RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole # 22-06-11

Borehole Information

Farm : BY	**Tank :** BY-106	**Site Number :** 299-E33-250
N-Coord : 46,140	**W-Coord :** 53,375	**TOC Elevation :** 648.00
Water Level, ft : 84.00	**Date Drilled :** 5/3/1974	

Casing Record

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

Borehole Notes:
The borehole was drilled with a cable tool drilling rig, and the casing is apparently ungrouted and unperforated.

Unlike the other boreholes for tank BY-106, borehole 22-06-11 contained water, which was at a depth of about 84 ft.

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 :** 8/16/1995	**Logging Engineer:** Gary Lekvold
Start Depth, ft.: 98.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 22.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 8/17/1995	**Logging Engineer:** Gary Lekvold
Start Depth, ft.: 23.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 18.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 3	**Log Run Date :** 8/18/1995	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 19.5	**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 run showed that the logging tool was operating properly.

Gain drift was minimal during data acquisition of runs 2 and 3, enabling a single energy calibration to be used during data processing for each run. Gain drifts during run 1 necessitated multiple energy calibrations to maintain proper radionuclide identification.

Repeatability was good at the overlap log sections, being within the statistical uncertainties.

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. A water correction was applied to data collected below 84 ft. However, because a correction for a 7-in. casing was the closest diameter available, the calculated concentrations are slightly high. The water correction was established for a logging tool centralized in the borehole, but no centralizer was present on the tool during data collection.

Cs-137 was the only man-made contaminant detected in this borehole. It occurred mainly from the surface to about 37 ft at concentrations less than about 10 pCi/g.

K-40 concentrations increased below about 46 ft, near the tank's bottom.

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.