



Borehole 40-12-07

Log Event A

Borehole Information

Farm : <u>S</u>	Tank : <u>S-112</u>	Site Number : <u>299-W23-208</u>
N-Coord : <u>35,885</u>	W-Coord : <u>75,901</u>	TOC Elevation : <u>663.00</u>
Water Level, ft : <u>97.70</u>	Date Drilled : <u>3/31/1976</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>	

Cement Bottom, ft. : 105 Cement Top, ft. : 100

Borehole Notes:

This borehole was drilled in March 1976. The borehole was started with 20 ft of 8-in. surface casing and continued to 105 ft with 6-in. casing. The borehole was completed at a depth of 100 ft with 6-in.-nominal-diameter carbon-steel casing. The 20-ft segment of surface casing was withdrawn on completion of the borehole and the annulus between the borehole wall and the 6-in. casing was grouted. The 5-ft interval between the bottom of the casing and the bottom of the borehole was also grouted. The casing thickness is assumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. casing.

The top of the casing is the zero reference for the log. The casing lip 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>08/09/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>98.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>49.0</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>07/12/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>50.0</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

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 05/17/1997

Analysis Notes :

The SGLS log of this borehole was completed in two logging runs. A centralizer was used during the logging operation. The pre- and post-survey field verification spectra for both logging runs met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the pre- and post-survey field verification spectra that best matched the logging run data were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging runs. There was negligible gain drift during the logging runs. During processing of the log data, it was not necessary to adjust the established channel-to-energy parameters to maintain proper peak identification.

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 log. Cs-137 contamination was detected from the ground surface to 0.5 ft. The measured concentration at 0.5 ft was 0.3 pCi/g. A higher apparent Cs-137 concentration (about 4 pCi/g) was detected at the ground surface.

The logs of the naturally occurring radionuclides show an increased K-40 background concentration between 8 and 18.5 ft. The background concentration changes from about 6 pCi/g above 18.5 ft to about 10 pCi/g below. The background K-40 concentration decreases slightly at a depth of 50 ft, increases gradually from 50 to 66 ft, and decreases from about 66 to 75 ft. The U-238 concentration increases slightly between depths of 64 and 68 ft. The KUT concentrations increase below a depth of 75 ft.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Report for tank S-112.

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.

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.

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. Uncertainty bars and the MDL values have been omitted from the combination plot. 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.