

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

Location of spill: COG - Windward Federal #002H Battery

Date of Spill: 23-Apr-2019

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: 0.0 BBL WATER: 0.0 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 depth	oil (%)	Standing Liquid Area	width		length	liquid depth	oil (%)
Rectangle Area #1	30 ft	X	15 ft	X	0.50 in 100%	Rectangle Area #1	0 ft	X	0 ft	X	0.00 in 0%
Rectangle Area #2	0 ft	X	0 ft	X	0.00 in 0%	Rectangle Area #2	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #3	0 ft	X	0 ft	X	0.0 in 0%	Rectangle Area #3	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #4	0 ft	X	0 ft	X	0.0 in 0%	Rectangle Area #4	0 ft	X	0 ft	X	0 in 0%
Rectangle Area #5	0 ft	X	0 ft	X	0.0 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%

**0.1**

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

Average Daily Production: Oil 0 BBL Water 0 BBL 0 Gas (MCFD)

Total Hydrocarbon Content in gas: 0% (percentage)

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

H2S Content in Produced Gas: 0 PPM

H2S Content in Tank Vapors: 0 PPM

Amount of Free Liquid Recovered: 0 BBL okay

Percentage of Oil in Free Liquid Recovered: 0% (percentage)

Liquid holding factor \*: 0.14 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: **450** sq. ft. **cu. ft.** **19** cu. ft. Total Free Liquid Volume: **sq. ft.** **cu. ft.** **cu. ft.**

**Estimated Volumes Spilled**

**H2O** **OIL**  
 Liquid in Soil: 0.0 BBL 0.5 BBL  
 Free Liquid: 0.0 BBL 0.0 BBL  
 Totals: 0.0 BBL 0.5 BBL

Total Liquid Spill Liquid: 0.0 BBL 0.47 BBL

**Recovered Volumes**

Estimated oil recovered: **BBL** check - okay  
 Estimated water recovered: **BBL** check - okay

**Estimated Production Volumes Lost**

**H2O** **OIL**  
 Estimated Production Spilled: 0.0 BBL 0.0 BBL

**Estimated Surface Damage**

Surface Area: **450** sq. ft.  
 Surface Area: **.0103** acre

**Estimated Weights, and Volumes**

Saturated Soil = **2,100** lbs **19** cu. ft. **1** cu. yds.  
 Total Liquid = **BBL** **20** gallon **163** 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  
 HC gas release reportable? **NO**  
 H2S release reportable? **NO**