

**\*\*\*\*\* LIQUID SPILLS - VOLUME CALCULATIONS \*\*\*\*\***

Location of spill: COG Windmill 32 Federal Com #004H

Date of Spill: 7-Dec-2018

If the leak/spill is associated with production equipment, i.e. - wellhead, stuffing box, flowline, tank battery, production vessel, transfer pump, or storage tank place an "X" here: ☒

**Input Data:**

If spill volumes from measurement, i.e. metering, tank volumes, etc. are known enter the volumes here: OIL:  BBL WATER:  BBL

If "known" spill volumes are given, input data for the following "Area Calculations" is optional. The above will override the calculated volumes.

Total Area Calculations							Standing Liquid Calculations						
Total Surface Area		width	length	wet soil			Standing Liquid Area		width	length	liquid depth		oil (%)
				depth	oil (%)								
Rectangle Area #1	150 ft		185 ft	X	0.85 in	16%	Rectangle Area #1	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #2	261 ft	X	273 ft	X	0.10 in	16%	Rectangle Area #2	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #3	0 ft	X	0 ft	X	0 in	0%	Rectangle Area #3	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #4	0 ft	X	0 ft	X	0 in	0%	Rectangle Area #4	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #5	0 ft	X	0 ft	X	0 in	0%	Rectangle Area #5	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #6	0 ft	X	0 ft	X	0 in	0%	Rectangle Area #6	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #7	0 ft	X	0 ft	X	0 in	0%	Rectangle Area #7	0 ft	X	0 ft	X	0 in	0%
Rectangle Area #8	0 ft	X	0 ft	X	0 in	0%	Rectangle Area #8	0 ft	X	0 ft	X	0 in	0%

okay

**production system leak - DAILY PRODUCTION DATA REQUIRED**

Average Daily Production: Oil  BBL Water  BBL  Gas (MCFD)

Total Hydrocarbon Content in gas:  (percentage)

Did leak occur before the separator?: ☒ YES ☒ N/A (place an "X")

H2S Content in Produced Gas:  PPM

H2S Content in Tank Vapors:  PPM

Amount of Free Liquid Recovered:  BBL okay

Percentage of Oil in Free Liquid Recovered:  (percentage)

Liquid holding factor \*:  gal per gal

Use the following when the spill wets the grains of the soil.

\* Sand = 0.08 gallon (gal.) liquid per gal. volume of soil.

\* Gravelly (caliche) loam = 0.14 gal. liquid per gal. volume of soil.

\* Sandy clay loam soil = 0.14 gal liquid per gal. volume of soil.

\* Clay loam = 0.16 gal. liquid per gal. volume of soil.

Use the following when the liquid completely fills the pore space of the soil:

Occurs when the spill soaked soil is contained by barriers, natural (or not).

\* Clay loam = 0.20 gal. liquid per gal. volume of soil.

\* Gravelly (caliche) loam = 0.25 gal. liquid per gal. volume of soil.

\* Sandy loam = 0.5 gal. liquid per gal. volume of soil.

Total Solid/Liquid Volume: 99,003 sq. ft.			2,150 cu. ft.	410 cu. ft.	Total Free Liquid Volume: sq. ft.			cu. ft.	cu. ft.
<u>Estimated Volumes Spilled</u>				<u>Estimated Production Volumes Lost</u>					
	H2O	OIL		H2O	OIL				
Liquid in Soil:	53.6 BBL	10.2 BBL		Estimated Production Spilled:	0.0 BBL	0.0 BBL			
Free Liquid:	0.0 BBL	0.0 BBL							
Totals:	53.6 BBL	10.2 BBL		<u>Estimated Surface Damage</u>					
				Surface Area:	99,003 sq. ft.				
				Surface Area:	2.2728 acre				
Total Liquid Spill Liquid:	53.6 BBL	10.2 BBL							
<u>Recovered Volumes</u>			<u>Estimated Weights, and Volumes</u>						
Estimated oil recovered:	BBL	check - okay		Saturated Soil =	286,653 lbs	2,559 cu. ft.	95 cu. yds.		
Estimated water recovered:	BBL	check - okay		Total Liquid =	64 BBL	2,680 gallon	22,299 lbs		

**Air Emission from flowline leaks:**

Volume of oil spill: - BBL  
Separator gas calculated: - MCF  
Separator gas released: - MCF  
Gas released from oil: - lb  
H2S released: - lb  
Total HC gas released: - lb  
Total HC gas released: - MCF

**Air Emission of Reporting Requirements:**

New Mexico  
HC gas release reportable? NO  
H2S release reportable? NO  
Texas  
NO  
NO