Trans Energy, Inc.
Oil and Gas Exploration and Development

July 19, 2016

RECEIVED
JUL 20 2016
WV DEP / DIV OF AIR QUALITY

Douglas N. Hammell
WV DEP – Office of Air Quality
301 57th Street, SE
Charleston, WV 25304

RE: Permit Determination Form
Hart 28H Well Site
Wetzel County, WV

Dear Doug:

Attached are 3 copies of the PDF for the Hart Well Site, located in Wetzel County, WV
Please review. If you have any questions or require any additional information, let me know.

Sincerely,

Leslie A Gearhart
Vice President Operations

Trans Energy, Inc.
Hart 28H Compressor
103-00062
PD16-043
Jerry

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

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JUL 20 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 ID # _____

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:	5C. NEAREST CITY OR TOWN:	5D. COUNTY:
Buffalo Run Road	**Jacksonburg**	**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:	6D. FAX:	6E. E-MAIL:
304-684-7053	**304-684-3658**	**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	0.04	0.17
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)*	NA	NA

* 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: Leslie A. Gearhart

TITLE: **VICE PRESIDENT OF OPERATIONS** DATE: **JULY 20, 2016.**

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

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

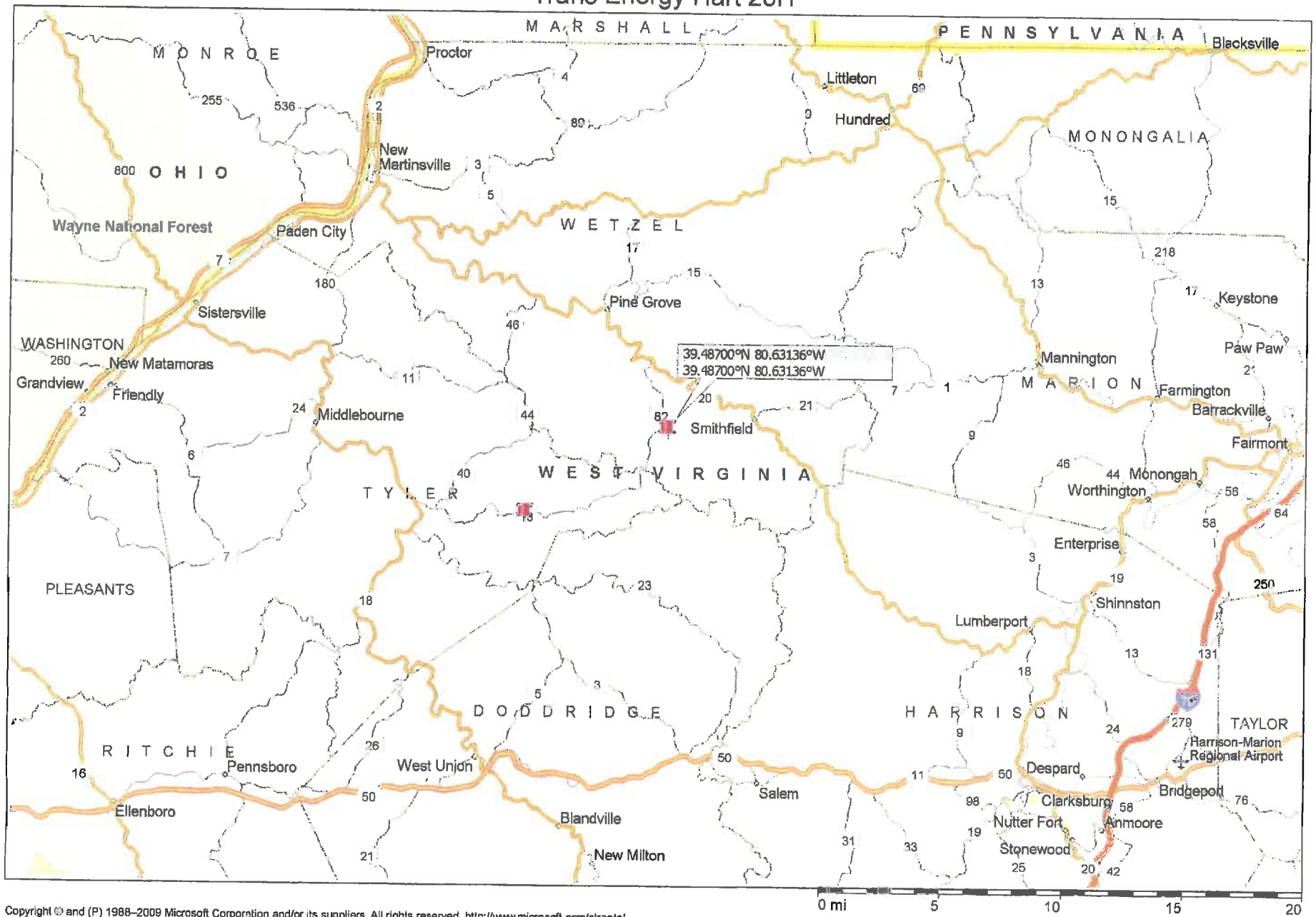
X ATTACHMENT A x ATTACHMENT B x ATTACHMENT C x ATTACHMENT D x ATTACHMENT E

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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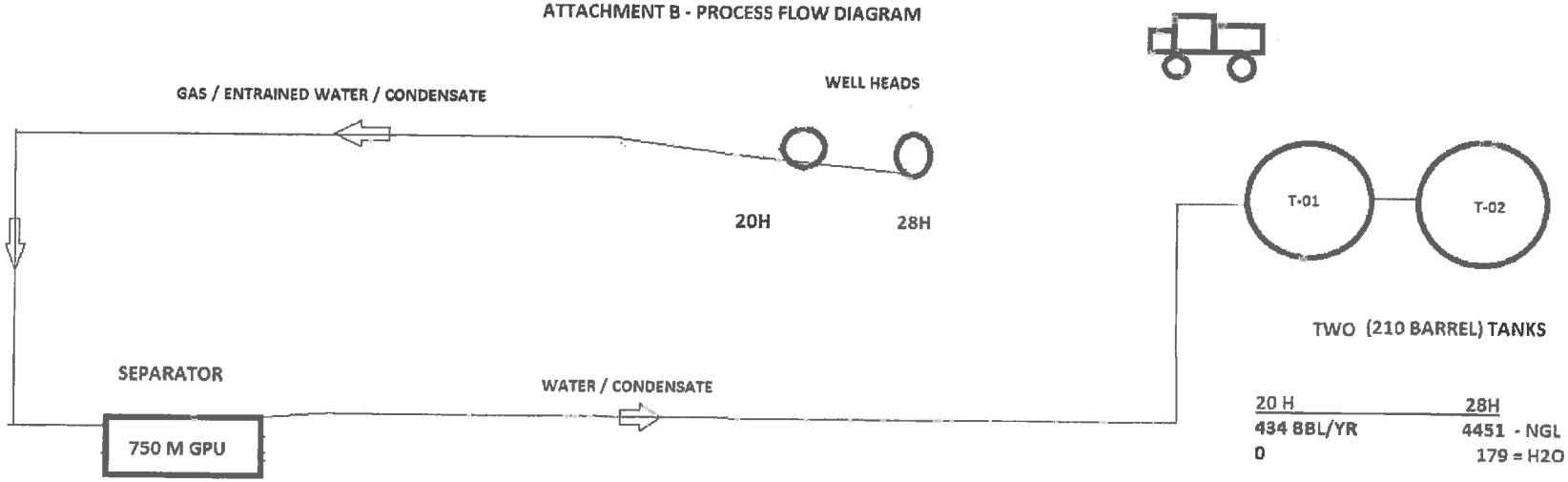
ATTACHMENT A

ATTACHMENT B

FACILITY ID# 103-00062

TRANS ENERGY HART 28H WELL SITE

ATTACHMENT B - PROCESS FLOW DIAGRAM



ATTACHMENT C

DETAILED PROCESS DESCRIPTION

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

NO TE: 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.

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

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 Well in the Area
Barrels/day = From Trans Energy Report of 5064 Barrels/Year
(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 = 18.18 from gas analysis

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 = 0.419 = 0.42 Tons/year

Tons CO2/year = (wt%CO2/100) (Tons/year) = wt%CO2 = 4.199 = (4.199/100) (0.42) = 0.018 TPY

Tons CH4/year = (wt%CH4/100) (Tons/year) = wt%CH4 = 78.023 = (78.023/100) (0.42) =0.32 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) (0.42) = 0.016 Tons/Year

VOC's = 0.016 TPY

HAP's (BTEX) Benzene, Toluene, Ethyl benzene, Xylene, Hexane = 0.181 WT% = 0.00181 %
HAP's (0.00181) (0.42) = **0.0008 TPY HAPS**

Total Well Site VOC Emissions Water Flash 0.016 TPY + W&B 0.0045 TPY + GPU 0.018 TPY + LL 0.13 TPY
Total VOC = 0.17 Tons/Year

GHG (CO2(e)) = 386 separators + 0.018 water flash = 386 TPY
GHG(CH4) = 0.007 separators + 0.32 water flash = 0.327 TPY

Trans Energy Corporation

Hart 20H & 28H Location

Truck Loading Emissions

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

L L = 12.46 x [(1.00 * 4.73 * 18.18) ÷ (70°F + 460)] x (1 –(0)]

L L = 12.46 x [86 ÷ 530] x 1

LL = 12.46 x 0.593 x 1

LL = 2.02

LL = 2.02 pounds per 1,000 gallons

Where:

LL = loading loss, pounds per 1,000 gallons

S = saturation factor (Table 5.2-1)

P = true vapor pressure of liquid loaded (psia)

M = Molecular weight of vapors

T = temperature of bulk liquid loaded, °R (°F + 460)

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 2.02 lbs/1000 gal = 429 lbs of VOC annual for **Hart 20H & 28H Tank 1, 2 = 0.215 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 0.215) = 0.43 Tons/year VOC Truck Load Loss

0.43 x (1- (70%)) = 0.13 TPY Load Loss w/ Vapor Balance

Total VOC = 0.016 (Flash) + 0.005 (W&B) + 0.018 (GPU) + 0.13 (Load Loss) = 0.17 TPY

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):		12.00
Diameter (ft):		10.00
Liquid Height (ft) :		11.00
Avg. Liquid Height (ft):		6.00
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	63.40	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):	2.9525
Vapor Space Volume (cu ft):	525.1097
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0713
Vented Vapor Saturation Factor:	0.9967
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	525.1097
Tank Diameter (ft):	10.0000
Vapor Space Outage (ft):	6.6859
Tank Shell Height (ft):	12.0000
Average Liquid Height (ft):	6.0000
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:	0.9967
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0094
Vapor Space Outage (ft):	6.6859
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):	6,462.7283
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	10.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	9.1121

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	2.95	9.11

WORKING EMISSIONS = 6.16 $\frac{lbs}{YR}$ = 0.003 TPY

BREATHING EMISSIONS = 2.95 $\frac{lbs}{YR}$ = 0.0015 TPY

W & B = 0.0045 TPY