Log Event A

Borehole # 10-01-09

Borehole Information

Farm : A	**Tank :** A-101	**Site Number :** Unknown
N-Coord :	**W-Coord :**	**TOC Elevation :** 690.5
Water Level, ft : 62.80	**Date Drilled :** Unknown	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 75	

Borehole Notes:

A driller's log was not available for this borehole. According to Welty (1988), this borehole was drilled in 1962 or 1978 to a depth of 75 ft. There is no indication that the casing was perforated or grouted.

The casing thickness for the borehole is assumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. casing.

The top of the casing is the zero reference for the log. The casing lip is approximately even with the ground surface.

Equipment Information

Logging System : 1	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 10/1996	**Calibration Reference :** GJO-HAN-13	**Logging Procedure :** P-GJPO-1783

Logging Information

Log Run Number :	1	**Log Run Date :**	12/02/1996	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	0.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	21.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Log Run Number :	2	**Log Run Date :**	12/03/1996	**Logging Engineer:**	Alan Pearson
Start Depth, ft.:	63.0	**Counting Time, sec.:**	100	**L/R :** L	**Shield :** N
Finish Depth, ft. :	20.0	**MSA Interval, ft. :**	0.5	**Log Speed, ft/min.:**	n/a

Borehole 10-01-09

Log Event A

Logging Operation Notes:

This borehole was logged in two log runs. Water was encountered at 62.8 ft; therefore, the total logging depth achieved by the SGLS was 63 ft.

Analysis Information

Analyst : S.D. Barry

Data Processing Reference : MAC-VZCP 1.7.9 Analysis Date : 02/10/1998

Analysis Notes :

The pre- and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

A casing correction factor for a 0.280-in.-thick steel casing (based on a 6-in., schedule-40 pipe) was applied to the entire logged interval during the analysis process.

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 the shape factor analysis results is also included. The plot is used as an interpretive tool to help determine the radial distribution of man-made contaminants around the borehole.

Results/Interpretations:

The only man-made radionuclide detected in this borehole was Cs-137. Cs-137 contamination was detected continuously from the ground surface to 8 ft and continuously from 11 to 16 ft.

The K-40 log plot shows an interval of higher concentrations between approximately 5 and 7.5 ft. At a depth of about 11 ft, the K-40 concentrations gradually increase from 10 to about 13 pCi/g. Between about 47 and 53 ft, the K-40 concentration values range from about 9 to 11 pCi/g. At a depth of 53 ft, the K-40 concentration values increase to about 16 pCi/g. Between 55 and 61 ft, the Th-232 concentration values are slightly elevated.

An analysis of the shape factors associated with applicable segments of the spectra was performed. The shape factors provide insights into the distribution of the Cs-137 contamination and into the nature of zones of elevated total count gamma-ray activity not attributable to gamma-emitting radionuclides. The shape factor

Borehole 10-01-09

Log Event A

analysis for the interval from just below the ground surface to about 2.5 ft indicates the Cs-137 is distributed somewhat uniformly in the backfill sediments or has been influenced by the presence of grout.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank A-101.