



# UST INFORMATION

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## Sample 30-Day Inventory Control Record

Tank tightness testing in combination with inventory control can be used to meet state and federal underground storage tank leak detection requirements. This information sheet provides an explanation and example of how to perform the inventory control procedure.

Inventory control is basically an ongoing accounting system, similar to a check book. Its objective is to reconcile the inputs and outputs of a stored substance in a given UST with the volume remaining in the UST. Careful records of all product delivered, product dispensed, and daily tank inventories are recorded on a ledger-like form and reconciled on a monthly basis. The system “imbalance” at the end of the month, the difference between book inventory and measured inventory, is compared to a threshold value to help determine whether the imbalance signifies a leak.

Monthly inventory control is only effective for finding larger leaks (more than one [1] gallon per hour) if “recommended practices” are followed. Due to its lack of sensitivity, inventory control is used in combination with tightness testing; tightness testing must be performed annually on tanks installed before December 22, 1988. Tanks installed after December 22, 1988, and tanks which have been upgraded with corrosion protection and spill/overfill devices, **must be tightness tested once every five years beginning the first year after installation or upgrade.** Monthly inventory control with periodic tank tightness tests is considered a “temporary” monitoring method and eventually must be replaced with a “permanent” monthly monitoring method (i.e., groundwater monitoring, vapor monitoring, automatic tank gauging, or secondary containment with interstitial monitoring.)

The numbers below are keyed to the numbers on the enclosed Inventory Control Record and the attached example form.

**(1) DATE:** Inventory must be reconciled for each operating day.

**(2) START STICK INVENTORY:** The Start Stick Inventory is brought forward from the previous day’s or shift’s End Stick Inventory.

**(3) DAILY GALLONS DISPENSED:** The Daily Gallons Dispensed is determined by subtracting the Opening Pump Reading (brought forward from the previous day’s or shift’s Closing Pump Reading) from the Closing Pump Reading, and adding the results for each meter if there is more than one pump to a tank. A Dispensing Meter Recording Sheet, along with an example are enclosed. Daily Gallons Dispensed are transferred from line D. of the Dispensing Meter Recording Sheet to column (3) on the Inventory Control Record. Pump meters must be calibrated once a year to state weights and measures standards.

**(4) GALLONS DELIVERED:** Gallons Delivered are recorded on the day of delivery. Stick readings should be taken immediately before and after the delivery of product in order to determine the correct amount of product delivered to the tank. Any withdrawals that occur during delivery must be taken into account (added) when

determining the Gallons Delivered. An example for determining the amount of product delivered to the tank is attached.

**(5) BOOK INVENTORY:** Book Inventory is determined by subtracting Daily Gallons Dispensed and adding Gallons Delivered to the Start Stick Inventory  $(5) = (2) - (3) + (4)$ .

**(6) END STICK READING:** The gauge stick measurement is taken at the same time each day while the pumps are closed, usually at the end of business hours for stations which close overnight, or at the end of a designated shift for stations open 24-hours a day.

The gauge stick should be carefully inserted at the same point in the same tank opening each time and held in a vertical position. After touching bottom, the stick is quickly withdrawn and the product "cut" (wet mark left by the product on the gauge stick) is read on the graduated scale to the nearest 1/8th inch. For increased accuracy, a product finding paste can be used, or the side adjacent to the graduated scale may be grooved every 1/8th inch to keep the product from moving up the stick past the measured level (creepage). Accuracy will decrease if the gauge stick is slanted or "bounced" off the bottom of the tank. Bouncing the stick off the bottom of the tank may eventually wear a hole in the tank bottom and is discouraged.

**(7) END STICK INVENTORY:** The End Stick Inventory is determined by converting the End Stick Reading to gallons of product from the tank calibration "gauge" chart. Each tank should have a chart specific to its dimensions and capacity, and the chart must correspond to the tank being gauged. For product levels which fall between whole inch marks on the calibration chart, the amount of product must be interpolated from the lower and higher whole inch readings. *An example* on how to interpolate the amount of product when the reading falls between whole inch marks is included on the back of the Inventory Control Record.

**(8) DAILY OVER (+) OR SHORT (-):** The Daily Overage or Shortage is determined by subtracting the Book Inventory from the End Stick Inventory  $(8) = (7) - (5)$ , and will either be a positive (+) or a negative (-) value.

**(9) INITIALS:** The individual responsible for recording measurements and doing the calculations should initial the record. The same person should take the readings and/or measurements and record the numbers for accuracy.

**(10) TOTAL GALLONS DISPENSED:** The Total Gallons Dispensed for the month is determined by adding the Daily Gallons Dispensed in column (3), i.e.,  $(333 + 44 + 329 + 60 + \dots + 263) = 6293$  gallons.

**(11) MONTHLY OVER (+) OR SHORT (-):** The Monthly Overage or Shortage is determined by summing the Daily Over (+) or Short (-) in column (8). For example:  $-24 + 12 -6 + 12 -13 - \dots -16) = -74$  gallons.

**(12) WATER CHECK:** The amount of water in the bottom of the tank must be determined at least once a month with water-finding paste; the paste is placed on the end of the gauge stick. The immersion time for a water "cut" is approximately 10 seconds for light products such as gasoline and kerosene, 20 to 30 seconds for heavier products. If the test shows more than 1/2 inch of water, arrangements should be made for its removal and the source of the water should be determined. Significant amounts of water in a tank will result in an inaccurately high gauge reading and in areas of high groundwater, may indicate an influx of water from a leak in the tank.

**(13) LEAK CHECK:** The Leak Check Number is determined by taking 1% of the Total Gallons Dispensed for the month plus 130 gallons, for example:  $(6293 \times .01) + 130 = 193$  gallons.

The Monthly Overage or Shortage (11) is compared to the Leak Check Number to determine if there is a suspected leak. In the attached example record, the Monthly Shortage (-74 gallons) is within the allowable error of 193 gallons.

If the monthly Overage or Shortage exceeds the Leak Check Number, call the North Dakota Department of Environmental Quality at 701.328.5166 to report the suspected leak. Our office location is: North Dakota Department of Environmental Quality, Division of Waste Management, 4201 Normandy St., 2nd Fl., Bismarck, ND 58503-1324.

**(Note: Make copies of all recording sheets before using.)**

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**NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY**