



Borehole 30-00-12

Log Event A

Borehole Information

Farm : <u>C</u>	Tank : <u>C</u>	Site Number : <u>299-E27-52</u>
N-Coord : <u>43,096</u>	W-Coord : <u>48,322</u>	TOC Elevation : <u>645.96</u>
Water Level, ft :	Date Drilled : <u>12/31/1944</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness, in. : <u>0.313</u>	ID, in. : <u>12</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>50</u>	
Type : <u>Steel-welded</u>	Thickness, in. : <u>0.313</u>	ID, in. : <u>8</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	

Cement Bottom, ft. : 150 Cement Top, ft. : 0

Borehole Notes:

This borehole was drilled in December 1944 and completed to a depth of 150 ft with 8-in.-diameter casing. According to the driller's log, a 12-in. casing was installed to a depth of 50 ft. The 8-in. casing was perforated from 148 to 50 ft. Half a sack of cement was added to the bottom of the borehole. The casing thickness is assumed to be 0.313 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 approximately even 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>10/1996</u>	Calibration Reference : <u>GJO-HAN-13</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>04/15/1997</u>	Logging Engineer: <u>Alan Pearson</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>47.0</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>04/16/1997</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>136.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>46.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

30-00-12

Log Event A

Log Run Number :	<u>3</u>	Log Run Date :	<u>04/17/1997</u>	Logging Engineer:	<u>Bob Spatz</u>
Start Depth, ft.:	<u>60.0</u>	Counting Time, sec.:	<u>100</u>	L/R :	<u>L</u> Shield : <u>N</u>
Finish Depth, ft. :	<u>40.0</u>	MSA Interval, ft. :	<u>0.5</u>	Log Speed, ft/min.:	<u>n/a</u>

Analysis Information

Analyst : S.D. Barry

Data Processing Reference : MAC-VZCP 1.7.9

Analysis Date : 11/12/1997

Analysis Notes :

This borehole was logged by the SGLS in two log runs. A third log run was performed that overlapped the previous logging runs as a quality assurance measure. 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 peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation. There were no fine gain adjustments made during these log runs.

Casing correction factors for a 0.313-in.-thick steel casing were not available for use in analyzing this data; therefore, a correction factor for a 0.322-in. casing was used. This will cause the reported concentration values to be slightly higher. No attempt was made to correct for the attenuation caused by the 12-in. casing.

The only man-made radionuclide detected around this borehole was Cs-137. The Cs-137 contamination was detected nearly continuously from the ground surface to a depth of 1.5 ft. Isolated zones of Cs-137 contamination were detected from 50 to 52.5 ft, at 94 ft, and from 111.5 to 112.5 ft.

The K-40 log plot shows a region of lower concentration values between about 48 and 51 ft. The U-238 concentrations were also below the MDL between 48 and 51 ft. The K-40 concentrations increase at a depth of 51 ft.

The measured Cs-137 concentration values were well below the 1 count-per-second threshold for calculating shape factor SF1, except at the ground surface. Therefore, an analysis of the shape factors was not performed.

The interval from 40 to 60 ft was relogged as a quality assurance measure. The concentration values of the man-made and natural radionuclides from both log runs were compared and were generally within the two-sigma uncertainty.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank C-112.

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.



Borehole **30-00-12**

Log Event A

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 separate plot of the repeated segment of the log shows the concentrations of the naturally occurring radionuclides measured by the original and repeated logging runs. The uncertainty of each measurement is indicated on the plot.