

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

Location of spill: COG Crapshoot 13 Federal #001H

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: 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       | 105 ft | 30 ft  | X      | 3.25 in        | 14%     | Rectangle Area #1            | 0 ft              | X      | 0 ft         | X       | 0 in |
| Rectangle Area #2       | 20 ft  | X      | 108 ft | X              | 2.50 in | 14%                          | Rectangle Area #2 | 0 ft   | X            | 0 ft    | X    |
| Rectangle Area #3       | 75 ft  | X      | 108 ft | X              | 0.10 in | 14%                          | Rectangle Area #3 | 0 ft   | X            | 0 ft    | X    |
| Rectangle Area #4       | 0 ft   | X      | 0 ft   | X              | 0 in    | 0%                           | Rectangle Area #4 | 0 ft   | X            | 0 ft    | X    |
| Rectangle Area #5       | 0 ft   | X      | 0 ft   | X              | 0 in    | 0%                           | Rectangle Area #5 | 0 ft   | X            | 0 ft    | X    |
| Rectangle Area #6       | 0 ft   | X      | 0 ft   | X              | 0 in    | 0%                           | Rectangle Area #6 | 0 ft   | X            | 0 ft    | X    |
| Rectangle Area #7       | 0 ft   | X      | 0 ft   | X              | 0 in    | 0%                           | Rectangle Area #7 | 0 ft   | X            | 0 ft    | X    |
| Rectangle Area #8       | 0 ft   | X      | 0 ft   | X              | 0 in    | 0%                           | Rectangle Area #8 | 0 ft   | X            | 0 ft    | X    |

okay

**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: 31 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: 13,410 sq. ft. | 1,179 cu. ft. | 192 cu. ft.  | Total Free Liquid Volume:                | sq. ft.        | cu. ft.       | cu. ft.     |
| <b>Estimated Volumes Spilled</b>          |               |              | <b>Estimated Production Volumes Lost</b> |                |               |             |
|   | <b>H2O</b>    | <b>OIL</b>   |  | <b>H2O</b>     | <b>OIL</b>    |             |
| Liquid in Soil:                           | 29.4 BBL      | 4.8 BBL      | Estimated Production Spilled:            | 0.0 BBL        | 0.0 BBL       |             |
| Free Liquid:                              | 0.0 BBL       | 0.0 BBL      |  |                |               |             |
| Totals:                                   | 29.4 BBL      | 4.8 BBL      | <b>Estimated Surface Damage</b>          |                |               |             |
|   |               |              | Surface Area:                            | 13,410 sq. ft. |               |             |
| Total Liquid Spill Liquid:                | 29.4 BBL      | 4.8 BBL      | Surface Area:                            | .3079 acre     |               |             |
| <b>Recovered Volumes</b>                  |               |              | <b>Estimated Weights, and Volumes</b>    |                |               |             |
| Estimated oil recovered:                  | BBL           | check - okay | Saturated Soil =                         | 153,510 lbs    | 1,371 cu. ft. | 51 cu. yds. |
| Estimated water recovered:                | BBL           | check - okay | Total Liquid =                           | 34 BBL         | 1,435 gallon  | 11,942 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