Stoller
Hanford Office

DOE-EM/GJ1129-2006

299-W11-45 (C4948)
Log Data Report

Borehole Information:

Borehole:	299-W11-45 (C4948)		Site:	Northeast of T Farm	
Coordinates (WA St Plane)		GWL[1] (ft) :	253.5	GWL Date:	11/14/05
North	East	Drill Date	Elevation (TOC)	Total Depth (ft)	Type
Not available	Not available	11/05	Not available	427	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded steel	0.5	13 1/2	12 1/8	11/16	0.5	196
Threaded steel	1.35	10 3/4	9 3/8	11/16	1.35	427

Borehole Notes:

Casing diameter and stickup measurements for the casing were acquired using a caliper and steel tape. Measurements are rounded to the nearest 1/16 in. Casing depths are derived from the on-site supervisor. Logging data acquisition is referenced to the ground surface.

Spectral Gamma Logging System (SGLS) Equipment Information:

Logging System:	Gamma 1E		Type:	SGLS (70%) SN: 34TP40587A
Effective Calibration Date:	03/04/05	Calibration Reference:	DOE/EM-GJ864-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Logging System:	Gamma 4E		Type:	SGLS (70%) SN: 34TP40587A
Effective Calibration Date:	12/21/04	Calibration Reference:	DOE/EM-GJ854-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	3	4	5 Repeat
Date	09/16/05	09/19/05	09/19/05	11/17/05	11/18/05
Logging Engineer	Spatz	Spatz	Spatz	Pearson	Pearson
Start Depth (ft)	195.0	115.0	49.0	427.0	300.0
Finish Depth (ft)	48.0	95.0	0.0	275.0	275.0
Count Time (sec)	100	100	100	100	100
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
MSA Interval (ft)	1.0	1.0	1.0	1.0	1.0

Log Run	1	2 Repeat	3	4	5 Repeat
ft/min	N/A[2]	N/A	N/A	N/A	N/A
Pre-Verification	AE111CAB	AE112CAB	AE112CAB	DE971CAB	DE981CAB
Start File	AE111000	AE112000	AE112021	DE971000	DE981000
Finish File	AE111147	AE112020	AE112070	DE971152	DE981025
Post-Verification	AE111CAA	AE112CAA	AE112CAA	DE971CAA	DE981CAA
Depth Return Error (in.)	0	0	0	- 4	N/A
Comments	No fine-gain adjustment	No fine-gain adjustment	No fine-gain adjustment	Fine gain adjustment after file - 003	No fine-gain adjustment

Log Run	6				
Date	11/18/05				
Logging Engineer	Pearson				
Start Depth (ft)	276.0				
Finish Depth (ft)	190.0				
Count Time (sec)	100				
Live/Real	R				
Shield (Y/N)	N				
MSA Interval (ft)	1.0				
ft/min	N/A				
Pre-Verification	DE981CAB				
Start File	DE981026				
Finish File	DE981110				
Post-Verification	DE981CAA				
Depth Return Error (in.)	N/A				
Comments	No fine-gain adjustment				

Logging Operation Notes:

Log data were initially acquired to 195 ft in September 2005; the borehole was deepened, and additional logging occurred in November 2005. Logging was conducted with a centralizer on the sonde. Measurements are referenced to the ground surface. Repeat sections were collected in this borehole to evaluate the logging systems' performance.

Analysis Notes:

Analyst:	Henwood	Date:	02/07/06	Reference:	GJO-HGLP 1.6.3, Rev. 1

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

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated using the EXCEL worksheet templates identified as G1Emar05.xls and G4Eapr05.xls for log data acquired by logging systems Gamma 1E and Gamma 4E, respectively. A casing correction for 0.6875-in.-thick casing was applied to the SGLS data for the entire depth of the borehole. A correction for water was applied to the data below 253 ft. No corrections for dead time were necessary.

Results and Interpretations:

^{137}Cs was detected using the routine processing software at several sporadic locations throughout the borehole near the MDL of approximately 0.4 pCi/g. These detections are the result of statistical fluctuations and are not considered to be valid. No other man-made radionuclides were detected in this borehole.

Recognizable changes in the KUT logs occurred in this borehole. Between approximately 98 and 125 ft, the fine-grained member of the Cold Creek Unit (formerly known as the Early Palouse Soil) is shown by an increases in total gamma, ^{40}K, and ^{232}Th. Decreases in ^{40}K concentrations in the interval centered at 108 and 122 ft indicate the carbonate rich paleosols of the Cold Creek Unit.

Log data suggest the presence of radon in the borehole during log runs 1 through 5. The last log run (6), acquired November 18, 2005 between 190 and 275 ft, indicates the radon had dissipated.

The repeat sections for the SGLS indicate good agreement for the naturally occurring radionuclides.

List of Plots:

Man-Made Radionuclides (two pages)
Natural Gamma Logs (three pages)
Combination Plot (four pages)
Total Gamma and Dead Time (three pages)
Repeat Section of Natural Gamma Logs (two pages)

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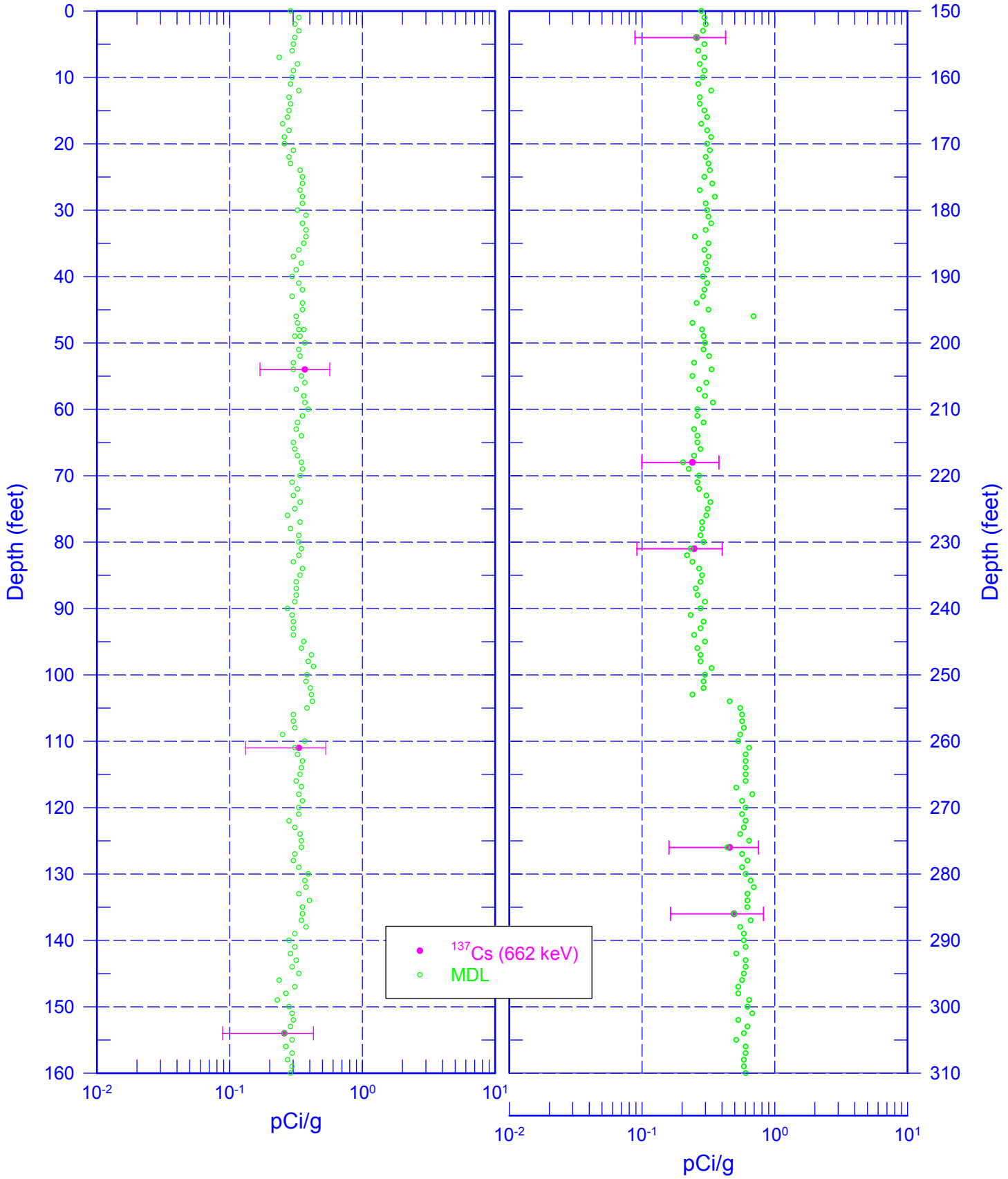
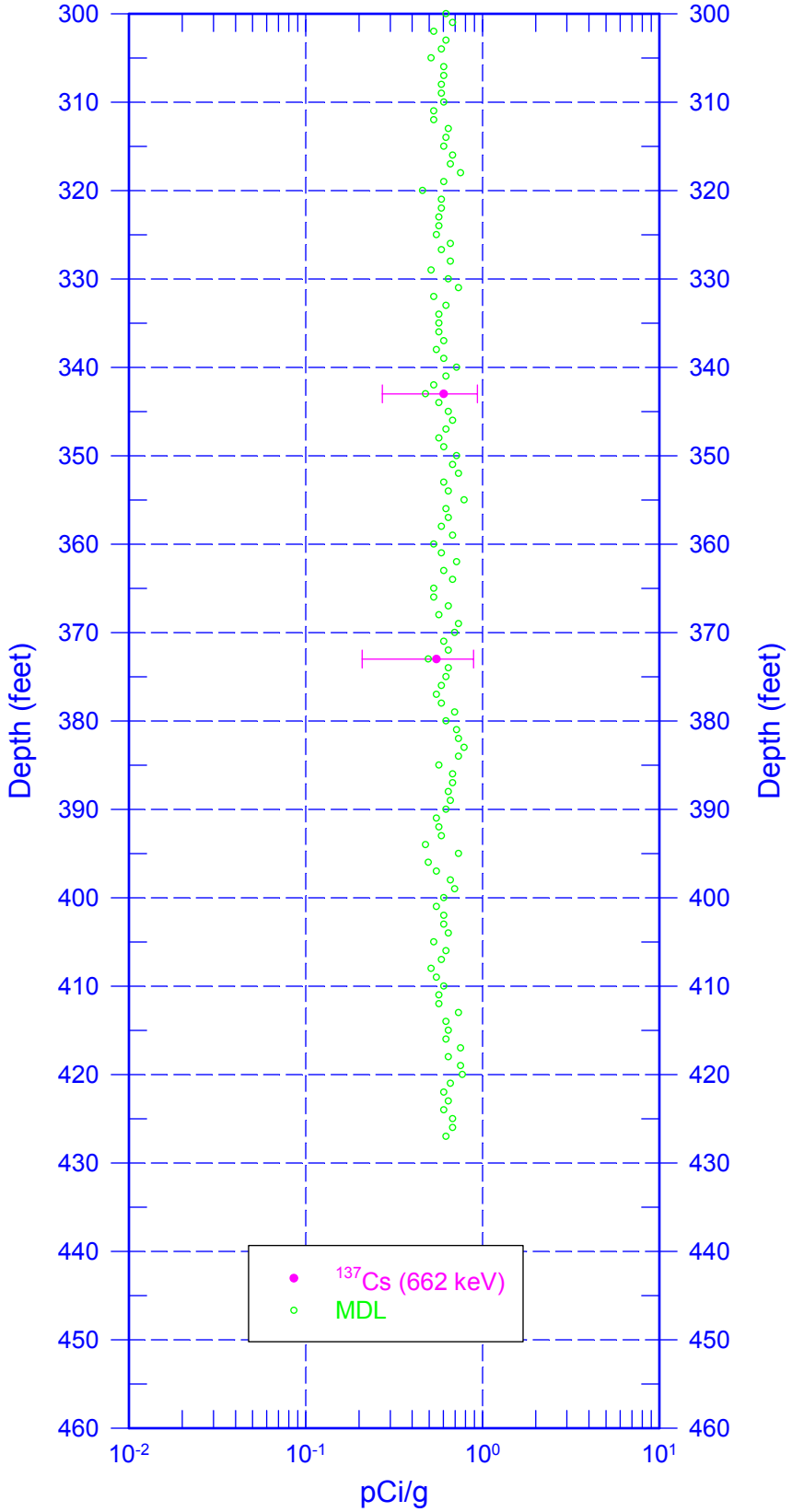
[1] GWL – groundwater level
[2] N/A – not applicable

299-W11-45 (C4948)
Man-Made Radionuclides



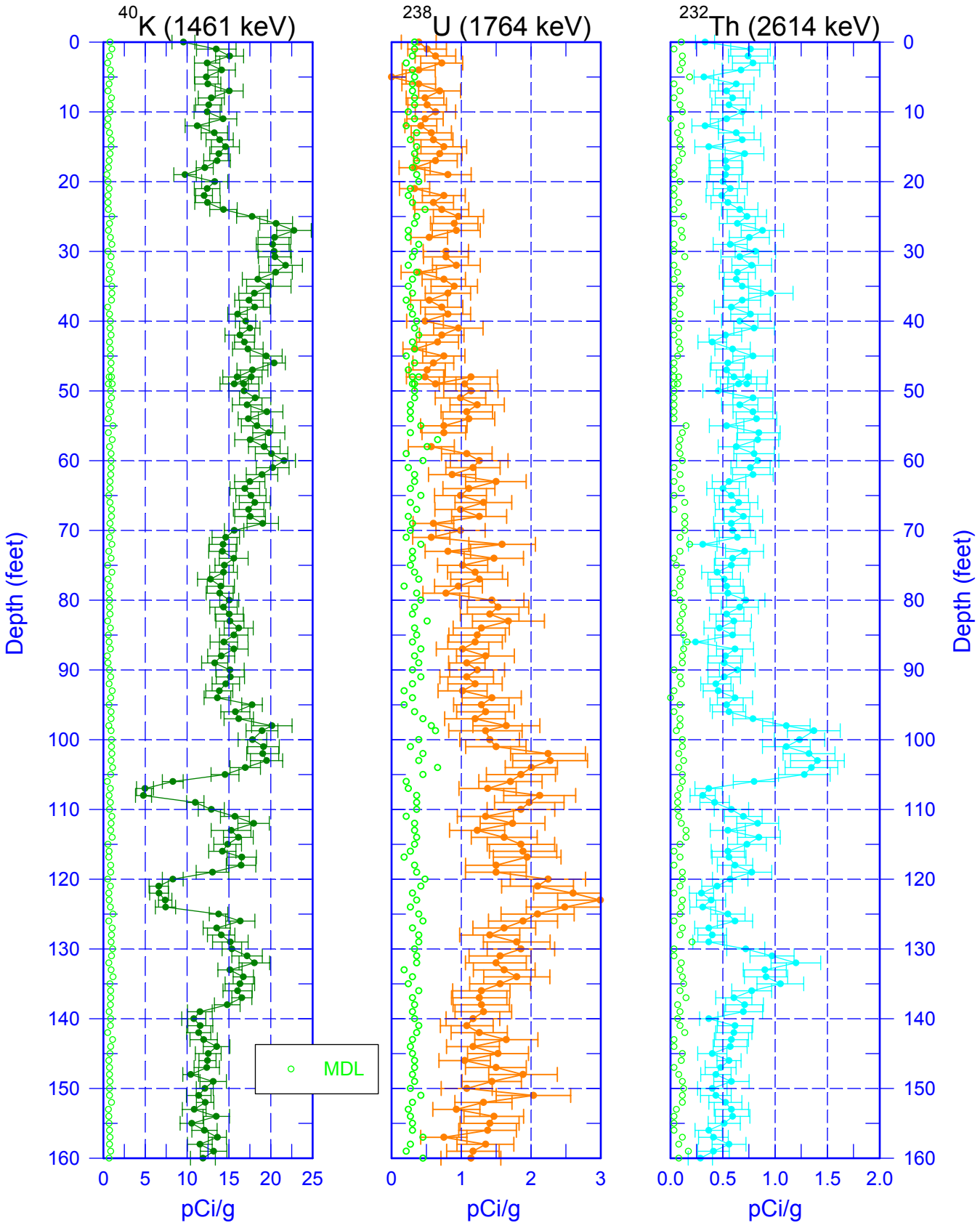
Zero Reference = Ground Surface

299-W11-45 (C4948)
Man-Made Radionuclides



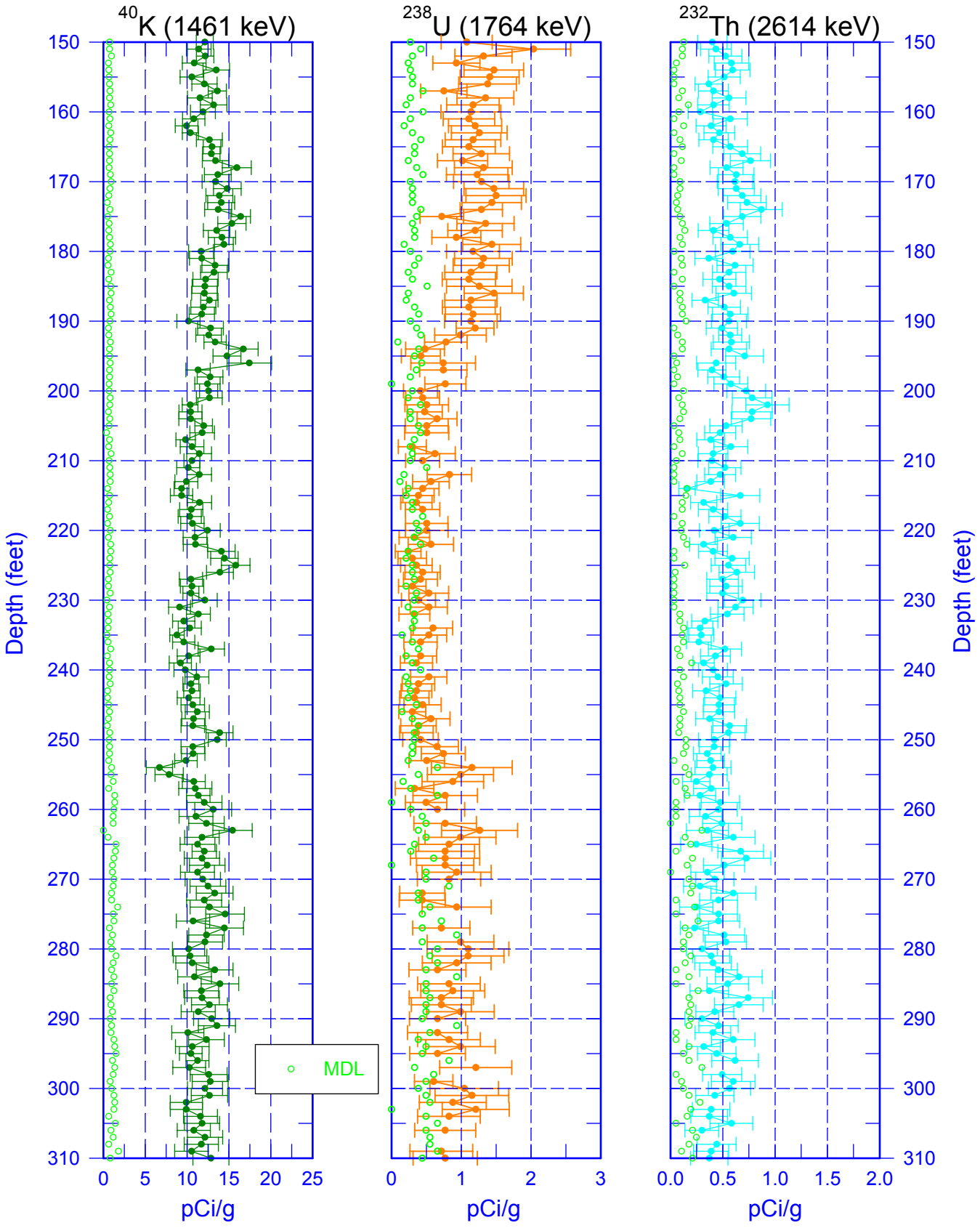
Zero Reference = Ground Surface

299-W11-45 (C4948)
Natural Gamma Logs



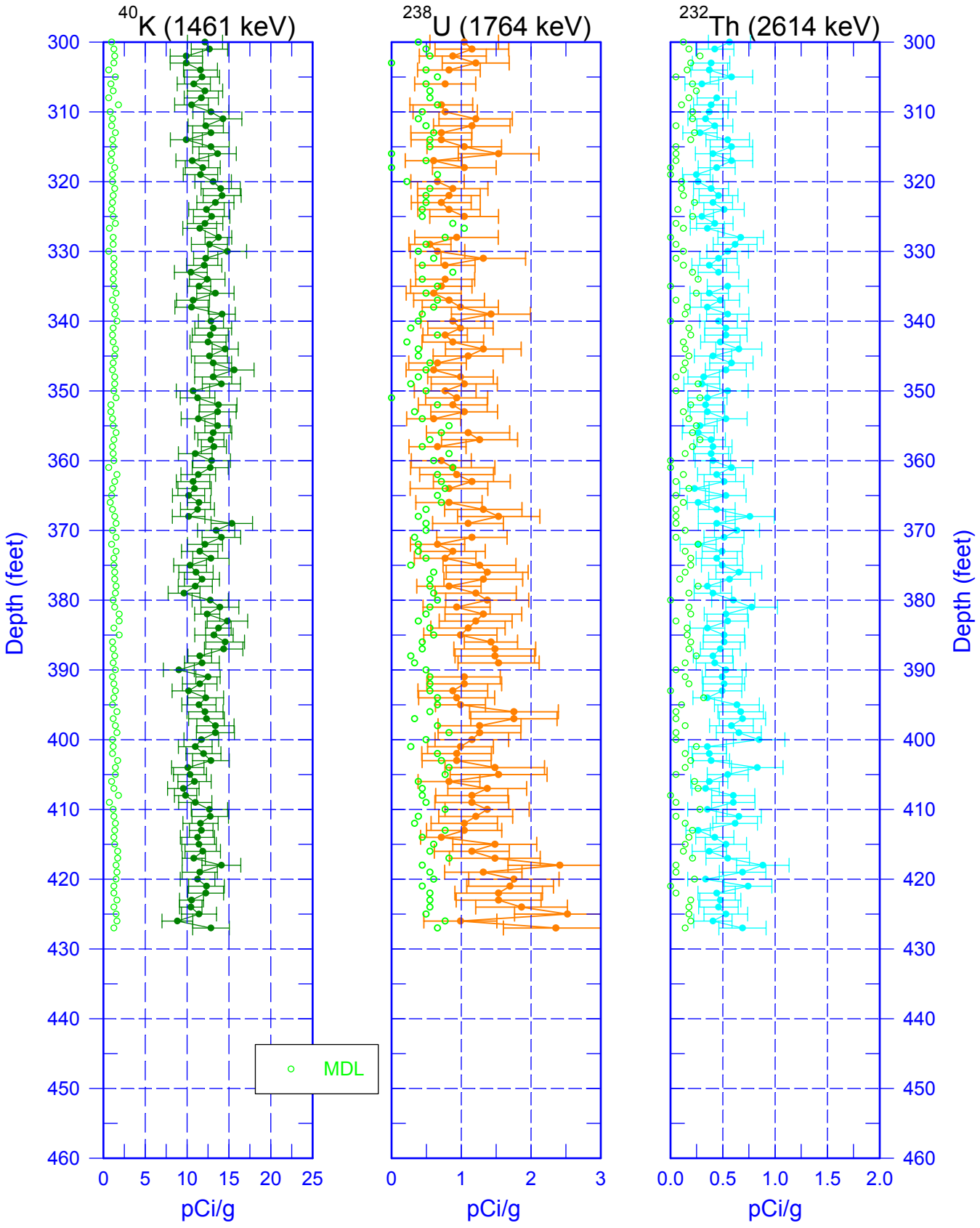
Zero Reference = Ground Surface

299-W11-45 (C4948)
Natural Gamma Logs



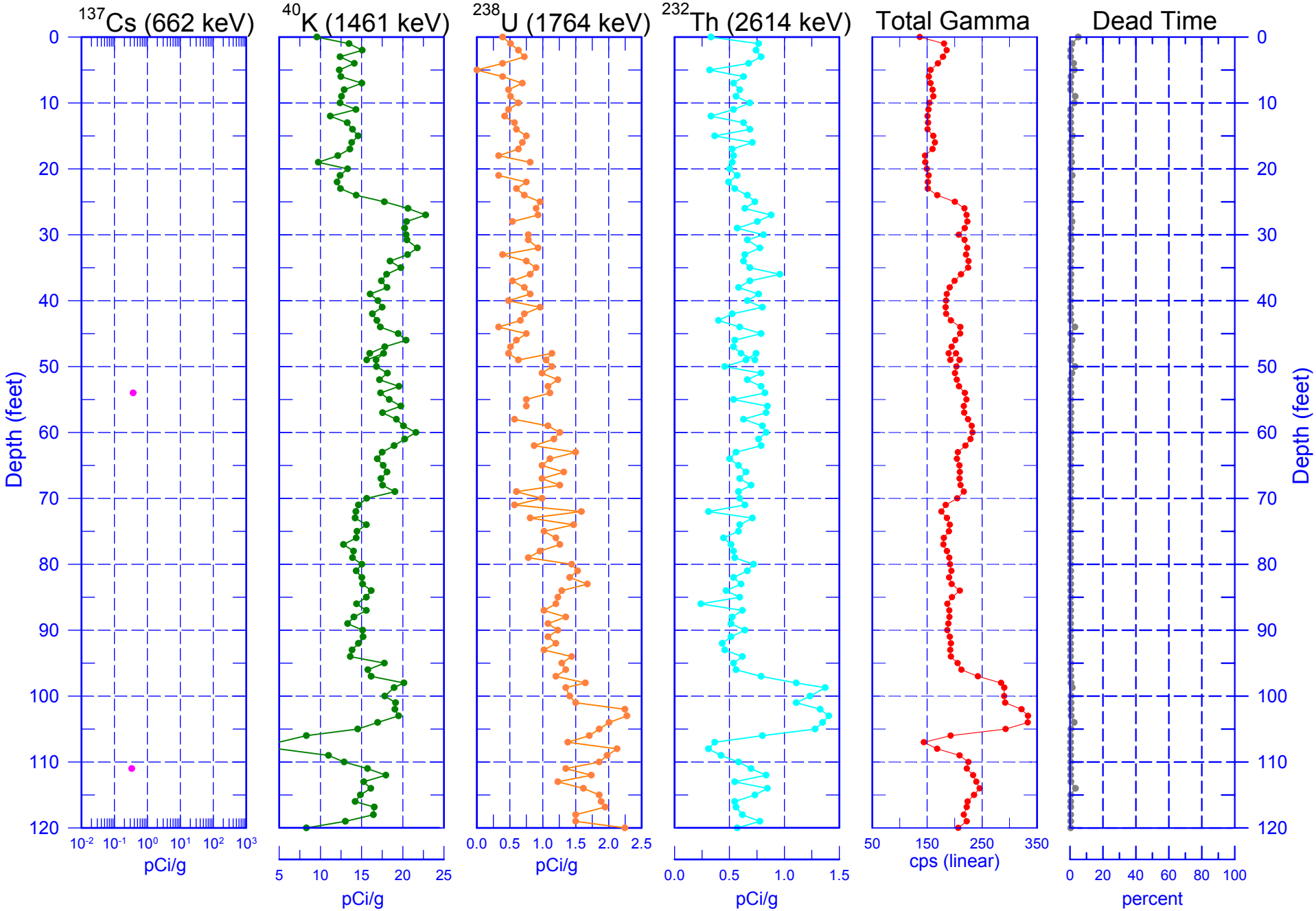
Zero Reference = Ground Surface

299-W11-45 (C4948)
Natural Gamma Logs



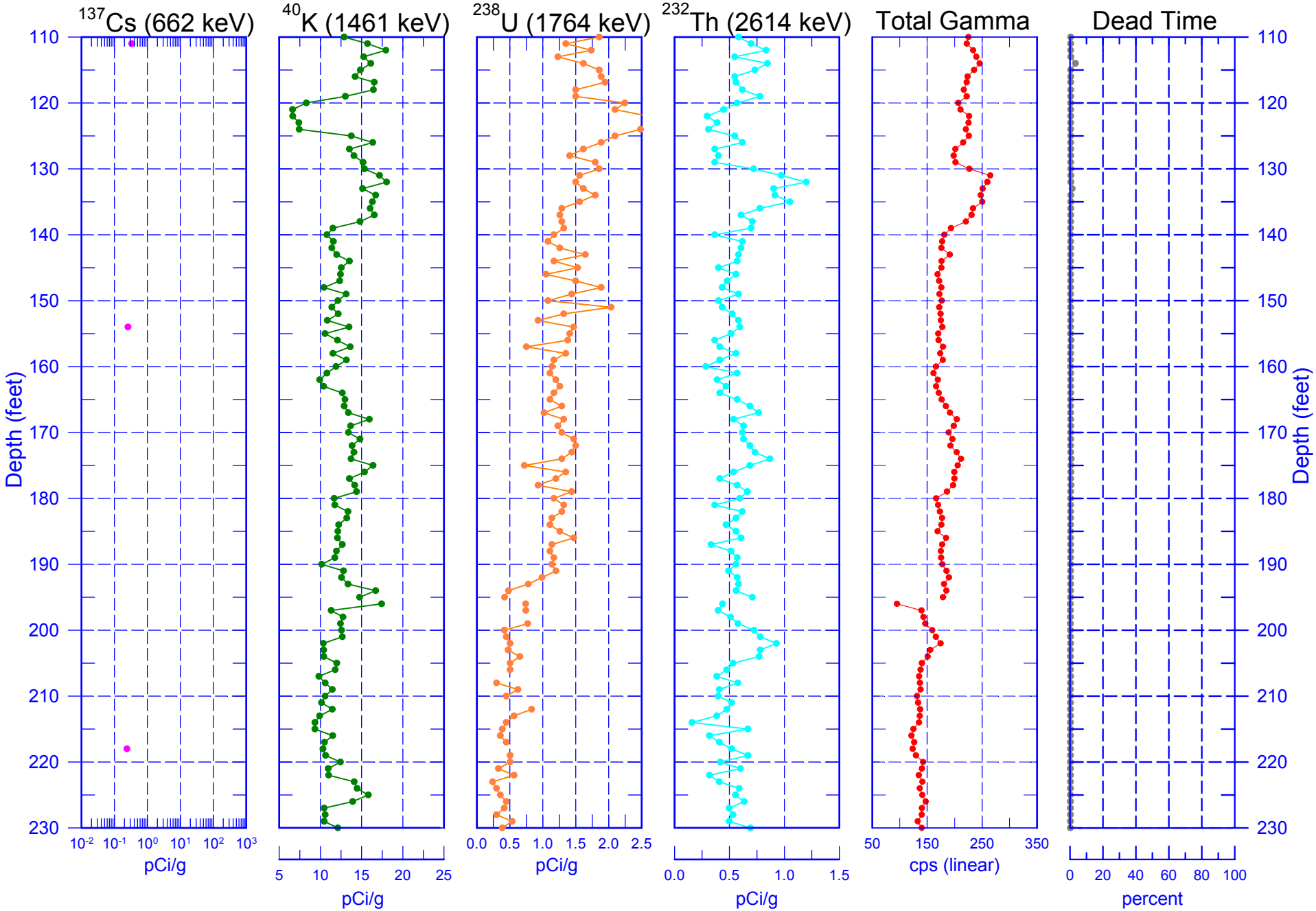
Zero Reference = Ground Surface

299-W11-45 (C4948) Combination Plot



Zero Reference = Ground Surface

299-W11-45 (C4948) Combination Plot



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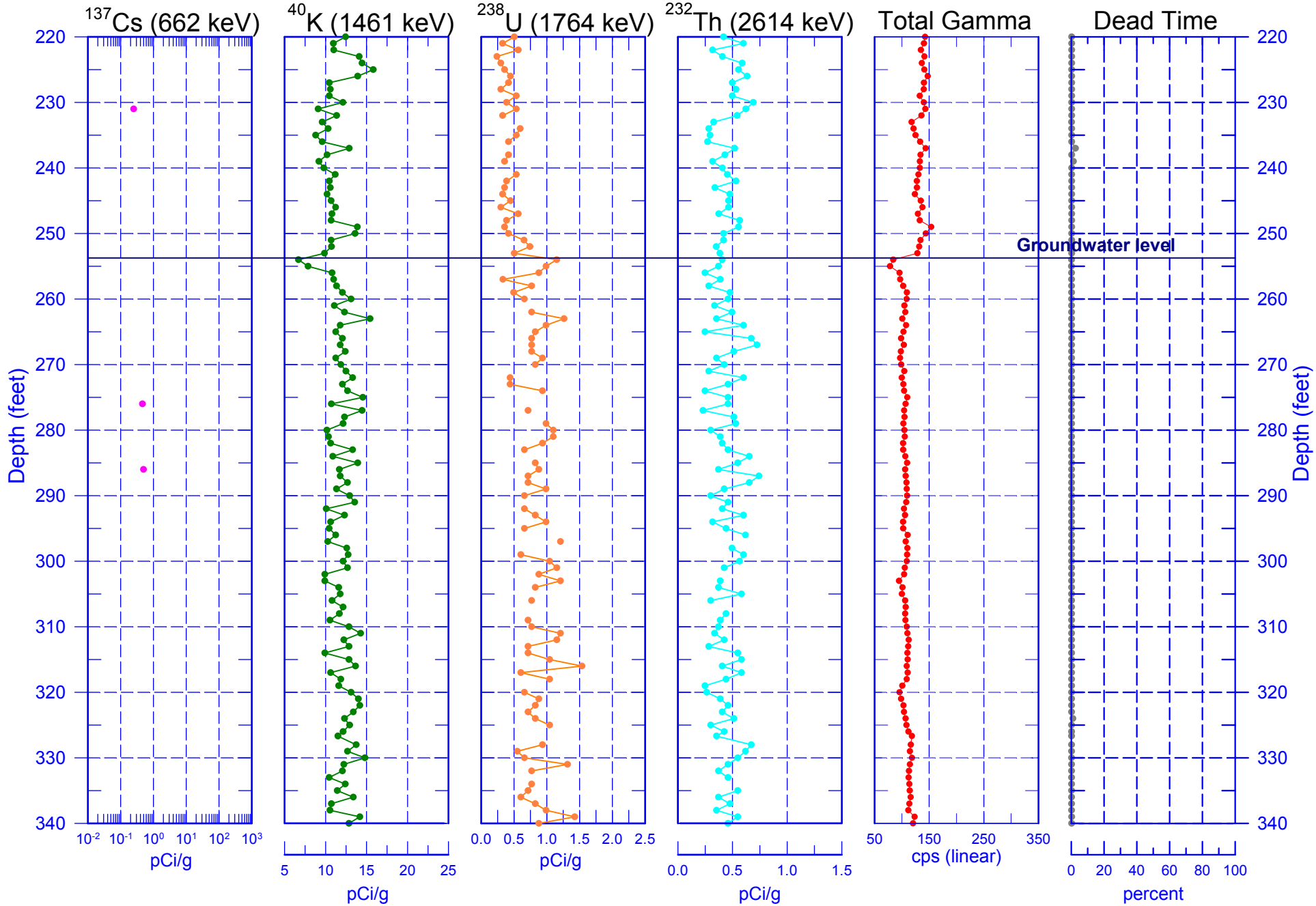
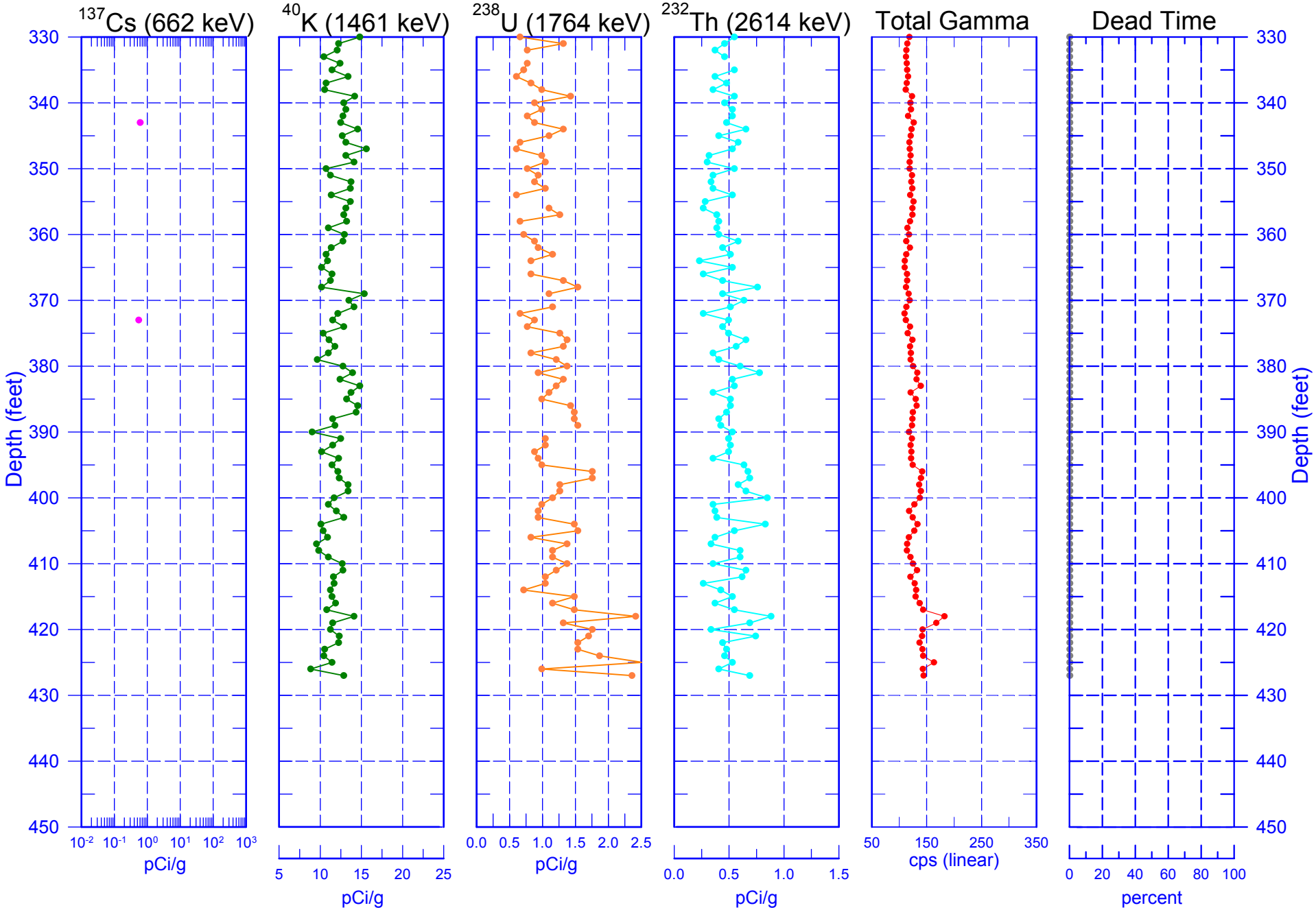


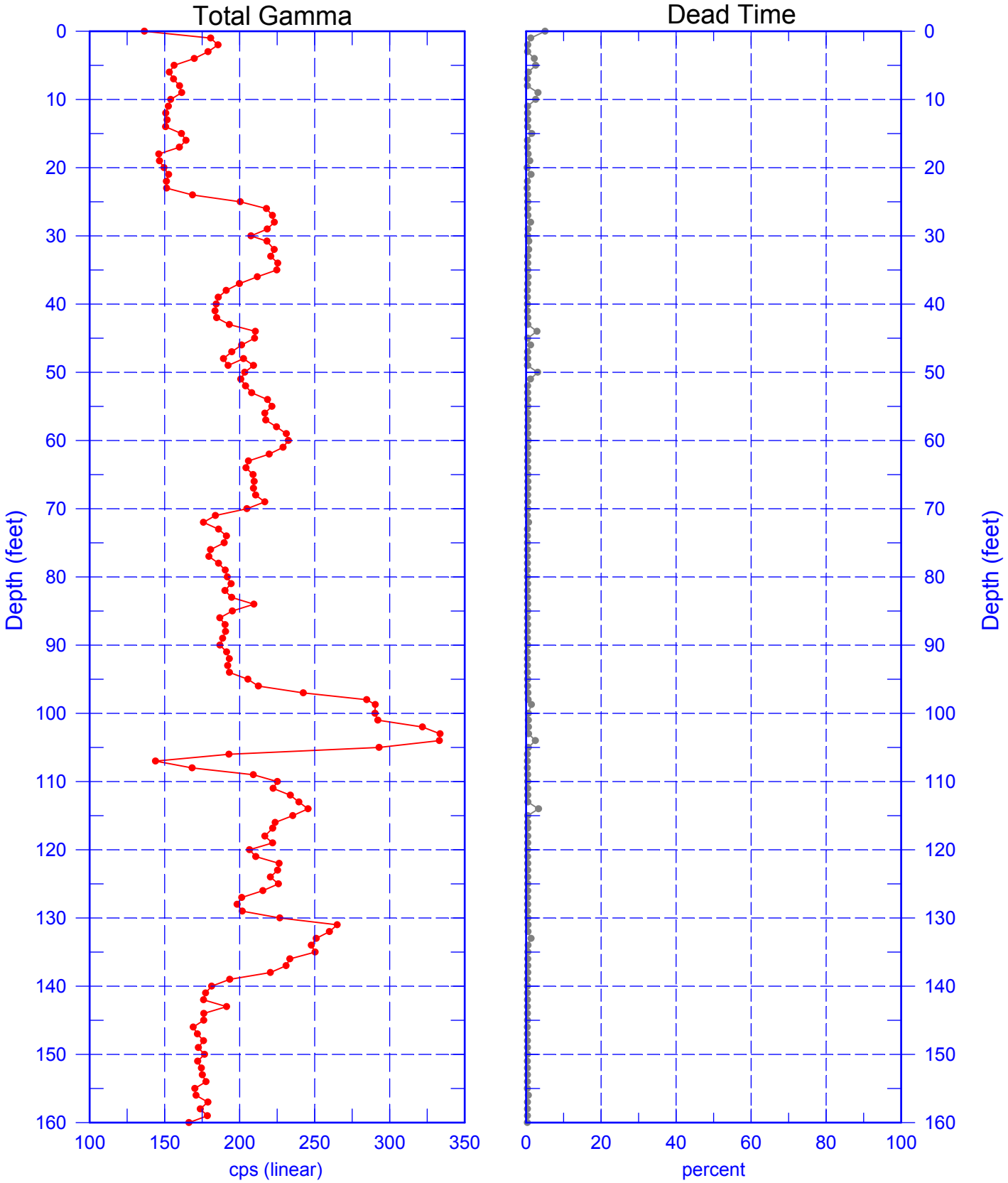
Zero Reference = Ground Surface

299-W11-45 (C4948) Combination Plot



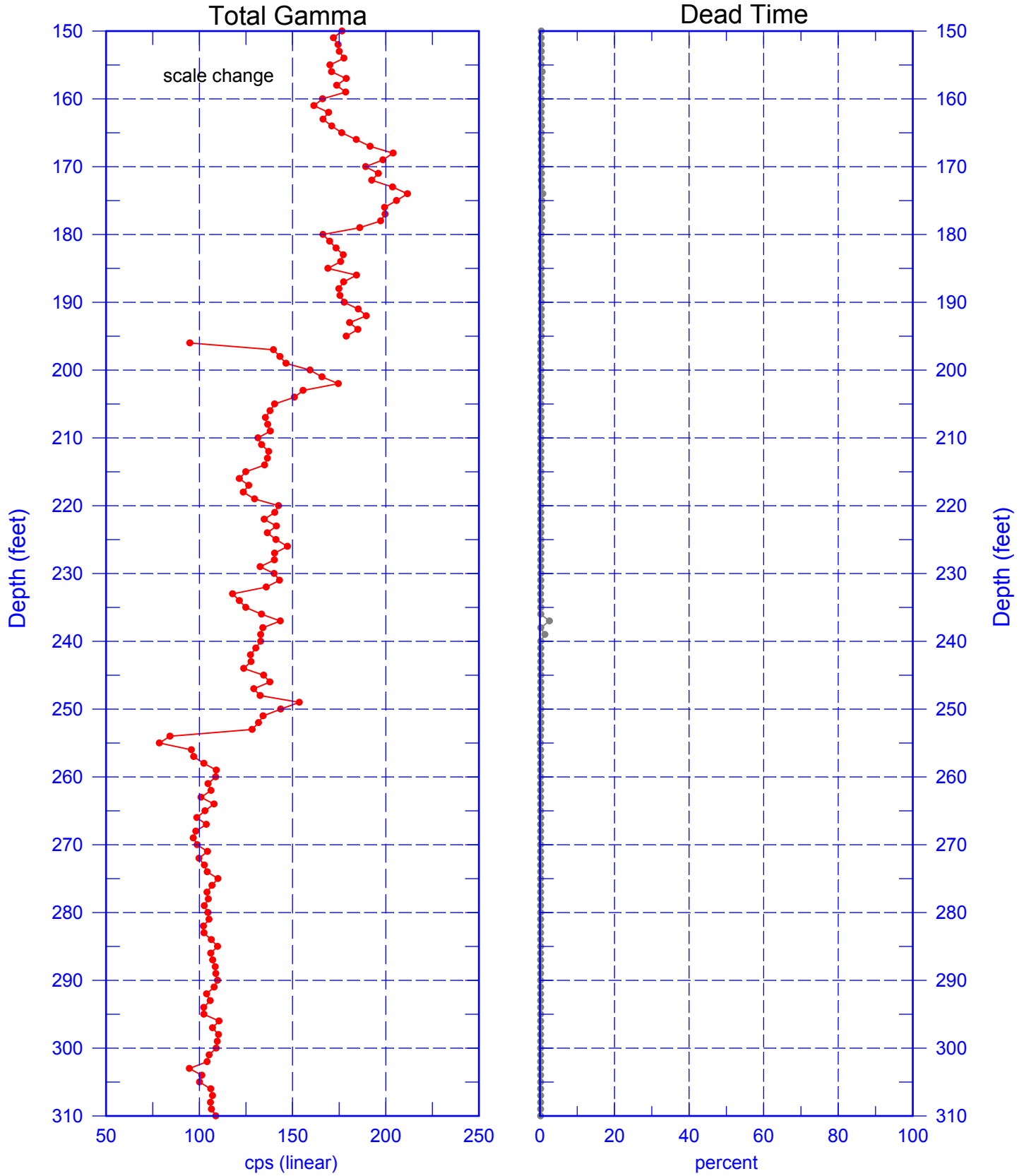
Zero Reference = Ground Surface

299-W11-45 (C4948)
Total Gamma & Dead Time



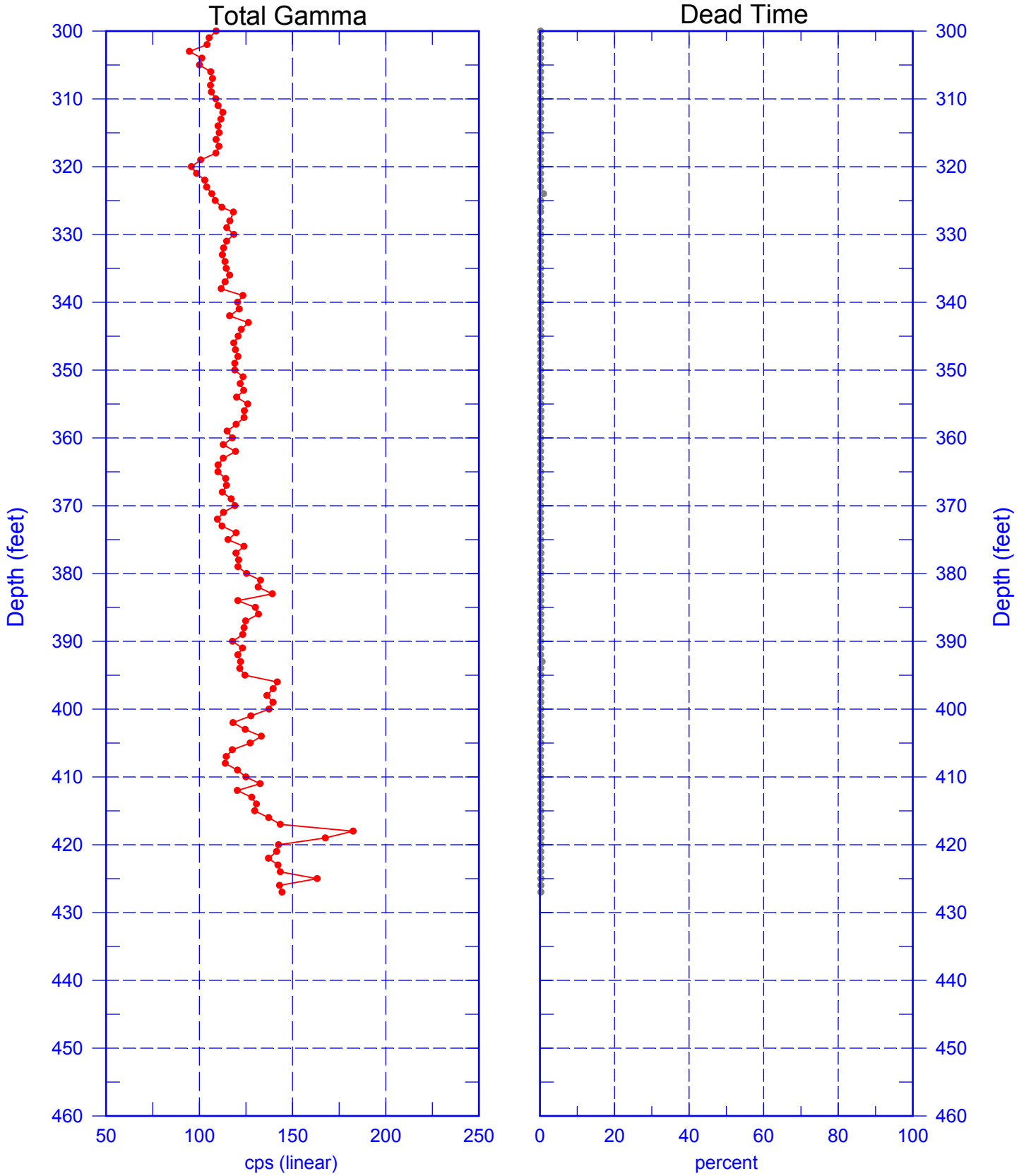
Reference - Ground Surface

299-W11-45 (C4948)
Total Gamma & Dead Time



Reference - Ground Surface

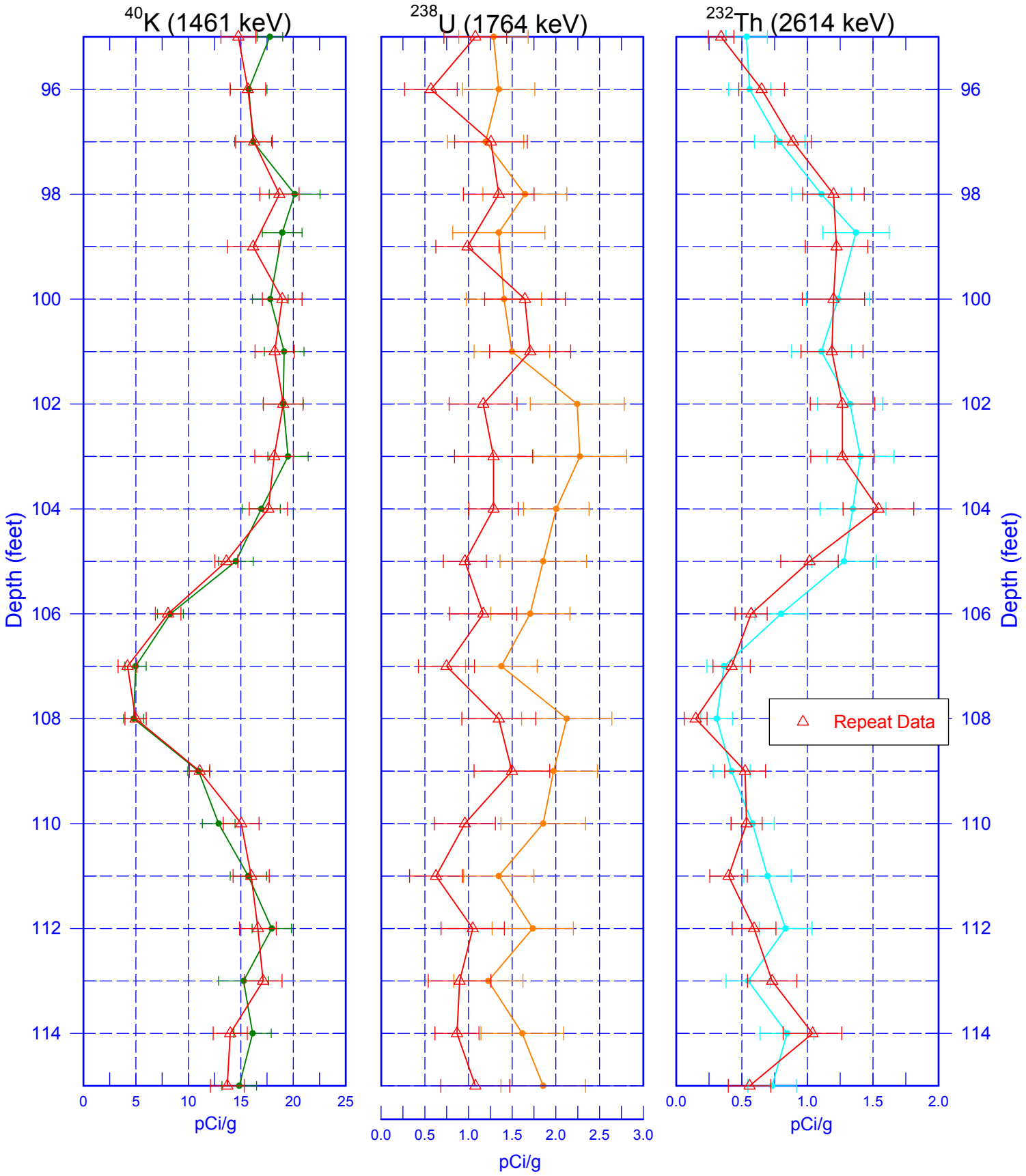
299-W11-45 (C4948)
Total Gamma & Dead Time



Reference - Ground Surface

299-W11-45 (C4948)

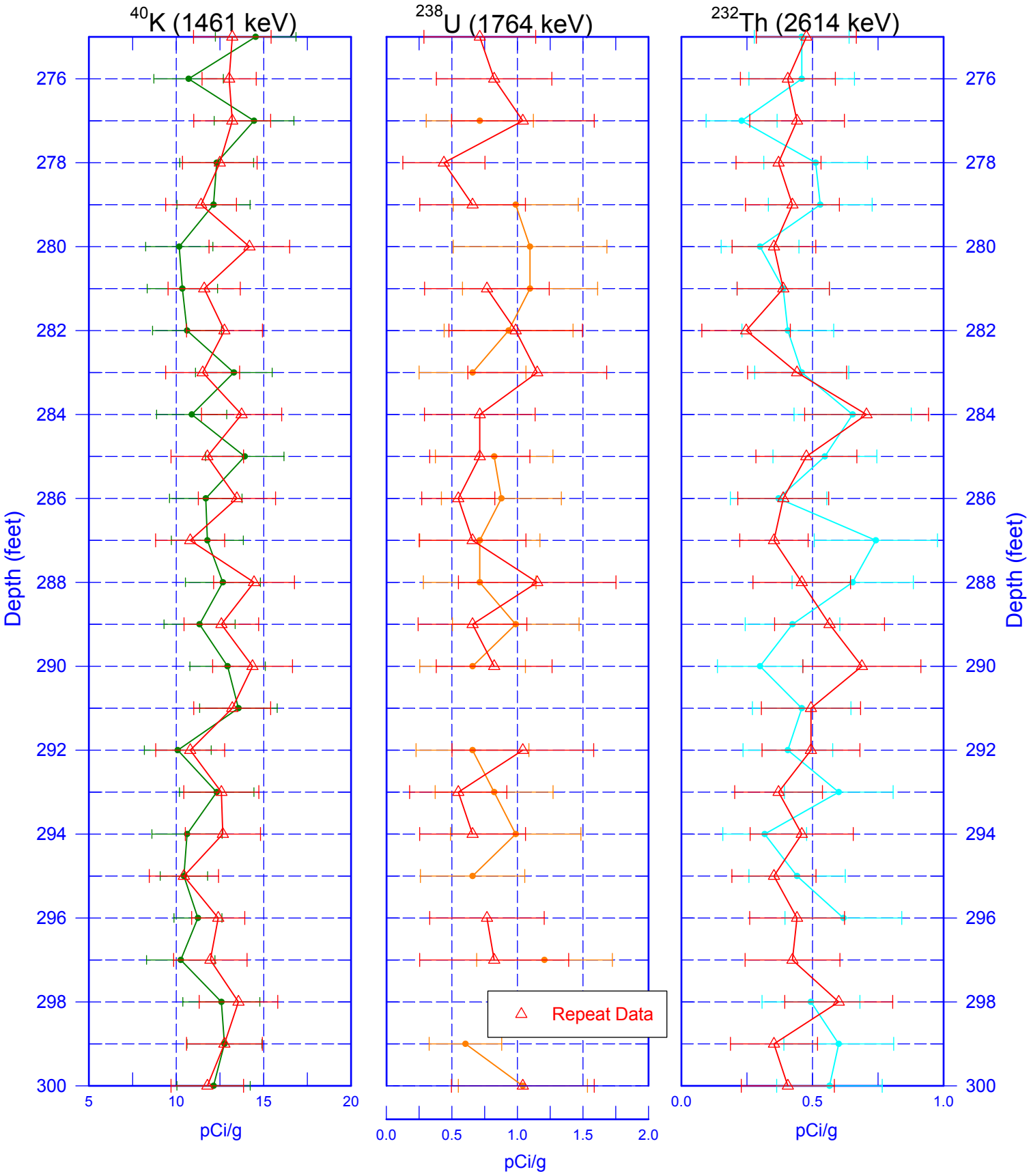
Repeat Section of Natural Gamma Logs



Zero Reference = Ground Surface

299-W11-45 (C4948)

Repeat Section of Natural Gamma Logs



Zero Reference = Ground Surface