RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Log Event A

Borehole 22-08-12

Borehole Information

Farm : BY	**Tank :** BY-108	**Site Number :** 299-E33-209
N-Coord : 46,049	**W-Coord :** 53,447	**TOC Elevation :** 650.00
Water Level, ft :	**Date Drilled :** 1/26/1973	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 101	

Borehole Notes:
According to the driller's records, this borehole was not perforated or grouted. The borehole is located within a 4-ft-high (relative to the surrounding area) berm. It is possible an additional 3 to 4 ft of casing was welded onto the original casing after the borehole was drilled in 1973. This scenario could account for the discrepancy between drilling reports of 100 ft of casing in the borehole and the logging depth of 104 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 :** 9/1/1995	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 104.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 35.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 9/1/1995	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 36.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : P-GJPO-1787 Analysis Date : 2/28/1996

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra showed consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated energy versus channel number recalibrations during processing of the data to maintain proper peak identification. A depth overlap, where data were collected on separate days at the same depth, occurred in this borehole at 35 ft. The calculated concentrations were within the statistical uncertainty of the measurements, indicating very good repeatability.

The casing thickness is 5/16 (0.3125) inch. Casing-correction factors for a 0.33-in.-thick steel casing were applied during analysis, which may cause an almost negligible over-estimation of concentrations.

Cs-137 and Co-60 were the man-made radionuclides identified in this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to about 45 ft, and at isolated locations to TD. Co-60 was measured at about 3 and 35 ft, 45 to 57 ft, and from about 69 to 80 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank BY-108.

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 Tank Farms gross gamma log. The gross gamma plot displays the earliest and latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with each other or the SGLS data. The purpose of providing both logs is to show the decreasing count rates over time which are probably due to decay of Co-60.

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.