

Borehole

41-09-09

Log Event A

Borehole Information

Farm : <u>SX</u>	Tank : <u>SX-109</u>	Site Number : <u>299-W23-108</u>
N-Coord : <u>35,360</u>	W-Coord : <u>75,915</u>	TOC Elevation : <u>661.13</u>
Water Level, ft :	Date Drilled : <u>3/22/1962</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>130</u>	

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency : <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	

Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>6/14/1995</u>	Logging Engineer: <u>Dave Traub</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>60.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>6/15/1995</u>	Logging Engineer: <u>Dave Traub</u>
Start Depth, ft.: <u>58.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>71.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>3</u>	Log Run Date : <u>6/15/1995</u>	Logging Engineer: <u>Dave Traub</u>
Start Depth, ft.: <u>126.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>74.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>4</u>	Log Run Date : <u>6/14/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>74.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>R</u> Shield : <u>N</u>
Finish Depth, ft. : <u>73.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Analysis Information

Analyst : <u>P.D. Henwood</u>		
Data Processing Reference : <u>Data Analysis Manual Ver. 1</u>	Analysis Date : <u>10/20/1995</u>	

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Analysis Notes :

This borehole was logged in four 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 multiple energy versus channel number recalibrations during processing of the data to maintain proper peak identification. Depth overlaps occurred between log runs from 58.5 to 60.5 ft and at 74 ft in this borehole. The repeatability of data was very good.

Casing thickness was measured at 5/16 (0.3125) inches. A casing-correction factor was applied for a casing thickness of 0.33 inches, which may result in an almost negligible over-estimation of the radionuclide concentration.

No data were collected between 71 and 73.5 ft, due to high count rates that produced excessive dead time in the data collection system. Cs-137 was measured at 1,665 pCi/g, and the total gamma count rate was measured at 320,200 counts per second at 74 ft in depth. This depth contained the maximum measured concentration, although the zone of high dead time would be much higher in values.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank SX-109.

Log Plot Notes:

Three log plots are provided. The Cs-137 concentrations are provided in a separate log plot to document the relative concentrations and shape of the distribution. A plot of naturally occurring radionuclides (K-40, U-238, and Th-232) is also provided, which can be used for lithology interpretation. A combination plot includes logs of Cs-137, natural gamma, total gamma derived from the spectral data, and the latest available data from the WHC Tank Farms gross gamma logging. The energy peaks from which the radionuclide concentrations were derived are included in the headings for the Cs-137 and natural gamma plots.

Log scales were selected for the Cs-137 and gross gamma logs in order to emphasize the maximum peak intensities. The natural gamma logs and the total gamma log are plotted on a linear scale in order to emphasize lithology changes.

The statistical uncertainty in a measurement is represented by uncertainty bars on the log plots where appropriate. This uncertainty is reported at the 95-percent confidence interval. The minimum detectable activity (MDA) is represented as an open circle on the plots. The MDA of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible. If the reported concentration is slightly above the MDA, the 95-percent confidence interval may extend below the MDA value and detection is not assured with 95-percent certainty.

The Tank Farms gross gamma plot is the latest available from WHC. With the exception of scale changes, no attempt has been made to adjust for depth discrepancies or other potential problems.