



Borehole **40-11-07**

Log Event **A**

**Borehole Information**

Farm : <u>S</u>	Tank : <u>S-111</u>	Site Number : <u>299-W23-172</u>
N-Coord : <u>35,877</u>	W-Coord : <u>75,783</u>	TOC Elevation : <u>664.35</u>
Water Level, ft :	Date Drilled : <u>11/1971</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:**

This borehole was drilled in November 1971 and completed to a depth of 100 ft with 6-in.-diameter casing. The driller's log contains no mention of perforations or grouting. The casing thickness is assumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. casing. The zero reference for the SGLS logs is the top of the casing, which is even with the ground surface.

**Equipment Information**

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

**Log Run Information**

Log Run Number : <u>1</u>	Log Run Date : <u>07/17/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>100.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>25.0</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>07/18/1996</u>	Logging Engineer: <u>Bob Spatz</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>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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### Analysis Information

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Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787

Analysis Date : 04/10/1997

#### Analysis Notes :

This borehole was logged in two log runs using a centralizer. The pre- and post-survey field verification spectra met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the field verification spectra that best matched the data were used to establish the channel-to-energy parameters used in processing the spectra acquired during the log runs.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected at the ground surface, continuously from 3.5 to 13.5 ft, intermittently from 36.5 to 41.5 ft, and at the bottom of the borehole. The maximum Cs-137 concentration was 0.6 pCi/g at a depth of 40.5 ft, although a higher apparent concentration was detected at the ground surface. The borehole-to-detector geometry at the ground surface does not match the source-to-detector geometry used during calibration; therefore, concentrations calculated at the ground surface are not considered accurate.

The logs of the naturally occurring radionuclides show elevated concentrations over the depth interval from about 59 to 65 ft. K-40 and U-238 concentrations increase over the depth interval from about 68 to 74 ft. The KUT concentrations vary from 60 to 80 ft and increase at a depth of about 80 ft.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Report for tank S-111.

#### Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. 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 the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs 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 MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.