



Borehole **22-08-07**

Log Event A

Borehole Information

Farm : <u>BY</u>	Tank : <u>BY-108</u>	Site Number : <u>299-E33-87</u>
N-Coord : <u>45,956</u>	W-Coord : <u>53,492</u>	TOC Elevation : <u>650.03</u>
Water Level, ft :	Date Drilled : <u>8/17/1949</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.313</u>	ID, in. : <u>8</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	

Borehole Notes:

According to the driller's records, this borehole was drilled and cased to 150 ft in 1949. The depth achieved by logging has been about 131 ft since at least 1982. The cause of blockage in the borehole or the date when it occurred is not known. Records indicate the casing is perforated (5 holes per foot) from about 49 to 100 ft. Other boreholes in the vicinity that were drilled in 1949 have perforations from 40 to 100 ft. On the basis of the Cs-137 log, which indicates contamination beginning at 40 ft (contaminants apparently entered the casing through perforations), it is possible the casing in this borehole was actually perforated from 40 to 100 ft. Records do not indicate any grout being placed in this borehole.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>8/29/1995</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>13.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>2</u>	Log Run Date : <u>8/30/1995</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>131.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>25.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>3</u>	Log Run Date : <u>8/31/1995</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>26.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>12.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : P-GJPO-1787

Analysis Date : 2/28/1996

Analysis Notes :

This borehole was logged in three log runs. The pre- and post-survey field verification spectra showed consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated energy versus channel number recalibrations during processing of the data to maintain proper peak identification. Depth overlaps, where data were collected on separate days at the same depth, occurred in this borehole at about 13 and 25 ft. The calculated concentrations were within the statistical uncertainty of the measurements, indicating very good repeatability.

The casing thickness was measured in the field as 3/8 (0.375) in. However, borehole casing thicknesses are typically measured at 5/16 (0.3125) in. or less in the BY Tank Farm. Another borehole (22-06-07) that was drilled at about the same time (1949) had a measured casing thickness of 5/16 in. Therefore, casing-correction factors for a 0.33-in.-thick steel casing were applied during analysis.

Cs-137 and Co-60 were the only man-made radionuclides identified in this borehole. The presence of Cs-137 was measured continuously from the ground surface to about 4 ft, almost continuously from about 40 to 100 ft, intermittently in other locations, and at the bottom of the borehole. Cs-137 concentrations from 40 to 100 ft are most likely influenced by the perforations in the casing in this depth interval. Co-60 was measured at 84 ft, and from 95 to 98 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BY-108.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the earliest and latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with each other or the SGLS data. The purpose of providing both logs is to show the decreasing count rates over time which are probably due to decay of Co-60.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.