

GC2 Oil Transit Line Release Volume Estimation Protocol March 5, 2006

Description

On March 2, 2006 a hydrocarbon release was discovered from the oil transit line from GC2. Volume and cause of the release is undetermined at this time. This plan describes the procedures for initial volume accounting of the released material. The options identified below may be considered for approval and implementation by the Unified Command.

Volume Calculations

Initial Volume Estimation

The sum of Method 1 (Site Sampling) and Method 2 (Volume Accounting of Recovered Material) at the time of site sampling would equal the initial volume estimate. Method 3 (Engineering Calculation) will provide a second initial volume estimate.

Final Volume Calculation

Final release volume will be determined by Method 2 (Volume Accounting of Recovered Material) and any oil observed during post cleanup monitoring.

Volume Determination Methods

Method 1: Site Sampling

Surveying will be conducted on approximately 10-foot intervals which will be topography driven. Survey to provide land surface topography along with an oil surface topography, which when combined will provide an isopach of the oil layer from which volume estimates will be calculated. This will be achieved by probing each location to locate the land surface beneath the snow. Once the probe is removed, the oil thickness above ground surface will be determined by the oil level indicated on the probe (similar to checking the oil in a car).

Survey work, mapping, and volume estimates will be conducted by Bell & Associates. Field surveying will be conducted in accordance with the incident Site Safety Plan and a job Safety Task Assessment.

Field work is estimated to be completed by end of day shift on Monday, March 6, 2006 with mapping and volume calculations estimated to be complete by end of day shift on Tuesday, March 7, 2006.

Error Analysis: Possible considerations which could impact the accuracy of the spill volume estimate include:

- Wicking of oil up into snow
- Site access
- Attempting to apply a grid pattern to irregular topography
- Measurement tolerances
- Simultaneous recovery of oil during survey

Method 2: Volume Accounting of Recovered Material

As described in the Disposal Plan which was amended on March 5, 2006, all hydrocarbons recovered from the release will be collected at Flow Station 2 (FS2) in tank #1934. This tank has been isolated from receipt of other facility or field fluids and will be designated for receipt of fluids from this release only.

Settled fluids in the FS2 collection tank will reveal the hydrocarbon and water interface. This process may be facilitated as needed with emulsion breaker and heat circulation. Once adequately separated, a total volume will be calculated and the water phase from this tank will be drained to the facility process. Material drained from this tank will be monitored throughout removal of the water phase. Once the water phase has been removed, a volume calculation will be made on the remaining oil phase with the volume of any emulsion breaker added subtracted from the resultant volume calculation.

Contaminated snow and ice collected at the site will be processed through a snow melter and the resultant fluids will be taken to the tank at FS2.

No contaminated solids are anticipated at this time. If contaminated solids are identified during the response, this volume estimation protocol will be amended to address this.

Error Analysis: Possible considerations which could impact the accuracy of the spill volume estimate include:

- Accuracy of differential pressure (DP) sensor used to detect volume
- Accuracy of Miltronics ultrasonic surface measurement device
- Site glass accuracy
- Percent water in oil/water interface layer
- Quantity of emulsion remaining in the oil
- Accuracy of decanting process

Method 3: Engineering Calculations

Engineering's estimate of the spill volume will be accomplished by first calculating an estimated hole size based on the pressure decline post line shut-in/isolation. Then, by reference to available pressure trends and recorded observations, determine the duration of the leak. It is anticipated that these calculations will yield a 'most likely' volume, and a 'not greater than' volume.

Error Analysis: Determination of the duration of the leak will have a high error band, but the error band will be able to be bracketed.

Approvals

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Revision Log

March 5, 2006

Initial Version