Enterprise Products™

ENTERPRISE PRODUCTS PARTNERS LP
ENTERPRISE PRODUCTS OPERATING LLC

ENTERPRISE PRODUCTS GP, LLC, GENERAL PARTNER
ENTERPRISE PRODUCTS OLPGP, INC., SOLE MANAGER

May 12, 2008

Federal Express
8610 9887 3732

Jeffrey Robinson, Chief Air Permits Section
U.S. Environmental Protection Agency
Region 6 (6PD-R)
1445 Ross Avenue
Dallas, Texas 75202

RE: Lindrith Compressor Station
Permit Renewal Application

Dear Mr. Robinson:

Enclosed for your review and handling the referenced application.

Should you have questions or need additional information, please contact our field environmental representative, Mr. Don Fernald at 505-599-2141 or Mr. Andy Price, Permitting Engineer, at 432-528-2777.

Yours truly,

Shiver J. Nolan
Senior Compliance Administrator

RECEIVED
2008 MAY 14 AM 10:48
AIR PERMITS SECTION
6PD-R

/sjn
enclosures
cc: Environmental Director, Jicarilla Nation
Randy Baysinger, Enterprise, Farmington

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

GENERAL INFORMATION AND SUMMARY (GIS)

A. Mailing Address and Contact Information

Facility name Lindrith Compressor Station

Mailing address: Street or P.O. Box Enterprise Field Services, LLC c/o Environmental Dep't: PO Box 4324

City Houston State TX ZIP 77210 -4324

Contact person: Donald Fernald Title Environmental Scientist

Telephone (505) 599 - 2141 Ext. ____

Facsimile (505) 599 - 2119

B. Facility Location

Temporary source? ___Yes X No Plant site location 20 miles West of Lindrith, New Mexico

East ½ of the Southeast ¼ of Section 18, Township 24 North, Range 5 West

City Lindrith State NM County Rio Arriba EPA Region 6

Is the facility located within:

Indian lands? X YES ___ NO OCS waters? ___ YES X NO

Non-attainment area? ___ YES X NO If yes, for what air pollutants? ____

Within 50 miles of affected State? X YES __ NO If yes, What State(s)? NM

C. Owner

Name Enterprise Field Services LLC Street/P.O. Box PO Box 4324

City Houston State TX ZIP 77210 - 4324

Telephone (713) 880 - 6695 Ext. ____

D. Operator

Name Enterprise Products Operating LLC Street/P.O. Box PO Box 4324

City Houston State TX ZIP 77210 - 4324

Telephone (713) 880 - 6500 Ext ____

E. Application Type

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

___Initial Permit _X__ Renewal ___ Significant Mod ___ Minor Permit Mod(MPM)

___ Group Processing, MPM ___ Administrative Amendment

For initial permits, when did operations commence? _____ /_____ /_____

For permit renewal, what is the expiration date of current permit? **11 /16 / 2008**

F. Applicable Requirement Summary

Mark all types of applicable requirements that apply.

___ SIP	___ FIP/TIP	___ PSD	___Non-attainment NSR
___ Minor source NSR	___ Section 111	___ Phase I acid rain	___Phase II acid rain
___ Stratospheric ozone	___ OCS regulations	___ NESHAP	_X_ Sec. 112(d) MACT
___ Sec. 112(g) MACT	___ Early reduction of HAP	___ Sec 112(j) MACT	___ RMP [Sec.112(r)]

___ Tank Vessel requirements, sec. 183(f)) ___ Section 129 Standards/Requirement

___ Consumer / comm.. products, § 183(e) ___ NAAQS, increments or visibility (temp. sources)

Has a risk management plan been registered? ___YES _X_NO Regulatory agency ____________

Phase II acid rain application submitted? ___YES _X_NO If yes, Permitting authority ____________

G. Source-Wide PTE Restrictions and Generic Applicable Requirements

Cite and describe any emissions-limiting requirements and/or facility-wide "generic" applicable requirements.

Facility previously issued NSR Permit NM-1644-M1, limiting fuel consumption, requiring oxidation catalysts on two RICE, with quarterly testing requirement and condenser on dehydrator still vent. Permit establishes emissions limits for each unit.
Generic requirements identified in Condition 3.2 of Operating Permit R6FOPP71-03

H. Process Description

List processes, products, and SIC codes for the facility.

Process	Products	SIC
Natural gas gathering and transmission facility, with pressurized natural gas as product delivered to pipeline	Pressurized natural gas	1311

I. Emission Unit Identification

Assign an emissions unit ID and describe each 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
A-01	Caterpillar 3612 LE, Natural Gas Fired Engine
A-01-CD#1	Oxidation Catalyst for RICE A-01 (Control Device)
A-02	Caterpillar 3612 LE, Natural Gas Fired Engine
A-02-CD#1	Oxidation Catalyst for RICE A-01 (Control Device)
A-03	Caterpillar 3612 LE. Natural Gas Fired Engine
DEHY-1RBLR	Dehy Reboiler
DEHY-STL	Dehy Still Vent
DEHY-STL-CD#1	Condenser attached to DHY1-STL (control device)
FUGVOC	Fugitive VOCs
TK-1	Condensate Tank
TK-2	Condensate Tank

J. Facility Emissions Summary

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 68.46 tons/yr VOC 119.32 tons/yr SO2 4.2 tons/yr

PM-10 N/A tons/yr CO 95.2 (103.21) tons/yr Lead N/A tons/yr Total HAP 21.2 (22.319) tons/yr

Single HAP emitted in the greatest amount Formaldehyde PTE ~~10.8~~ tons/yr

Total of regulated pollutants (for fee calculation), Sec. F, line 5 of form FEE N/A tons/yr

permitted NOx 68.48 VOC - 153.3 SO_2 0.22 CO - 95.5 PM_{10} - N/A HAP - 55

indiv. = 2.22

K. Existing Federally-Enforceable Permits

Permit number(s) NM 1644 M1 Permit type NSR Permitting authority NMED

Permit number(s) R6FOPP71-03 Permit type Title V Permitting authority USEPA

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)

INSTRUCTIONS FOLLOW

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

POTENTIAL TO EMIT (PTE)

For each unit with emissions that count towards applicability, list the emissions unit ID and the PTE for the air pollutants listed below and sum them up to show totals for the facility. You may find it helpful to complete form **EMISS** before completing this form. Show other pollutants not listed that are present in major amounts at the facility on attachment in a similar fashion. You may round values to the nearest tenth of a ton. Also report facility totals in section J of form **GIS**.

Emissions Unit ID	Regulated Air Pollutants and Pollutants for which the Source is Major (tons/yr)						
	NOx	VOC	SO2	PM10	CO	Lead	HAP
A-01	22.54	20.5	1.4	N/A	11.8	N/A	4.5
A-02	22.54	20.5	1.4	N/A	11.8	N/A	4.5
A-03	22.54	29.3	1.4	N/A	70.85	N/A	4.5
DEHY1-RBLR	0.84	0.05	N/A	N/A	0.71	N/A	neg
DEHY1-STL	N/A	40.0	N/A	N/A	N/A	N/A	8.0
FUGVOC	N/A	3.77	N/A	N/A	N/A	N/A	N/A
TK-1		2.6					
TK-2		2.6					
FACILTY TOTALS	68.46	119.32	4.2	N/A	95.2	N/A	21.5

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID _A-01_____ Description_Natural Gas Fired Reciprocating IC Engine

SIC Code (4-digit) _4922_ SCC Code__31000203______

B. Emissions Unit Description

Primary use __Gas Compression__ Temporary Source ___Yes _X_No

Manufacturer ____Caterpillar_______ Model No. _3612 LE______

Serial Number _1YG00061_ Installation Date_11/16/2007__

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 Heat Input _27.25__MM BTU/hr Max. Design Heat Input _27.25_MM BTU/hr

C. Fuel Data

Primary fuel type(s) Pipeline Quality Natural Gas Standby fuel type(s) N/A

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Pipeline Quality Natural Gas	0.02%	Negligible	1000

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Pipeline Quality Natural Gas	193.5 MMscf	27.25 Mscf	238.7 MMscf
		= 654 Mscf/day subject to	
		MACT HH [illegible]	[illegible]

E. Associated Air Pollution Control Equipment

Emissions unit ID A-01-CD#1 Device type Catalytic Oxidation System

Air pollutant(s) Controlled CO Manufacturer Houston Industrial Silencing

Model No. DeCOHx-33c22/24PL Serial No. Unknown

Installation date 4/17/1995 Control efficiency (%) 80%

Efficiency estimation method PSD-NM-1644-M1

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 15.0 Inside stack diameter (ft) 1.5

Stack temp(°F) 858 Design stack flow rate (ACFM) 24273

Actual stack flow rate (ACFM) 24273 Velocity (ft/sec) 228.9

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

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 A-01

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates: Actual Annual Emissions (tons/yr)	Emission Rates: Potential to Emit: Hourly (lb/hr)	Emission Rates: Potential to Emit: Annual (tons/yr)	CAS No.
NOx	N/A	5.1	22.54	N/A
VOC	N/A	4.7	20.5	N/A
SO2	N/A	0.23	1.4	7446-09-5
CO	N/A	2.7	11.8	630-08-0
Formaldehyde	N/A	0.8	3.6	50-000-0
Methanol	N/A	0.03	0.14	67-56-1
Acetaldehyde	N/A	0.04	0.16	75-07-0
Acrolein	N/A	0.05	0.23	107-02-8
Toluene	N/A	0.03	0.11	108-88-3

4.24 HAPs

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID _A-02_____ Description_ Natural Gas Fired Reciprocating IC Engine

SIC Code (4-digit) _4922__ SCC Code__31000203______

B. Emissions Unit Description

Primary use __Gas Compression__ Temporary Source ___Yes _X_No

Manufacturer ____Caterpillar_______ Model No. _3612 LE______

Serial Number _1YG00054_ Installation Date_03/17/2008__

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 Heat Input _27.25__MM BTU/hr Max. Design Heat Input _27.25__MM BTU/hr

C. Fuel Data

Primary fuel type(s)Pipeline Quality Natural Gas Standby fuel type(s)__N/A_____

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Pipeline Quality Natural Gas	0.02%	Negligible	1000

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Pipeline Quality Natural Gas	193.5 MMscf	27.25 Mscf	238.7 MMscf

E. Associated Air Pollution Control Equipment

Emissions unit ID_A-01-CD#1_ Device type_Catalytic Oxidation System_

Air pollutant(s) Controlled_CO_ Manufacturer_Houston Industrial Silencing_

Model No._DeCOHx-33c22/24PL_ Serial No._Unknown_

Installation date_5/1/1995_ Control efficiency (%) _80%_

Efficiency estimation method_PSD-NM-1644-M1_

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 15.0 Inside stack diameter (ft) 1.5

Stack temp(°F) 858 Design stack flow rate (ACFM) 24273

Actual stack flow rate (ACFM) 24273 Velocity (ft/sec) 228.9

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

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 A-02

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NOx	N/A	5.1	22.54	N/A
VOC	N/A	4.7	20.5	N/A
SO2	N/A	230.	1.4	7446-09-5
CO	N/A	2.7	11.8	630-08-0
Formaldehyde	N/A	0.8	3.6	50-000-0
Methanol	N/A	0.03	0.14	67-56-1
Acetaldehyde	N/A	0.04	0.16	75-07-0
Acrolein	N/A	0.05	0.23	107-02-8
Toluene	N/A	0.03	0.11	108-88-3

4.24 HAPs

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID _A-03_ Description _Natural Gas Fired Reciprocating IC Engine_

SIC Code (4-digit) _4922_ SCC Code _31000203_

B. Emissions Unit Description

Primary use _Gas Compression_ Temporary Source ___Yes _X_ No

Manufacturer _Caterpillar_ Model No. _3612 LE_

Serial Number _1YG00072_ Installation Date _06/08/2007_

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 Heat Input _27.25_ MM BTU/hr Max. Design Heat Input _27.25_ MM BTU/hr

C. Fuel Data

Primary fuel type(s)Pipeline Quality Natural Gas Standby fuel type(s)__N/A___

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Pipeline Quality Natural Gas	0.02%	Negligible	1000

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Pipeline Quality Natural Gas	193.5 MMscf	27.25 Mscf	238.7 MMscf

E. Associated Air Pollution Control Equipment

Emissions unit ID_N/A_ Device type____________________________

Air pollutant(s) Controlled_______ Manufacturer__________________________

Model No.______________________ Serial No.________________________

Installation date_____/_____/_________ Control efficiency (%) ____________

Efficiency estimation method____

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 15.0	Inside stack diameter (ft) 1.5
Stack temp(^{o}F) 858	Design stack flow rate (ACFM) 24273
Actual stack flow rate (ACFM) 24273	Velocity (ft/sec) 228.9

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

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 A-03

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NOx	N/A	5.1	22.54	N/A
VOC	N/A	10.3	29.3	N/A
SO2	N/A	0.31	1.4	7446-09-5
CO	N/A	18.0	78.9	630-08-0
Formaldehyde	N/A	0.8	3.6	50-000-0
Methanol	N/A	0.03	0.14	67-56-1
Acetaldehyde	N/A	0.04	0.16	75-07-0
Acrolein	N/A	0.05	0.23	107-02-8
Toluene	N/A	0.03	0.11	108-88-3

4.24 HAPs

Enterprise Lindrith Compressor Station

Caterpillar G3612 LE

Type:	4SLB with oxidation catalyst	
	AO-1, AO-2, AO-3	
Sea level hp	3550 hp	
Elevation	6653 msl	
Derate T/A	3267	3%/1000>4000
Site hp	3267 hp	

Emission Calculations

Uncontrolled	NOx	CO	VOC	SO_2*	PM	HAPs		
AO-3	0.7	2.5	0.93				g/hp-hr	
					0.010		lb/MMBtu/hr	
	5.0	18.0	6.70	0.316	0.2		lb/hr	g/hp-hr * hp * 1 lb/453.6 g
	22.5	78.9	29.3	1.4	1.0	4.5	tpy	Assumes 8760 hrs/yr operation
permit limits	22.5	70.9	45.1	0.07		7	tpy	
Requested Limits	22.5	78.9	29.3	1.4		4.5	tpy	

Controlled	NOx	CO	VOC	SO_2*				
AO-1, AO-2	5.0	18.0	6.7	0.32	0.22		lb/hr	
		85%	30%				%	Control efficiency
	5.04	2.70	4.69	0.3	0.2		lb/hr	
	22.5	11.8	20.5	1.4	1.0	4.5	tpy	
Permit limits	22.5	12.2	32.2	0.07		7	tpy	
Requested Limits	22.5	11.8	20.5	1.4		4.5	tpy	

*SO_2 emissions based on fuel consumption and fuel sulfur content 5gr/100 scf
HAPs from GRI HAPCalc

Fuel Consumption

Horsepower	3267 hp	
Heat rate	6761 Btu/hp-hr	Mfg
Fuel heat value	1000 Btu/scf	Nominal
Heat input	22.1 MMBtu/hr	Heat rate * hp
Fuel consumption	22.1 Mscf/hr	Heat input / fuel heat value
Annual fuel usage	193.5 MMcf/yr	8760 hrs/yr operation

Exhaust Parameters

858 °F	Exhaust temp	engineering est.
15 ft	Stack height	engineering est.
1.50 ft	Stack diameter	*Flow (acfm) = Flow (scfm) * (Stack Temp + 460) / 528 * 29.92 / Site Bar. Pres. / (100% - Moisture%)*
24273 acfm	Exhaust flow	Exhaust flow / stack area
228.9 ft/sec	Exhaust velocity	

G3612

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

Industrial/Petroleum 07/01

ENGINE SPEED (rpm):	1000	FUEL TYPE:	Nat Gas
COMPRESSION RATIO:	9:1	MIN. FUEL PRESSURE (PSIG):	43
AFTERCOOLER WATER (°F)	129	MIN. RATED METHANE NUMBER:	66
JACKET WATER OUTLET (°F)	190	RATED ALTITUDE @ 77°F (ft):	5000
IGNITION SYSTEM:	DST	FUEL LHV (BTU/SCF):	905
EXHAUST MANIFOLD:	DRY		

RATING		NOTES	LOAD	100%	75%	50%
ENGINE POWER		(1) (2)	bhp	3550	2662	1775
ENGINE EFFICIENCY	**(ISO 3046/1)**	**(1)**	**%**	**38.6**	**37.0**	**34.1**
ENGINE EFFICIENCY	(NOMINAL)	(1)	%	37.6	36.1	33.3

ENGINE DATA						
FUEL CONSUMPTION	**(ISO 3046/1)**	**(1)**	**BTU/bhp-hr**	**6601**	**6884**	**7468**
FUEL CONSUMPTION	(NOMINAL)	(1)	BTU/bhp-hr	6761	7051	7650
AIR FLOW (@ 77°F, 13.9 psia)			ft3/min	9,623	7,384	5,051
AIR MASS FLOW			lb/hr	40,345	30,958	21,175
COMPRESSOR OUTLET PRESSURE			psi (abs)	36.4	28.4	20.4
COMPRESSOR OUTLET TEMPERATURE			°F	300	248	154
INLET MANIFOLD PRESSURE			psi (abs)	35.1	27.3	18.7
INLET MANIFOLD TEMPERATURE			°F	147	144	140
LAMBDA				2.07	2.03	1.92
TIMING			°BTDC	18.3	17.6	16.2
EXHAUST STACK TEMPERATURE			°F	858	896	946
EXHAUST GAS FLOW (@ stack temp, 14.5 psia)			ft3/min	24,273	19,160	13,592
EXHAUST GAS MASS FLOW			lb/hr	41,575	31,901	21,820

EMISSIONS						
NOx (as NO)		(3)	g/bhp-hr	0.7	0.7	0.7
CO		(3)	g/bhp-hr	2.5	2.5	2.5
THC (molecular weight of 15.84)		(3)	g/bhp-hr	6.15	6.31	6.5
NMHC (molecular weight of 15.84)		(3)	g/bhp-hr	0.93	0.95	0.98
EXHAUST OXYGEN			%	12.5	11.8	10.7

ENERGY BALANCE DATA						
FUEL INPUT ENERGY (LHV)	(NOMINAL)	(1)	BTU/min	399,965	312,844	226,312
WORK ENERGY	(NOMINAL)	(2)	BTU/min	150,544	112,908	75,272
HEAT REJ. TO JACKET WATER	(NOMINAL)	(4)	BTU/min	36,431	31,107	29,390
HEAT REJ. TO ATMOSPHERE	(NOMINAL)	(5)	BTU/min	13,999	13,139	12,447
HEAT REJ. TO LUBE OIL	(NOMINAL)	(6)	BTU/min	17,998	17,206	16,973
HEAT REJ. TO EXH. (LHV to 77°F)	(NOMINAL)	(4)	BTU/min	154,449	124,159	90,239
HEAT REJ. TO EXH. (LHV to 350°F)	(NOMINAL)	(4)	BTU/min	93,314	77,170	57,985
HEAT REJ. TO AFTERCOOLER	(NOMINAL)	(7) (8)	BTU/min	26,544	14,324	1,990

CONDITIONS AND DEFINITIONS

ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1 (STD. REF. CONDITIONS OF 25°C, 100 KPA). NO OVERLOAD PERMITTED AT RATING SHOWN. CONSULT ALTITUDE CURVES FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE.

NOTES

1) FUEL CONSUMPTION TOLERANCE. ISO 3046/1 IS 0, + 5% OF FULL LOAD DATA. NOMINAL IS ± 2.5 % OF FULL LOAD DATA.
2) ENGINE POWER AND WORK ENERGY INCLUDE 2 ENGINE DRIVEN WATER PUMPS.
3) EMISSION DATA SHOWN ARE DRY AND NOT TO EXCEED VALUES.
4) HEAT REJECTION TO JACKET AND EXHAUST TOLERANCE IS ± 10% OF FULL LOAD DATA. (heat rate based on treated water)
5) HEAT REJECTION TO ATMOSPHERE TOLERANCE IS ± 50% OF FULL LOAD DATA. (heat rate based on treated water)
6) HEAT REJECTION TO LUBE OIL TOLERANCE IS ± 20% OF FULL LOAD DATA. (heat rate based on treated water)
7) HEAT REJECTION TO AFTERCOOLER TOLERANCE IS ± 5% OF FULL LOAD DATA. (heat rate based on treated water)
8) TOTAL AFTERCOOLER HEAT = AFTERCOOLER HEAT x ACHRF (heat rate based on treated water)

DM5310-01

G3612

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

FUEL USAGE GUIDE

DERATE FACTOR vs CATERPILLAR METHANE NUMBER

Methane Number	30	35	40	45	50	55	60	65	70>=100
Rating Factor	0.00	0.00	0.00	0.76	0.82	0.87	0.93	0.98	1.00

Minimum Methane Number for Full Rating = 66.3

Fuel System Limit (minimum Wobbe Index) = 1128 BTU/SCF

TOTAL DERATION FACTORS - ALTITUDE & COOLING

AIR TO TURBO (°F) vs ALTITUDE (FEET ABOVE SEA LEVEL)

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	0.93	0.89	0.85	0.81	0.78	0.74	0.71	0.68	0.65	0.61	0.58	0.56	0.53
120	0.98	0.94	0.90	0.86	0.82	0.79	0.75	0.72	0.68	0.65	0.62	0.59	0.56
110	1.00	1.00	0.95	0.91	0.87	0.83	0.80	0.76	0.73	0.69	0.66	0.63	0.60
100	1.00	1.00	1.00	0.97	0.93	0.89	0.85	0.81	0.77	0.73	0.70	0.67	0.63
90	1.00	1.00	1.00	1.00	0.98	0.94	0.90	0.86	0.82	0.78	0.74	0.71	0.67
80	1.00	1.00	1.00	1.00	1.00	0.99	0.95	0.91	0.87	0.83	0.79	0.75	0.72
70	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.94	0.90	0.86	0.83	0.80	0.76
60	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.95	0.92	0.88	0.85	0.81	0.78
50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.94	0.90	0.86	0.83	0.79

AFTERCOOLER HEAT REJECTION FACTORS

AIR TO TURBO (°F) vs ALTITUDE (FEET ABOVE SEA LEVEL)

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.42	1.49	1.56	1.63	1.70	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
120	1.34	1.40	1.47	1.54	1.61	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
110	1.25	1.32	1.38	1.45	1.52	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
100	1.17	1.23	1.30	1.36	1.43	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
90	1.08	1.14	1.21	1.27	1.34	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
80	1.00	1.06	1.12	1.18	1.25	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
70	1.00	1.00	1.03	1.09	1.16	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
60	1.00	1.00	1.00	1.00	1.07	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
50	1.00	1.00	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04

MINIMUM SPEED CAPABILITY AT MAX SITE TORQUE (RPM)

AIR TO TURBO (°F) vs ALTITUDE (FEET ABOVE SEA LEVEL)

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	760	780	800	850	850	850	850	850	850	850	850	850	850
120	760	770	790	850	850	850	850	850	850	850	850	850	850
110	750	770	780	800	850	850	850	850	850	850	850	850	850
100	750	760	770	790	850	850	850	850	850	850	850	850	850
90	750	750	770	780	800	850	850	850	850	850	850	850	850
80	750	750	760	770	790	850	850	850	850	850	850	850	850
70	750	750	750	770	780	800	850	850	850	850	850	850	850
60	750	750	750	760	770	790	850	850	850	850	850	850	850
50	750	750	750	750	770	780	800	850	850	850	850	850	850

ALLOWABLE INERTS IN THE FUEL:
The maximum amount of free inerts in the fuel is limited to 5%.

FUEL SYSTEM LIMIT:
Fuels with a Wobbe index lower than the limit, require a custom fuel system and engine control system mapping from the factory. The Wobbe index is determined using the Caterpillar Methane Number Calculation program.

FUEL USAGE GUIDE:
This table shows the derate factor required for a given fuel. Note that deration occurs as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar Methane Number Calculation program.

TOTAL DERATION FACTORS:
This table shows the deration required for various air inlet temperatures and altitudes. Use this information along with the fuel usage guide chart to help determine actual engine power for your site. The total deration factor includes deration due to altitude and ambient temperature, and air inlet manifold temperature deration.

ACTUAL ENGINE RATING
It is important to note that the Altitude/Temperature deration and the Fuel Usage Guide deration are not cumulative. They are not to be added together. To determine the actual power available, take the lowest rating between the Altitude/Temperature Deration and the Fuel Usage Guide Deration.

AFTERCOOLER HEAT REJECTION FACTORS:
Aftercooler heat rejection is given for standard conditions of 77°F and 500 ft altitude. To maintain a constant air inlet manifold temperature, as the air to turbo temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor to adjust for ambient and altitude conditions. Multiply this factor by the standard aftercooler heat rejection. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail.

MINIMUM SPEED CAPABILITY AT MAX SITE TORQUE
This table shows the minimum allowable engine operating speed for site-specific ratings as determined by the Total Deration Factor chart. The minimum allowable engine operating speed cannot be lowered even if the actual engine power falls below the site-specific rating allowed by the Total Deration Factor chart. Turbocharger compressor surge or damage will result if the engine is operated lower than the minimum allowable speed.

GRI-HAPCalc® 3.0
Engines Report

Facility ID:	**LINDRITH**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:		
User Name:		
Units of Measure:	**U.S. STANDARD**	

Note: Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero. These emissions are indicated on the report with a "0". Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Engine Unit

Unit Name: 3612

Hours of Operation:	8,760	Yearly
Rate Power:	3,267	hp
Fuel Type:	NATURAL GAS	
Engine Type:	4-Stroke, Lean Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	3.6246	0.11500000 g/bhp-hr	GRI Field
Methanol	0.1378	0.00437210 g/bhp-hr	GRI Field
Acetaldehyde	0.1576	0.00500000 g/bhp-hr	GRI Field
Acrolein	0.2332	0.00740000 g/bhp-hr	GRI Literature
Benzene	0.0065	0.00020500 g/bhp-hr	GRI Field
Toluene	0.1144	0.00362870 g/bhp-hr	EPA
Ethylbenzene	0.0102	0.00032210 g/bhp-hr	EPA
Xylenes(m,p,o)	0.0400	0.00127010 g/bhp-hr	EPA
2,2,4-Trimethylpentane	0.0415	0.00131540 g/bhp-hr	EPA
n-Hexane	0.0016	0.00005050 g/bhp-hr	GRI Field
Phenol	0.0028	0.00008850 g/bhp-hr	GRI Field
Styrene	0.0008	0.00002450 g/bhp-hr	GRI Field
Naphthalene	0.0012	0.00003800 g/bhp-hr	GRI Field
Biphenyl	0.0247	0.00078500 g/bhp-hr	GRI Field
Fluorene	0.0012	0.00003650 g/bhp-hr	GRI Field
Ethylene Dibromide	0.0114	0.00036290 g/bhp-hr	EPA
Vinyl Chloride	0.0039	0.00012250 g/bhp-hr	EPA
Methylene Chloride	0.0099	0.00031300 g/bhp-hr	EPA
1,1-Dichloroethane	0.0060	0.00019050 g/bhp-hr	EPA
1,3-Dichloropropene	0.0069	0.00021770 g/bhp-hr	EPA
Chlorobenzene	0.0069	0.00021770 g/bhp-hr	EPA
Chloroform	0.0073	0.00023130 g/bhp-hr	EPA
1,1,2-Trichloroethane	0.0066	0.00020870 g/bhp-hr	EPA

1,1,2,2-Tetrachloroethane	0.0129	0.00040820 g/bhp-hr	EPA
Carbon Tetrachloride	0.0094	0.00029940 g/bhp-hr	EPA
Total	4.4793		

Criteria Pollutants

PM	1.1437	0.03628740 g/bhp-hr	EPA
CO	26.2655	0.83333330 g/bhp-hr	GRI Field
NMEHC	9.8647	0.31297920 g/bhp-hr	EPA
NOx	449.1405	14.25000000 g/bhp-hr	GRI Field
SO2	0.0715	0.00226800 g/bhp-hr	EPA

Other Pollutants

Methane	171.8554	5.45250000 g/bhp-hr	GRI Field
Ethane	4.9642	0.15750000 g/bhp-hr	GRI Field
Propane	0.4728	0.01500000 g/bhp-hr	GRI Field
Butane	0.0630	0.00200000 g/bhp-hr	GRI Field
Cyclopentane	0.0357	0.00113400 g/bhp-hr	EPA
Butyraldehyde	0.0033	0.00010430 g/bhp-hr	EPA
n-Pentane	0.0741	0.00235000 g/bhp-hr	GRI Field
Methylcyclohexane	0.2002	0.00635030 g/bhp-hr	EPA
1,2-Dichloroethane	0.0060	0.00019050 g/bhp-hr	EPA
1,2-Dichloropropane	0.0069	0.00021770 g/bhp-hr	EPA
n-Octane	0.0572	0.00181440 g/bhp-hr	EPA
1,2,4-Trimethylbenzene	0.0021	0.00006800 g/bhp-hr	EPA
1,3,5-Trimethylbenzene	0.0044	0.00014060 g/bhp-hr	EPA
n-Nonane	0.0172	0.00054430 g/bhp-hr	EPA
CO2	13,867.7330	439.98521000 g/bhp-hr	EPA

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID _DEHY-1RBLR__ Description_Dehy Reboiler_

SIC Code (4-digit) _4922__ SCC Code_ 31000228 _

B. Emissions Unit Description

Primary use _Dehydrator Heat Source_ Temporary Source ___Yes _X_No

Manufacturer ______________________ Model No. __________________

Serial Number ______________________ Installation Date_1995_

Boiler Type: _X_ 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 Heat Input _2.25_MM BTU/hr Max. Design Heat Input __2.25__MM BTU/hr

C. Fuel Data

Primary fuel type(s)__Pipeline Quality Natural Gas_ Standby fuel type(s)_N/A__

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Pipeline Quality Natural Gas	0.02%	Negligible	1000

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Pipeline Quality Natural Gas		2.3 Mscf	20.1 MMscf

E. Associated Air Pollution Control Equipment

Emissions unit ID_ _ Device type_ __

Air pollutant(s) Controlled_ _ Manufacturer______________________

Model No.____________________ Serial No._____________________

Installation date_____/_____/_________ Control efficiency (%) _

Efficiency estimation method_ _

F. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) 12.0 Inside stack diameter (ft) 0.75

Stack temp(°F) 500 Design stack flow rate (ACFM) 920

Actual stack flow rate (ACFM) 920 Velocity (ft/sec) 35

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

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 DEHY-RBLR

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
NOx	N/A	0.2	0.84	N/A
VOC	N/A	0.01	0.05	N/A
SO2	N/A	Negligible	Negligible	7446-09-5
CO	N/A	0.2	0.71	630-08-0
HAPs	N/A	Negligible	Negligible	N/A

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID _DEHY-STL_ Description _Glycol Dehydration Unit and condenser_

SIC Code (4-digit) _4922_ SCC Code _31000227_

B. Emissions Unit Description

Primary use or equipment type _Natural Gas Dehydration_

Manufacturer ____________ Model No. ____________

Serial No. _02271_ Installation date _11/24/1957_

Raw materials _Natural Gas_

Finished products _Pipeline Quality Natural Gas_

Temporary source: _X_No ___Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	3.75 MMscf/hour	32,850 MMscf/year
Maximum rate	3.75 MMscf/hour	32,850 MMscf/year

D. Associated Air Pollution Control Equipment

Emissions unit ID _DEHY-STL-CD#1_ Device Type _Condenser_

Manufacturer ____________ Model No ____________

Serial No. ____________ Installation date ____/____/________

Control efficiency (%) _84.4% (VOC)_ Capture efficiency (%) _N/A_

Air pollutant(s) controlled _VOCs and HAPs_ Efficiency estimation method _GLYCalc_

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) 12.0 Inside stack diameter (ft) 0.33

Stack temp (F) 100 Design stack flow rate (ACFM) 1

Actual stack flow rate (ACFM) 1 Velocity (ft/sec) 0

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Lindrith Station HAPS Estimate
File Name: C:\rcoldstuff\RC Shared\EP 089 Largo lindrith\lindrith HH.ddf
Date: February 11, 2002

DESCRIPTION:

Description: 1.2X max throughput 90 MMscf/d

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.3304	7.929	1.4471
Ethane	0.7023	16.855	3.0761
Propane	1.7121	41.091	7.4992
Isobutane	0.7079	16.991	3.1008
n-Butane	1.4820	35.568	6.4912
Isopentane	0.5350	12.839	2.3431
n-Pentane	0.4608	11.059	2.0183
n-Hexane	0.2860	6.864	1.2527
Other Hexanes	0.8824	21.177	3.8649
Heptanes	0.1408	3.379	0.6167
2,2,4-Trimethylpentane	0.0085	0.205	0.0373
Benzene	0.6767	16.241	2.9640
Toluene	0.3109	7.462	1.3618
Ethylbenzene	0.0125	0.300	0.0547
Xylenes	0.1027	2.464	0.4498
Total Emissions	8.3510	200.425	36.5776
Total Hydrocarbon Emissions	8.3510	200.425	36.5776
Total VOC Emissions	7.3184	175.641	32.0545
Total HAP Emissions	1.3973	33.536	6.1202
Total BTEX Emissions	1.1028	26.467	4.8302

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.3331	7.994	1.4590
Ethane	0.7299	17.517	3.1969
Propane	2.0522	49.252	8.9885
Isobutane	1.0062	24.150	4.4073
n-Butane	2.3892	57.341	10.4647
Isopentane	1.3732	32.957	6.0147
n-Pentane	1.4834	35.602	6.4973
n-Hexane	1.8539	44.494	8.1202
Other Hexanes	4.0991	98.378	17.9540
Heptanes	2.6248	62.996	11.4967

2,2,4-Trimethylpentane	0.1425	3.421	0.6243
Benzene	7.2162	173.189	31.6070
Toluene	9.5022	228.054	41.6198
Ethylbenzene	1.1179	26.829	4.8963
Xylenes	12.0418	289.003	52.7430
Total Emissions	47.9657	1151.177	210.0898
Total Hydrocarbon Emissions	47.9657	1151.177	210.0898
Total VOC Emissions	46.9027	1125.665	205.4339
Total HAP Emissions	31.8746	764.990	139.6106
Total BTEX Emissions	29.8781	717.075	130.8661

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	6.4013	153.631	28.0376
Ethane	4.5300	108.719	19.8412
Propane	5.8350	140.039	25.5572
Isobutane	2.0471	49.132	8.9665
n-Butane	3.8293	91.903	16.7722
Isopentane	2.0267	48.641	8.8770
n-Pentane	1.8041	43.298	7.9018
n-Hexane	1.3566	32.558	5.9418
Other Hexanes	3.8642	92.740	16.9250
Heptanes	1.0293	24.703	4.5082
2,2,4-Trimethylpentane	0.1063	2.551	0.4656
Benzene	0.2172	5.212	0.9512
Toluene	0.1995	4.789	0.8740
Ethylbenzene	0.0145	0.349	0.0637
Xylenes	0.1096	2.630	0.4800
Total Emissions	33.3705	800.893	146.1630
Total Hydrocarbon Emissions	33.3705	800.893	146.1630
Total VOC Emissions	22.4393	538.543	98.2842
Total HAP Emissions	2.0037	48.089	8.7763
Total BTEX Emissions	0.5408	12.980	2.3689

EQUIPMENT REPORTS:

CONDENSER

Condenser Outlet Temperature:	100.00 deg. F
Condenser Pressure:	14.70 psia
Condenser Duty:	2.34e-001 MM BTU/hr
Hydrocarbon Recovery:	3.18 bbls/day
Produced Water:	19.97 bbls/day
VOC Control Efficiency:	84.40 %
HAP Control Efficiency:	95.62 %
BTEX Control Efficiency:	96.31 %
Dissolved Hydrocarbons in Water:	638.44 mg/L

Component	Emitted	Condensed

Water	0.08%	99.92%
Carbon Dioxide	94.63%	5.37%
Nitrogen	99.06%	0.94%
Methane	99.18%	0.82%
Ethane	96.22%	3.78%
Propane	83.43%	16.57%
Isobutane	70.36%	29.64%
n-Butane	62.03%	37.97%
Isopentane	38.96%	61.04%
n-Pentane	31.06%	68.94%
n-Hexane	15.43%	84.57%
Other Hexanes	21.53%	78.47%
Heptanes	5.36%	94.64%
2,2,4-Trimethylpentane	5.98%	94.02%
Benzene	9.38%	90.62%
Toluene	3.27%	96.73%
Ethylbenzene	1.12%	98.88%
Xylenes	0.85%	99.15%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages:	1.25
Calculated Dry Gas Dew Point:	4.88 lbs. H2O/MMSCF
Temperature:	71.0 deg. F
Pressure:	264.0 psig
Dry Gas Flow Rate:	108.0000 MMSCF/day
Glycol Losses with Dry Gas:	0.1253 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	69.63 lbs. H2O/MMSCF
Specified Lean Glycol Recirc. Ratio:	3.00 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	6.99%	93.01%
Carbon Dioxide	99.92%	0.08%
Nitrogen	100.00%	0.00%
Methane	100.00%	0.00%
Ethane	99.98%	0.02%
Propane	99.96%	0.04%
Isobutane	99.94%	0.06%
n-Butane	99.91%	0.09%
Isopentane	99.89%	0.11%
n-Pentane	99.86%	0.14%
n-Hexane	99.72%	0.28%
Other Hexanes	99.80%	0.20%
Heptanes	99.36%	0.64%
2,2,4-Trimethylpentane	99.72%	0.28%
Benzene	88.70%	11.30%
Toluene	81.51%	18.49%

Ethylbenzene	70.03%	29.97%
Xylenes	59.79%	40.21%

FLASH TANK

Flash Control: Vented to atmosphere
Flash Temperature: 160.0 deg. F
Flash Pressure: 14.7 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.91%	0.09%
Carbon Dioxide	33.45%	66.55%
Nitrogen	4.72%	95.28%
Methane	4.95%	95.05%
Ethane	13.88%	86.12%
Propane	26.02%	73.98%
Isobutane	32.95%	67.05%
n-Butane	38.42%	61.58%
Isopentane	40.69%	59.31%
n-Pentane	45.40%	54.60%
n-Hexane	57.96%	42.04%
Other Hexanes	51.96%	48.04%
Heptanes	71.97%	28.03%
2,2,4-Trimethylpentane	57.92%	42.08%
Benzene	97.22%	2.78%
Toluene	98.11%	1.89%
Ethylbenzene	98.85%	1.15%
Xylenes	99.21%	0.79%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	28.98%	71.02%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	1.23%	98.77%
n-Pentane	1.10%	98.90%
n-Hexane	0.86%	99.14%
Other Hexanes	1.92%	98.08%
Heptanes	0.69%	99.31%
2,2,4-Trimethylpentane	2.59%	97.41%
Benzene	5.14%	94.86%
Toluene	8.06%	91.94%

Ethylbenzene	10.53%	89.47%
Xylenes	13.02%	86.98%

STREAM REPORTS:

WET GAS STREAM

Temperature: 71.00 deg. F
Pressure: 278.70 psia
Flow Rate: 4.51e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.47e-001	3.14e+002
Carbon Dioxide	9.19e-001	4.80e+003
Nitrogen	4.19e-001	1.40e+003
Methane	8.32e+001	1.58e+005
Ethane	8.57e+000	3.06e+004
Propane	3.89e+000	2.04e+004
Isobutane	6.89e-001	4.76e+003
n-Butane	1.01e+000	6.96e+003
Isopentane	3.69e-001	3.17e+003
n-Pentane	2.70e-001	2.31e+003
n-Hexane	1.11e-001	1.13e+003
Other Hexanes	3.79e-001	3.88e+003
Heptanes	4.80e-002	5.72e+002
2,2,4-Trimethylpentane	6.49e-003	8.81e+001
Benzene	7.09e-003	6.58e+001
Toluene	4.79e-003	5.25e+001
Ethylbenzene	3.00e-004	3.78e+000
Xylenes	2.40e-003	3.02e+001
Total Components	100.00	2.39e+005

DRY GAS STREAM

Temperature: 71.00 deg. F
Pressure: 278.70 psia
Flow Rate: 4.50e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.03e-002	2.19e+001
Carbon Dioxide	9.19e-001	4.80e+003
Nitrogen	4.20e-001	1.40e+003
Methane	8.33e+001	1.58e+005
Ethane	8.58e+000	3.06e+004
Propane	3.90e+000	2.04e+004
Isobutane	6.90e-001	4.75e+003
n-Butane	1.01e+000	6.96e+003
Isopentane	3.70e-001	3.16e+003
n-Pentane	2.70e-001	2.31e+003

n-Hexane	1.11e-001	1.13e+003
Other Hexanes	3.79e-001	3.88e+003
Heptanes	4.78e-002	5.68e+002
2,2,4-Trimethylpentane	6.48e-003	8.78e+001
Benzene	6.30e-003	5.84e+001
Toluene	3.91e-003	4.28e+001
Ethylbenzene	2.10e-004	2.65e+000
Xylenes	1.44e-003	1.81e+001
Total Components	100.00	2.39e+005

LEAN GLYCOL STREAM

Temperature: 71.00 deg. F
Flow Rate: 1.41e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	7.81e+003
Water	1.50e+000	1.19e+002
Carbon Dioxide	4.67e-012	3.70e-010
Nitrogen	7.51e-014	5.96e-012
Methane	2.85e-018	2.26e-016
Ethane	3.13e-008	2.48e-006
Propane	4.05e-009	3.21e-007
Isobutane	1.16e-009	9.16e-008
n-Butane	1.94e-009	1.54e-007
Isopentane	2.15e-004	1.71e-002
n-Pentane	2.08e-004	1.65e-002
n-Hexane	2.03e-004	1.61e-002
Other Hexanes	1.01e-003	8.04e-002
Heptanes	2.32e-004	1.84e-002
2,2,4-Trimethylpentane	4.78e-005	3.79e-003
Benzene	4.93e-003	3.91e-001
Toluene	1.05e-002	8.33e-001
Ethylbenzene	1.66e-003	1.32e-001
Xylenes	2.27e-002	1.80e+000
Total Components	100.00	7.93e+003

RICH GLYCOL STREAM

Temperature: 71.00 deg. F
Pressure: 278.70 psia
Flow Rate: 1.48e+001 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.40e+001	7.80e+003
Water	4.95e+000	4.11e+002
Carbon Dioxide	4.46e-002	3.70e+000
Nitrogen	7.17e-004	5.95e-002
Methane	8.11e-002	6.73e+000

Ethane	6.34e-002	5.26e+000
Propane	9.50e-002	7.89e+000
Isobutane	3.68e-002	3.05e+000
n-Butane	7.49e-002	6.22e+000
Isopentane	4.12e-002	3.42e+000
n-Pentane	3.98e-002	3.30e+000
n-Hexane	3.89e-002	3.23e+000
Other Hexanes	9.69e-002	8.04e+000
Heptanes	4.42e-002	3.67e+000
2,2,4-Trimethylpentane	3.04e-003	2.53e-001
Benzene	9.42e-002	7.82e+000
Toluene	1.27e-001	1.05e+001
Ethylbenzene	1.52e-002	1.26e+000
Xylenes	1.68e-001	1.40e+001
Total Components	100.00	8.30e+003

FLASH TANK OFF GAS STREAM

Temperature: 160.00 deg. F
Pressure: 29.40 psia
Flow Rate: 3.77e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.03e+000	3.63e-001
Carbon Dioxide	5.64e+000	2.46e+000
Nitrogen	2.04e-001	5.67e-002
Methane	4.02e+001	6.40e+000
Ethane	1.52e+001	4.53e+000
Propane	1.33e+001	5.83e+000
Isobutane	3.55e+000	2.05e+000
n-Butane	6.64e+000	3.83e+000
Isopentane	2.83e+000	2.03e+000
n-Pentane	2.52e+000	1.80e+000
n-Hexane	1.59e+000	1.36e+000
Other Hexanes	4.52e+000	3.86e+000
Heptanes	1.04e+000	1.03e+000
2,2,4-Trimethylpentane	9.38e-002	1.06e-001
Benzene	2.80e-001	2.17e-001
Toluene	2.18e-001	2.00e-001
Ethylbenzene	1.38e-002	1.45e-002
Xylenes	1.04e-001	1.10e-001
Total Components	100.00	3.63e+001

FLASH TANK GLYCOL STREAM

Temperature: 160.00 deg. F
Flow Rate: 1.48e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.44e+001	7.80e+003
Water	4.97e+000	4.10e+002

Carbon Dioxide	1.50e-002	1.24e+000
Nitrogen	3.40e-005	2.81e-003
Methane	4.03e-003	3.33e-001
Ethane	8.83e-003	7.30e-001
Propane	2.48e-002	2.05e+000
Isobutane	1.22e-002	1.01e+000
n-Butane	2.89e-002	2.39e+000
Isopentane	1.68e-002	1.39e+000
n-Pentane	1.81e-002	1.50e+000
n-Hexane	2.26e-002	1.87e+000
Other Hexanes	5.06e-002	4.18e+000
Heptanes	3.20e-002	2.64e+000
2,2,4-Trimethylpentane	1.77e-003	1.46e-001
Benzene	9.20e-002	7.61e+000
Toluene	1.25e-001	1.03e+001
Ethylbenzene	1.51e-002	1.25e+000
Xylenes	1.67e-001	1.38e+001
Total Components	100.00	8.27e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 6.38e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.62e+001	2.92e+002
Carbon Dioxide	1.67e-001	1.24e+000
Nitrogen	5.97e-004	2.81e-003
Methane	1.23e-001	3.33e-001
Ethane	1.44e-001	7.30e-001
Propane	2.77e-001	2.05e+000
Isobutane	1.03e-001	1.01e+000
n-Butane	2.44e-001	2.39e+000
Isopentane	1.13e-001	1.37e+000
n-Pentane	1.22e-001	1.48e+000
n-Hexane	1.28e-001	1.85e+000
Other Hexanes	2.83e-001	4.10e+000
Heptanes	1.56e-001	2.62e+000
2,2,4-Trimethylpentane	7.42e-003	1.43e-001
Benzene	5.49e-001	7.22e+000
Toluene	6.13e-001	9.50e+000
Ethylbenzene	6.26e-002	1.12e+000
Xylenes	6.74e-001	1.20e+001
Total Components	100.00	3.41e+002

CONDENSER VENT GAS STREAM

Temperature: 100.00 deg. F
Pressure: 14.70 psia
Flow Rate: 7.68e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.51e+000	2.37e-001
Carbon Dioxide	1.32e+001	1.17e+000
Nitrogen	4.91e-002	2.78e-003
Methane	1.02e+001	3.30e-001
Ethane	1.15e+001	7.02e-001
Propane	1.92e+001	1.71e+000
Isobutane	6.02e+000	7.08e-001
n-Butane	1.26e+001	1.48e+000
Isopentane	3.67e+000	5.35e-001
n-Pentane	3.16e+000	4.61e-001
n-Hexane	1.64e+000	2.86e-001
Other Hexanes	5.06e+000	8.82e-001
Heptanes	6.95e-001	1.41e-001
2,2,4-Trimethylpentane	3.69e-002	8.52e-003
Benzene	4.28e+000	6.77e-001
Toluene	1.67e+000	3.11e-001
Ethylbenzene	5.81e-002	1.25e-002
Xylenes	4.78e-001	1.03e-001
Total Components	100.00	9.76e+000

CONDENSER PRODUCED WATER STREAM

Temperature: 100.00 deg. F
Flow Rate: 5.83e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
Water	9.99e+001	2.91e+002	999217.
Carbon Dioxide	1.44e-002	4.20e-002	144.
Nitrogen	7.82e-007	2.28e-006	0.
Methane	1.87e-004	5.46e-004	2.
Ethane	4.79e-004	1.40e-003	5.
Propane	1.02e-003	2.96e-003	10.
Isobutane	2.34e-004	6.82e-004	2.
n-Butane	6.66e-004	1.94e-003	7.
Isopentane	1.74e-004	5.08e-004	2.
n-Pentane	1.63e-004	4.76e-004	2.
n-Hexane	8.74e-005	2.55e-004	1.
Other Hexanes	2.14e-004	6.23e-004	2.
Heptanes	2.45e-005	7.13e-005	0.
2,2,4-Trimethylpentane	9.73e-007	2.84e-006	0.
Benzene	3.92e-002	1.14e-001	392.
Toluene	1.53e-002	4.47e-002	153.
Ethylbenzene	4.78e-004	1.39e-003	5.
Xylenes	5.59e-003	1.63e-002	56.
Total Components	100.00	2.91e+002	1000000.

CONDENSER RECOVERED OIL STREAM

Temperature: 100.00 deg. F

Flow Rate: 9.28e-002 gpm

Component	Conc. (wt%)	Loading (lb/hr)
Water	4.25e-002	1.68e-002
Carbon Dioxide	6.20e-002	2.45e-002
Nitrogen	6.10e-005	2.41e-005
Methane	5.51e-003	2.17e-003
Ethane	6.64e-002	2.62e-002
Propane	8.54e-001	3.37e-001
Isobutane	7.54e-001	2.98e-001
n-Butane	2.29e+000	9.05e-001
Isopentane	2.12e+000	8.38e-001
n-Pentane	2.59e+000	1.02e+000
n-Hexane	3.97e+000	1.57e+000
Other Hexanes	8.15e+000	3.22e+000
Heptanes	6.29e+000	2.48e+000
2,2,4-Trimethylpentane	3.40e-001	1.34e-001
Benzene	1.63e+001	6.43e+000
Toluene	2.32e+001	9.15e+000
Ethylbenzene	2.80e+000	1.10e+000
Xylenes	3.02e+001	1.19e+001
Total Components	100.00	3.95e+001

CONDENSER CONTROL CURVE DATA REPORT:

CONDENSER CONTROL EFFICIENCY CURVES

Note: Condenser curves computed for the range 40.0 F <= T <= 170.0 F.
DO NOT EXTRAPOLATE BEYOND THIS RANGE!

Temp(F)	BTEX	Total HAP	VOC
40.0	99.66	99.59	95.11
45.0	99.58	99.49	94.57
50.0	99.49	99.37	93.98
55.0	99.36	99.22	93.32
60.0	99.22	99.05	92.63
65.0	99.04	98.84	91.88
70.0	98.83	98.59	91.07
75.0	98.58	98.28	90.18
80.0	98.28	97.93	89.24
85.0	97.92	97.50	88.21
90.0	97.49	96.99	87.07
95.0	96.96	96.37	85.82
100.0	96.33	95.64	84.44
105.0	95.57	94.76	82.92
110.0	94.65	93.71	81.23
115.0	93.54	92.45	79.35
120.0	92.20	90.94	77.25
125.0	90.45	88.99	74.70
130.0	88.40	86.75	71.97
135.0	85.89	84.03	68.85
140.0	82.79	80.73	65.28
145.0	78.95	76.71	61.16
150.0	74.16	71.78	56.40
155.0	68.17	65.71	50.84

160.0	60.61	58.18	44.29
165.0	51.63	49.37	37.00
170.0	38.75	36.90	27.17

ANNUAL AIR-COOLED CONDENSER PERFORMANCE:

ANNUAL AIR-COOLED CONDENSER PERFORMANCE

Nearest Site for Air Temperature Data: Farmington, NM

Ambient Air Dry Bulb Temperature (deg. F)	Frequency (%)	Condenser Outlet Temperature (deg. F)
<=50	46.55	<=70
51-55	7.55	71-75
56-60	7.85	76-80
61-65	8.90	81-85
66-70	8.10	86-90
71-75	6.20	91-95
76-80	5.23	96-100
81-85	4.54	101-105
86-90	3.41	106-110
91-95	1.41	111-115
96-100	0.26	116-120
.>100	0.00	>120

Condenser outlet temperature approach to ambient: 20.00 deg. F

Annual air-cooled condenser emissions and control efficiency:

	Uncontrolled emissions tons/year	Controlled emissions tons/year	% Control
Benzene	31.607	1.682	94.68
BTEX	130.866	2.681	97.95
Total HAP	139.611	3.423	97.55
VOC	205.434	23.214	88.70

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID _TK-1_ Description _Condensate Tank_

SIC Code (4-digit) _4922_ SCC Code _40400311_

B. Emissions Unit Description

Primary use or equipment type _Condensate Tank_

Manufacturer _N/A_ Model No. _N/A_

Serial No. _N/A_ Installation date _<1972_

Raw materials _Natural Gas Condensate_

Finished products _Natural Gas Condensate_

Temporary source: _X_ No ___ Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	41.7 bbl	36,500 bbl
Maximum rate	41.7 bbl	36,500 bbl

D. Associated Air Pollution Control Equipment

Emissions unit ID _TBD_ Device Type _Vapor Recovery Unit (VRU)_

Manufacturer _TBD_ Model No _TBD_

Serial No. _TBD_ Installation date _TBD_

Control efficiency (%) _95.0_ Capture efficiency (%) ____.__

Air pollutant(s) controlled _VOCs_ Efficiency estimation method _Engineering Estimate_

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) __________.______ Inside stack diameter (ft) __________.______

Stack temp (F) __________.______ Design stack flow rate (ACFM) __________.______

Actual stack flow rate (ACFM) __________.______ Velocity (ft/sec) __________.______

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

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 TK-1

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
VOCs	N/A	0.06	2.6	N/A

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID _TK-2_ Description _Condensate Tank_

SIC Code (4-digit) _4922_ SCC Code _40400311_

B. Emissions Unit Description

Primary use or equipment type _Condensate Tank_

Manufacturer _N/A_ Model No. _N/A_

Serial No. _N/A_ Installation date _<1972_

Raw materials _Natural Gas Condensate_

Finished products _Natural Gas Condensate_

Temporary source: _X_ No ___ Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	41.7 bbl	36,500 bbl
Maximum rate	41.7 bbl	36,500 bbl

D. Associated Air Pollution Control Equipment

Emissions unit ID _TBD_ Device Type _Vapor Recovery Unit (VRU)_

Manufacturer _TBD_ Model No _TBD_

Serial No. _TBD_ Installation date _TBD_

Control efficiency (%) _95.0_ Capture efficiency (%) ____.__

Air pollutant(s) controlled _VOCs_ Efficiency estimation method _Engineering Estimate_

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) __________.______ Inside stack diameter (ft) __________.______

Stack temp (F) __________.______ Design stack flow rate (ACFM) __________.______

Actual stack flow rate (ACFM) __________.______ Velocity (ft/sec) __________.______

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

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 TK-2

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
VOCs	N/A	0.06	2.6	N/A

```
******************************************************************************************
*     Project Setup Information                                                          *
******************************************************************************************
Project File               : Untitled.Ept
Flowsheet Selection        : Oil Tank with Separator
Calculation Method         : RVP Distillation
Control Efficiency         : 95.0%
Known Separator Stream     : Low Pressure Gas
Entering Air Composition   : No

Date                       : 2008.04.29

******************************************************************************************
*     Data Input                                                                         *
******************************************************************************************

Separator Pressure         : 250.00[psig]
Separator Temperature      : 70.00[F]
Molar GOR                  : 0.0500
Ambient Pressure           : 14.70[psia]
Ambient Temperature        : 70.00[F]
C10+ SG                    : 0.8990
C10+ MW                    : 166.00

-- Low Pressure Gas ----------------------------------------------------------------------
   No.     Component            mol %
   1       H2S                  0.0000
   2       O2                   0.0000
   3       CO2                  2.7917
   4       N2                   0.4337
   5       C1                  68.0461
   6       C2                  11.9601
   7       C3                   7.7790
   8       i-C4                 1.9473
   9       n-C4                 2.7105
   10      i-C5                 1.2521
   11      n-C5                 0.0000
   12      C6                   2.3540
   13      C7+                  0.6794
   14      Benzene              0.0180
   15      Toluene              0.0210
   16      E-Benzene            0.0010
   17      Xylenes              0.0060
   18      n-C6                 0.0000
   19      224Trimethylp        0.0000

   C7+ Molar Ratio: C7  :    C8  :     C9  :     C10+
                  1.0000    1.0000    1.0000    1.0000

-- Sales Oil -----------------------------------------------------------------------------
Production Rate            : 100[bbl/day]
Days of Annual Operation   : 365 [days/year]
API Gravity                : 46.0
Reid Vapor Pressure        : 7.70[psia]

******************************************************************************************
*     Calculation Results                                                                *
******************************************************************************************

-- Emission Summary ----------------------------------------------------------------------
Item            Uncontrolled   Uncontrolled   Controlled   Controlled
                [ton/yr]       [lb/hr]        [ton/yr]     [lb/hr]
Total HAPs      1.120          0.256          0.056        0.013
Total HC        66.804         15.252         3.340        0.763
```

VOCs, C2+	60.684	13.855	3.034	0.693
VOCs, C3+	52.733	12.039	2.637	0.602

Uncontrolled Recovery Info.

Vapor	3.5800	[MSCFD]
HC Vapor	3.3400	[MSCFD]
GOR	35.80	[SCF/bbl]

-- Emission Composition --

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.605	0.138	0.030	0.007
2	O2	0.000	0.000	0.000	0.000
3	CO2	4.284	0.978	4.284	0.978
4	N2	0.114	0.026	0.114	0.026
5	C1	6.120	1.397	0.306	0.070
6	C2	7.951	1.815	0.398	0.091
7	C3	20.683	4.722	1.034	0.236
8	i-C4	4.884	1.115	0.244	0.056
9	n-C4	13.296	3.036	0.665	0.152
10	i-C5	4.243	0.969	0.212	0.048
11	n-C5	4.992	1.140	0.250	0.057
12	C6	1.448	0.331	0.072	0.017
13	C7	1.394	0.318	0.070	0.016
14	C8	0.534	0.122	0.027	0.006
15	C9	0.108	0.025	0.005	0.001
16	C10+	0.029	0.007	0.001	0.000
17	Benzene	0.105	0.024	0.005	0.001
18	Toluene	0.013	0.003	0.001	0.000
19	E-Benzene	0.002	0.000	0.000	0.000
20	Xylenes	0.014	0.003	0.001	0.000
21	n-C6	0.990	0.226	0.050	0.011
22	224Trimethylp	0.000	0.000	0.000	0.000
	Total	71.809	16.395	3.590	0.820

-- Stream Data --

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0508	0.0355	0.0067	0.6810	1.4514	1.0284
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.2437	0.0933	0.0002	6.4383	4.6707	5.6412
4	N2	28.01	0.0102	0.0005	0.0000	0.4113	0.0233	0.2363
5	C1	16.04	0.9543	0.1523	0.0000	33.9966	7.6384	22.1101
6	C2	30.07	0.6701	0.3612	0.0091	13.3981	17.6680	15.3237
7	C3	44.10	2.1827	1.7837	1.0550	18.6221	37.6065	27.1833
8	i-C4	58.12	1.1269	1.0500	0.9581	4.2943	5.5709	4.8700
9	n-C4	58.12	4.6091	4.4244	4.2190	12.2198	14.5215	13.2578
10	i-C5	72.15	3.1066	3.1026	3.0930	3.2694	3.5772	3.4082
11	n-C5	72.15	5.0558	5.0849	5.1030	3.8575	4.1947	4.0096
12	C6	86.16	4.1726	4.2505	4.3157	0.9620	1.0443	0.9991
13	C7	100.20	10.3655	10.5977	10.7955	0.7984	0.8751	0.8330
14	C8	114.23	10.8426	11.0993	11.3191	0.2654	0.2949	0.2787
15	C9	128.28	5.5127	5.6454	5.7591	0.0467	0.0562	0.0510
16	C10+	166.00	45.9695	47.0850	48.0426	0.0091	0.0110	0.0100
17	Benzene	78.11	0.5685	0.5805	0.5906	0.0743	0.0815	0.0776
18	Toluene	92.13	0.2132	0.2182	0.2224	0.0077	0.0086	0.0081
19	E-Benzene	106.17	0.0711	0.0728	0.0743	0.0008	0.0010	0.0009
20	Xylenes	106.17	0.6802	0.6965	0.7105	0.0071	0.0080	0.0075
21	n-C6	86.18	3.5939	3.6656	3.7260	0.6399	0.6968	0.6656
22	224Trimethylp	114.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	MW		123.89	125.97	127.60	38.19	45.79	41.62
	Stream Mole Ratio		1.0000	0.9763	0.9568	0.0237	0.0195	0.0432
	Heating Value	[BTU/SCF]				2017.62	2466.09	2219.86
	Gas Gravity	[Gas/Air]				1.32	1.58	1.44
	Bubble Pt. @ 100F	[psia]	56.28	19.99	8.71			
	RVP @ 100F	[psia]	18.38	11.58	7.71			
	Spec. Gravity @ 100F		0.800	0.803	0.806			

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

INITIAL COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION (I-COMP)

SECTION A - COMPLIANCE STATUS AND COMPLIANCE PLAN

Complete this section for each unique combination of applicable requirements and emissions units at the facility. List all compliance methods (monitoring, recordkeeping and reporting) you used to determine compliance with the applicable requirement described above. Indicate your compliance status at this time for this requirement and compliance methods and check "YES" or "NO" to the follow-up question.

Emission Unit ID(s): DEHY-STL

Applicable Requirement (Describe and Cite): **40 CFR 63, Subpart HH – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities**

Based on existing permit limits, this facility is a major source for HAPs. However, as it is a field compression facility, only emissions from glycol dehydrators and flashing tanks, if any, are aggregated to determine Subpart HH applicability. The facility is therefore a minor source for purposes of Subpart HH. It includes an affected facility, the glycol dehydrator, but no "flashing tanks". Off gas from the dehydrator is directed to a condenser, as required by an enforceable condition; the PTE of the dehydrator is therefore limited by this requirement.

The facility is not located within a UA plus offset and UC boundary and construction commenced prior to July 8, 2005; the compliance date for this facility is therefore January 5, 2009.

Compliance requirements are specified at 40 CFR 63.764 (d)(2)(i) & (ii) & 63.765. Based on the GRI GLYCalc calculations provided with the previous application for revision, HAP emissions are reduced by 95%, satisfying the requirements of 40 CFR 63.765 (c) (3) (i). The facility is therefore in compliance with this requirement.

Compliance Methods for the Above (Description and Citation):

Condenser

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? _X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

Emission Unit ID(s): DEHY-STL

Applicable Requirement (Description and Citation): **40 CFR 64 – Compliance Assurance Monitoring (CAM)**

Compliance Methods for the Above (Description and Citation):

In general terms, an affected unit must

- Be subject to an emission limit for a pollutant;
- Use a control device to achieve compliance with that limit; and
- Have a pre-control potential to emit for that pollutant greater than major source level.

Although the permit specifies that catalytic converters are installed on units A01 and A02, neither engine has pre-control emissions that make the unit a major source in itself.

However, the dehydrator still vent is a major source for HAPs if uncontrolled; and a minor source with the control device, the condenser. A CAM plan is therefore due with renewal. Such a plan is attached.

Compliance Status:

X In Compliance: Will you continue to comply up to permit issuance? _X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes _____No

Emission Unit ID(s): TK-1, TK-2

Applicable Requirement (Describe and Cite) 40 CFR 71. Condensate tanks previously believed to be insignificant activities have significant calculated emissions. Tanks are not "storage vessel with the potential for flash emissions" by reason of having throughput much less than 79,500 liters/day, and are thus not subject to 40 CFR 63 Subpart HH. Tanks are prior to custody transfer and pre-date Kb, and are therefore not subject to NSPS. Controlled emissions from each tank are less than major source level. However, units are not insignificant and are therefore identified here.

Compliance Methods for the Above (Description and Citation):
This application identifies the tanks as emissions units. Moreover, Enterprise will install a vapor recovery unit (VRU) on the tanks, with a consequent reduction in emissions by approximately 95%.

Compliance Status:

___ In Compliance: Will you continue to comply up to permit issuance? ____Yes ____No

_X__ Not In Compliance: Will you be in compliance at permit issuance? _X__Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

B. SCHEDULE OF COMPLIANCE

Complete this section if you answered "NO" to any of the questions in section A. Also complete this section if required to submit a schedule of compliance by an applicable requirement. Please attach copies of any judicial consent decrees or administrative orders for this requirement.

Unit(s)________TK-1, TK-2 Requirement__identify as emissions units; voluntarily install VRU to control VOC and HAP emissions

Reason for Noncompliance. Briefly explain reason for noncompliance at time of permit issuance or that future-effective requirement will not be met on a timely basis: Tanks grandfathered into original NSR permit as insignificant sources of emissions.

Narrative Description of how Source Compliance Will be Achieved. Briefly explain your plan for achieving compliance: Identify units as emissions sources in this application, voluntarily install VRU to control emissions.

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
Identify as emissions units in this application	15 May 2008
VRU installation on condensate tanks	15 Nov 2008

C. SCHEDULE FOR SUBMISSION OF PROGRESS REPORTS

Only complete this section if you are required to submit one or more schedules of compliance in section B or if an applicable requirement requires submittal of a progress report. If a schedule of compliance is required, your progress report should start within 6 months of application submittal and subsequently, no less than every six months. One progress report may include information on multiple schedules of compliance.

Contents of Progress Report (describe) Notification of installation of VRU on condensate tanks

First Report_Dec__/_30___/_2008_ Frequency of Submittal___one time__________

D. SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS

This section must be completed once by every source. Indicate when you would prefer to submit compliance certifications during the term of your permit (at least once per year).

Frequency of submittal_Semi-annually_ Beginning__

E. COMPLIANCE WITH ENHANCED MONITORING & COMPLIANCE CERTIFICATION REQUIREMENTS

This section must be completed once by every source. To certify compliance with these, you must be able to certify compliance for every applicable requirement related to monitoring and compliance certification at every unit.

Enhanced Monitoring Requirements: _X__ In Compliance ____ Not In Compliance

Compliance Certification Requirements: _X_ In Compliance ___ Not In Compliance

Note; by this application, permittee notifies EPA of emissions units TK-1 and TK-2, and therefore is in compliance with requirements of 40 CFR 71.

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 09/30/2010

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) Hurlburt (First) Terry (MI) L.

Title Senior Vice President - Operations

Street or P.O. Box P.O. Box 4324

City Houston State TX ZIP 77210 - 4324

Telephone (_713_) 880 - 6595 Ext. _ Facsimile (713) 880-6660

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) Terry L. Hurlburt

Name (typed) Terry L. Hurlburt Date: 5 / 12 / 2008

DMQ 05/09/2008

EPA Form 5900-02

Addendum 1

Applicable Requirements Discussion

The following discussion addresses applicable requirements, and requirements that may appear to be applicable but are not. All applicable and non-applicable requirements addressed here are included in the Code of Federal Regulations, Title 40. Requirements imposed by Permit V-SU-0032-02.03 are not addressed here.

Applicable Requirements
Upon reasonable inquiry, Enterprise has determined that the following requirements are relevant to this facility within the meaning of this application.

40 CFR 63, Subpart HH – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities
Based on existing permit limits, this facility is a major source for HAPs. However, as it is a field compression facility, only emissions from glycol dehydrators and flashing tanks, if any, are aggregated to determine Subpart HH applicability. The facility is therefore a minor source for purposes of Subpart HH. It includes an affected facility, the glycol dehydrator, but no "flashing tanks" as defined in this Subpart; tankage throughput at the site is less than the applicability threshold for this Subpart. Off gas from the dehydrator is directed to a condenser, as required by an enforceable condition; the PTE of the dehydrator is therefore limited by this requirement.

The facility is not located within a UA plus offset and UC boundary and construction commenced prior to July 8, 2005; the compliance date for this facility is therefore January 5, 2009.

Compliance requirements are specified at 40 CFR 63.764 (d)(2)(i) & (ii) & 63.765. Based on the GRI GLYCalc calculations provided with the previous application for revision, HAP emissions are reduced by 95%, satisfying the requirements of 40 CFR 63.765 (c) (3) (i). The facility is therefore in compliance with this requirement.

40 CFR 64 – Compliance Assurance Monitoring (CAM)
In general terms, an affected unit must

- Be subject to an emission limit for a pollutant;
- Use a control device to achieve compliance with that limit; and
- Have a pre-control potential to emit for that pollutant greater than major source level.

Although catalytic converters are installed on units A01 and A02, neither engine has pre-control emissions that make the unit a major source in itself.

However, the dehydrator still vent is a major source for HAPs if uncontrolled; and a minor source with the control device, the dehydrator. A CAM plan is therefore due with renewal. Such a plan is attached.

40 CFR 71 – Federal Operating Permits
The facility is a major source of NOx as defined by 40 CFR 71, and is operated in accordance with Permit V-SU-0032-02.03.

40 CFR 71.5(a)(1) requires that "*for each part 71 source, the owner or operator shall submit a timely and complete permit application in accordance with this section*". 40 CFR 71.5(a)(1)(iii) goes on to state that "*for purposes of permit renewal, a timely application is one that is submitted at least 6 months but not more than 18 months prior to expiration of the part 70 or 71 permit*".

Operating Permit R6FOPP71-03 expires on 11/16/08; as required by regulation, this application is being submitted prior to 5/16/08.

Non-Applicable Requirements
Some requirements may appear to apply to this facility when in fact they do not. Non-applicability is discussed here.

40 CFR 50 – National Ambient Air Quality Standards
40 CFR 50 establishes National Ambient Air Quality Standards but does not directly impose requirements on a specific stationary source and is therefore not applicable.

40 CFR 52.21 – Prevention of Significant Deterioration (PSD) of Air Quality
Enterprise has made a determination in accordance with 40 CFR 52.21(a)(1)(2) that the facility is a minor source for PSD purposes as defined at 40 CFR 52.21(b). Lindrith Compressor Station is not a source type identified at 40 CFR 52.21(a), and the facility-wide potential to emit is less than 250 tons per year (tpy) of any regulated pollutant.

40 CFR 60, Subpart A – General Provisions
This subpart is referenced by other NSPSs applicable to the facility and is therefore applicable only in the event that an NSPS is applicable. No NSPSs apply to this facility.

40 CFR 60, Subparts K, Ka, and Kb – Standards of Performance for Storage Vessels
The only tanks that are sources of VOC emissions pre date these regulations. This Subpart does not apply.

40 CFR 60, Subpart GG – Standards of Performance for Stationary Gas Turbines
No turbines are installed at the facility.

40 CFR 60, Subpart KKK – Standards of Performance for Equipment Leaks
The facility is not a gas processing plant as defined in this Subpart.

40 CFR 60, Subpart LLL – Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions
The facility is not a natural gas treating plant as defined in this Subpart.

40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
All engines at the facility were constructed before June 12, 2006 (40 CFR 60.4230.a.4) and have not been modified or reconstructed since (40 CFR 60.4230.a.5). This Subpart does not apply.

40 CFR 61 – National Emissions Standards for Hazardous Air Pollutants (NESHAP)
No 40 CFR 61 NESHAPs apply to this facility. In the case of asbestos demolition, subpart M of 40 CFR 61 may apply.

40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
All engines currently installed at the facility are "existing" (constructed before June 12, 2006) 4 stroke lean burns and therefore do not have to meet the requirements of Subpart ZZZZ, including the initial notification, as stated at 40 CFR 63.6590(b)(3).

40 CFR 68 – Accidental Release Prevention Program
This regulation does not apply. This regulation arises from section 112 (r) of the Clean Air Act and establishes thresholds based on inventoried quantity of specific substances in process. This facility does not manufacture, process, use, store, or otherwise handle regulated substances in excess of the quantities specified in 40 CFR 68.

40 CFR 72 – Acid Rain Regulations
The facility is not an electric utility generating facility as defined in the Part and therefore is not an affected facility under the Acid Rain Program.

40 CFR 82, Subpart F – Protection of Stratospheric Ozone
No operations involving CFCs are conducted at the facility.

40 CFR 82, Subpart H – Protection of Stratospheric Ozone
No halon-containing fire extinguishers are used, stored, or disposed of at the facility.

Addendum 2

Compliance Assurance Monitoring (CAM) Plan

Compliance Assurance Monitoring (CAM) Plan
40 CFR 63 Subpart G

Dehydrator Condenser

I Background

A. Emissions Unit
   Dehydrator still vent DEHY1-STL

B. Applicable Regulation(s), Limit, and Requirements
   40 CFR 63 Subpart HH
   Pollutant; VOCs, HAPs
   Emission Limit; 40 tpy VOC

C. Control Technology
   Condenser

II Monitoring Approach

See table

Indicator	Condenser outlet temperature	Integrity of ducting from dehydrator to condenser
Measurement Approach	Excursion defined as daily temperature greater than 100 F as established in application	Excursion defined as visible break, disconnect, or failure in ducting from dehydrator still vent to condensor.
	Excursions trigger permittee to re-measure temperature at regular intervals and establish daily average temperature, and make repairs or adjustments as necessary	Excursions trigger permittee to investigate and repair ducting.
Performance Criteria	Hydrocarbon recovery depends on temperature and heat rejection of condenser. Correct temperature has been established as daily average of 100 F	Control depends on duct integrity.
Verification of status	temperature measurement	inspection and repair
QA/QC practices	periodic measurement, and recording of data. Repair or replacement as needed.	periodic inspection, and recording of results. Repair or replacement as needed.
Monitoring frequency	daily	monthly
Averaging Period	daily	NA

Justification

Background; The controlled emission unit is a glycol dehydrator that can process up to 90 MMscf/day of natural gas. The dehydrator is equipped with a flash tank; offgas from the flash tank is vented. Offgas from the still vent is ducted to a condenser where condensable liquids are recovered. Non-condensible gases from the condenser are vented to atmosphere.

Rational for selection of performance indicators and indicator ranges.

The monitoring is based on two primary indicators; ducting integrity, and condenser operating temperature.

In order for the control device to control emissions to the levels authorized, all gases from the still vent must be directed to the condenser. Routine inspection of the ducting as specified at 40 CFR 63.773 (b)(i) is presumptively acceptable monitoring.

40 CFR 63.773 (e) offers two alternatives for verifying operation of control devices; demonstration by test, or by design analysis. In this case, worst-case calculations by GRI GLYCalc are the basis of the emission limits and control device operating parameters, which in turn are the basis of the performance indicators.

The design temperature of the condenser is based on GRI GLYCalc and EPA TANK data. A typical average annual temperature at Clayton, NM, (climatologically similar) according to TANK, is approximately 53 F; GRI GLYCalc recommends a maximum "approach" temperature (the temperature rise expected at a condenser in full sun) of 40 F; the condenser design temperature is therefore 53 + 40, plus a modest safety factor. Based on this design temperature, GRI GLYCalc calculates the maximum expected emission rate of VOCs and HAPs.

Clearly, emissions from the condenser will be affected by the uncontrolled emissions from the controlled device, the dehydrator. Parameters affecting the uncontrolled emissions, primarily glycol circulation rate and dehydrator throughput, are specified in the NSR permit. Note that 40 CFR 63 Subpart HH requires calculation of and operation at a glycol circulation rate based on specific criteria, resulting in a circulation rate no higher than, and generally lower than, the rate specified in the permit.

Thus, monitoring of key design parameters is sufficient to ensure proper operation of the condenser and compliance with emissions limits.