

APPENDIX A

EMISSION CALCULATIONS

Emission Calculations – Supporting Information

Superior 8G825 Compressor Engines (Units 1-3)

The Nitrogen Oxides (NO_x), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC) emission factors for uncontrolled compressor engine emissions were taken from AGA stack test data. The NO_x, CO and VOC emission factors for controlled compressor engine emissions were calculated from uncontrolled emissions tuned to the catalyst and the catalyst efficiencies provided by Miratech. A safety factor was included. As the fuel for the engines is sweet natural gas, PM10 and SO₂ emissions were assumed to be negligible. Emissions for each engine were calculated using a design rate of 800 horsepower and 8760 hours of operation per year.

Hazardous Air Pollutant (HAP) emissions were calculated using GRI-HAPCalc 3.0.

In addition to the emission calculations and GRI-HaPCalc output file, copies of stack test results and the MIRATECH performance guarantee are provided as supporting documentation.

Triethylene Glycol (TEG) Dehydrators (Units 4-7)

Dehydrator regenerator vent emissions were calculated using GRI-GLYCalc 3.0 assuming a production rate of 20 mmscfd (design capacity). The GRI-GLYCalc output file and a copy of the Ojito natural gas analysis is provided as supporting documentation. Additionally, regenerator vent emissions were calculated using GlyCalc 4.0, the most current version of the model, using a current gas analysis to show that the currently permitted emissions are appropriate to carry forward in this renewal application.

Flare (Unit 8)

Flare NO_x and CO emissions were calculated using the composition of the dehydrator exhaust gas and AP-42 emission factors from Table 13.5-1 of Section 13.5 (Industrial Flares). Supporting documentation is provided.

Storage Tanks

Flash emissions from the condensate tanks (Units T-11 and T-12) are calculated using actual condensate ticket sales for the entire station during calendar year 2007 (1100 barrels of flashed condensate total in 2007). E&P Tanks is then used to estimate the

volume of VOC flashed to the atmosphere. Working and breathing losses were calculated using 550 barrels of flashed condensate per tank per year using TANKS 4.0.9d.

A safety factor was applied to the calculated flash and working/breathing emissions to provide a margin of safety. This margin of safety allows for future variations in condensate composition and throughput, thus maximizing operational flexibility without exceeding the PSD major modification threshold.

The working and breathing losses for the glycol, gasoline, diesel, methanol, ambitol and lubrication oil storage tanks (Units T-1 through T-10, and T-13 through T-14) are also calculated using TANKS 4.0.9d. Based on the emission calculations, all of these tanks are included in this application as insignificant sources.

Copies of the E&P Tanks and TANKS 4.0.9d output files are provided in this attachment.

Fugitive Emissions

Fugitive emissions from leaking pipeline components (valves, flanges, seals, etc.) were calculated using emission factors from the *1993 Protocol for Equipment Leak Emission Estimates* published by the Environmental Protection Agency (EPA). Component counts were based on a survey conducted at a similar station which identified the number of components for each representative unit. The calculations are provided in this appendix.

Potential to Emit

Source: Internal Combustion Natural Gas Compressor Engines
 Company: Williams Field Services Company
 Site: Ojito Compressor Station
 Date: August 2001

Source	Pollutant	Emission Factor (g/hp-hr) EF	Design Rating (hp) DR	Operating Time (hr/yr) OP	(ton/yr)	Emission Rate (lb/hr) ER	(g/sec)
Uncontrolled Superior 8G825 #1	NOX	16	800	8,760	123.60	28.22	3.556
	CO	20	800	8,760	154.50	35.27	4.444
	VOC	1	800	8,760	7.73	1.76	0.222
Superior 8G825 #2	NOX	16	800	8,760	123.60	28.22	3.556
	CO	20	800	8,760	154.50	35.27	4.444
	VOC	1	800	8,760	7.73	1.76	0.222
Superior 8G825 #3	NOX	16	800	8,760	123.60	28.22	3.556
	CO	20	800	8,760	154.50	35.27	4.444
	VOC	1	800	8,760	7.73	1.76	0.222
Controlled Superior 8G825 #1	NOX	1.5	800	8,760	11.59	2.65	0.333
	CO	3.0	800	8,760	23.18	5.29	0.667
	VOC	0.56	800	8,760	4.35	0.99	0.125
Superior 8G825 #2	NOX	1.5	800	8,760	11.59	2.65	0.333
	CO	3.0	800	8,760	23.18	5.29	0.667
	VOC	0.56	800	8,760	4.35	0.99	0.125
Superior 8G825 #3	NOX	1.5	800	8,760	11.59	2.65	0.333
	CO	3.0	800	8,760	23.18	5.29	0.667
	VOC	0.56	800	8,760	4.35	0.99	0.125

Potential to Emit

Source: Internal Combustion Natural Gas Compressor Engines
Company: Williams Field Services Company
Site: Ojito Compressor Station
Date: August 2001

Source of Data:

Emission Factor (uncontrolled): AGA Test Data
Emission Factor (controlled): Based on manufacturer's catalyst efficiency with a 25 %
safety factor
Design Rating: Williams Field Services Company
Operating Time: Williams Field Services Company
Emission Rate: Calculated

Notes:

The three engines are controlled with AF-1011 Dynalco Air/Fuel Ratio Controllers and EQ-800 Miratech Catalytic Converters.
PM10 and SO2 emissions are assumed to be negligible.

Equations:

Emission Rates:

$$\left(\frac{EF}{hp-hr} \right) (DR \text{ hp}) \left(\frac{1 \text{ lb}}{453.59 \text{ g}} \right) \left(\frac{hr}{yr} \right) \left(\frac{1 \text{ ton}}{2,000 \text{ lb}} \right) = ER \left(\frac{\text{ton}}{\text{yr}} \right)$$
$$\left(\frac{EF}{hp-hr} \right) (DR \text{ hp}) \left(\frac{1 \text{ lb}}{453.59 \text{ g}} \right) = ER \left(\frac{\text{lb}}{\text{hr}} \right)$$
$$\left(\frac{ER}{hr} \right) \left(\frac{1 \text{ lb}}{453.59 \frac{\text{g}}{\text{lb}}} \right) \left(\frac{1 \text{ hr}}{3,600 \text{ sec}} \right) = ER \left(\frac{\text{g}}{\text{sec}} \right)$$

GRI-HAPCalc® 3.0
Engines Report

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

Notes:

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: SUPERIOR 1

Hours of Operation: 8,760 Yearly
 Rate Power: 800 hp
 Fuel Type: FIELD GAS
 Engine Type: 4-Stroke, Rich Burn
 Emission Factor Set: EPA > FIELD > LITERATURE
 Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

<u>Chemical Name</u>	<u>Emissions</u>	<u>Emission Factor</u>	<u>Emission Factor Set</u>
HAPs			
Formaldehyde	0.3233	0.04188340 g/bhp-hr	GRI Field
Methanol	0.0515	0.00666670 g/bhp-hr	GRI Field
Benzene	0.1706	0.02210000 g/bhp-hr	GRI Field
Toluene	0.0548	0.00710000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0131	0.00170000 g/bhp-hr	GRI Field
Naphthalene	0.0021	0.00027540 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0004	0.00005050 g/bhp-hr	GRI Field
Acenaphthylene	0.0001	0.00001890 g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090 g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570 g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720 g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400 g/bhp-hr	GRI Field
Phenanthrene	0.0002	0.00003210 g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260 g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860 g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040 g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070 g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020 g/bhp-hr	GRI Field

Total 0.6165

Criteria Pollutants

CO	70.1070	9.08349210 g/bhp-hr	GRI Field
NMEHC	2.0373	0.26386820 g/bhp-hr	GRI Field
NOx	58.0904	7.52854670 g/bhp-hr	GRI Field

Other Pollutants

Methane	7.5637	0.98000000 g/bhp-hr	GRI Field
Ethylene	0.9776	0.12666670 g/bhp-hr	GRI Field
Ethane	2.3669	0.30666670 g/bhp-hr	GRI Field
Propylene	0.1852	0.02400000 g/bhp-hr	GRI Field
Propane	0.7409	0.09600000 g/bhp-hr	GRI Field

WHITE SUPERIOR 8G825

05/01/80

ENGINE TEST 98, TEST SITE 20 EXHAUST STACK AREA SQ. FT. .529
 WHITE SUPERIOR 8G825 RATED 696 HP AT 900 RPM, 4-STROKE NA
 SOURCE: PR 15-92 HCR-3.57 NOX-CLH CO-NDIR HC- FID 02-POL FLOW-CB

RUN	1	2	3	4	5
DATE	11/13/78	11/13/78	11/13/78	11/13/78	11/13/78
TIME	1215	1330	1415	1500	1600

OPERATIONAL DATA

BAROMETER, IN. HG.	26.38	26.34	26.34	26.32	26.32
AMBIENT TEMP. DEG. F	63	58	58	58	58
INLET MAN. TEMP DEG. F	64	61	58	58	58
EXHAUST VEL. FT/SEC	104.02	88.49	74.68	99.20	60.22
SP. HUMIDITY GRAIN/LB	32	22	22	25	22
ENGINE SPEED RPM	879	880	880	880	658
HORSEPOWER	753	647	548	705	478
SCAV. AIR PRES. IN. HG.	-3.7	-5.6	-7.5	-4.6	-6.7
IGNIT. TIME DEG. BTDC	33.0	33.0	33.0	33.0	33.0
FUEL SP. GR. (STP)	.7363	.7363	.7363	.7363	.7363
HI HEAT VALUE BTU/SCF	988	988	988	988	988
LO HEAT VALUE BTU/SCF	895	895	895	895	895
CALC. EXH. FLOW LB/HR	5020	4375	3774	4828	3241
EXHAUST SP. GR. (STP)	.9605	.9617	.9634	.9609	.9658
EXHAUST TEMP. DEG. F	1050	1012	980	1034	891
FUEL FLOW SCF/HR	6455	5684	4898	6212	4048
FUEL MIL. BTU/HR (HHV)	6.374	5.613	4.837	6.134	3.997
FUEL FLOW LB/HR	364	320	276	350	228
AIR FLOW LB/HR (MET)	4657	4054	3498	4478	3013
AIR/FUEL RATIO (MET)	12.8	12.7	12.7	12.8	13.2
BSFC BTU/HP HR (HHV)	8465	8675	8826	8701	8362
EXHAUST H2O PERCENT	17.92	17.95	18.00	17.83	17.39

EMISSIONS AS MEASURED

NOX PPM	1536.00	1812.00	2169.00	1536.00	3300.00
NO PPM	ND	ND	ND	ND	ND
NO2 PPM	ND	ND	ND	ND	ND
CO2 PERCENT	11.14	11.37	11.73	11.14	11.43
HC PPM	840.00	708.00	415.00	706.00	324.00
CO PPM	6866.00	6007.00	2528.00	7032.00	238.00
O2 PERCENT	.10	.14	.20	.12	.77
NO/NOX	ND	ND	ND	ND	ND
NON-METH/TOTAL HC	.344	.329	ND	ND	.289

CALCULATED EMISSIONS

NOX LB/HR	10.540	10.817	11.142	10.142	14.631
HC LB/HR TOTAL	1.956	1.434	.723	1.582	.487
HC LB/HR NON-METH	.673	.472	ND	ND	.141
CO LB/HR	25.637	19.472	7.029	25.265	.573
NOX LB/MIL BTU	1.654	1.927	2.304	1.653	3.661
HC LB/MIL BTU TOTAL	.307	.256	.150	.258	.122
HC LB/MIL BTU NON-METH	.106	.084	ND	ND	.035
CO LB/MIL BTU	4.022	3.469	1.453	4.119	.143
NOX G/BHP HR	6.349	7.584	9.223	6.526	13.885
HC G/BHP HR TOTAL	1.178	1.006	.599	1.018	.463
HC G/BHP HR NON-METH	.405	.331	ND	ND	.134
CO G/BHP HR	15.443	13.651	5.818	16.256	.543
NOX PPM CORR TO 15 PCT O2	436	515	618	436	967

NOTE: NOX AS NO2 AND BTU AS HHV FOR CALCULATED EMISSIONS

WHITE SUPERIOR RG825

05/01/80

ENGINE TEST 98, TEST SITE 20 EXHAUST STACK AREA SQ. FT. .579
 WHITE SUPERIOR RG825 RATED 696 HP AT 900 RPM, 4-STROKE NA
 SOURCE: PR 15-92 HCR-3.57 NOX-CLH CO-NDIR HC- FID O2-POL FLOW-CB

RUN	6	7
DATE	11/13/78	11/13/78
TIME	1640	1720

OPERATIONAL DATA

BAROMETER, IN. HG.	26.33	26.33
AMBIENT TEMP. DEG. F	55	52
INLET MAN. TEMP DEG. F	54	52
EXHAUST VEL. FT/SEC	79.76	100.64
SP. HUMIDITY GRAIN/LB	20	25
ENGINE SPEED RPM	786	882
HORSEPOWER	628	717
SCAV. AIR PRES. IN. HG.	-5.1	-4.6
IGNIT. TIME DEG. BTDC	33.0	33.0
FUEL SP. GR. (STP)	.7363	.7363
H ₂ HEAT VALUE BTU/SCF	988	988
L ₂ HEAT VALUE BTU/SCF	895	895
CALC. EXH. FLOW LB/HR	3996	4894
EXHAUST SP. GR. (STP)	.9632	.9611
EXHAUST TEMP. DEG. F	992	1036
FUEL FLOW SCF/HR	5200	6235
FUEL MIL. BTU/HR (HHV)	5.135	6.157
FUEL FLOW LB/HR	293	351
AIR FLOW LB/HR (NET)	3703	4543
AIR/FUEL RATIO (NET)	12.6	12.9
BSFC BTU/HP HR (HHV)	8176	8587
EXHAUST H ₂ O PERCENT	18.00	17.66

EMISSIONS AS MEASURED

NOX PPM	2457.00	1587.00
NO PPM	ND	ND
NO ₂ PPM	ND	ND
CO ₂ PERCENT	11.67	11.03
HC PPM	452.00	681.00
CO PPM	3512.00	6784.00
O ₂ PERCENT	.20	.12
NO/NOX	ND	ND
NON-METH/TOTAL HC	ND	.357

CALCULATED EMISSIONS

NOX LB/HR	13.367	10.641
HC LB/HR TOTAL	.834	1.549
HC LB/HR NON-METH	ND	.553
CO LB/HR	10.347	24.775
NOX LB/MIL BTU	2.603	1.728
HC LB/MIL BTU TOTAL	.163	.252
HC LB/MIL BTU NON-METH	ND	.090
CO LB/MIL BTU	2.015	4.024
NOX G/BHP HR	9.655	6.732
HC G/BHP HR TOTAL	.603	.980
HC G/BHP HR NON-METH	ND	.350
CO G/BHP HR	7.473	15.674
NOX PPM CORR TO 15 PCT O ₂	700	451

NOTE: NOX AS NO₂ AND BTU AS HHV FOR CALCULATED EMISSIONS

ENGINE TEST 100, TEST SITE 20 EXHAUST STACK AREA SQ. FT. .579
 WHITE SUPERIOR 8G825 RATED 696 HP AT 900 RPM, 4-STROKE NA
 SOURCE: PR 15-92 HCR-3.57 NOX-CLH CO-NDIR HC- FID 02-POL FLOW-CB

RUN	1	2	3	4	5
DATE	11/15/78	11/15/78	11/15/78	11/15/78	11/15/78
TIME	1100	1200	1440	1530	1600
OPERATIONAL DATA					
BAROMETER, IN. HG.	30.26	30.26	30.26	30.26	30.26
AMBIENT TEMP. DEG. F	32	35	34	36	35
INLET MAN. TEMP DEG. F	45	NO	NO	NO	NO
EXHAUST VEL. FT/SEC	89.05	70.20	89.47	57.96	75.26
SP. HUMIDITY GRAIN/LB	21	21	23	22	21
ENGINE SPEED RPM	893	885	850	651	775
HORSEPOWER	681	551	729	564*	667
SCAV. AIR PRES. IN. HG.	-3.5	-5.7	-3.7	-4.1	-4.3
IGNIT. TIME DEG. BTOC	33.0	33.0	33.0	33.0	33.0
FUEL SP. GR. (STP)	.7363	.7363	.7363	.7363	.7363
HI HEAT VALUE BTU/SCF	988	988	988	988	988
LO HEAT VALUE BTU/SCF	895	895	895	895	895
CALC. EXH. FLOW LB/HR	5020	4107	4986	3568	4315
EXHAUST SP. GR. (STP)	.9685	.9685	.9617	.9683	.9612
EXHAUST TEMP. DEG. F	1023	969	1040	898	998
FUEL FLOW SCF/HR	5631	4553	6378	4066	5561
FUEL MIL. BTU/HR (MHV)	5.561	4.496	6.298	4.015	5.491
FUEL FLOW LB/HR	317	256	359	229	313
AIR FLOW LB/HR (WET)	4703	3850	4627	3339	4002
AIR/FUEL RATIO (WET)	14.8	15.0	12.9	14.6	12.8
BSFC BTU/HP HR (MHV)	8165 ^a	8160 ^a	8640 ^a	7119*	8233 ^a
EXHAUST H2O PERCENT	15.70	15.43	17.61	15.93	17.67

EMISSIONS AS MEASURED

NOX PPM	2280.00	1533.00	1548.00	2844.00	1593.00
NO PPM	2090.00	1386.00	ND	ND	1497.00
NO2 PPM	190.00	147.00	ND	ND	96.00
CO2 PERCENT	10.07	9.85	11.14	10.24	11.08
HC PPM	269.00	907.00	1224.00	534.00	1440.00
CO PPM	559.00	541.00	5438.00	401.00	6866.00
O2 PERCENT	3.00	3.35	.10	2.70	.15
NO/NOX	.917	.904	ND	ND	.940
NON-METH/TOTAL HC	.295	.408	.488	.359	.452

CALCULATED EMISSIONS

NOX LB/HR	15.932	8.793	10.577	14.092	9.419
HC LB/HR TOTAL	.638	1.765	2.838	.898	2.889
HC LB/HR NON-METH	.188	.720	1.385	.322	1.306
CO LB/HR	2.146	1.708	20.217	1.090	22.101
NOX LB/MIL BTU	2.865	1.956	1.679	3.510	1.715
HC LB/MIL BTU TOTAL	.115	.393	.451	.224	.526
HC LB/MIL BTU NON-METH	.034	.160	.220	.080	.238
CO LB/MIL BTU	.386	.380	3.210	.271	4.025
NOX G/8HP HR	10.612	7.239	6.581	11.334	6.405
HC G/8HP HR TOTAL	.425	1.453	1.766	.722	1.965
HC G/8HP HR NON-METH	.125	.593	.862	.259	.888
CO G/8HP HR	1.430	1.406	12.580	.877	15.030
NOX PPM CORR TO 15 PCT O2	752	515	439	922	453

NOTE: NOX AS NO2 AND BTU AS MHV FOR CALCULATED EMISSIONS

^a BSFC APPEARS TO BE SOMEWHAT LOW

* HIGH ENGINE TORQUE OVERLOAD

ENGINE TEST 100, TEST SITE 20 EXHAUST STACK AREA SQ. FT. .579
 WHITE SUPERIOR 8G825 RATED 696 HP AT 900 RPM, 4-STROKE NA
 SOURCE: PR 15-92 HCR-3.57 NOX-CLM CO-NDIR HC- FID 02-POL FLOW-CB

RUN 6
 DATE 11/15/78
 TIME 1630

OPERATIONAL DATA

BAROMETER, IN. HG.	30.26
AMBIENT TEMP. DEG. F	32
INLET MAN. TEMP DEG. F	ND
EXHAUST VEL. FT/SEC	99.99
SP. HUMIDITY GRAIN/LB	23
ENGINE SPEED RPM	862
HORSEPOWER	<u>789</u>
SCAV. AIR PRES. IN. HG.	-3.3
IGNIT. TIME. DEG. BTDC	33.0
FUEL SP. GR. (STP)	.7363
HI HEAT VALUE BTU/SCF	988
LO HEAT VALUE BTU/SCF	895
CALC. EXH. FLOW LB/HR	5543
EXHAUST SP. GR. (STP)	.9604
EXHAUST TEMP. DEG. F	1048
FUEL FLOW SCF/HR	6988
FUEL MIL. BTU/HR (HHV)	6.901
FUEL FLOW LB/HR	394
AIR FLOW LB/HR (WET)	5150
AIR/FUEL RATIO (WET)	13.1
BSFC BTU/HP HR (HHV)	8746
EXHAUST H2O PERCENT	17.36

EMISSIONS AS MEASURED

NOX PPM	1005.00
NO PPM	ND
NO2 PPM	ND
CO2 PERCENT	10.68
HC PPM	1195.00
CO PPM	8104.00
O2 PERCENT	.07
NO/NOX	ND
NON-METH/TOTAL HC	.491

CALCULATED EMISSIONS

NOX LB/HR	7.668
HC LB/HR TOTAL	3.094
HC LB/HR NON-METH	1.519
CO LB/HR	33.784
NOX LB/MIL BTU	1.111
HC LB/MIL BTU TOTAL	.448
HC LB/MIL BTU NON-METH	.220
CO LB/MIL BTU	4.896
NOX G/BHP HR	4.408
HC G/BHP HR TOTAL	1.779
HC G/BHP HR NON-METH	.873
CO G/BHP HR	19.423
NOX PPM CORR TO 15 PCT O2	285

NOTE: NOX AS NO2 AND BTU AS HHV FOR CALCULATED EMISSIONS

Emissions Control Equipment Specification Summary

APPLICATION

of Engines: 1
 Engine Operation: Gas Compression
 Fuel: Pipeline Quality Natural Gas
 Lubrication Oil: 0.5 wt% sulfated ash or less

Engine Data:

Engine: Superior 8G825
 Power Output: 789 bhp @ 862 rpm
 Exhaust Temp: 1043° F
 Exhaust Flow Rate: 5,543 lb/hr

Combination Catalytic Converter/Silencer System Data:

Catalytic Converter Model: EQ-800-10-D2
 Inlet / Outlet Pipe Size: 10"
 Overall Length: 37" OAL
 Diameter: 21.5" dia.
 Weight: 257 lb.
 System Backpressure: 9" WC (Housing + Catalyst: Flange to Flange)

Catalyst Section Internals: 304 SS
 Shell / Body Construction: 304 SS
 Inlet / Outlet Connection: Standard ANSI Flanges – FF
 Instrumentation Ports: 2 inlet / 2 outlet (1/2" NPT)
 Oxygen Sensor Ports: 1 outlet (18 mm)
 Exhaust Noise Attenuation: 5-10 dB(A)
 Operating Temperature Limits: 750 - 1,200° F {Inlet}

EMISSION REQUIREMENTS

Exhaust Gases	Engine Outputs (lb/hr)	Engine Outputs (gm/bhp-hr)	Reduction (%)	Converter Output (gm/bhp-hr)	Area Limits (gm/bhp-hr)
NO _x	7.668	4.41	90	< 0.44	N/A
CO	33.7	19.40	80	< 3.88	N/A
NMHC	1.5	0.86	50	< 0.43	N/A
Oxygen	0.07%	0.07%	—	—	—

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

By: Wes Meyer

Date: 6/22/2001

GRI-GLYCalc VERSION 3.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Ojito Compressor Station

File Name: C:\GLYCALC\OJITO.DDF

Date: July 27, 2001

DESCRIPTION:

Description: Ojito Compressor Station 20 MMSCFD TEG dehydrator treating conventional gas. Inlet natural gas composition based on extended natural gas analysis performed by Core Laboratories.

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROL DEVICE EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.3434	8.243	1.5043
Ethane	0.0813	1.952	0.3562
Propane	0.0673	1.616	0.2949
Isobutane	0.0194	0.466	0.0850
n-Butane	0.0390	0.936	0.1707
Isopentane	0.0216	0.518	0.0944
n-Pentane	0.0219	0.525	0.0958
n-Hexane	0.0178	0.427	0.0779
Cyclohexane	0.0437	1.050	0.1916
Other Hexanes	0.0213	0.511	0.0932
Heptanes	0.0392	0.941	0.1717
Methylcyclohexane	0.0553	1.328	0.2423
Benzene	0.1653	3.966	0.7238
Toluene	0.2600	6.241	1.1390
Ethylbenzene	0.0310	0.745	0.1359
Xylenes	0.1101	2.641	0.4821
C8+ Heavies	0.1464	3.513	0.6411
Total Emissions	1.4840	35.616	6.5000
Total Hydrocarbon Emissions	1.4840	35.616	6.5000
Total VOC Emissions	1.0592	25.422	4.6395
Total HAP Emissions	0.5842	14.020	2.5587
Total BTEX Emissions	0.5664	13.593	2.4808

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	17.1722	412.133	75.2143
Ethane	4.0662	97.590	17.8101

Propane	3.3663	80.791	14.7443
Isobutane	0.9705	23.293	4.2510
n-Butane	1.9490	46.777	8.5368
Isopentane	1.0782	25.876	4.7224
n-Pentane	1.0933	26.239	4.7887
n-Hexane	0.8893	21.342	3.8949
Cyclohexane	2.1868	52.484	9.5783
Other Hexanes	1.0645	25.547	4.6624
Heptanes	1.9597	47.033	8.5836
Methylcyclohexane	2.7661	66.386	12.1154
Benzene	8.2628	198.307	36.1910
Toluene	13.0019	312.046	56.9484
Ethylbenzene	1.5518	37.244	6.7970
Xylenes	5.5030	132.072	24.1032
C8+ Heavies	7.3189	175.652	32.0566

Total Emissions	74.2005	1780.812	324.9983
Total Hydrocarbon Emissions	74.2005	1780.812	324.9983
Total VOC Emissions	52.9621	1271.089	231.9738
Total HAP Emissions	29.2088	701.011	127.9344
Total BTEX Emissions	28.3195	679.668	124.0395

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	13.8269	331.845	60.5616
Ethane	3.9797	95.514	17.4312
Propane	3.6986	88.766	16.1997
Isobutane	1.1094	26.626	4.8592
n-Butane	2.1389	51.333	9.3682
Isopentane	1.1651	27.961	5.1030
n-Pentane	1.0863	26.072	4.7582
n-Hexane	0.6062	14.550	2.6553
Cyclohexane	0.4224	10.137	1.8501
Other Hexanes	0.8858	21.258	3.8796
Heptanes	0.7298	17.516	3.1966
Methylcyclohexane	0.4262	10.229	1.8668
Benzene	0.2468	5.923	1.0810
Toluene	0.2542	6.100	1.1133
Ethylbenzene	0.0177	0.426	0.0777
Xylenes	0.0440	1.057	0.1929
C8+ Heavies	0.3049	7.317	1.3353

Total Emissions	30.9429	742.629	135.5299
Total Hydrocarbon Emissions	30.9429	742.629	135.5299
Total VOC Emissions	13.1363	315.271	57.5370
Total HAP Emissions	1.1690	28.056	5.1202

Total BTEX Emissions

0.5628

13.506

Page: 3

2.4649

EQUIPMENT REPORTS:

INCINERATOR/FLARE

Ambient Temperature: 68.00 deg. F
 Excess Oxygen: 5.00 %
 Combustion Efficiency: 98.00 %
 Supplemental Fuel Requirement: 3.37e-001 MM BTU/hr

Component	Emitted	Destroyed
Methane	2.00%	98.00%
Ethane	2.00%	98.00%
Propane	2.00%	98.00%
Isobutane	2.00%	98.00%
n-Butane	2.00%	98.00%
Isopentane	2.00%	98.00%
n-Pentane	2.00%	98.00%
n-Hexane	2.00%	98.00%
Cyclohexane	2.00%	98.00%
Other Hexanes	2.00%	98.00%
Heptanes	2.00%	98.00%
Methylcyclohexane	2.00%	98.00%
Benzene	2.00%	98.00%
Toluene	2.00%	98.00%
Ethylbenzene	2.00%	98.00%
Xylenes	2.00%	98.00%
C8+ Heavies	2.00%	98.00%

ABSORBER

Specified Absorber Stages: 2.00
 Calculated Dry Gas Dew Point: 3.31 lbs. H2O/MMSCF
 Temperature: 65.0 deg. F
 Pressure: 125.0 psig
 Dry Gas Flow Rate: 20.0000 MMSCF/day
 Glycol Losses with Dry Gas: 0.0102 lb/hr
 Wet Gas Water Content: Saturated
 Calculated Wet Gas Water Content: 108.34 lbs. H2O/MMSCF
 Calculated Lean Glycol Recirc. Ratio: 5.32 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	3.04%	96.96%
Carbon Dioxide	99.87%	0.13%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%

Ethane	99.97%	0.03%
Propane	99.93%	0.07%
Isobutane	99.87%	0.13%
n-Butane	99.82%	0.18%
Isopentane	99.77%	0.23%
n-Pentane	99.70%	0.30%
n-Hexane	99.35%	0.65%
Cyclohexane	97.22%	2.78%
Other Hexanes	99.53%	0.47%
Heptanes	98.40%	1.60%
Methylcyclohexane	95.99%	4.01%
Benzene	73.99%	26.01%
Toluene	56.43%	43.57%
Ethylbenzene	32.78%	67.22%
Xylenes	20.80%	79.20%
C8+ Heavies	91.61%	8.39%

FLASH TANK

Flash Temperature: 140.0 deg. F
Flash Pressure: 30.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.92%	0.08%
Carbon Dioxide	28.56%	71.44%
Nitrogen	3.47%	96.53%
Methane	3.58%	96.42%
Ethane	11.26%	88.74%
Propane	21.21%	78.79%
Isobutane	28.47%	71.53%
n-Butane	34.06%	65.94%
Isopentane	37.34%	62.66%
n-Pentane	42.17%	57.83%
n-Hexane	56.33%	43.67%
Cyclohexane	84.01%	15.99%
Other Hexanes	49.92%	50.08%
Heptanes	72.06%	27.94%
Methylcyclohexane	87.00%	13.00%
Benzene	97.24%	2.76%
Toluene	98.23%	1.77%
Ethylbenzene	98.99%	1.01%
Xylenes	99.31%	0.69%
C8+ Heavies	96.46%	3.54%

REGENERATOR

Regenerator Stripping Gas:

Dry Product Gas

Stripping Gas Flow Rate: 8.0000 scfm

Component	Remaining in Glycol	Distilled Overhead
Water	42.77%	57.23%
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	1.13%	98.87%
n-Pentane	1.04%	98.96%
n-Hexane	0.83%	99.17%
Cyclohexane	3.75%	96.25%
Other Hexanes	1.84%	98.16%
Heptanes	0.68%	99.32%
Methylcyclohexane	4.55%	95.45%
Benzene	5.13%	94.87%
Toluene	8.04%	91.96%
Ethylbenzene	10.50%	89.50%
Xylenes	12.99%	87.01%
C8+ Heavies	12.39%	87.61%

STREAM REPORTS:

WET GAS STREAM

Temperature: 65.00 deg. F
 Pressure: 139.70 psia
 Flow Rate: 8.36e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.28e-001	9.05e+001
Carbon Dioxide	6.39e-001	6.19e+002
Nitrogen	5.19e-001	3.20e+002
Methane	8.19e+001	2.89e+004
Ethane	9.34e+000	6.18e+003
Propane	4.24e+000	4.12e+003
Isobutane	7.18e-001	9.20e+002
n-Butane	1.15e+000	1.47e+003
Isopentane	4.29e-001	6.82e+002
n-Pentane	3.39e-001	5.39e+002
n-Hexane	1.05e-001	1.99e+002

Cyclohexane	4.89e-002	9.06e+001
Other Hexanes	1.82e-001	3.45e+002
Heptanes	7.18e-002	1.59e+002
Methylcyclohexane	3.59e-002	7.77e+001

Benzene	1.90e-002	3.26e+001
Toluene	1.50e-002	3.04e+001
Ethylbenzene	9.98e-004	2.33e+000
Xylenes	2.99e-003	7.00e+000
C8+ Heavies	2.39e-002	8.98e+001

Total Components	100.00	4.49e+004
------------------	--------	-----------

 DRY GAS STREAM

Temperature: 65.00 deg. F
 Pressure: 139.70 psia
 Flow Rate: 8.33e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----------	-----------------	--------------------

Water	6.96e-003	2.75e+000
Carbon Dioxide	6.39e-001	6.18e+002
Nitrogen	5.20e-001	3.20e+002
Methane	8.21e+001	2.89e+004
Ethane	9.36e+000	6.18e+003

Propane	4.25e+000	4.12e+003
Isobutane	7.19e-001	9.18e+002
n-Butane	1.15e+000	1.47e+003
Isopentane	4.29e-001	6.80e+002
n-Pentane	3.39e-001	5.37e+002

n-Hexane	1.04e-001	1.98e+002
Cyclohexane	4.77e-002	8.81e+001
Other Hexanes	1.81e-001	3.43e+002
Heptanes	7.09e-002	1.56e+002
Methylcyclohexane	3.46e-002	7.46e+001

Benzene	1.41e-002	2.41e+001
Toluene	8.47e-003	1.71e+001
Ethylbenzene	3.28e-004	7.65e-001
Xylenes	6.24e-004	1.46e+000
C8+ Heavies	2.20e-002	8.23e+001

Total Components	100.00	4.48e+004
------------------	--------	-----------

 LEAN GLYCOL STREAM

Temperature: 65.00 deg. F
 Flow Rate: 7.76e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
-----------	----------------	--------------------

TEG	9.84e+001	4.30e+003
Water	1.50e+000	6.55e+001
Carbon Dioxide	1.82e-012	7.95e-011
Nitrogen	4.89e-014	2.14e-012
Methane	1.50e-018	6.56e-017
Ethane	1.98e-008	8.67e-007
Propane	2.73e-009	1.19e-007
Isobutane	7.95e-010	3.47e-008
n-Butane	1.48e-009	6.48e-008
Isopentane	1.79e-004	7.84e-003
n-Pentane	1.89e-004	8.24e-003
n-Hexane	1.49e-004	6.52e-003
Cyclohexane	1.91e-003	8.33e-002
Other Hexanes	3.71e-004	1.62e-002
Heptanes	2.91e-004	1.27e-002
Methylcyclohexane	2.97e-003	1.30e-001
Benzene	1.02e-002	4.46e-001
Toluene	2.60e-002	1.14e+000
Ethylbenzene	4.17e-003	1.82e-001
Xylenes	1.88e-002	8.21e-001
C8+ Heavies	2.35e-002	1.03e+000

Total Components	100.00	4.37e+003

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 65.00 deg. F
 Pressure: 139.70 psia
 Flow Rate: 8.11e+000 gpm
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)

TEG	9.47e+001	4.30e+003
Water	3.38e+000	1.53e+002
Carbon Dioxide	2.34e-002	1.06e+000
Nitrogen	3.49e-003	1.58e-001
Methane	3.16e-001	1.43e+001
Ethane	9.89e-002	4.48e+000
Propane	1.04e-001	4.69e+000
Isobutane	3.42e-002	1.55e+000
n-Butane	7.15e-002	3.24e+000
Isopentane	4.10e-002	1.86e+000
n-Pentane	4.14e-002	1.88e+000
n-Hexane	3.06e-002	1.39e+000
Cyclohexane	5.83e-002	2.64e+000
Other Hexanes	3.90e-002	1.77e+000
Heptanes	5.76e-002	2.61e+000

Methylcyclohexane	7.23e-002	3.28e+000
Benzene	1.97e-001	8.94e+000
Toluene	3.17e-001	1.44e+001
Ethylbenzene	3.86e-002	1.75e+000
Xylenes	1.40e-001	6.37e+000
C8+ Heavies	1.90e-001	8.60e+000

Total Components	100.00	4.53e+003

FLASH TANK OFF GAS STREAM

Temperature: 140.00 deg. F
 Pressure: 44.70 psia
 Flow Rate: 4.69e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	5.44e-001	1.21e-001
Carbon Dioxide	1.39e+000	7.57e-001
Nitrogen	4.41e-001	1.53e-001
Methane	6.97e+001	1.38e+001
Ethane	1.07e+001	3.98e+000
Propane	6.78e+000	3.70e+000
Isobutane	1.54e+000	1.11e+000
n-Butane	2.98e+000	2.14e+000
Isopentane	1.31e+000	1.17e+000
n-Pentane	1.22e+000	1.09e+000
n-Hexane	5.69e-001	6.06e-001
Cyclohexane	4.06e-001	4.22e-001
Other Hexanes	8.31e-001	8.86e-001
Heptanes	5.89e-001	7.30e-001
Methylcyclohexane	3.51e-001	4.26e-001
Benzene	2.55e-001	2.47e-001
Toluene	2.23e-001	2.54e-001
Ethylbenzene	1.35e-002	1.77e-002
Xylenes	3.35e-002	4.40e-002
C8+ Heavies	1.45e-001	3.05e-001

Total Components	100.00	3.20e+001

FLASH TANK GLYCOL STREAM

Temperature: 140.00 deg. F
 Flow Rate: 8.04e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)

TEG	9.54e+001	4.30e+003
Water	3.40e+000	1.53e+002
Carbon Dioxide	6.72e-003	3.03e-001

Nitrogen	1.22e-004	5.50e-003
Methane	1.14e-002	5.13e-001
Ethane	1.12e-002	5.05e-001
Propane	2.21e-002	9.96e-001
Isobutane	9.81e-003	4.42e-001
n-Butane	2.45e-002	1.10e+000
Isopentane	1.54e-002	6.94e-001
n-Pentane	1.76e-002	7.92e-001
n-Hexane	1.74e-002	7.82e-001
Cyclohexane	4.93e-002	2.22e+000
Other Hexanes	1.96e-002	8.83e-001
Heptanes	4.18e-002	1.88e+000
Methylcyclohexane	6.34e-002	2.85e+000
Benzene	1.93e-001	8.70e+000
Toluene	3.14e-001	1.41e+001
Ethylbenzene	3.85e-002	1.73e+000
Xylenes	1.40e-001	6.32e+000
C8+ Heavies	1.84e-001	8.30e+000

Total Components	100.00	4.50e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 2.54e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	7.26e+001	8.77e+001
Carbon Dioxide	2.23e-001	6.59e-001
Nitrogen	1.01e-001	1.90e-001
Methane	1.60e+001	1.72e+001
Ethane	2.02e+000	4.07e+000
Propane	1.14e+000	3.37e+000
Isobutane	2.49e-001	9.71e-001
n-Butane	5.00e-001	1.95e+000
Isopentane	2.23e-001	1.08e+000
n-Pentane	2.26e-001	1.09e+000
n-Hexane	1.54e-001	8.89e-001
Cyclohexane	3.87e-001	2.19e+000
Other Hexanes	1.84e-001	1.06e+000
Heptanes	2.92e-001	1.96e+000
Methylcyclohexane	4.20e-001	2.77e+000
Benzene	1.58e+000	8.26e+000
Toluene	2.10e+000	1.30e+001
Ethylbenzene	2.18e-001	1.55e+000
Xylenes	7.73e-001	5.50e+000

C8+ Heavies 6.41e-001 7.32e+000

 Total Components 100.00 1.63e+002

INCINERATOR OFF GAS STREAM

 Temperature: 1000.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 1.38e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	5.90e+001	3.43e-001
Ethane	7.45e+000	8.13e-002
Propane	4.21e+000	6.73e-002
Isobutane	9.20e-001	1.94e-002
n-Butane	1.85e+000	3.90e-002
Isopentane	8.23e-001	2.16e-002
n-Pentane	8.35e-001	2.19e-002
n-Hexane	5.68e-001	1.78e-002
Cyclohexane	1.43e+000	4.37e-002
Other Hexanes	6.80e-001	2.13e-002
Heptanes	1.08e+000	3.92e-002
Methylcyclohexane	1.55e+000	5.53e-002
Benzene	5.83e+000	1.65e-001
Toluene	7.77e+000	2.60e-001
Ethylbenzene	8.05e-001	3.10e-002
Xylenes	2.86e+000	1.10e-001
C8+ Heavies	2.37e+000	1.46e-001
-----	-----	-----
Total Components	100.00	1.48e+000

Natural Gas Analysis
 Williams Field Services Company
 Ojito Compressor Station

<u>C₁ through C₆ Compounds</u>	
Nitrogen (N ₂)	0.52
Methane (C ₁)	82.07
Ethane (C ₂)	9.36
Carbon Dioxide (CO ₂)	0.64
Propane (C ₃)	4.25
isoButane (i-C ₄)	0.72
n-Butane (n-C ₄)	1.15
isoPentane (i-C ₅)	0.43
n-Pentane (n-C ₅)	0.34
Hexanes (C ₆ +)	0.50
<u>C₆+ Compounds</u>	
Benzene	0.019
Cyclohexane	0.049
n-Hexane	0.105
Other C ₆	0.182
Toluene	0.015
Methylcyclohexane	0.036
Heptanes	0.072
Ethylbenzene	0.001
Xylenes	0.003
C ₈ + Heavies	0.024
Total	99.99

Based on an extended gas analysis for Ojito Compressor Station sampled May 13, 1998.
 Analysis performed by Core Laboratories, Houston Texas, on May 26, 1998.



CORE LABORATORIES

LABORATORY TESTS RESULTS
05/26/98

JOB NUMBER: 982413 CUSTOMER: WILLIAMS FIELD SERVICES ATTN: BOBBY MYERS

CLIENT I.D.:
DATE SAMPLED: 05/13/98
TIME SAMPLED: 00:00
WORK DESCRIPTION: Ojito

LABORATORY I.D.: 982413-0002
DATE RECEIVED: 05/21/98
TIME RECEIVED: 17:00
REMARKS:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Extended Natural Gas Analysis						
		*1			05/26/98	TSH
Oxygen	0.02	0.01	Mol %	GPA 2261-90		
Nitrogen	0.52	0.01	Mol %	GPA 2261-90		
Carbon Dioxide	0.64	0.01	Mol %	GPA 2261-90		
Methane	82.07	0.01	Mol %	GPA 2261-90		
Ethane	9.36	0.01	Mol %	GPA 2261-90		
Propane	4.25	0.01	Mol %	GPA 2261-90		
Isobutane	0.72	0.01	Mol %	GPA 2261-90		
n-Butane	1.15	0.01	Mol %	GPA 2261-90		
Isopentane	0.43	0.01	Mol %	GPA 2261-90		
n-Pentane	0.34	0.01	Mol %	GPA 2261-90		
Hexanes Plus	0.50	0.01	Mol %	GPA 2261-90		
Total	100.00	0.01	Mol %			
Relative Density	0.70593	0		GPA 2172-86		
Compressibility Factor	0.99676	0		GPA 2172-86		
Gross Heating Value (Dry/Real)	1221.9	0	BTU/CF	14.696		
Net Heating Value (Dry)	1107.5	0	BTU/CF (Real)			
2,2-Dimethylbutane	0.010	0.001	Mol %	GPA 2286-86		
2-Methyl Pentane	0.115	0.001	Mol %	GPA 2286-86		
3-Methyl Pentane	0.054	0.001	Mol %	GPA 2286-86		
n-Hexane 0.182	0.105	0.001	Mol %	GPA 2286-86		C6
Methylcyclopentane	0.003	0.001	Mol %	GPA 2286-86		
Benzene	0.019	0.001	Mol %	GPA 2286-86		
Cyclohexane	0.049	0.001	Mol %	GPA 2286-86		
2-Methyl Hexane	0.021	0.001	Mol %	GPA 2286-86		
3-Methylhexane	0.020	0.001	Mol %	GPA 2286-86		
Dimethylcyclopentanes	0.011	0.001	Mol %	GPA 2286-86		
n-Heptane 0.072	0.020	0.001	Mol %	GPA 2286-86		C7
Methylcyclohexane	0.036	0.001	Mol %	GPA 2286-86		
Trimethylcyclopentanes	0.003	0.001	Mol %	GPA 2286-86		
Toluene	0.015	0.001	Mol %	GPA 2286-86		
2-Methylheptane	0.003	0.001	Mol %	GPA 2286-86		
3-Methylheptane	0.001	0.001	Mol %	GPA 2286-86		
Dimethylcyclohexanes	0.003	0.001	Mol %	GPA 2286-86		
n-Octane 0.013	0.003	0.001	Mol %	GPA 2286-86		C8
Ethyl Benzene	<0.001	0.001	Mol %	GPA 2286-86		
Xylenes (total)	0.003	0.001	Mol %	GPA 2286-86		
C9 Paraffins	<0.001	0.001	Mol %	GPA 2286-86		
n-Nonane 0.010	0.009	0.001	Mol %	GPA 2286-86		C9
Decanes Plus 0.001	<0.001	0.001	Mol %	GPA 2286-86		C10+
Hexanes Plus Mol WT	90.3	0.1	#/#-mol	GPA 2286-86		
Hexanes Plus Relative Density	0.7021	0.0001	60/60	GPA 2286-86		
Hexanes Plus Heating Value	4886.0	0.1	BTU/CF (Ideal)	GPA 2286-86		
Hexanes Plus Vapor Equivalent	24.608	0.001	CF/gal	GPA 2286-86		

P O BOX 34766
HOUSTON, TX 77234-4282
(713) 943-9776

PAGE:2

The analytical results, opinions or interpretations contained in this report are based upon information and material supplied by the client for whose exclusive and confidential use this report has been made. The analytical results, opinions or interpretations expressed herein are the best judgment of Core Laboratories. Core Laboratories, however, makes no warranty or representation, express or implied, of any type, and expressly disclaims any liability for the accuracy, order, operations or performance of any oil, gas, coal or other mineral, property, well or field in connection with which such report is used or relied upon for any reason whatsoever. This report shall not be reproduced, in whole or in part, without the written approval of Core Laboratories.



Ojito dehys for 2008 TV renewal 05-27-08 input.txt

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Ojito dehys for TV renewal
File Name: C:\backup\awilliams\NewMexico\facilities\Ojito\Title V Part 71 5-yr
renewal application 2007\Ojito dehys 05-27-08.ddf
Date: May 27, 2008

DESCRIPTION:

Description: Ojito Title V renewal application GLYCalc
v4.0
to confirm current permitted rate using
2007 NESHAP HH 11/21/07 ext analysis & op
parameters w/gas & glycol rates at
capacity

Annual Hours of Operation: 8760.0 hours/yr.

WET GAS:

Temperature: 68.00 deg. F
Pressure: 400.00 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	0.6982
Nitrogen	0.3294
Methane	81.5684
Ethane	9.8601
Propane	4.5191
Isobutane	0.7628
n-Butane	1.2371
Isopentane	0.4042
n-Pentane	0.3068
n-Hexane	0.0644
Cyclohexane	0.0257
Other Hexanes	0.1379
Heptanes	0.0519
Methylcyclohexane	0.0130
2,2,4-Trimethylpentane	0.0028
Benzene	0.0112
Toluene	0.0049
Xylenes	0.0002
C8+ Heavies	0.0021

DRY GAS:

Flow Rate: 20.0 MMSCF/day
Water Content: 6.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 3.3 gpm

PUMP:

Glycol Pump Type: Gas Injection
Gas Injection Pump Volume Ratio: 0.080 acfm gas/gpm glycol

FLASH TANK:

Flash Control: Combustion device
Flash Control Efficiency: 95.00 %
Temperature: 120.0 deg. F
Pressure: 40.0 psig

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Combustion Device
Destruction Efficiency: 98.0 %
Excess Oxygen: 5.0 %
Ambient Air Temperature: 60.0 deg. F

QUESTAR APPLIED TECHNOLOGY

1210 D. Street, Rock Springs, Wyoming 82901

(307) 352-7292

LIMS ID:	N/A	Description:	Ojito Dehy
Analysis Date/Time:	12/6/2007 10:15 AM	Field:	Ojito
Analyst Initials:	AST	ML#:	Williams
Instrument ID:	Instrument 1	GC Method:	Quesbtex
Data File:	QPC63.D		
Date Sampled:	11/21/2007		

Component	Mol%	Wt%	LV%
Methane	81.5684	64.1674	73.1697
Ethane	9.8601	14.5386	13.9932
Propane	4.5191	9.7717	6.5940
Isobutane	0.7628	2.1741	1.3214
n-Butane	1.2371	3.5258	2.0653
Neopentane	0.0082	0.0290	0.0166
Isopentane	0.3960	1.4009	0.7675
n-Pentane	0.3068	1.0853	0.5883
2,2-Dimethylbutane	0.0080	0.0339	0.0177
2,3-Dimethylbutane	0.0270	0.1142	0.0586
2-Methylpentane	0.0665	0.2810	0.1461
3-Methylpentane	0.0364	0.1536	0.0786
n-Hexane	0.0644	0.2723	0.1403
Heptanes	0.1095	0.4813	0.2160
Octanes	0.0020	0.0112	0.0052
Nonanes	0.0000	0.0000	0.0000
Decanes plus	0.0001	0.0004	0.0002
Nitrogen	0.3294	0.4525	0.1912
Carbon Dioxide	0.6982	1.5068	0.6301
Oxygen	0.0000	0.0000	0.0000
Hydrogen Sulfide	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Global Properties	Units	
Gross BTU/Real CF	1227.6	BTU/SCF at 60°F and 14.73 psia
Sat. Gross BTU/Real CF	1207.6	BTU/SCF at 60°F and 14.73 psia
Gas Compressibility (Z)	0.9966	
Specific Gravity	0.7060	air=1
Avg Molecular Weight	20.394	gm/mole
Propane GPM	1.242433	gal/MCF
Butane GPM	0.638119	gal/MCF
Gasoline GPM	0.380579	gal/MCF
26# Gasoline GPM	0.769778	gal/MCF
Total GPM	2.261182	gal/MCF
Base Mol%	99.206	%v/v

Sample Temperature:	85	°F
Sample Pressure:	400	psig

Reviewed By: _____

Component	Mol%	Wt%	LV%
Benzene	0.0112	0.0429	0.0166
Toluene	0.0049	0.0222	0.0087
Ethylbenzene	0.0000	0.0000	0.0000
M&P Xylene	0.0000	0.0000	0.0000
O-Xylene	0.0000	0.0000	0.0000
2,2,4-Trimethylpentane	0.0028	0.0156	0.0074
Cyclopentane	0.0000	0.0000	0.0000
Cyclohexane	0.0257	0.1060	0.0463
Methylcyclohexane	0.0130	0.0626	0.0277
Description:	Ojito Dehy		

GRI GlyCalc Information

Component	Mol%	Wt%	LV%
Carbon Dioxide	0.6982	1.5068	0.6301
Hydrogen Sulfide	0.0000	0.0000	0.0000
Nitrogen	0.3294	0.4525	0.1912
Methane	81.5684	64.1674	73.1697
Ethane	9.8601	14.5386	13.9932
Propane	4.5191	9.7717	6.5940
Isobutane	0.7628	2.1741	1.3214
n-Butane	1.2371	3.5258	2.0653
Isopentane	0.4042	1.4299	0.7841
n-Pentane	0.3068	1.0853	0.5883
Cyclopentane	0.0000	0.0000	0.0000
n-Hexane	0.0644	0.2723	0.1403
Cyclohexane	0.0257	0.1060	0.0463
Other Hexanes	0.1379	0.5827	0.3010
Heptanes	0.0519	0.2320	0.1093
Methylcyclohexane	0.0130	0.0626	0.0277
2,2,4 Trimethylpentane	0.0028	0.0156	0.0074
Benzene	0.0112	0.0429	0.0166
Toluene	0.0049	0.0222	0.0087
Ethylbenzene	0.0000	0.0000	0.0000
Xylenes	0.0000	0.0000	0.0000
C8+ Heavies	0.0021	0.0116	0.0054
Subtotal	100.0000	100.0000	100.0000
Oxygen	0.0000	0.0000	0.0000
Total	100.0000	100.0000	100.0000

Ojito dehys for 2008 TV renewal 05-27-08 output.txt

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Ojito dehys for TV renewal
 File Name: C:\backup\awilliams\NewMexico\facilities\Ojito\Title V Part 71 5-yr
 renewal application 2007\Ojito dehys 05-27-08.ddf
 Date: May 27, 2008

DESCRIPTION:

Description: Ojito Title V renewal application GLYCalc
 v4.0
 to confirm current permitted rate using
 2007 NESHAP HH 11/21/07 ext analysis & op
 parameters w/gas & glycol rates at
 capacity

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0055	0.132	0.0240
Ethane	0.0059	0.142	0.0259
Propane	0.0113	0.272	0.0496
Isobutane	0.0049	0.117	0.0214
n-Butane	0.0125	0.300	0.0548
Isopentane	0.0064	0.153	0.0279
n-Pentane	0.0072	0.172	0.0313
n-Hexane	0.0047	0.114	0.0207
Cyclohexane	0.0135	0.324	0.0591
Other Hexanes	0.0064	0.154	0.0280
Heptanes	0.0134	0.321	0.0585
Methylcyclohexane	0.0109	0.261	0.0477
2,2,4-Trimethylpentane	0.0003	0.006	0.0012
Benzene	0.0639	1.534	0.2800
Toluene	0.0519	1.245	0.2271
Xylenes	0.0047	0.112	0.0204
C8+ Heavies	0.0045	0.108	0.0197
Total Emissions	0.2277	5.465	0.9974
Total Hydrocarbon Emissions	0.2277	5.465	0.9974
Total VOC Emissions	0.2163	5.191	0.9474
Total HAP Emissions	0.1254	3.011	0.5495
Total BTEX Emissions	0.1205	2.891	0.5276

UNCONTROLLED REGENERATOR EMISSIONS

Ojito dehy for 2008 TV renewal 05-27-08 output.txt

Component	lbs/hr	lbs/day	tons/yr
Methane	0.2744	6.585	1.2017
Ethane	0.2961	7.107	1.2970
Propane	0.5658	13.580	2.4784
Isobutane	0.2442	5.862	1.0698
n-Butane	0.6251	15.003	2.7381
Isopentane	0.3181	7.633	1.3931
n-Pentane	0.3576	8.582	1.5662
n-Hexane	0.2365	5.677	1.0360
Cyclohexane	0.6750	16.201	2.9567
other Hexanes	0.3198	7.676	1.4009
Heptanes	0.6678	16.027	2.9249
Methylcyclohexane	0.5443	13.063	2.3841
2,2,4-Trimethylpentane	0.0133	0.318	0.0580
Benzene	3.1964	76.714	14.0002
Toluene	2.5930	62.231	11.3572
Xylenes	0.2333	5.599	1.0218
C8+ Heavies	0.2253	5.407	0.9867
Total Emissions	11.3860	273.264	49.8707
Total Hydrocarbon Emissions	11.3860	273.264	49.8707
Total VOC Emissions	10.8155	259.573	47.3720
Total HAP Emissions	6.2724	150.538	27.4733
Total BTEX Emissions	6.0227	144.544	26.3792

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.9433	22.639	4.1317
Ethane	0.2796	6.711	1.2248
Propane	0.2434	5.842	1.0661
Isobutane	0.0679	1.629	0.2973
n-Butane	0.1310	3.145	0.5739
Isopentane	0.0574	1.378	0.2514
n-Pentane	0.0513	1.232	0.2248
n-Hexane	0.0183	0.438	0.0799
Cyclohexane	0.0130	0.313	0.0571
Other Hexanes	0.0330	0.792	0.1446
Heptanes	0.0244	0.585	0.1068
Methylcyclohexane	0.0080	0.193	0.0351
2,2,4-Trimethylpentane	0.0010	0.024	0.0043
Benzene	0.0083	0.199	0.0363
Toluene	0.0042	0.101	0.0184
Xylenes	0.0001	0.003	0.0006
C8+ Heavies	0.0007	0.017	0.0031
Total Emissions	1.8850	45.240	8.2563
Total Hydrocarbon Emissions	1.8850	45.240	8.2563
Total VOC Emissions	0.6621	15.890	2.8999
Total HAP Emissions	0.0319	0.765	0.1396
Total BTEX Emissions	0.0126	0.303	0.0554

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	18.8661	452.787	82.6336
Ethane	5.5927	134.224	24.4959
Propane	4.8681	116.834	21.3222
Isobutane	1.3576	32.582	5.9462
n-Butane	2.6205	62.892	11.4778
Isopentane	1.1481	27.555	5.0288
n-Pentane	1.0267	24.640	4.4968
n-Hexane	0.3650	8.761	1.5989
Cyclohexane	0.2607	6.257	1.1418
Other Hexanes	0.6603	15.847	2.8920
Heptanes	0.4877	11.705	2.1362
Methylcyclohexane	0.1604	3.850	0.7026
2,2,4-Trimethylpentane	0.0196	0.471	0.0860
Benzene	0.1659	3.981	0.7265
Toluene	0.0840	2.016	0.3679
Xylenes	0.0029	0.070	0.0128
C8+ Heavies	0.0139	0.334	0.0610
Total Emissions	37.7002	904.805	165.1270
Total Hydrocarbon Emissions	37.7002	904.805	165.1270
Total VOC Emissions	13.2415	317.795	57.9976
Total HAP Emissions	0.6375	15.299	2.7921
Total BTEX Emissions	0.2528	6.067	1.1072

COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.9488	22.771	4.1557
Ethane	0.2856	6.853	1.2507
Propane	0.2547	6.113	1.1157
Isobutane	0.0728	1.746	0.3187
n-Butane	0.1435	3.445	0.6287
Isopentane	0.0638	1.530	0.2793
n-Pentane	0.0585	1.404	0.2562
n-Hexane	0.0230	0.552	0.1007
Cyclohexane	0.0265	0.637	0.1162
Other Hexanes	0.0394	0.946	0.1726
Heptanes	0.0377	0.906	0.1653
Methylcyclohexane	0.0189	0.454	0.0828
2,2,4-Trimethylpentane	0.0012	0.030	0.0055
Benzene	0.0722	1.733	0.3163
Toluene	0.0561	1.345	0.2455
Xylenes	0.0048	0.115	0.0211
C8+ Heavies	0.0052	0.125	0.0228
Total Emissions	2.1127	50.706	9.2538

Ojito dehy's for 2008 TV renewal 05-27-08 output.txt

Total Hydrocarbon Emissions	2.1127	50.706	9.2538
Total VOC Emissions	0.8784	21.081	3.8473
Total HAP Emissions	0.1573	3.776	0.6891
Total BTEX Emissions	0.1331	3.194	0.5829

COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	83.8353	4.1557	95.04
Ethane	25.7928	1.2507	95.15
Propane	23.8005	1.1157	95.31
Isobutane	7.0160	0.3187	95.46
n-Butane	14.2158	0.6287	95.58
Isopentane	6.4219	0.2793	95.65
n-Pentane	6.0630	0.2562	95.77
n-Hexane	2.6349	0.1007	96.18
Cyclohexane	4.0985	0.1162	97.16
Other Hexanes	4.2929	0.1726	95.98
Heptanes	5.0611	0.1653	96.73
Methylcyclohexane	3.0867	0.0828	97.32
2,2,4-Trimethylpentane	0.1440	0.0055	96.21
Benzene	14.7267	0.3163	97.85
Toluene	11.7252	0.2455	97.91
Xylenes	1.0346	0.0211	97.96
C8+ Heavies	1.0478	0.0228	97.83
Total Emissions	214.9977	9.2538	95.70
Total Hydrocarbon Emissions	214.9977	9.2538	95.70
Total VOC Emissions	105.3696	3.8473	96.35
Total HAP Emissions	30.2654	0.6891	97.72
Total BTEX Emissions	27.4864	0.5829	97.88

EQUIPMENT REPORTS:

COMBUSTION DEVICE

Ambient Temperature: 60.00 deg. F
 Excess Oxygen: 5.00 %
 Combustion Efficiency: 98.00 %
 Supplemental Fuel Requirement: 5.76e-002 MM BTU/hr

Component	Emitted	Destroyed
Methane	2.00%	98.00%
Ethane	2.00%	98.00%

Ojito dehy for 2008 TV renewal 05-27-08 output.txt

Propane	2.00%	98.00%
Isobutane	2.00%	98.00%
n-Butane	2.00%	98.00%
Isopentane	2.00%	98.00%
n-Pentane	2.00%	98.00%
n-Hexane	2.00%	98.00%
Cyclohexane	2.00%	98.00%
Other Hexanes	2.00%	98.00%
Heptanes	2.00%	98.00%
Methylcyclohexane	2.00%	98.00%
2,2,4-Trimethylpentane	2.00%	98.00%
Benzene	2.00%	98.00%
Toluene	2.00%	98.00%
Xylenes	2.00%	98.00%
C8+ Heavies	2.00%	98.00%

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:	2.09 lbs. H2O/MMSCF
Temperature:	68.0 deg. F
Pressure:	400.0 psig
Dry Gas Flow Rate:	20.0000 MMSCF/day
Glycol Losses with Dry Gas:	0.0237 lb/hr
Wet Gas Water Content:	Saturated
Calculated Wet Gas Water Content:	44.20 lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	5.69 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.71%	95.29%
Carbon Dioxide	99.85%	0.15%
Nitrogen	99.99%	0.01%
Methane	99.99%	0.01%
Ethane	99.97%	0.03%
Propane	99.93%	0.07%
Isobutane	99.89%	0.11%
n-Butane	99.85%	0.15%
Isopentane	99.83%	0.17%
n-Pentane	99.77%	0.23%
n-Hexane	99.56%	0.44%
Cyclohexane	98.09%	1.91%
Other Hexanes	99.68%	0.32%
Heptanes	99.05%	0.95%
Methylcyclohexane	97.55%	2.45%
2,2,4-Trimethylpentane	99.59%	0.41%
Benzene	82.56%	17.44%

Ojito dehy for 2008 TV renewal 05-27-08 output.txt

Toluene	73.07%	26.93%
Xylenes	49.42%	50.58%
C8+ Heavies	97.01%	2.99%

FLASH TANK

Flash Control: Combustion device
Flash Control Efficiency: 95.00 %
Flash Temperature: 120.0 deg. F
Flash Pressure: 40.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.89%	0.11%
Carbon Dioxide	15.41%	84.59%
Nitrogen	1.39%	98.61%
Methane	1.43%	98.57%
Ethane	5.03%	94.97%
Propane	10.41%	89.59%
Isobutane	15.25%	84.75%
n-Butane	19.26%	80.74%
Isopentane	21.98%	78.02%
n-Pentane	26.13%	73.87%
n-Hexane	39.59%	60.41%
Cyclohexane	73.01%	26.99%
Other Hexanes	33.20%	66.80%
Heptanes	57.99%	42.01%
Methylcyclohexane	78.13%	21.87%
2,2,4-Trimethylpentane	41.08%	58.92%
Benzene	95.31%	4.69%
Toluene	97.11%	2.89%
Xylenes	98.93%	1.07%
C8+ Heavies	94.87%	5.13%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	44.48%	55.52%
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	1.70%	98.30%
n-Pentane	1.52%	98.48%

Ojito dehy for 2008 TV renewal 05-27-08 output.txt

n-Hexane	1.11%	98.89%
Cyclohexane	4.26%	95.74%
Other Hexanes	2.55%	97.45%
Heptanes	0.81%	99.19%
Methylcyclohexane	5.01%	94.99%
2,2,4-Trimethylpentane	3.20%	96.80%
Benzene	5.23%	94.77%
Toluene	8.12%	91.88%
Xylenes	13.04%	86.96%
C8+ Heavies	12.47%	87.53%

STREAM REPORTS:

WET GAS STREAM

Temperature: 68.00 deg. F
 Pressure: 414.70 psia
 Flow Rate: 8.34e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.31e-002	3.69e+001
Carbon Dioxide	6.98e-001	6.75e+002
Nitrogen	3.29e-001	2.03e+002
Methane	8.15e+001	2.87e+004
Ethane	9.85e+000	6.51e+003
Propane	4.51e+000	4.38e+003
Isobutane	7.62e-001	9.74e+002
n-Butane	1.24e+000	1.58e+003
Isopentane	4.04e-001	6.41e+002
n-Pentane	3.07e-001	4.86e+002
n-Hexane	6.43e-002	1.22e+002
Cyclohexane	2.57e-002	4.75e+001
Other Hexanes	1.38e-001	2.61e+002
Heptanes	5.19e-002	1.14e+002
Methylcyclohexane	1.30e-002	2.80e+001
2,2,4-Trimethylpentane	2.80e-003	7.03e+000
Benzene	1.12e-002	1.92e+001
Toluene	4.90e-003	9.92e+000
Xylenes	2.00e-004	4.66e-001
C8+ Heavies	2.10e-003	7.86e+000
Total Components	100.00	4.48e+004

DRY GAS STREAM

Temperature: 68.00 deg. F
 Pressure: 414.70 psia
 Flow Rate: 8.33e+005 scfh

Ojito dehyds for 2008 TV renewal 05-27-08 output.txt

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.40e-003	1.74e+000
Carbon Dioxide	6.97e-001	6.74e+002
Nitrogen	3.29e-001	2.03e+002
Methane	8.16e+001	2.87e+004
Ethane	9.86e+000	6.51e+003
Propane	4.52e+000	4.38e+003
Isobutane	7.62e-001	9.73e+002
n-Butane	1.24e+000	1.58e+003
Isopentane	4.04e-001	6.40e+002
n-Pentane	3.06e-001	4.85e+002
n-Hexane	6.41e-002	1.21e+002
Cyclohexane	2.52e-002	4.66e+001
Other Hexanes	1.37e-001	2.60e+002
Heptanes	5.14e-002	1.13e+002
Methylcyclohexane	1.27e-002	2.74e+001
2,2,4-Trimethylpentane	2.79e-003	7.00e+000
Benzene	9.25e-003	1.59e+001
Toluene	3.58e-003	7.25e+000
Xylenes	9.89e-005	2.31e-001
C8+ Heavies	2.04e-003	7.62e+000
Total Components	100.00	4.48e+004

LEAN GLYCOL STREAM

Temperature: 68.00 deg. F
 Flow Rate: 3.33e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	1.85e+003
Water	1.50e+000	2.81e+001
Carbon Dioxide	5.27e-012	9.87e-011
Nitrogen	9.35e-014	1.75e-012
Methane	4.26e-018	7.99e-017
Ethane	5.26e-008	9.86e-007
Propane	6.26e-009	1.17e-007
Isobutane	1.65e-009	3.10e-008
n-Butane	3.08e-009	5.76e-008
Isopentane	2.93e-004	5.49e-003
n-Pentane	2.95e-004	5.53e-003
n-Hexane	1.42e-004	2.67e-003
Cyclohexane	1.60e-003	3.00e-002
Other Hexanes	4.46e-004	8.36e-003
Heptanes	2.92e-004	5.47e-003
Methylcyclohexane	1.53e-003	2.87e-002
2,2,4-Trimethylpentane	2.34e-005	4.38e-004
Benzene	9.41e-003	1.76e-001
Toluene	1.22e-002	2.29e-001
Xylenes	1.87e-003	3.50e-002

Ojito dehy for 2008 TV renewal 05-27-08 output.txt
 C8+ Heavies 1.71e-003 3.21e-002

 Total Components 100.00 1.87e+003

RICH GLYCOL AND PUMP GAS STREAM

 Temperature: 68.00 deg. F
 Pressure: 414.70 psia
 Flow Rate: 3.51e+000 gpm
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.42e+001	1.84e+003
Water	3.23e+000	6.33e+001
Carbon Dioxide	7.05e-002	1.38e+000
Nitrogen	6.93e-003	1.36e-001
Methane	9.77e-001	1.91e+001
Ethane	3.01e-001	5.89e+000
Propane	2.77e-001	5.43e+000
Isobutane	8.18e-002	1.60e+000
n-Butane	1.66e-001	3.25e+000
Isopentane	7.51e-002	1.47e+000
n-Pentane	7.09e-002	1.39e+000
n-Hexane	3.08e-002	6.04e-001
Cyclohexane	4.93e-002	9.66e-001
Other Hexanes	5.04e-002	9.88e-001
Heptanes	5.93e-002	1.16e+000
Methylcyclohexane	3.74e-002	7.33e-001
2,2,4-Trimethylpentane	1.70e-003	3.33e-002
Benzene	1.81e-001	3.54e+000
Toluene	1.48e-001	2.91e+000
Xylenes	1.38e-002	2.71e-001
C8+ Heavies	1.38e-002	2.71e-001
Total Components	100.00	1.96e+003

FLASH TANK OFF GAS STREAM

 Temperature: 120.00 deg. F
 Pressure: 54.70 psia
 Flow Rate: 6.19e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	2.42e-001	7.12e-002
Carbon Dioxide	1.63e+000	1.17e+000
Nitrogen	2.93e-001	1.34e-001
Methane	7.21e+001	1.89e+001
Ethane	1.14e+001	5.59e+000
Propane	6.77e+000	4.87e+000
Isobutane	1.43e+000	1.36e+000

Ojito dehy for 2008 TV renewal 05-27-08 output.txt

n-Butane	2.76e+000	2.62e+000
Isopentane	9.76e-001	1.15e+000
n-Pentane	8.72e-001	1.03e+000
n-Hexane	2.60e-001	3.65e-001
Cyclohexane	1.90e-001	2.61e-001
Other Hexanes	4.70e-001	6.60e-001
Heptanes	2.98e-001	4.88e-001
Methylcyclohexane	1.00e-001	1.60e-001
2,2,4-Trimethylpentane	1.05e-002	1.96e-002
Benzene	1.30e-001	1.66e-001
Toluene	5.59e-002	8.40e-002
Xylenes	1.68e-003	2.91e-003
C8+ Heavies	5.01e-003	1.39e-002

Total Components	100.00	3.91e+001

FLASH TANK GLYCOL STREAM

Temperature: 120.00 deg. F
 Flow Rate: 3.42e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.61e+001	1.84e+003
Water	3.29e+000	6.32e+001
Carbon Dioxide	1.11e-002	2.13e-001
Nitrogen	9.81e-005	1.88e-003
Methane	1.43e-002	2.74e-001
Ethane	1.54e-002	2.96e-001
Propane	2.95e-002	5.66e-001
Isobutane	1.27e-002	2.44e-001
n-Butane	3.26e-002	6.25e-001
Isopentane	1.68e-002	3.24e-001
n-Pentane	1.89e-002	3.63e-001
n-Hexane	1.25e-002	2.39e-001
Cyclohexane	3.67e-002	7.05e-001
Other Hexanes	1.71e-002	3.28e-001
Heptanes	3.51e-002	6.73e-001
Methylcyclohexane	2.98e-002	5.73e-001
2,2,4-Trimethylpentane	7.13e-004	1.37e-002
Benzene	1.76e-001	3.37e+000
Toluene	1.47e-001	2.82e+000
Xylenes	1.40e-002	2.68e-001
C8+ Heavies	1.34e-002	2.57e-001

Total Components	100.00	1.92e+003

FLASH GAS EMISSIONS

Flow Rate: 2.39e+003 scfh
 Control Method: Combustion Device
 Control Efficiency: 95.00

Ojito dehy for 2008 TV renewal 05-27-08 output.txt

Component	Conc. (vol%)	Loading (lb/hr)
Water	6.11e+001	6.92e+001
Carbon Dioxide	3.76e+001	1.04e+002
Nitrogen	7.60e-002	1.34e-001
Methane	9.35e-001	9.43e-001
Ethane	1.48e-001	2.80e-001
Propane	8.77e-002	2.43e-001
Isobutane	1.86e-002	6.79e-002
n-Butane	3.58e-002	1.31e-001
Isopentane	1.26e-002	5.74e-002
n-Pentane	1.13e-002	5.13e-002
n-Hexane	3.37e-003	1.83e-002
Cyclohexane	2.46e-003	1.30e-002
Other Hexanes	6.09e-003	3.30e-002
Heptanes	3.87e-003	2.44e-002
Methylcyclohexane	1.30e-003	8.02e-003
2,2,4-Trimethylpentane	1.37e-004	9.82e-004
Benzene	1.69e-003	8.29e-003
Toluene	7.25e-004	4.20e-003
Xylenes	2.18e-005	1.46e-004
C8+ Heavies	6.50e-005	6.97e-004
Total Components	100.00	1.75e+002

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 8.03e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	9.20e+001	3.51e+001
Carbon Dioxide	2.28e-001	2.13e-001
Nitrogen	3.18e-003	1.88e-003
Methane	8.08e-001	2.74e-001
Ethane	4.65e-001	2.96e-001
Propane	6.06e-001	5.66e-001
Isobutane	1.99e-001	2.44e-001
n-Butane	5.08e-001	6.25e-001
Isopentane	2.08e-001	3.18e-001
n-Pentane	2.34e-001	3.58e-001
n-Hexane	1.30e-001	2.37e-001
Cyclohexane	3.79e-001	6.75e-001
Other Hexanes	1.75e-001	3.20e-001
Heptanes	3.15e-001	6.68e-001
Methylcyclohexane	2.62e-001	5.44e-001
2,2,4-Trimethylpentane	5.48e-003	1.33e-002
Benzene	1.93e+000	3.20e+000
Toluene	1.33e+000	2.59e+000
Xylenes	1.04e-001	2.33e-001

Ojito dehys for 2008 TV renewal 05-27-08 output.txt
C8+ Heavies 6.25e-002 2.25e-001

Total Components 100.00 4.67e+001

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia
Flow Rate: 1.24e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	1.05e+001	5.49e-003
Ethane	6.02e+000	5.92e-003
Propane	7.85e+000	1.13e-002
Isobutane	2.57e+000	4.88e-003
n-Butane	6.58e+000	1.25e-002
Isopentane	2.70e+000	6.36e-003
n-Pentane	3.03e+000	7.15e-003
n-Hexane	1.68e+000	4.73e-003
Cyclohexane	4.91e+000	1.35e-002
Other Hexanes	2.27e+000	6.40e-003
Heptanes	4.08e+000	1.34e-002
Methylcyclohexane	3.39e+000	1.09e-002
2,2,4-Trimethylpentane	7.10e-002	2.65e-004
Benzene	2.50e+001	6.39e-002
Toluene	1.72e+001	5.19e-002
Xylenes	1.34e+000	4.67e-003
C8+ Heavies	8.09e-001	4.51e-003
Total Components	100.00	2.28e-001

Potential to Emit

Source: Flare
 Company: Williams Field Services Company
 Site: Ojito Compressor Station
 Date: August 2001

Source	Pollutant	Emission Factor (lb/mmBtu) EF	Heat Content (Btu/scf) HC	Flow Rate (scfh) FR	Operating Time (hr/yr) OP	Emission Rate (lb/hr) ER	(ton/yr)	(g/sec)
Flare	NOx	0.068	542.92	10,160	8,760	0.38	1.54	0.0473
	CO	0.370	542.92	10,160	8,760	2.04	8.34	0.2572

Source of Data:

Emission Factor: AP-42, Fifth Edition, Section 13.5 Industrial Flares
 Heat Content: Table 13.5-1 Calculated
 Flow Rate: GRI-GLYCalc 3.0
 Operating Time: Williams Field Services Company
 Emission Rate: Calculated

Notes:

Four dehydrators will vent to the flare. The flow rate from each dehydrator is 2,540 scfh.

Equations:

Emission Rates:

$$\left(\frac{\text{EF}}{\text{mmBtu}} \right) \left(\frac{\text{HC}}{\text{Btu}} \right) \left(\frac{\text{FR}}{\text{scf}} \right) \left(\frac{\text{OP}}{\text{hr}} \right) \left(\frac{1 \text{ ton}}{2,000 \text{ lb}} \right) = \text{ER} \left(\frac{\text{ton}}{\text{yr}} \right)$$

$$\left(\frac{\text{EF}}{\text{mmBtu}} \right) \left(\frac{\text{HC}}{\text{Btu}} \right) \left(\frac{\text{FR}}{\text{scf}} \right) \left(\frac{1,000,000 \text{ Btu}}{1 \text{ mmBtu}} \right) = \text{ER} \left(\frac{\text{lb}}{\text{hr}} \right)$$

$$\left(\frac{\text{ER}}{\text{hr}} \right) \left(\frac{453.59 \text{ g}}{\text{lb}} \right) \left(\frac{1 \text{ hr}}{3,600 \text{ sec}} \right) = \text{ER} \left(\frac{\text{g}}{\text{sec}} \right)$$

Supplemental Fuel Calculations For TEG Dehydrator Flare *

Williams Field Services Company
Ojito Compressor Station

BTU _{regen} =	Heat content of regenerator stream =	542.92 Btu/cf
Q _{regen} =	Flow rate of regenerator stream =	2,540 scfh
BTU _{fuel} =	Heat content of fuel stream =	NA Btu/cf
Q _{fuel} =	Flow rate of fuel stream =	NA scfh
BTU _{mix} =	Btu of combined stream =	NA Btu/cf
Q _{fuel} =	$Q_{regen} * (BTU_{mix} - BTU_{regen}) / (BTU_{fuel} - BTU_{mix}) =$	0.0 scfh

* No supplemental fuel is required if the heat content of the regenerator stream is greater than or equal to 300 Btu/scf.

Composition of Dehydrator Regenerator Overheads Stream
Williams Field Services Company
Ojito Compressor Station

Component	Formula	Molecular Weight (lb/lb-mole)	Heating Values		Regenerator Overheads Stream (mole %)	Regenerator Overheads Stream (Btu/cf)* (MW fraction)
			LHV (Btu/cu ft)	HHV (Btu/cu ft)		
Methane	CH ₄	16.041	909.4	1,010.0	16.000	2.5666
Ethane	C ₂ H ₆	30.067	1,618.7	1,769.7	2.020	0.6074
Propane	C ₃ H ₈	44.092	2,314.9	2,516.1	1.140	0.5026
Isobutane	C ₄ H ₁₀	58.118	3,000.4	3,251.9	0.249	0.1447
n-Butane	C ₄ H ₁₀	58.118	3,010.8	3,262.3	0.500	0.2906
Isopentane	C ₅ H ₁₂	72.144	3,699.0	4,000.9	0.223	0.1609
n-Pentane	C ₅ H ₁₂	72.144	3,706.9	4,008.9	0.226	0.1630
n-Hexane	C ₆ H ₁₄	86.169	4,403.9	4,755.9	0.154	0.1327
Heptanes	C ₇ H ₁₆	100.210	5,100.0	5,502.5	0.292	0.2926
Carbon Dioxide	CO ₂	44.010	-	-	0.223	0.0981
Nitrogen (Atm)	N ₂	28.016	-	-	0.101	0.0283
Water vapor	H ₂ O	18.016	-	-	72.600	13.0796
Ethylbenzene	C ₈ H ₁₀	106.158	4,970.5	5,222.2	0.218	0.2314
Toluene	C ₇ H ₈	92.132	4,273.6	4,475.0	2.100	1.9348
Xylenes	C ₈ H ₁₀	106.158	4,958.0	5,208.0	0.773	0.8206
Benzene	C ₆ H ₆	78.107	3,590.9	3,741.8	1.580	1.2341
Cyclohexane	C ₆ H ₁₂	84.160	4,179.7	4,481.5	0.387	0.3257
Methylcyclohexane	C ₇ H ₁₄	98.190	4,863.6	5,215.7	0.420	0.4124
Other Hexanes	C ₆ H ₁₄	86.169	4,403.9	4,755.9	0.184	0.1586
C8+ heavies	C ₈ H ₁₈	170.340	5,796.1	6,248.9	0.641	1.0919
Total					100.031	24.28

* The heat content was calculated using the lower heating value (LHV).

ojito condensate 05-27-08.txt

* Project Setup Information

*

Project File : C:\backup\awilliams\NewMexico\facilities\Ojito\Title V
Part 71 5-yr renewal application 2007\Ojito condensate.ept
Flowsheet Selection : Oil Tank with Separator
Calculation Method : AP42
Control Efficiency : 100.0%
Known Separator Stream : High Pressure Oil
Entering Air Composition : No

Filed Name : Ojito Condensate
Well Name : Ojito based on 2/26/08 Trk E&H analysis
Date : 2008.05.27

* Data Input

*

Separator Pressure : 160.00[psig]
Separator Temperature : 70.00[F]
Ambient Pressure : 13.00[psia]
Ambient Temperature : 70.00[F]
C10+ SG : 0.7635
C10+ MW : 194.945

-- High Pressure Oil

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0975
4	N2	0.0044
5	C1	4.8105
6	C2	4.3658
7	C3	7.1420
8	i-C4	3.1596
9	n-C4	7.3137
10	i-C5	6.4958
11	n-C5	6.8004
12	C6	9.0589
13	C7	28.8732
14	C8	5.3252
15	C9	1.0238
16	C10+	1.5666
17	Benzene	1.2061
18	Toluene	3.7690
19	E-Benzene	0.1486
20	Xylenes	1.1533
21	n-C6	6.5707
22	224Trimethylp	1.1149

-- Sales oil

Production Rate : 3[bb1/day]

Days of Annual Operation : 365 [days/year]
 API Gravity : 80.4
 Reid Vapor Pressure : 300.64[psia]
 Bulk Temperature : 70.00[F]

-- Tank and Shell Data

 Diameter : 9.00[ft]
 Shell Height : 10.00[ft]
 Cone Roof Slope : 0.06
 Average Liquid Height : 4.00[ft]
 Vent Pressure Range : 0.03[psi]
 Solar Absorbance : 0.68

Page 1----- E&P TANK

-- Meteorological Data

 City : Grand Junction, CO
 Ambient Pressure : 13.00[psia]
 Ambient Temperature : 70.00[F]
 Min Ambient Temperature : 39.60[F]
 Max Ambient Temperature : 65.70[F]
 Total Solar Insolation : 1659.00[Btu/ft^2*day]

* Calculation Results

*

-- Emission Summary

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]
Total HAPs	0.270	0.062
Total HC	11.316	2.584
VOCs, C2+	10.008	2.285
VOCs, C3+	8.101	1.850

Uncontrolled Recovery Info.

Vapor	605.4900	x1E-3	[MSCFD]
HC Vapor	602.0900	x1E-3	[MSCFD]
GOR	201.83		[SCF/bbl]

-- Emission Composition

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]
1	H2S	0.000	0.000
2	O2	0.000	0.000
3	CO2	0.069	0.016
4	N2	0.002	0.000
5	C1	1.307	0.298
6	C2	1.907	0.435
7	C3	3.022	0.690 ---
8	i-C4	0.977	0.223
9	n-C4	1.686	0.385
10	i-C5	0.787	0.180

Ojito condensate 05-27-08.txt

11	n-C5	0.602	0.137	
12	C6	0.343	0.078	
13	C7	0.389	0.089	
14	C8	0.024	0.005	
15	C9	0.002	0.000	-- VOC = 8.1 tpy
16	C10+	0.000	0.000	
17	Benzene	0.030	0.007	
18	Toluene	0.028	0.006	
19	E-Benzene	0.000	0.000	
20	Xylenes	0.003	0.001	
21	n-C6	0.195	0.045	
22	2,2,4-Trimethylp	0.014	0.003	---
	Total	11.387	2.600	

-- Stream Data

No. Component	MW	LP Oil	Flash Oil	Sale Oil	Flash Gas	W&S Gas
Total Emissions		mol %	mol %	mol %	mol %	mol %
mol %						
1 H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
2 O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
3 CO2	44.01	0.0975	0.0094	0.0094	0.5361	0.0000
0.5361						
4 N2	28.01	0.0044	0.0000	0.0000	0.0261	0.0000
0.0261						
5 C1	16.04	4.8105	0.1615	0.1615	27.9470	0.0000
27.9470						
6 C2	30.07	4.3658	0.8716	0.8716	21.7552	0.0000
21.7552						
7 C3	44.10	7.1420	3.8549	3.8549	23.5011	0.0000
23.5011						
8 i-C4	58.12	3.1596	2.6361	2.6361	5.7648	0.0000
5.7648						
9 n-C4	58.12	7.3137	6.7842	6.7842	9.9491	0.0000
9.9491						
10 i-C5	72.15	6.4958	7.0490	7.0490	3.7427	0.0000
3.7427						
11 n-C5	72.15	6.8004	7.5922	7.5922	2.8598	0.0000
2.8598						
12 C6	86.16	9.0589	10.5974	10.5974	1.4020	0.0000
1.4020						
Page 2						E&P TANK

13 C7	100.20	28.8732	34.3983	34.3983	1.3767	0.0000
1.3767						
14 C8	114.23	5.3252	6.3806	6.3806	0.0730	0.0000
0.0730						
15 C9	128.28	1.0238	1.2286	1.2286	0.0044	0.0000
0.0044						
16 C10+	194.95	1.5666	1.8814	1.8814	0.0001	0.0000
0.0001						
17 Benzene	78.11	1.2061	1.4222	1.4222	0.1308	0.0000
0.1308						
18 Toluene	92.13	3.7690	4.5054	4.5054	0.1044	0.0000
0.1044						
19 E-Benzene	106.17	0.1486	0.1782	0.1782	0.0012	0.0000
0.0012						
20 Xylenes	106.17	1.1533	1.3834	1.3834	0.0082	0.0000
0.0082						

Ojito condensate 05-27-08.txt

21 n-C6	86.18	6.5707	7.7353	7.7353	0.7747	0.0000
0.7747						
22 224Trimethylp	114.24	1.1149	1.3304	1.3304	0.0423	0.0000
0.0423						
MW	79.53	87.67	87.67	39.05	0.00	
39.05						
Stream Mole Ratio	1.0000	0.8327	0.8327	0.1673	0.0000	
0.1673						
Heating Value	[BTU/SCF]			2226.85	0.00	
2226.85						
Gas Gravity	[Gas/Air]			1.35	0.00	
1.35						
Bubble Pt. @ 100F	[psia]	186.87	25.59	25.59		
RVP @ 100F	[psia]	447.66	127.26	127.26		
Spec. Gravity @ 100F		0.640	0.657	0.657		

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification: 4200 gal Condensate
 City: Bloomfield
 State: NM
 Company: Williams
 Type of Tank: Vertical Fixed Roof Tank
 Description: Ojito

Tank Dimensions

Shell Height (ft): 14.00
 Diameter (ft): 7.00
 Liquid Height (ft) : 14.00
 Avg. Liquid Height (ft): 7.00
 Volume (gallons): 4,200.00
 Turnovers: 5.50
 Net Throughput(gal/yr): 23,100.00
 Is Tank Heated (y/n): N

Paint Characteristics

Shell Color/Shade: Gray/Light
 Shell Condition: Good
 Roof Color/Shade: Gray/Light
 Roof Condition: Good

Roof Characteristics

Type: Dome
 Height (ft) 0.00
 Radius (ft) (Dome Roof) 7.00

Breather Vent Settings

Vacuum Settings (psig): -0.03
 Pressure Settings (psig) 0.03

Meteorological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

4200 gal Condensate - Vertical Fixed Roof Tank
Bloomfield, NM

Mixture/Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg.	Min.		Max.	Avg.	Min.					
Condensate	All	64.94	53.24	76.64	5.4918	4.2037	7.0904	74.2364	0.0061	0.0016	77.61	Option 2: A=6.905, B=1211.033, C=220.79
Benzene		1.3372	0.9653	1.8208	0.1266	0.0854	0.1894	78.1100	0.0010	0.0000	78.11	Option 2: A=6.975, B=1424.255, C=213.21
Ethylbenzene		2.1727	1.6003	2.9030	7.6199	5.8716	9.7769	106.1700	0.4140	0.1712	108.17	Option 2: A=6.876, B=1171.17, C=224.41
Hexane (-n)		0.3844	0.2666	0.5435	0.3844	0.2666	0.5435	86.1700	0.5899	0.8267	86.17	Option 3: A=27691, B=7.558
Pentane (-n)		0.1073	0.0710	0.1586	0.1073	0.0710	0.1586	72.1500	0.0065	0.0005	72.15	Option 2: A=6.954, B=1344.8, C=219.48
Toluene								92.1300	0.0065	0.0005	92.13	Option 2: A=7.009, B=1462.286, C=215.11
Xylene (-n)								106.1700	0.0025	0.0001	106.17	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

4200 gal Condensate - Vertical Fixed Roof Tank
Bloomfield, NM

Annual Emission Calculations

Standing Losses (lb): 1,230.2748
 Vapor Space Volume (cu ft): 287.8693
 Vapor Density (lb/cu ft): 0.0724
 Vapor Space Expansion Factor: 0.5137
 Vented Vapor Saturation Factor: 0.3147

Tank Vapor Space Volume: 287.8693
 Vapor Space Volume (cu ft): 7.0000
 Tank Diameter (ft): 7.4801
 Vapor Space Outage (ft): 14.0000
 Tank Shell Height (ft): 7.0000
 Average Liquid Height (ft): 0.4801
 Roof Outage (ft): 0.4801

Roof Outage (Dome Roof): 0.4801
 Roof Outage (ft): 7.0000
 Dome Radius (ft): 3.5000
 Shell Radius (ft): 3.5000

Vapor Density: 0.0724
 Vapor Density (lb/cu ft): 74.2364
 Vapor Molecular Weight (lb/lb-mole): 5.4818
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 524.6094
 Daily Avg. Liquid Surface Temp. (deg. R): 56.1542
 Daily Average Ambient Temp. (deg. F): 10.731
 Ideal Gas Constant R (psia cuft / (lb-mol-deg R)): 518.0642
 Liquid Bulk Temperature (deg. R): 0.5400
 Tank Paint Solar Absorptance (Shell): 0.5400
 Tank Paint Solar Absorptance (Roof): 1.765.3167
 Daily Total Solar Insulation Factor (Btu/sqft day): 1.765.3167

Vapor Space Expansion Factor: 0.5137
 Vapor Space Expansion Factor: 46.7576
 Daily Vapor Temperature Range (deg. R): 2.8667
 Breather Vent Press. Setting Range(psia): 0.0600
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 5.4918
 Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia): 4.2037
 Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia): 7.0904
 Daily Avg. Liquid Surface Temp. (deg R): 524.6094
 Daily Min. Liquid Surface Temp. (deg R): 512.9100
 Daily Max. Liquid Surface Temp. (deg R): 536.3088
 Daily Ambient Temp. Range (deg. R): 27.9250

Vented Vapor Saturation Factor: 0.3147
 Vented Vapor Saturation Factor: 5.4918
 Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 7.4801
 Vapor Space Outage (ft): 7.4801

Working Losses (lb): 224,2318
Vapor Molecular Weight (lb/lb-mole): 74.2364
Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 5.4918
Annual Net Throughput (gal/yr.): 23,100.0000
Annual Turnovers: 5.5000
Turnover Factor: 1.0000
Maximum Liquid Volume (gal): 4,200.0000
Maximum Liquid Height (ft): 14.0000
Tank Diameter (ft): 7.0000
Working Loss Product Factor: 1.0000

Total Losses (lb): 1,454,5088

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

4200 gal Condensate - Vertical Fixed Roof Tank
Bloomfield, NM

Components	Losses(lbs)			Total Emissions
	Working Loss	Breathing Loss		
Condensate	224.23	1,230.27		1,454.51
Benzene	0.35	1.91		2.26
Ethylbenzene	0.01	0.03		0.04
Hexane (-n)	38.39	210.66		249.05
Pentane (-n)	185.37	1,017.03		1,202.39
Toluene	0.11	0.59		0.69
Xylene (-m)	0.01	0.06		0.07

**FUGITIVE EMISSION SPECIATION & CALCULATIONS
WILLIAMS FOUR CORNERS, LLC
OJITO COMPRESSOR STATION**

Component	Molecular Weight	Mole %	Weighted Sum	Wt. %	VOC Emissions (tpy)
Carbon Dioxide	44.010	0.6982	30.7278	1.5064	-
Nitrogen	28.013	0.3294	9.2276	0.4524	-
Methane	16.043	81.5684	1308.6018	64.1526	-
Ethane	30.070	9.8601	296.4932	14.5352	-
Propane	44.097	4.5191	199.2788	9.7694	2.86970
IsoButane	58.123	0.7628	44.3362	2.1735	0.63846
Normal Butane	58.123	1.2371	71.9040	3.5250	1.03545
IsoPentane	72.150	0.4042	29.1630	1.4297	0.41996
Normal Pentane	72.150	0.3068	22.1356	1.0852	0.31876
Cyclopentane	70.135	0.0000	0.0000	0.0000	0.00000
n-Hexane	86.177	0.0644	5.549799	0.2721	0.07992
Cyclohexane	84.162	0.0257	2.162963	0.1060	0.03115
other Hexanes	86.177	0.1379	11.88	0.5826	0.17113
Heptanes	100.204	0.0519	5.200588	0.2550	0.07489
Methylcyclohexane	98.189	0.0130	1.276457	0.0626	0.01838
2,2,4 Trimethylpentane	114.230	0.0028	0.32	0.0157	0.00461
Benzene	78.114	0.0112	0.874877	0.0429	0.01260
Toluene	92.141	0.0049	0.451491	0.0221	0.00650
Ethylbenzene	106.167	0.0000	0.000000	0.0000	0.00000
Xylenes	106.167	0.0000	0.000000	0.0000	0.00000
C ₈ + heavies	114.232	0.0021	0.239887	0.0118	0.00345
Total		100.0000	2039.8277	100.0000	
Total VOC		7.5439		19.3535	
Natural gas analysis from 2007 NESHAP HH benzene exemption demonstration					5.68

Component	Number of Components	Emission Factor (kg/hr/source) ^c	Emission Factor (lb/hr/source)	Fugitive TOC Emissions (lb/hr)	Gas Stream VOC Content (wt %)	Total VOC Fugitive Emissions (lb/hr) ^d
Valves	450	4.5E-03	9.9E-03	4.455	19.35	0.862
Pump Seals	8	2.4E-03	5.3E-03	0.042	19.35	0.008
Compressor Seals	36	8.8E-03	1.9E-02	0.697	19.35	0.135
Pressure Relief Valves	37	8.8E-03	1.9E-02	0.716	19.35	0.139
Connectors	419	2.0E-04	4.4E-04	0.184	19.35	0.036
Flanges	0	3.9E-04	8.6E-04	0.000	19.35	0.000
Open-Ended Lines	139	2.0E-03	4.4E-03	0.612	19.35	0.118
				TOC Fugitive Emissions	VOC Fugitive Emissions	
				lb/hr	6.71	lb/hr
				ton/yr	29.37	ton/yr
					1.30	5.68

^c Emission factors from the EPA document "Protocol for Equipment Leak Emission Estimates", Table 2-4 (November 1995).