7,500	2.28	0.0011
090	Diesel Storage Tank (P3 Crane Pedestal)		7,500	2.28	0.0011
091	Diesel Storage Tank (P3 Crane Pedestal)		7,500	2.28	0.0011
092	Diesel Storage Tank (P4 Generator)		1,300	0.59	0.0003
093	Oily Water Separators		2,000	0.56	0.0003
094	Waste Oil Storage		900	0.38	0.0002
095	Oily Water Separators		500	0.17	0.0001
096	Waste Oil Storage		100	0.06	0.0000
061	Diesel Storage Tank For Leaching		1,500	0.69	0.0003
066	EPG Day Tank (quarters)		1,300	0.59	0.0003
			Total lb/year	252.74	
			Total T / Year	0.126	

Emission Calculations for Power Generation Turbine
Emission Source Numbers 036 ,037 & 038

Basis: The Emissions calculations are based on Exhaust data from GE LM2500 .
Although each Turbine is to be operating at 66% of the capacity, data
for 75% output is considered for design (Case no. 319 of vendor's calculation).

Parameter	Units	Power Gen Turbine Turbine No.1	Power Gen Turbine Turbine No.2	Power Gen Turbine Turbine No.3
Emission Source No.		036	037	038
Load (Net)	MW	11.2	11.2	11.2
Run Time	Hrs/Day	24	24	24
	Days/Year	330	330	330
Fuel Flow	MMBTU/hr	159.2	159.2	159.2
	MMSCF/hr	0.15	0.15	0.15
	lb/hr	7587	7587	7587
Inlet Air Flow	lb/hr	NA	NA	NA
Exhaust Air Flow	lb/hr	415927	415927	415927
	SCF/hr	5644724	5644724	5644724
NOx Emissions	ppmv	7	7	7
(assumed as NO_2)	SCF/hr	39.51	39.51	39.51
	lb/hr	4.78	4.78	4.78
	Tons/Year	19	19	19
CO Emissions	ppmv	10	10	10
	SCF/hr	56.45	56.45	56.45
	lb/hr	4.16	4.16	4.16
	Tons/Year	16	16	16
VOC	ppmv	10	10	10
(assumed as methane)	SCF/hr	56.45	56.45	56.45
	lb/hr	2.38	2.38	2.38
	Tons/Year	9	9	9
Ammonia	ppmv	3	3	3
(assumed as NH_3)	SCF/hr	16.93	16.93	16.93
	lb/hr	0.76	0.76	0.76
	Tons/Year	3.00	3	3
PM_{10}	lb/hr	3.00	3.00	3.00
	Tons/Year	11.88	11.88	11.88

Emission Calculations for Start-up for Power Generation Turbines
Emission Source Numbers 036 ,037 & 038

Basis: The Emissions calculations are based on Exhaust data from GE LM2500 .
Although each Turbine is to be operating at 66% of the capacity, data
for 75% output is considered for design (Case no. 319 of vendor's calculation).

Parameter	Units	Power Gen Turbine Turbine No.1
Emission Source No.		036/037/038
Load (Net)	MW	11.2
Run Time	Hrs/Day	2
	Days/Year	50
Fuel Flow	MMBTU/hr	159.2
	MMSCF/hr	0.14
	lb/hr	6868
Inlet Air Flow	lb/hr	NA
Exhaust Air Flow	lb/hr	415927
	SCF/hr	5644724
NOx Emissions	ppmv	40
(assumed as NO_2)	SCF/hr	225.79
	lb/hr	27.33
	Tons/Year	1.37
CO Emissions	ppmv	60
	SCF/hr	338.68
	lb/hr	24.96
	Tons/Year	1.25
VOC	ppmv	25
(assumed as methane)	SCF/hr	141.12
	lb/hr	5.94
	Tons/Year	0.30
PM_{10}	lb/hr	3.00
	Tons/Year	0.15

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Alternative fuel for Gas turbine
Basis : 6.6% of fuel gas is contributed by alternative fuel gas source(SONAT gas)

Parameter	Units	Power Gen Turbine No.1	Power Gen Turbine No.2	Power Gen Turbine No.3
Emission Source No.		036	037	038
Fuel Flow	MMSCF/year	79.53	79.53	79.53
Qty of sulphur tons/year		2.38	2.38	2.38

Basis for SO_2 calculations

Basis: 0.0299 Tons of SO_2 per MMSCF of alternative fuel gas
0.0299
Alternative Fuel has 200 grains / 1000 SCF of sulphur
and 10 grains / 1000scf of H2S

Sulfur dioxide (SO_2) Contribution calculations

From sulphur :

Assuming complete combustion and all Sulphur is converted to SO_2
32 grains of sulphur generate 64 grains of SO_2
200 grains of sulphur generate 400 grains of SO_2

From H_2S :

Assuming complete combustion and all H_2S is converted to SO_2
34 grains of H_2S generate 64 grains of SO_2
10 grains of sulphur generate 18.8 grains of SO_2

Total grains of SO_2 per 1000 SCF = 400+18.8 = 418.8

1 grain = 7.14 E-8 Tons

Qty of SO_2 per MMSCF = (418.8 X 7.14 E -8)X1000 = 0.0299 Tons

Calculations for exhaust duct velocity

Exhaust Temp (°F)	520	
Exhaust duct dia	9.0	ft
Exhaust flow (lb/hr)	415927	
Actual flow	10,638,133	ACF/hr
Velocity	46.5	ft/sec
Equivalent Dia	108	inches

EMISSION SOURCE : Cranes 300Hp

EMISSIONS FROM CRANES

Reference: EPA Publication AP-42,
Section 3.3 -Gasoline and Diesel Industrial Engines

DIESEL Under 600 Hp

Emission Source No.: 20

Input the following parameters:

1. Engine horsepower	Hp =	300	Hp
2. Engine usage	U =	26.1538	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		2.86	Bbl per operating day
	U =	8	hours per operating day

The following emissions are based on the emission factors from Table 3.3-1 of AP-42 (Note 1)

includes aldehydes in VOC

DIESEL

		One Hour Peak Flow			Annual Average		
Nitrogen Oxides	NOx =	0.003	lb/sec	12648.0	lbs/yr	6.324	Tons/yr
Carbon Monoxides	CO =	0.001	lb/sec	2725.4	lbs/yr	1.363	Tons/yr
Sulfur Oxides	SO_2 =	0.0002	lb/sec	836.4	lbs/yr	0.418	Tons/yr
Volatile Organic Compounds	VOC =	0.00025	lb/sec	1214.7	lbs/yr	0.607	Tons/yr
Particulate Matter	PM =	0.0002	lb/sec	897.6	lbs/yr	0.449	Tons/yr

Note:

1. Emission factors for diesel-powered industrial equipment:

NOx:	0.031	lb/Hp-Hr
CO:	0.00668	lb/Hp-Hr
SO_2:	0.00205	lb/Hp-Hr
VOC:	0.00298	lb/Hp-Hr (Includes emissions from Exhaust, Aldehydes and crank case)
PM:	0.0022	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.0304442	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

EMISSION SOURCE : Cranes 175Hp

EMISSIONS FROM CRANES

Reference: EPA Publication AP-42,
Section 3.3 -Gasoline and Diesel Industrial Engines

DIESEL Under 600 Hp

Emission Source No.: 021, 022, 023, 087, 088

Input the following parameters:

1. Engine horsepower	Hp =	175	Hp
2. Engine usage	U =	26.1538	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		1.67	Bbl per operating day
	U =	8	hours per operating day

The following emissions are based on the emission factors from Table 3.3-1 of AP-42 (Note 1)
includes aldehydes in VOC

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.002	lb/sec	7378.0	lbs/yr	3.689	Tons/yr
Carbon Monoxides	CO =	0.000	lb/sec	1589.8	lbs/yr	0.795	Tons/yr
Sulfur Oxides	SO_2 =	0.0001	lb/sec	487.9	lbs/yr	0.244	Tons/yr
Volatile Organic Compounds	VOC =	0.00014	lb/sec	708.5	lbs/yr	0.354	Tons/yr
Particulate Matter	PM =	0.0001	lb/sec	523.6	lbs/yr	0.262	Tons/yr

Note:
1. Emission factors for diesel-powered industrial equipment:

NOx:	0.031	lb/Hp-Hr
CO:	0.00668	lb/Hp-Hr
SO_2:	0.00205	lb/Hp-Hr
VOC:	0.00298	lb/Hp-Hr (Includes emissions from Exhaust, Aldehydes and crank case)
PM:	0.0022	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.0304442	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

EMISSION SOURCE : P4 Generator 310 Hp

EMISSIONS FROM P4 GENERATOR

Reference: EPA Publication AP-42,
Section 3.3 -Gasoline and Diesel Industrial Engines

DIESEL Under 600 Hp

Emission Source No.: 89

Input the following parameters:

1. Engine horsepower	Hp =	310	Hp
2. Engine usage	U =	2	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		1.48	Bbl per operating day
	U =	4	hours per operating day

The following emissions are based on the emission factors from Table 3.3-1 of AP-42 (Note 1)
includes aldehydes in VOC

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.003	lb/sec	999.4	lbs/yr	0.500	Tons/yr
Carbon Monoxides	CO =	0.001	lb/sec	215.4	lbs/yr	0.108	Tons/yr
Sulfur Oxides	SO_2 =	0.0002	lb/sec	66.1	lbs/yr	0.033	Tons/yr
Volatile Organic Compounds	VOC =	0.00026	lb/sec	96.0	lbs/yr	0.048	Tons/yr
Particulate Matter	PM =	0.0002	lb/sec	70.9	lbs/yr	0.035	Tons/yr

Note:
1. Emission factors for diesel-powered industrial equipment:

NOx:	0.031	lb/Hp-Hr
CO:	0.00668	lb/Hp-Hr
SO_2:	0.00205	lb/Hp-Hr
VOC:	0.00298	lb/Hp-Hr (Includes emissions from Exhaust, Aldehydes and crank case)
PM:	0.0022	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.0304442	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

EMISSION SOURCE : Fire water Pumps

EMISSIONS FROM FIRE WATER PUMPS

Reference: EPA Publication AP-42,
Section 3.4 -Large Stationary Diesel Industrial Engines

DIESEL OVER 600 Hp

Emission Source No.: 039, 040

Input the following parameters:

1. Engine horsepower	Hp =	1,500	Hp
2. Engine usage	U =	2	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		3.57	Bbl per operating day
	U =	2	hours per operating day

The following emissions are based on the emission factors from Table 3.4-1 of AP-42 (Note 1)
includes aldehydes in VOC

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.010	lb/sec	3744.0	lbs/yr	1.872	Tons/yr
Carbon Monoxides	CO =	0.002	lb/sec	858.0	lbs/yr	0.429	Tons/yr
Sulfur Oxides	SO_2 =	0.0034	lb/sec	1262.0	lbs/yr	0.631	Tons/yr
Volatile Organic Compounds	VOC =	0.00029	lb/sec	110.0	lbs/yr	0.055	Tons/yr
Particulate Matter	PM =	0.0003	lb/sec	109.2	lbs/yr	0.055	Tons/yr

Note:
1. Emission factors for diesel-powered industrial equipment:

NOx:	0.024	lb/Hp-Hr
CO:	0.0055	lb/Hp-Hr
SO_2:	0.00809	lb/Hp-Hr
VOC:	0.00071	lb/Hp-Hr (As CH4)
PM:	0.0007	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.03044424	lb/ft3		
Exhaust gas flow =	0	CFM		
Stack diameter = 5"	5	inches equivalent	5	ID
Stack area	0.13635	sq ft		
Velocity	0	ft/sec		

EMISSION SOURCE : Emergency Power generators

EMISSIONS FROM Emergency Power generation (Soft Berth)

Reference: EPA Publication AP-42,
Section 3.4 -Large Stationary Diesel Industrial Engines

DIESEL OVER 600 Hp

Emission Source No.: 047, 052

Input the following parameters:

1. Engine horsepower	Hp =	2,000	Hp
2. Engine usage	U =	2	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		4.76	Bbl per operating day
	U =	2	hours per operating day

The following emissions are based on the emission factors from Table 3.4-1 of AP-42 (Note 1)

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.013	lb/sec	4992.0	lbs/yr	2.496	Tons/yr
Carbon Monoxides	CO =	0.003	lb/sec	1144.0	lbs/yr	0.572	Tons/yr
Sulfur Oxides	SO2 =	0.0045	lb/sec	1682.7	lbs/yr	0.841	Tons/yr
Volatile Organic Compounds	VOC =	0.00039	lb/sec	146.6	lbs/yr	0.073	Tons/yr
Particulate Matter	PM =	0.0004	lb/sec	145.6	lbs/yr	0.073	Tons/yr

Note:

1. Emission factors for diesel-powered industrial equipment:

NOx:	0.024	lb/Hp-Hr
CO:	0.0055	lb/Hp-Hr
SO_2:	0.00809	lb/Hp-Hr
VOC:	0.00071	lb/Hp-Hr (As CH4)
PM:	0.0007	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800F) =	0.0304442	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

EMISSIONS FROM Emergency Power generation Plant

Reference: EPA Publication AP-42,
Section 3.4 -Large Stationary Diesel Industrial Engines

DIESEL OVER 600 Hp

Emission Source No.: 043

Input the following parameters:

1. Engine horsepower	Hp =	4,000	Hp
2. Engine usage	U =	2	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		9.52	Bbl per operating day
	U =	2	hours per operating day

The following emissions are based on the emission factors from Table 3.4-1 of AP-42 (Note 1)

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.027	lb/sec	9984.0	lbs/yr	4.992	Tons/yr
Carbon Monoxides	CO =	0.006	lb/sec	2288.0	lbs/yr	1.144	Tons/yr
Sulfur Oxides	SO_2 =	0.0090	lb/sec	3365.4	lbs/yr	1.683	Tons/yr
Volatile Organic Compounds	VOC =	0.00078	lb/sec	293.3	lbs/yr	0.147	Tons/yr
Particulate Matter	PM =	0.0008	lb/sec	291.2	lbs/yr	0.146	Tons/yr

Note:
1. Emission factors for diesel-powered industrial equipment:

NOx:	0.024	lb/Hp-Hr
CO:	0.0055	lb/Hp-Hr
SO_2:	0.00809	lb/Hp-Hr
VOC:	0.00071	lb/Hp-Hr (As CH4)
PM:	0.0007	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.0304442	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

Calculations for Glycol Regeneration Emissions

Emission Point No. - 028, 029

Heat Duty (MMBTU/hr) =	8
Fuel Gas LHV(BTU/SCF) =	1046

Gas required =	0.008997863	MMSCF/hr
	447.53	lb/hr

Emissions calculated as per Table 1.4-2 (EPA Guideline AP-42)

	Emissions as per EPA Guidelines	One hour Peak Flow	Annual Average
	lb/ MMSCF	lb/hr	Tons/Year
NOx	100	0.90	1.62
SO_2	3.9	0.04	0.06
CO	84	0.76	1.36
VOC	5.5	18.02	32.44
PM	7.6	0.07	0.12

Glycol Vent VOC Calculations per Train	
	lb/hr
Propane	15.8
i-Butane	1.14
n-Butane	0.99
i- Pentane	0
n-Pentane	0.04
Total for one train	17.97

Basis for SO_2 calculations

Alternative Fuel has 200 grains / 1000 SCF of sulphur
and 10 grains / 1000scf of H_2S

Sulfur dioxide (SO_2) Contribution calculations

From sulphur :

Assuming complete combustion and all Sulphur is converted to SO_2
32 grains of sulphur generate 64 grains of SO_2

200 grains of sulphur generate 400 grains of SO_2

From H_2S :

Assuming complete combustion and all H_2S is converted to SO_2
34 grains of H_2S generate 64 grains of SO_2
10 grains of sulphur generate 18.8 grains of SO_2

Total grains of SO_2 per 1000 SCF = 400+18.8 = 418.8

1 grain = 7.14 E-8 Tons

Qty of SO_2 per MMSCF = (418.8 X 7.14 E -8)X1000 = 0.0299 Tons per MMSCF

Qty of SO_2 per MMSCF = 0.0299 X 2000 lb per MMSCF
= 59.8 lb/MMSCF

Contribution of SO_2 = 59.8 X 0.066 = 3.94

EMISSION CALCULATIONS FOR FLARE

Emission Point No. - 016, 017, 056

Calculations for Pilot Gas

Emissions calculated as per Table13.5-1 (EPA Guideline AP-42)

Gas required for 500 MMscfd Flare (two pilots of 45 SCFH each) =	1.12 MMSCF per Year	Heat Duty (LHV , 1046 Btu/Scf) =	1171.52 MMBTU/year
Gas required for 750 MMscfd Flare (thee pilots of 45 SCFH each) =	1.12 MMSCF per Year	Heat Duty (LHV , 1046 Btu/Scf) =	1171.52 MMBTU/year
Gas required for 20 MMscfd Flare (one pilot of 45 SCFH) =	0.36 MMSCF per Year	Heat Duty (LHV , 1046 Btu/Scf) =	376.56 MMBTU/year

Emissions calculated as per Table13.5-1 (EPA Guideline AP-42)

	Emission Point	017	056	016
	Emissions as per EPA Guidelines	Annual Average For 500 MMSCFD Flare	Annual Average For 750 MMSCFD Flare	Annual Average For 20 MMSCFD Flare
	lb/ MMBTU	Tons/Year	Tons/Year	Tons/Year
NOx	0.07	0.040	0.040	0.013
SO_2	0.00	0.000	0.000	0.000
CO	0.37	0.217	0.217	0.070
VOC	0.14	0.082	0.082	0.026
PM	0.50	0.094	0.094	0.094

Calculations for Purge Gas

Emission Point No. - 016, 017, 056

Basis: Natural gas purged at the rate of (ft/s) 0.1

Purge Gas for 500 MMscfd Flare, of header size	24	10.17	MMSCF/ year	Heat Duty (LHV, 1046 Btu/Scf) =	10638.69	MMBTU/year
Ambient Temperature (^oF) =	60					
Flare header pressure (psig) =	2					
Purge Gas for 750 MMscfd Flare, of header size	24	10.17	MMSCF/ year	Heat Duty (LHV, 1046 Btu/Scf) =	10638.69	MMBTU/year
Ambient Temperature (^oF) =	60					
Flare header pressure (psig) =	2					
Purge Gas for 20 MMscfd Flare, of header size	12	2.54	MMSCF/ year	Heat Duty (LHV, 1046 Btu/Scf) =	2659.67	MMBTU/year
Ambient Temperature (^oF) =	60					
Flare header pressure (psig) =	2					

Emissions calculated as per Table13.5-1 (EPA Guideline AP-42)

	Emission Point	017	056	016
	Emissions as per EPA Guidelines	Annual Average For 500 MMSCFD Flare	Annual Average For 750 MMSCFD Flare	Annual Average For 20 MMSCFD Flare
	lb/ MMBTU	Tons/Year	Tons/Year	Tons/Year
NOx	0.07	0.362	0.362	0.090
SO_2	0.00	0.000	0.000	0.000
CO	0.37	1.968	1.968	0.492
VOC	0.14	0.745	0.745	0.186
PM	0.50	2.660	2.660	0.665

Calculations for Flaring under abnormal conditions

Emission Point No.	Flare Capacity	Hrs / day	Days/ year	Fuel LHV	NOx	SO2	CO	VOC	PM
	(MMSCFD)			BTU	Tons/year	Tons/year	Tons/year	Tons/year	Tons/year
017	500	2	3	1046	4.45	0.00	24.19	9.15	32.69
056	750	1	3	1046	3.33	0.00	18.14	6.86	24.52
016	20	24	6	1046	4.27	0.00	23.22	8.79	31.38

EMISSION SOURCE : Fork Truck 100 Hp

EMISSIONS FROM FORK TRUCK #1

Reference: EPA Publication AP-42,
Section 3.3 -Gasoline and Diesel Industrial Engines

DIESEL Under 600 Hp

Emission Source No.: 080

Input the following parameters:

1. Engine horsepower	Hp =	100	Hp
2. Engine usage	U =	56.00	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		0.95	Bbl per operating day
	U =	8	hours per operating day

The following emissions are based on the emission factors from Table 3.3-1 of AP-42 (Note 1)
includes aldehydes in VOC

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.001	lb/sec	9027.2	lbs/yr	4.514	Tons/yr
Carbon Monoxides	CO =	0.000	lb/sec	1945.2	lbs/yr	0.973	Tons/yr
Sulfur Oxides	SO_2 =	0.0001	lb/sec	597.0	lbs/yr	0.298	Tons/yr
Volatile Organic Compounds	VOC =	0.00008	lb/sec	866.9	lbs/yr	0.433	Tons/yr
Particulate Matter	PM =	0.0001	lb/sec	640.6	lbs/yr	0.320	Tons/yr

Note:
1. Emission factors for diesel-powered industrial equipment:

NOx:	0.031	lb/Hp-Hr
CO:	0.00668	lb/Hp-Hr
SO_2:	0.00205	lb/Hp-Hr
VOC:	0.00298	lb/Hp-Hr (Includes emissions from Exhaust, Aldehydes and crank case)
PM:	0.0022	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.03044424	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

EMISSION SOURCE : Fork Truck 60 Hp

EMISSIONS FROM FORK TRUCK # 2

Reference: EPA Publication AP-42,
Section 3.3 -Gasoline and Diesel Industrial Engines

DIESEL Under 600 Hp

Emission Source No.: 081

Input the following parameters:

1. Engine horsepower	Hp =	60	Hp
2. Engine usage	U =	56.00	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		0.57	Bbl per operating day
	U =	8	hours per operating day

The following emissions are based on the emission factors from Table 3.3-1 of AP-42 (Note 1)

includes aldehydes in VOC

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.001	lb/sec	5416.3	lbs/yr	2.708	Tons/yr
Carbon Monoxides	CO =	0.000	lb/sec	1167.1	lbs/yr	0.584	Tons/yr
Sulfur Oxides	SO_2 =	0.0000	lb/sec	358.2	lbs/yr	0.179	Tons/yr
Volatile Organic Compounds	VOC =	0.00005	lb/sec	520.2	lbs/yr	0.260	Tons/yr
Particulate Matter	PM =	0.0000	lb/sec	384.4	lbs/yr	0.192	Tons/yr

Note:

1. Emission factors for diesel-powered industrial equipment:

NOx:	0.031	lb/Hp-Hr
CO:	0.00668	lb/Hp-Hr
SO_2:	0.00205	lb/Hp-Hr
VOC:	0.00298	lb/Hp-Hr (Includes emissions from Exhaust, Aldehydes and crank case)
PM:	0.0022	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800°F) =	0.03044424	lb/ft3	
Exhaust gas flow =	0	CFM	
Stack diameter = 5"	5	inches equivalent	5 ID
Stack area	0.13635	sq ft	
Velocity	0	ft/sec	

FUGITIVE EMISSIONS , Emission point no. - 082

Basis :Fugitive emissions are considered from the following sources
1. From the NGL end of Gas Conditioning Plant (light liquid)
2. Hot oil system (heavy liquid)
3. Diesel Oil system (heavy liquid)

Ethane and Methane are not included in VOC. To account for it , NGL Fugitives are multiplied by a factor of 0.3939
(which is the mass fraction of Non C_1& C_2 , heavies components in NGL)
Hot oil fugitives are considered as "heavy liquid"
NGL Fugitives are considered as "light liquid"

Reference: EPA AP-42 Table 2-4 "Oil and Gas Production Operations Average Emission factors"

Equipment Service: Fugitives
Emission Source No.: N/A

A = Gas
B = Light Liquid
C = Heavy Liquid

Input the following parameters:

		A	B	C	A	B	C
	Valves per item	Gas	Light liquid	Heavy liquid	Valves		
1. Pressure Relief Valves	3		3	3	0	9	9
2. Flow transmitters	6		6	1	0	36	6
3. Storage Tanks	13		2	1	0	26	13
4. Pump	11	-	6	3	-	66	33
5. Compressors	11	0	-	-	0	-	-
6. Custody Meters	14		0		0	0	0
7. Vertical Vessel	23				0	0	0
8. Horizontal Vessel	21		0	0	0	0	0
9. Heat Exchanger - Heated Side	8		2	3	0	16	24
10. Heat Exchanger -Cooling Side	17			4	0	0	68
11. Loading or Unloading Point	4	0	0	1	0	0	4
12. Sample Connections			2	1			
Total					0	60.3	157

The following fugitive emission factors are based on
EPA AP-42 Table 2-4 "Oil and Gas Production Operations Average Emission factors"

	Lbs/hr A	B	C	**Annual Average**	
Valves	0.00	0.33	0.00	1.5	Tons/yr
pumps	0.00	0.17	0.00	0.8	Tons/yr
Compressors	0.00	0.00	0.00	0.0	Tons/yr
Pressure Relief Valves	0.00	0.00	0.00	0.0	Tons/yr
Flanges	0.00	0.06	0.00	0.3	Tons/yr
Open Ended Lines	0.00	0.05	0.01	0.3	Tons/yr
Sample Connections	0.00	0.001	0.00002	0.004	Tons/yr
TOTAL				2.75	Tons/yr

	Lbs/hr A	B	C
Valves	0.00992	0.00551	0.00002
pumps	0.00529	0.02866	0.00000
Compressors	0.01940	0.01653	0.00007
Pressure Relief Valves	0.00992	0.00551	0.00002
Flanges	0.00086	0.00024	0.00000
Open Ended Lines	0.00441	0.00309	0.00031
Sample Connections	0.00044	0.00046	0.00002

EMISSION SOURCE : Emergency Power Generators

EMISSIONS FROM Emergency Power generation (Quarters)

Reference: EPA Publication AP-42,
Section 3.4 -Large Stationary Diesel Industrial Engines

DIESEL OVER 600 Hp

Emission Source No.: 065

Input the following parameters:

1. Engine horsepower	Hp =	670	Hp
2. Engine usage	U =	2	hrs/wk
3. Gallons / Hp / Hr		0.05	gallons / Hp / Hr
4. Bbl per day operating day		1.60	Bbl per operating day
	U =	2	hours per operating day

The following emissions are based on the emission factors from Table 3.4-1 of AP-42 (Note 1)

DIESEL

		One Hour Peak Flow		Annual Average			
Nitrogen Oxides	NOx =	0.004	lb/sec	1672.3	lbs/yr	0.836	Tons/yr
Carbon Monoxides	CO =	0.001	lb/sec	383.2	lbs/yr	0.192	Tons/yr
Sulfur Oxides	SO_2 =	0.0015	lb/sec	563.7	lbs/yr	0.282	Tons/yr
Volatile Organic Compounds	VOC =	0.00013	lb/sec	49.1	lbs/yr	0.025	Tons/yr
Particulate Matter	PM =	0.0001	lb/sec	48.8	lbs/yr	0.024	Tons/yr

Note:

1. Emission factors for diesel-powered industrial equipment:

NOx:	0.024	lb/Hp-Hr
CO:	0.0055	lb/Hp-Hr
SO_2:	0.00809	lb/Hp-Hr
VOC:	0.00071	lb/Hp-Hr (As CH4)
PM:	0.0007	lb/Hp-Hr
Exhaust	0	lb/Hp-Hr

Exhaust gas Density (MW-28 T=800F) =	0.0304442	lb/ft3		
Exhaust gas flow =	0	CFM		
Stack diameter = 5"	5	inches equivalent	5	ID
Stack area	0.13635	sq ft		
Velocity	0	ft/sec		

AKER KVÆRNER PROCESS CALCULATION	PREP. BY	KS			
	CHKD. BY				
	APPROVED				
	DATE	12/17/2003			
	ISSUE				

Freeport McMoRan Energy	H0316900	
LNG TERMINAL - GOM		
BTX CALCULATIONS BASIS		

CALCULATION FOR BENZENE TOLUENE AND XYLENE FROM GLYCOL REGENERATION VOC

Pipeline Gas

BASIS: Maximum MSCF (1000 SCF) pentane (C5) plus in the pipeline gas. 0.3 gal

Moles per 1(based on C5 plus gals/mole =		15.56		
Moles of C5 plus in the pipeline gas		0.019280206		
Total moles per 1000 SCF		2.635150269		
Mole % of C5 plus in the pipeline gas		0.731654884		
ASSUMPTIONS:				
Maximum BTX components in the C5 + stream		0.4	%	
Mole % of BTX in the pipeline gas		0.00292662		
Approximate breakdown of BTX components				
Benzene		65		
Toluene		25		
Xylene		10		
Amount of BTX components in the pipeline inlet gas				Mol. Wt.
Benzene	Mole%	0.001902303		78.114
Toluene	Mole%	0.000731655		92.141
Xylene	Mole%	0.000292662		106.167
Amount of Benzene absorbed in the TEG (Ref. GPSA pg. 20-32)				
Benzene	10% of Inlet	0.0001902	mole%	
Toluene	14% of Inlet	0.0001024	mole%	
Xylene	28% of Inlet	0.0000819	mole%	
Gas Injection Basis to Cavern		56	days	
Injection Cycles per year		4		
Injection rate		500	MMSCFD	
Amount of Gas from Pipeline		20	%	
Total pipeline gas injected per year		22400	MMSCFD	
Total Benzene to TEG generator Stack		112.2879	Moles	**4.39 tons/year**
Total Toluene to TEG generator Stack		60.4627	Moles	**2.79 "**
Total Xylene to TEG generator Stack		48.3702	Moles	**2.57 "**
				9.74

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C

Hazardous Air Pollutant (HAP) Emission Calculations

Table C-1. HAP Emissions Summary

Equipment	Estimated HAP Emissions (tpy)						
	All HAPs [a]	Formaldehyde	Benzene	Toluene	Xylenes	Acetaldehyde	Ammonia
Turbine Generators	1.22	0.62	0.02	0.25	0.12	0.08	9.00
Turbine Compressor - EPN 001	1.84	1.71	4.89E-03	0.05	0.03	0.02	n/a
Turbine Compressor - EPN 002	1.05	0.98	2.80E-03	0.03	0.01	9.32E-03	n/a
Firewater Pumps	4.94E-03	8.92E-05	8.78E-04	3.18E-04	2.18E-04	2.85E-05	n/a
Emergency Generators (>600 HP)	0.03	4.76E-04	4.68E-03	1.69E-03	1.16E-03	1.52E-04	n/a
Emergency Generators (<600 HP)	7.54E-04	1.38E-04	1.09E-04	4.78E-05	3.33E-05	8.96E-05	n/a
Cranes	0.06	0.01	8.28E-03	3.63E-03	2.53E-03	6.81E-03	n/a
Fork Trucks	0.01	2.50E-03	1.98E-03	8.66E-04	6.03E-04	1.62E-03	n/a
Glycol Regenerator Reboilers	0.37	2.43E-03	6.80E-05	1.10E-04	n/a	n/a	n/a
Glycol Regenerator Still Vents [b]	9.75	n/a	4.39	2.79	2.57	n/a	n/a
TOTAL	**14.34**	**3.33**	**4.44**	**3.13**	**2.74**	**0.11**	**9.00**

[a] Ammonia is not included in "All HAPs" since it is not federally regulated; however, it is regulated by the LDEQ as a state TAP.

[b] Aker Kvaerner Process Calculation, 02/16/2004, Issue H (see page B-22).

Table C-2. HAP Emissions from Turbine Generators

Process Equipment:	Gas Turbine Generator		EPNs 036, 037, 038
Unit Rating:	15,000	HP	
Fuel Type:	Natural Gas		
Fuel Heat Content:	1,046	Btu/SCF	
Fuel Usage Factor:	10.147	SCF/HP-hr	
Heat Input:	159.20	MMBtu/hr	
Hourly Fuel Usage:	152,199	SCF/hr	
Annual Operating Hours:	7,920	hr/yr	
Annual Fuel Usage:	1,205,414,914	SCF/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions					
		1 Gas Turbine Generator			3 Gas Turbine Generators		
		lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
1,3-Butadiene	4.30E-07	6.85E-05	5.42E-01	2.71E-04	2.05E-04	1.63E+00	8.13E-04
Acetaldehyde	4.00E-05	6.37E-03	5.04E+01	2.52E-02	1.91E-02	1.51E+02	7.57E-02
Acrolein	6.40E-06	1.02E-03	8.07E+00	4.03E-03	3.06E-03	2.42E+01	1.21E-02
Benzene	1.20E-05	1.91E-03	1.51E+01	7.57E-03	5.73E-03	4.54E+01	2.27E-02
Ethylbenzene	3.20E-05	5.09E-03	4.03E+01	2.02E-02	1.53E-02	1.21E+02	6.05E-02
Formaldehyde[b,c]	1.59E-03	5.26E-02	4.16E+02	2.08E-01	1.58E-01	1.25E+03	6.25E-01
Naphthalene	1.30E-06	2.07E-04	1.64E+00	8.20E-04	6.21E-04	4.92E+00	2.46E-03
PAH	2.20E-06	3.50E-04	2.77E+00	1.39E-03	1.05E-03	8.32E+00	4.16E-03
Propylene Oxide	2.90E-05	4.62E-03	3.66E+01	1.83E-02	1.39E-02	1.10E+02	5.48E-02
Toluene	1.30E-04	2.07E-02	1.64E+02	8.20E-02	6.21E-02	4.92E+02	2.46E-01
Xylenes	6.40E-05	1.02E-02	8.07E+01	4.03E-02	3.06E-02	2.42E+02	1.21E-01
TOTAL HAPs					**3.09E-01**	**2.45E+03**	**1.22E+00**
Ammonia [d]	3	7.58E-01	6.00E+03	3.00E+00	2.27E+00	1.80E+04	9.00E+00

[a] Emission factors from AP-42, Section 3.1, "Stationary Gas Turbines," Table 3.1-3, except for ammonia, which is ppm in exhaust gas, and formaldehyde (see note b).
[b] Factor shown is in units of g/HP-hr, as recommended by the Louisiana Department of Environmental Quality, with DRE of 90% applied (see note c).
[c] Formaldehyde emission estimate based on 90% DRE as provided by SCR catalyst.
d Ammonia is calculated based on 3 ppm in the exhaust gas of 415,927 lb/hr, as follows:

$$\frac{3 \text{ lb-mol } NH_3}{1.E+06 \text{ lb-mol exhaust}} \times \frac{\text{lb-mol exhaust}}{28 \text{ lb exhaust}} \times \frac{17 \text{ lb } NH_3}{\text{lb-mol } NH_3} \times \frac{415{,}927 \text{ lb exhaust}}{\text{hr}}$$

= 7.58E-01 lb/hr ammonia

Table C-3. HAP Emissions from Turbine Compressor

Process Equipment:	Gas Turbine Compressor		EPN 001
Unit Rating:	11,640	HP	
Fuel Type:	Natural Gas		
Fuel Heat Content:	1,046	Btu/SCF	
Fuel Usage Factor:	7.972	SCF/HP-hr	
Heat Input:	97.06	MMBtu/hr	
Hourly Fuel Usage:	92,792	SCF/hr	
Annual Operating Hours:	8,400	hr/yr	
Annual Fuel Usage:	779,449,331	SCF/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions 1 Gas Turbine Compressor		
		lb/hr	lb/yr	tpy
1,3-Butadiene	4.30E-07	4.17E-05	3.51E-01	1.75E-04
Acetaldehyde	4.00E-05	3.88E-03	3.26E+01	1.63E-02
Acrolein	6.40E-06	6.21E-04	5.22E+00	2.61E-03
Benzene	1.20E-05	1.16E-03	9.78E+00	4.89E-03
Ethylbenzene	3.20E-05	3.11E-03	2.61E+01	1.30E-02
Formaldehyde[b]	1.59E-02	4.08E-01	3.43E+03	1.71E+00
Naphthalene	1.30E-06	1.26E-04	1.06E+00	5.30E-04
PAH	2.20E-06	2.14E-04	1.79E+00	8.97E-04
Propylene Oxide	2.90E-05	2.81E-03	2.36E+01	1.18E-02
Toluene	1.30E-04	1.26E-02	1.06E+02	5.30E-02
Xylenes	6.40E-05	6.21E-03	5.22E+01	2.61E-02
TOTAL HAPs		4.39E-01	3.69E+03	1.84E+00

[a] Emission factors from AP-42, Section 3.1, "Stationary Gas Turbines," Table 3.1-3, except for formaldehyde (see note b).

[b] Factor shown is in units of g/HP-hr, as recommended by the Louisiana Department of Environmental Quality.

Table C-4. HAP Emissions from Turbine Compressor

Process Equipment:	Gas Turbine Compressor		EPN 002
Unit Rating:	11,640	HP	
Fuel Type:	Natural Gas		
Fuel Heat Content:	1,046	Btu/SCF	
Fuel Usage Factor:	7.972	SCF/HP-hr	
Heat Input:	97.06	MMBtu/hr	
Hourly Fuel Usage:	92,792	SCF/hr	
Annual Operating Hours:	4,800	hr/yr	
Annual Fuel Usage:	445,399,618	SCF/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions 1 Gas Turbine Compressor		
		lb/hr	lb/yr	tpy
1,3-Butadiene	4.30E-07	4.17E-05	2.00E-01	1.00E-04
Acetaldehyde	4.00E-05	3.88E-03	1.86E+01	9.32E-03
Acrolein	6.40E-06	6.21E-04	2.98E+00	1.49E-03
Benzene	1.20E-05	1.16E-03	5.59E+00	2.80E-03
Ethylbenzene	3.20E-05	3.11E-03	1.49E+01	7.45E-03
Formaldehyde[b]	1.59E-02	4.08E-01	1.96E+03	9.79E-01
Naphthalene	1.30E-06	1.26E-04	6.06E-01	3.03E-04
PAH	2.20E-06	2.14E-04	1.02E+00	5.12E-04
Propylene Oxide	2.90E-05	2.81E-03	1.35E+01	6.76E-03
Toluene	1.30E-04	1.26E-02	6.06E+01	3.03E-02
Xylenes	6.40E-05	6.21E-03	2.98E+01	1.49E-02
TOTAL HAPs		4.39E-01	2.11E+03	1.05E+00

[a] Emission factors from AP-42, Section 3.1, "Stationary Gas Turbines," Table 3.1-3, except for formaldehyde (see note b).

[b] Factor shown is in units of g/HP-hr, as recommended by the Louisiana Department of Environmental Quality.

Table C-5. HAP Emissions from Firewater Pumps

Process Equipment:	Firewater Pump	EPNs 039, 040
Unit Rating:	1,500 HP	
Fuel Type:	Diesel	
Fuel Heat Content:	145,000 Btu/gal	
Fuel Usage Factor:	0.05 gal/HP-hr	
Heat Input:	10.88 MMBtu/hr	
Hourly Fuel Usage:	75.00 gal/hr	
Annual Operating Hours:	104 hr/yr	
Annual Fuel Usage:	7,800 gal/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions					
		1 Firewater Pump			2 Firewater Pumps		
		lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Benzene	7.76E-04	8.44E-03	8.78E-01	4.39E-04	1.69E-02	1.76E+00	8.78E-04
Toluene	2.81E-04	3.06E-03	3.18E-01	1.59E-04	6.11E-03	6.36E-01	3.18E-04
Xylenes	1.93E-04	2.10E-03	2.18E-01	1.09E-04	4.20E-03	4.37E-01	2.18E-04
Propylene	2.79E-03	3.03E-02	3.16E+00	1.58E-03	6.07E-02	6.31E+00	3.16E-03
Formaldehyde	7.89E-05	8.58E-04	8.92E-02	4.46E-05	1.72E-03	1.78E-01	8.92E-05
Acetaldehyde	2.52E-05	2.74E-04	2.85E-02	1.43E-05	5.48E-04	5.70E-02	2.85E-05
Acrolein	7.88E-06	8.57E-05	8.91E-03	4.46E-06	1.71E-04	1.78E-02	8.91E-06
Naphthalene	1.30E-04	1.41E-03	1.47E-01	7.35E-05	2.83E-03	2.94E-01	1.47E-04
Acenaphthylene	9.23E-06	1.00E-04	1.04E-02	5.22E-06	2.01E-04	2.09E-02	1.04E-05
Acenaphthene	4.68E-06	5.09E-05	5.29E-03	2.65E-06	1.02E-04	1.06E-02	5.29E-06
Fluorene	1.28E-05	1.39E-04	1.45E-02	7.24E-06	2.78E-04	2.90E-02	1.45E-05
Phenanthrene	4.08E-05	4.44E-04	4.61E-02	2.31E-05	8.87E-04	9.23E-02	4.61E-05
Anthracene	1.23E-06	1.34E-05	1.39E-03	6.96E-07	2.68E-05	2.78E-03	1.39E-06
Fluoranthene	4.03E-06	4.38E-05	4.56E-03	2.28E-06	8.77E-05	9.12E-03	4.56E-06
Pyrene	3.71E-06	4.03E-05	4.20E-03	2.10E-06	8.07E-05	8.39E-03	4.20E-06
Benz(a)anthracene	6.22E-07	6.76E-06	7.03E-04	3.52E-07	1.35E-05	1.41E-03	7.03E-07
Chrysene	1.53E-06	1.66E-05	1.73E-03	8.65E-07	3.33E-05	3.46E-03	1.73E-06
Benzo(b)fluoranthene	1.11E-06	1.21E-05	1.26E-03	6.28E-07	2.41E-05	2.51E-03	1.26E-06
Benzo(k)fluoranthene	2.18E-07	2.37E-06	2.47E-04	1.23E-07	4.74E-06	4.93E-04	2.47E-07
Benzo(a)pyrene	2.57E-07	2.79E-06	2.91E-04	1.45E-07	5.59E-06	5.81E-04	2.91E-07
Indeno(1,2,3-cd)pyrene	4.14E-07	4.50E-06	4.68E-04	2.34E-07	9.00E-06	9.36E-04	4.68E-07
Dibenz(a,h)anthracene	3.46E-07	3.76E-06	3.91E-04	1.96E-07	7.53E-06	7.83E-04	3.91E-07
Benzo(g,h,l)perylene	5.56E-07	6.05E-06	6.29E-04	3.14E-07	1.21E-05	1.26E-03	6.29E-07
TOTAL HAPs					**9.49E-02**	**9.87E+00**	**4.94E-03**

[a] Emission factors from AP-42, Section 3.4, "Large Stationary Diesel And All Stationary Dual-fuel Engines," Tables 3.4-3 and 3.4-4.

Table C-6. HAP Emissions from Emergency Generators >600 HP

Process Equipment:	Emergency Generator		EPNs 043, 047, 052, 065
Unit Rating:	4,000	HP [b]	
Fuel Type:	Diesel		
Fuel Heat Content:	145,000	Btu/gal	
Fuel Usage Factor:	0.05	gal/HP-hr	
Heat Input:	29.00	MMBtu/hr	
Hourly Fuel Usage:	200.00	gal/hr	
Annual Operating Hours:	104	hr/yr	
Annual Fuel Usage:	20,800	gal/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions					
		1 Emergency Generator			4 Emergency Generators		
		lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Benzene	7.76E-04	2.25E-02	2.34E+00	1.17E-03	9.00E-02	9.36E+00	4.68E-03
Toluene	2.81E-04	8.15E-03	8.47E-01	4.24E-04	3.26E-02	3.39E+00	1.69E-03
Xylenes	1.93E-04	5.60E-03	5.82E-01	2.91E-04	2.24E-02	2.33E+00	1.16E-03
Propylene	2.79E-03	8.09E-02	8.41E+00	4.21E-03	3.24E-01	3.37E+01	1.68E-02
Formaldehyde	7.89E-05	2.29E-03	2.38E-01	1.19E-04	9.15E-03	9.52E-01	4.76E-04
Acetaldehyde	2.52E-05	7.31E-04	7.60E-02	3.80E-05	2.92E-03	3.04E-01	1.52E-04
Acrolein	7.88E-06	2.29E-04	2.38E-02	1.19E-05	9.14E-04	9.51E-02	4.75E-05
Naphthalene	1.30E-04	3.77E-03	3.92E-01	1.96E-04	1.51E-02	1.57E+00	7.84E-04
Acenaphthylene	9.23E-06	2.68E-04	2.78E-02	1.39E-05	1.07E-03	1.11E-01	5.57E-05
Acenaphthene	4.68E-06	1.36E-04	1.41E-02	7.06E-06	5.43E-04	5.65E-02	2.82E-05
Fluorene	1.28E-05	3.71E-04	3.86E-02	1.93E-05	1.48E-03	1.54E-01	7.72E-05
Phenanthrene	4.08E-05	1.18E-03	1.23E-01	6.15E-05	4.73E-03	4.92E-01	2.46E-04
Anthracene	1.23E-06	3.57E-05	3.71E-03	1.85E-06	1.43E-04	1.48E-02	7.42E-06
Fluoranthene	4.03E-06	1.17E-04	1.22E-02	6.08E-06	4.67E-04	4.86E-02	2.43E-05
Pyrene	3.71E-06	1.08E-04	1.12E-02	5.59E-06	4.30E-04	4.48E-02	2.24E-05
Benz(a)anthracene	6.22E-07	1.80E-05	1.88E-03	9.38E-07	7.22E-05	7.50E-03	3.75E-06
Chrysene	1.53E-06	4.44E-05	4.61E-03	2.31E-06	1.77E-04	1.85E-02	9.23E-06
Benzo(b)fluoranthene	1.11E-06	3.22E-05	3.35E-03	1.67E-06	1.29E-04	1.34E-02	6.70E-06
Benzo(k)fluoranthene	2.18E-07	6.32E-06	6.57E-04	3.29E-07	2.53E-05	2.63E-03	1.31E-06
Benzo(a)pyrene	2.57E-07	7.45E-06	7.75E-04	3.88E-07	2.98E-05	3.10E-03	1.55E-06
Indeno(1,2,3-cd)pyrene	4.14E-07	1.20E-05	1.25E-03	6.24E-07	4.80E-05	4.99E-03	2.50E-06
Dibenz(a,h)anthracene	3.46E-07	1.00E-05	1.04E-03	5.22E-07	4.01E-05	4.17E-03	2.09E-06
Benzo(g,h,l)perylene	5.56E-07	1.61E-05	1.68E-03	8.38E-07	6.45E-05	6.71E-03	3.35E-06
TOTAL HAPs					**5.06E-01**	**5.26E+01**	**2.63E-02**

[a] Emission factors from AP-42, Section 3.4, "Large Stationary Diesel And All Stationary Dual-fuel Engines," Tables 3.4-3 and 3.4-4.

[b] Although all emergency power generators will be 4,000 HP or less, HAPs are conservatively estimated at 4,000 HP to simplify calculation.

Table C-7. HAP Emissions from Emergency Generators <600 HP

Process Equipment:	Emergency Generator		EPN 089
Unit Rating:	310	HP	
Fuel Type:	Diesel		
Fuel Heat Content:	145,000	Btu/gal	
Fuel Usage Factor:	0.05	gal/HP-hr	
Heat Input:	2.25	MMBtu/hr	
Hourly Fuel Usage:	15.50	gal/hr	
Annual Operating Hours:	104	hr/yr	
Annual Fuel Usage:	1,612	gal/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions 1 Emergency Generator lb/hr	lb/yr	tpy
Benzene	9.33E-04	2.10E-03	2.18E-01	1.09E-04
Toluene	4.09E-04	9.19E-04	9.56E-02	4.78E-05
Xylenes	2.85E-04	6.41E-04	6.66E-02	3.33E-05
Propylene	2.58E-03	5.80E-03	6.03E-01	3.02E-04
1,3-Butadiene	3.91E-05	8.79E-05	9.14E-03	4.57E-06
Formaldehyde	1.18E-03	2.65E-03	2.76E-01	1.38E-04
Acetaldehyde	7.67E-04	1.72E-03	1.79E-01	8.96E-05
Acrolein	9.25E-05	2.08E-04	2.16E-02	1.08E-05
Naphthalene	8.48E-05	1.91E-04	1.98E-02	9.91E-06
Acenaphthylene	5.06E-06	1.14E-05	1.18E-03	5.91E-07
Acenaphthene	1.42E-06	3.19E-06	3.32E-04	1.66E-07
Fluorene	2.92E-05	6.56E-05	6.83E-03	3.41E-06
Phenanthrene	2.94E-05	6.61E-05	6.87E-03	3.44E-06
Anthracene	1.87E-06	4.20E-06	4.37E-04	2.19E-07
Fluoranthene	7.61E-06	1.71E-05	1.78E-03	8.89E-07
Pyrene	4.78E-06	1.07E-05	1.12E-03	5.59E-07
Benzo(a)anthracene	1.68E-06	3.78E-06	3.93E-04	1.96E-07
Chrysene	3.53E-07	7.93E-07	8.25E-05	4.13E-08
Benzo(b)fluoranthene	9.91E-08	2.23E-07	2.32E-05	1.16E-08
Benzo(k)fluoranthene	1.55E-07	3.48E-07	3.62E-05	1.81E-08
Benzo(a)pyrene	1.88E-07	4.23E-07	4.39E-05	2.20E-08
Indeno(1,2,3-cd)pyrene	3.75E-07	8.43E-07	8.77E-05	4.38E-08
Dibenz(a,h)anthracene	5.83E-07	1.31E-06	1.36E-04	6.81E-08
Benzo(g,h,l)perylene	4.89E-07	1.10E-06	1.14E-04	5.71E-08
TOTAL HAPs		**1.45E-02**	**1.51E+00**	**7.54E-04**

[a] Emission factors from AP-42, Section 3.3, "Gasoline And Diesel Industrial Engines," Table 3.3-2.

Table C-8. HAP Emisssions from Cranes

Process Equipment:	Crane		EPNs 020, 021, 022, 023, 087, 088
Unit Rating:	300	HP	
Fuel Type:	Diesel		
Fuel Heat Content:	145,000	Btu/gal	
Fuel Usage Factor:	0.05	gal/HP-hr	
Heat Input:	2.18	MMBtu/hr	
Hourly Fuel Usage:	15.00	gal/hr	
Annual Operating Hours:	1,360	hr/yr	
Annual Fuel Usage:	20,400	gal/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions					
		1 Crane			6 Cranes		
		lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Benzene	9.33E-04	2.03E-03	2.76E+00	1.38E-03	1.22E-02	1.66E+01	8.28E-03
Toluene	4.09E-04	8.90E-04	1.21E+00	6.05E-04	5.34E-03	7.26E+00	3.63E-03
Xylenes	2.85E-04	6.20E-04	8.43E-01	4.22E-04	3.72E-03	5.06E+00	2.53E-03
Propylene	2.58E-03	5.61E-03	7.63E+00	3.82E-03	3.37E-02	4.58E+01	2.29E-02
1,3-Butadiene	3.91E-05	8.50E-05	1.16E-01	5.78E-05	5.10E-04	6.94E-01	3.47E-04
Formaldehyde	1.18E-03	2.57E-03	3.49E+00	1.75E-03	1.54E-02	2.09E+01	1.05E-02
Acetaldehyde	7.67E-04	1.67E-03	2.27E+00	1.13E-03	1.00E-02	1.36E+01	6.81E-03
Acrolein	9.25E-05	2.01E-04	2.74E-01	1.37E-04	1.21E-03	1.64E+00	8.21E-04
Naphthalene	8.48E-05	1.84E-04	2.51E-01	1.25E-04	1.11E-03	1.51E+00	7.53E-04
Acenaphthylene	5.06E-06	1.10E-05	1.50E-02	7.48E-06	6.60E-05	8.98E-02	4.49E-05
Acenaphthene	1.42E-06	3.09E-06	4.20E-03	2.10E-06	1.85E-05	2.52E-02	1.26E-05
Fluorene	2.92E-05	6.35E-05	8.64E-02	4.32E-05	3.81E-04	5.18E-01	2.59E-04
Phenanthrene	2.94E-05	6.39E-05	8.70E-02	4.35E-05	3.84E-04	5.22E-01	2.61E-04
Anthracene	1.87E-06	4.07E-06	5.53E-03	2.77E-06	2.44E-05	3.32E-02	1.66E-05
Fluoranthene	7.61E-06	1.66E-05	2.25E-02	1.13E-05	9.93E-05	1.35E-01	6.75E-05
Pyrene	4.78E-06	1.04E-05	1.41E-02	7.07E-06	6.24E-05	8.48E-02	4.24E-05
Benzo(a)anthracene	1.68E-06	3.65E-06	4.97E-03	2.48E-06	2.19E-05	2.98E-02	1.49E-05
Chrysene	3.53E-07	7.68E-07	1.04E-03	5.22E-07	4.61E-06	6.27E-03	3.13E-06
Benzo(b)fluoranthene	9.91E-08	2.16E-07	2.93E-04	1.47E-07	1.29E-06	1.76E-03	8.79E-07
Benzo(k)fluoranthene	1.55E-07	3.37E-07	4.58E-04	2.29E-07	2.02E-06	2.75E-03	1.38E-06
Benzo(a)pyrene	1.88E-07	4.09E-07	5.56E-04	2.78E-07	2.45E-06	3.34E-03	1.67E-06
Indeno(1,2,3-cd)pyrene	3.75E-07	8.16E-07	1.11E-03	5.55E-07	4.89E-06	6.66E-03	3.33E-06
Dibenz(a,h)anthracene	5.83E-07	1.27E-06	1.72E-03	8.62E-07	7.61E-06	1.03E-02	5.17E-06
Benzo(g,h,l)perylene	4.89E-07	1.06E-06	1.45E-03	7.23E-07	6.38E-06	8.68E-03	4.34E-06
TOTAL HAPs					**8.42E-02**	**1.15E+02**	**5.73E-02**

[a] Emission factors from AP-42, Section 3.3, "Gasoline And Diesel Industrial Engines," Table 3.3-2.

[b] Although all cranes will be 300 HP or less, HAPs are conservatively estimated at 300 HP to simplify calculation.

Table C-9. HAP Emisssions from Fork Trucks

Process Equipment:	Fork Truck		EPNs 080, 081
Unit Rating:	100	HP	
Fuel Type:	Diesel		
Fuel Heat Content:	145,000	Btu/gal	
Fuel Usage Factor:	0.05	gal/HP-hr	
Heat Input:	0.73	MMBtu/hr	
Hourly Fuel Usage:	5.00	gal/hr	
Annual Operating Hours:	2,920	hr/yr	
Annual Fuel Usage:	14,600	gal/yr	

HAP Constituent	Emission Factor[a] lb/MMBtu	Air Emissions					
		1 Fork Truck			2 Fork Trucks		
		lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
Benzene	9.33E-04	6.76E-04	1.98E+00	9.88E-04	1.35E-03	3.95E+00	1.98E-03
Toluene	4.09E-04	2.97E-04	8.66E-01	4.33E-04	5.93E-04	1.73E+00	8.66E-04
Xylenes	2.85E-04	2.07E-04	6.03E-01	3.02E-04	4.13E-04	1.21E+00	6.03E-04
Propylene	2.58E-03	1.87E-03	5.46E+00	2.73E-03	3.74E-03	1.09E+01	5.46E-03
1,3-Butadiene	3.91E-05	2.83E-05	8.28E-02	4.14E-05	5.67E-05	1.66E-01	8.28E-05
Formaldehyde	1.18E-03	8.56E-04	2.50E+00	1.25E-03	1.71E-03	5.00E+00	2.50E-03
Acetaldehyde	7.67E-04	5.56E-04	1.62E+00	8.12E-04	1.11E-03	3.25E+00	1.62E-03
Acrolein	9.25E-05	6.71E-05	1.96E-01	9.79E-05	1.34E-04	3.92E-01	1.96E-04
Naphthalene	8.48E-05	6.15E-05	1.80E-01	8.98E-05	1.23E-04	3.59E-01	1.80E-04
Acenaphthylene	5.06E-06	3.67E-06	1.07E-02	5.36E-06	7.34E-06	2.14E-02	1.07E-05
Acenaphthene	1.42E-06	1.03E-06	3.01E-03	1.50E-06	2.06E-06	6.01E-03	3.01E-06
Fluorene	2.92E-05	2.12E-05	6.18E-02	3.09E-05	4.23E-05	1.24E-01	6.18E-05
Phenanthrene	2.94E-05	2.13E-05	6.22E-02	3.11E-05	4.26E-05	1.24E-01	6.22E-05
Anthracene	1.87E-06	1.36E-06	3.96E-03	1.98E-06	2.71E-06	7.92E-03	3.96E-06
Fluoranthene	7.61E-06	5.52E-06	1.61E-02	8.06E-06	1.10E-05	3.22E-02	1.61E-05
Pyrene	4.78E-06	3.47E-06	1.01E-02	5.06E-06	6.93E-06	2.02E-02	1.01E-05
Benzo(a)anthracene	1.68E-06	1.22E-06	3.56E-03	1.78E-06	2.44E-06	7.11E-03	3.56E-06
Chrysene	3.53E-07	2.56E-07	7.47E-04	3.74E-07	5.12E-07	1.49E-03	7.47E-07
Benzo(b)fluoranthene	9.91E-08	7.18E-08	2.10E-04	1.05E-07	1.44E-07	4.20E-04	2.10E-07
Benzo(k)fluoranthene	1.55E-07	1.12E-07	3.28E-04	1.64E-07	2.25E-07	6.56E-04	3.28E-07
Benzo(a)pyrene	1.88E-07	1.36E-07	3.98E-04	1.99E-07	2.73E-07	7.96E-04	3.98E-07
Indeno(1,2,3-cd)pyrene	3.75E-07	2.72E-07	7.94E-04	3.97E-07	5.44E-07	1.59E-03	7.94E-07
Dibenz(a,h)anthracene	5.83E-07	4.23E-07	1.23E-03	6.17E-07	8.45E-07	2.47E-03	1.23E-06
Benzo(g,h,l)perylene	4.89E-07	3.55E-07	1.04E-03	5.18E-07	7.09E-07	2.07E-03	1.04E-06
TOTAL HAPs					**9.36E-03**	**2.73E+01**	**1.37E-02**

[a] Emission factors from AP-42, Section 3.3, "Gasoline And Diesel Industrial Engines," Table 3.3-2.

[b] Although all fork trucks will be 100 HP or less, HAPs are conservatively estimated at 100 HP to simplify calculation.

Table C-10. HAP Emissions from Glycol Regenerator Reboilers

Process Equipment:	Glycol Regenerator Reboiler	EPNs 028, 029
Fuel Type:	Natural Gas	
Fuel Heat Content:	1,046	Btu/SCF
Heat Input:	8.00	MMBtu/hr
Hourly Fuel Usage:	8,998	SCF/hr
Annual Operating Hours:	3,600	hr/yr
Annual Fuel Usage:	32,392,307	SCF/yr

HAP Constituent	Emission Factor[a] $lb/10^6$ scf	Air Emissions					
		1 Glycol Regenerator Reboiler			2 Glycol Regenerator Reboilers		
		lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
2-Methylnaphthalene	2.40E-05	2.16E-07	7.77E-04	3.89E-07	4.32E-07	1.55E-03	7.77E-07
3-Methylchloranthrene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.44E-07	5.18E-04	2.59E-07	2.88E-07	1.04E-03	5.18E-07
Acenaphthene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Acenaphthylene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Anthracene	2.40E-06	2.16E-08	7.77E-05	3.89E-08	4.32E-08	1.55E-04	7.77E-08
Benz(a)anthracene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Benzene	2.10E-03	1.89E-05	6.80E-02	3.40E-05	3.78E-05	1.36E-01	6.80E-05
Benzo(a)pyrene	1.20E-06	1.08E-08	3.89E-05	1.94E-08	2.16E-08	7.77E-05	3.89E-08
Benzo(b)fluoranthene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Benzo(g,h,i)perylene	1.20E-06	1.08E-08	3.89E-05	1.94E-08	2.16E-08	7.77E-05	3.89E-08
Benzo(k)fluoranthene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Butane	2.10E+00	1.89E-02	6.80E+01	3.40E-02	3.78E-02	1.36E+02	6.80E-02
Chrysene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Dibenzo(a,h)anthracene	1.20E-06	1.08E-08	3.89E-05	1.94E-08	2.16E-08	7.77E-05	3.89E-08
Dichlorobenzene	1.20E-03	1.08E-05	3.89E-02	1.94E-05	2.16E-05	7.77E-02	3.89E-05
Ethane	3.10E+00	2.79E-02	1.00E+02	5.02E-02	5.58E-02	2.01E+02	1.00E-01
Fluoranthene	3.00E-06	2.70E-08	9.72E-05	4.86E-08	5.40E-08	1.94E-04	9.72E-08
Fluorene	2.80E-06	2.52E-08	9.07E-05	4.53E-08	5.04E-08	1.81E-04	9.07E-08
Formaldehyde	7.50E-02	6.75E-04	2.43E+00	1.21E-03	1.35E-03	4.86E+00	2.43E-03
Hexane	1.80E+00	1.62E-02	5.83E+01	2.92E-02	3.24E-02	1.17E+02	5.83E-02
Indeno(1,2,3-cd)pyrene	1.80E-06	1.62E-08	5.83E-05	2.92E-08	3.24E-08	1.17E-04	5.83E-08
Naphthalene	6.10E-04	5.49E-06	1.98E-02	9.88E-06	1.10E-05	3.95E-02	1.98E-05
Pentane	2.60E+00	2.34E-02	8.42E+01	4.21E-02	4.68E-02	1.68E+02	8.42E-02
Phenanathrene	1.70E-05	1.53E-07	5.51E-04	2.75E-07	3.06E-07	1.10E-03	5.51E-07
Propane	1.60E+00	1.44E-02	5.18E+01	2.59E-02	2.88E-02	1.04E+02	5.18E-02
Pyrene	5.00E-06	4.50E-08	1.62E-04	8.10E-08	9.00E-08	3.24E-04	1.62E-07
Toluene	3.40E-03	3.06E-05	1.10E-01	5.51E-05	6.12E-05	2.20E-01	1.10E-04
TOTAL HAPs					**2.03E-01**	**7.31E+02**	**3.65E-01**

[a] Emission factors from AP-42, Section 1.4, "Natural Gas Combustion," Table 1.4-3.

EMISSION FACTOR REFERENCE DOCUMENTS

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor (lb/10^6 scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

Table 3.1-3. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM NATURAL GAS-FIRED STATIONARY GAS TURBINES[a]

Emission Factors[b] - Uncontrolled		
Pollutant	Emission Factor (lb/MMBtu)[c]	Emission Factor Rating
1,3-Butadiene[d]	< 4.3 E-07	D
Acetaldehyde	4.0 E-05	C
Acrolein	6.4 E-06	C
Benzene[e]	1.2 E-05	A
Ethylbenzene	3.2 E-05	C
Formaldehyde[f]	7.1 E-04	A
Naphthalene	1.3 E-06	C
PAH	2.2 E-06	C
Propylene Oxide[d]	< 2.9 E-05	D
Toluene	1.3 E-04	C
Xylenes	6.4 E-05	C

[a] SCC for natural gas-fired turbines include 2-01-002-01, 2-02-002-01, 2-02-002-03, 2-03-002-02, and 2-03-002-03. Hazardous Air Pollutants as defined in Section 112 (b) of the *Clean Air Act*.
[b] Factors are derived from units operating at high loads ($\geq$80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief".
[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60^{o}F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. These emission factors can be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this heating value.
[d] Compound was not detected. The presented emission value is based on one-half of the detection limit.
[e] Benzene with SCONOX catalyst is 9.1 E-07, rating of D.
[f] Formaldehyde with SCONOX catalyst is 2.0 E-05, rating of D.

Table 3.3-2. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR UNCONTROLLED DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (Fuel Input) (lb/MMBtu)
Benzene[b]	9.33 E-04
Toluene[b]	4.09 E-04
Xylenes[b]	2.85 E-04
Propylene[b]	2.58 E-03
1,3-Butadiene[b,c]	<3.91 E-05
Formaldehyde[b]	1.18 E-03
Acetaldehyde[b]	7.67 E-04
Acrolein[b]	<9.25 E-05
Polycyclic aromatic hydrocarbons (PAH)	
Naphthalene[b]	8.48 E-05
Acenaphthylene	<5.06 E-06
Acenaphthene	<1.42 E-06
Fluorene	2.92 E-05
Phenanthrene	2.94 E-05
Anthracene	1.87 E-06
Fluoranthene	7.61 E-06
Pyrene	4.78 E-06
Benzo(a)anthracene	1.68 E-06
Chrysene	3.53 E-07
Benzo(b)fluoranthene	<9.91 E-08
Benzo(k)fluoranthene	<1.55 E-07
Benzo(a)pyrene	<1.88 E-07
Indeno(1,2,3-cd)pyrene	<3.75 E-07
Dibenz(a,h)anthracene	<5.83 E-07
Benzo(g,h,l)perylene	<4.89 E-07
TOTAL PAH	1.68 E-04

[a] Based on the uncontrolled levels of 2 diesel engines from References 6-7. Source Classification Codes 2-02-001-02, 2-03-001-01. To convert from lb/MMBtu to ng/J, multiply by 430.
[b] Hazardous air pollutant listed in the *Clean Air Act*.
[c] Based on data from 1 engine.

Table 3.4-3. SPECIATED ORGANIC COMPOUND EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

Pollutant	Emission Factor (lb/MMBtu) (fuel input)
Benzene[b]	7.76 E-04
Toluene[b]	2.81 E-04
Xylenes[b]	1.93 E-04
Propylene	2.79 E-03
Formaldehyde[b]	7.89 E-05
Acetaldehyde[b]	2.52 E-05
Acrolein[b]	7.88 E-06

[a]Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.
[b]Hazardous air pollutant listed in the *Clean Air Act*.

Table 3.4-4. PAH EMISSION FACTORS FOR LARGE UNCONTROLLED STATIONARY DIESEL ENGINES[a]

EMISSION FACTOR RATING: E

PAH	Emission Factor (lb/MMBtu) (fuel input)
Naphthalene[b]	1.30 E-04
Acenaphthylene	9.23 E-06
Acenaphthene	4.68 E-06
Fluorene	1.28 E-05
Phenanthrene	4.08 E-05
Anthracene	1.23 E-06
Fluoranthene	4.03 E-06
Pyrene	3.71 E-06
Benz(a)anthracene	6.22 E-07
Chrysene	1.53 E-06
Benzo(b)fluoranthene	1.11 E-06
Benzo(k)fluoranthene	<2.18 E-07
Benzo(a)pyrene	<2.57 E-07
Indeno(1,2,3-cd)pyrene	<4.14 E-07
Dibenz(a,h)anthracene	<3.46 E-07
Benzo(g,h,l)perylene	<5.56 E-07
TOTAL PAH	<2.12 E-04

[a] Based on 1 uncontrolled diesel engine from Reference 7. Source Classification Code 2-02-004-01. Not enough information to calculate the output-specific emission factors of lb/hp-hr. To convert from lb/MMBtu to ng/J, multiply by 430.
[b] Hazardous air pollutant listed in the *Clean Air Act*.

Formaldehyde Emissions

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Formaldehyde Emissions From Internal Combustion Engines and Turbines

Applicability to Title V

(Revised November 18, 1996)
Formaldehyde emissions from combustion of fossil fuels are exempt from LAC33:III.Chapter 51, but are not exempt from Section 112(b) of the Clean Air Act. Facilities with small engines will not be required to speciate combustion VOC emissions, and only formaldehyde emissions will be required of large engines and gas turbines or facilities* approaching 10 TPY formaldehyde trigger value.

GRID-HAPCalc Version 1 gives the following formaldehyde emission factors for gas-fired engines:

DESCRIPTION	FACTOR (g/hp-hr)
Turbine (Pipeline or Field Gas)	0.0159
Pipeline Gas-Fired Engines	
4-cycle, rich burn IC	0.0623
2-cycle, lean burn IC	0.0879
4-cycle, lean burn IC	0.1011
Field Gas-Fired Engines	
4-cycle, rich burn IC	0.0381
4-cycle, lean burn IC	0.1683
2-cycle, lean burn IC	0.2432

Examples Approaching Trigger for Formaldehyde:

- All Turbines: 60,000(0.0159/453.6)(4.38)=9.21 TPY
- Pipeline Gas, worst case ICs: 10,000(0.1011/453.6)(4.38)=9.76 TPY
- Field Gas, worst case ICs: 4,000(0.2432/453.6)(4.38)=9.39 TPY

Formaldehyde emissions are required for the following equipment or

facilities* :

1. Over 4,000 hp for engines using field gas fuel
2. Over 10,000 hp for engines using pipeline gas fuel
3. Over 60,000 hp for turbines using either gas fuel
4. Any combination of the above yielding over 9 TPY formaldehyde

**Formaldehyde emissions cannot be aggregated for oil and gas facilities, compressor or pump stations, and similar units. (Approved by EPA and LAC 33:III.5105.B.5.)*

[Home] [Up] [Fugitive Emissions] [Voluntary Emission Reduction Credit] [Submittal Schedule Clarification]
[Preparing EIQ Sheets] [Gas-Fired Combusion Engines] [Formaldehyde Emissions]
[Clarification of upset notification] [Reporting Methane & Ethane Emissions]
[Modifications to Part 70] [Control of Natural Gas Releases] [NSPS Requirements]
[Compressor Engine Overhaul] [Testing of Gas-Fired Combustion Engines] [Tanks3]

D

SCREEN3 Model Input/Output

```
02/18/04

17:08:19
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 CRANES

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE            =        POINT
    EMISSION RATE (G/S)    =      1.00000
    STACK HEIGHT (M)       =      50.2920
    STK INSIDE DIAM (M)    =        .1524
    STK EXIT VELOCITY (M/S)=      73.1500
    STK GAS EXIT TEMP (K)  =     749.8000
    AMBIENT AIR TEMP (K)   =     293.0000
    RECEPTOR HEIGHT (M)    =        .0000
    URBAN/RURAL OPTION     =        RURAL
    BUILDING HEIGHT (M)    =        .0000
    MIN HORIZ BLDG DIM (M) =        .0000
    MAX HORIZ BLDG DIM (M) =        .0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =    2.537 M**4/S**3;  MOM. FLUX =   12.141 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
      1.   .0000        1     1.0    1.1   320.0   88.76    1.82    1.78
NO
    100.   .1679E-01    1     3.0    3.4   960.0   63.12   27.10   14.42
NO
    200.   6.557        1     2.5    2.8   800.0   65.68   50.16   29.63
NO
    300.   15.66        1     1.5    1.7   480.0   75.94   72.14   48.00
NO
    400.   19.78        1     1.0    1.1   320.0   88.76   93.36   72.01
NO
    500.   16.67        1     1.0    1.1   320.0   88.76  113.57  105.23
NO
    600.   17.14        2     1.0    1.1   320.0   88.76   98.11   63.37
NO
    700.   16.70        2     1.0    1.1   320.0   88.76  112.51   74.72
NO
```

800.	15.32	2	1.0	1.1	320.0	88.76	126.69	86.27	NO
900.	15.57	3	1.0	1.2	320.0	86.94	94.26	56.50	NO
1000.	15.78	3	1.0	1.2	320.0	86.94	103.64	62.03	NO
1100.	15.50	3	1.0	1.2	320.0	86.94	112.94	67.53	NO
1200.	14.94	3	1.0	1.2	320.0	86.94	122.16	72.99	NO
1300.	14.23	3	1.0	1.2	320.0	86.94	131.32	78.43	NO
1400.	13.44	3	1.0	1.2	320.0	86.94	140.40	83.83	NO
1500.	12.64	3	1.0	1.2	320.0	86.94	149.42	89.21	NO
1600.	11.85	3	1.0	1.2	320.0	86.94	158.39	94.56	NO
1700.	11.10	3	1.0	1.2	320.0	86.94	167.30	99.89	NO
1800.	10.39	3	1.0	1.2	320.0	86.94	176.16	105.19	NO
1900.	9.724	3	1.0	1.2	320.0	86.94	184.97	110.47	NO
2000.	9.827	4	1.0	1.3	320.0	84.10	128.31	51.07	NO
2100.	9.881	4	1.0	1.3	320.0	84.10	134.08	52.65	NO
2200.	9.890	4	1.0	1.3	320.0	84.10	139.82	54.19	NO
2300.	9.862	4	1.0	1.3	320.0	84.10	145.53	55.72	NO
2400.	9.804	4	1.0	1.3	320.0	84.10	151.22	57.22	NO
2500.	9.721	4	1.0	1.3	320.0	84.10	156.89	58.70	NO
2600.	9.618	4	1.0	1.3	320.0	84.10	162.53	60.16	NO
2700.	9.498	4	1.0	1.3	320.0	84.10	168.15	61.61	NO
2800.	9.366	4	1.0	1.3	320.0	84.10	173.75	63.03	NO
2900.	9.225	4	1.0	1.3	320.0	84.10	179.33	64.44	NO
3000.	9.076	4	1.0	1.3	320.0	84.10	184.89	65.83	NO
3500.	8.263	4	1.0	1.3	320.0	84.10	212.41	72.13	NO
4000.	7.480	4	1.0	1.3	320.0	84.10	239.50	78.09	NO
4500.	6.767	4	1.0	1.3	320.0	84.10	266.23	83.77	NO
5000.	6.136	4	1.0	1.3	320.0	84.10	292.63	89.21	NO
5500.	5.583	4	1.0	1.3	320.0	84.10	318.74	94.45	NO
6000.	5.098	4	1.0	1.3	320.0	84.10	344.57	99.50	NO
6500.	4.673	4	1.0	1.3	320.0	84.10	370.17	104.39	NO

```
   7000.   4.301        4     1.0    1.3   320.0   84.10  395.53  109.14
NO
   7500.   3.977        5     1.0    1.8 10000.0   83.87  314.92   69.04
NO
   8000.   3.806        5     1.0    1.8 10000.0   83.87  333.61   71.29
NO
   8500.   3.643        5     1.0    1.8 10000.0   83.87  352.15   73.47
NO
   9000.   3.489        5     1.0    1.8 10000.0   83.87  370.57   75.58
NO
   9500.   3.342        5     1.0    1.8 10000.0   83.87  388.86   77.64
NO
  10000.   3.204        5     1.0    1.8 10000.0   83.87  407.04   79.65
NO
  15000.   2.413        6     1.0    2.4 10000.0   75.31  388.49   55.35
NO
  20000.   1.994        6     1.0    2.4 10000.0   75.31  501.00   60.72
NO
  25000.   1.690        6     1.0    2.4 10000.0   75.31  609.79   65.25
NO
  30000.   1.462        6     1.0    2.4 10000.0   75.31  715.62   69.21
NO
  40000.   1.146        6     1.0    2.4 10000.0   75.31  920.25   74.83
NO
  50000.   .9409        6     1.0    2.4 10000.0   75.31 1117.45   79.51
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    389.   19.83        1     1.0    1.1   320.0   88.76   91.31   69.54
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *********************************
 *** SCREEN DISCRETE DISTANCES ***
 *********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
  25000.   1.690        6     1.0    2.4 10000.0   75.31  609.79   65.25
NO
  35200.   1.279        6     1.0    2.4 10000.0   75.31  823.08   72.28
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
```

```
     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC     DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)    HT (M)
--------------     -----------   -------   -------
SIMPLE TERRAIN       19.83          389.        0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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02/18/04

17:04:07

*** SCREEN3 MODEL RUN ***

*** VERSION DATED 96043 ***

FWPUMPS AND EMGENS

SIMPLE TERRAIN INPUTS:

```
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =      1.00000
   STACK HEIGHT (M)         =      48.7680
   STK INSIDE DIAM (M)      =        .3048
   STK EXIT VELOCITY (M/S)=        73.1500
   STK GAS EXIT TEMP (K)    =     749.8000
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =        .0000
   URBAN/RURAL OPTION       =        RURAL
   BUILDING HEIGHT (M)      =        .0000
   MIN HORIZ BLDG DIM (M) =          .0000
   MAX HORIZ BLDG DIM (M) =          .0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX =   10.150 M**4/S**3; MOM. FLUX =   48.565 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF   0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	320.0	157.81	2.85	2.82	NO
100.	.4540E-04	1	3.0	3.4	960.0	85.12	27.60	15.33	NO
200.	1.384	1	3.0	3.4	960.0	85.12	50.98	30.99	NO
300.	5.805	1	3.0	3.4	960.0	85.12	72.51	48.56	NO
400.	7.612	1	2.0	2.2	640.0	103.29	94.01	72.85	NO
500.	8.102	1	1.5	1.7	480.0	121.46	114.93	106.69	NO
600.	8.142	1	1.0	1.1	320.0	157.81	136.48	157.06	NO
700.	7.208	1	1.0	1.1	320.0	157.81	155.46	215.59	NO

800.	6.512	2	1.5	1.7	480.0	121.46	127.91	88.05	NO
900.	6.392	2	1.5	1.7	480.0	121.46	141.78	99.56	NO
1000.	6.082	2	1.0	1.1	320.0	157.81	157.24	113.65	NO
1100.	6.034	2	1.0	1.1	320.0	157.81	170.69	125.28	NO
1200.	5.907	3	2.0	2.3	640.0	100.76	122.62	73.75	NO
1300.	5.793	3	2.0	2.3	640.0	100.76	131.74	79.13	NO
1400.	5.772	3	1.5	1.8	480.0	118.09	141.40	85.50	NO
1500.	5.693	3	1.5	1.8	480.0	118.09	150.37	90.78	NO
1600.	5.560	3	1.5	1.8	480.0	118.09	159.28	96.04	NO
1700.	5.390	3	1.5	1.8	480.0	118.09	168.14	101.29	NO
1800.	5.227	3	1.0	1.2	320.0	152.75	178.34	108.80	NO
1900.	5.190	3	1.0	1.2	320.0	152.75	187.04	113.92	NO
2000.	5.121	3	1.0	1.2	320.0	152.75	195.71	119.02	NO
2100.	5.028	3	1.0	1.2	320.0	152.75	204.35	124.13	NO
2200.	4.917	3	1.0	1.2	320.0	152.75	212.95	129.22	NO
2300.	4.795	3	1.0	1.2	320.0	152.75	221.51	134.30	NO
2400.	4.666	3	1.0	1.2	320.0	152.75	230.04	139.38	NO
2500.	4.534	3	1.0	1.2	320.0	152.75	238.54	144.44	NO
2600.	4.401	3	1.0	1.2	320.0	152.75	247.01	149.50	NO
2700.	4.270	3	1.0	1.2	320.0	152.75	255.44	154.55	NO
2800.	4.142	3	1.0	1.2	320.0	152.75	263.85	159.58	NO
2900.	4.017	3	1.0	1.2	320.0	152.75	272.23	164.61	NO
3000.	3.898	3	1.0	1.2	320.0	152.75	280.58	169.63	NO
3500.	3.376	3	1.0	1.2	320.0	152.75	321.93	194.57	NO
4000.	3.209	4	1.5	1.9	480.0	112.81	240.01	79.62	NO
4500.	3.065	4	1.5	1.9	480.0	112.81	266.68	85.20	NO
5000.	3.010	5	1.0	1.7	10000.0	102.26	219.39	57.77	NO
5500.	3.024	5	1.0	1.7	10000.0	102.26	238.91	60.42	NO
6000.	3.007	5	1.0	1.7	10000.0	102.26	258.22	62.97	NO
6500.	2.969	5	1.0	1.7	10000.0	102.26	277.36	65.42	NO

```
   7000.   2.916        5     1.0    1.7 10000.0  102.26  296.33   67.78
NO
   7500.   2.854        5     1.0    1.7 10000.0  102.26  315.15   70.06
NO
   8000.   2.785        5     1.0    1.7 10000.0  102.26  333.82   72.27
NO
   8500.   2.712        5     1.0    1.7 10000.0  102.26  352.35   74.42
NO
   9000.   2.638        5     1.0    1.7 10000.0  102.26  370.76   76.51
NO
   9500.   2.564        5     1.0    1.7 10000.0  102.26  389.04   78.55
NO
  10000.   2.489        5     1.0    1.7 10000.0  102.26  407.21   80.53
NO
  15000.   1.852        5     1.0    1.7 10000.0  102.26  583.59   96.77
NO
  20000.   1.523        6     1.0    2.4 10000.0   88.71  501.08   61.36
NO
  25000.   1.338        6     1.0    2.4 10000.0   88.71  609.86   65.85
NO
  30000.   1.188        6     1.0    2.4 10000.0   88.71  715.68   69.78
NO
  40000.   .9603        6     1.0    2.4 10000.0   88.71  920.29   75.36
NO
  50000.   .8055        6     1.0    2.4 10000.0   88.71 1117.48   80.01
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    555.   8.342        1     1.0    1.1   320.0  157.81  128.05  134.67
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *********************************
 *** SCREEN DISCRETE DISTANCES ***
 *********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
  25000.   1.338        6     1.0    2.4 10000.0   88.71  609.86   65.85
NO
  35200.   1.058        6     1.0    2.4 10000.0   88.71  823.13   72.82
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
```

```
     **************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     **************************************

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)     HT (M)
--------------    -----------    -------    -------
SIMPLE TERRAIN      8.342           555.          0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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02/18/04

17:06:10
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 GAS COMPRESSORS

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE            =        POINT
    EMISSION RATE (G/S)    =      1.00000
    STACK HEIGHT (M)       =      51.8160
    STK INSIDE DIAM (M)    =       2.2860
    STK EXIT VELOCITY (M/S)=      15.6970
    STK GAS EXIT TEMP (K)  =     778.7000
    AMBIENT AIR TEMP (K)   =     293.0000
    RECEPTOR HEIGHT (M)    =        .0000
    URBAN/RURAL OPTION     =        RURAL
    BUILDING HEIGHT (M)    =        .0000
    MIN HORIZ BLDG DIM (M) =        .0000
    MAX HORIZ BLDG DIM (M) =        .0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =  125.431 M**4/S**3;  MOM. FLUX =  121.122 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC              U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
      1.   .0000        1     1.0    1.1   679.2  678.22    3.48    3.46
NO
    100.   .7489E-06    5     1.0    1.8 10000.0  174.62   28.39   27.94
NO
    200.   .8308E-03    5     1.0    1.8 10000.0  174.62   36.96   35.64
NO
    300.   .1089E-02    5     1.0    1.8 10000.0  174.62   38.94   36.15
NO
    400.   .5992E-01    1     3.0    3.4   960.0  260.62   99.79   80.16
NO
    500.   .4858        1     3.0    3.4   960.0  260.62  120.88  113.08
NO
    600.  1.125         1     3.0    3.4   960.0  260.62  141.40  161.36
NO
    700.  1.320         1     3.0    3.4   960.0  260.62  161.46  219.96
NO
```

800.	1.744	1	1.5	1.7	480.0	469.42	207.62	306.30	NO
900.	2.008	1	1.5	1.7	480.0	469.42	224.51	382.23	NO
1000.	2.017	1	1.5	1.7	480.0	469.42	240.40	469.27	NO
1100.	1.922	1	1.5	1.7	480.0	469.42	256.44	567.97	NO
1200.	1.812	1	1.5	1.7	480.0	469.42	272.56	678.16	NO
1300.	1.710	1	1.5	1.7	480.0	469.42	288.74	799.78	NO
1400.	1.619	1	1.5	1.7	480.0	469.42	304.94	932.80	NO
1500.	1.538	1	1.5	1.7	480.0	469.42	321.14	1077.23	NO
1600.	1.464	1	1.5	1.7	480.0	469.42	337.33	1233.09	NO
1700.	1.397	1	1.5	1.7	480.0	469.42	353.49	1400.43	NO
1800.	1.336	1	1.5	1.7	480.0	469.42	369.62	1579.30	NO
1900.	1.283	1	1.0	1.1	679.2	678.22	408.12	1774.77	NO
2000.	1.237	1	1.0	1.1	679.2	678.22	423.31	1976.33	NO
2100.	1.194	1	1.0	1.1	679.2	678.22	438.52	2189.66	NO
2200.	1.154	1	1.0	1.1	679.2	678.22	453.73	2414.80	NO
2300.	1.116	1	1.0	1.1	679.2	678.22	468.94	2651.78	NO
2400.	1.081	1	1.0	1.1	679.2	678.22	484.14	2900.65	NO
2500.	1.050	2	1.5	1.7	480.0	469.42	368.17	321.63	NO
2600.	1.062	2	1.5	1.7	480.0	469.42	379.83	333.86	NO
2700.	1.068	2	1.5	1.7	480.0	469.42	391.46	346.20	NO
2800.	1.070	2	1.5	1.7	480.0	469.42	403.08	358.65	NO
2900.	1.067	2	1.5	1.7	480.0	469.42	414.68	371.19	NO
3000.	1.060	2	1.5	1.7	480.0	469.42	426.26	383.83	NO
3500.	.9932	2	1.5	1.7	480.0	469.42	483.77	448.21	NO
4000.	.9071	2	1.5	1.7	480.0	469.42	540.64	514.23	NO
4500.	.8262	2	1.5	1.7	480.0	469.42	596.87	581.56	NO
5000.	.7719	2	1.0	1.1	679.2	678.22	665.97	663.53	NO
5500.	.7224	2	1.0	1.1	679.2	678.22	719.94	731.60	NO
6000.	.7261	3	1.5	1.8	480.0	449.31	532.24	334.68	NO
6500.	.7197	3	1.5	1.8	480.0	449.31	570.00	357.27	NO

```
   7000.   .7048        3     1.5    1.8   480.0  449.31  607.52  379.87
NO
   7500.   .6845        3     1.5    1.8   480.0  449.31  644.81  402.46
NO
   8000.   .6611        3     1.5    1.8   480.0  449.31  681.87  425.04
NO
   8500.   .6365        3     1.5    1.8   480.0  449.31  718.70  447.59
NO
   9000.   .6279        5     1.0    1.8 10000.0  174.62  372.10   82.78
NO
   9500.   .6455        5     1.0    1.8 10000.0  174.62  390.32   84.66
NO
  10000.   .6605        5     1.0    1.8 10000.0  174.62  408.43   86.51
NO
  15000.   .6908        5     1.0    1.8 10000.0  174.62  584.44  101.80
NO
  20000.   .6510        5     1.0    1.8 10000.0  174.62  753.14  114.80
NO
  25000.   .5841        5     1.0    1.8 10000.0  174.62  916.33  123.94
NO
  30000.   .5259        5     1.0    1.8 10000.0  174.62 1075.12  132.06
NO
  40000.   .4339        5     1.0    1.8 10000.0  174.62 1382.17  146.14
NO
  50000.   .3651        5     1.0    1.8 10000.0  174.62 1678.09  155.55
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    952.   2.035        1     1.5    1.7   480.0  469.42  232.91  426.90
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *********************************
 *** SCREEN DISCRETE DISTANCES ***
 *********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
  25000.   .5841        5     1.0    1.8 10000.0  174.62  916.33  123.94
NO
  35200.   .4744        5     1.0    1.8 10000.0  174.62 1236.35  139.68
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
```

```
     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC    DIST TO   TERRAIN
  PROCEDURE         (UG/M**3)    MAX (M)    HT (M)
--------------     -----------   -------   -------
SIMPLE TERRAIN       2.035          952.        0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```

02/18/04

17:10:46

```
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 GLYCOL REGENERATORS

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE             =        POINT
    EMISSION RATE (G/S)     =      1.00000
    STACK HEIGHT (M)        =      50.2920
    STK INSIDE DIAM (M)     =        .5639
    STK EXIT VELOCITY (M/S)=        5.0000
    STK GAS EXIT TEMP (K)   =     394.0000
    AMBIENT AIR TEMP (K)    =     293.0000
    RECEPTOR HEIGHT (M)     =        .0000
    URBAN/RURAL OPTION      =        RURAL
    BUILDING HEIGHT (M)     =        .0000
    MIN HORIZ BLDG DIM (M) =         .0000
    MAX HORIZ BLDG DIM (M) =         .0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =     .999 M**4/S**3;  MOM. FLUX =    1.478 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	320.0	69.41	.76	.67	NO
100.	.7514E-01	1	3.0	3.4	960.0	56.65	26.92	14.07	NO
200.	13.12	1	1.5	1.7	480.0	63.04	50.10	29.53	NO
300.	28.76	1	1.0	1.1	320.0	69.41	71.97	47.75	NO
400.	26.73	1	1.0	1.1	320.0	69.41	92.87	71.37	NO
500.	26.79	2	1.0	1.1	320.0	69.41	82.93	51.38	NO
600.	25.15	2	1.0	1.1	320.0	69.41	97.65	62.65	NO
700.	24.86	3	1.0	1.2	320.0	68.51	74.67	44.43	NO

800.	25.19	3	1.0	1.2	320.0	68.51	84.30	50.12	NO
900.	24.34	3	1.0	1.2	320.0	68.51	93.82	55.77	NO
1000.	22.92	3	1.0	1.2	320.0	68.51	103.25	61.36	NO
1100.	21.29	3	1.0	1.2	320.0	68.51	112.58	66.91	NO
1200.	19.62	3	1.0	1.2	320.0	68.51	121.83	72.42	NO
1300.	18.03	3	1.0	1.2	320.0	68.51	131.00	77.90	NO
1400.	16.61	4	1.0	1.3	320.0	67.10	92.68	40.15	NO
1500.	16.80	4	1.0	1.3	320.0	67.10	98.66	41.95	NO
1600.	16.82	4	1.0	1.3	320.0	67.10	104.60	43.70	NO
1700.	16.72	4	1.0	1.3	320.0	67.10	110.51	45.42	NO
1800.	16.52	4	1.0	1.3	320.0	67.10	116.38	47.11	NO
1900.	16.26	4	1.0	1.3	320.0	67.10	122.22	48.76	NO
2000.	15.96	4	1.0	1.3	320.0	67.10	128.03	50.38	NO
2100.	15.61	4	1.0	1.3	320.0	67.10	133.81	51.97	NO
2200.	15.25	4	1.0	1.3	320.0	67.10	139.57	53.54	NO
2300.	14.87	4	1.0	1.3	320.0	67.10	145.29	55.08	NO
2400.	14.48	4	1.0	1.3	320.0	67.10	150.99	56.60	NO
2500.	14.09	4	1.0	1.3	320.0	67.10	156.66	58.10	NO
2600.	13.70	4	1.0	1.3	320.0	67.10	162.32	59.58	NO
2700.	13.32	4	1.0	1.3	320.0	67.10	167.94	61.03	NO
2800.	12.94	4	1.0	1.3	320.0	67.10	173.55	62.47	NO
2900.	12.58	4	1.0	1.3	320.0	67.10	179.14	63.89	NO
3000.	12.22	4	1.0	1.3	320.0	67.10	184.70	65.29	NO
3500.	10.60	4	1.0	1.3	320.0	67.10	212.24	71.64	NO
4000.	9.254	4	1.0	1.3	320.0	67.10	239.36	77.64	NO
4500.	8.146	4	1.0	1.3	320.0	67.10	266.10	83.35	NO
5000.	7.229	4	1.0	1.3	320.0	67.10	292.51	88.82	NO
5500.	6.463	4	1.0	1.3	320.0	67.10	318.63	94.08	NO
6000.	5.818	4	1.0	1.3	320.0	67.10	344.47	99.15	NO
6500.	5.270	4	1.0	1.3	320.0	67.10	370.07	104.05	NO

```
   7000.   4.870         5     1.0    1.8 10000.0   74.90  296.02   66.41
NO
   7500.   4.615         5     1.0    1.8 10000.0   74.90  314.85   68.73
NO
   8000.   4.378         5     1.0    1.8 10000.0   74.90  333.54   70.99
NO
   8500.   4.157         5     1.0    1.8 10000.0   74.90  352.09   73.18
NO
   9000.   3.953         5     1.0    1.8 10000.0   74.90  370.51   75.30
NO
   9500.   3.763         5     1.0    1.8 10000.0   74.90  388.81   77.37
NO
  10000.   3.587         5     1.0    1.8 10000.0   74.90  406.98   79.38
NO
  15000.   2.817         6     1.0    2.4 10000.0   68.63  388.46   55.13
NO
  20000.   2.270         6     1.0    2.4 10000.0   68.63  500.98   60.52
NO
  25000.   1.892         6     1.0    2.4 10000.0   68.63  609.77   65.07
NO
  30000.   1.617         6     1.0    2.4 10000.0   68.63  715.61   69.04
NO
  40000.   1.249         6     1.0    2.4 10000.0   68.63  920.24   74.67
NO
  50000.   1.016         6     1.0    2.4 10000.0   68.63 1117.44   79.37
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    329.   29.61         1     1.0    1.1   320.0   69.41   78.31   54.54
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *********************************
 *** SCREEN DISCRETE DISTANCES ***
 *********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
  25000.   1.892         6     1.0    2.4 10000.0   68.63  609.77   65.07
NO
  35200.   1.403         6     1.0    2.4 10000.0   68.63  823.07   72.11
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
```

```
     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION           MAX CONC     DIST TO    TERRAIN
  PROCEDURE           (UG/M**3)     MAX (M)     HT (M)
--------------      -----------    -------    -------
SIMPLE TERRAIN        29.61           329.         0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
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02/18/04

17:12:43
  ***  SCREEN3 MODEL RUN  ***
  *** VERSION DATED 96043 ***

 TURBINES

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE            =        POINT
    EMISSION RATE (G/S)    =      1.00000
    STACK HEIGHT (M)       =      57.9120
    STK INSIDE DIAM (M)    =       1.4630
    STK EXIT VELOCITY (M/S)=      53.9496
    STK GAS EXIT TEMP (K)  =     466.4800
    AMBIENT AIR TEMP (K)   =     293.0000
    RECEPTOR HEIGHT (M)    =        .0000
    URBAN/RURAL OPTION     =        RURAL
    BUILDING HEIGHT (M)    =        .0000
    MIN HORIZ BLDG DIM (M) =        .0000
    MAX HORIZ BLDG DIM (M) =        .0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


 BUOY. FLUX =  105.277 M**4/S**3;  MOM. FLUX =  978.227 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC              U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
      1.   .0000        1     1.0    1.1   618.4  617.45    7.54    7.53
NO
    100.   .2682E-07    5     1.0    1.8 10000.0  172.25   25.88   25.40
NO
    200.   .2236E-03    5     1.0    1.8 10000.0  172.25   34.68   33.26
NO
    300.   .1279E-02    1     3.0    3.4   960.0  244.42   77.22   55.35
NO
    400.   .1013        1     3.0    3.4   960.0  244.42   98.94   79.10
NO
    500.   .6470        1     3.0    3.4   960.0  244.42  119.93  112.07
NO
    600.  1.306         1     3.0    3.4   960.0  244.42  140.37  160.46
NO
    700.  1.433         1     3.0    3.4   960.0  244.42  160.36  219.15
NO
```

800.	1.779	1	1.5	1.7	480.0	430.94	201.83	302.41	NO
900.	2.049	1	1.5	1.7	480.0	430.94	218.01	378.45	NO
1000.	2.053	1	1.5	1.7	480.0	430.94	234.34	466.20	NO
1100.	1.999	1	1.0	1.1	618.4	617.45	277.64	577.85	NO
1200.	1.941	1	1.0	1.1	618.4	617.45	292.60	686.46	NO
1300.	1.853	1	1.0	1.1	618.4	617.45	307.72	806.83	NO
1400.	1.766	1	1.0	1.1	618.4	617.45	322.97	938.85	NO
1500.	1.686	1	1.0	1.1	618.4	617.45	338.31	1082.47	NO
1600.	1.613	1	1.0	1.1	618.4	617.45	353.71	1237.67	NO
1700.	1.545	1	1.0	1.1	618.4	617.45	369.15	1404.47	NO
1800.	1.483	1	1.0	1.1	618.4	617.45	384.63	1582.88	NO
1900.	1.426	1	1.0	1.1	618.4	617.45	400.11	1772.94	NO
2000.	1.373	1	1.0	1.1	618.4	617.45	415.60	1974.70	NO
2100.	1.323	1	1.0	1.1	618.4	617.45	431.07	2188.18	NO
2200.	1.277	1	1.0	1.1	618.4	617.45	446.54	2413.45	NO
2300.	1.235	1	1.0	1.1	618.4	617.45	461.99	2650.56	NO
2400.	1.195	1	1.0	1.1	618.4	617.45	477.41	2899.54	NO
2500.	1.158	1	1.0	1.1	618.4	617.45	492.80	3160.45	NO
2600.	1.123	1	1.0	1.1	618.4	617.45	508.17	3433.34	NO
2700.	1.090	1	1.0	1.1	618.4	617.45	523.50	3718.25	NO
2800.	1.069	2	1.5	1.7	480.0	430.94	399.50	354.61	NO
2900.	1.066	2	1.5	1.7	480.0	430.94	411.20	367.30	NO
3000.	1.059	2	1.5	1.7	480.0	430.94	422.87	380.06	NO
3500.	1.003	2	1.0	1.1	618.4	617.45	495.33	460.66	NO
4000.	.9763	2	1.0	1.1	618.4	617.45	551.01	525.12	NO
4500.	.9202	2	1.0	1.1	618.4	617.45	606.28	591.22	NO
5000.	.8565	2	1.0	1.1	618.4	617.45	661.09	658.64	NO
5500.	.7956	2	1.0	1.1	618.4	617.45	715.43	727.16	NO
6000.	.7411	2	1.0	1.1	618.4	617.45	769.29	796.63	NO
6500.	.7173	3	1.5	1.8	480.0	411.79	567.65	353.51	NO

```
   7000.   .7158         3     1.0    1.2   589.7  588.73  615.78  392.94
NO
   7500.   .7184         3     1.0    1.2   589.7  588.73  652.59  414.83
NO
   8000.   .7135         3     1.0    1.2   589.7  588.73  689.23  436.76
NO
   8500.   .7031         3     1.0    1.2   589.7  588.73  725.70  458.73
NO
   9000.   .6887         3     1.0    1.2   589.7  588.73  761.99  480.72
NO
   9500.   .6717         3     1.0    1.2   589.7  588.73  798.10  502.72
NO
  10000.   .6531         3     1.0    1.2   589.7  588.73  834.04  524.72
NO
  15000.   .6811         5     1.0    1.8 10000.0  172.25  584.30  100.99
NO
  20000.   .6409         5     1.0    1.8 10000.0  172.25  753.03  114.08
NO
  25000.   .5742         5     1.0    1.8 10000.0  172.25  916.24  123.28
NO
  30000.   .5162         5     1.0    1.8 10000.0  172.25 1075.04  131.44
NO
  40000.   .4248         5     1.0    1.8 10000.0  172.25 1382.11  145.57
NO
  50000.   .3569         5     1.0    1.8 10000.0  172.25 1678.04  155.02
NO

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
    948.   2.074         1     1.5    1.7   480.0  430.94  226.00  420.00
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *********************************
 *** SCREEN DISCRETE DISTANCES ***
 *********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING
DISTANCES ***

   DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)
DWASH
 -------  ----------  ----  -----  -----  ------  ------  ------  ------
-----
  25000.   .5742         5     1.0    1.8 10000.0  172.25  916.24  123.28
NO
  35200.   .4650         5     1.0    1.8 10000.0  172.25 1236.29  139.09
NO

  DWASH=   MEANS NO CALC MADE (CONC = 0.0)
  DWASH=NO MEANS NO BUILDING DOWNWASH USED
  DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
  DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
  DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
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     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)     HT (M)
--------------     -----------    -------    -------
SIMPLE TERRAIN       2.074          948.         0.

***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
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