



299-E33-75 (A6883)

Log Data Report

Borehole Information:

Borehole: 299-E33-75		Site: 216-B-7B Crib			
Coordinates (Plant)		GWL¹ (ft): n/a ²		GWL Date: n/a	
North 45709.00	East -52798.00	Drill Date 01/48	TOC³ Elevation 641.78	Total Depth (ft) 250.0	Type cable tool

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inner Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Steel (welded)	2.33	8.625	8.0	0.3125	0	251.5

Borehole Notes:

The borehole and casing information provided above is derived from Hanford Wells (Chamness and Merz 1993) except for the casing thickness that was measured with a caliper in the field. Logging measurements are referenced to the top of casing.

Logging Equipment Information:

Logging System: Gamma 2B	Type: SGLS (35%)
Calibration Date: 09/00	Calibration Reference: GJO-2001-245-TAR
Logging Procedure: MAC-HGLP 1.6.5	

Log Run Information:

Log Run	1	2	3	4	
Date	06/28/01	08/09/01	08/09/01	08/09/01	
Logging Engineer	Kos	Kos	Kos	Kos	
Start Depth	151.5	0.0	34.5	45.0	
Finish Depth	74.0	34.0	44.5	75.0	
Count Time (sec)	100	100	30	100	
Live/Real	L	L	R	L	
Shield (Y/N)	N	N	N	N	
MSA Interval (ft)	0.5	0.5	0.5	0.5	
ft/min	n/a	n/a	n/a	n/a	
Pre-Verification	B0010CAB	B0031CAB	B0031CAB	B0031CAB	
Start File	B0010000	B0031000	B0031069	B0031090	
Finish File	B0010155	B0031068	B0031089	B0031150	
Post-Verification	B0010CAA	B0031CAA	B0031CAA	B0031CAA	

Logging Operation Notes:

Logging occurred on 2 separate days more than 1 month apart. No repeat section was performed in this borehole although a 1-ft data overlap between 74 and 75 ft was collected during log runs 1 and 4.

Analysis Notes:

Analyst:	Henwood	Date:	08/16/01	Reference:	MAC-VZCP 1.7.9 Rev. 2
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Pre-run and post-run verification of the logging tool were performed for each day's log event. The post-run and pre-run verifications passed the acceptance criteria verification, indicating the detector was functioning normally. The post-verification spectra were used for the energy and resolution calibration for the data processing in all log runs.

Each spectrum collected during a log run was processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL using an efficiency function and corrections for casing and dead time established during calibration of the logging system.

Log Plot Notes:

Separate log plots are provided for the man-made radionuclide (^{137}Cs), naturally occurring radionuclides (^{40}K , ^{232}Th , ^{238}U [KUT]), a combination of man-made, KUT, total gamma and dead time, and total gamma plotted with dead time. 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 corrections. These errors are discussed in the calibration report.

In most of the plots, zones of high gamma flux where dead time exceeds 40 percent are shown by gray shading. Concentrations of all radionuclides in depth intervals where the dead time exceeds about 40 percent may be slightly underestimated, the degree of underestimation increasing as 100 percent dead time is approached.

Data overlaps collected between successive log runs (74-75 ft) indicate good agreement, demonstrating good repeatability in both depth and measurement.

Results and Interpretations :

^{137}Cs was the only man-made radionuclide detected in this borehole. ^{137}Cs was detected between about ground surface and 10 ft and between 30 and 55 ft. The highest ^{137}Cs concentrations measure greater than 3,000 pCi/g in the zone of high dead time. It is recommended a high rate detector be used in this borehole to determine the maximum concentrations.

The ^{137}Cs contamination near the ground surface is probably the result of surface spills. The origin of the ^{137}Cs contamination between 30 and 55 ft is likely the result of designed releases of liquid effluent at the crib.

The KUT logs do not have sufficient character in most of the borehole to delineate any definitive lithologic changes. On the basis of increasing ⁴⁰K concentrations, it appears a change to finer grained sediment occurs somewhere within the high dead time interval. At about 140 ft in depth, another change in ⁴⁰K concentrations is observed that may be correlatable with other boreholes in the vicinity.

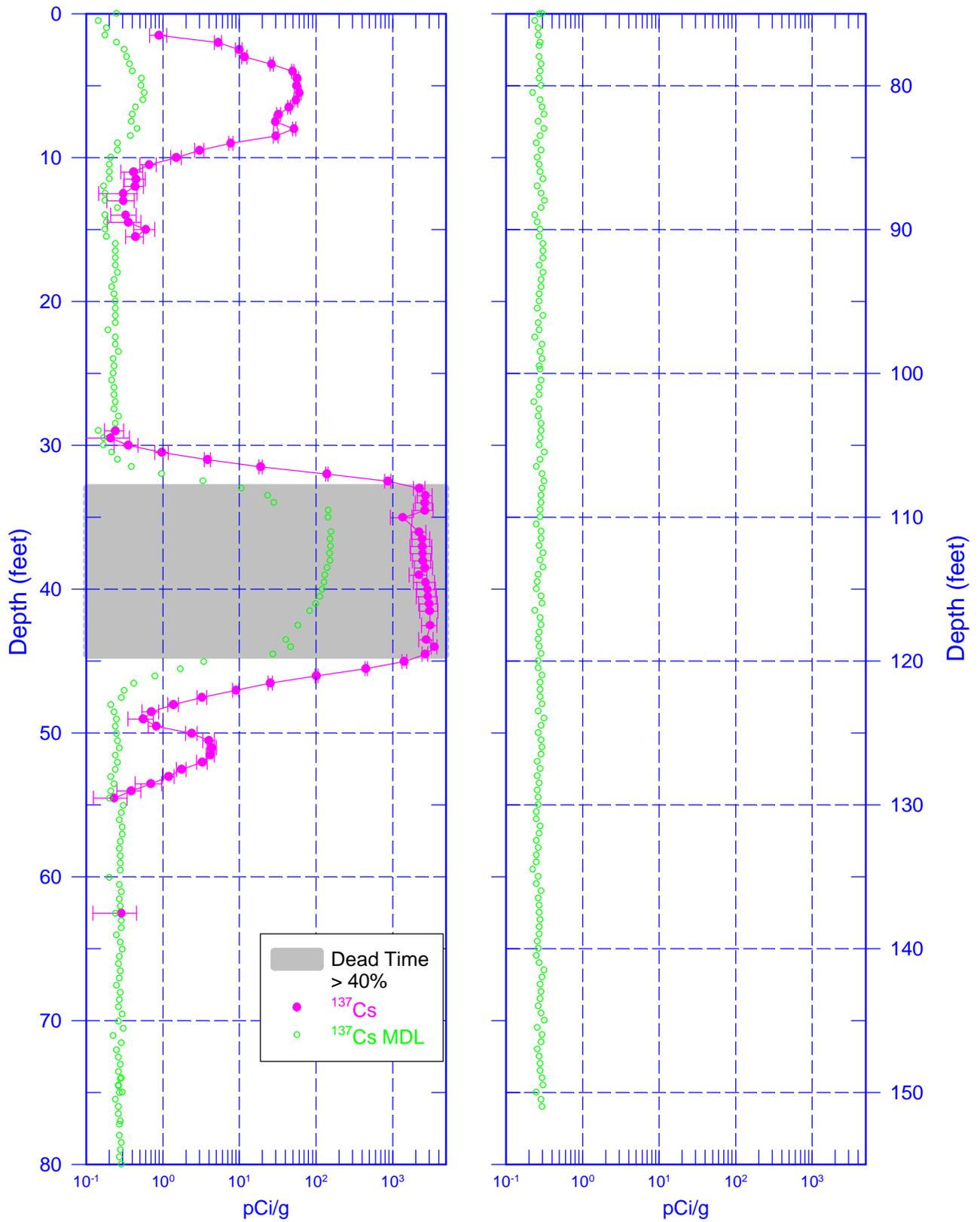
¹ GWL – groundwater level

² n/a – not applicable

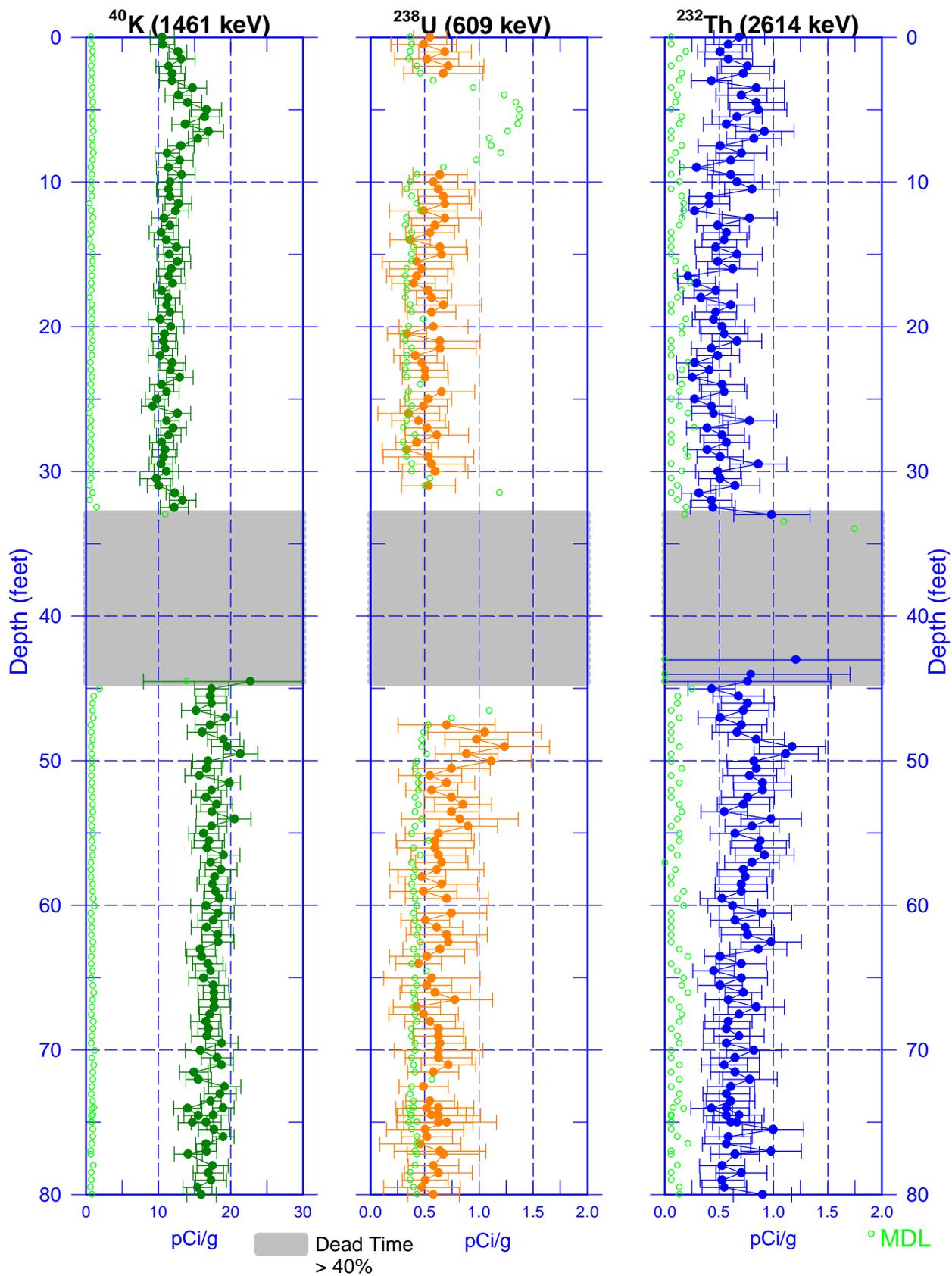
³ TOC – top of casing

299-E33-75 (A6883)

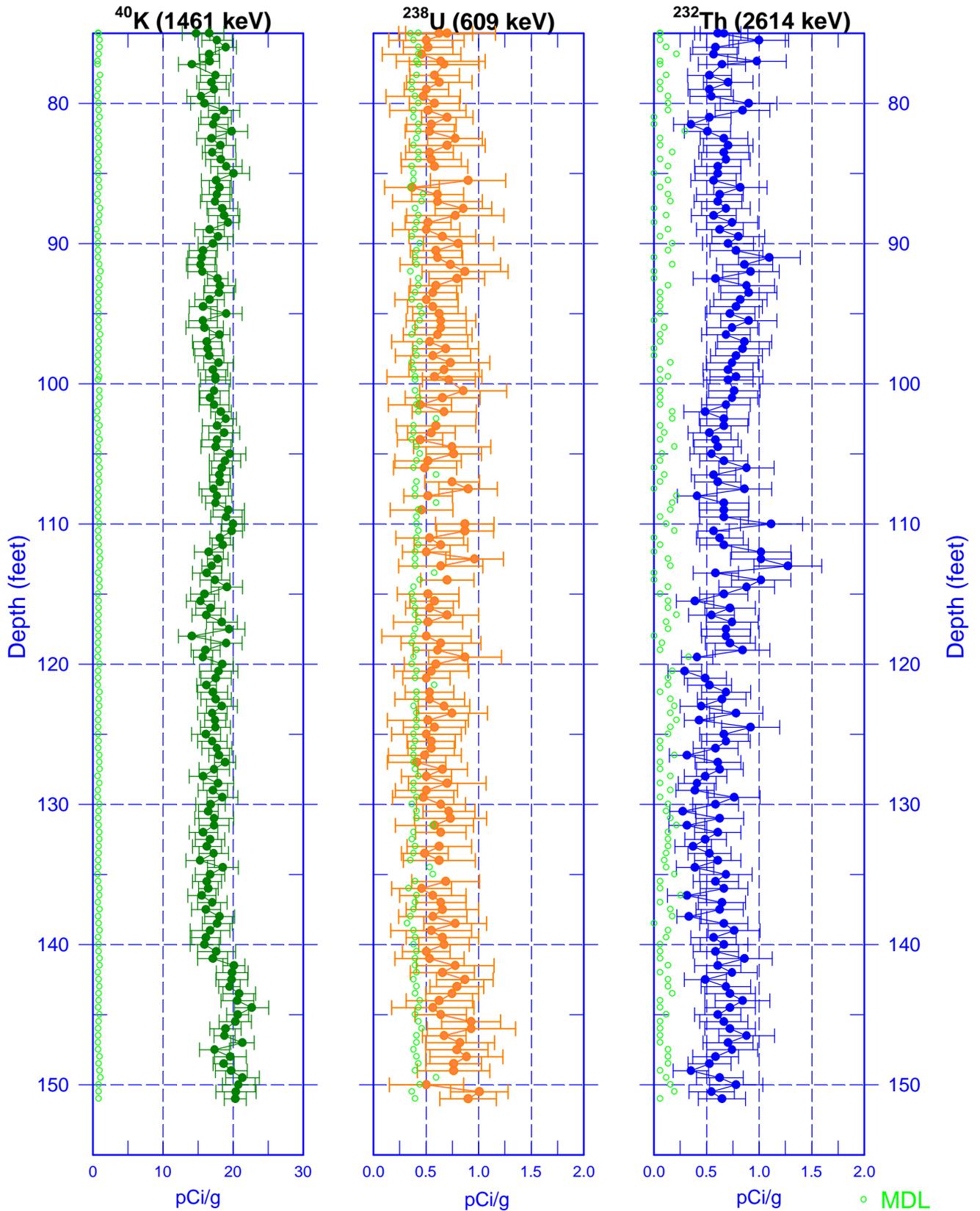
Man-Made Radionuclide Concentrations



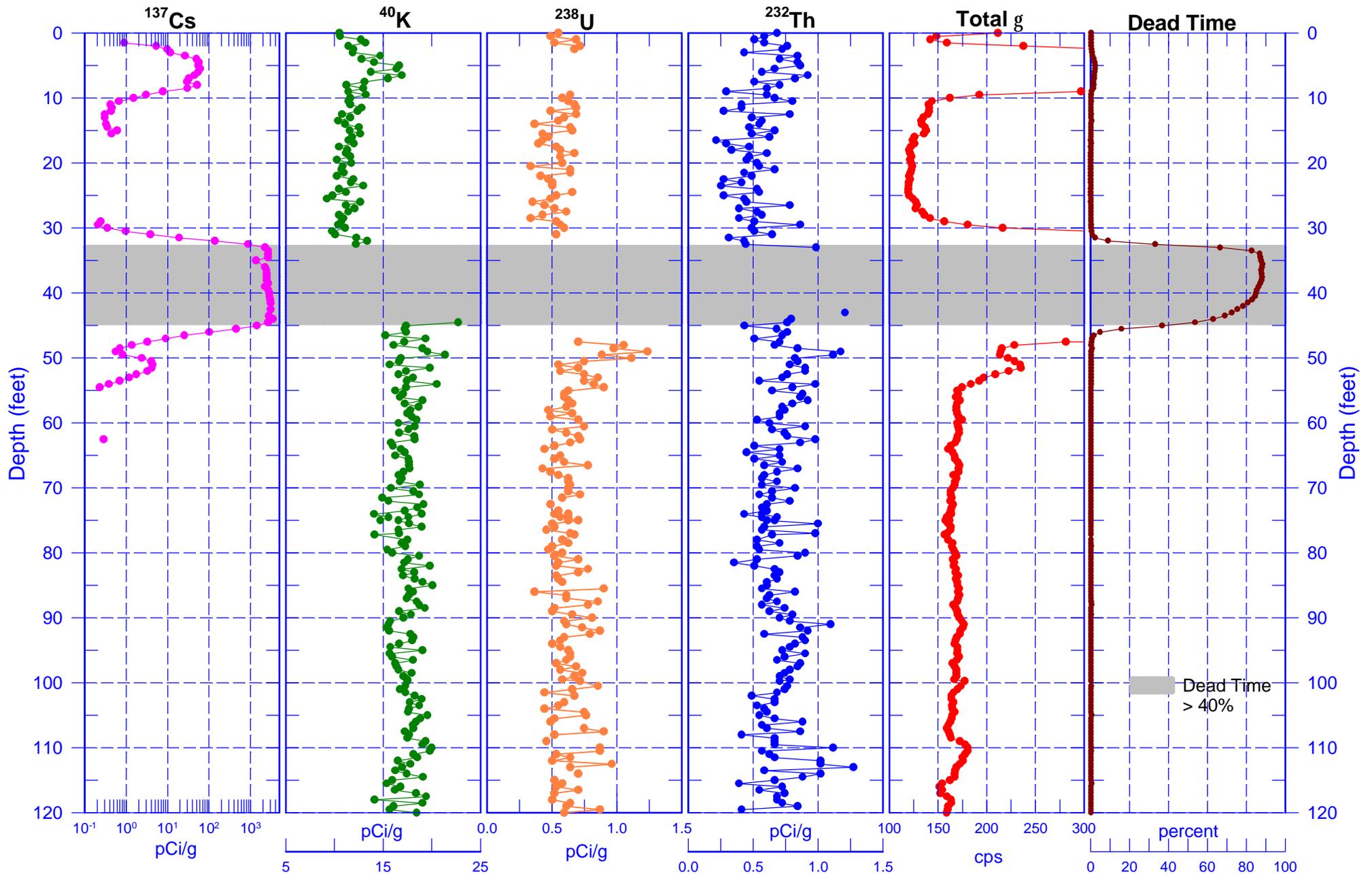
299-E33-75 (A6883) Natural Gamma Logs



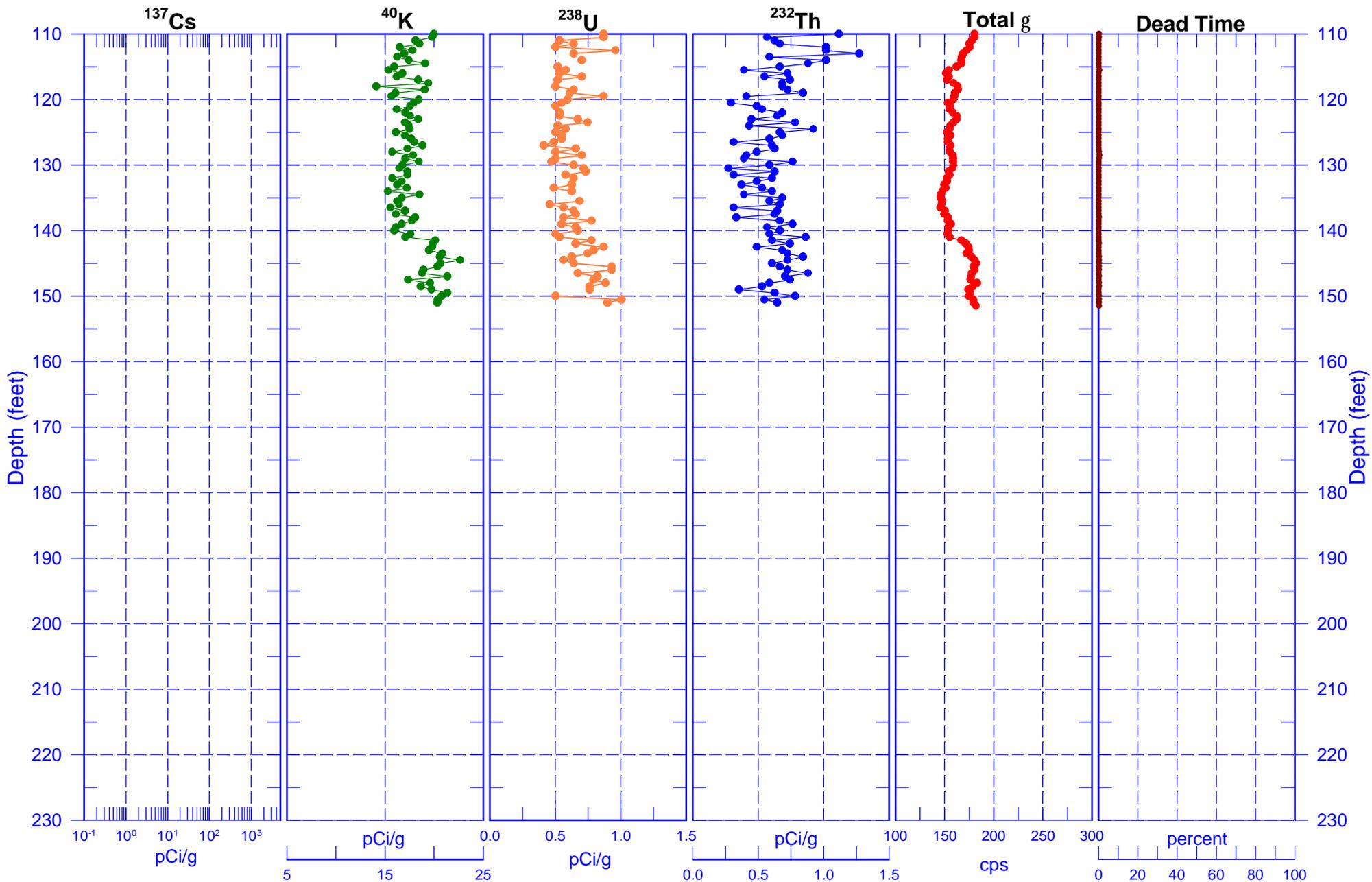
299-E33-75 (A6883) Natural Gamma Logs



299-E33-75 (A6883) Combination Plot



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