

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

**Identification**

User Identification:	Vanadium SX Barren Organic Tank
City:	Montrose
State:	Colorado
Company:	Energy Fuels
Type of Tank:	Vertical Fixed Roof Tank
Description:	Vanadium SX Barren Organic Tank

**Tank Dimensions**

Shell Height (ft):	19.00
Diameter (ft):	24.00
Liquid Height (ft) :	19.00
Avg. Liquid Height (ft):	9.50
Volume (gallons):	64,298.25
Turnovers:	3.15
Net Throughput(gal/yr):	202,222.00
Is Tank Heated (y/n):	N

**Paint Characteristics**

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

**Roof Characteristics**

Type:	Cone
Height (ft)	0.75
Slope (ft/ft) (Cone Roof)	0.06

**Breather Vent Settings**

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

Meteorological Data used in Emissions Calculations: Grand Junction, Colorado (Avg Atmospheric Pressure = 12.37 psia)

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

**Vanadium SX Barren Organic Tank - Vertical Fixed Roof Tank**  
**Montrose, Colorado**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Jet kerosene	All	55.06	48.57	61.56	52.95	0.0073	0.0057	0.0089	130.0000			162.00	Option 1: VP50 = .006 VP60 = .0085

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

**Vanadium SX Barren Organic Tank - Vertical Fixed Roof Tank**  
**Montrose, Colorado**

---

Annual Emission Calculations

---

Standing Losses (lb):	12.5766
Vapor Space Volume (cu ft):	4,410.7961
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0459
Vented Vapor Saturation Factor:	0.9963
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	4,410.7961
Tank Diameter (ft):	24.0000
Vapor Space Outage (ft):	9.7500
Tank Shell Height (ft):	19.0000
Average Liquid Height (ft):	9.5000
Roof Outage (ft):	0.2500
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.2500
Roof Height (ft):	0.7500
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	12.0000
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):	0.0073
Daily Avg. Liquid Surface Temp. (deg. R):	514.7342
Daily Average Ambient Temp. (deg. F):	52.9333
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	512.6233
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,578.3125
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0459
Daily Vapor Temperature Range (deg. R):	25.9688
Daily Vapor Pressure Range (psia):	0.0032
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0073
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0057
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0089
Daily Avg. Liquid Surface Temp. (deg R):	514.7342
Daily Min. Liquid Surface Temp. (deg R):	508.2420
Daily Max. Liquid Surface Temp. (deg R):	521.2264
Daily Ambient Temp. Range (deg. R):	25.6333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9963
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0073

Vapor Space Outage (ft):	9.7500
Working Losses (lb):	4.5480
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0073
Annual Net Throughput (gal/yr.):	202,222.0000
Annual Turnovers:	3.1451
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	64,298.2513
Maximum Liquid Height (ft):	19.0000
Tank Diameter (ft):	24.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	17.1247

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

**Emissions Report for: Annual**

**Vanadium SX Barren Organic Tank - Vertical Fixed Roof Tank**  
**Montrose, Colorado**

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Jet kerosene	4.55	12.58	17.12

