



Borehole **60-00-05**

Log Event A

Borehole Information

Farm : <u>U</u>	Tank : <u>U</u>	Site Number : <u>299-W19-53</u>
N-Coord : <u>37,898</u>	W-Coord : <u>75,577</u>	TOC Elevation : <u>670.83</u>
Water Level, ft :	Date Drilled : <u>10/31/1944</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.365</u>	ID, in. : <u>10</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>148</u>	
Type : <u>Steel-welded</u>	Thickness : <u>0.500</u>	ID, in. : <u>12</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>50</u>	

Cement Bottom, ft. : 148 Cement Top, ft. : 143

Borehole Notes:

A portion of this borehole is double cased, with 10-in. and 12-in. tubings. Twelve-inch diameter casing extends from the surface to a depth of 50 ft. Ten-inch casing was then placed inside the 12-in. pipe and extended to the borehole completion depth (148 ft). The 10-in. casing was perforated with .5-in. by 3-in. slots at staggered 6-in. intervals from a depth of 46 ft to the bottom of the borehole. The drill records state that the bottom of the 10-in. casing was cemented in place, but the records make no mention of cement or grouting material emplaced in the annulus between the 10-in. and 12-in. casings.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>12/6/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>143.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>55.0</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>12/7/1995</u>	Logging Engineer: <u>Bob Spatz</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>56.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

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Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 5/22/1996

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-field verification spectra indicate the logging system was operating properly during data collection. The energy/channel drift observed during the logging runs did not exceed the search parameters of the processing software, and multiple energy calibrations were not required to process the data. Data overlaps occurred when the same depth intervals were logged between the log runs. The calculated concentrations were within the statistical uncertainty of the measurements, indicating acceptable repeatability.

The casing thickness is presumed to be 0.365 inch (in.), on the basis of published thickness for schedule-40, 10-in. steel casing. Casing-correction factors for a 0.365 in.-thick steel casing were applied during analysis. This was the only correction applied to the data. The correction factor was not adjusted in the portion of the borehole that is double cased (0 to 50 ft) because appropriate attenuation factors for a double casing are not available. Furthermore, there is no information available on the type of grout or filler material that may have been injected into the annulus between the two tubes. Because the attenuation of gamma rays in the double cased region of the borehole will be greater than the calculated attenuation using a single casing thickness factor, calculated radionuclide concentrations are somewhat lower than actual concentrations.

Cs-137 was the only man-made radionuclide detected. Cs-137 occurred from the ground surface to a depth of 16.5 ft; it was also indicated at depths between 49 and 50 ft, between 53 and 62 ft, between 68 and 69 ft, between 76 and 77 ft, at 83, 92, 99, 111, 117, and 120.5 ft and at the bottom of the borehole. Other than the maximum concentration of 7.32 pCi/g that was measured at a depth of 2.5 ft, Cs-137 concentrations ranged between 0.2 and 6 pCi/g.

Details regarding the interpretation of the data for this borehole are presented in the Tank Summary Data Report for tank U-110.

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.