Log Event A

Borehole # 21-03-03

Borehole Information

Farm : BX	**Tank :** BX-103	**Site Number :** 299-E33-239
N-Coord : 45,600	**W-Coord :** 53,204	**TOC Elevation :** 653.90
Water Level, ft :	**Date Drilled :** 10/16/1973	

Casing Record

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

Borehole Notes:
Borehole 21-03-03 was completed in October 1973 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. A driller's log was not available for this borehole, so data from Chamness and Merz (1993) were used to provide construction information. 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 about 0.5 ft below the ground surface.

Equipment Information

Logging System : 1B	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 02/1997	**Calibration Reference :** GJO-HAN-13	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 05/30/1997	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 98.5	**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 :** 06/02/1997	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 19.0	**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 : 11/12/1997

Analysis Notes :

This borehole was logged by the SGLS in two log runs. Three of the pre-survey 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 post-survey field verification spectra for log run one did not meet the acceptance criteria. The energy calibration and peak-shape calibration from the spectra that best matched the data were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation. No fine gain adjustments were necessary during logging of this borehole.

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

The man-made radionuclides Cs-137 and Co-60 were detected around this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to 33 ft; a single detection occurred at the bottom of the borehole (98.5 ft). A well-defined peak in the Cs-137 concentrations occurs from 2 to 4 ft with a maximum concentration of about 5.4 pCi/g at 2 ft. Cs-137 concentrations were relatively constant at about 1 pCi/g from about 11 to 22 ft. The presence of Co-60 was detected continuously at low concentrations from 71.5 to 72.5 ft.

The K-40 concentration values increase gradually from about 40 to 48.5 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BX-103.

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 spectrum shape factors is included. The plot is used as an interpretive tool to help determine the radial distribution of man-made contaminants around the borehole. A plot of selected historical gross-gamma logs is also included.