APPENDIX C

Additional Documentation on Agreed Orders Regarding

Quantification of Emission Reductions

ADDITIONAL DOCUMENTATION ON AGREED ORDERS REGARDING QUANTIFICATION OF EMISSION REDUCTIONS

ATTACHMENT C

1. Arco Permian, a Unit of Atlantic Richfield Company

(a) The company replaced a glycol regenerator at the plant in 1994, operating under Standard Exemption number 66, registration no. 26085. Emissions from the glycol regenerator have been reduced by approximately 45 tons per year.

Copies of ARCO's Form PI-7, Registration Form for Standard Exemption, dated 06/02/94 is attached as Attachment C-1. The attachment to the PI-7 indicates that uncontrolled VOC emissions would be 57 tons per year (tpy), and that the expected emissions with the condenser are expected to be 11.4 tpy.

(b) The company represented that in 1994 it installed Vapor Recovery Units (VRU) at four production tank batteries, and in 1995 installed VRUs at an additional eight production tank batteries (one of which has since been sold), reducing VOC emissions by 1400 tons per year in each of those years. At the remaining eleven production tank batteries, listed in Attachment A, the company commits to reducing VOC emissions by up to approximately 1157 tons per year by VRUs or natural reservoir decline. From and after the date of the Agreed Order, the company will maintain the VRUs in good working order and operate the VRUs properly unless the recovered gas rate drops below five (5) MCFD (thousand cubic feet per day).

At the time the TNRCC was checking the emission reduction commitments, Arco notified the TNRCC that it no longer operated (as of July 29, 1996) one the of the twelve leases it included in its list of production tank batteries which would have vapor recovery units installed. Arco supplied information which was reviewed and summarized by TNRCC New Source Review Permit Engineer. Those 13 pages are included as Attachment C-2.

2. Eastman Chemical Company, Texas Eastman Division

(a) The company replaced three gas engines (FIN #s UD042FE1, UD042FE2, and UD042FE3) on Cooling Tower Number 4, Building 69 with electric motors in 1996, resulting in an estimated total reduction of 34 tons per year of NOx emissions at the plant.

(b) The company will route loading emissions of n-butyraldehyde and isobutyraldehyde (VOC) from FIN #SD004LR1 at the B-12 Rail Loading facility and FIN #SD004LT41 at the B-12 Truck Spot 41 facility to a flare (EPN #027FL1), resulting in estimated reduction of 12 tons per year of VOC emissions, and emissions of n-butyraldehyde and isobutyraldehyde (VOC) from these facilities during normal facility operations will be limited to a total of 1.32 tons per year, as required by TNRCC Air Quality Permit No. 1105.

(c) The company will implement a fugitive emission monitoring and maintenance program, as described in 40 CFR Parts 63, Subparts F and H, in Acetaldehyde Plants 1 and 2, resulting in a reduction of VOC emissions by an estimated 75 tons per year. Emissions of VOC will comply with 40 CFR Part 63, Subpart H, including all record keeping requirements in Subpart H.

(d) The company will operate sludge transport trailers (FIN 0X026T579 and FIN 0X016T580) to reduce emissions of VOC related to organic esters production at the plant. The reduction in VOC emissions will be an estimated 13 tons per year. Emissions from sludge handling operation have been eliminated by switching from an open top to an enclosed operation.

Copies of the calculations provided for (a) through (d) above are attached as Attachment C-3.

3. LaGloria Oil and Gas Company

(a) In 1993 and 1994, the company implemented a leak detection and repair program in accordance with 40 CFR 60, Subpart GGG for piping components at its truck loading rack, hydrodesulfurization units #1 and #2, saturates gas unit, cryogenic plant, rheniformer unit, and isomerization plant (the units) at the plant to reduce fugitive emissions by approximately 732 tons per year. From and after the date of the Agreed Order, the company agrees that fugitive emissions of VOC from these units shall be limited to:

Permitted truck rack facilities:	9.50 tons per year
Hydrodesulfurization unit #1:	41.08 tons per year
Hydrodesulfurization unit #2:	51.01 tons per year
Saturates gas unit:	44.77 tons per year
Cryogenic plant:	53.31 tons per year
Rheniformer unit:	30.22 tons per year
Isomerization plant:	31.73 tons per year

(b) In 1994, the company installed process wastewater system modifications resulting in VOC emission reductions of approximately 122 tons per year. From and after the date of this agreed order, the company agrees to limit the VOC emissions from its permitted wastewater system to 24.04 tons per year.

The explanation and calculations supporting both (a) and (b) are summarized in a letter with two attachments from L. D. (Dale) Rhodes, Environmental Supervisor at LaGloria, to Debra Rankin in TNRCC New Source Review Permits Division, Office of Air Quality dated April 8, 1997. These 39 pages are included as Attachment C-4

4. Norit Americas, Inc.

The company will limit production of bituminous coal-based liquid phase activated carbons in the plant to 6,810 hours per year. This will reduce NOx emissions by approximately 2.5 tons per year. This reduction is documented in TNRCC Air Quality Permit No. 2265A (effective October 5, 1994) which limits NOx emissions from the plant to 39.9 tons per year and production of bituminous coal-based liquid phase activated carbons to 6,810 hours per year, as shown on the maximum allowable emission rate table in Attachment A of the permit and the Agreed Order.

TEX NATURAL RESOURCE CONSERVATION COMMIS ON
ISTRATION FORM FOR STANDARD EXEMPTIC
FORM PI-7

RECEIVED
AUG 1 0 1994
PERMITS PROGRAM

I. Company Name ARCO Permian
(Corporation, Company, Government Agency, Firm, etc.)

Mailing Address P. O. Box 1610, Midland, Texas 79702

Individual Authorized to Act for Applicant: Name Peggy Waisanen Title Sr. Env. Engineer

Address P. O. Box 1610, Midland, Tx 79702 Telephone (915) 688-5703

II. LOCATION OF EXEMPT FACILITY (Latitude and Longitude must be to the nearest second):

Name of Plant or Site Longview Gas Plant

Street Address 2100 Sinclair Plant Road

Nearest City Longview County Gregg UTM ~~Latitude~~ 324706ME ~~Longitude~~ 2597550MN
UTM Zone 15

SITE REQUIREMENTS: A. Submit a plot plan to scale of the property showing the location of plant boundaries, plant equipment, and surrounding area.
B. *Furnish an area map with a scale showing the facility location relative to highways and towns.*

III. TYPE OF FACILITY:

A. Applicable Standard Exemption Number(s) from TNRCC List 66 26085

B. Name of Facility and Company's Facility Number Glycol Regenerator - FIN H-310

C. TNRCC Account Identification Number GJ0003W

D. Previous Special Exemption or Permit Number

E. Operating Schedule: Hours/day 24 Days/week 7 Weeks/year 52

F. Proposed Start of Construction 7/94 (Date) Operation 12/94 (Date)

G. Permanent [X] Portable [ ]

H. Length of time at this site, if portable

IV. PROCESS INFORMATION
Description of Process: Prepare and attach a written description of the exempt process and applicable checklists (when available). The description must be in sufficient detail to indicate that the facility will conform to the specified exemption.

V. EMISSIONS DATA Furnish a description of the basis for emission rates including fugitives. (Calculations, emission factors, measurement, NSPS, etc.)

Emission Point Number	Name of Source	Name of Air Contaminant	Emission Rate of Each Air Contaminant			
			lb/hr		tons/yr	
			Gaseous	Particulate	Gaseous	Particulate
SEE ATTACHED SPREADSHEET						

VI. A copy of the application is being sent to the Regional Office of the TNRCC\: [X]Yes [ ]No

VII. I, Peggy Waisanen (Name) Senior Environmental Engineer (Title)

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project will satisfy the conditions and limitations of the indicated exemption. The facility will operate in compliance with all Regulations of the Texas Natural Resource Conservation Commission and with Federal Environmental Protection Agency Regulations governing air pollution.

DATE June 2, 1994 SIGNATURE Peggy Waisanen

Rev 6/2

ARCO Permian
Account Number GJ0003W

REVISED 8-2-94
Longview Gas Plant
Glycol Reboiler Replacement

AP-42 Emission Factors									
Tables 1.4-1, 1.4-2, 1.4-3									
.3<boiler<10MMBTU/hr									
	LB/MMSCF								
PM	12.0								
SO2	0.6								
NOx	100.0								
CO	21.0								
VOC	5.8								
							CALCULATED		
			MMBTU	**FUEL**	**CALCULATED EMISSIONS in TPY**				
			per HR	**USE**					
FIN	**NAME**		**RATING**	**MMCF**	**NOx**	**CO**	**VOC**	**SO2**	**PM**
H-310	Combustion Products		1.0	11.0	**0.548**	**0.115**	**0.032**	**0.003**	**0.066**
H-310	Vent	VOC uncontrolled (from material balance)					57	TPY	
		Condenser system recovery					80%		
		Expected Emissions with condenser					**11.4**	**TPY**	
Fugitives, using EPA 450/3-83-007. Rich stream contains 4290 ppmw VOC.									
		TOTAL HC				**VOC**			
	Emission	**Emission**		**Number**	**Total HC**	**Emission**	**VOC Emissions**		
	Source	**Factor**		**of**	**Tons/Yr**	**Factor**	**Tons/Yr**		
	Valves	1.056	lb/day	60	11.56	0.00429	0.05		
	Relief Valves	9.9	lb/day	0	0.00	0.00429	0.00		
	Open Ended Lines	1.166	lb/day	0	0.00	0.00429	0.00		
	Compress. Seals	39.6	lb/day	0	0.00	0.00429	0.00		
	Pump Seals	3.3	lb/day	0	0.00	0.00429	0.00		
	Flanges	0.0572	lb/day	255	2.66	0.00429	0.20		
	TOTAL				**14.2**		**0.25**		
TOTAL EMISSIONS FROM REPLACEMENT GLYCOL REGENERATOR									
			TPY						
		NOx	**0.5**						
		CO	**0.1**						
		VOC	**11.7**						
		SO2	**0.0**						
		PM	**0.1**						

TED 29-1 (2-97)

COMPUTATION SHEET

SUBJECT Emissions Calculations for FAR
Δ Non-confidential version

USE THIS SHEET FOR ALL IMPORTANT COMPUTATIONS

BLDG. NO.
COMPUTED BY S. J. Zuiss
DATE 3-18-97
CHECKED BY
DATE Δ 4-7-99
DRAWINGS
SHEET NO. OF

a. Cooling Tower Fan Engine Replacement

The gas-fired fan engines will be replaced with electric drives. The engines are each 100 hp engines that are continuously operated

For each engine: UD042FE1, UD042FE2, and UD042FE3

$$\frac{100\ hp}{fan\ engine} \times \frac{8760\ hr}{yr} \times \frac{11.8\ g\ NOx}{hp\text{-}hr} \times \frac{lb}{454\ g} \times \frac{ton}{2000\ lb} = \frac{11.4\ ton\ NOx/yr}{engine}$$

For three engines

$$\frac{11.4\ ton\ NOx/yr}{engines} \times 3\ engines = 34\ tpy\ NOx\ reduction$$

TED 29-1 (2-97)

COMPUTATION SHEET

SUBJECT Emissions Calculations for FAR
Δ non-confidential version

USE THIS SHEET FOR ALL IMPORTANT COMPUTATIONS

BLDG. NO.
COMPUTED BY S. J. Zuiss
DATE 3-18-97
CHECKED BY
DATE Δ 4-7-99
DRAWINGS
SHEET NO. OF

b. Aldehyde Product Loading

Loading Loss (Per AP-42) for both rail and truck loading

$$L_L = \frac{12.46\,(S)(P_{VAP})(Mol\,Wt)}{(Temp)} = \text{Factor } \frac{\text{lb emissions}}{\text{Kgal loaded}}$$

Aldehyde 1 Loading Factor, A-1

$$L_L = \frac{12.46\,(0.6)(2.4)(72.1)}{(528)} = 2.45 \text{ lb/Kgal}$$

Aldehyde 2 Loading Factor, A-2

$$L_L = \frac{12.46\,(0.6)(1.7)(72.1)}{(528)} = 1.74 \text{ lb/Kgal}$$

UNCONTROLLED EMISSIONS AT LOADING SPOTS SD004LR1 and SD004LT41

A-1 $5\,\frac{M\,lb}{yr} \times \frac{gal}{6.8\,lb} \times \frac{k\,gal}{1{,}000\,gal} \times \frac{2.45\,lb}{k\,gal} = 1{,}800\,\frac{lb}{yr} = 0.9$ tpy

A-2 $90\,\frac{M\,lb}{yr} \times \frac{gal}{6.9\,lb} \times \frac{k\,gal}{1{,}000} \times \frac{1.74\,lb}{K\,gal} = 22{,}700\,\frac{lb}{yr} = 11.3$ tpy

	UNCONTROLLED EMISSIONS, tpy	98% CONTROLLED EMISSIONS, tpy	REDUCTION tpy
A-1	0.9	0.0	0.9
A-2	11.3	0.2	11.1
			12.0 tpy VOC reduction

TED 29-1 (2-97)

COMPUTATION SHEET

SUBJECT Emissions Calculations for FAR
Δ Non-Confidential Version

USE THIS SHEET FOR ALL IMPORTANT COMPUTATIONS

BLDG. NO.
COMPUTED BY S.J. Zuiss
DATE 3-18-97
CHECKED BY
DATE Δ 4-7-99
DRAWINGS
SHEET NO. OF

c. Fugitive Monitoring at Acetaldehyde Plants

	Uncontrolled Emissions, lb/yr	Controlled (96.5%) Emissions, lb/yr	Reduction lb/yr
Plant 1	128,000	5,000	123,000
Plant 2	32,000	1,000	31,000
			154,000

= 77 ton/yr.

≈ 75 ton/yr VOC Reduction

TED 29-1 (2-97)

COMPUTATION SHEET

SUBJECT Emission Calculation for FAR
Δ Non-confidential version

USE THIS SHEET FOR ALL IMPORTANT COMPUTATIONS

BLDG. NO.
COMPUTED BY S. J. Zuiss
DATE 3-18-97
CHECKED BY
DATE Δ 4-7-99
DRAWINGS
SHEET NO. OF

d. Mixed Esters Sludge

Emissions from sludge handing operations have been eliminated by switching to an enclosed operation.

$$\frac{7{,}000 \text{ lb sludge}}{\text{day}} \times \frac{1\% \text{ VOC emissions}}{\text{lb sludge}} \times \frac{365 \text{ day}}{\text{year}} = 22{,}550 \frac{\text{lb}}{\text{yr}}$$

$\approx$ 3 tpy VOC reduction

La Gloria

La Gloria Oil and Gas Company

April 8, 1997

Ms. Debra S. Rankin
Chemical Section
New Source Review Permits Division
Texas Natural Resource Conservation Commission
MC 162
P.O. Box 13087
Austin, TX 78711-3087

RECEIVED
APR 14 1997
PERMITS PROGRAM

Re: Flexible Attainment Region Agreement
La Gloria Refinery
Tyler, Smith County
Account ID No. SK-0022-A

Dear Ms. Rankin:

This is in response to the additional information you requested regarding La Gloria's five commitments associated with the Flexible Attainment Region Agreement. Enclosed is La Gloria's response to each commitment in the same order as the TNRCC letter dated March 19, 1997.

In the March 19, 1997 letter, you indicated that any reductions that occurred as a result of a federal requirement should not be included in the reduction estimate. When the Flexible Attainment Region Agreement was developed with the EPA and TNRCC, emission reductions were to be based on total VOC and NO_x reductions beginning in 1993 regardless of whether the reductions were required by federal or state regulations.

Commitment No. 1: La Gloria implemented leak detection and repair (LDAR) programs for six process units and one gasoline truck loading terminal which resulted in a calculated decrease in volatile organic compound (VOC) emissions of 749 tons per year (TPY). The LDAR programs were implemented in 1993 and 1994.

Commitment No. 1 is an immediate control measure, which requires La Gloria to implement the commitment within 30 days. See Attachment 1 for calculations regarding the reduction of 1994 VOC emissions for the six process units and one

P. O. Box 840 Tyler, TX 75710 (903) 535-2200 Fax (903) 535-2740

gasoline truck loading terminal. Each calculation shows a 0% and 75% monitoring credit for each process unit and terminal. Note: Corrections were made to the process units and terminal fugitive emissions, and the table below shows 733 TPY of reduced VOC emissions instead of 749 TPY. The benzene reduced for the six process units and truck loading terminal is 2.83 TPY.

UNIT	UNCONTROLLED EMISSIONS	CONTROLLED EMISSIONS	EMISSION REDUCTION	REQUIREMENT
1HDS	152.81	41.08	111.73	40 CFR SUBPART GGG
2HDS	195.64	51.01	144.63	40 CFR SUBPART GGG
SAT GAS	169.80	44.77	125.03	VOLUNTARY
CRYOGENIC	204.82	53.31	151.51	40 CFR SUBPART GGG
RHENIFORMER	115.47	30.22	85.25	VOLUNTARY
ISOM	120.82	31.73	89.09	40 CFR SUBPART GGG
TRUCK RACK	78.10	52.56	25.54	PERMIT NO. R-72

Total reduction = 732.78 TPY

Commitment No. 2: La Gloria installed process wastewater system modifications resulting in VOC emissions reductions of 122 TPY were put in service in 1994.

Commitment No. 2 is an immediate control measure, which requires requires La Gloria to implement the commitment within 30 days. The wastewater system modifications were not requirements of NESHAPS Subpart FF. The modification was intended to modernize La Gloria's wastewater system. Permit No. 5955 was amended in July 1992 to account for the wastewater system modification. See Attachment 2 for the July 1992 calculations submitted to the TNRCC regarding the wastewater system modification along with 1994 tank calculations and 1995 aeration basin calculations, which show the reduction of VOC emissions in the process wastewater system. The table below is a summary of Attachment 2 wastewater system revamp emission reductions. Note: The correct emission reductions for the wastewater system are 124.485 TPY instead of 122 TPY. In Attachment 2, the total benzene reduced is 20.11 TPY from Tank 34, Tank 35, and the aeration basin.

SOURCES	EMISSIONS BEFORE REVAMP	EMISSIONS AFTER REVAMP	EMISSION REDUCTION	REQUIREMENT
TANK 172	DID NOT EXIST	3.0	0	SUBPART Kb
WASTEWATER FUGITIVES	15.3 13.10	15.3 13.10	0	PERMIT NO. 5955
WASTEWATER FLARE	0.44 0.53	0.44 0.53	0	SUBPART QQQ
TANK 68 / TANK 34	2.475	0.35 0.38	2.125	SUBPART QQQ
TANK 69 / TANK 35	2.475	0.35 0.39	2.125	SUBPART QQQ
AERATION BASIN	124.03	1.67 4.07	122.36	VOLUNTARY

Total reduction = 124.49 TPY

Commitment No. 3: La Gloria installed internal floating roofs in three storage tanks in 1995 resulting in VOC emission reductions of 20.2 TPY.

Commitment No. 3 is a voluntary measure. Nothing in the FAR Agreement authorizes the EPA or TNRCC to convert voluntary measures into state or federally enforceable measures. See Attachment 3 for support data regarding before and after internal floating roof calculations on Tanks 2, 3, and 4 in 1995. The total reduction of benzene emissions is 0.10 TPY.

Commitment No. 4: La Gloria will install floating roofs in three tanks in 1996 resulting in VOC emission reductions of 94 TPY.

Commitment No. 4 is a voluntary measure. Nothing in the FAR Agreement authorizes the EPA or TNRCC to convert voluntary measures into state or federally enforceable measures. In 1996 internal floating roofs were installed in Tanks 60 and 37. Repairs were made in 1996 on Tank 156, which is an external floating roof. See Attachment 4 for the before and after calculations regarding the modifications of these storage tanks. The VOC emission reduction for Tanks 60, 37, and 156 in 1996 is 94 TPY. The total benzene reduction is 0.48 TPY for these three tanks.

Commitment No. 5: La Gloria will reroute VOC vent streams to a control device by August 1998 which will result in VOC emission reductions of 144 TPY.

Commitment No. 5 is a contingent measure. This measure would not be converted to an enforceable measure unless the Flexible Attainment Region

experiences at least one validated exceedance of the Ozone NAAQS. See Attachment 5 for the proposed control of the Vacuum Ejector emissions letter to the TNRCC, and the emission reduction calculations. The 1994 Vacuum Ejector Emissions show 144.17 TPY of VOC emissions. A combustion efficiency of 99.9% would achieve a reduction of 144.03 TPY with the proposed control of the Vacuum Ejector emissions.

If you have any questions or need any additional information, contact me at (903) 535-2204.

Sincerely,

L. D. Rhoades sm

Dale Rhoades
Environmental Supervisor
La Gloria Oil and Gas Company

cc: R. G. Chapman
Charles Murray - TNRCC / Tyler

tnrcc/agreemen/far4_97

ATTACHMENT 1

Table F14
Component Fugitive Emissions
#1 HDS Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (b/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	506	0.059	29.8540	0%	29.8540	130.7605
Lt liquid	128	0.024	3.0720	0%	3.0720	13.4554
Hvy liquid	350	0.0005	0.1750	0%	0.1750	0.7665
Flanges						
Gas/vapor	1360	0.00056	0.7616	0%	0.7616	3.3358
Lt liquid	315	0.00056	0.1764	0%	0.1764	0.7726
Hvy liquid	931	0.00056	0.5214	0%	0.5214	2.2836
Pump seals						
Lt liquid	0	0.25	0.0000	0%	0.0000	0.0000
Hvy liquid	5	0.046	0.2300	0%	0.2300	1.0074
Sample Ports**	3	0.033	0.0990	0%	0.0990	0.4336
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	0%	0.0000	0.0000
Total VOC Emissions			34.8894	0.00	34.8894	152.8154

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

The speciation of benzene from the 1994 Emission Inventory for plant fugitives is 0.38%. The total reduction in benzene is 2.69 TPY.

The 1994 Emissions Inventory for the gasoline loading terminal speciation of benzene is 0.55%. The total reduction of benzene for the gasoline loading terminal is 0.14 TPY.

The overall total benzene reduction for the six process units and terminal is 2.83 TPY.

Table F14
Component Fugitive Emissions
#1 HDS Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	506	0.059	29.8540	75%	7.4635	32.6901
Lt liquid	128	0.024	3.0720	75%	0.7680	3.3638
Hvy liquid	350	0.0005	0.1750	75%	0.0438	0.1916
Flanges						
Gas/vapor	1360	0.00056	0.7616	30%	0.5331	2.3351
Lt liquid	315	0.00056	0.1764	30%	0.1235	0.5408
Hvy liquid	931	0.00056	0.5214	30%	0.3650	1.5985
Pump seals						
Lt liquid	0	0.25	0.0000	75%	0.0000	0.0000
Hvy liquid	5	0.046	0.2300	75%	0.0575	0.2519
Sample Ports**	3	0.033	0.0990	75%	0.0248	0.1084
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	75%	0.0000	0.0000
Total VOC Emissions			34.8894	6.90	9.3791	41.0802

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

Table F18
Component Fugitive Emissions
#2 HDS Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	585	0.059	34.5150	0%	34.5150	151.1757
Lt liquid	198	0.024	4.7520	0%	4.7520	20.8138
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	1430	0.00056	0.8008	0%	0.8008	3.5075
Lt liquid	476	0.00056	0.2666	0%	0.2666	1.1675
Hvy liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Pump seals						
Lt liquid	6	0.25	1.5000	0%	1.5000	6.5700
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports**	1	0.033	0.0330	0%	0.0330	0.1445
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	2	1.4	2.8000	0%	2.8000	12.2640
Total VOC Emissions			44.6674	0.00	44.6674	195.6430

* EPA AP-42 Emission Factors for the Petroleum Industry
** Slop water factor estimated at 1% of light liquid factor
*** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

Table F18
Component Fugitive Emissions
#2 HDS Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	585	0.059	34.5150	75%	8.6288	37.7939
Lt liquid	198	0.024	4.7520	75%	1.1880	5.2034
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	1430	0.00056	0.8008	30%	0.5606	2.4553
Lt liquid	476	0.00056	0.2666	30%	0.1866	0.8173
Hvy liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Pump seals						
Lt liquid	6	0.25	1.5000	75%	0.3750	1.6425
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports**	1	0.033	0.0330	75%	0.0083	0.0361
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	2	1.4	2.8000	75%	0.7000	3.0660
Total VOC Emissions			44.6674	5.40	11.6472	51.0145

* EPA AP-42 Emission Factors for the Petroleum Industry
** [illegible] water factor estimated at 1% of light liquid factor
[illegible] Factors for Non-Ethylene Streams
[illegible] and flange counts were determined from the database of the leak detection program.

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Table F24
Component Fugitive Emissions
Saturate Gas Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	316	0.059	18.6440	0%	18.6440	81.6607
Lt liquid	552	0.024	13.2480	0%	13.2480	58.0262
Hvy liquid	1	0.0005	0.0005	0%	0.0005	0.0022
Flanges						
Gas/vapor	769	0.00056	0.4306	0%	0.4306	1.8862
Lt liquid	1330	0.00056	0.7448	0%	0.7448	3.2622
Hvy liquid	3	0.00056	0.0017	0%	0.0017	0.0074
Pump seals						
Lt liquid	16	0.25	4.0000	0%	4.0000	17.5200
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports ***	9	0.033	0.2970	0%	0.2970	1.3009
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	1	1.4	1.4000	0%	1.4000	6.1320
Total VOC Emissions			38.7666		38.7666	169.7978

* EPA AP-42 Emission Factors for the Petroleum Industry
** Slop water factor estimated at 1% of light liquid factor
*** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

Table F24
Component Fugitive Emissions
Saturate Gas Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	316	0.059	18.6440	75%	4.6610	20.4152
Lt liquid	552	0.024	13.2480	75%	3.3120	14.5066
Hvy liquid	1	0.0005	0.0005	75%	0.0001	0.0005
Flanges						
Gas/vapor	769	0.00056	0.4306	30%	0.3014	1.3203
Lt liquid	1330	0.00056	0.7448	30%	0.5214	2.2836
Hvy liquid	3	0.00056	0.0017	30%	0.0012	0.0052
Pump seals						
Lt liquid	16	0.25	4.0000	75%	1.0000	4.3800
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports ***	9	0.033	0.2970	75%	0.0743	0.3252
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	1	1.4	1.4000	75%	0.3500	1.5330
Total VOC Emissions			38.7666		10.2214	44.7696

* EPA AP-42 Emission Factors for the Petroleum Industry
** Slop water factor estimated at 1% of light liquid factor
*** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

Table F8
Component Fugitive Emissions
Cryogenic Plant
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	504	0.059	29.7360	0%	29.7360	130.2437
Lt liquid	283	0.024	6.7920	0%	6.7920	29.7490
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	1227	0.00056	0.6871	0%	0.6871	3.0096
Lt liquid	684	0.00056	0.3830	0%	0.3830	1.6777
Hvy liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Pump seals						
Lt liquid	8	0.25	2.0000	0%	2.0000	8.7600
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports**	5	0.033	0.1650	0%	0.1650	0.7227
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	5	1.4	7.0000	0%	7.0000	30.6600
Total VOC Emissions			46.7632	0.00	46.7632	204.8226

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

Table F8
Component Fugitive Emissions
Cryogenic Plant
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	504	0.059	29.7360	75%	7.4340	32.5609
Lt liquid	283	0.024	6.7920	75%	1.6980	7.4372
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	1227	0.00056	0.6871	30%	0.4810	2.1067
Lt liquid	684	0.00056	0.3830	30%	0.2681	1.1744
Hvy liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Pump seals						
Lt liquid	8	0.25	2.0000	75%	0.5000	2.1900
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports**	5	0.033	0.1650	75%	0.0413	0.1807
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	5	1.4	7.0000	75%	1.7500	7.6650
Total VOC Emissions			46.7632	5.40	12.1724	53.3149

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.

Table F15
Component Fugitive Emissions
Rheniformer Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	321	0.059	18.9390	0%	18.9390	82.9528
Lt liquid	178	0.024	4.2720	0%	4.2720	18.7114
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	790	0.00056	0.4424	0%	0.4424	1.9377
Lt liquid	437	0.00056	0.2447	0%	0.2447	1.0719
Hvy liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Pump seals						
Lt liquid	4	0.25	1.0000	0%	1.0000	4.3800
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports**	2	0.033	0.0660	0%	0.0660	0.2891
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	1	1.4	1.4000	0%	1.4000	6.1320
Total VOC Emissions			26.3641	0.00	26.3641	115.4748

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.
*** Total multiplied by 0.75 due to unit shutdown and drain for 3 months.

Table F15
Component Fugitive Emissions
Rheniformer Unit
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	321	0.059	18.9390	75%	4.7348	20.7382
Lt liquid	178	0.024	4.2720	75%	1.0680	4.6778
Hvy liquid	0	0.0005	0.0000	75%	0.0000	0.0000
Flanges						
Gas/vapor	790	0.00056	0.4424	30%	0.3097	1.3564
Lt liquid	437	0.00056	0.2447	30%	0.1713	0.7503
Hvy liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Pump seals						
Lt liquid	4	0.25	1.0000	75%	0.2500	1.0950
Hvy liquid	0	0.046	0.0000	75%	0.0000	0.0000
Sample Ports**	2	0.033	0.0660	75%	0.0165	0.0723
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	1	1.4	1.4000	75%	0.3500	1.5330
Total VOC Emissions			26.3641	6.90	6.9002	30.2230

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.
*** Total multiplied by 0.75 due to unit shutdown and drain for 3 months.

Table F10
Component Fugitive Emissions
Isomerization Plant
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	346	0.059	20.4140	0%	20.4140	89.4133
Lt liquid	209	0.024	5.0160	0%	5.0160	21.9701
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	856	0.00056	0.4794	0%	0.4794	2.0996
Lt liquid	522	0.00056	0.2923	0%	0.2923	1.2804
Hvy liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Pump seals						
Lt liquid	5	0.25	1.2500	0%	1.2500	5.4750
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Sample Ports**	4	0.033	0.1320	0%	0.1320	0.5782
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	0%	0.0000	0.0000
Total VOC Emissions			27.5837	0.00	27.5837	120.8165

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.
*** Final total multiplied by 0.667 due to unit shutdown and emptied for 4 months of 1993.

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Table F10
Component Fugitive Emissions
Isomerization Plant
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	346	0.059	20.4140	75%	5.1035	22.3533
Lt liquid	209	0.024	5.0160	75%	1.2540	5.4925
Hvy liquid	0	0.0005	0.0000	75%	0.0000	0.0000
Flanges						
Gas/vapor	856	0.00056	0.4794	30%	0.3356	1.4697
Lt liquid	522	0.00056	0.2923	30%	0.2046	0.8963
Hvy liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Pump seals						
Lt liquid	5	0.25	1.2500	75%	0.3125	1.3688
Hvy liquid	0	0.046	0.0000	75%	0.0000	0.0000
Sample Ports**	4	0.033	0.1320	75%	0.0330	0.1445
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	75%	0.0000	0.0000
Total VOC Emissions			27.5837	6.90	7.2432	31.7251

* EPA AP-42 Emission Factors for the Petroleum Industry
** SOCMI Factors for Non-Ethylene Streams
Component and flange counts were determined from the database of the leak detection program.
*** Final total multiplied by 0.667 due to unit shutdown and emptied for 4 months of 1993.

Table M19
Component Fugitive Emissions
Fuels Loading Racks - Vapor Recovery Unit & Flare No. 4
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	16	0.059	0.9440	0%	0.9440	4.1347
Lt liquid	31	0.024	0.7440	0%	0.7440	3.2587
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	42	0.00056	0.0235	0%	0.0235	0.1030
Lt liquid	68	0.00056	0.0381	0%	0.0381	0.1668
Hvy liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Pump seals						
Lt liquid	3	0.25	0.7500	0%	0.7500	3.2850
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Open Ended lines	0	0.005	0.0000	0%	0.0000	0.0000
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	1	1.4	1.4000	0%	1.4000	6.1320
Total VOC Emissions			3.8996	0.00	3.8996	17.0802

* EPA AP-42 Emission Factors for the Petroleum Industry

Component counts found by physical count at site and from mechanical drawings.

Loading Rack Uncontrolled Emissions

Additives	43.1243
VRU + Flare	17.0802
Diesel	0.7208
Kerosene	0.3845
Gasoline	16.7940
Total Uncontrolled Emissions	78.10 TPY

Table M15
Component Fugitive Emissions
Fuels Loading Racks - Diesel
LaGloria Oil and Gas Company

Component		Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves							
	Gas/vapor	0	0.059	0.0000	0%	0.0000	0.0000
	Lt liquid	0	0.024	0.0000	0%	0.0000	0.0000
	Hvy liquid	58	0.0005	0.0290	0%	0.0290	0.1270
Flanges							
	Gas/vapor	0	0.00056	0.0000	0%	0.0000	0.0000
	Lt liquid	0	0.00056	0.0000	0%	0.0000	0.0000
	Hvy liquid	126	0.00056	0.0706	0%	0.0706	0.3091
Pump seals							
	Lt liquid	0	0.25	0.0000	0%	0.0000	0.0000
	Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Open Ended lines		13	0.005	0.0650	0%	0.0650	0.2847
Relief valves		0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals		0	1.4	0.0000	0%	0.0000	0.0000
Total VOC Emissions				0.1646	0.00	0.1646	0.7208

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts based on physical count at site

Table M16
Component Fugitive Emissions
Fuels Loading Racks - Kerosene
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	0	0.059	0.0000	0%	0.0000	0.0000
Lt liquid	0	0.024	0.0000	0%	0.0000	0.0000
Hvy liquid	43	0.0005	0.0215	0%	0.0215	0.0942
Flanges						
Gas/vapor	0	0.00056	0.0000	0%	0.0000	0.0000
Lt liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Hvy liquid	38	0.00056	0.0213	0%	0.0213	0.0932
Pump seals						
Lt liquid	0	0.25	0.0000	0%	0.0000	0.0000
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Open Ended lines	9	0.005	0.0450	0%	0.0450	0.1971
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	0%	0.0000	0.0000
Total VOC Emissions			0.0878	0.00	0.0878	0.3845

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts found by physical count at site

Table M17
Component Fugitive Emissions
Fuels Loading Racks - Gasoline
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Uncontrolled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	0	0.059	0.0000	0%	0.0000	0.0000
Lt liquid	144	0.024	3.4560	0%	3.4560	15.1373
Hvy liquid	0	0.0005	0.0000	0%	0.0000	0.0000
Flanges						
Gas/vapor	35	0.00056	0.0196	0%	0.0196	0.0858
Lt liquid	319	0.00056	0.1786	0%	0.1786	0.7824
Hvy liquid	0	0.00056	0.0000	0%	0.0000	0.0000
Pump seals						
Lt liquid	0	0.25	0.0000	0%	0.0000	0.0000
Hvy liquid	0	0.046	0.0000	0%	0.0000	0.0000
Open Ended lines	36	0.005	0.1800	0%	0.1800	0.7884
Relief valves	0	0.36	0.0000	0%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	0%	0.0000	0.0000
Total VOC Emissions			3.8342	0.00	3.8342	16.7940

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts found by physical count at site

Table M18
Component Fugitive Emissions
Fuels Loading Racks - Additives
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Valves				
Gas/vapor	0	0.059	0.0000	0.0000
Lt liquid	313	0.024	7.5120	32.9026
Hvy liquid	0	0.0005	0.0000	0.0000
Flanges				
Gas/vapor	0	0.00056	0.0000	0.0000
Lt liquid	87	0.00056	0.0487	0.2134
Hvy liquid	0	0.00056	0.0000	0.0000
Pump seals				
Lt liquid	9	0.25	2.2500	9.8550
Hvy liquid	0	0.046	0.0000	0.0000
Open Ended lines	7	0.005	0.0350	0.1533
Relief valves	0	0.36	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	0.0000
Total VOC Emissions			9.8457	43.1243

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts found by physical count at site

Loading Rack Controlled Emissions

Additives	43.1243
VRU + Flare	4.3915
Diesel	0.1381
Kerosene	0.3193
Gasoline	4.5892
Total Controlled Emissions	52.56

Table M19
Component Fugitive Emissions
Fuels Loading Racks - Vapor Recovery Unit & Flare No. 4
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	16	0.059	0.9440	75%	0.2360	1.0337
Lt liquid	31	0.024	0.7440	75%	0.1860	0.8147
Hvy liquid	0	0.0005	0.0000	75%	0.0000	0.0000
Flanges						
Gas/vapor	42	0.00056	0.0235	30%	0.0165	0.0721
Lt liquid	68	0.00056	0.0381	30%	0.0267	0.1168
Hvy liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Pump seals						
Lt liquid	3	0.25	0.7500	75%	0.1875	0.8213
Hvy liquid	0	0.046	0.0000	75%	0.0000	0.0000
Open Ended lines	0	0.005	0.0000	75%	0.0000	0.0000
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	1	1.4	1.4000	75%	0.3500	1.5330
Total VOC Emissions			3.8996	6.90	1.0026	4.3915

* EPA AP-42 Emission Factors for the Petroleum Industry

Component counts found by physical count at site and from mechanical drawings.

Table M16
Component Fugitive Emissions
Fuels Loading Racks - Kerosene
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	0	0.059	0.0000	75%	0.0000	0.0000
Lt liquid	0	0.024	0.0000	75%	0.0000	0.0000
Hvy liquid	43	0.0005	0.0215	75%	0.0054	0.0235
Flanges						
Gas/vapor	0	0.00056	0.0000	30%	0.0000	0.0000
Lt liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Hvy liquid	38	0.00056	0.0213	30%	0.0149	0.0652
Pump seals						
Lt liquid	0	0.25	0.0000	75%	0.0000	0.0000
Hvy liquid	0	0.046	0.0000	75%	0.0000	0.0000
Open Ended lines	9	0.005	0.0450	75%	0.0113	0.0493
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	75%	0.0000	0.0000
Total VOC Emissions			0.0878	6.90	0.0315	0.1381

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts found by physical count at site

Table M15
Component Fugitive Emissions
Fuels Loading Racks - Diesel
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	0	0.059	0.0000	75%	0.0000	0.0000
Lt liquid	0	0.024	0.0000	75%	0.0000	0.0000
Hvy liquid	58	0.0005	0.0290	75%	0.0073	0.0318
Flanges						
Gas/vapor	0	0.00056	0.0000	30%	0.0000	0.0000
Lt liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Hvy liquid	126	0.00056	0.0706	30%	0.0494	0.2163
Pump seals						
Lt liquid	0	0.25	0.0000	75%	0.0000	0.0000
Hvy liquid	0	0.046	0.0000	75%	0.0000	0.0000
Open Ended lines	13	0.005	0.0650	75%	0.0163	0.0712
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	75%	0.0000	0.0000
Total VOC Emissions			0.1646	6.90	0.0729	0.3193

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts based on physical count at site

Table M17
Component Fugitive Emissions
Fuels Loading Racks - Gasoline
LaGloria Oil and Gas Company

Component	Number of Components	Emission Factor* (lb/hr)	Hourly Emissions (lb/hr)	Credit for Monitoring Percent	Controlled Emissions (lb/hr)	Annual Emissions (tpy)
Valves						
Gas/vapor	0	0.059	0.0000	75%	0.0000	0.0000
Lt liquid	144	0.024	3.4560	75%	0.8640	3.7843
Hvy liquid	0	0.0005	0.0000	75%	0.0000	0.0000
Flanges						
Gas/vapor	35	0.00056	0.0196	30%	0.0137	0.0601
Lt liquid	319	0.00056	0.1786	30%	0.1250	0.5477
Hvy liquid	0	0.00056	0.0000	30%	0.0000	0.0000
Pump seals						
Lt liquid	0	0.25	0.0000	75%	0.0000	0.0000
Hvy liquid	0	0.046	0.0000	75%	0.0000	0.0000
Open Ended lines	36	0.005	0.1800	75%	0.0450	0.1971
Relief valves	0	0.36	0.0000	75%	0.0000	0.0000
Compressor Seals	0	1.4	0.0000	75%	0.0000	0.0000
Total VOC Emissions			3.8342	6.90	1.0478	4.5892

* EPA AP-42 Emission Factors for the Petroleum Industry
Component counts found by physical count at site

ATTACHMENT 2

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Estimated External Floating-Roof Storage Tank Evaporation Losses
API Publication 2517,
Evaporative Loss From External Floating-Roof Tanks,
Third Edition, February 1989

Company Name : La Gloria Oil and Gas Company
Project Name : LG1056

Tank Number : Surge 1R4
Emission Point # :
Tank Location :
Zone : 15 Easting(m) : 285604.0 Northing(m) : 3582579.0

Storage Tank Summary :

	Number Of Months Stored Per Year	:	12
D,	Diameter (ft)	:	120.0
	Capacity (bbl)	:	40000.0
Q,	Total Throughput (bbl/yr)	:	287000.0
N,	Average Turnovers (annual)	:	7.18
	Max. Fill/Withdrawal Rate (bbl/hr)	:	1430.0
	Construction (Welded or Bolted)	:	Welded
	Shell Condition	:	Gunite Lined
C,	Shell Clingage Factor (bbl/1000 ft^2)	:	0.15
n,	Seal-Related Wind Speed Exp. (dimensionless)	:	0.4
Kr,	Seal Factor (lb-mol/(ft(mile/hr)^n yr))	:	0.7
	The Tank Rim-Seal Fit Is	:	Average
P*,	V.P. Function (dimensionless @ 77.0 °F)	:	0.0257
P*,	V.P. Function (dimensionless @ 110.0 °F)	:	0.0295
Ff,	Total Deck Fitting Loss Factor (lb-mol/yr)	:	1199.32
Fr,	Rim Seal Loss Factor (lb-mol/(ft yr))	:	1.83

Meteorological Summary :

	City	:	Tyler
Pa,	Average Atmospheric Pressure (psia)	:	14.4
V,	Average Wind Speed (mph)	:	11.1

Liquid Data Summary :

	Liquid Type (Other or Crude Oil)	:	Other
	Average Ambient Temperature (°F)	:	77.0
	Temperature Increase Due To Shell Color (°F)	:	0.0
	Maximum Storage Temperature (°F)	:	110.0
P,	True Vapor Pressure (psia @ 77.0 °F)	:	1.40686
Mv,	Vapor Molecular Weight (lb/lb-mol @ 77.0 °F)	:	100.13
P,	True Vapor Pressure (psia @ 110.0 °F)	:	1.6039
Mv,	Vapor Molecular Weight (lb/lb-mol @ 110.0 °F)	:	100.32
Wl,	Average Organic Liquid Density (lb/gal)	:	7.0
Kc,	Product Factor For Standing Storage Loss (dimensionless)	:	1.0

Company Name : La Gloria Oil and Gas Company
Project Name : LG1056

Tank Number : Surge 1R4
Emission Point # :
Tank Location :
Zone : 15 Easting(m): 285604.0 Northing(m): 3582579.0

Liquid Composition Data:

Chemical	Molecular Weight	Weight % in Liquid	Vapor Pressure @ 77.0 °F	Vapor Pressure @ 110.0 °F
Mixed VOC	100.0	87.73	1.56	1.76
Benzene	78.1	0.01	1.83	4.03
Xylene	106.1	0.2	0.171	0.456
Ethyl benzene	106.1	0.02	0.186	0.494
Toluene	92.1	0.04	0.549	1.328
Trimethyl benzene	120.2	12.0	0.09	0.254

Emission Rate Summary :

		lb/hr	tons/yr
Ls, Extern. Standing Storage Losses	:	0.480	1.826
Lw, Extern. Float Withdrawal Losses	:	11.799	1.184
Total Floating-Roof Losses	:	12.279	3.010

Component Emissions :	lb/hr	tons/yr
Mixed VOC	10.821	2.849
Benzene	0.001	3.6E-004
Xylene	0.024	0.003
Ethyl benzene	0.002	2.9E-004
Toluene	0.005	7.6E-004
Trimethyl benzene	1.425	0.156

FUGITIVE EMISSIONS FROM WASTEWATER COMPONENTS AFTER MODIFICATION

Emission Source	Total Source Count	Emission Factor lb/hr-source	Fugitive Emission Rate lb/hr	Control Factor %	Weight Fraction Benzene	Weight Fraction NMVOC	Emission Rate lb/hr Benzene	Emission Rate lb/hr NMVOC	Emission Rate tons/yr Benzene	Emission Rate tons/yr NMVOC
Valves (wastewater)	185	0.024	4.440	0	0.000025	0.00015	1.11E-04	6.66E-04	4.86E-04	2.92E-03
Valves (light liquid)	162	0.024	3.888	75	0.167	1.00	0.162	0.972	0.7096	4.2574
Valves (light liquid < 2 in)	42	0.024	1.008	0	0.167	1.00	0.168	1.008	0.7358	4.4150
Flanges (wastewater)	400	0.00056	0.224	0	0.000025	0.00015	5.6E-06	3.36E-05	2.45E-05	1.47E-04
Flanges (light liquid)	375	0.00056	0.210	30	0.167	1.00	0.025	0.147	0.1095	0.6439
Flanges (light liquid < 2 in)	12	0.00056	0.007	0	0.167	1.00	0.001	0.007	4.38E-03	0.031
Pumps (wastewater)	12	0.25	3.000	0	0.000025	0.00015	7.50E-05	4.50E-04	3.29E-04	0.0020
Pumps (light liquid)	13	0.25	3.250	75	0.167	1.00	0.1357	0.8125	0.5944	3.5588
Drains (w/o seals)	0	0.0027	0.000	0	0.167	1	0.0000	0.0000	0.0000	0.0000
Drains (w/ seals)	276	0.00134	0.370	0	0.167	1	0.0618	0.3700	0.2707	1.6206
Junction boxes (w/ seals)	122	0.00134	0.163	0	0.167	1	0.0272	0.1630	0.1191	0.7139
Junction boxes (covered)	0	0.00134	0.000	0	0.167	1	0.0000	0.0000	0.0000	0.0000
Manholes (covered)	6	0.00134	0.008	0	0.167	1	0.0013	0.0080	0.0057	0.0350
TOTAL							**0.582**	**3.489**	**2.550**	**15.281**

For equipment in wastewater service, calculated emissions were multiplied by the weight fraction of VOC in the stream.

Rationale for Calculating VOC Emissions from the Fugitive Sources

Emissions from fugitive sources in the waste water collection system, as it will be after the proposed modifications, were calculated using factors from AP-42, Table 9.1-2 for valves, flanges, and pumps and from the Environmental Protection Agency (EPA) document, "VOC Emissions from Petroleum Refinery Waste water Systems: Background Information for Proposed Standards" for drains. The same emission factor was used for junction boxes and manholes, as well as drains.

As shown on the enclosed calculation, total VOC emissions from the waste water components are 15.3 tons/yr. Most of this total comes from the existing pumps, valves, and flanges used to transport the recovered oil collected in the API separators. Drains, junction boxes, and manholes contribute another 2.37 tons/yr, most from the existing drains. Valves, flanges, and pumps in waste water service contribute only a small percentage to the total because of the dilute nature of these streams.

C. Calculation of the Emissions from the API Separator, Recovery Oil Tanks and the Resultant Change in the VOCs at the Flare No.2

Calculated emissions from the API separators themselves will not change as a result of this modernization project. Flow to the separators will be better regulated, not increased. The separators will be covered and vented to a flare, as has been previously authorized. Emissions from the separators can be conservatively calculated using AP-42 for controlled oil/water separators, assuming 98% control efficiency for the flare.

Short-Term Emissions:

$$\left(\frac{1400\ \text{gal}}{\text{min}}\right)\left(\frac{60\ \text{min}}{\text{hr}}\right)\left(\frac{0.2\ \text{lb}}{1000\ \text{gal}}\right)\left(\frac{1-0.98}{}\right) = 0.34\ \text{lb/hr}$$

Annual Emissions:

$$\left(\frac{420\ \text{gal}}{\text{min}}\right)\left(\frac{60\ \text{min}}{\text{hr}}\right)\left(\frac{0.2\ \text{lb}}{1000\ \text{gal}}\right)\left(\frac{8760\ \text{hr}}{\text{yr}}\right)\left(\frac{\text{ton}}{2000\ \text{lb}}\right)\left(\frac{1-0.98}{}\right)$$

$$= 0.44\ \text{ton/yr}$$

Estimated Fixed-Roof Storage Tank Evaporation Losses
Supplement B to EPA's Publication AP-42, COMPILATION OF AIR POLLUTANT EMISSION FACTORS, September 1988, Fourth Edition, Section 4.3

Company Name : La Gloria Oil and Gas Company
Project Name : LG1056

Tank Number : 68
Emission Point # :
Tank Location :
Zone : 0 Easting(m) : 0.0 Northing(m) : 0.0

Storage Tank Summary :

	Number Of Months Stored Per Year	:	12
D,	Diameter (ft)	:	25.0
H,	Avg. Vapor Space Height (ft)	:	15.0
V,	Capacity (gal)	:	109200.0
	Total Throughput (gal/yr)	:	762300.0
N,	Average Turnovers (annual)	:	6.98
	Max. Fill/Withdrawal Rate (bbl/hr)	:	1.3
	Roof Color (dimensionless)	:	White
	Shell Color (dimensionless)	:	White
	Paint Condition (dimensionless)	:	Good
Fp,	Paint Factor (dimensionless)	:	1.0
C,	Adjustment Factor (dimensionless)	:	0.97
Kn,	Turnover Factor (dimensionless)	:	1.0

Meteorological Summary :

	City	:	Tyler
Pa,	Average Atmospheric Pressure (psia)	:	14.4
dT,	Average Ambient Diurnal Temp. Change (°F)	:	22.1

Liquid Data Summary :

	Liquid Type (Other or Crude Oil)	:	Other
	Average Ambient Temperature (°F)	:	77.0
	Temperature Increase Due To Shell Color (°F)	:	0.0
	Maximum Storage Temperature (°F)	:	110.0
P,	True Vapor Pressure (psia @ 77.0 °F)	:	1.40686
Mv,	Vapor Molecular Weight (lb/lb-mol @ 77.0 °F)	:	100.13
P,	True Vapor Pressure (psia @ 110.0 °F)	:	1.6039
Mv,	Vapor Molecular Weight (lb/lb-mol @ 110.0 °F)	:	100.32
	Product Factor For		
Kc,	Breathing Loss (dimensionless)	:	1.0
Kc,	Working Loss (dimensionless)	:	1.0

Company Name : La Gloria Oil and Gas Company
Project Name : LG1056

Tank Number : 68
Emission Point # :
Tank Location :
Zone : 0 Easting(m): 0.0 Northing(m): 0.0

Liquid Composition Data:

Chemical	Molecular Weight	Weight % in Liquid	Vapor Pressure @ 77.0 °F	Vapor Pressure @ 110.0
Benzene	78.1	0.01	1.83	4.03
Xylene	106.1	0.2	0.171	0.456
Ethyl benzene	106.1	0.02	0.186	0.494
Toluene	92.1	0.04	0.549	1.328
Mixed VOC	100.0	87.73	1.56	1.76
Trimethyl benzene	120.2	12.0	0.09	0.254

Emission Rate Summary :

		lb/hr	tons/yr
Lb, Fixed-Roof Breathing Losses	:	0.300	1.187
Lw, Fixed-Roof Working Losses	:	0.211	1.289
Total Fixed-Roof Losses	:	0.511	2.475

Component Emissions :	lb/hr	tons/yr
Benzene	1.3E-004	3.3E-00
Xylene	3.0E-004	6.1E-00
Ethyl benzene	3.2E-005	6.7E-00
Toluene	1.7E-004	3.9E-00
Mixed VOC	0.500	2.454
Trimethyl benzene	9.9E-003	0.019

Estimated Fixed-Roof Storage Tank Evaporation Losses
Supplement B to EPA's Publication AP-42,
COMPILATION OF AIR POLLUTANT EMISSION FACTORS,
September 1988, Fourth Edition, Section 4.3

Company Name : La Gloria Oil and Gas Company
Project Name : LG1056

Tank Number : 69
Emission Point # :
Tank Location :
Zone : 0 Easting(m) : 0.0 Northing(m) : 0.0

Storage Tank Summary :

	Number Of Months Stored Per Year	:	12
D,	Diameter (ft)	:	25.0
H,	Avg. Vapor Space Height (ft)	:	15.0
V,	Capacity (gal)	:	109200.0
	Total Throughput (gal/yr)	:	762300.0
N,	Average Turnovers (annual)	:	6.98
	Max. Fill/Withdrawal Rate (bbl/hr)	:	6.0
	Roof Color (dimensionless)	:	White
	Shell Color (dimensionless)	:	White
	Paint Condition (dimensionless)	:	Good
Fp,	Paint Factor (dimensionless)	:	1.0
C,	Adjustment Factor (dimensionless)	:	0.97
Kn,	Turnover Factor (dimensionless)	:	1.0

Meteorological Summary :

	City	:	Tyler
Pa,	Average Atmospheric Pressure (psia)	:	14.4
dT,	Average Ambient Diurnal Temp. Change (°F)	:	22.1

Liquid Data Summary :

	Liquid Type (Other or Crude Oil)	:	Other
	Average Ambient Temperature (°F)	:	77.0
	Temperature Increase Due To Shell Color (°F)	:	0.0
	Maximum Storage Temperature (°F)	:	110.0
P,	True Vapor Pressure (psia @ 77.0 °F)	:	1.40686
Mv,	Vapor Molecular Weight (lb/lb-mol @ 77.0 °F)	:	100.13
P,	True Vapor Pressure (psia @ 110.0 °F)	:	1.6039
Mv,	Vapor Molecular Weight (lb/lb-mol @ 110.0 °F)	:	100.32
	Product Factor For		
Kc,	Breathing Loss (dimensionless)	:	1.0
Kc,	Working Loss (dimensionless)	:	1.0

Company Name : La Gloria Oil and Gas Company
Project Name : LG1056

Tank Number : 69
Emission Point # :
Tank Location :
Zone : 0 Easting(m): 0.0 Northing(m): 0.0

Liquid Composition Data:

Chemical	Molecular Weight	Weight % in Liquid	Vapor Pressure @ 77.0 °F	Vapor Pressure @ 110.0
Benzene	78.1	0.01	1.83	4.03
Xylene	106.1	0.2	0.171	0.456
Ethyl benzene	106.1	0.02	0.186	0.494
Toluene	92.1	0.04	0.549	1.328
Mixed VOC	100.0	87.73	1.56	1.76
Trimethyl benzene	120.2	12.0	0.09	0.254

Emission Rate Summary :

		lb/hr	tons/yr
Lb, Fixed-Roof Breathing Losses	:	0.300	1.187
Lw, Fixed-Roof Working Losses	:	0.973	1.289
Total Fixed-Roof Losses	:	1.273	2.475

Component Emissions :	lb/hr	tons/yr
Benzene	3.3E-004	3.3E-00
Xylene	7.4E-004	6.1E-00
Ethyl benzene	8.0E-005	6.7E-00
Toluene	4.3E-004	3.9E-00
Mixed VOC	1.247	2.454
Trimethyl benzene	0.025	0.019

Tank ID number	34	35
Index No.	27	28
Product description	Slop Oil	Slop Oil
MV, average vapor molecular weight (lb/lb-mole	100	100
Liq Surf Avg Temp, TLA (psia)	72	72
Liq Surf Max Temp, TLM (psia)	88	88
WL, average liquid density (lb/gal)	7	7
PVA, avg vapor pressure at TLA (psia)	1.0	1.0
P* avg, vapor pressure function for PVA	0.0179	0.0179
PVM, max hourly vapor pressure at TLM (psia)	2.5	2.5
P* max, vapor pressure function for PVM	0.0459	0.0459
Q, annual net throughput (bbl/yr)	111,443	111,443
Q max, maximum hourly throughput (bbl/hr)	838.10	838.10
No. of days in use	365	365
D, tank diameter (ft)	30	30
Q, tank capacity (bbl)	3,000	3,000
KC, product factor (1)	1	1
KR, seal factor (lb-mole/(mph)^n*ft*yr	6.7	6.7
LR, annual rim seal loss (lb/yr)	360	360
LR, maximum rim seal loss (lb/hr)	0.11	0.11
C, shell clingage factor (bbl/1000ft^2) (2)	0.0015	0.0015
NC, number of columns	1	1
FC, effective column diameter, (ft) (3)	1	1
LWD, Annual withdrawal loss (lb/yr)	38.01	38.01
LWD, Max hourly withdrawal loss (lb/hr)	0.29	0.29
Deck construction (B=Bolted, W=Welded) (4	B	B
Ff, deck fitting factor (lbmol/yr)	210.61	210.61
Lf, average deck fitting loss (lb/yr)	377	377
Lf, Max hourly deck fitting loss (lb/hr)	0.11	0.11
KD, deck seam/unit seam length factor (lb-mole	0.34	0.34
SD, deck seam length factor (ft/ft^2)	0.2	0.2
LD, annual deck seam loss (lb/yr)	110	110
LD, maximum hourly deck seam loss (lb/hr)	0.03	0.03
Total annual emissions (lb/yr)	885	885
Total annual emissions (tpy)	0.44	0.44
Max hourly emissions (lb/hr)	0.53	0.53

(v) mounted primary seal was submitted in 1994 EIQ, but this is not the seal that is actually in the tank. These emissions were reported as the reduction for the FAR agreement.

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PERMITS PROGRAM

1994 missions

Tank ID number	34	35
Index No.	27	28
Product description	Slop Oil (8)	Slop Oil (8)
MV, average vapor molecular weight (lb/lb-mole	100	100
Liq Surf Avg Temp, TLA (psia)	72	72
Liq Surf Max Temp, TLM (psia)	90	90
WL, average liquid density (lb/gal)	7	7
PVA, avg vapor pressure at TLA (psia)	1.0	1.0
P* avg, vapor pressure function for PVA	0.0181	0.0181
PVM, max hourly vapor pressure at TLM (psia)	2.3	2.3
P* max, vapor pressure function for PVM	0.0416	0.0416
Q, annual net throughput (bbl/yr)	111,443	111,443
Q max, maximum hourly throughput (bbl/hr)	838.10	838.10
No. of days in use	365	365
D, tank diameter (ft)	30	30
Q, tank capacity (bbl)	3,000	3,000
KC, product factor (1)	1	1
KR, seal factor (lb-mole/(mph)^n*ft*yr	3	3
LR, annual rim seal loss (lb/yr)	163	163
LR, maximum rim seal loss (lb/hr)	0.04	0.04
C, shell clingage factor (bbl/1000ft^2) (2)	0.0015	0.0015
NC, number of columns	1	1
FC, effective column diameter, (ft) (3)	1	1
LWD, Annual withdrawal loss (lb/yr)	38.01	38.01
LWD, Max hourly withdrawal loss (lb/hr)	0.29	0.29
Deck construction (B=Bolted, W=Welded) (4	B	B
Ff, deck fitting factor (lbmol/yr)	210.61	210.61
Lf, average deck fitting loss (lb/yr)	381	381
Lf, Max hourly deck fitting loss (lb/hr)	0.10	0.10
KD, deck seam/unit seam length factor (lb-mole	0.34	0.34
SD, deck seam length factor (ft/ft^2)	0.2	0.2
LD, annual deck seam loss (lb/yr)	111	111
LD, maximum hourly deck seam loss (lb/hr)	0.03	0.03
Total annual emissions (lb/yr)	692	692
Total annual emissions (tpy)	0.35	0.35
Max hourly emissions (lb/hr)	0.46	0.46

(1) mounted primary seal only

Tank 68/34 2.475 - 0.35 = 2.125

Tank 69/35 2.475 - 0.35 = 2.125

Total Reduction = 4.25 TPY

Speciation of benzene for Tank 34+35 is 0.51%, which is 0.02 TPY benzene emission reduction.

Table W3
Wastewater Aeration Basin Emissions
1992 La Gloria Oil and Gas
Tyler Refinery

Process WW Average Inlet	420	GPM
Process WW Maximum Inlet	1400	GPM
Cooling Tower Blowdown	200	GPM

FIN: WW-3 EPN: WW-3

Component	Process Inlet (ppb)	Process Inlet (ppm)	Cooling Tower Blowdown (ppm)	Maximum Conc (ppm)	Average Conc (ppm)	Uncontrolled Pond Emissions (lb/hr)	(tpy)	
C3	500	0.5	0	0.438	0.339	0.314	0.413	
IC4	500	0.5	0.005	0.438	0.340	0.315	0.415	
C5	10,000	10.0	0.036	8.755	6.786	6.286	8.270	
C6	15,000	15.0	0.049	13.131	10.177	9.429	12.403	
Benzene	25,000	25.0	0.5	21.938	17.097	15.753	20.837	
Toluene	17,000	17.0	0.349	14.919	11.629	10.713	14.173	
C7	0	0.0	0	0.000	0.000	0.000	0.000	
Xylenes	9,600	9.6	0.141	8.418	6.549	6.045	7.981	
Ethylbenzene	1,600	1.6	0.026	1.403	1.092	1.008	1.331	
C8	13,000	13.0	0.003	11.375	8.807	8.168	10.734	
C9	46,000	46.0	0.003	40.250	31.162	28.903	37.979	
C12	11,500	11.5	0.003	10.063	7.791	7.226	9.496	
Total Lagoon Emissions (2)						94.16	124.03	
Speciation								Vapor %
Benzene	25,000	25.0	0.5	21.938	17.097	15.75	20.84	16.80%
Hexane (1)	7,500	7.5	0.0245	6.566	5.089	4.71	6.20	5.00%
Toluene	17,000	17.0	0.349	14.919	11.629	10.71	14.17	11.43%
Ethylbenzene	1,600	1.6	0.026	1.403	1.092	1.01	1.33	1.07%
Xylenes	9,600	9.6	0.141	8.418	6.549	6.04	7.98	6.43%
Non Methane VOC	98,600	98.6				55.93	73.51	59.27%

Data Source: July 30, 1992 Permit Application for WW System
(1) Hexane assumed to be 50% of C6 concentration
(2) All VOC's are assumed to be volatilized in aeration basin.

Table W3
Wastewater Aeration Basin Emissions in 1995
La Gloria Oil and Gas
Tyler Refinery

Process WW Average Inl	475	GPM
Process WW Maximum I	1400	GPM
Cooling Tower Blowdow	200	GPM

EPN: WW-3

Component	Cooling Tower/Boile Blowdown (ppm)	Stripper Outlet Maximum Conc (ppm)	Stripper Outlet Average Conc (ppm)	Pond Emissions (lb/hr)	Pond Emissions (tpy)	
C3	0	0.000	0.000	0.000	0.000	
IC4	0.005	0.000	0.000	0.004	0.007	
C5	0.036	0.000	0.000	0.029	0.053	
C6	0.049	0.000	0.000	0.039	0.073	
Benzene	0.5	0.005	0.003	0.405	0.744	
Toluene	0.349	0.010	0.003	0.288	0.520	
C7	0	0.000	0.000	0.000	0.000	
Xylenes	0.141	0.030	0.008	0.137	0.220	
Ethylbenzene	0.026	0.010	0.003	0.029	0.042	
C8	0.003	0.000	0.000	0.002	0.004	
C9	0.003	0.000	0.000	0.002	0.004	
C12	0.003	0.000	0.000	0.002	0.004	
Total Lagoon Emissions (2)				0.94	1.67	
Speciation						Vapor %
Benzene	0.5	0.005	0.003	0.405	0.744	44.47%
N-Hexane	0.0245	0.000	0.000	0.020	0.036	2.17%
Cyclohexane	0.0245	0.000	0.000	0.020	0.036	2.17%
Toluene	0.349	0.010	0.003	0.288	0.520	31.11%
Ethylbenzene	0.026	0.010	0.003	0.029	0.042	2.52%
Xylenes	0.141	0.030	0.008	0.137	0.220	13.14%
Non Methane.VOC				0.177	0.294	17.57%

Data Source: July 30, 1992 Permit Application for WW System and Stripper Oulet Data from NESHAP
(1) Hexane assumed to be 50% of C6 concentration
(2) All VOC's are assumed to be volatilized in aeration basin.

Texas Natural Resource Conservation Commission

INTEROFFICE MEMORANDUM

To: Janis Hudson Date: May 19, 1997

From: Susana Hildebrand

Subject: Arco Permian East Texas Flexible Attainment Region

Assuming the leases are limited to 5 MCFD results in an emission rate of 113 TPY for each lease.[1] The enforceable limitation is 113 TPY * 11 leases = 1245 TPY. Gas volumes from May of 1995 to April of 1997 were provided for all of the existing and currently owned leases. The table below specifies the VOC emissions (in TPY) eliminated by installation of the vapor recovery units (VRUs).

Lease	Gas Flow (MCFD)	Emission Rate (TPY)
Akin B	12.5	282
T.B. Harris	6.6	150
Moncrief	21.1	478
Harris (Conoco)	19.2	434
Fisher	7.0	158
Akin A	8.61*	195
Williams	3.8**	113***
Rodden	3.2**	113***
Hays A	7.5	169
Foster B	1.5**	113***
King B	8.7	197
		2402

* Estimated using 12 months of data and assuming seprator gas is 3.6% of total gas metered
**Existing gas flow is less than the proposed enforceable rate of 5 MCFD, therefore no reduction is achieved.
***Actual emission rate is less than the proposed enforceable rate. This value is the allowable rate

[1]Assuming STP, 94% VOC as represented.

at 5 MCFD

Based on the representations made, the enforceable reduction is 1157 TPY.

ARCO Permian

Safety, Health, and Environmental Group

FACSIMILE COVER PAGE

To: Susana Hildebrand
Company: TNRCC
Phone: (512)239-1562
Fax: (512)239-1300

From: Peggy Waisanen
Company: ARCO Permian
Phone: (915) 688-5703
Fax: (915) 688-5620

Date: June 6, 1997
Pages including this cover page: 4

Susana,

The physical set-up at the Akin A is like that at the Moncrief and the Fisher. Oil goes from a heater treater to a separator, then to the tank. The other batteries with VRUs do not have a separator between the heater treater and tank, making correlation with those batteries impossible. At the Moncrief and the Fisher the gas from the heater treater is metered with the gas from the separator and VRU gas is metered separately. At the Akin A, the heater treater gas is metered by itself and the VRU gas is combined with separator gas for metering.

To estimate VRU gas from the Akin A, I have summed all gas production at the other batteries and calculated the percentage due to the VRU. I used the average of the percentages to estimate the amount of gas recovered by the VRU at the Akin A.

I am still waiting on a response about the distance you asked about on the Foster B. Please call if you need anything else.

Peggy

1996 FISHER OIL and GAS VOLUMES

MONTH	VRU GAS MCF	HT & SEP GAS MCF	TOTAL GAS MCF
Dec-96	235	6790	7025
Nov-96	151	5021	5172
Oct-96	211	5332	5543
Sep-96	194	5163	5357
Aug-96	193	5018	5211
Jul-96	257	5025	5282
Jun-96	304	4766	5070
May-96	241	4984	5225
Apr-96	285	4608	4893
Mar-96	180	4456	4636
Feb-96	145	4979	5124
Jan-96	113	5183	5296
Totals	2509	61325	63834
	3.93%	96.07%	

1996 MONCRIEF OIL and GAS VOLUMES

MONTH	VRU GAS MCF	HT & SEP GAS MCF	TOTAL GAS MCF
Dec-96	275	17540	17815
Nov-96	291	18462	18753
Oct-96	477	18855	19332
Sep-96	676	18826	19502
Aug-96	689	19217	19906
Jul-96	716	19586	20302
Jun-96	760	20125	20885
May-96	914	21066	21980
Apr-96	818	19579	20397
Mar-96	962	19601	20563
Feb-96	616	18811	19427
Jan-96	606	19946	20552
Totals	7800	231614	239414
	3.26%	96.74%	

1996 AKIN A OIL and GAS VOLUMES

MONTH	VRU & SEP GAS MCF	HT GAS MCF	TOTAL GAS MCF
Dec-96	1542	4694	6236
Nov-96	1399	4921	6320
Oct-96	1354	5225	6579
Sep-96	1536	4845	6381
Aug-96	1469	5127	6596
Jul-96	1687	5888	7575
Jun-96	1660	6795	8455
May-96	1594	7077	8671
Apr-96	1763	5977	7740
Mar-96	1754	6127	7881
Feb-96	1953	5806	7759
Jan-96	2056	5052	7108
Total	19767	67534	87301
Moncrief	0.0326		
Fisher	0.0393		
Average	0.03595		
Akin A VRU Gas, 1996		**3138**	

ARCO East Texas VRU Gas

LEASE	AKIN A	AKIN B	FISHER	HARRIS(A)	HARRIS(C)	HAYS A	KING B-2	MONCRIEF	RODDEN	WILLIAMS	
STATION #	197182	197190	197242	197234	42420805	194150	197289	197962	42420885	197422	
Jun-94	654	265				206	646	917			2688
May-94	699	305				210	663	544			2421
Apr-94	824	48				219	664	49			1804
Mar-94	846	0				211	623	119			1799
Feb-94	587	0				145	521	105			1358
Jan-94	778	0				156	613	105			1652

Note: Akin A volumes include separator gas All volumes in MCF/month at a 14.73 pressure base

ARCO East T. as VRU Gas

LEASE	AKIN A	AKIN B	FISHER	HARRIS(A)	HARRIS(C)	HAYS A	KING B-2	MONCRIEF	RODDEN	WILLIAMS	TOTAL
STATION #	197182	197190	197242	197234	42420805	194150	197289	197962	42420885	197422	MCF/MO.
Apr-97	1937	88	253	329	828	183	210	497	72	104	4501
Mar-97	2002	29	222	454	575	121	136	555	133	128	4355
Feb-97	1927	0	174	156	530	27	96	486	97	91	3584
Jan-97	1822	38	149	140	218	168	71	283	74	81	3024
Dec-96	1542	143	235	289	379	214	102	275	111	35	3325
Nov-96	1399	161	151	223	537	237	130	291	72	82	3283
Oct-96	1354	199	211	239	480	281	267	477	185	91	3784
Sep-96	1536	90	194	218	912	296	390	676	282	117	4711
Aug-96	1469	148	193	267	468	301	266	689	256	105	4182
Jul-96	1687	225	257	184	684	247	210	716	69	130	4409
Jun-96	1660	310	304	167	773	241	193	760	110	122	4640
May-96	1594	293	241	151	412	224	222	914	66	117	4234
Apr-96	1763	367	285	207	0	218	665	818	75	132	4530
Mar-96	1754	412	180	159	545	233	467	962	41	145	4898
Feb-96	1953	295	145	164	563	245	530	616	59	121	4691
Jan-96	2056	435	113	145	581	246	431	606	32	94	4739
Dec-95	2340	747	187	146	634	234	165	519	50	131	5153
Nov-95	2185	579	175	155	690	227	378	535	63	91	5078
Oct-95	2093	787	171	179	698	283	315	644	53	120	5343
Sep-95	1530	976	306	194	692	268	160	845	34	273	5276
Aug-95	1805	712	319	227	781	274	290	679	NEW	NEW	5087
Jul-95	1892	464	NEW	99	799	292	253	924			4723
Jun-95	2326	1031		103	610	212	233	936			5451
May-95	1530	567		242	620	174	186	753			4072
Apr-95	1318	333		225	678	51	170	553			3328
Mar-95	1509	411		277	622	74	201	607			3701
Feb-95	1196	718		133	NEW	85	232	594			2958
Jan-95	1237	603		147		135	349	595			3068
Dec-94	1553	660		129		141	187	798			3468
Nov-94	1584	566		162		118	323	791			3544
Oct-94	1163	619		212		144	500	701			3339
Sep-94	1202	591		199		226	633	821			3872
Aug-94	698	389		191		214	342	815			2649
Jul-94	705	293		NEW		200	571	1021			2790

Note: Akin A volumes include separator gas All volumes in MCF/month at a 14.73 pressure base

JUN. 2.1997 1:57PM

Longview Production
VRU Leases

Akin B			VRU		
1994-1995		Oil	Gas		
		BOPM month	MCFM month		
May	31	20273	305		
June	30	19650	265		
July	31	21227	293		
August	31	21418	389		
September	30	20684	591		
October	31	21462	619		
November	30	20800	566		
December	31	21521	660		
January	31	21382	603		
February	28	19398	716		
	=SUM(B4:B13)	=SUM(C4:C13)	=SUM(D4:D13)	=D14/C14	MCF/bo
					Using 50 lb/mcf,
		bopd	mcfd		Emissions
average		=C14/B14	=D14/B14		=D17*365/2000/0.379*50

$\frac{\text{barrels}}{\text{month}}$

$\frac{\text{mscf}}{\text{day}} \cdot \frac{365\,d}{\text{yr}} \cdot \frac{1\,\text{mole}}{0.379\,\text{mscf}} \cdot \frac{50\,\text{lb}}{\text{mole}} = \frac{\text{ton}}{2000\,\text{lb}} = 3973$

5-14-97

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To: Stephanie Hildebrandt
Co.: TNRCC
Dept.:
Fax #: (512) 239-1300

From: Peggy Lebanion
Co.: ARCO Permian
Phone #: (915) 688-5703
Fax #: (915) 688-5620

MAY.15.1997 6:58AM

Longview Production
VRU Leases

Akin B			**VRU**			Average MCF/BO	
1994-1995		**Oil**	**Gas**			Akin B	0.024094
		BOPM	**MCFM**			Anderson	0.016162
May	31	20273	305			T. B. Harris	0.008797
June	30	19650	265			Moncrief	0.014389
July	31	21227	293				
August	31	21418	389			average	0.01586
September	30	20684	591				
October	31	21462	619				
November	30	20800	566				
December	31	21521	660				
January	31	21382	603				
February	28	19398	716				
	304	207815	5007	0.024094	MCF/bo		
					Using 50 lb/mcf,		
		bopd	mcfd		Emissions	396.5	TPY
average		683.6	16.5				
Anderson			**VRU**				
1994-1995		**Oil**	**Gas**				
		BOPM	**MCFM**				
May							
June							
July							
August							
September							
October	31	11729	234				
November	30	11398	242				
December	31	12179	215				
January	31	11970	134				
February	28	11317	122				
	151	58593	947	0.016162			
					Using 50 lb/mcf,		
		bopd	mcfd		Emissions	151.0	TPY
average		388.0	6.3				
T. B. Harris			**VRU**				
1994-1995		**Oil**	**Gas**				
		BOPM	**MCFM**				
May							
June							
July							
August	31	19750	191				
September	30	19406	199				
October	31	19577	212				
November	30	18777	162				

Longview Production
VRU Leases

December	31	18925	129				
January	31	19411	147				
February	28	17494	133				
	212	133340	1173	0.008797			
					Using 50 lb/mcf,		
		bopd	mcfd		Emissions	133.2	TPY
average		629.0	5.5				
Moncrief			**VRU**				
1994-1995		**Oil**	**Gas**				
		BOPM	**MCFM**				
May	31	51608	544				
June	30	50530	917				
July	31	54422	1021				
August	31	54359	815				
September	30	52776	821				
October	31	54802	701				
November	30	52508	791				
December	31	53563	798				
January	31	54811	595				
February	28	48805	594				
	304	527984	7597	0.014389	Using 50 lb/mcf,		
		bopd	mcfd		Emissions	601.7	TPY
average		1736.8	25.0				
Using highest monthly volume by lease							
	2191	mcfm					
	x 12						
	26292	mcf/yr					
	1734.3	tpy					

East Texas VRU Volumes
Second Group

NAME	GAS * MCF\MONTH
HARRIS(CONOCO)	785
FISHER	319
AKIN A **	1805
WILLIAMS	138
RODDEN	60
HAYS A	274
FOSTER B	48
KING B	290
Total	**3719**

* Based on August, 1995 gas volumes at 14.73 pressure base and 60 F

** Volume includes overhead separator gas

Total Gas Recovered = 3719*50/.379*12/2000
including separator 2943.799 tpy
gas from Akin A

Longview Production
VRU Leases

Average MCF/BO		BOPD	TPY	Upstream Pressure	TPY from Tanks Calc	Actual/ calc	Actual TPY
Akin B	0.024094	683.6	396.5	35.0	139.0	2.9	0.580089
Anderson	0.016162	388.0	151.0	8.0	24.6	6.1	0.389133
T. B. Harris	0.008797	629.0	133.2	10.0	53.0	2.5	0.211803
Moncrief	0.014389	1736.8	601.7	5.0	103.0	5.8	0.34643
			1282.4				
average	0.01586		ave				0.381863
		Assuming 94% is VOC,					0.358952
		To reach 100 TPY,					
			278.6				BOPD
			101685		BOPY		
		Per Charlie Hearn, 7-24-96, economic limit is 5 MCFD.					
		For 11 VRUs, emissions assuming 5 MCFD per lease					
mcf,		# leases	MCFD	mol wt	VOC	TPY VOC	
396.5	TPY	8	5	50	0.94	907.672	
		3	7.9	50	0.94	179.2652	
		(3 leases are already under 5 MCFD)				1086.937	

Average over first year = 1282 TPY
using highest monthly volume/lease = 1734 TPY

50 lb/mol
94% VOC