



## 299-E28-68 (A6819)

### Log Data Report

#### Borehole Information:

<b>Borehole:</b> 299-E28-68 (A6819)		<b>Site:</b> 216-B-9 Crib			
<b>Coordinates (WA State Plane)</b>		<b>GWL (ft)<sup>1</sup>:</b> Not reached		<b>GWL Date:</b> N/A <sup>2</sup>	
<b>North</b>	<b>East</b>	<b>Drill Date</b>	<b>TOC<sup>3</sup> Elevation</b>	<b>Total Depth (ft)</b>	<b>Type</b>
136,857.6 m	573,858.4 m	unknown	208.2 m	10	unknown

#### Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Steel Welded	2.3	8.625	8.0	0.328	0	12.5

#### Borehole Notes:

The logging engineer measured the stickup using a steel tape. Calipers were used to measure the casing wall thickness and the outside diameter; the inside diameter is calculated. A reference point survey "X" is located on TOC stickup (zero reference). TOC is cut squarely. HWIS<sup>4</sup> is the source of the TOC elevation and coordinates. The borehole was swabbed on 03/12/02, and no contamination was detected.

#### Logging Equipment Information:

<b>Logging System:</b> Gamma 2B	<b>Type:</b> SGLS (35%)
<b>Calibration Date:</b> 11/01/01	<b>Calibration Reference:</b> GJO-2002-287-TAR
<b>Logging Procedure:</b> MAC-HGLP 1.6.5, Rev. 0	

#### Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2		
Date	03/25/02	03/25/02		
Logging Engineer	Spatz	Spatz		
Start Depth (ft)	12.5	2.5		
Finish Depth (ft)	2.5	12.5		
Count Time (sec)	100	100		
Live/Real	R	R		
Shield (Y/N)	N/A	N/A		
MSA Interval (ft)	0.5	0.5		
ft/min	N/A	N/A		
Pre-Verification	B0110CAB	B0110CAB		
Start File	B0111000	B0111021		
Finish File	B0111020	B0111041		
Post-Verification	B0111CAA	B0111CAA		
Depth Return Error (ft)	0	0		

Log Run	1	2			
Comments	No fine-gain adjustment.	Repeat section. No fine-gain adjustment.			

**Logging Operation Notes:**

Zero reference is the top of casing. Logging was performed with a centralizer installed on the sonde. Pre- and post-survey verification measurements for the SGLS employed the Amersham KUT verifier with SN 082.

**Analysis Notes:**

<b>Analyst:</b>	Sobczyk	<b>Date:</b>	04/29/02	<b>Reference:</b>	MAC-HGLP 1.6.3, Rev. 0
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SGLS pre-run and post-run verification spectra were collected at the beginning and end of the day. The verification spectra were within the control limits. The recorded peak counts per second (cps) at the 609-keV, 1461-keV, and 2615-keV photopeaks on the post-run verification spectrum as compared to the pre-run verification spectrum were within 10 percent of one another at each spectrum's energy line. The recorded peak counts per second for these three photopeaks were lower in the post-run verification as compared to the pre-run verification. The post-run verification spectrum was used to determine the energy and resolution calibration for processing the data using APTEC Supervisor.

Spectra for the SGLS were processed in batch mode using APTEC Supervisor to identify individual energy peaks and determine count rates. Concentrations were calculated in EXCEL (source file: G2BNov1.xls), using parameters determined from analysis of recent calibration data. Zero reference is the top of the casing. The casing configuration was assumed to be one string of 8-in. casing with a thickness of 0.322 in. to a log depth of 12.5 ft. A casing thickness of 0.322 in. is the published value for ASTM schedule-40 steel pipe (a commonly used casing material at Hanford). This casing thickness is within the range of measurement error associated with the logging engineer's measurements. A water correction was not needed or applied to the SGLS data. Dead time corrections were not needed because dead time did not exceed 10.5 percent.

**Log Plot Notes:**

Separate log plots are provided for gross gamma and dead time, naturally occurring radionuclides (<sup>40</sup>K, <sup>238</sup>U, and <sup>232</sup>Th), and man-made radionuclides. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, or casing correction. These errors are discussed in the calibration report. A combination plot is also included to facilitate correlation.

**Results and Interpretations:**

<sup>137</sup>Cs was the only man-made radionuclide that was detected in this borehole. <sup>137</sup>Cs was detected near the ground surface (3.0- through 5.0-ft log depth) at concentrations ranging from 0.2 to 0.9 pCi/g.

Apparent <sup>40</sup>K activities are less than 15 pCi/g, which probably represents the coarse-grained sediments of the Hanford H1.

The plots of the repeat logs demonstrate good repeatability of the SGLS data for both the man-made and naturally occurring radionuclides.

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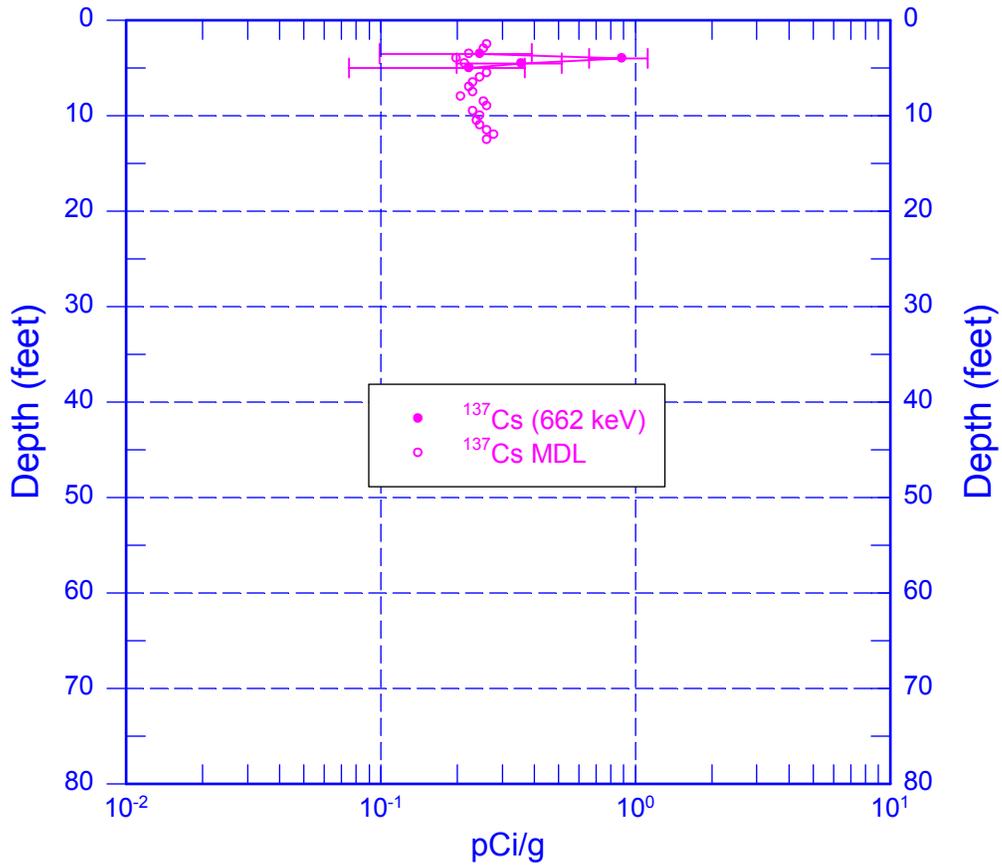
<sup>1</sup> GWL – groundwater level

<sup>2</sup> N/A – not applicable

<sup>3</sup> TOC – top of casing

<sup>4</sup> HWIS – Hanford Well Information System

# 299-E28-68 (A6819) Man-Made Radionuclides

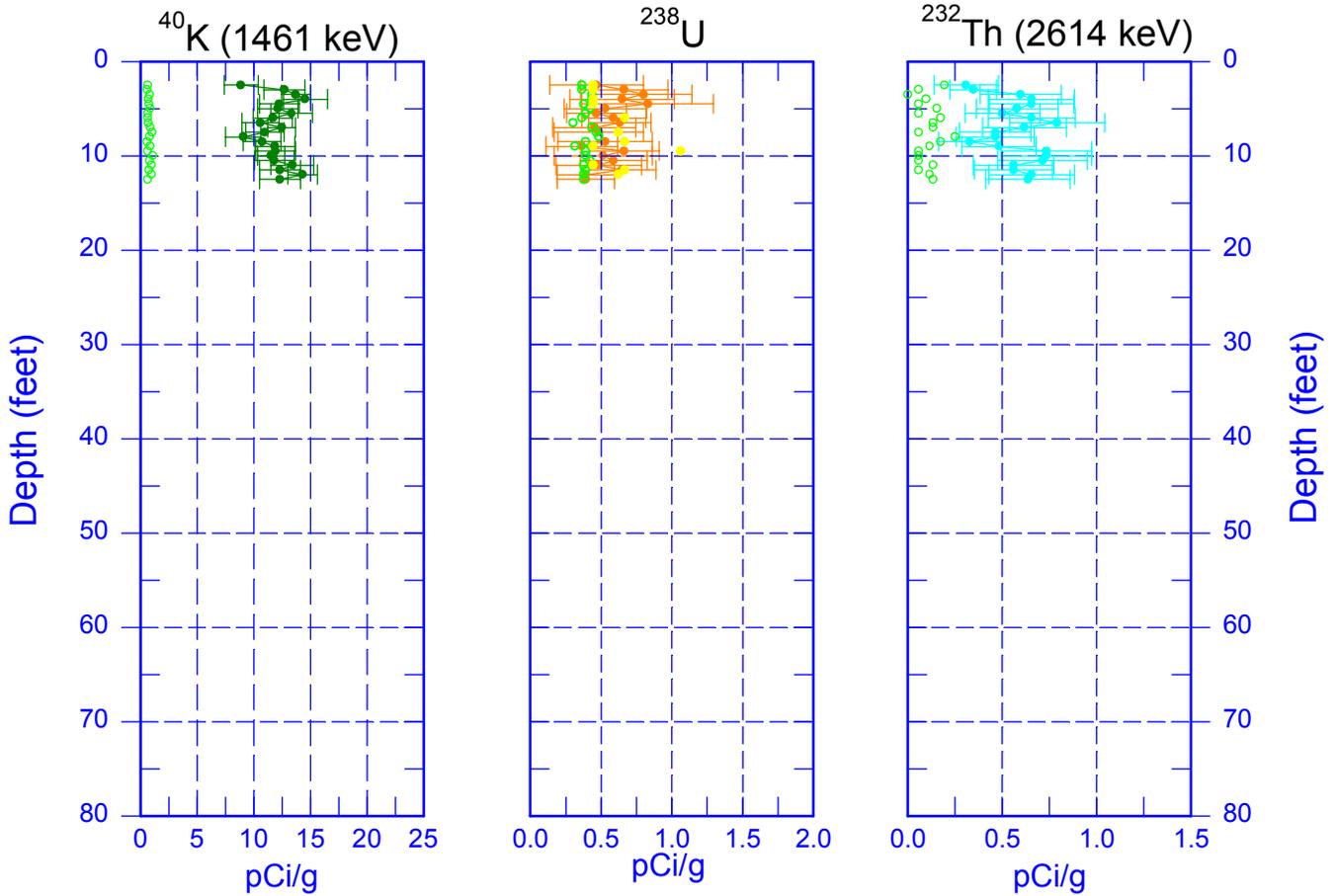


Zero Reference = Top of Casing

Date of Last Logging Run  
03/25/2002

# 299-E28-68 (A6819)

## Natural Gamma Logs



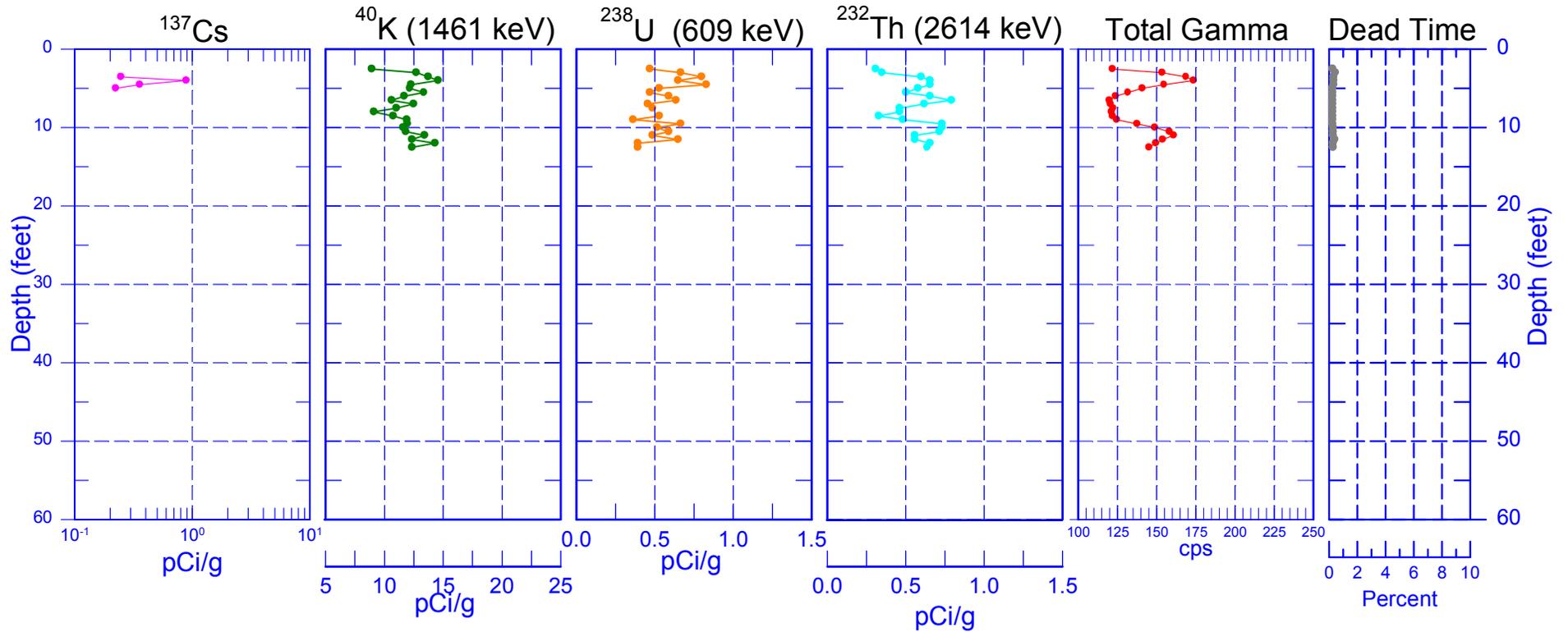
○ MDL

Zero Reference = Top of Casing



Date of Last Logging Run  
03/25/2002

# 299-E28-68 (A6819) Combination Plot

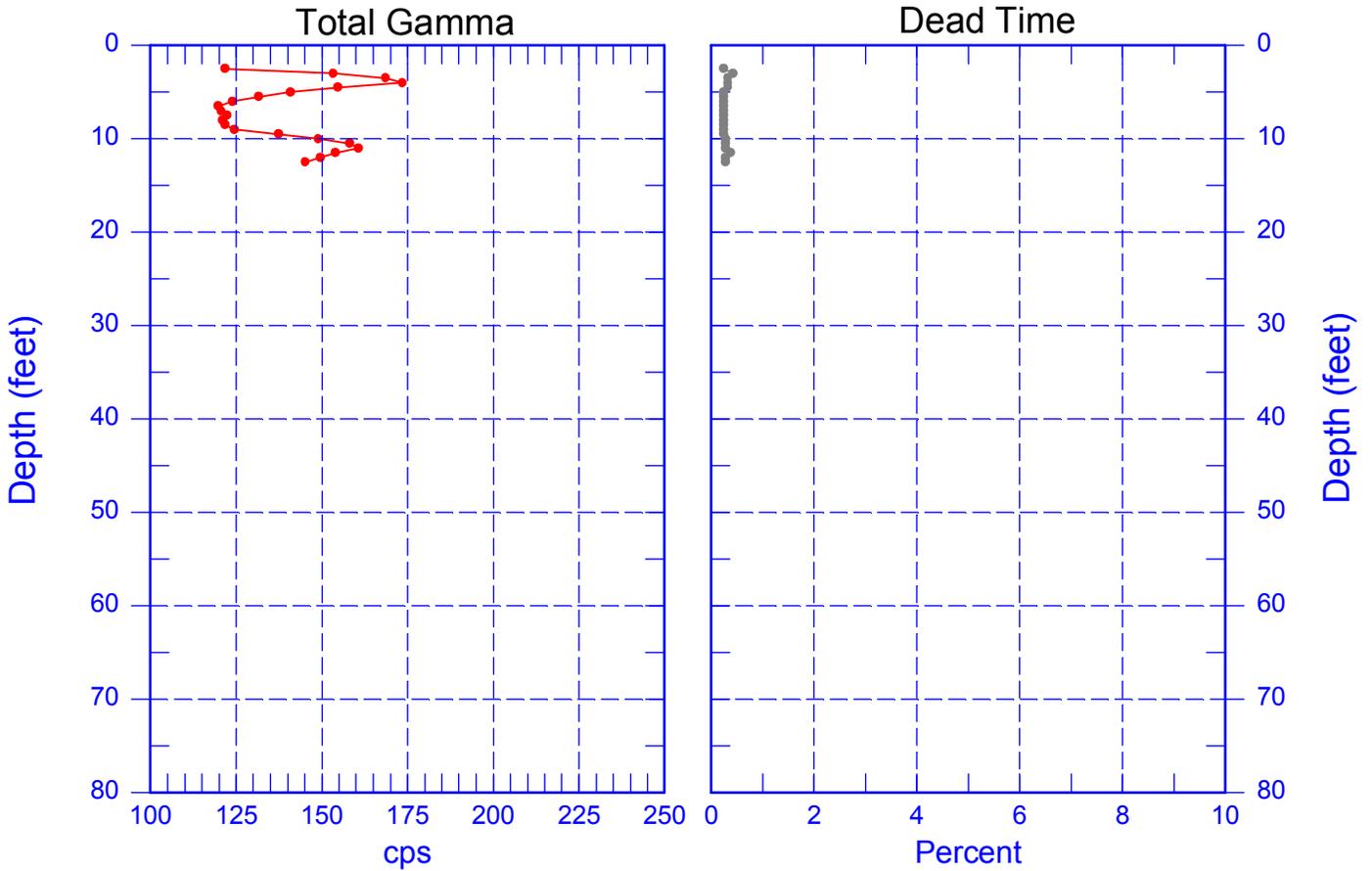


Zero Reference = Top of Casing

Date of Last Logging Run  
03/25/2002

# 299-E28-68 (A6819)

## Total Gamma & Dead Time

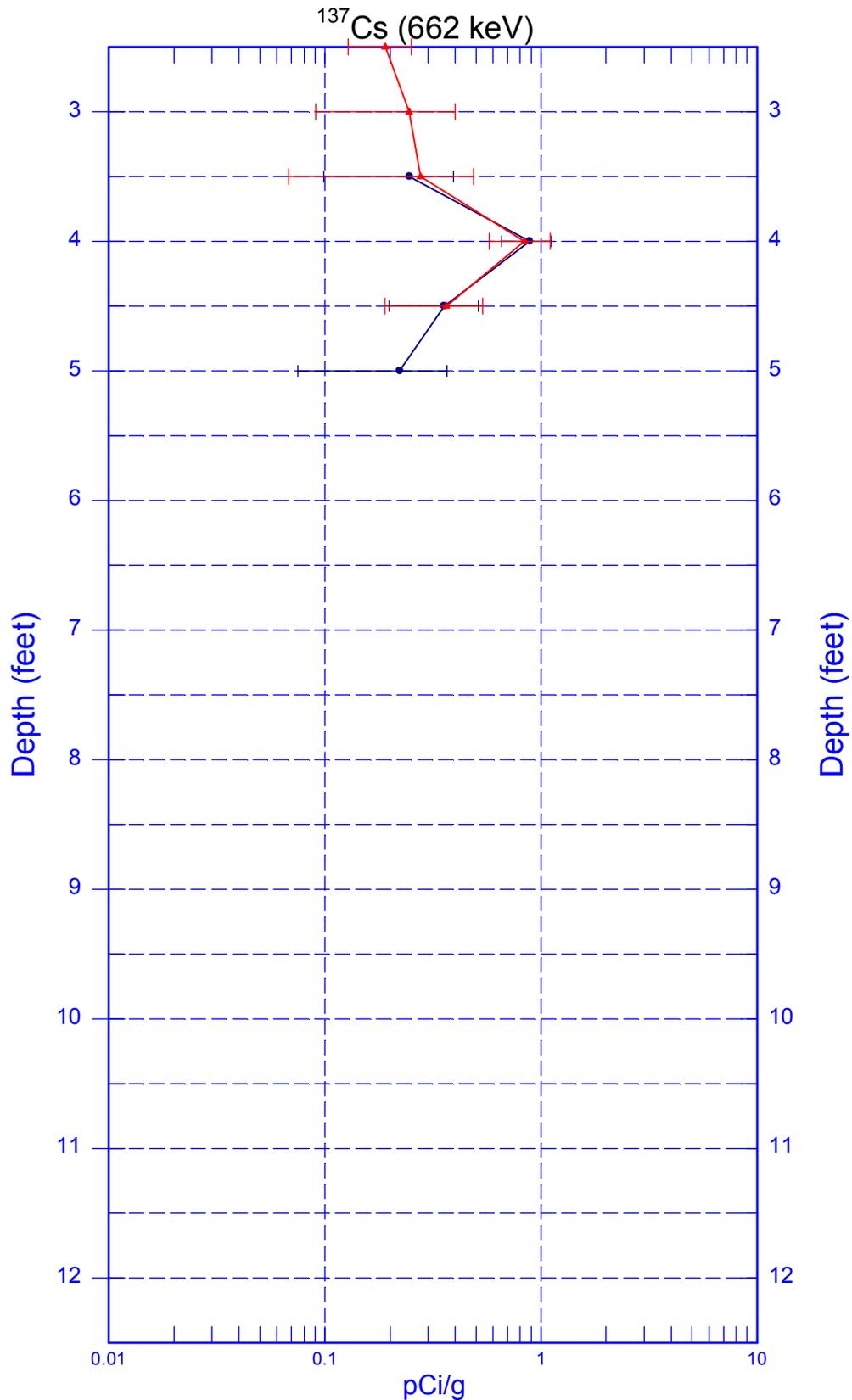


Zero Reference = Top of Casing

Date of Last Logging Run  
03/25/2002

# 299-E28-68 (A6819)

## Rerun of Man-Made Radionuclides (2.5 to 12.5 ft)



# 299-E28-68 (A6819)

## Rerun of Natural Gamma Logs (2.5 to 12.5 ft)

