



Borehole **10-00-08**

Log Event **A**

Borehole Information

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|---------------------------------|-------------------------------|---------------------------------|
| Farm : <u>A</u> | Tank : <u>A</u> | Site Number : <u>299-E24-13</u> |
| N-Coord : <u>41,187</u> | W-Coord : <u>47,875</u> | TOC Elevation : <u>691.13</u> |
| Water Level, ft : <u>292.80</u> | Date Drilled : <u>9/10/69</u> | |

Casing Record

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|----------------------------|--------------------------------|--------------------|
| 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>343</u> | |
| Type : <u>Steel-welded</u> | Thickness, in. : <u>0.237</u> | ID, in. : <u>4</u> |
| Top Depth, ft. : <u>0</u> | Bottom Depth, ft. : <u>308</u> | |

Borehole Notes:

According to the driller's log, this borehole was originally drilled in 1969 to a depth of 340 ft using 6-in. casing. In 1975, the casing was perforated from 270 to 338 ft. The borehole was backfilled from 339 to 313 ft with sand, and a concrete plug was installed from 313 to 308 ft. In 1976, the 6-in. casing was perforated from 260 to 90 ft and from the ground surface to 20 ft. A packer was set at 265 ft and a 4-in. stainless-steel casing was installed to this depth. Grout was apparently added to the annulus between the 4-in. and 6-in. casings.

The casing thickness for the 6-in. borehole is assumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. casing and 0.237 in. for the 4-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

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| Logging System : <u>1</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

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|--------------------------------|----------------------------------|---------------------------------------|
| Log Run Number : <u>1</u> | Log Run Date : <u>12/05/1996</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>3.0</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>01/03/1997</u> | Logging Engineer: | <u>Alan Pearson</u> |
| Start Depth, ft.: | <u>29.0</u> | Counting Time, sec.: | <u>100</u> | L/R : | <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : | <u>117.0</u> | MSA Interval, ft. : | <u>0.5</u> | Log Speed, ft/min.: | <u>n/a</u> |

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|---------------------|--------------|----------------------|-------------------|---------------------|----------------------------|
| Log Run Number : | <u>4</u> | Log Run Date : | <u>01/06/1997</u> | Logging Engineer: | <u>Alan Pearson</u> |
| Start Depth, ft.: | <u>116.0</u> | Counting Time, sec.: | <u>100</u> | L/R : | <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : | <u>179.0</u> | MSA Interval, ft. : | <u>0.5</u> | Log Speed, ft/min.: | <u>n/a</u> |

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|---------------------|--------------|----------------------|-------------------|---------------------|----------------------------|
| Log Run Number : | <u>5</u> | Log Run Date : | <u>01/07/1997</u> | Logging Engineer: | <u>Alan Pearson</u> |
| Start Depth, ft.: | <u>178.0</u> | Counting Time, sec.: | <u>100</u> | L/R : | <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : | <u>209.5</u> | MSA Interval, ft. : | <u>0.5</u> | Log Speed, ft/min.: | <u>n/a</u> |

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|---------------------|--------------|----------------------|-------------------|---------------------|----------------------------|
| Log Run Number : | <u>6</u> | Log Run Date : | <u>01/07/1997</u> | Logging Engineer: | <u>Alan Pearson</u> |
| Start Depth, ft.: | <u>208.5</u> | Counting Time, sec.: | <u>100</u> | L/R : | <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : | <u>242.0</u> | MSA Interval, ft. : | <u>0.5</u> | Log Speed, ft/min.: | <u>n/a</u> |

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|---------------------|--------------|----------------------|-------------------|---------------------|----------------------------|
| Log Run Number : | <u>7</u> | Log Run Date : | <u>01/08/1997</u> | Logging Engineer: | <u>Alan Pearson</u> |
| Start Depth, ft.: | <u>293.0</u> | Counting Time, sec.: | <u>100</u> | L/R : | <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : | <u>241.0</u> | MSA Interval, ft. : | <u>0.5</u> | Log Speed, ft/min.: | <u>n/a</u> |

Logging Operation Notes:

This borehole was logged in seven log runs. The total logging depth achieved by the SGLS was 293 ft. Water was encountered in the borehole at 293 ft.

Analysis Information

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|-----------------------------|-----------------------|-----------------|-------------------|
| Analyst : | <u>S.D. Barry</u> | | |
| Data Processing Reference : | <u>MAC-VZCP 1.7.9</u> | Analysis Date : | <u>02/20/1998</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.

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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 only man-made radionuclide detected in this borehole was Cs-137. Cs-137 contamination was detected nearly continuously from the ground surface to 21.5 ft. Cs-137 contamination was detected intermittently from 22 ft to the bottom of the borehole at levels just above the MDL.

The K-40 log plot shows a slight increase in concentrations at 55 ft and again at 120 ft. The U-238 log plot also shows an interval of elevated concentration values between 120 and 180 ft. At a depth of 265 ft, the K-40 concentration values increase sharply and the U-238 and Th-232 concentrations increase slightly. Beginning at a depth of about 285 ft, the K-40 and Th-232 concentration values begin to decrease.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank A-101.