



Borehole **51-16-07**

Log Event A

**Borehole Information**

Farm : <u>TX</u>	Tank : <u>TX-116</u>	Site Number : <u>299-W15-163</u>
N-Coord : <u>42,021</u>	W-Coord : <u>75,788</u>	TOC Elevation : <u>671.08</u>
Water Level, ft :	Date Drilled : <u>12/31/1973</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>	

**Borehole Notes:**

This borehole was drilled in December 1973 to a total nominal depth of 100 ft using 6-in. casing. The drilling log does not mention if the casing was perforated or grouted. Total logging depth achieved by the SGLS was 101 ft. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing. The zero reference for the SGLS logs is the top of the borehole casing, which is flush with the ground surface.

**Equipment Information**

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

**Log Run Information**

Log Run Number : <u>1</u>	Log Run Date : <u>1/10/1996</u>	Logging Engineer: <u>Gary Lekvold</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>59.0</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>1/11/1996</u>	Logging Engineer: <u>Gary Lekvold</u>
Start Depth, ft.: <u>101.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>58.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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### Analysis Information

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Analyst : S.D. Barry

Data Processing Reference : P-GJPO-1787

Analysis Date : 12/16/1996

#### Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The only man-made radionuclide detected in this borehole was Cs-137. The presence of Cs-137 contamination was measured continuously from the ground surface to about 27.5 ft, intermittently from 29 to 32 ft, and continuously from 98 to the bottom of the logged interval (101 ft). Detectable quantities of Cs-137 were detected from 41.5 to 42 ft, and at 49 ft, 64 ft, 74.5 ft, and 85.5 ft. The maximum Cs-137 concentration was 7 pCi/g at the ground surface.

K-40 concentrations increase at about 50 ft. The Th-232 and U-238 concentrations begin to increase at about 95 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks TX-113, TX-116, and TX-117.

#### Log Plot Notes:

Separate log plots show the man-made (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

A plot of representative historical gross gamma-ray logs acquired between 1975 and 1994 is included. The data contained in these logs can be used to identify the approximate time period in which anomalous gamma-ray activity was recognized in the borehole and illustrate the approximate decay rate of short-lived radionuclides.