RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 22-06-07

Log Event A

Borehole Information

Farm : BY	**Tank :** BY-106	**Site Number :** 299-E33-86
N-Coord : 46,058	**W-Coord :** 53,390	**TOC Elevation :** 649.12
Water Level, ft :	**Date Drilled :** 8/31/1949	

Casing Record

Type : Steel-welded	Thickness : 0.312	ID, in. : 7
Top Depth, ft. : 0	Bottom Depth, ft. : 150	

Borehole Notes:
The borehole was drilled with a cable tool drilling rig, and the casing is apparently ungrouted. Drilling records show that the casing was perforated from 40 to 100 ft with 5 holes per foot.

Although the drilling records indicate a borehole depth of 150 ft, the logging tool only reached about 131 ft, apparently due to an obstruction. Tank Farms gross gamma-ray logging also only reached about 131 ft.

Records do not indicate water level. The borehole is presumably dry.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 03/1995	**Calibration Reference :** GJPO-HAN-1	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 8/21/1995	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 39.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 8/22/1995	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 131.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 38.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : D.C. Stromswold

Data Processing Reference : P-GJPO-1787 Analysis Date : 2/8/1996

Analysis Notes :

The verification spectra collected before and after the log runs showed that the logging tool was operating properly.

Gain drift was minimal during data acquisition, enabling a single energy calibration to be used during data processing for run 1. Gain drifts during run 2 necessitated two energy calibrations to maintain proper radionuclide identification.

Repeatability was good at the overlap log section, being within the statistical uncertainty.

Correction factors for 0.33-in.-thick steel casing were used during data processing, because correction factors for 0.31-in. casing were not available. As a result, the calculated concentrations will be slightly high. No attempt has been made to adjust the calculated concentrations for the effect of the perforations on the gamma-ray transmission through the casing. No water correction was applied.

Cs-137 and Co-60 were the man-made contaminants detected. Cs-137 was detected almost continuously from the surface to TD. The maximum measured concentration was about 20 pCi/g near 48 ft (other than near the surface where the concentration was about 80 pCi/g). The main Cs-137 concentration occurred at the perforated interval of the casing from 40 to 100 ft. Co-60 was located mainly in the interval from 56 to 82 ft, and near TD. Co-60 concentrations were less than about 2 pCi/g.

K-40 concentrations increased below about 55 ft. The increase in U-238 concentration below about 13 ft is in the backfill material and does not indicate a natural lithology change.

See the Tank Summary Data Report for tank BY-106 for additional log analysis.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.