



Borehole **22-06-05**

Log Event A

Borehole Information

Farm : <u>BY</u>	Tank : <u>BY-106</u>	Site Number : <u>299-E33-113</u>
N-Coord : <u>46,064</u>	W-Coord : <u>53,327</u>	TOC Elevation : <u>648.82</u>
Water Level, ft :	Date Drilled : <u>7/14/1970</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

The borehole was drilled with a cable tool drilling rig, and the casing is apparently ungrouted and unperforated.

The drilling log noted that no activity was encountered during drilling.

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>8/11/1995</u>	Logging Engineer: <u>Gary Lekvold</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>6.5</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>8/14/1995</u>	Logging Engineer: <u>Gary Lekvold</u>
Start Depth, ft.: <u>98.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>5.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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Analysis Information

Analyst : D.C. Stromswold

Data Processing Reference : P-GJPO-1787

Analysis Date : 2/8/1996

Analysis Notes :

The verification spectra collected after run 1 and before and after run 2 showed that the logging tool was operating properly. The spectrum collected before run 1 was obtained near tank BY-104, where the surface Cs-137 contamination was high. The high Cs-137 perturbed the spectrum, making comparison with the other spectra difficult.

Gain drift during run 1 was minimal, enabling a single energy calibration to be used during data processing. Gain drifts during run 2 necessitated multiple energy calibrations to maintain proper radionuclide identification. Repeatability was good at the overlap log section, being within the statistical uncertainty.

Correction factors for 0.25-in.-thick steel casing were used during data processing. No water correction was applied because the borehole was dry.

Cs-137 and Co-60 were the man-made contaminants detected in this borehole. Cs-137 was found mainly above about 45 ft, and the concentrations were less than about 1 pCi/g, except near the surface. Co-60 occurred between about 28 and 87 ft, with the highest concentrations (about 15 pCi/g) in the interval from about 63 to 77 ft.

K-40 concentrations increased below about 48 ft, the depth of the tank's bottom. Variations in the K-40 concentrations above the tank's bottom do not indicate natural lithology changes because they occur in backfill material. The absence of reported U-238 concentrations in the interval from about 63 to 79 ft is due to the increased background from Co-60 that raised the minimum detection level (MDL) at that location.

See the Tank Summary Data Report for tank BY-106 for additional log analysis.

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 Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data.

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.