

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MEASUREMENT RECORD - OIL

By Tank Gauge or Alternative Method
(Onshore Order No. 4)

Date: _____ Case No.: _____
 Field/Unit: _____ Field Office: _____
 PA/CA: _____ Operator: _____
 County/State: _____ Purchaser: _____
 Facility ID.: _____ Location: 1/4 S T R _____
 Inspector: _____ Tank No.: _____

TANK GAUGE

	Yes	No	N/A
1. Does tank have a pressure-vacuum thief hatch and/or vent-line valve? III.C.1.a.			
2. Is tank set level? III.C.1.b.			
3. Does tank have a gauging reference point height stamped on a fixed bench mark plate or stenciled on tank near the Gauging hatch? III.C.1.c.			
4. Are strapping tables available for each tank? III. C.2. c.			
5. Is the tank free of dents or damage? III.C.2.b.			
6. Were oil samples taken prior to gauging tank? III.C.3.			
7. Was gauge tape of proper type and quality used? III.C.4.a.			
8. Were two identical gauges obtained? III.C.4.b.			
9. Were tests for gravity taken acceptable? III.C.5.a. & f.			
10. Was hydrometer of proper type and quality? III.C.5.b, c, d, e			
11. Were tests for tank temperature acceptable? III.C.5.e.			
12. Was thermometer of proper type and quality? III.C.6.a. & b ₂			
13. Were tests for BS&W content acceptable? III.C.7.			
14. Is tank/facility in conformance with applicable Site Security Regulations? (Self Inspection, Records, Site Sec. Plan, Fac. Diag) OO #3, III.F, G, H, and I.			
15. Copy of run ticket attached? OO #3, III.C.1.a.			
16. Gravity: Data _____ @ _____ °F Corrected API Gravity _____			
17. Sediment & Water Content: Tube # 1 _____ % Tube # 2 _____ % _____ % BS&W			
18. Opening Tank Temperature: Data _____ °F Closing Tank Temperature Data _____ °F			
19. Opening Gauge: Data _____ Closing Gauge: Data _____			
20. Do fill lines enter: Top of Tank _____ Bottom of Tank _____			
21. Method of Shipment By: Pipeline _____ Truck _____			
22. Load Line Seal Numbers: Off _____ (OO #3, III.A.1.b.) On _____ Fill Line Seal Numbers: On _____ Equalizer Line Seal Numbers: On _____ Drain/Circulating Line Seal Numbers: On _____			

Alternate Method

23. Date of Alternative Measurement Method Approval: _____
 24. Method Type: Turbine Metering _____ Calibrated Tank Truck _____
 Net Oil Computer _____ Measurement by Weight _____
 Other (describe) _____
 25. Does this method accurately meet or exceed the minimum API Standard for:
 Gross Volume Measurement _____ API Oil Gravity _____
 Sediment & Water _____ Temperature _____
 Net Volume Calculations _____

REMARKS

TANK GAUGING REQUIREMENTS

III.C.3. - Oil Sampling (API Chapter 8.1 and 10.4)

- a. Isolate and settle tank for 30 minutes before sampling or gauging.
- b. Two-way sample.
 - On tanks larger than 1,000 barrel capacity which contain between 10 and 15 feet of oil, take 2 equal volume samples, one in the middle of the upper 1/3 of the tank content and one in the lower 1/3 or at the sales outlet.
- Three-way sample.
 - On tanks larger than 1,000 barrel capacity which contain 15 feet or more of oil, take 3 equal volume samples, one in the middle of upper 1/3 of the tank content, one in the middle of the tank content, and one in the middle of the lower 1/3 or at the sales outlet.

NOTE: Either method may be used on tanks up to and including 1,000 barrel capacity.

III.C.4. - Sales Tank Gauging (API Standard 2545)

- a. Tapes shall be made of steel or corrosion-resistant material, not kinked or spliced, traceable to standards of the National Bureau of Standards (NBS) and certified accurate by either the manufacturer or an independent testing facility. Working tapes when checked against a NBS certified tape are acceptable.
- b. Two identical gauges shall be taken to the nearest ¼ inch for tanks with a capacity of less than 1,000 barrels, and 2 identical gauges shall be taken to the nearest ⅜ inch for tanks of 1,000 barrels or more. Use the proper bob for innage or outage gauging.

III.C.5. - Oil Gravity (API Chapter 9)

- a. Gravity test shall be performed on a representative sales tank oil sample following API Ch. 8.1.
- b. Test shall be complete before oil sales are made.
- c. Accuracy of the instruments shall be traceable to NBS and certified accurate by either the manufacturer or an independent testing facility.
- d. Hydrometer shall be clean, free of shot weights, or detached gravity scale.
- e. Hydrometer shall be calibrated for a gravity range that includes the observed gravity of the sample being tested.
- f. Gravity shall be measured to the nearest 0.1° API gravity, and shall be corrected to 60 °F using API Tables 5A and 6A.
- g. Temperature of sample shall be measured to the nearest 1.0 °F.

III.C.6. - Tank Temperatures (API Standard 2543)

- a. All thermometers shall be traceable to NBS and certified as accurate by either the manufacturer or an independent testing facility. Working thermometers checked against a thermometer certified as accurate to NBS standards shall be permitted.
- b. Thermometers shall be kept clean and free of mercury separation.
- c. Temperature should be taken:
 - > 15' liquid: 3' below surface, middle of tank, 3' above bottom of tank.
 - 10' - 15' liquid: 3' below surface of oil, 3' above bottom of tank.
 - < 10' liquid: middle of tank.

NOTE: For crude tanks over 10 ft in height, having a capacity of less than 5,000 bbl, one temperature measurement at the middle of the oil may be used.

- d. Immerse thermometer not less than 12" from shell of tank, for at least 5 minutes, and read to the nearest 1.0 EF.

III.C.7. - Sediment & Water (S&W) (API Chapter 10)

- a. Use solvent of Toluene, Xylene, Kerosine, or White Gasoline. (Toluene, and Xylene must be water saturated.)
- b. Thoroughly mix oil sample-solvent combination (50 ml solvent & 50 ml sample), stopper tubes and shake vigorously.
- c. Heat samples in bath to 140 °F (minimum 10 min.); vapor pressure @ 140 °F is double that @ 100 °F.
- d. Invert tubes to assure oil and solvent are mixed.
- e. Whirl heated sample tubes in the centrifuge not less than 5 minutes, with the temperature at the end of centrifuging a minimum of 115 °F without water-saturated diluent (125 °F with water-saturated diluent.)
- f. Volume of S&W at the bottom of 100 ml tube shall be read:
 1. estimated to nearest 0.025 if volume < 0.1 ml.
 2. to nearest 0.05 ml range from 0.1 - 1 ml.
 3. to nearest 0.1 ml if above the 1 ml mark.
- g. Multiply the reading obtained by 2 = S&W.

Innage - Height of oil level from tank bottom or fixed datum plate upward to surface of oil in tank.

Outage - Measurement from fixed reference point at top of tank downward to surface of oil in tank.