RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole # 22-09-08

Borehole Information

Farm : BY	**Tank :** BY-109	**Site Number :** 299-E33-121
N-Coord : 46,088	**W-Coord :** 53,491	**TOC Elevation :** 648.31
Water Level, ft :	**Date Drilled :** 2/28/1970	

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.

The drilling log noted that no contamination was encountered during drilling.

Equipment Information

Logging System : 1	**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 :** 9/15/1995	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 23.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 9/16/1995	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 22.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** Y
Finish Depth, ft. : 27.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 3	**Log Run Date :** 9/17/1995	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 98.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 23.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole 22-09-08

Log Event A

Analysis Information

Analyst : D.C. Stromswold

Data Processing Reference : P-GJPO-1787 Analysis Date : 2/27/1996

Analysis Notes :

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

Counting time was changed to 100 seconds (s) real time, rather than 100 s live time, for the portion of run 3 in the high count rate zone near 24 ft. Data from run 2 were collected with the tungsten shield present around the tool, but the data were not processed because runs 1 and 3 (without the shield) provided adequate coverage of the borehole.

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

Repeatability could not be judged because of the minimal overlap depth during data acquistion and because of the high count rates that obscured the K, U, and Th data at the overlap depth.

Correction factors for 0.25-in.-thick steel casing were used during data processing. No water corrections were applied because the borehole was dry.

Cs-137 and Co-60 were the only man-made contaminants detected. Cs-137 was detected mainly from the surface to about 36 ft, and discontinuously to TD. The highest measured concentration of Cs-137 was about 1000 pCi/g near 24 ft. Co-60 was detected discontinuously in the interval from about 22 to 51 ft, and from 81 to 88 ft. The highest measured Co-60 concentration was about 2.3 pCi/g at 82.5 ft.

K-40 concentrations increased slightly below about 46 ft, and below about 73 ft.

See the Tank Summary Data Report for BY-109 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. The MDLs for K, U, and Th increase near 24 ft because of the high Cs-137 concentration that produces enhanced background. At the location of increased MDLs, the concentrations of K, U, and Th are

Log Event A

Borehole 22-09-08

below the MDL values and hence are not plotted.