Stoller
Hanford Office

HGLP-LDR-006

299-W15-218 (A7516)
Log Data Report

Borehole Information:

Borehole: 299-W15-218 (A7516)			Site: 216-Z-9 Crib		
Coordinates (WA St Plane)		GWL[1] (ft) : N/A		GW Date:	
North	East	Drill Date	Ground Level Elevation	Total Depth (ft)	Type
135661.168 m	566771.023 m	5/08/93	204.774 m	200	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Stainless steel	3.5 ft	4.5	4	0.25	3.5	200
Stainless steel	3.0 ft	8	7.6	0.2	3.0	2

Borehole Notes:

The logging engineer measured the casing stick-up and diameter using a caliper and steel tape. Logging data acquisition is referenced to the TOC.

The borehole was drilled with telescoping casing. A 16-inch temporary casing was set to 38.87 ft, with a 12-inch casing to 118.1 ft, and an 8-inch casing to 205.04 ft. During well completion, a 4-inch stainless steel casing was installed with 0.020 inch slot louvered well screens at 98.5 to 113.5 ft and 180.4 to 195.3 ft. The screened intervals have a sandpack consisting of 10-20 Colorado silica sand. The annular space behind the tubing is filled with bentonite crumbles, Portland cement grout, or silica sand. All temporary casing was removed and an 8-inch protective pipe was placed to 2 ft.

Logging Equipment Information:

Logging System:	Gamma 1G		Type:	SGLS (35%) SN: 34TP10951A
Effective Calibration Date:	11/29/05	Calibration Reference:	DOE-EM/GJ1052-2005	
		Logging Procedure:	GJO-HGLP 1.6.5, Rev. 1	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4	5 (Repeat)
Date	01/25/06	01/30/06	01/31/06	02/01/06	02/01/06
Logging Engineer	McClellan	McClellan	McClellan	McClellan	McClellan
Start Depth (ft)	60	199	130	70	59
Finish Depth (ft)	3	129	70	60	40
Count Time (sec)	200	200	200	200	200
Live/Real	R	R	R	R	R
Shield (Y/N)	NA	NA	NA	NA	NA
MSA Interval (ft)	1.0	1.0	1.0	1.0	1.0
ft/min	NA	NA	NA	NA	NA
Pre-Verification	AG098CAB	AG099CAB	AG100CAB	AG101CAB	AG101CAB
Start File	AG098000	AG099000	AG100000	AG101000	AG101012
Finish File	AG098057	AG099070	AG100060	AG101011	AG101030
Post-Verification	AG098CAA	AG099CAA	AG100CAA	AG101CAA	AG101CAA

Log Run	1	2	3	4	5 (Repeat)
Depth Return Error (in.)	0	+1.5	-0.5	0	-1.0
Comments	No fine gain adjustment.	Adjusted 1 channel in file 000	No fine gain adjustment.	No fine gain adjustment.	No fine gain adjustment.

Logging Operation Notes:

Logging was conducted without a centralizer. Measurements are referenced to top of casing. Maximum log depth was 199 ft.

Analysis Notes:

Analyst:	McCain	Date:	08/14/06	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after each day's data acquisition. SGLS acceptance criteria were met.

A casing correction for 0.20-in.-thick casing was applied throughout the borehole.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G1Gnov05.xls using an efficiency function and corrections for casing and dead time as determined from annual calibrations.

Results and Interpretations:

No evidence of manmade contamination was detected in this borehole. Spectra were evaluated for gamma activity at 312 keV (^{233}Pa/^{237}Np), 375 keV (^{239}Pu), 662 keV (^{137}Cs or ^{241}Am), and 722.01 keV (^{241}Am). The few cases where activity was detected at the MDA appear to be isolated statistical fluctuations. The activity attributed to ^{241}Am at 722 keV is not supported by activity at 662 keV: it is most likely related to the 727 keV gamma originating from ^{212}Bi, a member of the ^{232}Th decay series.

The repeat measurements show good repeatability for natural radionuclides.

Log response in this borehole is dominated by the completion material outside the 4-inch casing. This borehole was completed with silica sand, bentonite, and grout in the annular space. A fairly good record of completion details and geology was available. A plot showing log data compared to completion details and geology is provided. Note that the areas of high gamma activity indicate bentonite in the annular space.

List of Log Plots:

Man-Made Radionuclide Plot (0-160 ft)
Man-Made Radionuclide Plot (150-310 ft)
Natural Gamma Logs (0-160 ft)
Natural Gamma Logs (150-310 ft)
Combination Plot (0-120 ft)
Combination Plot (110-230 ft)
Total Gamma & Dead Time (0-160 ft)
Total Gamma & Dead Time (150-310 ft)
Repeat Section for Natural Gamma Logs (40-60 ft)
Combination Plot with Completion Details and Lithology

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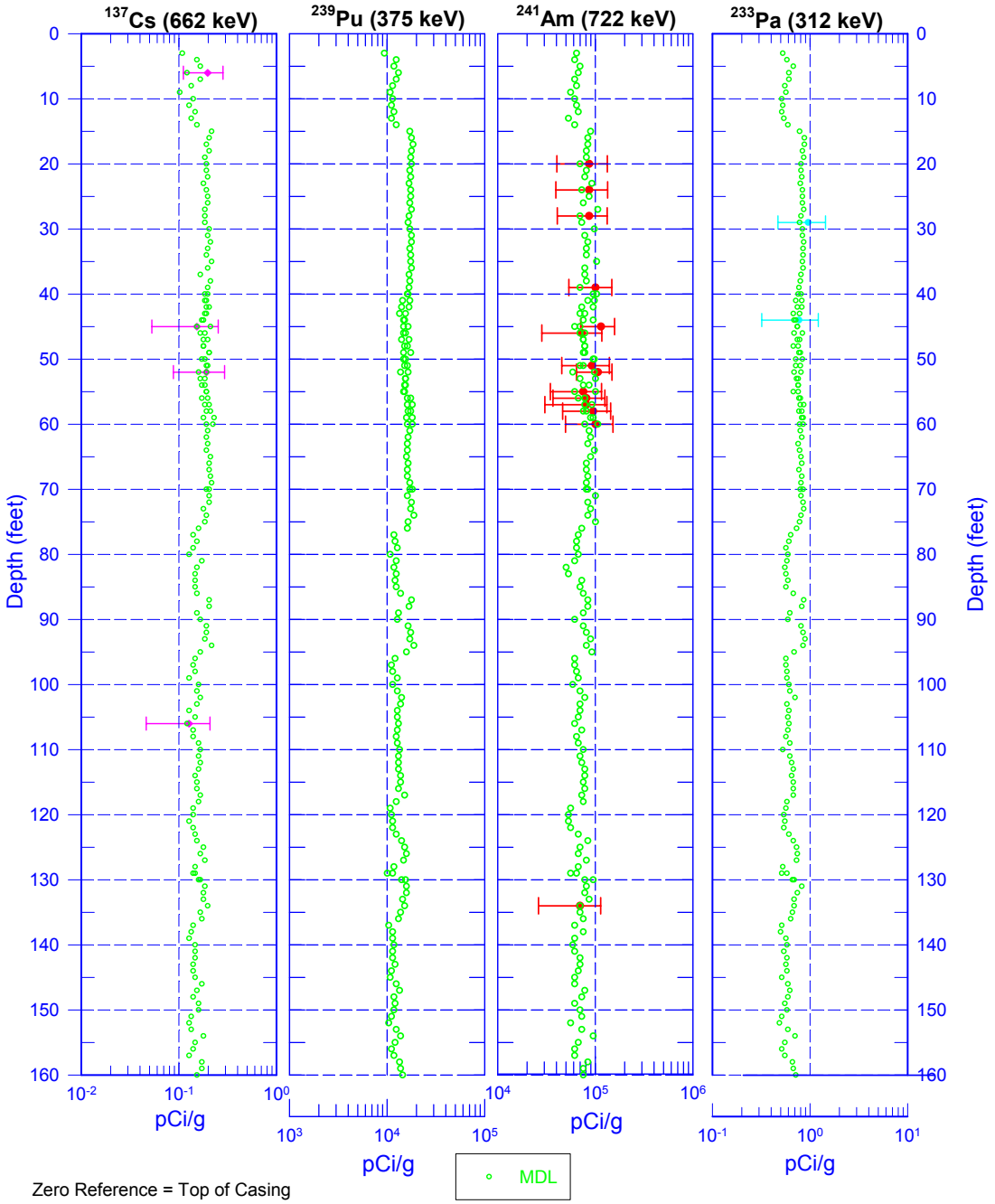
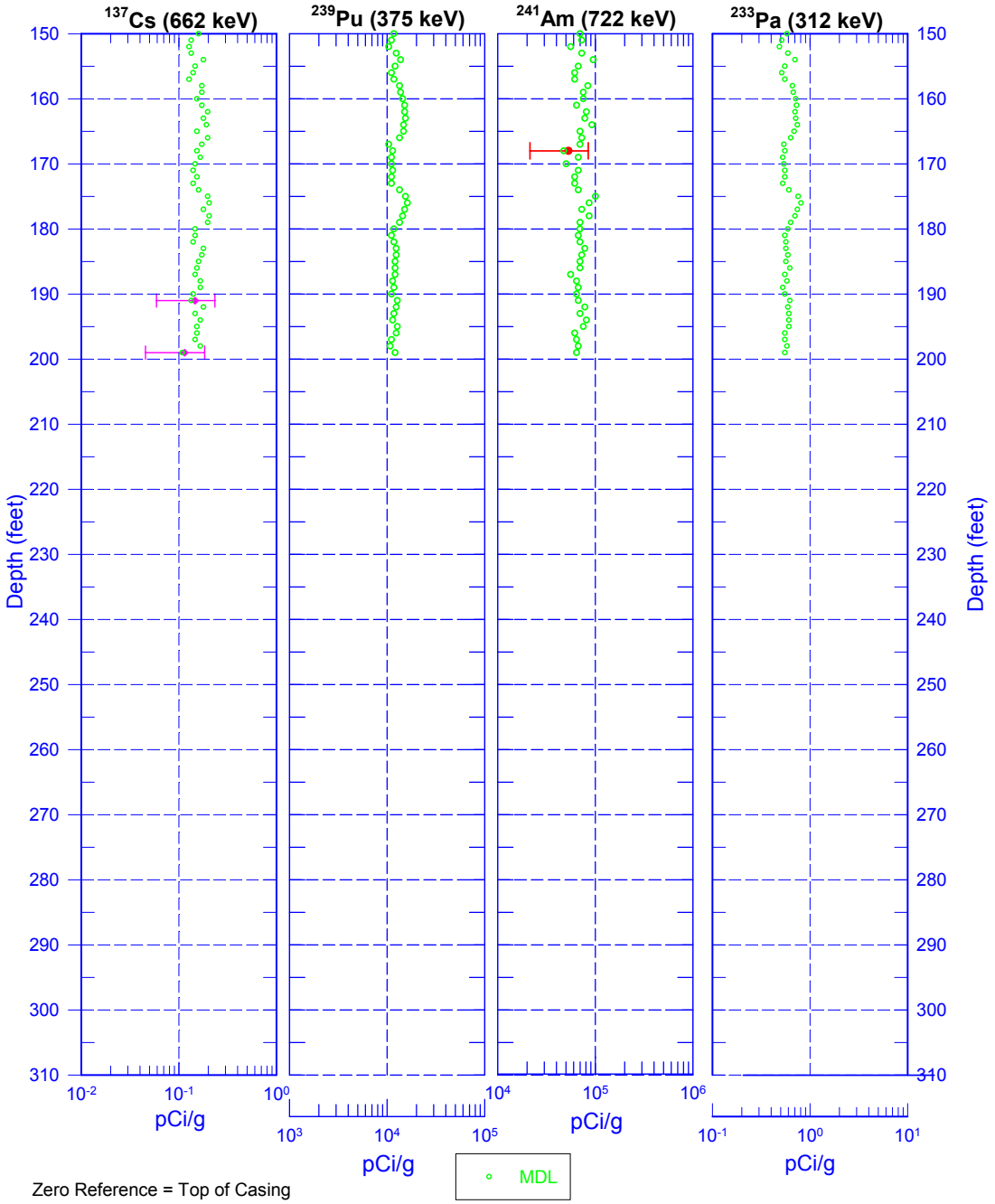
[1] GWL – groundwater level
[2] N/A – not applicable

299-W15-218 (A7516)
Manmade Radionuclide Plot



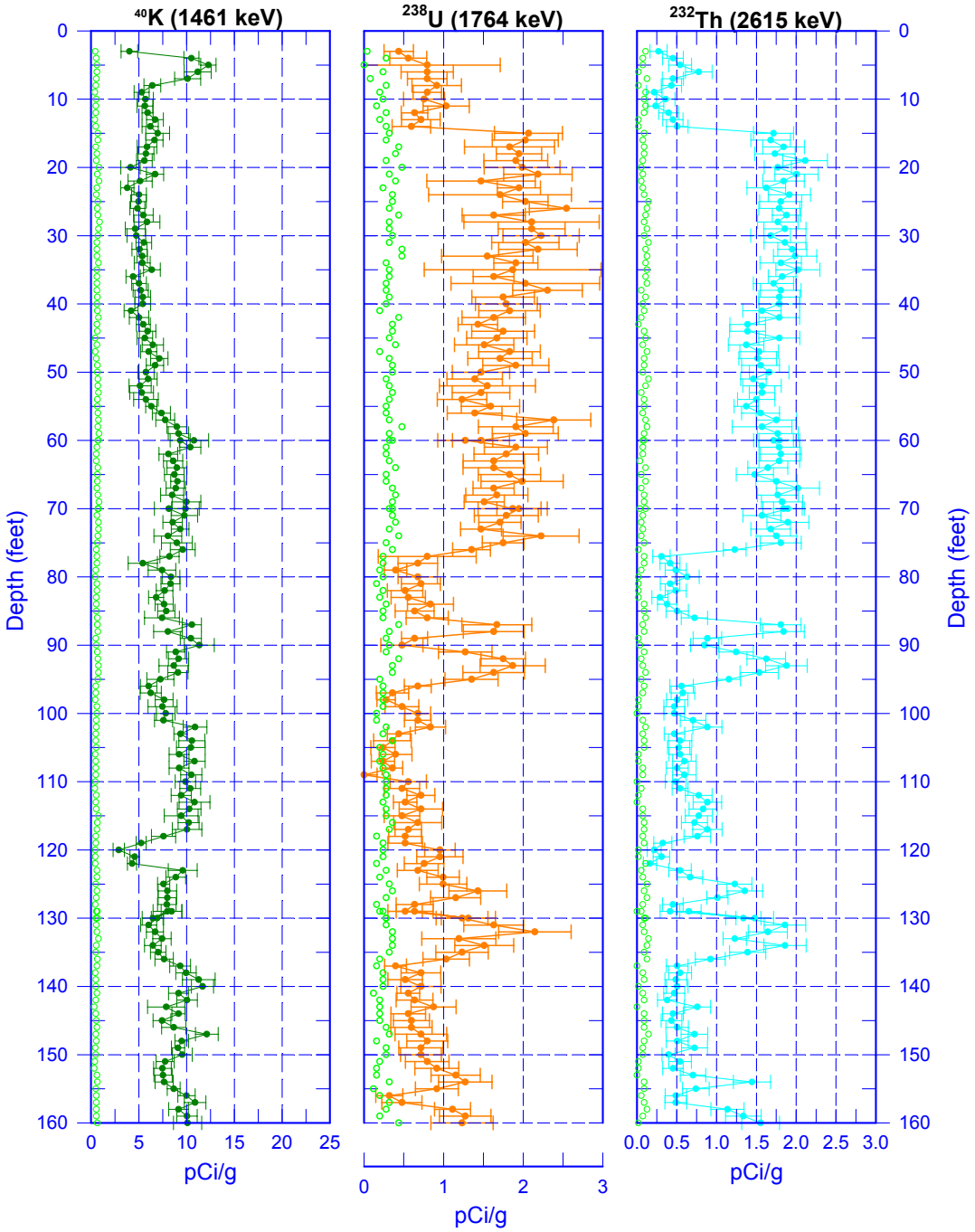
Zero Reference = Top of Casing

299-W15-218 (A7516)
Manmade Radionuclide Plot



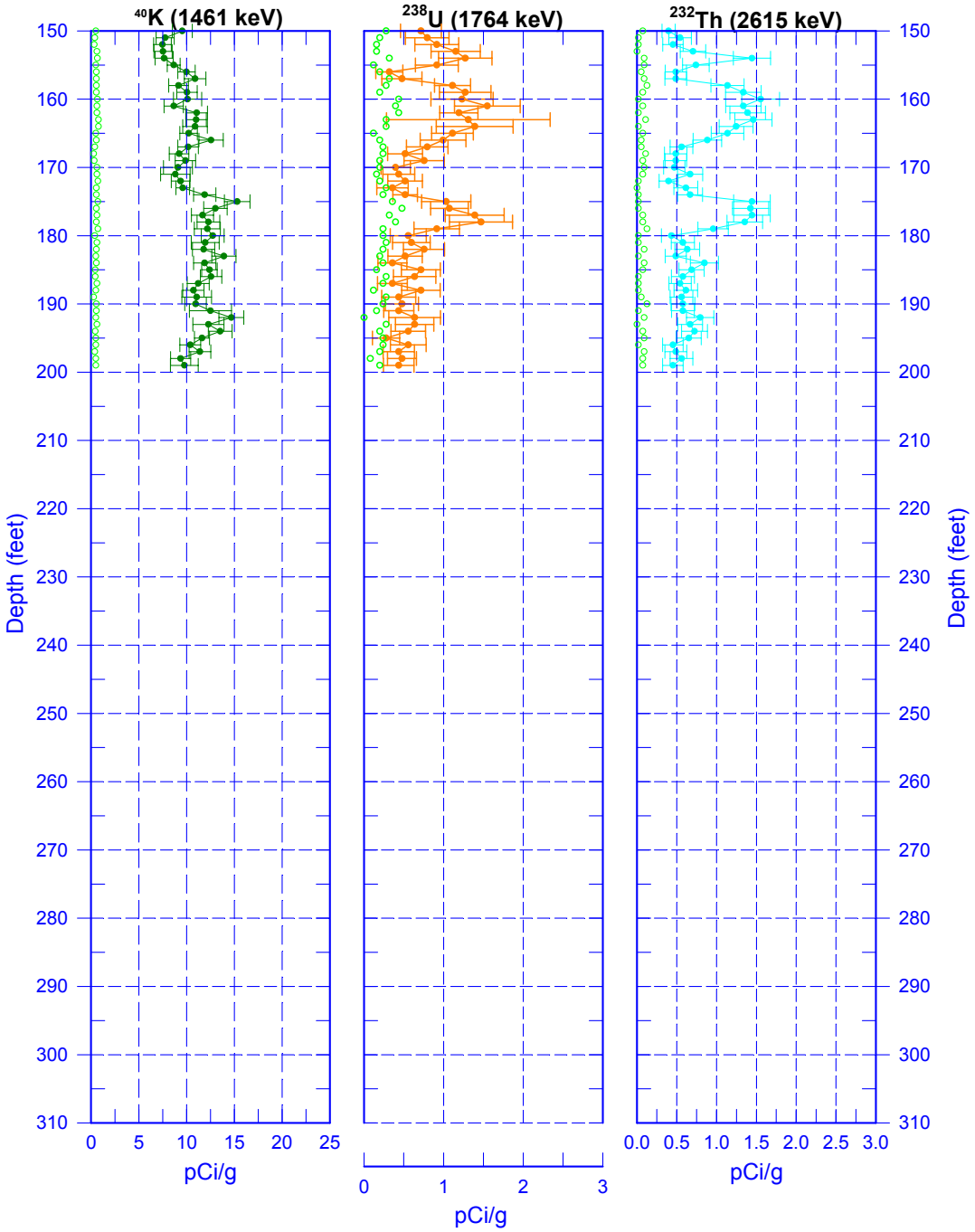
Zero Reference = Top of Casing

299-W15-218 (A7516)
Natural Gamma Logs



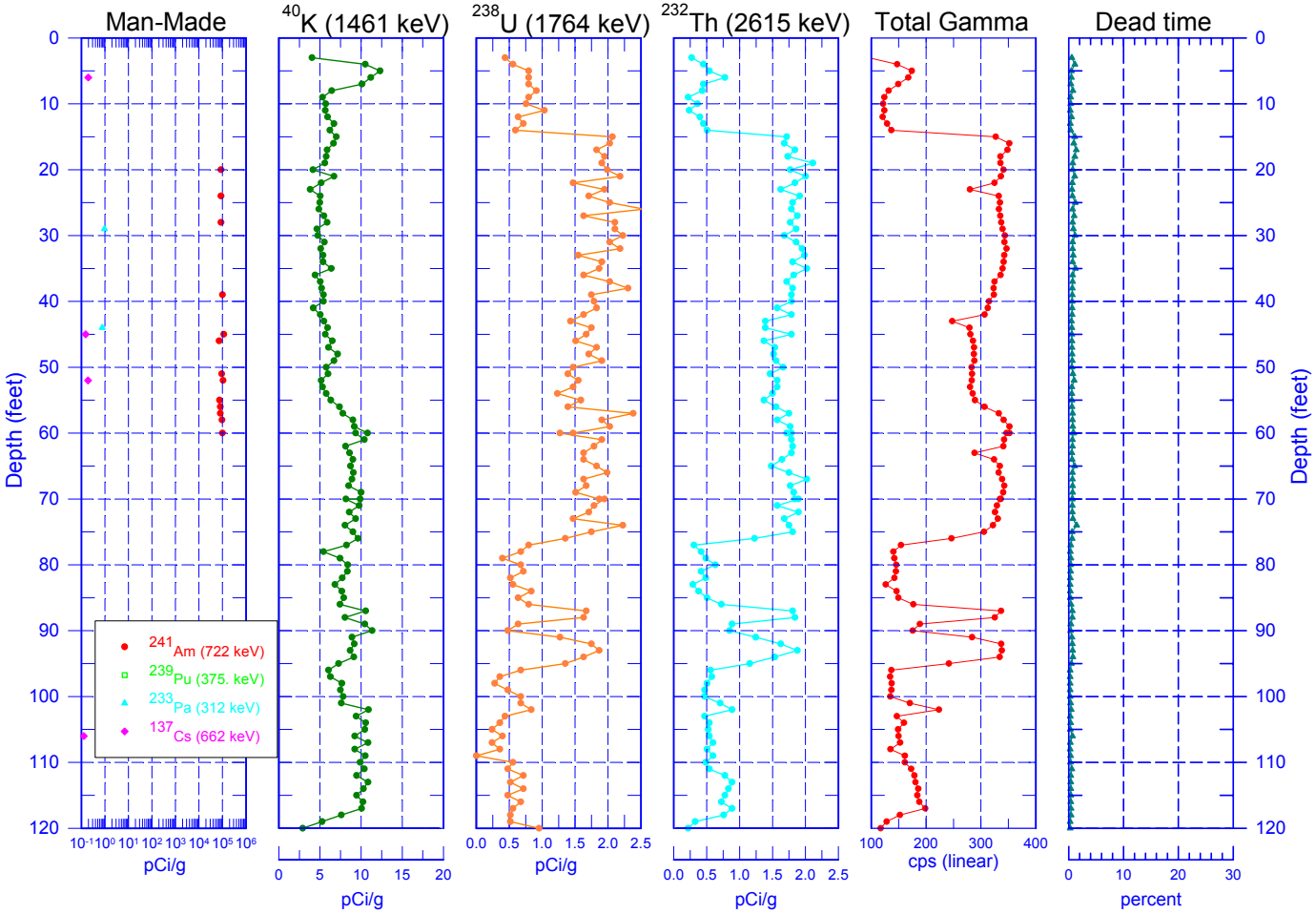
Zero Reference = Top of Casing

299-W15-218 (A7516)
Natural Gamma Logs



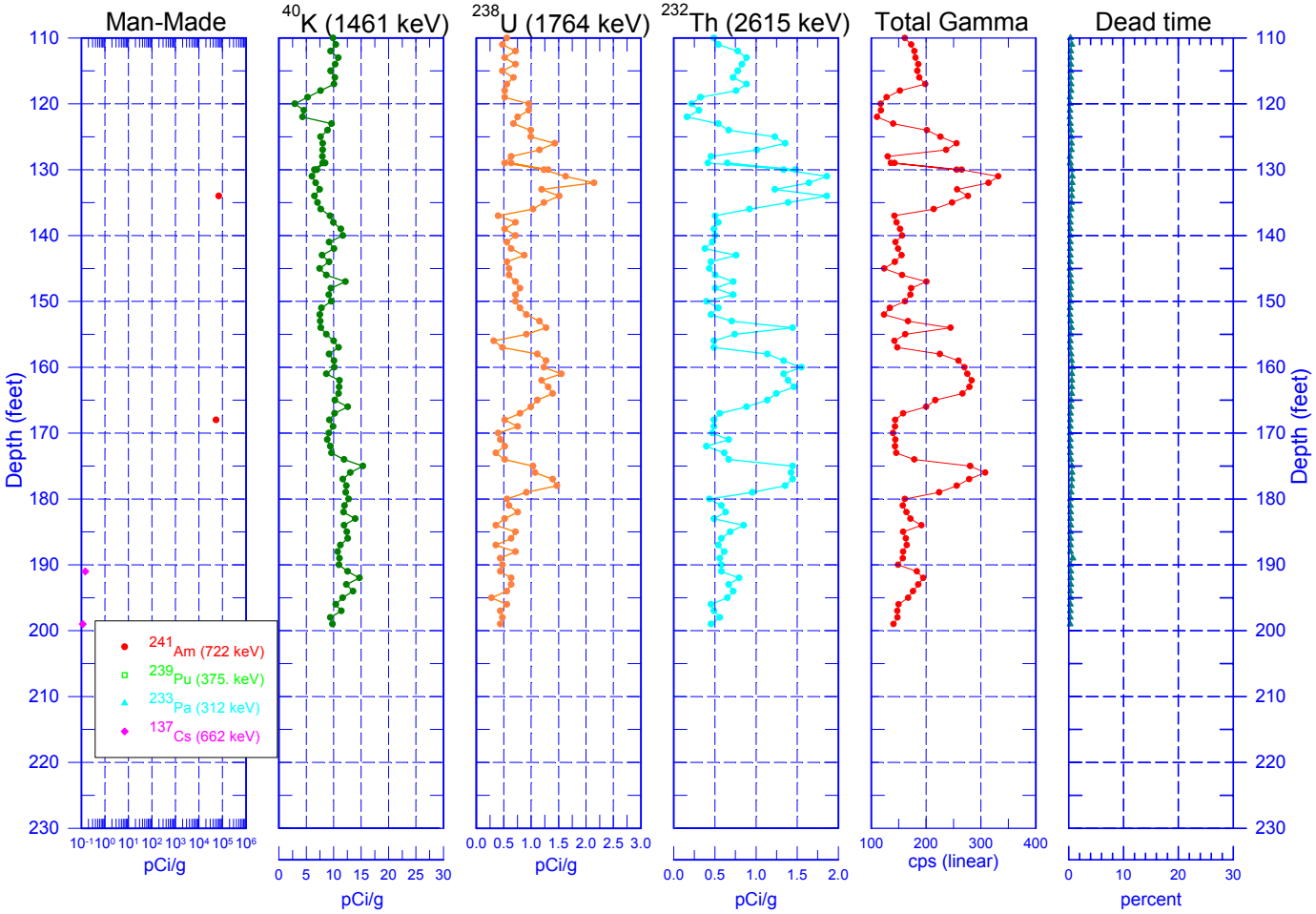
Zero Reference = Top of Casing

299-W15-218 (A7516) Combination Plot



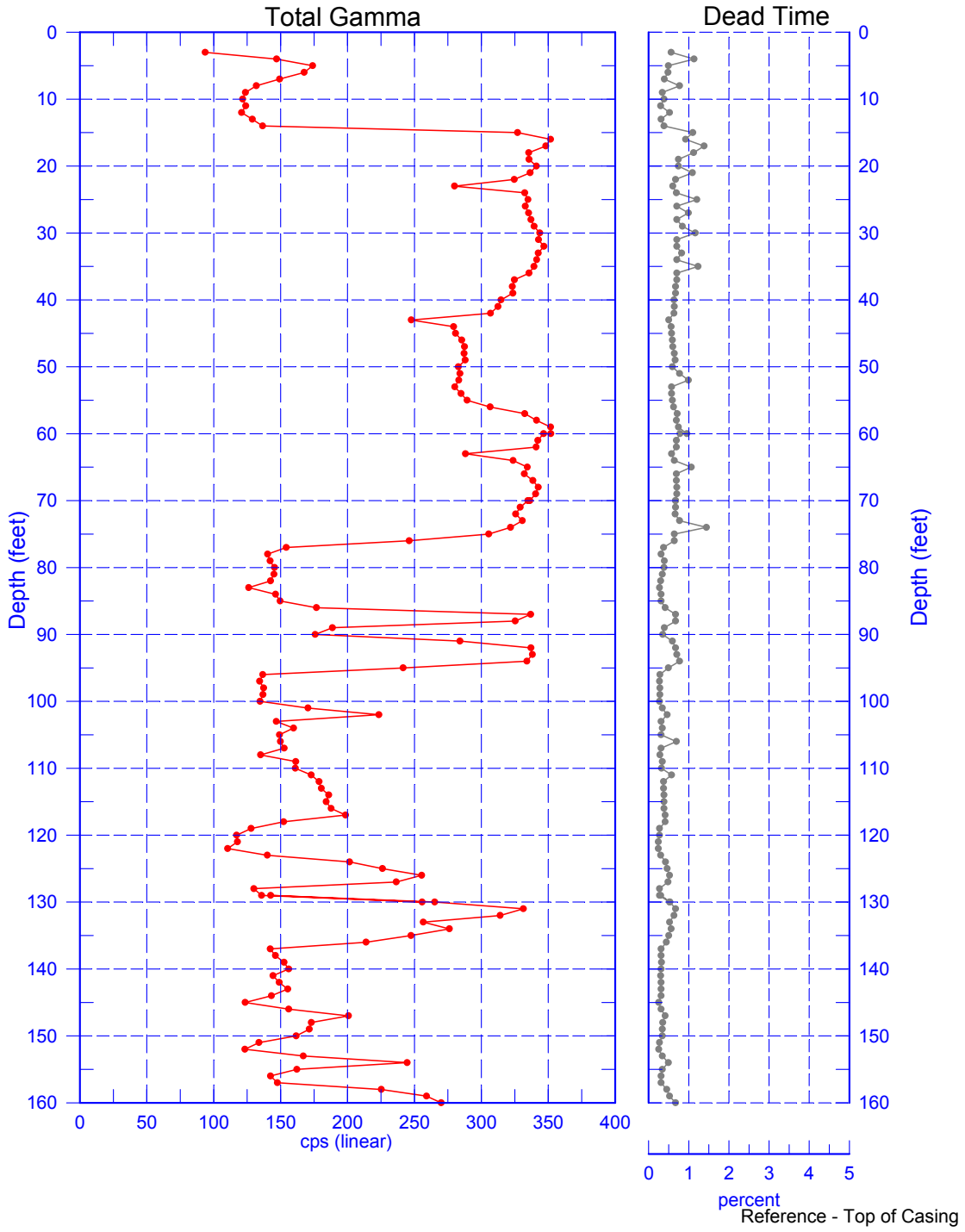
Zero Reference = Top of Casing

299-W15-218 (A7516) Combination Plot

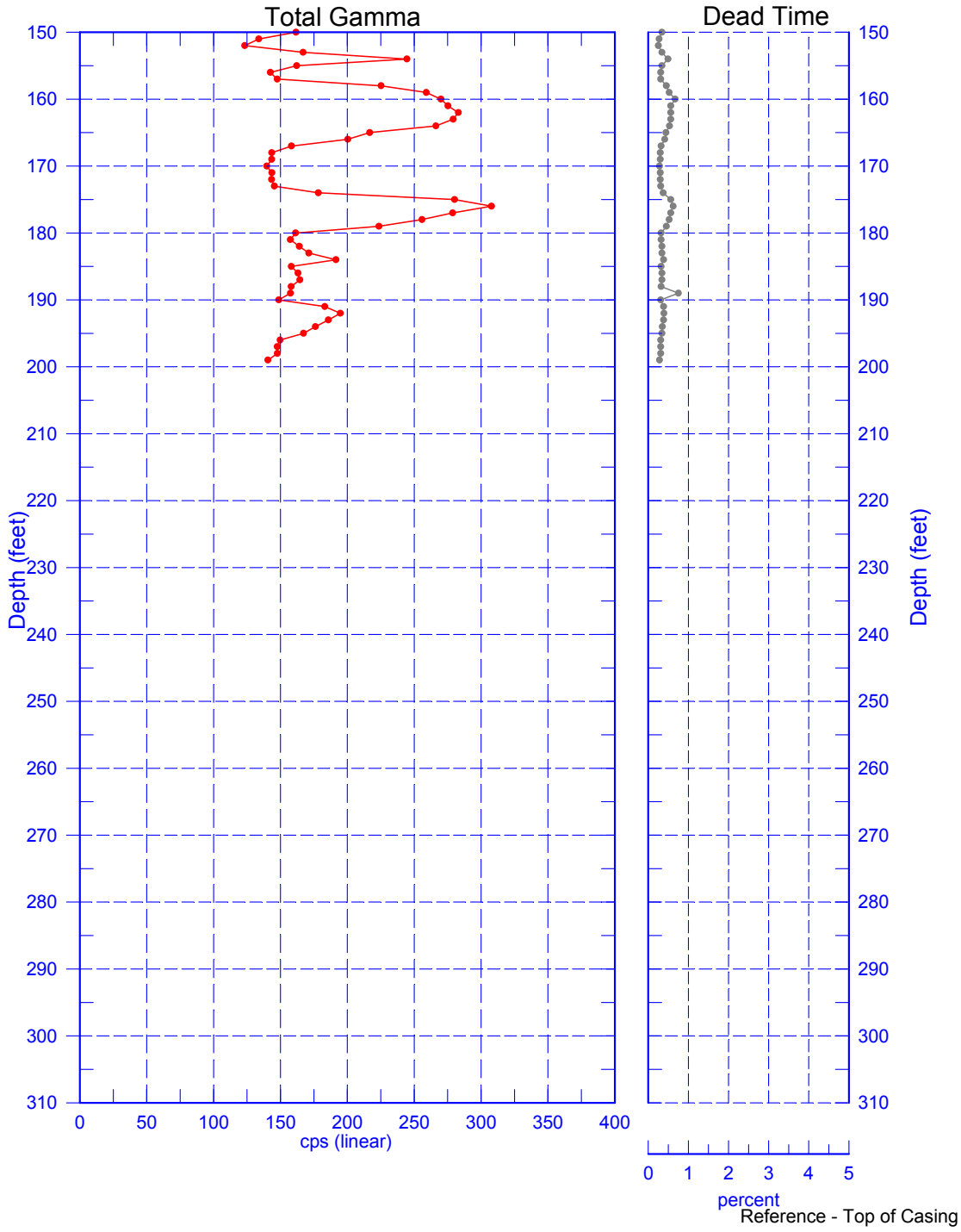


Zero Reference = Top of Casing

299-W15-218 (A7516)
Total Gamma & Dead Time

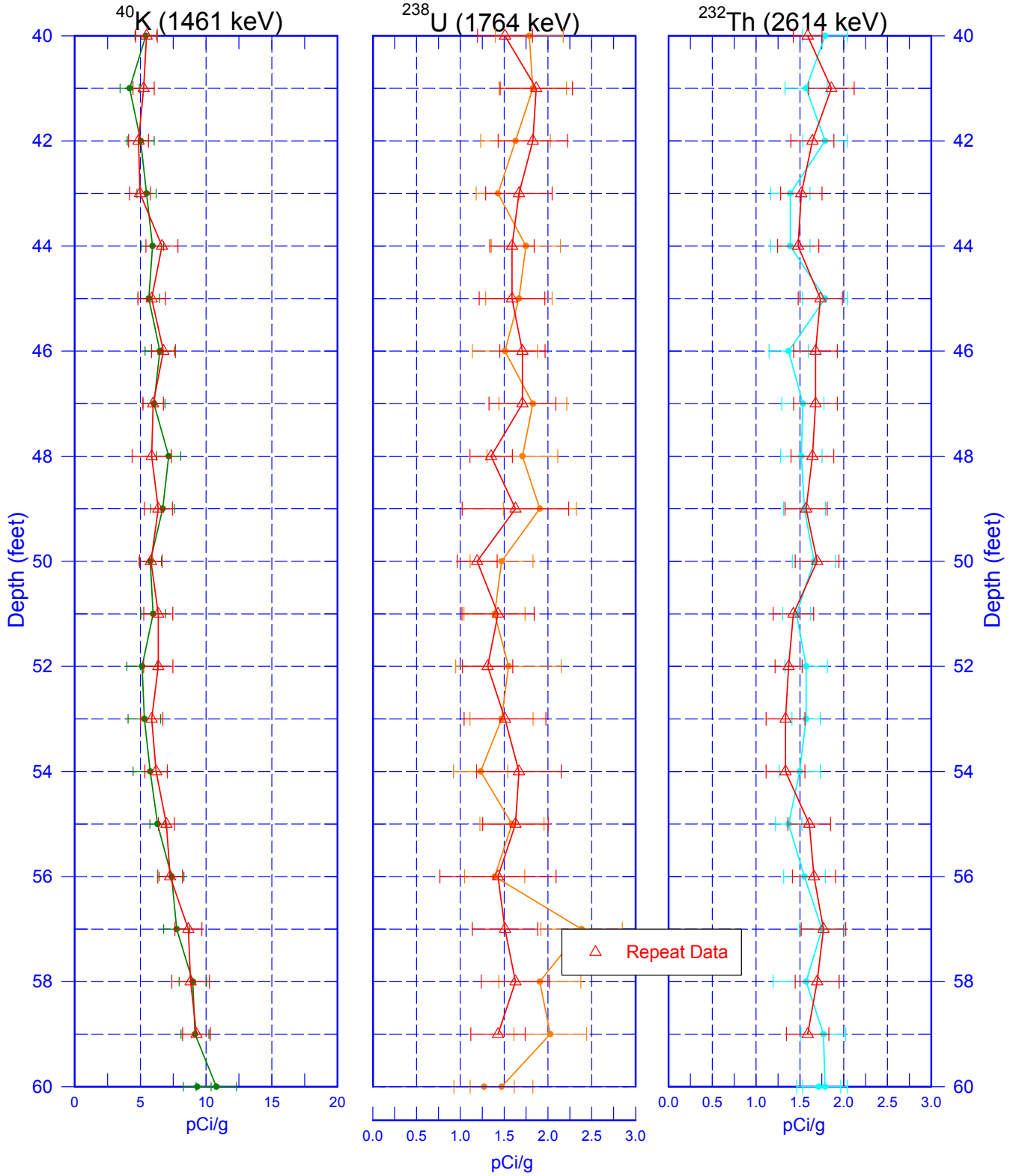


299-W15-218 (A7516)
Total Gamma & Dead Time



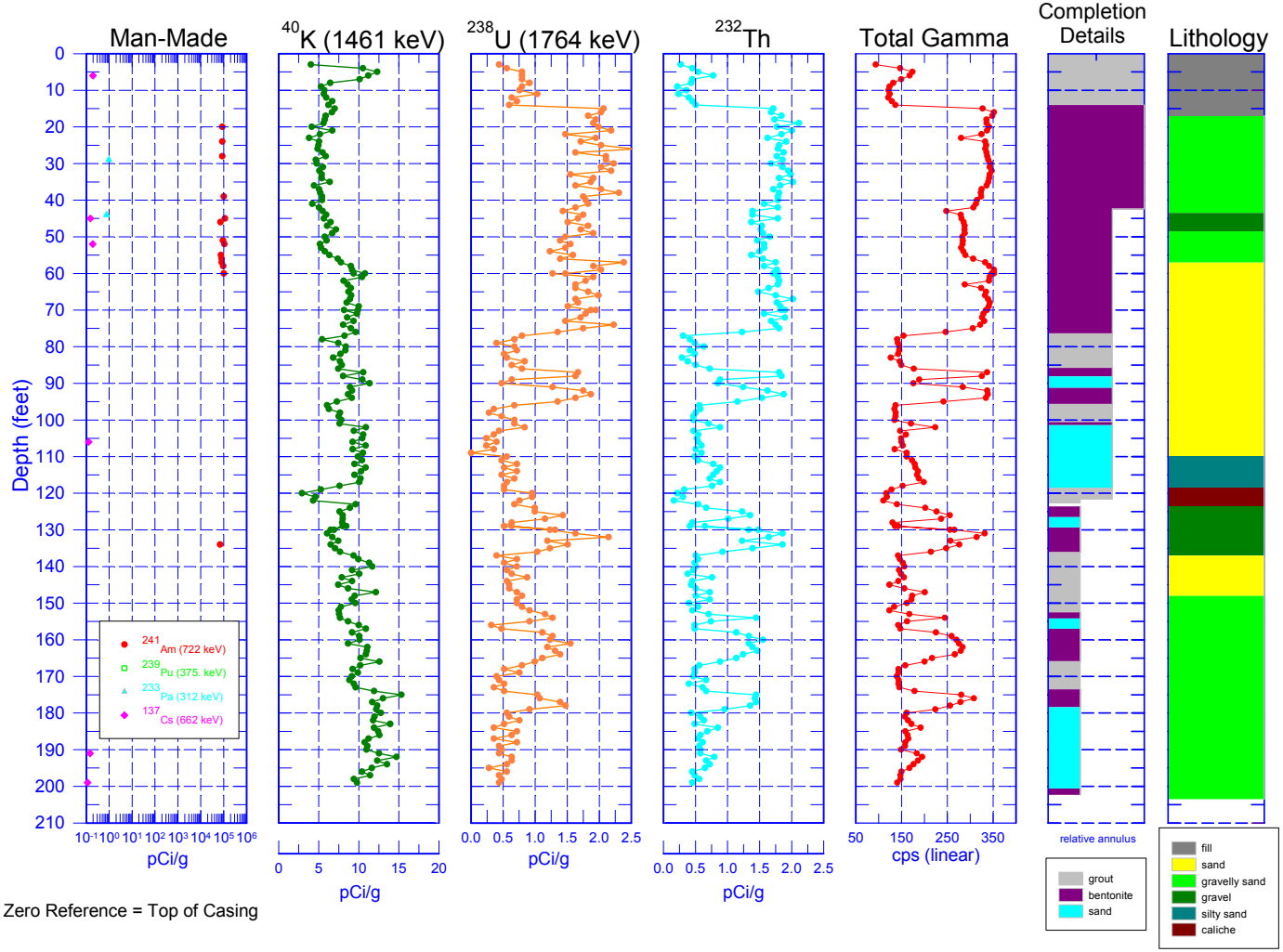
299-W15-218 (A7516)

Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing

299-W15-218 (A7516) Combination Plot with Completion Details & Lithology



Zero Reference = Top of Casing