Trans Energy, Inc.
Oil and Gas Exploration and Development

September 8, 2016

RECEIVED
SEP 12 2016
WV DEP / DIV OF AIR QUALITY

WV DEP - Air Quality
601 57th Street, SE
Charleston, WV 25304

RE: Hart 28H Permit Det. Form

Dear Air Quality:

Enclosed are three (3) copies of the Permit Determination Form for the Hart 28H well pad, located in Wetzel County. This is a re-submittal of this application.

Our consultant Bill Monroe, of Environmental Compression Services, Inc. spoke to Jerry Williams on 9/7/16, about corrections that he requested with our previous submission. The corrections have been made and we are re-submitting the form.

If there are any questions regarding this form; Bill Monroe can be contacted directly 724-899-3103 at his office.

Sincerely,

Leslie A. Gearhart
Vice President Operations

Enc.
Cc: W. Monroe

210 2nd Street, P.O. Box 393 St. Marys, WV 26170 304.684.7053 Fax 304.684.3658
www.transenergyinc.com

RECEIVED
SEP 12 2016
WV DEP / DIV OF AIR QUALITY

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

PERMIT DETERMINATION FORM (PDF)

FOR AGENCY USE ONLY: PLANT I.D. # _____

PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):
Trans Energy, Inc.

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):
Hart 28H Well Site

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE:
211111

4A. MAILING ADDRESS: **PO Box 39 3**
St. Marys, WV 26170

4B. PHYSICAL ADDRESS:
See Attached Map for Site Location

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A): **I – 79 to Route 50 West to Route 19 North to Route 20 West, follow into Jacksonburg. Turn onto Buffalo Run Road (CH82) follow for 3.3 miles to a "Y" for Campbell Run Road and Buffalo Run Road, stay left on Buffalo Run Road, 3/10 mile to site.**

5B. NEAREST ROAD: **Buffalo Run Road**

5C. NEAREST CITY OR TOWN: **Jacksonburg**

5D. COUNTY: **Wetzel**

5E. UTM NORTHING (KM): **4370.88**

5F. UTM EASTING (KM): **531.70**

5G. UTM ZONE: **17S**

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:
Leslie A. Gearhart

6B. TITLE:
VP of Operations

6C. TELEPHONE:
304-684-7053

6D. FAX:
304-684-3658

6E. E-MAIL:
lesliegearhart@transenergyinc.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):
103-00062

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY):

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: **NO**

8A. TYPE OF EMISSION SOURCE (CHECK ONE):
☐ **NEW SOURCE** x **ADMINISTRATIVE UPDATE**
☐ **MODIFICATION** ☐ **OTHER** (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?
☐ **YES** ☐ **NO**

9. IS *DEMOLITION* OR PHYSICAL *RENOVATION* AT AN EXISTING FACILITY INVOLVED? ☐ **YES** x **NO**

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:
Compressor Removed January/2016.

10B. DATE OF ANTICIPATED START-UP:
Production Operational 9/2012

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B.**

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C.**

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D.** FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. **REGULATED AIR POLLUTANT EMISSIONS:**

⇒ **FOR A NEW FACILITY,** PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY,** PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0.006	0.024
PM_{10}	0.006	0.024
VOC's	1.19	5.216
CO	0.06	0.27
NO_x	0.07	0.32
SO_2	0.0004	0.002
Pb	NA	NA
HAPs (AGGREGATE AMOUNT)	0.0002	0.0008
TAPs (INDIVIDUALLY)*	Insignificant	Insignificant
OTHER (INDIVIDUALLY)*	GHG CO2(e) 88	387

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL **SUPPORTING CALCULATIONS** AS **ATTACHMENT E.**

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27). AND OTHER AIR POLLUTANTS (E.G POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. **CERTIFICATION OF DATA**

I, LESLIE A. GEARHART (*TYPE NAME*) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A ***RESPONSIBLE OFFICIAL*** (*PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR*) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: **VICE PRESIDENT OF OPERATIONS** DATE: **SEPTEMBER 7, 2016.**

** THE DEFINITION OF THE PHRASE '*RESPONSIBLE OFFICIAL*' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

X ATTACHMENT A x ATTACHMENT B x ATTACHMENT C x ATTACHMENT D x ATTACHMENT E

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

Trans Energy Hart 28H

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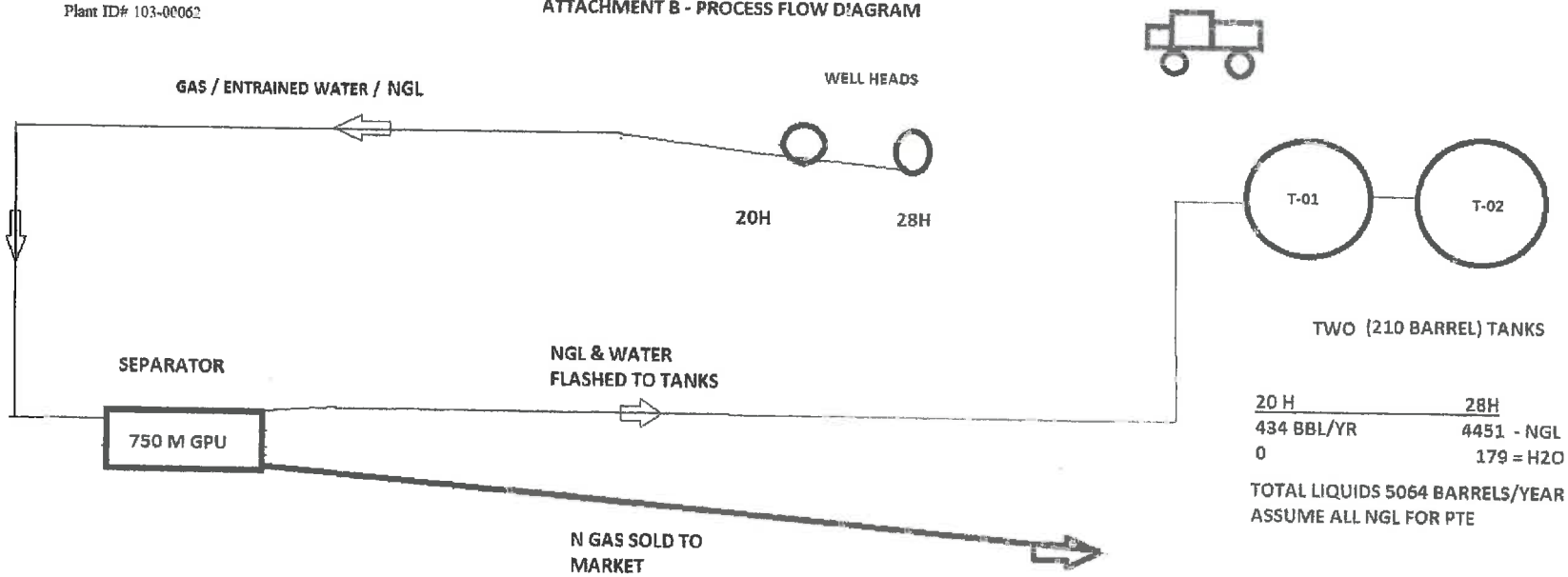
ATTACHMENT A

Trans Energy
Hart 20 H & 28 H Well Site Permit
Determinations
PD16-043
Plant ID# 103-00062

TRANS ENERGY HART 28H WELL SITE

ATTACHMENT B - PROCESS FLOW DIAGRAM



20 H	28H
434 BBL/YR	4451 - NGL
0	179 = H2O

TOTAL LIQUIDS 5064 BARRELS/YEAR
ASSUME ALL NGL FOR PTE

Trans Energy
Hart 20 H & 28 H Well Site Permit Determinations
PD16-043
Plant ID# 103-00062

ATTACHMENT C

DETAILED PROCESS DESCRIPTION

Natural Gas (methane, ethane, propane, etc.) comes from two Marcellus shale wells and is piped to an ONE (1) field separator GPU (Gas Processing Unit) which removes most of the liquids (NGL & water) entrained in the gas stream by disturbance of the gas flow inside the separator, the liquids are dumped from the GPU separator using low pressure (~35 psig separator pressure) gas to the Two (2) - 210 barrel (2 @ 8840 gallons) holding tank.

Production Values from wells as per Trans Energy Inc. reports:

	20H (bbls/year)	28H (bbls/year)	
NGL	434	4451	
Oil	0	0	
Water	0	179	
Total	434	4630	= 5064 barrel/year liquids

N. Gas	11,021 MCFD	126,636 MCFD

SITE EQUIMENT LIST:

1. Two (2) Wellheads
2. One (750,000 BTU/hr) Gas Processing Unit (GPU)
3. Two (2) 210 Barrel Storage Tanks
4. Total Liquids (4885 NGL + 179 Water) both 20H & 28H wells = 5064 barrels/year*
5. * - Assume all liquids as condensate (NGL) for permitting purposes (PTE)
6. Total Natural Gas Volume for both wells (137,657 CFD or 138 MCFD)

NOTE: The Caterpillar G3306TA Engine was removed from this location in January 2016

SITE Equipment (See Flow Diagram) will entail an inlet GPU separator, and the 2 - 210 barrel storage tanks for water separated from the gas stream and NGL storage.

There will be a small amount of VOC's from the 2 - 210 barrel poly tanks since it is used for small amounts of NGL and is also used as a holding tank for separated water that was entrained in gas stream. An insignificant amount of VOC's will be emitted from Fugitive Leaks from components such as: connectors, valves, flanges, open ended pipes, and pump seals. Fugitive leaks were too small to calculate.

VOC Emissions were estimated and determined by:

- E&P Tanks & GOR Calculations – Total Flashing Emissions
- Tanks 4.09d – Working & Breathing Emissions
- Truck Load Loss Emissions - Calculated for emission estimating purposes
- Criteria Pollutants NOx & CO were obtained through EPA AP-42 values

The final emissions for all the pieces of equipment on this site will be the result of all airborne pollutants. The TOTAL emission after controls is well under the WV, stated thresholds of 6lbs/hr and 10 tons/year for each criteria pollutant and below 2 lbs/hr and 5 tons/year of Hazardous Air Pollutants (HAP's), which should yield an exemption from obtaining an air permit for this compression site facility.

ATTACHMENT E

Date: September 7, 2016

Owner of Source: Trans Energy, Inc. Site: Hart 28H Well site

County: Wetzel County, WV

UTM Zone: 4370.88 Northing 531.70 Easting

Mass Emission Calculations for a Natural Gas Engine Stationary Source

Make GPU QTY 1 Model 750MBTU/hr

Heat Input (MMBTU/hr) 0.750

EPA AP-42 Natural Gas Combustion Emission Factors from Table 1.4-2

Pollutant	(lb/10^6 SCF)	lb/hr	Ton/Year lb/hr*8760/2000	Method AP-42
NOx	100	0.07	0.32	AP-42
CO	84	0.06	0.27	AP-42
VOC	5.5	0.004	0.018	AP-42
HCHO	0.075	NA	NA	AP-42
PM(Total)	7.6	0.006	0.024	AP-42
SOx	0.6	0.0004	0.002	AP-42
GHG CO2(e)	120,000	88	386	AP-42
CH4	2.3	0.002	0.007	

Emissions Above are **Totals** of **ONE (1) GPU**

Trans Energy
Hart 20 H & 28 H Well Site Permit Determinations
PD16-043
Plant ID# 103-00062

ATTACHMENT E

Truck Loading Emissions

L L = 12.46 x [(S*P*M) ÷ T] x (1-EFF/1)

L L = 12.46 x [(1.45 * 4.73 * 49.6) ÷ (48°F + 460)] x (1 –(0)]

L L = 12.46 x [86 ÷ 530] x 1

LL = 12.46 x 0.593 x 1

LL = 8.36

LL = 8.36 pounds per 1,000 gallons

Where:

LL = loading loss, pounds per 1,000 gallons

S = saturation factor (Table 5.2-1) = 1.45

P = true vapor pressure of liquid loaded (psia) = 4.73

M = Molecular weight of vapors = 49.6 lb/lb-mole (MW representative of this area – WV) Ascent Resources

T = temperature of bulk liquid loaded, °R (°F + 460) – Use 48.4 F (Average Temp in January)

~~EFF = VRU reduction efficiency~~

Total: (5064 bbl/year = 212,688 gallons/year) – Water & Condensate for both wells

212,688 ÷ 1,000 = 213

212,688 gal x 8.36 lbs/1000 gal = 1778 lbs of VOC annual for **Hart 20H & 28H Tank 1, 2 = 0.89 TPY**

As per WVDAQ suggestion, no control or capture efficiency and must list PTE (potential to emit)

~~Vapor balance service is a line hose connected to top of tank truck sending the vapors back to the tank being unloaded. Control efficiency 70% by AP-42~~

Two (2) 210 Barrel Tanks piped in Tandem = VOC (2 x 0.89) = 1.78 Tons/year VOC Truck Load Loss

Total VOC = 3.414 (Flash) + 0.004 (W&B) + 0.018 (GPU) + 1.78 (Load Loss) = 5.216 TPY

Trans Energy
Hart 20 H & 28 H Well Site Permit Determinations
PD16-043
Plant ID# 103-00062

ATTACHMENT E

Trans Energy Hart 28H Well Site 20H & 28H

1. One (1) 750,000 BTU/hr. GPU (Gas Processing Unit / Separators) AP-42 Emissions
2. Two 210 Barrel Storage Tanks – 4.09d, Produced Water Emission Results, Truck Load Loss

Produced Water Emission Results

Cubic Feet of Gas Liberated from Produced Water
Cubic Feet/Year = (GWR = Cubic FT^3/Barrel) (Barrel/year)
From FESCO Report Stock Tank GWR = 3.49 FT^3/Barrel – Used from Similar Trans Energy Well in the Area
Barrels/day = From Trans Energy Report of 5064 Barrels/Year (434 bbl + 4451 bbl + 179 bbl)
(3.49) (5064) = 17,673 Cubic Feet of Gas Liberated per year (FT^3/year)

Convert Cubic Feet of gas liberated to Tons of emissions per year using following methodology

FT^3/year = 17673
MW = 49.6 lb/lb-mole (HIGH) from - Representative of WV Area (Ascent Resources)

TPY = (MW) (FT^3/Year) (28,317 cm^3/FT^3) (gr-mole/23,890 cm^3) (lb-mole/454 gr-mole) (ton-mole/2000 lb-mole)

Tons/year = 1.14 Tons/year

Tons CO2/year = (wt%CO2/100) (Tons/year) = wt%CO2 = 4.199 = (4.199/100) (1.14) = 0.05 TPY

Tons CH4/year = (wt%CH4/100) (Tons/year) = wt%CH4 = 78.023 = (78.023/100) (1.14) =0.89 TPY

From Gas Analysis VOC's (NMNEHC) 100 – 78.023 WT% Methane – 13.954 WT% Ethane – 4.199 WT% CO2 = 3.824 WT% NMNEHC (VOC's) = 3.824 WT%

Tons VOC (NMNEHC)/Year = (wt%C3+/100) = wt%VOC = (3.824/100) (1.14) = 0.04Tons/Year

VOC's = 0.04 TPY Water Flash + E&P Tank Flash 3.374 = 3.414 TPY TOTAL Flash Emissions

HAP's (BTEX) Benzene, Toluene, Ethyl benzene, Xylene, Hexane = 0.181 WT% = 0.00181 %
HAP's (0.00181) (1.14) = **0.002 TPY HAPS**

Total Well Site VOC Emissions Flash 3.414 TPY +0.004 W&B TPY + GPU 0.018 TPY + LL 1.78 TPY
Total VOC = 5.216 Tons/Year

GHG (CO2(e)) = 386 separators + 0.05 water flash = 386.05 TPY
GHG(CH4) = 0.007 separators + 0.89 water flash = 0.897 TPY

FLASH EMISSIONS E&P TANKS


```
*****************************************************************************************
*     Project Setup Information                                                         *
*****************************************************************************************
Project File                : C:\Documents and Settings\Bill Monroe\My Documents\Abarta Clarion Small Tanks.ep
Flowsheet Selection         : Oil Tank with Separator
Calculation Method          : AP42
Control Efficiency          : 100.0%
Known Separator Stream      : Low Pressure Gas
Entering Air Composition    : No

Filed Name                  : Trans Energy
Well Name                   : Hart 28H
Well ID                     : PD16-043
Permit Number               : 103-00062
Date                        : 2016.09.07


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

Separator Pressure          : 35.00[psig]
Separator Temperature       : 50.00[F]
Molar GOR                   : 0.0500
Ambient Pressure            : 14.70[psia]
Ambient Temperature         : 45.00[F]
C10+ SG                     : 0.8800
C10+ MW                     : 585.00

-- Low Pressure Gas ----------------------------------------------------------------------
   No.    Component            mol %
   1      H2S                  0.0000
   2      O2                   0.0000
   3      CO2                  0.0250
   4      N2                   0.6033
   5      C1                  82.2810
   6      C2                  13.4216
   7      C3                   2.4994
   8      i-C4                 0.2532
   9      n-C4                 0.4882
   10     i-C5                 0.1456
   11     n-C5                 0.1535
   12     C6                   0.1233
   13     C7+                  0.0000
   14     Benzene              0.0000
   15     Toluene              0.0000
   16     E-Benzene            0.0000
   17     Xylenes              0.0000
   18     n-C6                 0.0000
   19     224Trimethylp        0.0000

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

-- Sales Oil -----------------------------------------------------------------------------
Production Rate             : 14[bbl/day]
Days of Annual Operation    : 365 [days/year]
API Gravity                 : 29.9
Reid Vapor Pressure         : 4.73[psia]
Bulk Temperature            : 80.00[F]

-- Tank and Shell Data -------------------------------------------------------------------
Diameter                    : 10.00[ft]
Shell Height                : 15.00[ft]
Cone Roof Slope             : 0.06
Average Liquid Height       : 3.00[ft]
```

Vent Pressure Range	: 0.06[psi]
Solar Absorbance	: 0.68

-- Meteorological Data ----------

City	: Charleston, WV
Ambient Pressure	: 14.70[psia]
Ambient Temperature	: 45.00[F]
Min Ambient Temperature	: 44.00[F]
Max Ambient Temperature	: 65.50[F]
Total Solar Insolation	: 1123.00[Btu/ft^2*day]

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

-- Emission Summary ----------

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]
Total HAPs	0.000	0.000
Total HC	2.686	0.613
VOCs, C2+	1.687	0.385 ← PER TANK 2 TANKS = 3.374 TPY FLASH EMISSIONS
VOCs, C3+	0.802	0.183

Uncontrolled Recovery Info.

Vapor	219.5100 x1E-3	[MSCFD]
HC Vapor	219.0800 x1E-3	[MSCFD]
GOR	15.68	[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	0.002	0.000
4	N2	0.005	0.001
5	C1	1.000	0.228
6	C2	0.885	0.202
7	C3	0.341	0.078
8	i-C4	0.051	0.012
9	n-C4	0.099	0.023
10	i-C5	0.038	0.009
11	n-C5	0.040	0.009
12	C6	0.038	0.009
13	C7	0.132	0.030
14	C8	0.046	0.011
15	C9	0.017	0.004
16	C10+	0.000	0.000
17	Benzene	0.000	0.000
18	Toluene	0.000	0.000
19	E-Benzene	0.000	0.000
20	Xylenes	0.000	0.000
21	n-C6	0.000	0.000
22	224Trimethylp	0.000	0.000
	Total	2.694	0.615

-- Stream Data ----------

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0000	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	0.0016	0.0007	0.0004	0.0360	0.0421	0.0368
4	N2	28.01	0.0050	0.0005	0.0000	0.1836	0.0003	0.1599
5	C1	16.04	2.0069	0.4663	0.0957	62.1756	37.2108	58.9426
6	C2	30.07	1.6909	1.0599	0.7905	26.3348	38.0072	27.8464
7	C3	44.10	1.0845	0.9437	0.8659	6.5835	12.2343	7.3153
8	i-C4	58.12	0.2924	0.2815	0.2733	0.7182	1.5255	0.8228
9	n-C4	58.12	0.7764	0.7605	0.7454	1.3978	3.0928	1.6173

10	i-C5	72.15	0.6378	0.6434	0.6416	0.4178	1.0318	0.4973
11	n-C5	72.15	0.8901	0.9017	0.9014	0.4387	1.1260	0.5277
12	C6	86.16	2.4317	2.4852	2.4988	0.3444	1.0021	0.4296
13	C7	100.20	22.5337	23.0854	23.2535	0.9893	3.2571	1.2830
14	C8	114.23	22.5465	23.1165	23.2998	0.2879	1.0790	0.3903
15	C9	128.28	22.5502	23.1253	23.3134	0.0923	0.3910	0.1310
16	C10+	585.00	22.5521	23.1295	23.3204	0.0000	0.0000	0.0000
17	Benzene	78.11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Toluene	92.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	E-Benzene	106.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Xylenes	106.17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	n-C6	86.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	224Trimethylp	114.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	MW		211.63	216.42	217.25	24.39	32.73	25.47
	Stream Mole Ratio		1.0000	0.9750	0.9713	0.0250	0.0037	0.0287
	Heating Value	[BTU/SCF]				1455.88	1904.26	1513.95
	Gas Gravity	[Gas/Air]				0.84	1.13	0.88
	Bubble Pt. @ 100F	[psia]	63.36	21.32	10.61			
	RVP @ 100F	[psia]	71.43	38.76	29.62			
	Spec. Gravity @ 100F		0.524	0.524	0.524			

WORKING & BREATHING EMISSIONS
4.09d

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

Identification

User Identification:	Trans Energy
City:	Charleston
State:	West Virginia
Company:	Trans Energy
Type of Tank:	Vertical Fixed Roof Tank
Description:	Well Site 28H

Tank Dimensions

Shell Height (ft):	15.00
Diameter (ft):	10.00
Liquid Height (ft) :	11.00
Avg. Liquid Height (ft):	11.00
Volume (gallons):	6,462.73
Turnovers:	32.91
Net Throughput(gal/yr):	212,688.00
Is Tank Heated (y/n):	N

Paint Characteristics

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

Roof Characteristics

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

Breather Vent Settings

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

Meterological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

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

Trans Energy - Vertical Fixed Roof Tank
Charleston, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Jet kerosene	All	63.43	53.60	73.25	58.06	0.0094	0.0069	0.0123	130.0000			162.00	Option 1: VP60 = .0085 VP70 = .011

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

Trans Energy - Vertical Fixed Roof Tank
Charleston, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	2.0713
Vapor Space Volume (cu ft):	368.0301
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0713
Vented Vapor Saturation Factor:	0.9977
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	368.0301
Tank Diameter (ft):	10.0000
Vapor Space Outage (ft):	4.6859
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	11.0000
Roof Outage (ft):	0.6859
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.6859
Dome Radius (ft):	10.0000
Shell Radius (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0094
Daily Avg. Liquid Surface Temp. (deg. R):	523.0962
Daily Average Ambient Temp. (deg. F):	54.9833
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	517.7333
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,250.5726
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0713
Daily Vapor Temperature Range (deg. R):	39.3149
Daily Vapor Pressure Range (psia):	0.0054
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0094
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0069
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0123
Daily Avg. Liquid Surface Temp. (deg R):	523.0962
Daily Min. Liquid Surface Temp. (deg R):	513.2675
Daily Max. Liquid Surface Temp. (deg R):	532.9249
Daily Ambient Temp. Range (deg. R):	21.5333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9977
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0094
Vapor Space Outage (ft):	4.6859
Working Losses (lb):	6.1596
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0094

Annual Net Throughput (gal/yr.):	212,688.0000
Annual Turnovers:	32.9100
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	6,462.7263
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	10.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	8.2309

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

Emissions Report for: Annual

Trans Energy - Vertical Fixed Roof Tank
Charleston, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Jet kerosene	6.16	2.07	8.23

WORKING $6.16 \frac{lbs}{YR} = .003$ TPY

BREATHING $2.07 \frac{lbs}{YR} = .001$ TPY

W & B = 0.004 TPY