

Borehole

41-06-09

Log Event A

Borehole Information

Farm : <u>SX</u>	Tank : <u>SX-106</u>	Site Number : <u>299-W23-144</u>
N-Coord : <u>35,446</u>	W-Coord : <u>75,913</u>	TOC Elevation : <u>661.25</u>
Water Level, ft :	Date Drilled : <u>3/24/1972</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>100</u>	

Equipment Information

Logging System : <u>1</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>5/26/1995</u>	Logging Engineer: <u>Bob Spatz</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>11.5</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>5/30/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>10.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>97.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

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Analysis Information

Analyst : P.D. HenwoodData Processing Reference : Data Analysis Manual Ver. 1Analysis Date : 9/6/1995**Analysis Notes :**

This borehole was drilled in 1972 to 100 ft; logging depth was 97 ft. There is no report of grout being used in the construction of the borehole. Historical Tank Farms gross gamma logging indicated elevated gamma activity between 21 and 25 ft in depth in February 1974 and from 40 to 43 ft in January 1975. The count rates decreased in both intervals by November 1976 to less than instrument detection levels. These elevated activities have not been observed again anywhere in the borehole. A lithology change is indicated at about 85 ft.

This borehole was logged with the spectral gamma ray logging system in two runs: run 1 from 0 to 11.5 ft and run 2 from 10.5 to 97 ft, with a 1 ft overlap. The data showed good agreement at the overlap. The pre- and post-survey field verification spectra showed consistent activities, but energy calibrations differed because of gain drift in the instrumentation. Spectra were recalibrated to adjust for energy versus channel number where appropriate.

Log data were corrected for casing attenuation using a correction for a 0.33-in.-thick casing. The actual casing thickness measured in the field was 0.313 in.

Cs-137 was the only man-made radionuclide detected in the borehole. The highest reported concentration of about 4 pCi/g was observed at 1.5 ft in depth. A thick interval (10 to 25 ft in depth) is indicated with concentrations ranging below 2 pCi/g. Other intermittent locations throughout the borehole indicate Cs-137 at less than 1 pCi/g.

The natural gamma logs indicate possible lithology changes at 57 and 84 ft. This change indicates alternating layers of sands and gravels within the 57 to 84 ft depth interval.

Log Plot Notes:

Three log plots are provided. The Cs-137 concentrations are provided in a separate plot to document the relative concentrations and shape of the distribution. The error of the concentration determination is shown by error bars, which represent the 95-percent confidence interval. The calculated MDA is shown on the plot as open circles. If the calculated concentration is less than the MDA, it is considered a non-detect, and the concentration is not reported.

A plot of naturally occurring radionuclides is also provided (see discussion above regarding error bars and the MDA) to permit correlation of these data with geologic information. On the Th-232 plot, the MDA value is shown as zero in some depth locations. This zero value was a result of an anomaly in the commercial spectrum analysis software which has been corrected by the vendor. Because the MDA calculation at these few points is not significant relative to the intended use of the plot, the data were not reprocessed and corrected. Therefore, these MDA data points on the plot should be ignored.

A combination plot is included with Cs-137, naturally occurring radionuclides, total gamma data derived from the spectral data, and the latest available WHC Tank Farms gross gamma data.