



Borehole **50-08-11**

Log Event **A**

**Borehole Information**

Farm : <u>T</u>	Tank : <u>T-108</u>	Site Number : <u>299-W10-51</u>
N-Coord : <u>43,485</u>	W-Coord : <u>75,776</u>	TOC Elevation : <u>671.55</u>
Water Level, ft : <u>0</u>	Date Drilled : <u>10/31/1944</u>	

**Casing Record**

Type : <u>Steel-welded</u>	Thickness, in. : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	

Cement Bottom, ft. : 150      Cement Top, ft. : 149

**Borehole Notes:**

Borehole 50-08-11 was drilled in September and October 1944 to a total depth of 150 ft. Data from the drilling log and Chamness and Merz (1993) were used to provide borehole construction information. The borehole was telescoped to total depth using 12-in., 10-in., and 6-in. casings. The 12-in. and 10-in. casings were driven to depths of 106 and 149 ft, respectively. The 6-in. casing was installed inside the larger casings to a depth of 150 ft. The 10-in. and 12-in. casings were then removed and the bottom of the 6-in. casing was sealed with half a sack of cement. The drilling log reports that the 6-in. casing was perforated from 50 to 150 ft.

The thickness of the 6-in. casing is assumed to be 0.280-in., on the basis of the published thickness for schedule-40, 6-in. steel tubing.

**Equipment Information**

Logging System : <u>1B</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1997</u>	Calibration Reference : <u>GJO-HAN-14</u>	Logging Procedure : <u>MAC-VZCP 1.7.10-1</u>

**Logging Information**

Log Run Number : <u>1</u>	Log Run Date : <u>05/18/1998</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>200</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>32.0</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>05/19/1998</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>31.0</u>	Counting Time, sec.: <u>200</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>90.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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Log Run Number :	<u>3</u>	Log Run Date :	<u>05/20/1998</u>	Logging Engineer:	<u>Alan Pearson</u>
Start Depth, ft.:	<u>135.5</u>	Counting Time, sec.:	<u>200</u>	L/R : <u>L</u>	Shield : <u>N</u>
Finish Depth, ft. :	<u>89.0</u>	MSA Interval, ft. :	<u>0.5</u>	Log Speed, ft/min.:	<u>n/a</u>

**Logging Operation Notes:**

This borehole was logged by the SGLS in three log runs using a 200-s counting time. The top of the casing, which is the zero reference for the SGLS, is approximately even with the ground surface. The total logging depth achieved was 135.5 ft.

The borehole was full of water at the time of logging.

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**Analysis Information**

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Analyst :	<u>D.L. Parker</u>		
Data Processing Reference :	<u>MAC-VZCP 1.7.9</u>	Analysis Date :	<u>07/30/1998</u>

**Analysis Notes :**

The pre-survey and post-survey field verification for each logging run met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from the field verification spectrum that most closely matched the field data were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra.

A casing correction factor for a 0.28-in.-thick steel casing was applied to the concentration data during the analysis process. An appropriate water correction factor was not available for application to data collected in this borehole.

**Log Plot Notes:**

Separate log plots show the man-made and the naturally occurring radionuclides. 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.

**Results/Interpretations:**

The man-made radionuclides Cs-137, Co-60, Eu-154, and Eu-152 were detected with the SGLS in this borehole. The Cs-137 contamination was detected almost continuously from the ground surface to a depth of about 63.5 ft, almost continuously from 85.5 to 97.5 ft, almost continuously from 102.5 to 105 ft, and intermittently from 118 to 135.5 ft. The maximum Cs-137 concentration of 17.2 pCi/g was measured at a depth



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of 5.5 ft.

Co-60 contamination was detected almost continuously from 54.5 to 60 ft, almost continuously from 63 to 92 ft, continuously from 95 to 97 ft, and almost continuously from 99 to 112.5 ft. The maximum Co-60 concentration was recorded as 90.5 pCi/g at 70.5 ft.

Eu-154 contamination was detected continuously from 63.5 to 83 ft and continuously from 102 to 103 ft. The maximum Eu-154 concentration was recorded as 90.5 pCi/g at 70.5 ft.

Eu-152 contamination was detected continuously from 64.5 to 81.5 ft. The maximum Eu-152 concentration was recorded as 4.7 pCi/g at a depth of 77.5 ft.

K-40 concentrations decrease sharply from a background concentration of about 10 pCi/g at about 80 ft to about 4 pCi/g from 83 to 90 ft. The K-40 concentrations decrease again to about 2.5 pCi/g from about 90 to 102 ft. K-40 concentrations increase to about 10 pCi/g below a depth of about 103 ft.