



Borehole **10-03-10**

Log Event **A**

Borehole Information

Farm : <u>A</u>	Tank : <u>A-103</u>	Site Number : <u>299-E25-55</u>
N-Coord : <u>41,223</u>	W-Coord : <u>47,656</u>	TOC Elevation : <u>688.33</u>
Water Level, ft :	Date Drilled : <u>5/31/1955</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness, in. : <u>0.322</u>	ID, in. : <u>8</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>151</u>	

Borehole Notes:

A driller's log for this borehole was not available. According to Chamness and Merz (1993), this borehole was installed in May 1955 to a depth of 151 ft using 8-in. steel pipe. Chamness and Merz (1993) do not indicate the borehole was perforated or grouted.

The casing thickness for the borehole is assumed to be 0.322 in., on the basis of the published thickness for schedule-40, 8-in. casing. The top of the casing is the zero reference for the log. The casing lip is located on a berm and is approximately 2.5 ft above the average tank farm ground surface.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1996</u>	Calibration Reference : <u>GJO-HAN-13</u>	Logging Procedure : <u>P-GJPO-1783</u>

Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>10/30/1996</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>29.5</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>10/31/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>147.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>53.5</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>11/01/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>28.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>36.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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Log Run Number :	<u>4</u>	Log Run Date :	<u>11/01/1996</u>	Logging Engineer:	<u>Bob Spatz</u>
Start Depth, ft.:	<u>54.5</u>	Counting Time, sec.:	<u>100</u>	L/R :	<u>L</u> Shield : <u>Y</u>
Finish Depth, ft. :	<u>35.5</u>	MSA Interval, ft. :	<u>0.5</u>	Log Speed, ft/min.:	<u>n/a</u>

Logging Operation Notes:

This borehole was logged in four log runs. The total logging depth achieved by the SGLS was 147.5 ft.

Analysis Information

Analyst :	<u>S.D. Barry</u>		
Data Processing Reference :	<u>MAC-VZCP 1.7.9</u>	Analysis Date :	<u>03/02/1998</u>

Analysis Notes :

The pre- and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.322-in.-thick casing were not available; therefore, a casing correction factor for a 0.33-in.-thick steel casing was applied to the entire logged interval during the analysis process. Corrections for a slightly thicker casing will cause the reported concentration values to be slightly higher. Shape factor analysis was applied to the SGLS data and provided insights into the distribution of Cs-137 contamination and into the nature of zones of elevated total count gamma-ray activity not attributable to gamma-emitting radionuclides.

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, and Eu-154 were detected around this borehole. Cs-137 contamination was detected nearly continuously from the ground surface to 9 ft and just above the MDL at the bottom of the logged interval. Co-60 contamination was measured nearly continuously from 4 to 6 ft; Eu-154 contamination was measured continuously from 3.5 to 7 ft.



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At 105 ft, the K-40 concentration values increase from about 13 to 17 pCi/g. The Th-232 concentrations also increase at a depth of about 105 ft.

An analysis of the shape factors associated with applicable segments of the spectra was performed. Interpretations of the shape factor results are presented in the individual Tank Summary Data Reports.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks A-102 and A-103.