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699-52-55B (C5862)
Log Data Report

Borehole Information:

Borehole:	699-52-55B (C5862)		Site:	200-BP-5 (near four corners of the 600 Area)	
Coordinates (WA St Plane)		GWL[1] (ft):	173.5	GWL Date:	08/01/08
North (m)	East (m)	Drill Date	TOC[2] Elevation	Total Depth (ft)	Type
Unknown	Unknown	08/01/08	Unknown	286.5	Cable Tool

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (inch)	Inside Diameter (inch)	Thickness (inch)	Top (ft)	Bottom (ft)
Threaded Steel	-0.9	13 3/8	12 3/8	1/2	-0.9	61.3
Threaded Steel	-1.4	11 ¾	10 3/4	1/2	-1.4	176
Threaded Steel	-2.3	8 5/8	7 7/8	3/8	-2.3	282.87

Borehole Notes:

The well site geologist reported depth to bottom, depth of casing, and water level. The logging engineer measured the casing diameter, rounding to the nearest 1/16-inch.

Logging Equipment Information:

Logging System:	Gamma 1 N		Type: Serial No.:	60% HPGe SGLS 45TP22010A
Effective Calibration Date:	03/28/08	Calibration Reference:	HGLP-CC-031	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Logging System:	Gamma 1 M		Type: Serial No.:	NMLS H340207279
Effective Calibration Date:	05/06/08	Calibration Reference:	HGLP-CC-032	
		Logging Procedure:	HGLP-MAN-002, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	5	6 Repeat	10
Date	06/16/08	06/16/08	06/30/08	06/30/08	08/01/08
Logging Engineer	Pearson	Pearson	McClellan	McClellan	Spatz
Start Depth (ft)	59.0	0.0	177.0	58.0	285.0
Finish Depth (ft)	0.0	6.0	58.0	70.0	175.0
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 Speed (ft/min)	NA	NA	NA	NA	NA
Pre-Verification	AN086CAB	AN086CAB	AN088CAB	AN088CAB	AN100CAB
Start File	AN086000	AN086060	AN088000	AN088120	AN100000
Finish File	AN086059	AN086066	AN088119	AN088132	AN100110
Post-Verification	AN086CAA	AN086CAA	AN088CAA	AN088CAA	AN100CAA
Depth Return Error (inch)	¼ low	0	NA	1.5 low	NA

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Log Run	1	2 Repeat	5	6 Repeat	10
Comments	No fine gain adjustment made.	No fine gain adjustment made.	Fine gain adjustment made before AN088098	No fine gain adjustment made.	No fine gain adjustment made.

Log Run	11 Repeat				
Date	08/01/08				
Logging Engineer	Spatz				
Start Depth (ft)	242.0				
Finish Depth (ft)	232.0				
Count Time (sec)	100				
Live/Real	R				
Shield (Y/N)	N				
MSA Interval (ft)	1.0				
Log Speed (ft/min)	NA				
Pre-Verification	AN100CAB				
Start File	AN100111				
Finish File	AN100121				
Post-Verification	AN100CAA				
Depth Return Error (inch)	1/5 low				
Comments	No fine gain adjustment made.				

Neutron Moisture Gamma Logging System (NMLS) Log Run Information:

Log Run	3	4 Repeat	7	8	9 Repeat
Date	06/16/08	06/16/08	07/01/08	07/01/08	07/01/08
Logging Engineer	Pearson	Pearson	Pearson	Pearson	Pearson
Start Depth (ft)	0.0	52.0	58.0	158.25	145.0
Finish Depth (ft)	59.0	58.0	158.0	173.5	157.0
Count Time (sec)	15	15	15	15	15
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
MSA Interval (ft)	0.25	0.25	0.25	0.25	0.25
Log Speed (ft/min)	NA	NA	NA	NA	NA
Pre-Verification	AM012CAB	AM012CAB	AM013CAB	AM013CAB	AM013CAB
Start File	AM012000	AM012237	AM013000	AM013401	AM013463
Finish File	AM012236	AM012261	AM013400	AM013462	AM013511
Post-Verification	AM012CAA	AM012CAA	AM013CAA	AM013CAA	AM013CAA
Depth Return Error (inch)	NA	½ low	NA	NA	2 low
Comments	No fine gain adjustment made.	No fine gain adjustment made.	No fine gain adjustment made.	No fine gain adjustment made.	No fine gain adjustment made.

Logging Operation Notes:

Data were collected using Gamma 1, HO 68B-3574. SGLS pre- and post-survey verification measurements were acquired in the Amersham KUTh-118 field verifier. NMLS pre- and post-survey verification measurements were

acquired in the AmBe standard. Maximum logging depth for the SGLS was 285.0 ft before the sonde un-weighted. A centralizer was installed on the sondes.

Analysis Notes:

Analyst:	LEGLER	Date:	12/29/08	Reference:	GJO-HGLP 1.6.3, Rev. 0

The pre- and post-survey verification measurements met the acceptance criteria for the established systems.

Several casing corrections were applied to SGLS data during analysis, a ½-inch thick casing from 0 –176ft, and 3/8-inch thick casing from 175 – 285 feet. A water correction was also applied to SGLS data from 173.6 to total logged depth.

SGLS spectra were processed in batch mode in APTEC SUPERVISOR to identify individual peaks and count rates. Concentrations were calculated using EXCEL templates identified as G1NMar.xls using efficiency functions and corrections for casing, dead time, and water as determined by annual calibrations.

NMLS data were processed in batch mode in APTEC SUPERVISOR to determine count rates. NMLS data are presented in counts per second (cps), because there are no calibration data for 12 3/8-inch and 10 3/4-inch diameter borehole casings.

Results and Interpretations:

Cs-137, Eu-152, and U-238 (Pa-234m) were detected at various isolated depths in this borehole, but inspection of the individual spectra indicates that these detection are statistical fluctuations and are not valid energy peaks.

Strata changes at approximately 145 – 155 ft, and 222- 240 ft are visible in the KUT and Total Gamma log.

The repeat plots indicated good repeatability.

List of Log Plots:

Depth Reference is Ground surface

Manmade Radionuclides (2 pages)
Natural Gamma Logs (2 pages)
Combination Plot (4 pages)
Total Gamma & Dead Time (2 pages)
Total Gamma & Moisture (2 pages)
Repeat Section of Natural Gamma Logs (3 pages)
Moisture Repeat Section (2 pages)

[1] GWL – groundwater level
[2] TOC – top of casing

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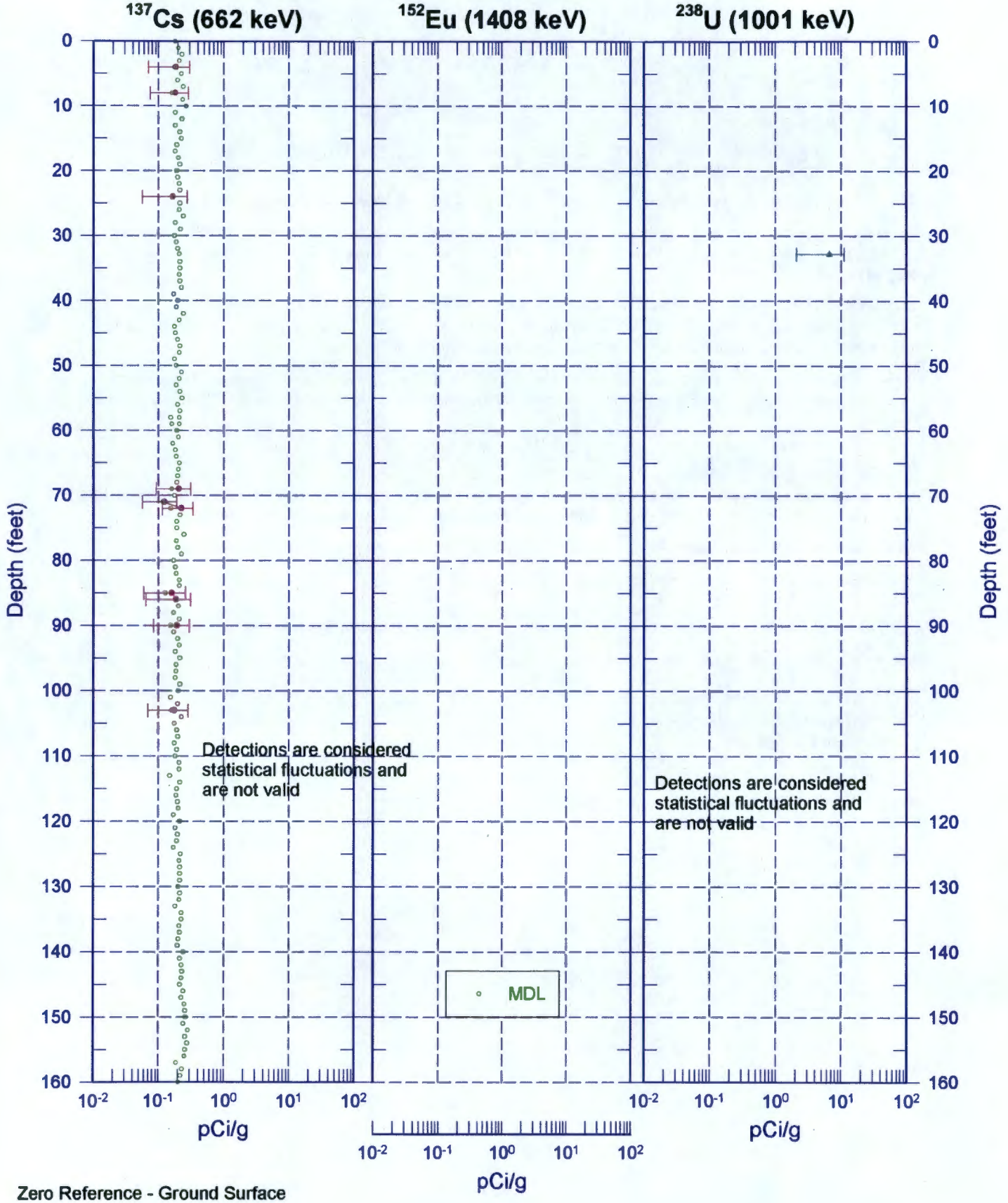
699-52-55B (C5862)
Manmade Radionuclides



Zero Reference - Ground Surface

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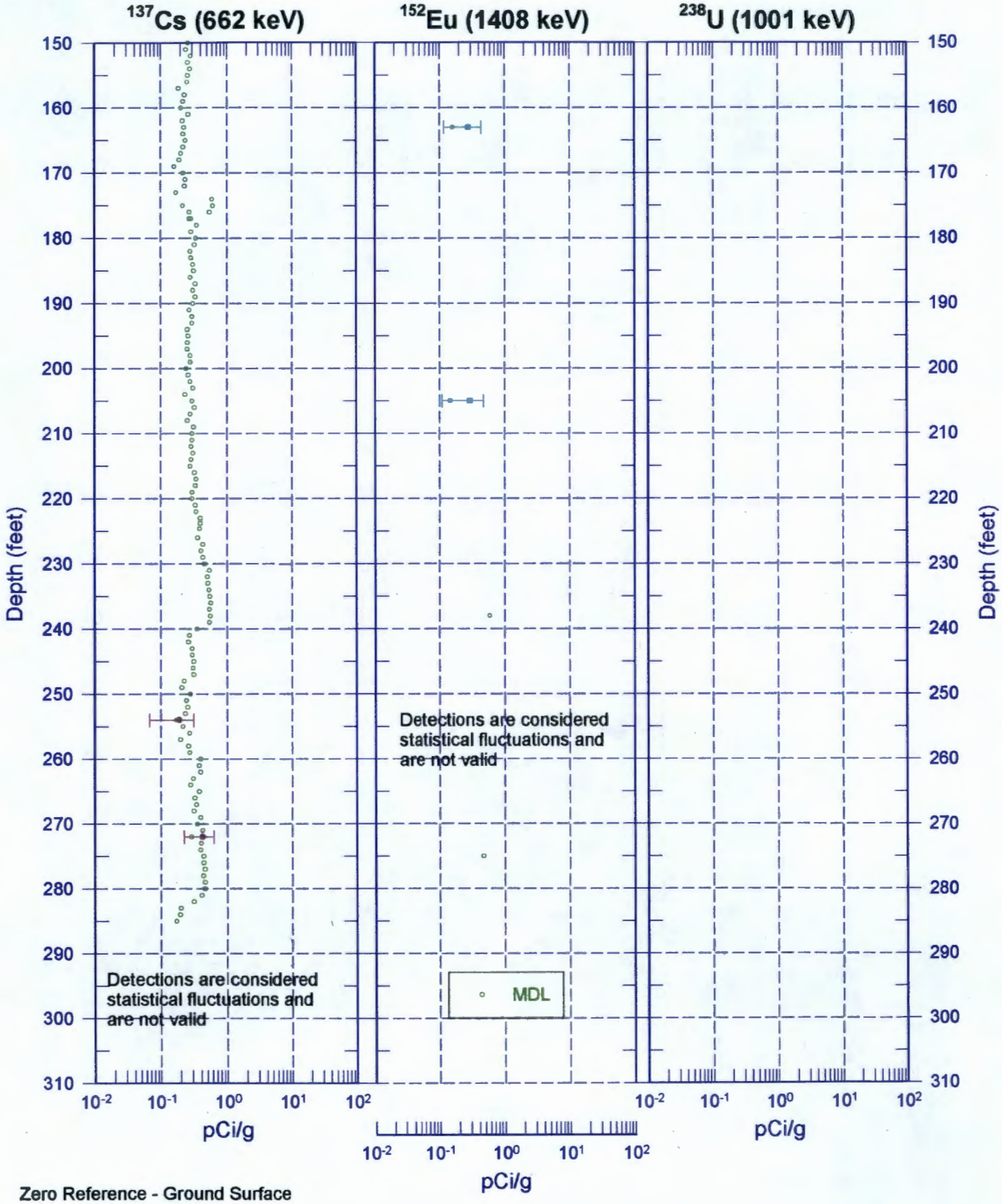
699-52-55B (C5862)
Manmade Radionuclides



Zero Reference - Ground Surface

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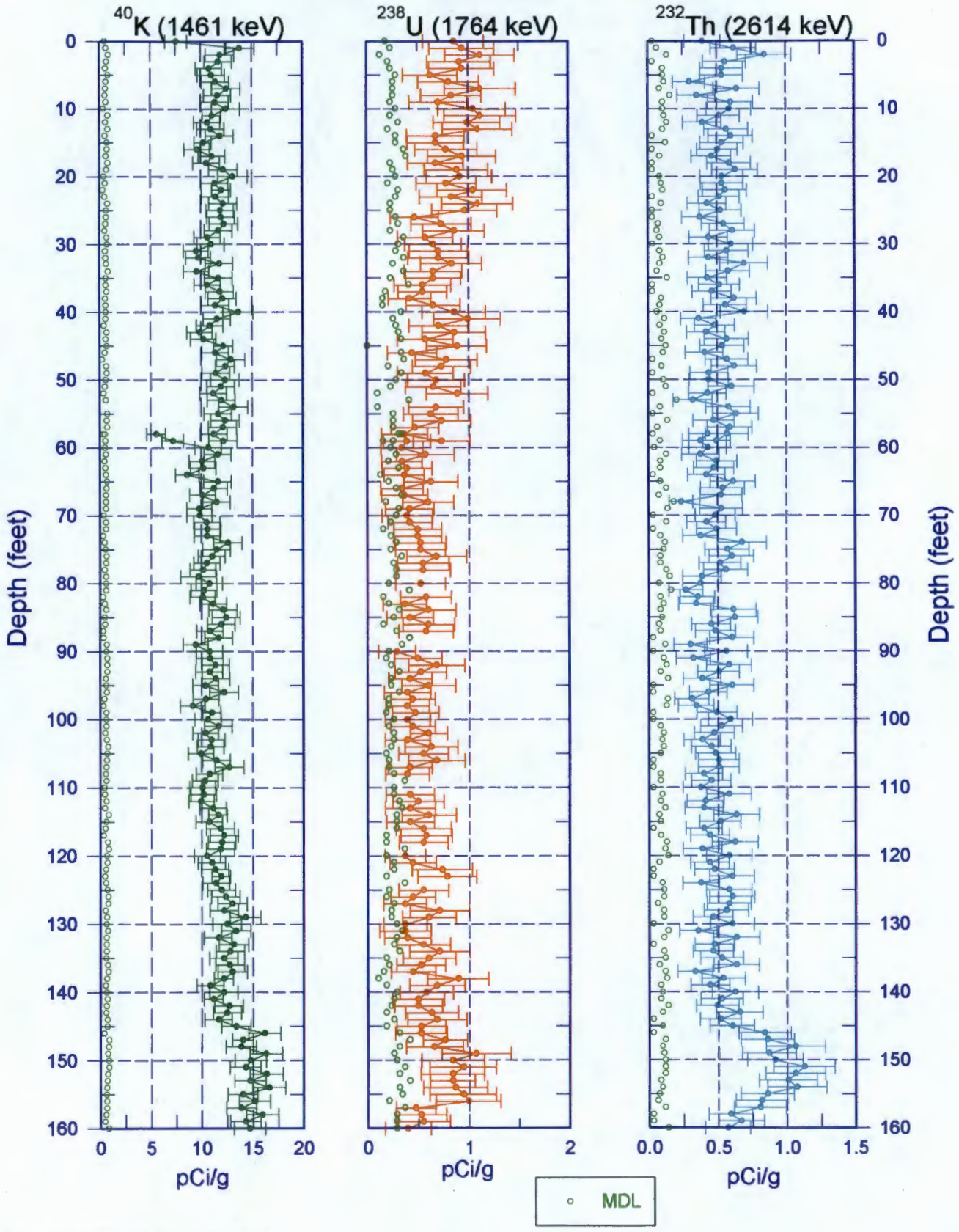
699-52-55B (C5862)
Natural Gamma Logs



Zero Reference - Ground Surface

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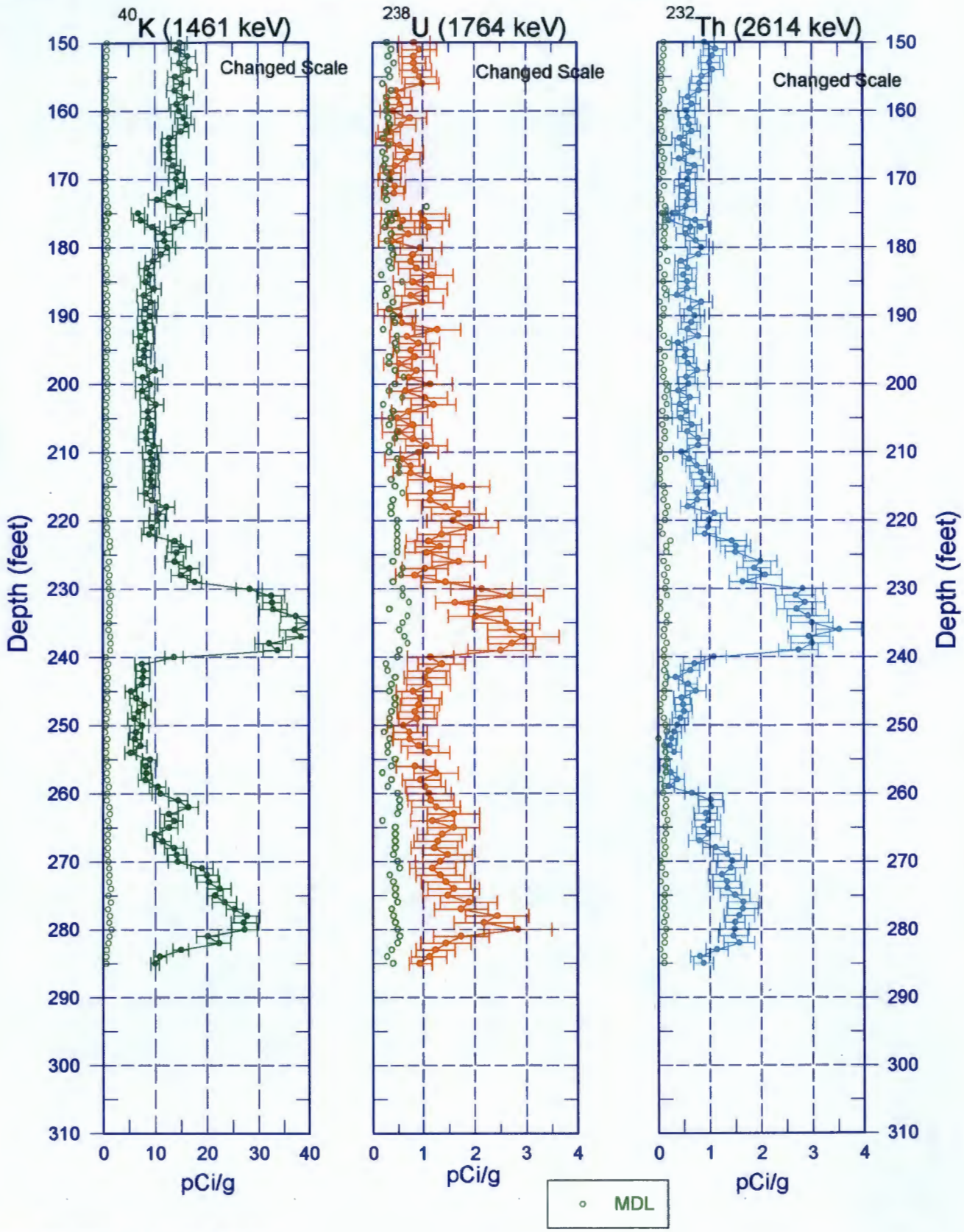
699-52-55B (C5862)
Natural Gamma Logs



Zero Reference - Ground Surface

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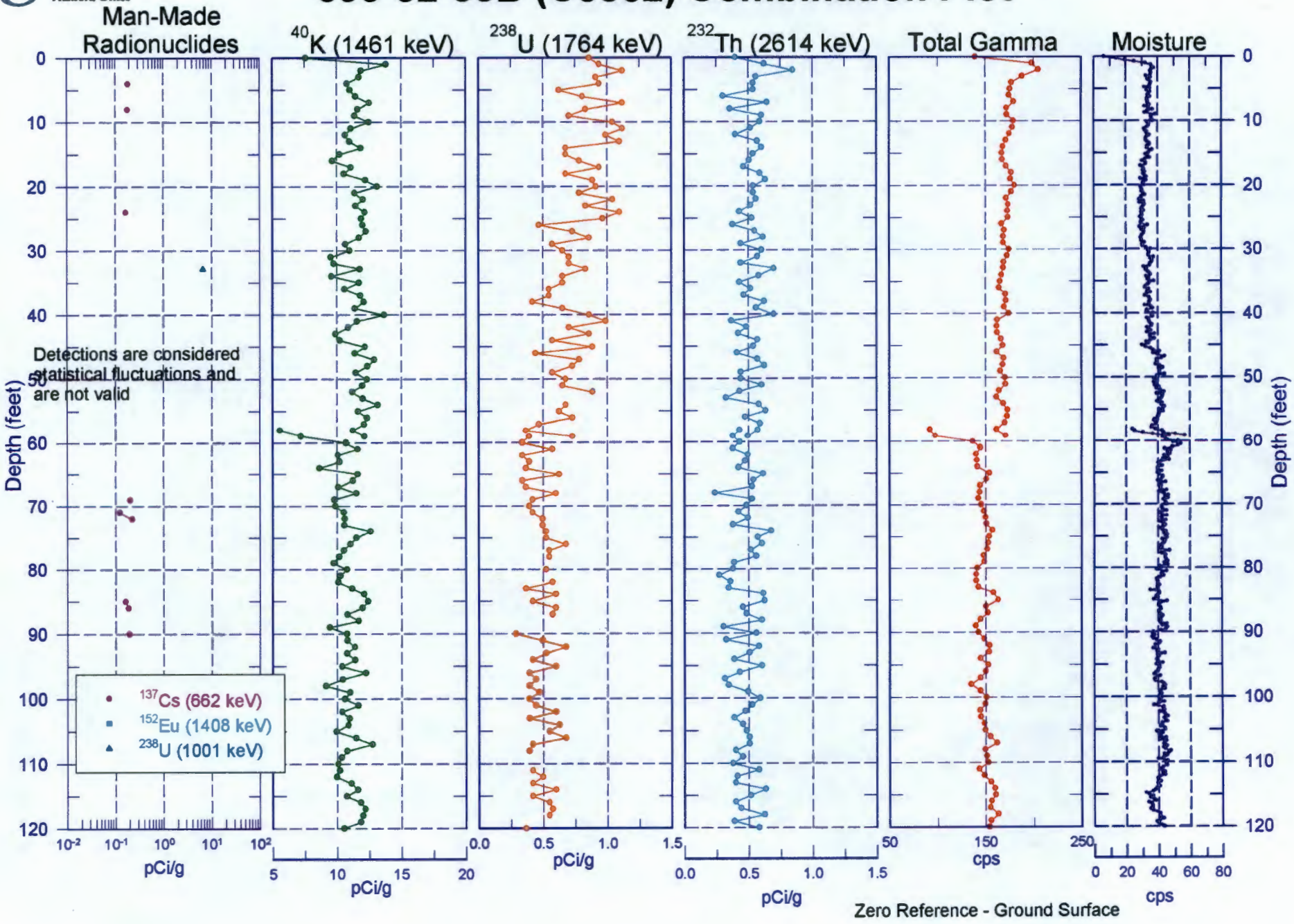
699-52-55B (C5862) Combination Plot



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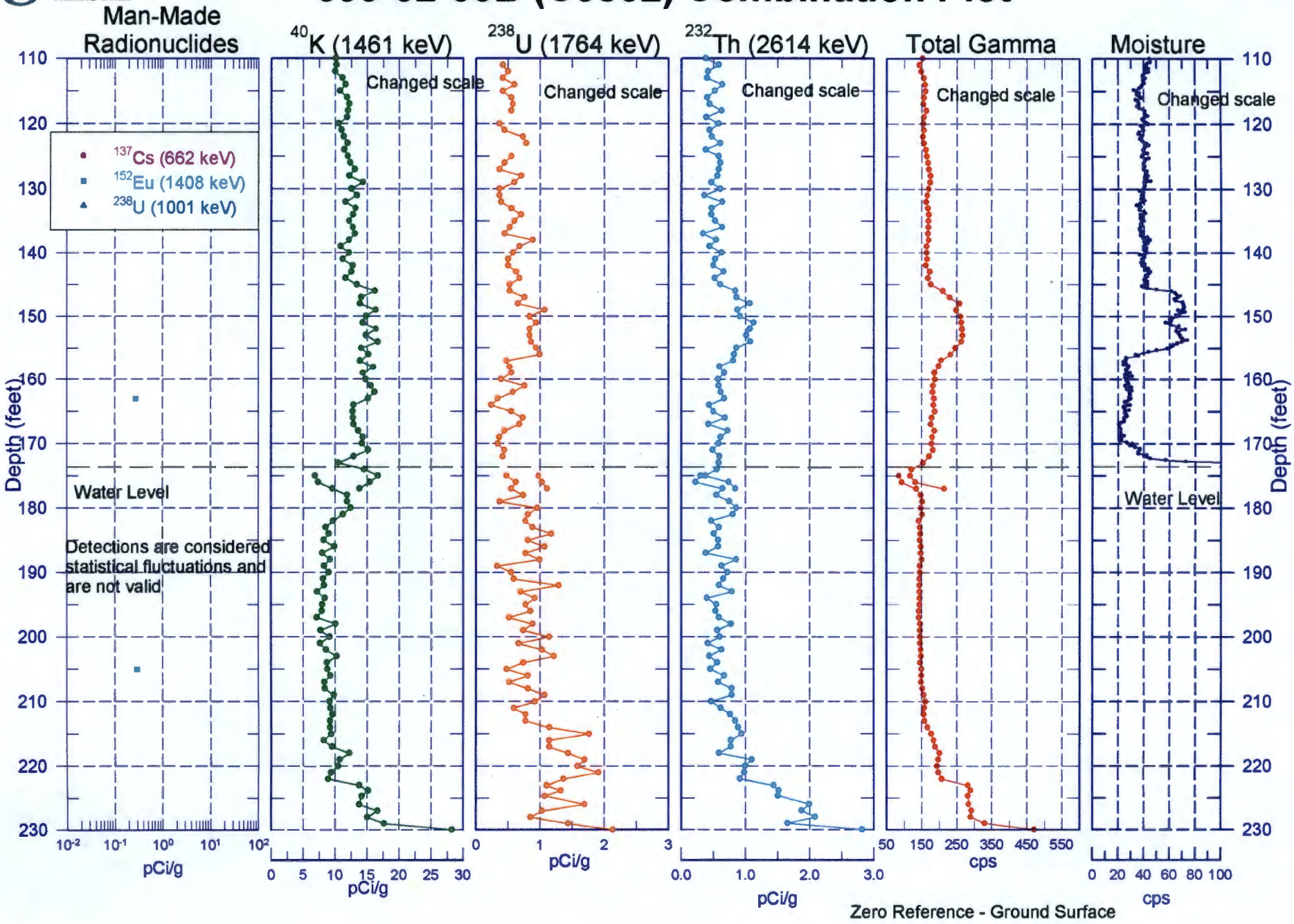
699-52-55B (C5862) Combination Plot



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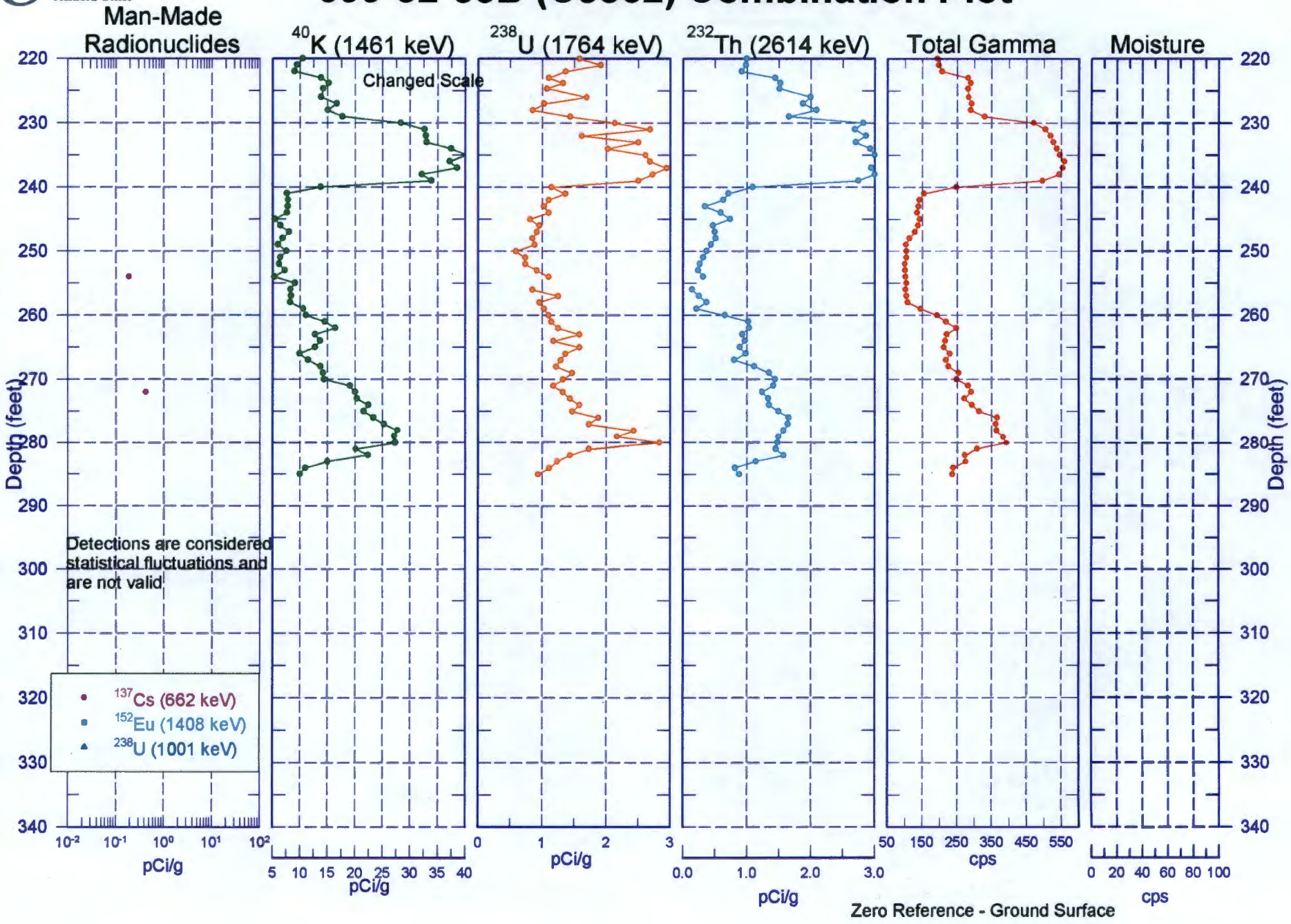
699-52-55B (C5862) Combination Plot



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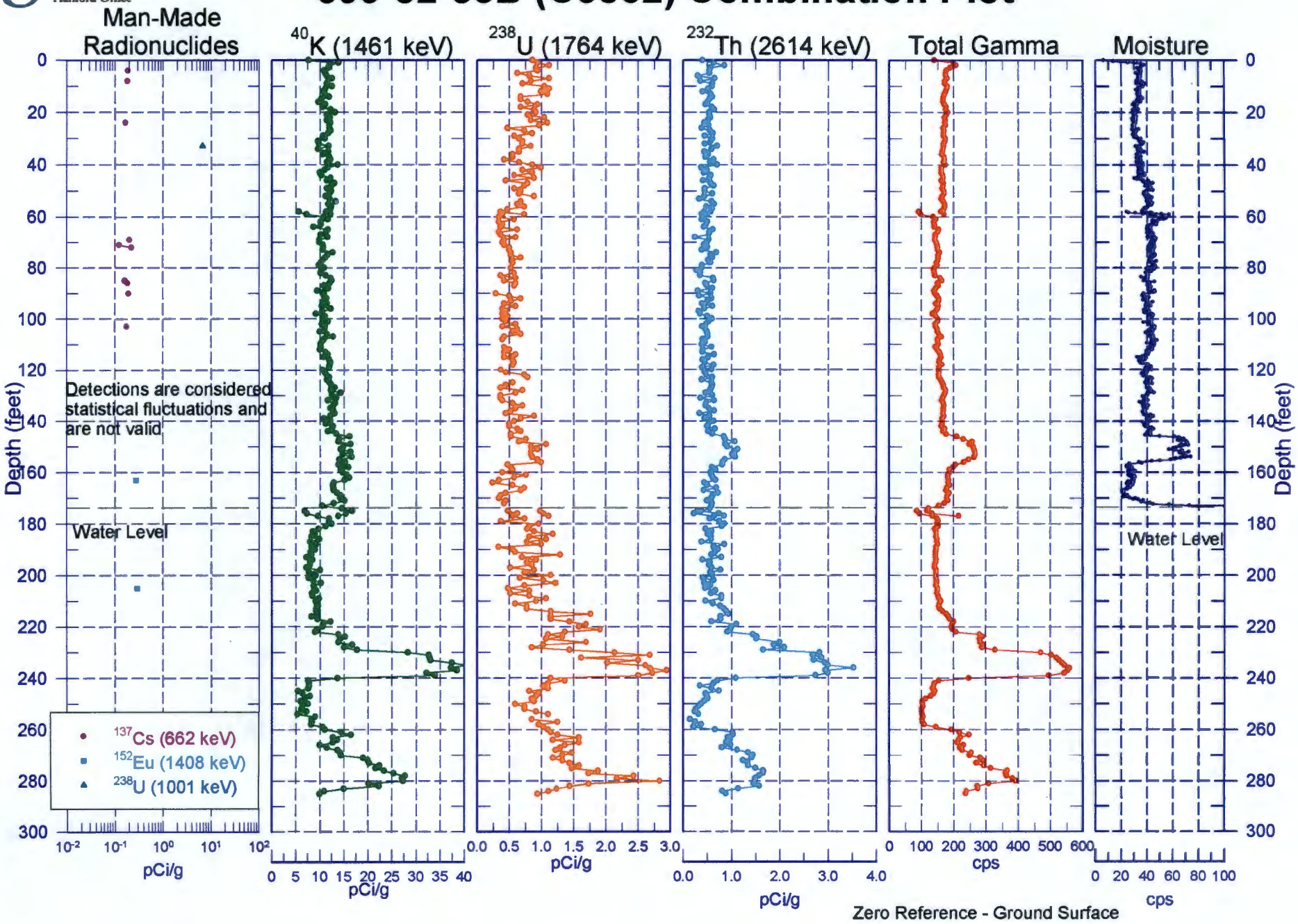
699-52-55B (C5862) Combination Plot



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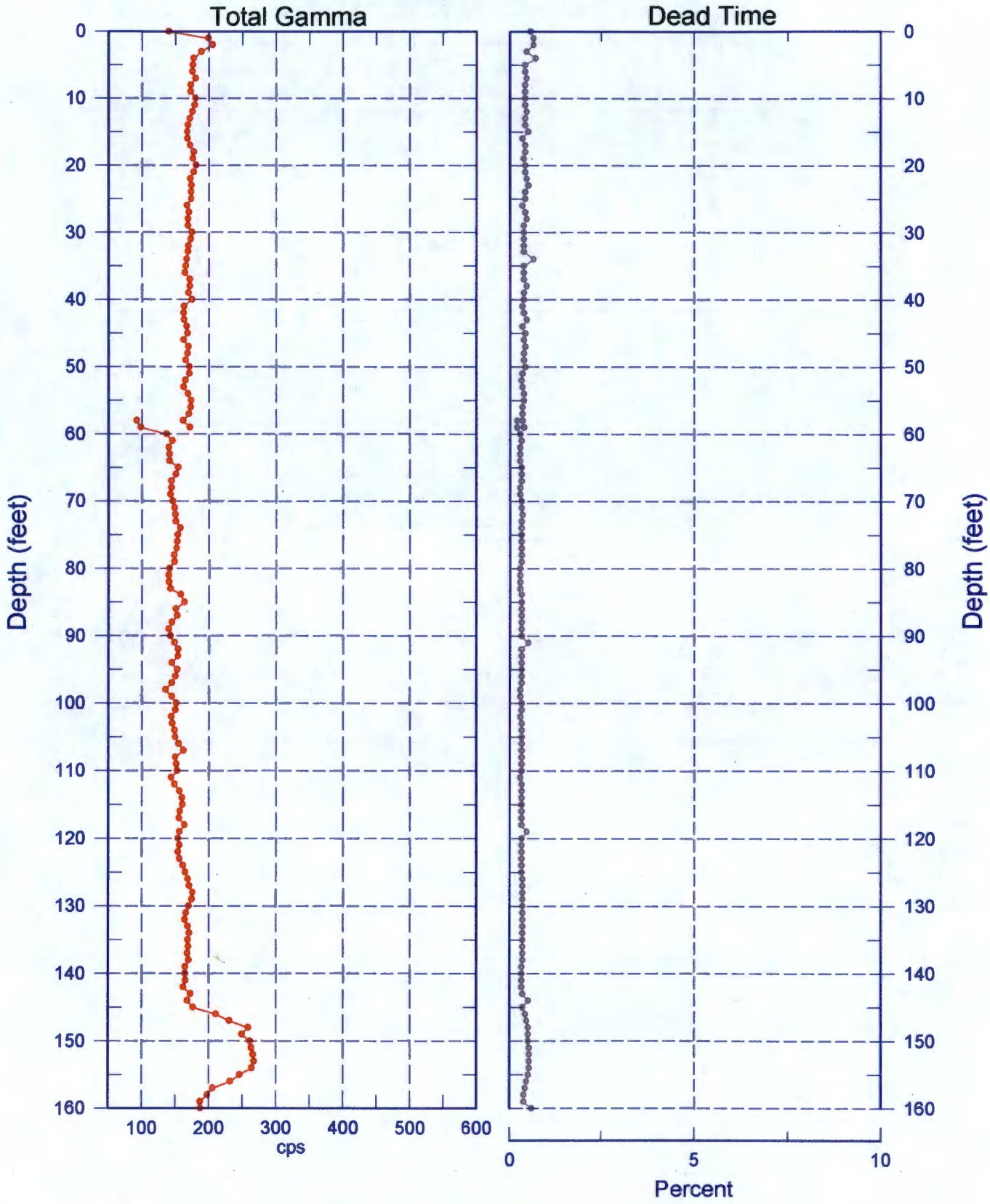
699-52-55 (C5862)
Total Gamma & Dead Time



Reference - Ground Surface

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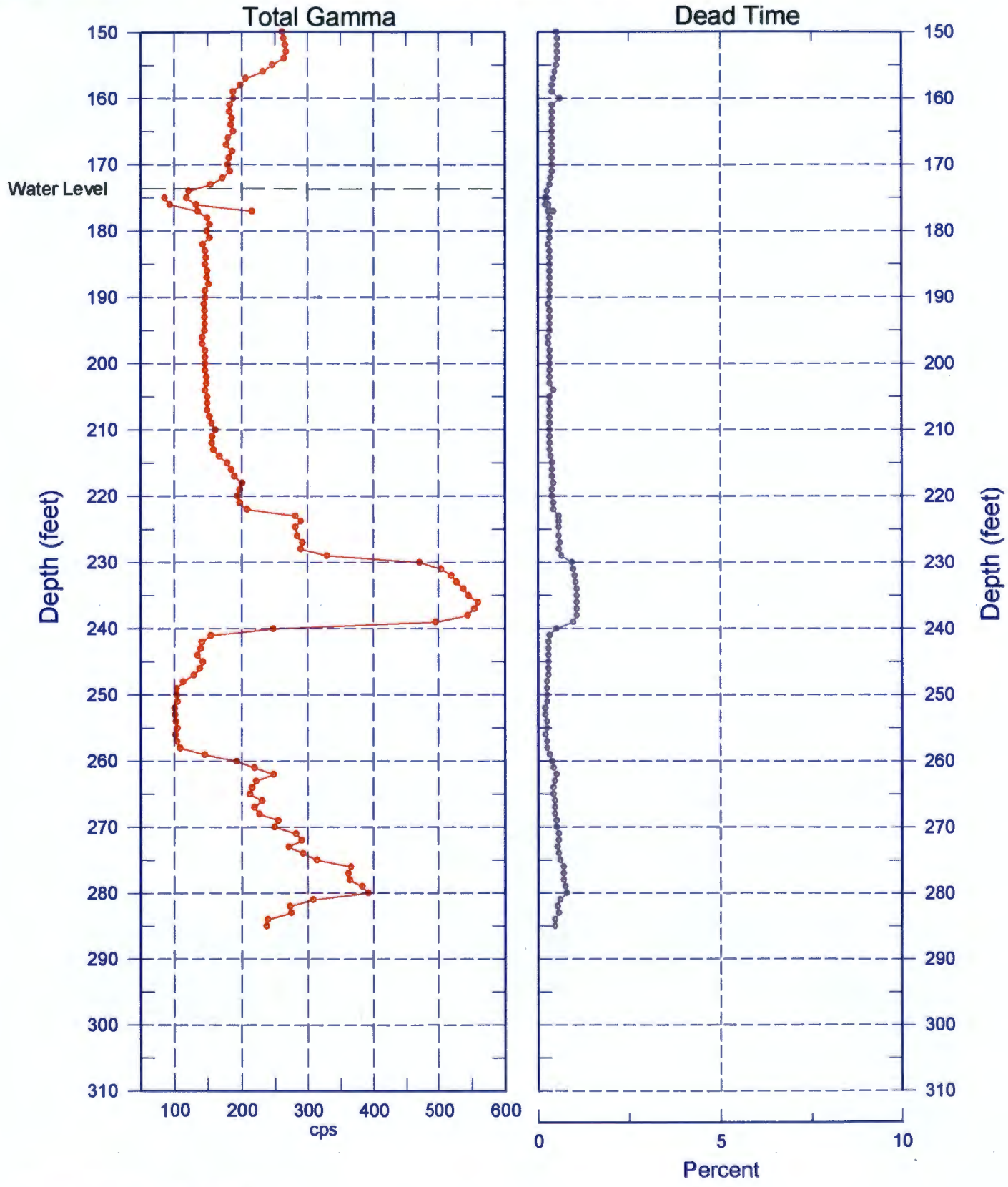
699-52-55 (C5862)
Total Gamma & Dead Time



Reference - Ground Surface

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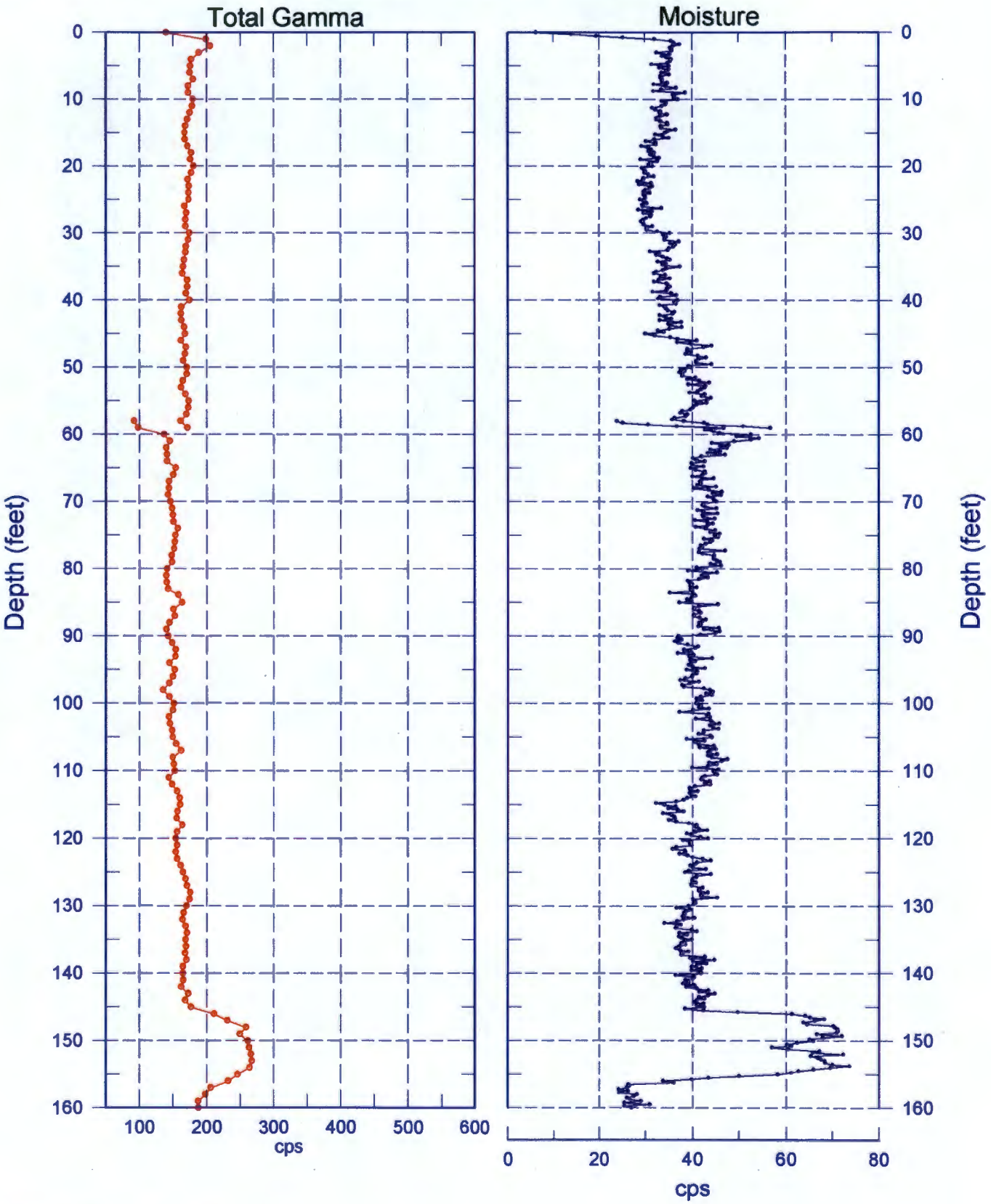
699-52-55B (C5862)
Total Gamma & Moisture



Reference - Ground Surface

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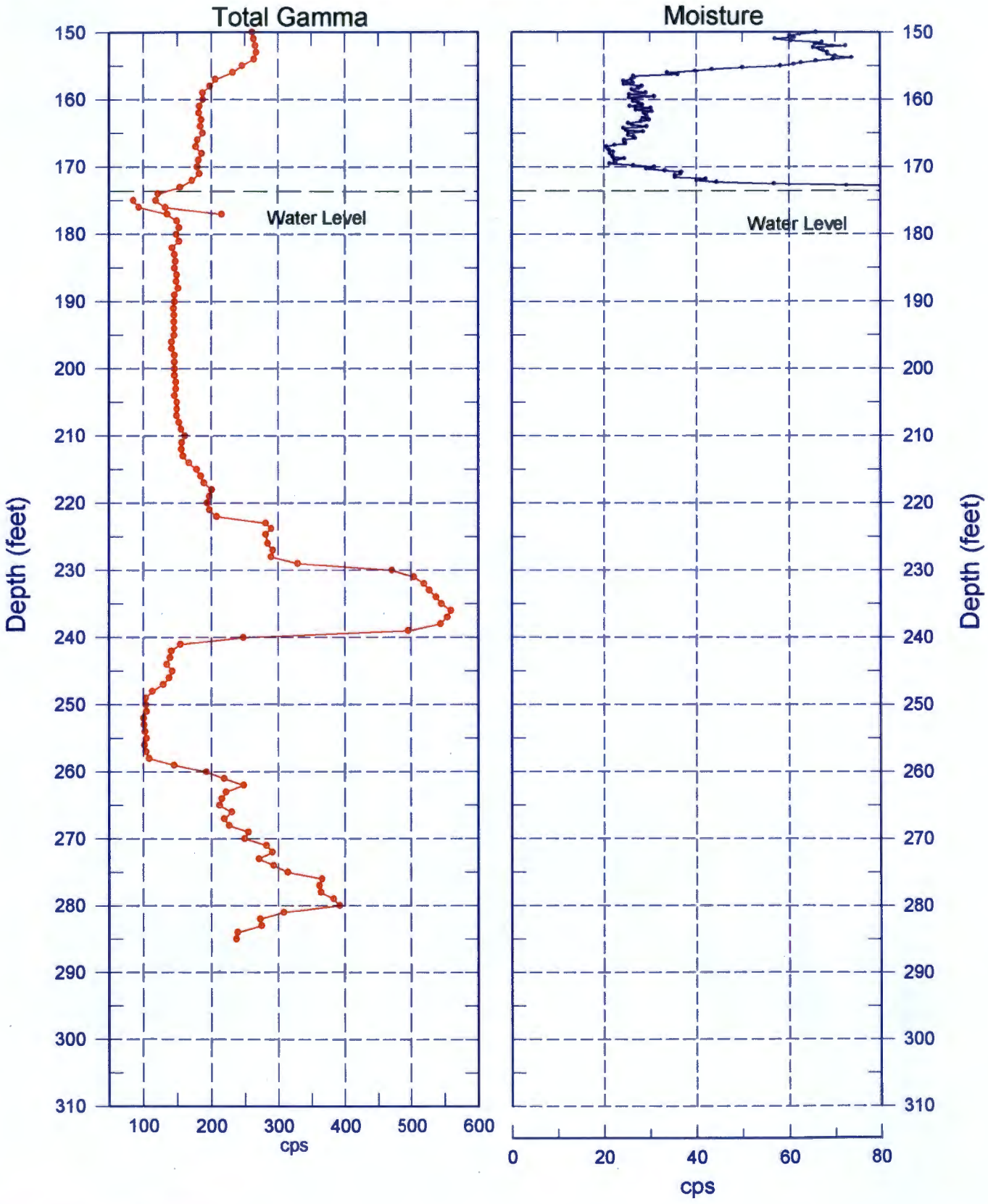
699-52-55B (C5862)
Total Gamma & Moisture



Reference - Ground Surface

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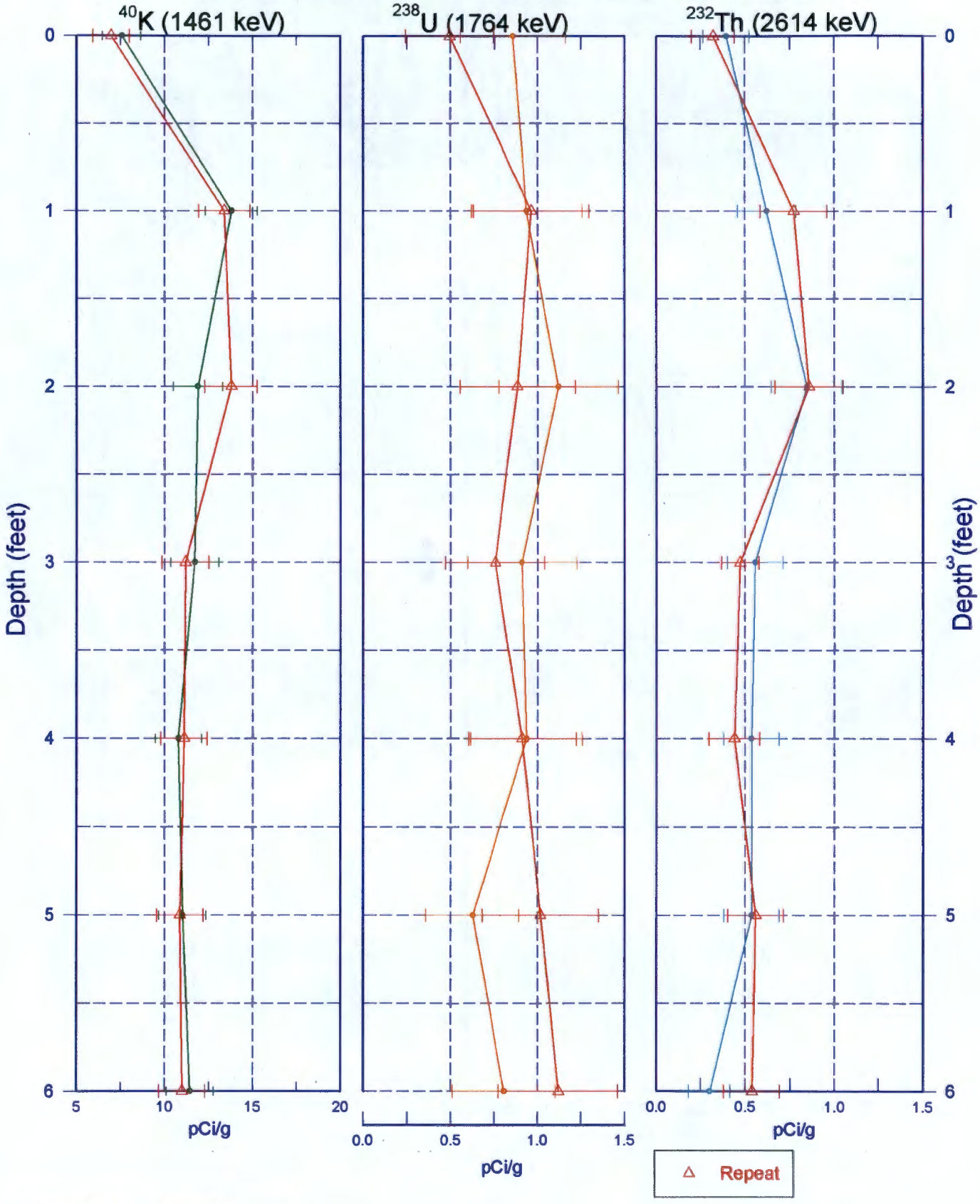
699-52-55B (C5862)

Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface

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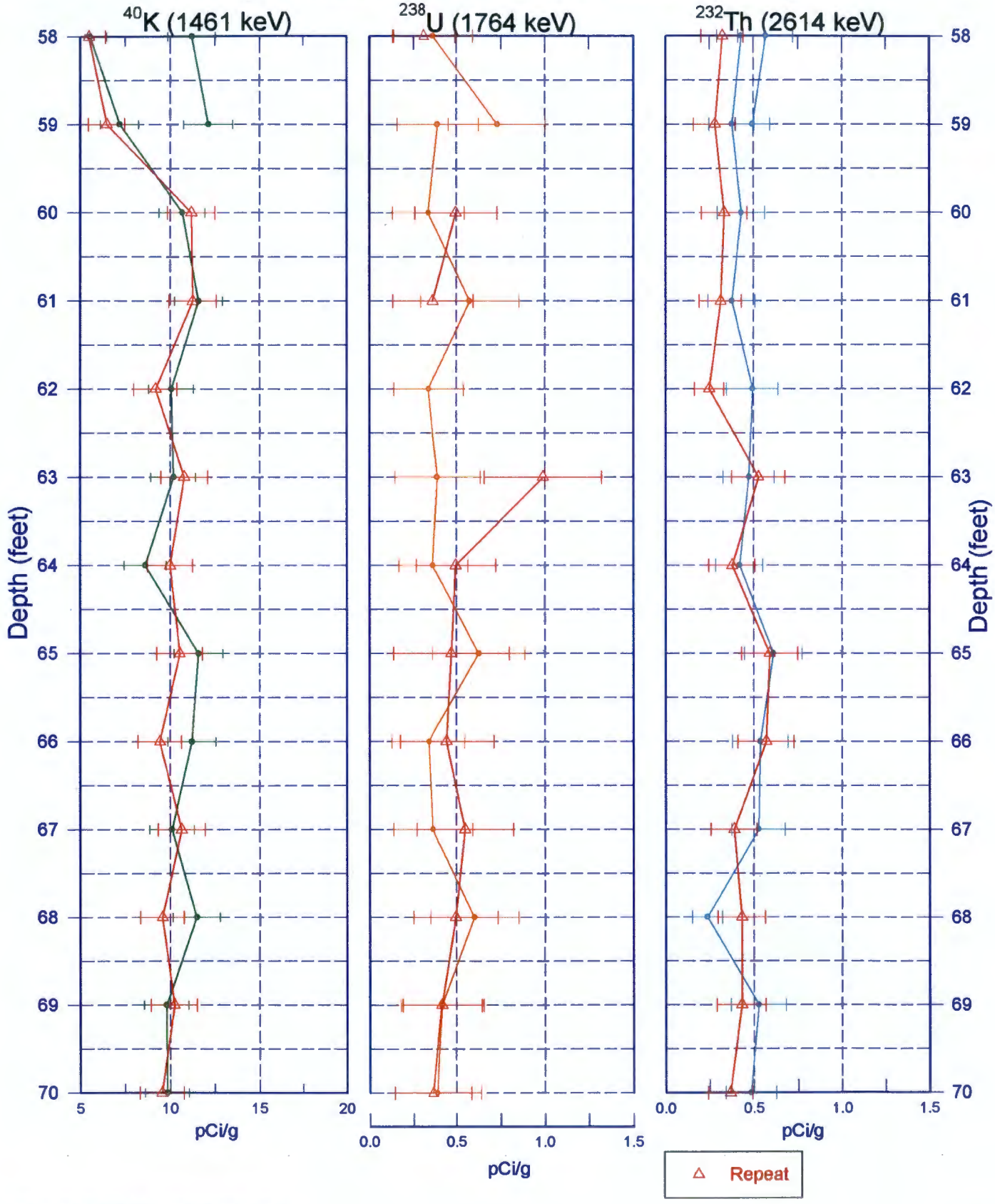
699-52-55B (C5862)

Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface

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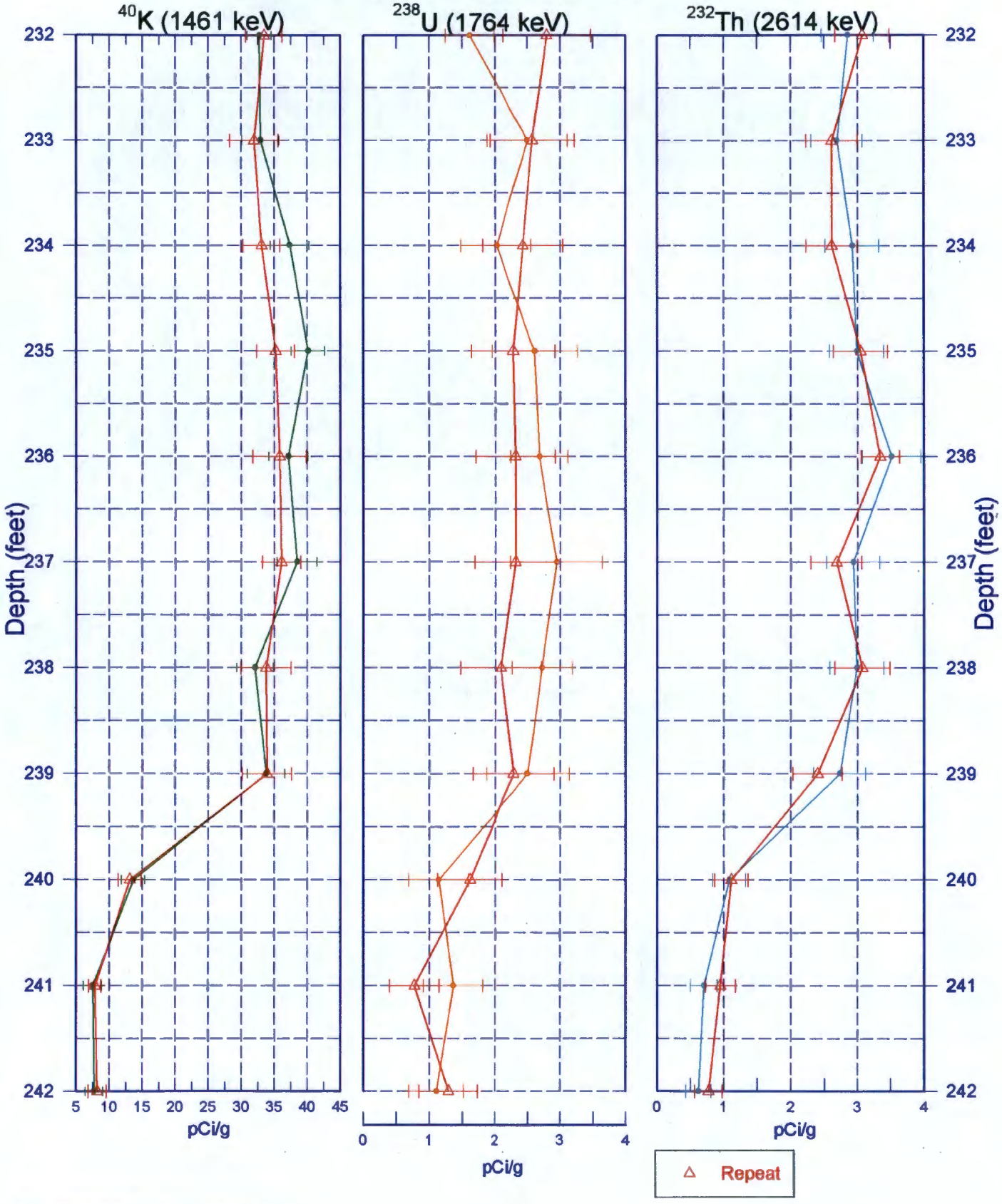
Repeat Section of Natural Gamma Logs



Zero Reference - Ground Surface

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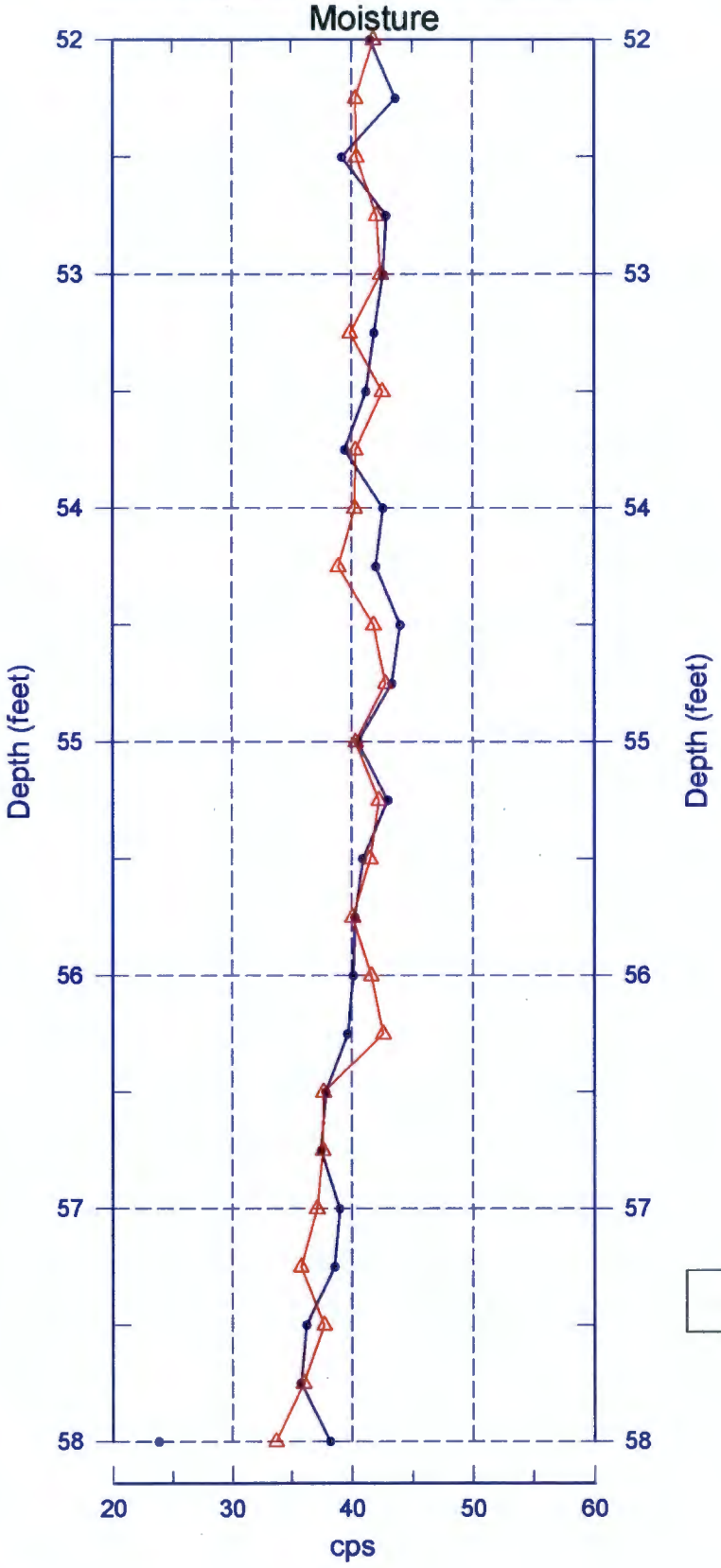
699-52-55B (C5862)
Moisture Repeat Section



Reference - Ground Surface

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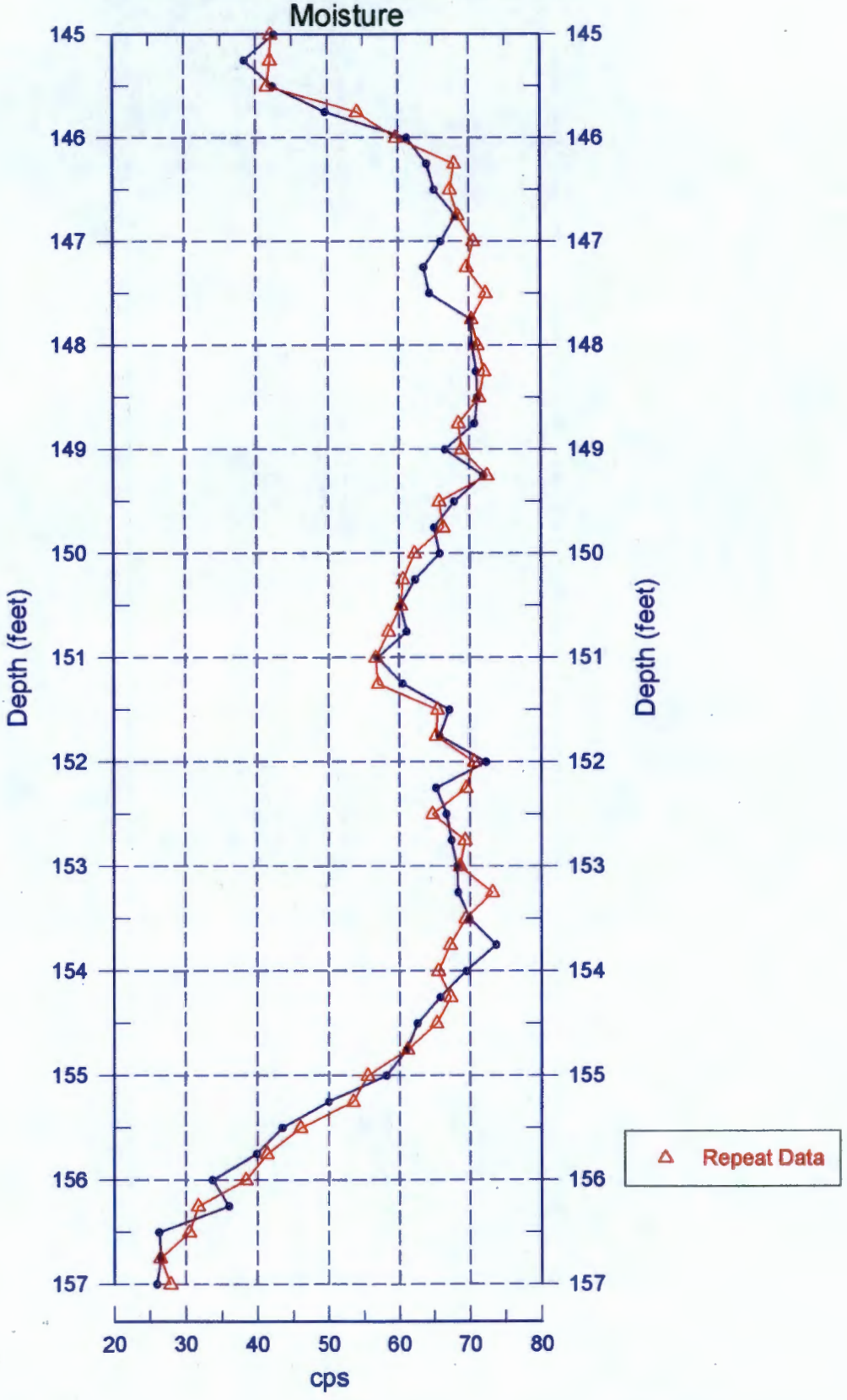
699-52-55B (C5862)
Moisture Repeat Section



Reference - Ground Surface