Log Event A

Borehole # 40-05-10

Borehole Information

Farm : S	**Tank :** S-105	**Site Number :** 299-W23-156
N-Coord : 36,140	**W-Coord :** 75,810	**TOC Elevation :** 663.59
Water Level, ft :	**Date Drilled :** 10/31/1971	

Casing Record

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

Borehole Notes:
This borehole was drilled in October 1976 to a depth of 105 ft. The borehole was started with a 20-ft length of 8-in. surface casing and was completed at a depth of 100 ft with 6-in.-diameter casing. The 20 ft of surface casing was removed on completion of the borehole and the annulus between the 8-in. casing and the permanent 6-in. casing was grouted. Grout was also placed in the bottom 5 ft of the borehole as the 6-in. casing was withdrawn from the drilled depth (105 ft) to the completion depth (100 ft).

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

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

Equipment Information

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

Log Run Information

Log Run Number : 1	**Log Run Date :** 06/17/1996	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 89.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 0.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Event A

Borehole # 40-05-10

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787 Analysis Date : 03/20/1997

Analysis Notes :

This borehole was logged by the SGLS in a single logging run with a detector centralizer.

The pre- and post-survey field verification spectra for the log run met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the post-survey field verification spectra 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 run and it was not necessary to adjust the established channel-to-energy parameters during processing of log data 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. Cs-137 contamination was detected at the ground surface and between depths of 1 and 1.5 ft. Except at the surface, the measured Cs-137 concentration was about 0.2 pCi/g, just slightly above the MDL. The maximum measured Cs-137 concentration was about 3 pCi/g at the surface; however, this value is only an apparent concentration because the configuration of the detector system does not conform to the configuration used in the calibration model. The logs of the naturally occurring radionuclides show increases in the K-40 concentrations from depths of 52 to 54 ft and 60 to 62 ft. There are lows in the K-40 and U-238 concentrations from 64 to 67 ft. The background K-40 concentration increases from about 12 pCi/g above 67 ft to about 17 pCi/g below this depth. The measured U-238 and Th-232 background concentrations also increase at the 67-ft depth.

The SGLS total count log plot reflects the varying concentrations of the naturally occurring radionuclides. The measured Cs-137 contamination in the upper 1.5 ft of the borehole is also reflected in the SGLS total count log.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Report for tank S-105.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The naturally occurring radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate 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 both the man-made and naturally occurring radionuclides, the total-count log plot, and the Tank Farm gross-gamma log. The Tank Farm gross-gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma log plot to coincide with the SGLS data.