Log Event A

Borehole # 30-10-09

Borehole Information

Farm : C	**Tank :** C-110	**Site Number :** 299-E27-103
N-Coord : 42,926	**W-Coord :** 48,585	**TOC Elevation :** 646.00
Water Level, ft :	**Date Drilled :** 9/30/1974	

Casing Record

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

Borehole Notes:
Borehole 30-10-09 was drilled in September 1974 to a depth of 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. No information concerning grouting or perforations was available; therefore, it is assumed that the borehole was not grouted or perforated. The top of the casing, which is the zero reference for the SGLS, is even with the ground surface. The borehole is located on a slope and is about 5 ft above the ground surface of the tank farm.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 10/1996	**Calibration Reference :** GJO-HAN-13	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number :	1	**Log Run Date :**	02/28/1997	**Logging Engineer:**	Bob Spatz
Start Depth, ft.:	0.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	18.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	2	**Log Run Date :**	02/28/1997	**Logging Engineer:**	Bob Spatz
Start Depth, ft.:	97.5	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** Y
Finish Depth, ft. :	50.5	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	3	**Log Run Date :**	03/04/1997	**Logging Engineer:**	Bob Spatz
Start Depth, ft.:	51.5	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	17.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

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Analysis Information

Analyst : D.L. Parker

Data Processing Reference : MAC-VZCP 1.7.9 Analysis Date : 09/09/1997

Analysis Notes :

This borehole was logged by the SGLS in three log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

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

Shape factor analysis, a data analysis method developed as part of the Hanford Tank Farms Vadose Zone Project, was performed on SGLS data from this borehole, but Cs-137 concentrations were too low to produce meaningful results.

The only man-made radionuclide detected in this borehole was Cs-137. The presence of Cs-137 was measured intermittently from the ground surface to 13.5 ft and almost continuously from 17 to 37.5 ft.

The K-40 concentrations increase to a background of about 18 pCi/g at 41 ft and remain elevated to about 51 ft. K-40 concentrations decrease to about 16 pCi/g at about 51 ft and remain at this concentration to the 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 C-110.

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. 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.

A plot of representative historical gross gamma-ray logs from 1975 to 1983 is included.