



Borehole **60-11-06**

Log Event A

**Borehole Information**

Farm : <u>U</u>	Tank : <u>U-111</u>	Site Number : <u>299-W18-101</u>
N-Coord : <u>37,860</u>	W-Coord : <u>75,737</u>	TOC Elevation : <u>665.98</u>
Water Level, ft :	Date Drilled : <u>7/31/1973</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>125</u>	

**Borehole Notes:**

This borehole was drilled in July 1973 and completed with 6-in., schedule-40 steel tubing with a wall thickness of 0.280 inch to a depth of 125 ft. The top of the casing is even with the ground surface. There is no mention in the drilling log about the casing being perforated or any mention of cement placed in the bottom of the hole. A hard object (boulder) was encountered at 38 to 40 ft.

**Equipment Information**

Logging System : <u>2</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>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>71.0</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>Alan Pearson</u>
Start Depth, ft.: <u>125.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>70.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

60-11-06

Log Event A

---

### Analysis Information

---

Analyst : E.P. Baumgartner

Data Processing Reference : P-GJPO-1787

Analysis Date : 6/12/1996

#### Analysis Notes :

This borehole was logged in two log runs using the Spectral Gamma Logging System (SGLS). The pre- and post-survey field verification spectra show consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Logging overlap, where data were collected on separate days at the same depth, occurred in this borehole at about 71 ft. The calculated concentrations for the overlap zone were within the statistical uncertainty of the measurements, indicating very good repeatability.

The casing thickness is presumed to be 0.280 inch (in.), on the basis of the published thickness for 6-in., schedule-40 steel tubing. Casing-correction factors for a 0.280-in.-thick steel casing were applied during analysis. The borehole was logged dry.

Cs-137 was the only man-made radionuclide identified in this borehole. The presence of Cs-137 was measured semi-continuously from the ground surface to 12.5 ft, at 124.5 ft, and at 125.0 ft. The highest concentration of Cs-137, about 3 pCi/g, was measured at the surface, and the rest of the concentrations were less than 1 pCi/g. The logs for the natural radionuclides and the total gamma all increase at the very bottom of the borehole.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank U-111.

#### 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 lithologic interpretations. The headings of these plots identify the energy of the specific gamma peaks used to calculate the concentrations.

A combination plot includes the man-made radionuclides, the naturally occurring radionuclides, the total gamma count derived from the SGLS 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 uncertainty for the calculated concentrations at the 95-percent confidence level. The minimum detection level (MDL) is shown by open circles on the plots. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.