

299-E33-50 (C5195)

Log Data Report

Borehole Information:

Borehole: 299-E33-50 (C5195)			Site: 200-BP-5 North of B Farm		
Coordinates (WA St Plane)		GWL¹ (ft): 227.34	GWL Date: 03/08/07		
North (m)	East (m)	Drill Date	TOC Elevation	Total Depth (ft)	Type
Not available	Not available	01/07	Not available	382	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded Steel	2.5	10 3/4	10	3/8	2.5	235
Threaded Steel	3.3	8 5/8	7 3/4	7/16	3.3	382

Borehole Notes:

The logging engineer measured the casing diameter using a caliper and steel tape.

Logging Equipment Information:

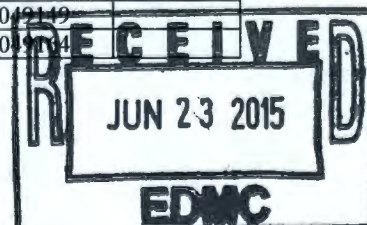
Logging System: Gamma 4N	Type: SGLS (60%) SN: 45-TP22010A
Effective Calibration Date: 04/06/06	Calibration Reference: DOE-EM/GJ1177-2006
	Logging Procedure: HGLP-MAN-002 Rev. 0

Logging System: Gamma 1N	Type: SGLS (60%) SN: 45-TP22010A
Effective Calibration Date: 02/20/07	Calibration Reference: HGLP-CC-010
	Logging Procedure: HGLP-MAN-002 Rev. 0

Logging System: Gamma 4H	Type: NMLS SN: H310700352
Effective Calibration Date: 11/22/06	Calibration Reference: HGLP-CC-002
	Logging Procedure: HGLP-MAN-002 Rev. 0

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	7	8 Repeat	
Date	01/17/07	01/18/07	03/08/07	03/08/07	
Logging Engineer	McClellan	McClellan	Spatz	Spatz	
Start Depth (ft)	235.0	170.0	382.0	336.0	
Finish Depth (ft)	1.0	147.0	234.0	321.0	
Count Time (sec)	100	100	100	100	
Live/Real	R	R	R	R	
Shield (Y/N)	N	N	N	N	
MSA Interval (ft)	1.0	1.0	1.0	1.0	
ft/min	N/A ²	N/A	N/A	N/A	
Pre-Verification	DN641CAB	DN641CAB	AN049CAB	AN049CAB	
Start File	DN641000	DN641235	AN049000	AN049149	
Finish File	DN641234	DN641281	AN049148	AN049144	



HGLP-LDR-066

Log Run	1	2 Repeat	7	8 Repeat	
Post-Verification	DN641CAA	DN641CAA	AN049CAA	AN049CAA	
Depth Return Error (in.)	N/A	- 4.5	N/A	- 2.5	
Comments	No fine-gain adjustment.	No fine-gain adjustment.	Fine-gain adjustment after file -09.	No fine-gain adjustment.	

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	3	4	5	6 Repeat	
Date	1/17/07	1/17/07	1/17/07	1/17/07	
Logging Engineer	Pearson	Pearson	Pearson	Pearson	
Start Depth (ft)	0.0	100.25	200.25	148.0	
Finish Depth (ft)	100.0	200.0	226.0	170.0	
Count Time (sec)	15	15	15	15	
Live/Real	R	R	R	R	
Shield (Y/N)	NA	NA	NA	NA	
Sample Interval (ft)	0.25	0.25	0.25	0.25	
ft/min	NA	NA	NA	NA	
Pre-Verification	DH432CAB	DH432CAB	DH432CAB	DH432CAB	
Start File	DH432000	DH432401	DH432801	DH432905	
Finish File	DH432400	DH432800	DH432904	DH432993	
Post-Verification	DH432CAA	DH432CAA	DH432CAA	DH432CAA	
Depth Return Error (in.)	N/A	N/A	N/A	- 1.5	
Comments	Subdirectory change	Subdirectory change	Stopped at top of water	None	

Logging Operation Notes:

Logging was conducted with a centralizer on each sonde and measurements are referenced to top of casing.

Analysis Notes:

Analyst:	P.D. Henwood	Date:	04/02/2007	Reference:	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging systems were performed before and after each day's data acquisition. The acceptance criteria were met.

A casing correction for a 3/8-in. thick casing was applied to the SGLS data acquired in January 2007, from 1 to 235 ft. For SGLS data acquired in March 2007, a casing correction for a thickness of 7/16-in. was applied from 234 to 382 ft. There is no calibration available to convert NMLS data to volume percent moisture in the 10-in. casing. These data are reported in counts per second.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G4NApr06.xls and G1NFeb07.xls for the January and March logging events, respectively, using efficiency functions and corrections for casing and dead time as determined from annual calibrations. A correction for water was applied to the data below 235 ft.

Results and Interpretations:

No manmade radionuclides were detected in this borehole. Because of the interest in the possibility of processed uranium entering the area of this borehole, plots of MDLs for U-238 and U-235 in addition to Cs-137 are included. No processed uranium was detected in this borehole. Cs-137 was encountered at or near the MDL at several isolated points. These are simply statistical fluctuations.

The total gamma log data reflect relatively higher count rates at approximately 63 and 162 ft. Relatively high moisture is associated with these intervals. The Rattlesnake Ridge interbeds are indicated from 316 to 375 ft. Two intervals of relatively high KUT concentrations are indicated between 315 and 325 ft and from 355 to 375 ft.

Log plots from two boreholes (299-E33-12 and 299-E33-13) located in the vicinity of 299-E33-50, approximately 250 ft north and 250 ft west, respectively, are included for comparison. The sediment layer at approximately 160 ft is indicated in all three boreholes. Borehole 299-E33-50 indicates possible perched moisture above 163 ft. This perched moisture coincides with Co-60 contamination observed in borehole 299-E33-13 at approximately the same depth (borehole depths are not corrected for elevation). It is postulated this sediment layer is continuous in the area and contributes to lateral migration of contaminants that originated from BY tank farm or BY cribs west of 299-E33-13. The top of the Rattlesnake Ridge interbeds are observed at approximately 315 ft in boreholes 299-E33-12 and -50.

Co-60 and/or Cs-137 are observed in the two older boreholes, 299-E33-12 and -13 (both drilled in 1953), near the historical and current groundwater level. This contamination is not observed in the new well 299-E33-50. It is postulated perched water and groundwater at this depth was contaminated in the 1950's. Cs-137 and Co-60 contamination may have adsorbed to rust inside the casing. As the perched water and groundwater receded over the years, a "bathtub ring" may have formed on the inside of the casing and is an artifact of historical groundwater contamination. The lack of contamination in the new well at this depth suggests the contaminants did not adsorb to the sediments in the area.

The SGLS and NMLS repeat logs show good repeatability.

List of Log Plots:

Depth Reference is top of casing

Depth Scale - 20 ft/inch except for repeat logs

Manmade Radionuclides

Natural Gamma Logs

Combination Plot

Combination Plot (0-400 ft)

Total Gamma & Moisture

Total Gamma & Dead Time

Repeat Section of Natural Gamma Logs (147-170 ft)

Repeat Section of Natural Gamma Logs (321-336 ft)

Repeat of Total Gamma & Moisture

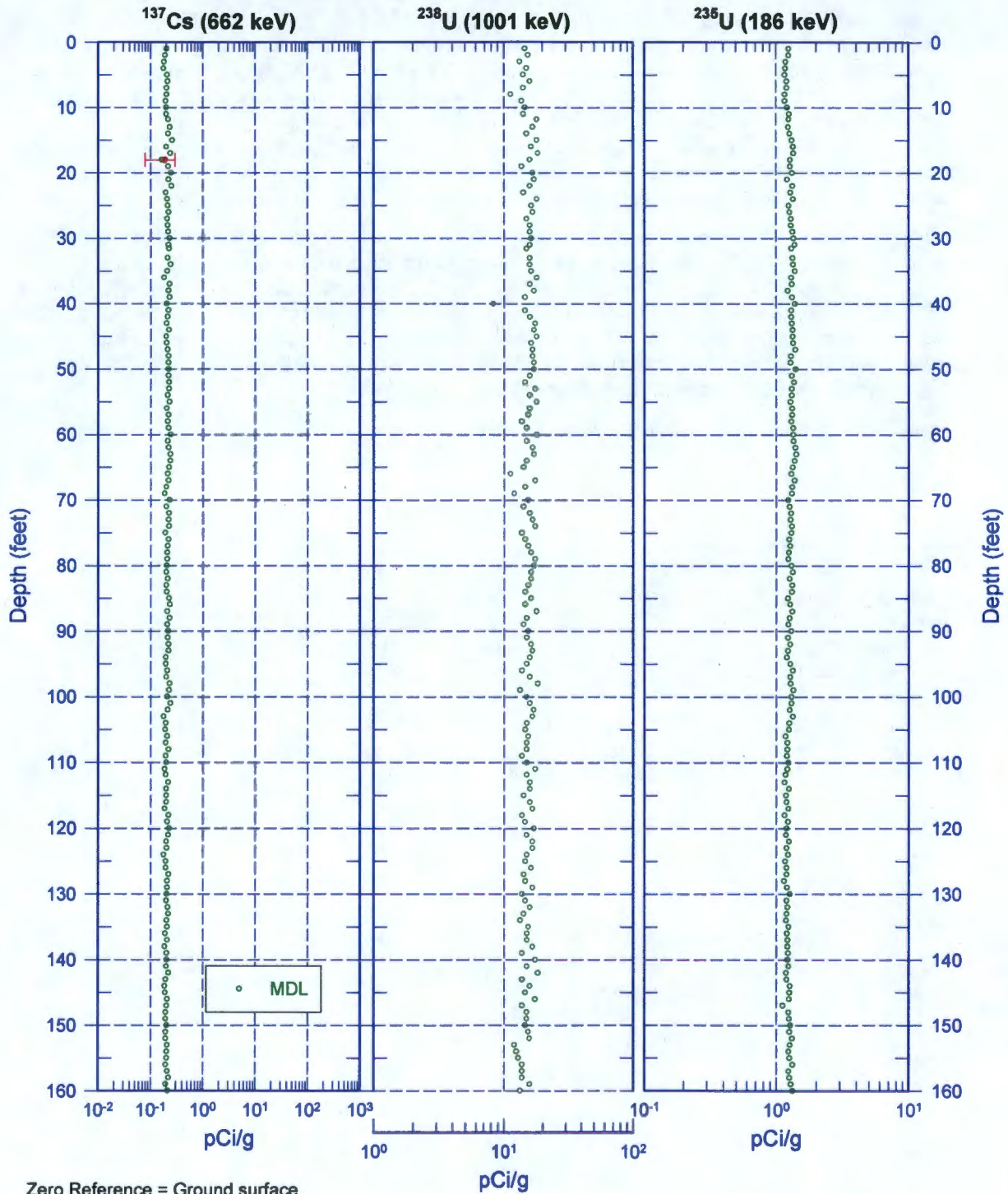
299-E33-12 (A6839) Combination Plot

299-E33-13 (A6840) Combination Plot

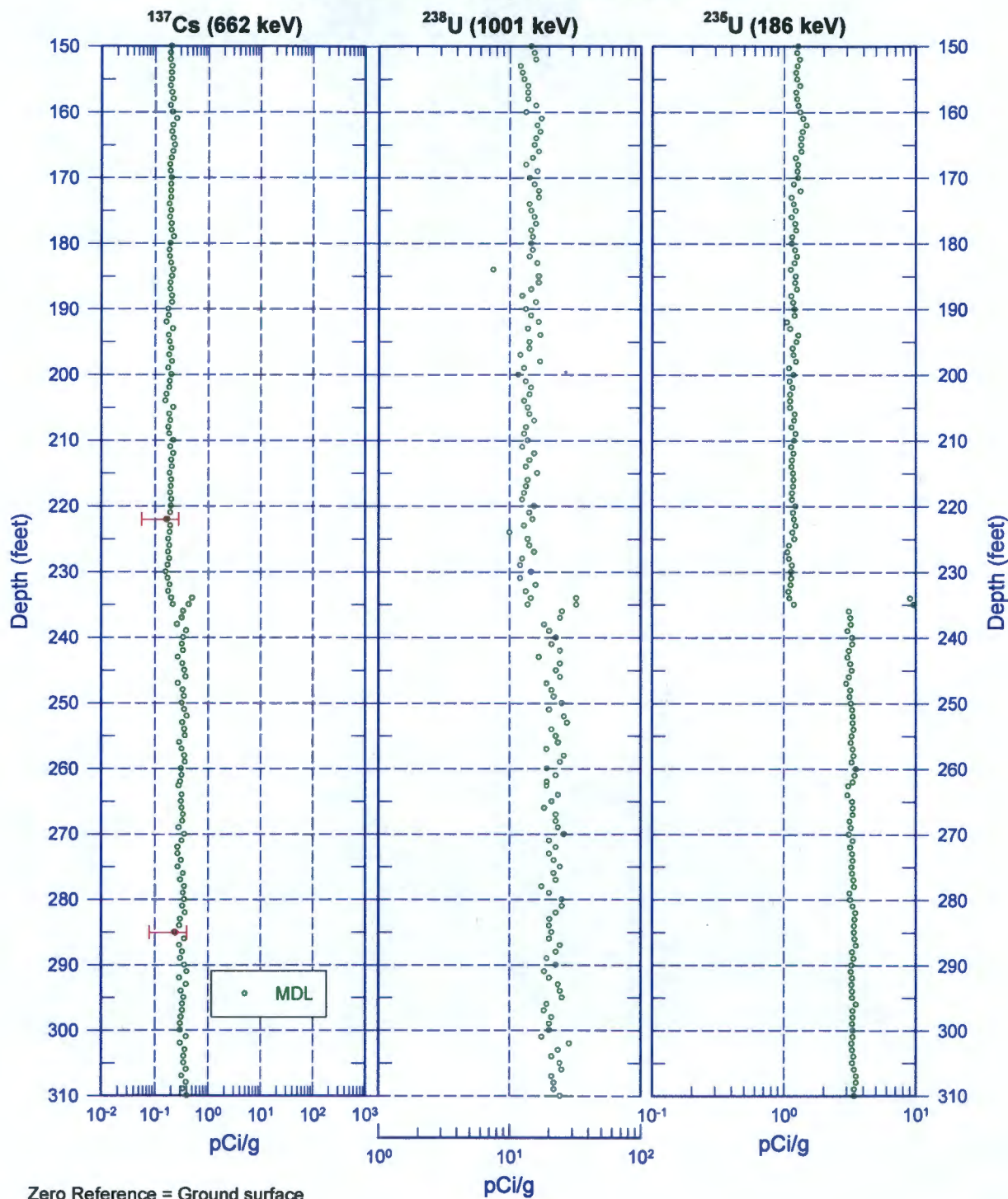
¹ GWL -- groundwater level

² N/A - not applicable

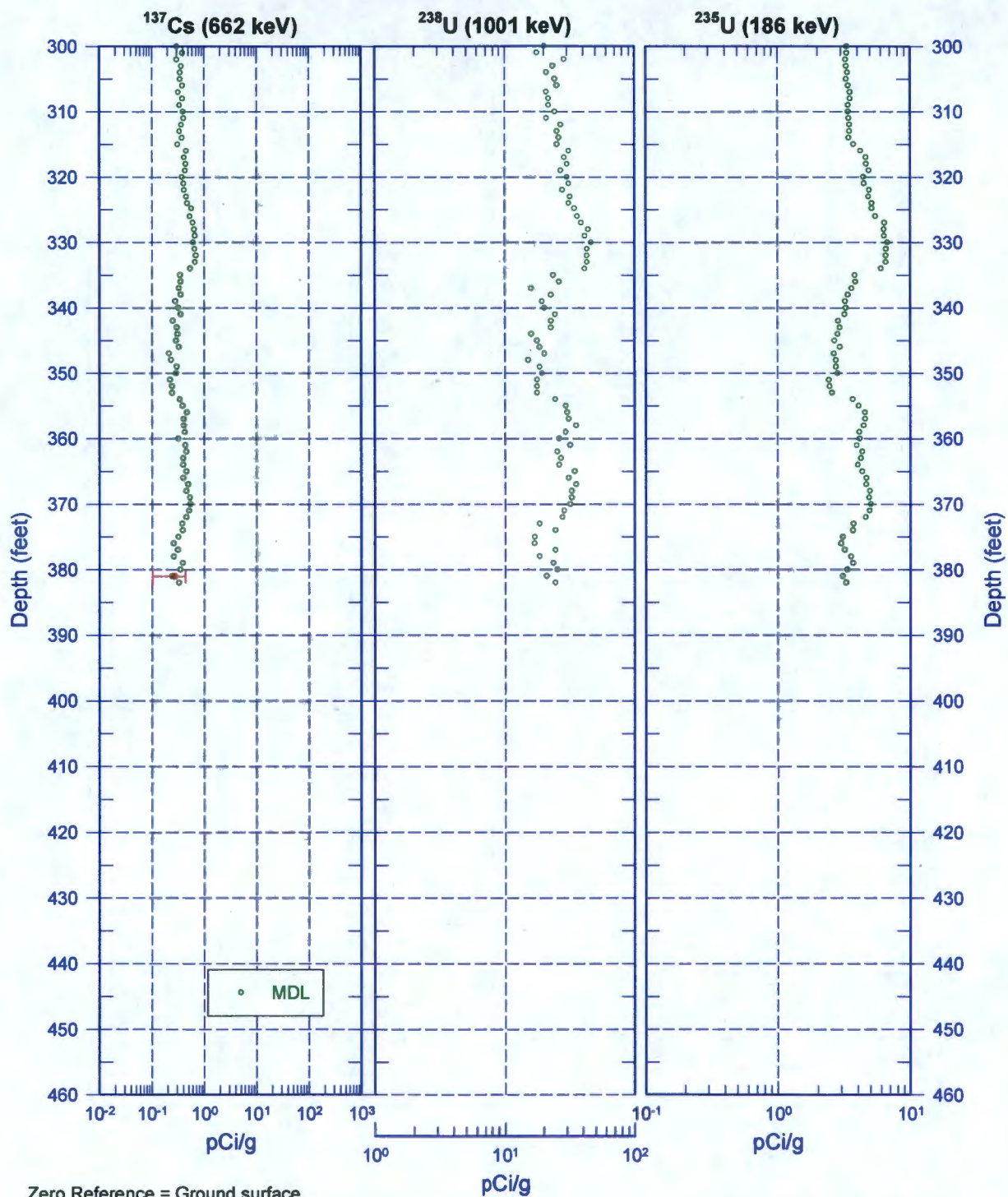
299-E33-50 (C5195) Manmade Radionuclides



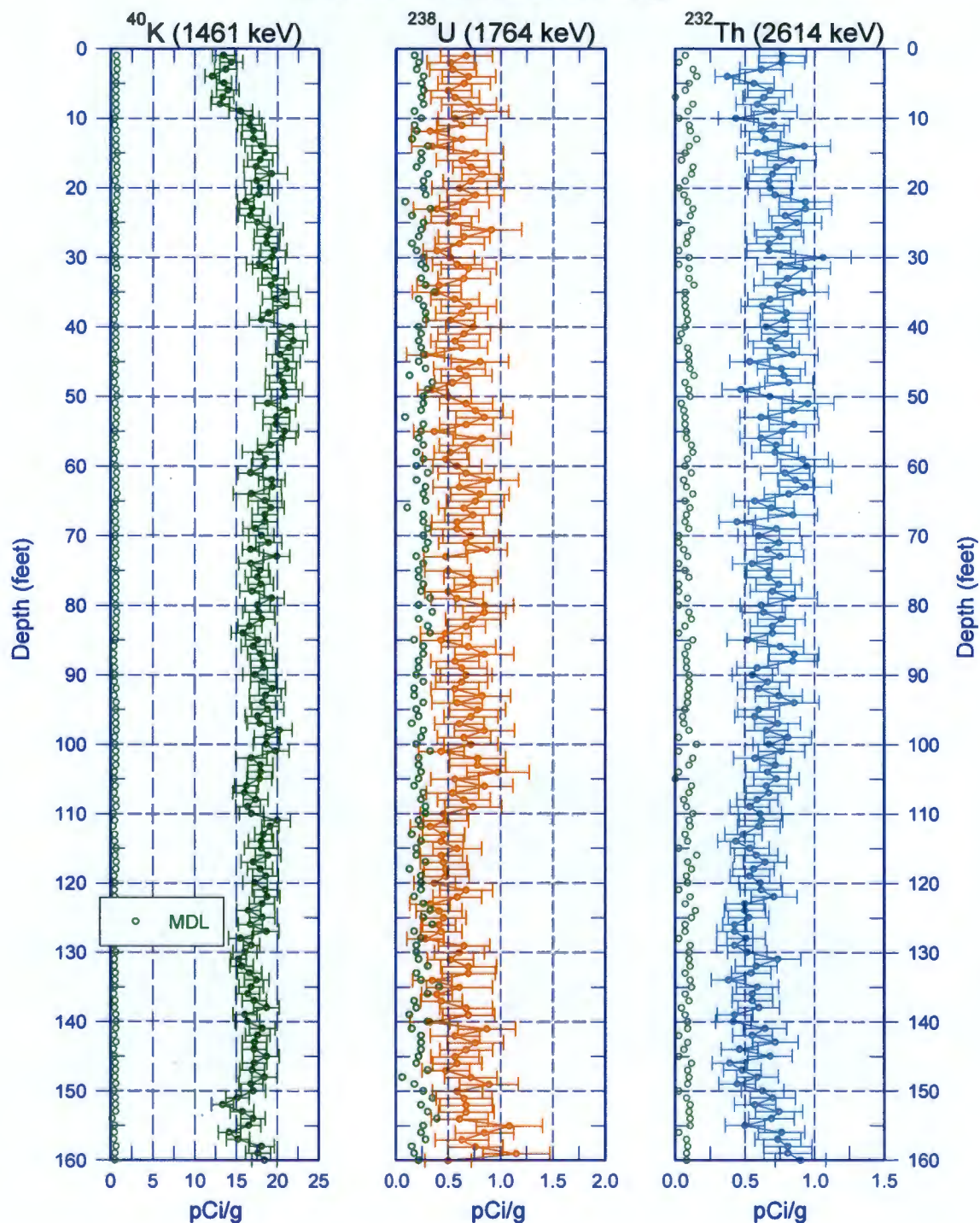
299-E33-50 (C5195) Manmade Radionuclides



299-E33-50 (C5195) Manmade Radionuclides

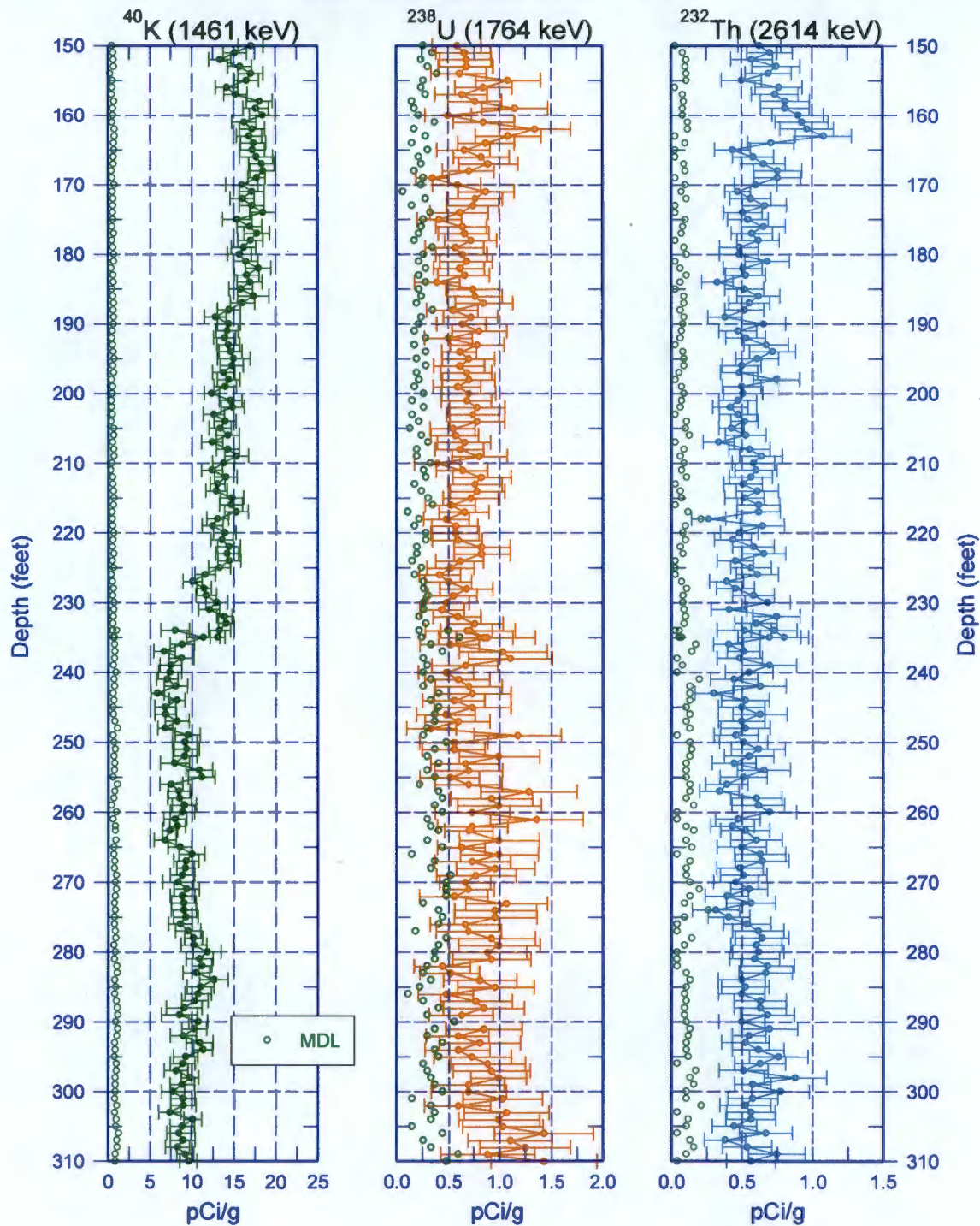


299-E33-50 (C5195) Natural Gamma Logs



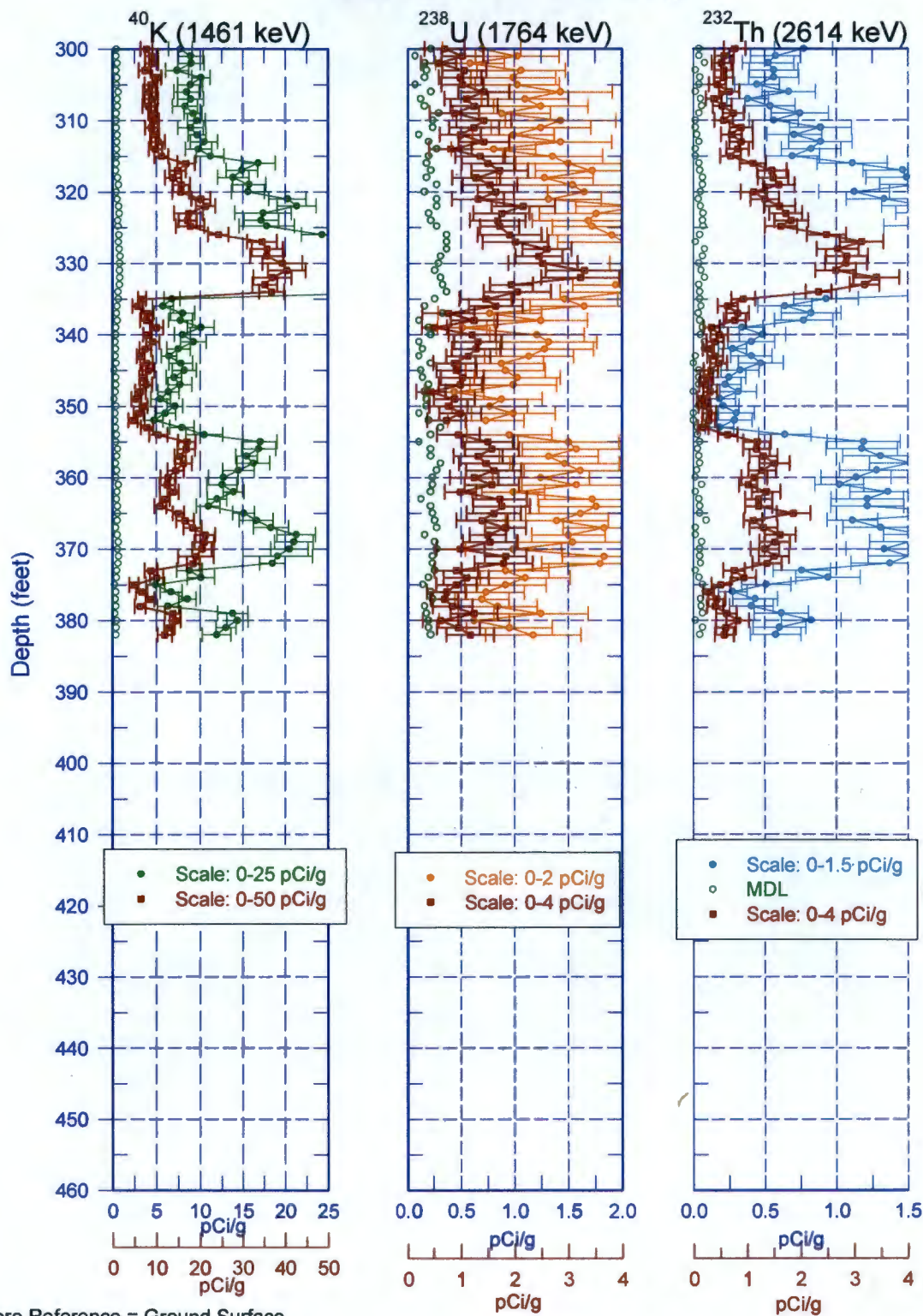
Zero Reference = Ground Surface

299-E33-50 (C5195) Natural Gamma Logs

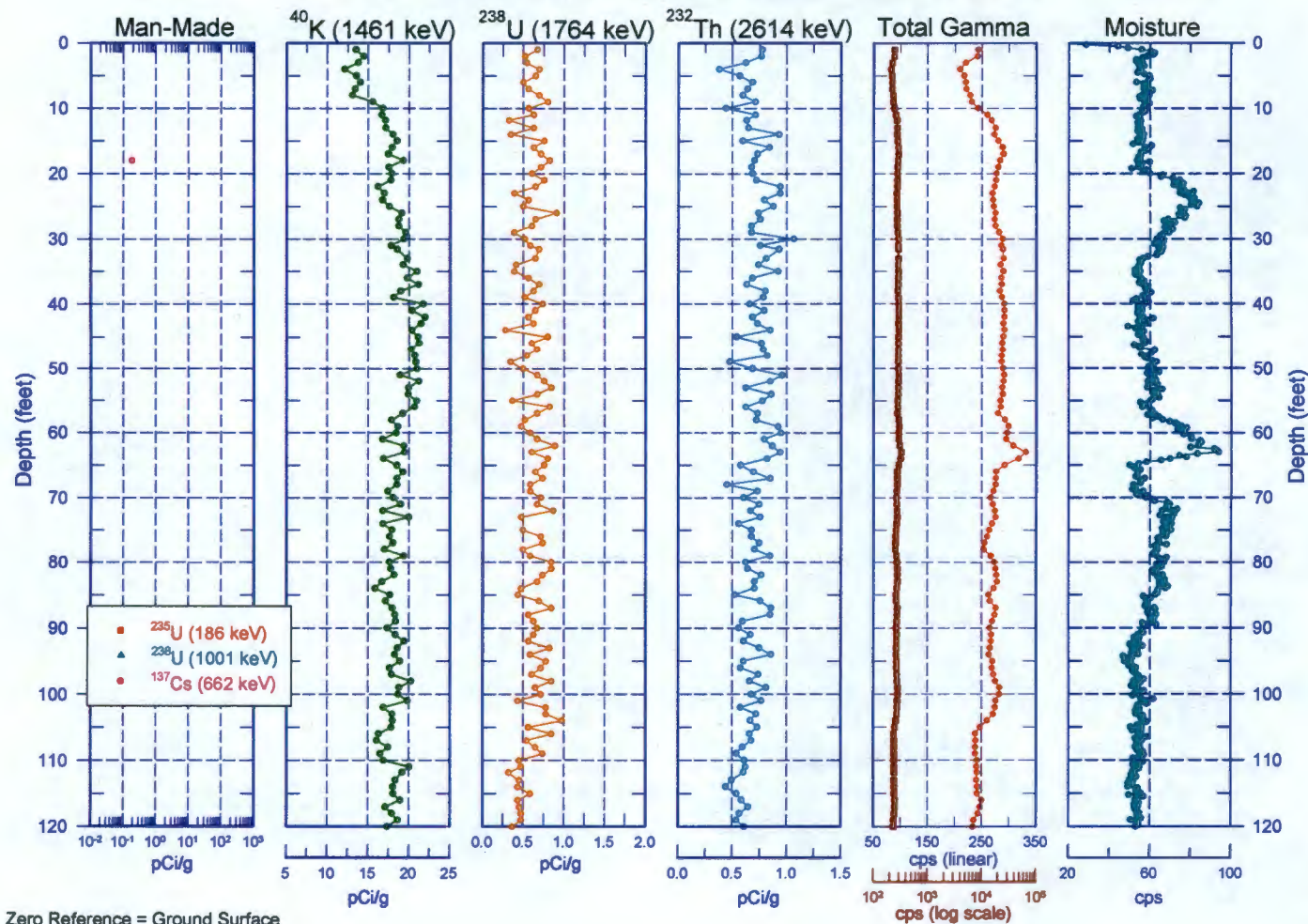


Zero Reference = Ground Surface

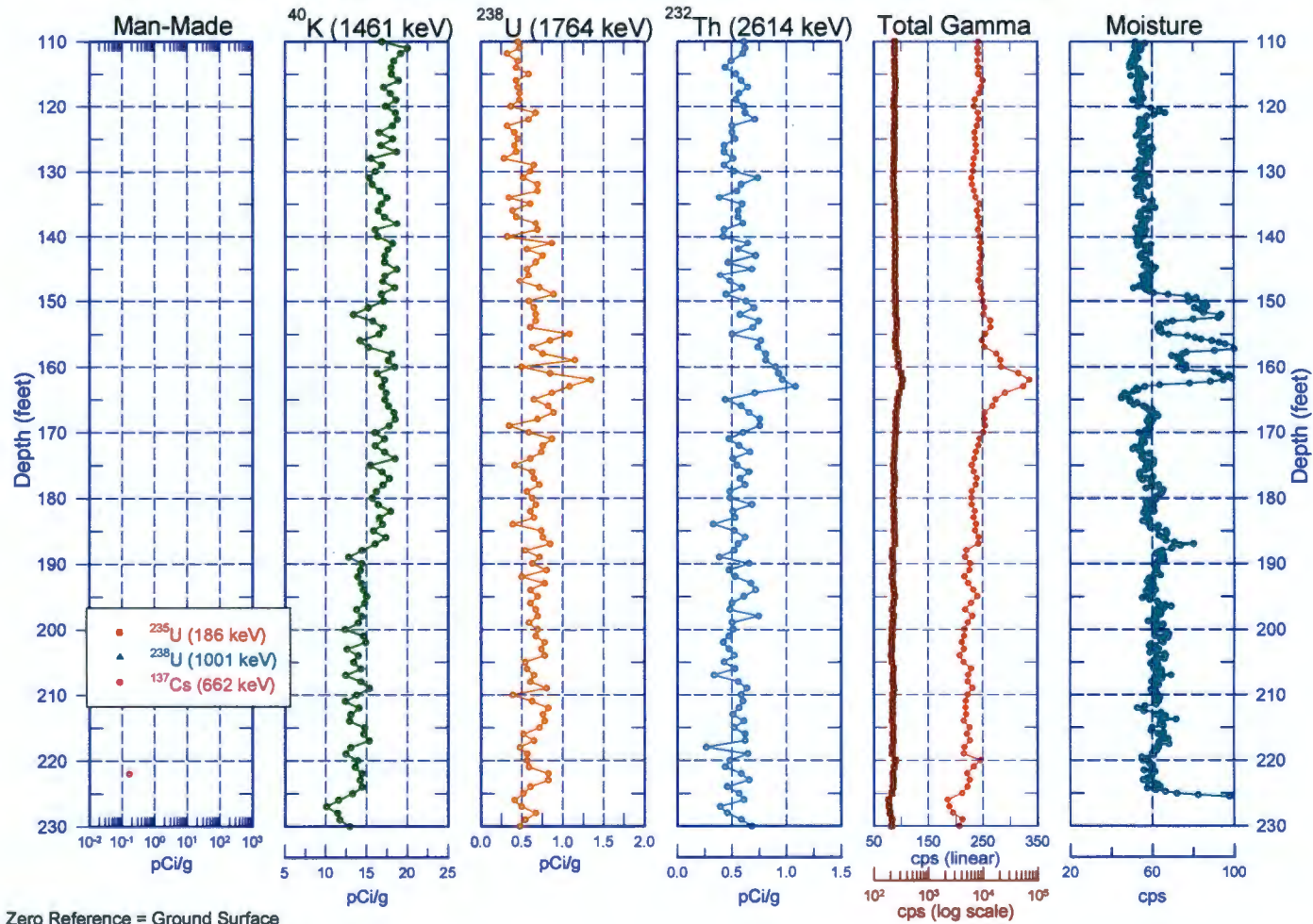
299-E33-50 (C5195) Natural Gamma Logs



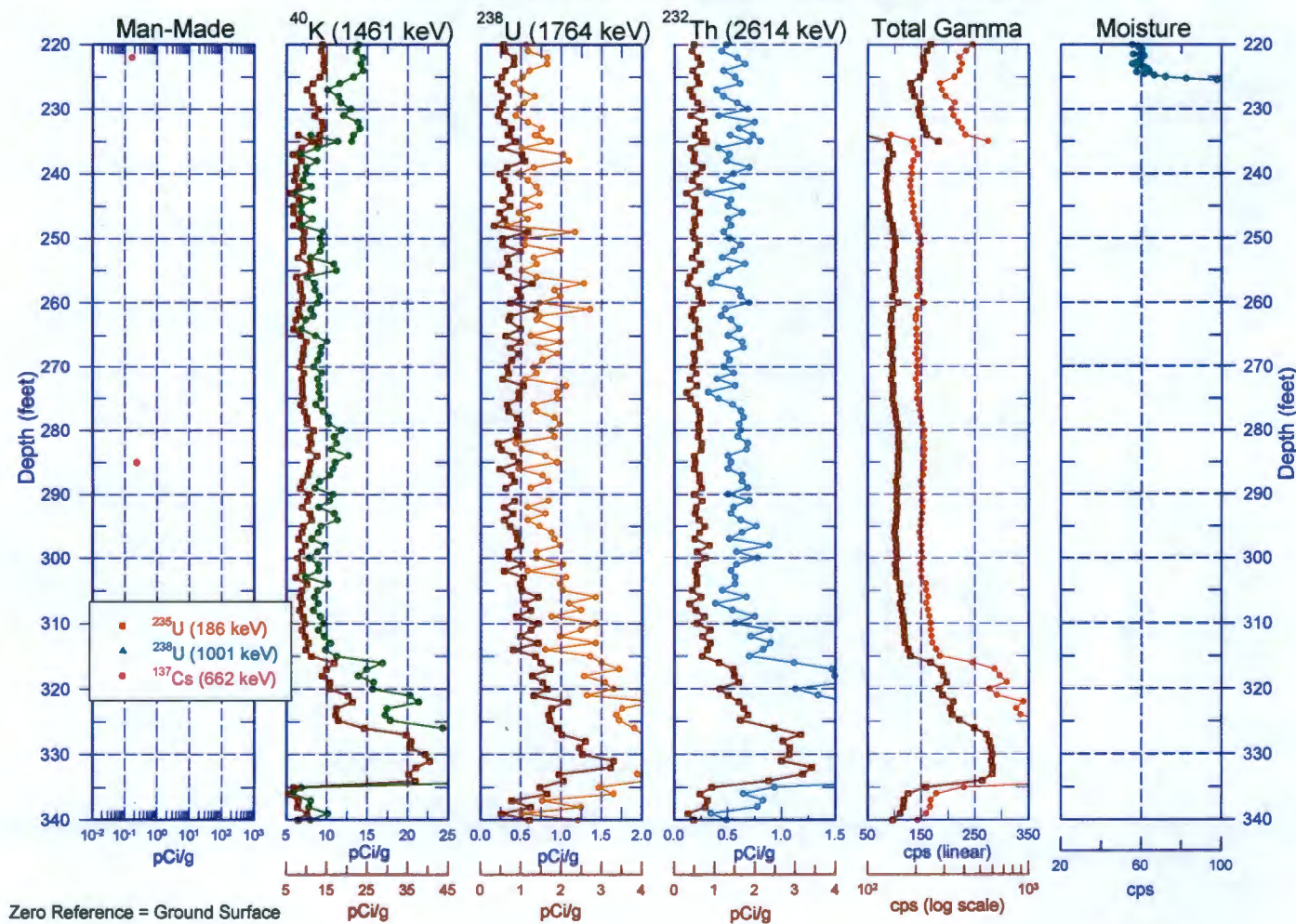
299-E33-50 (C5195) Combination Plot



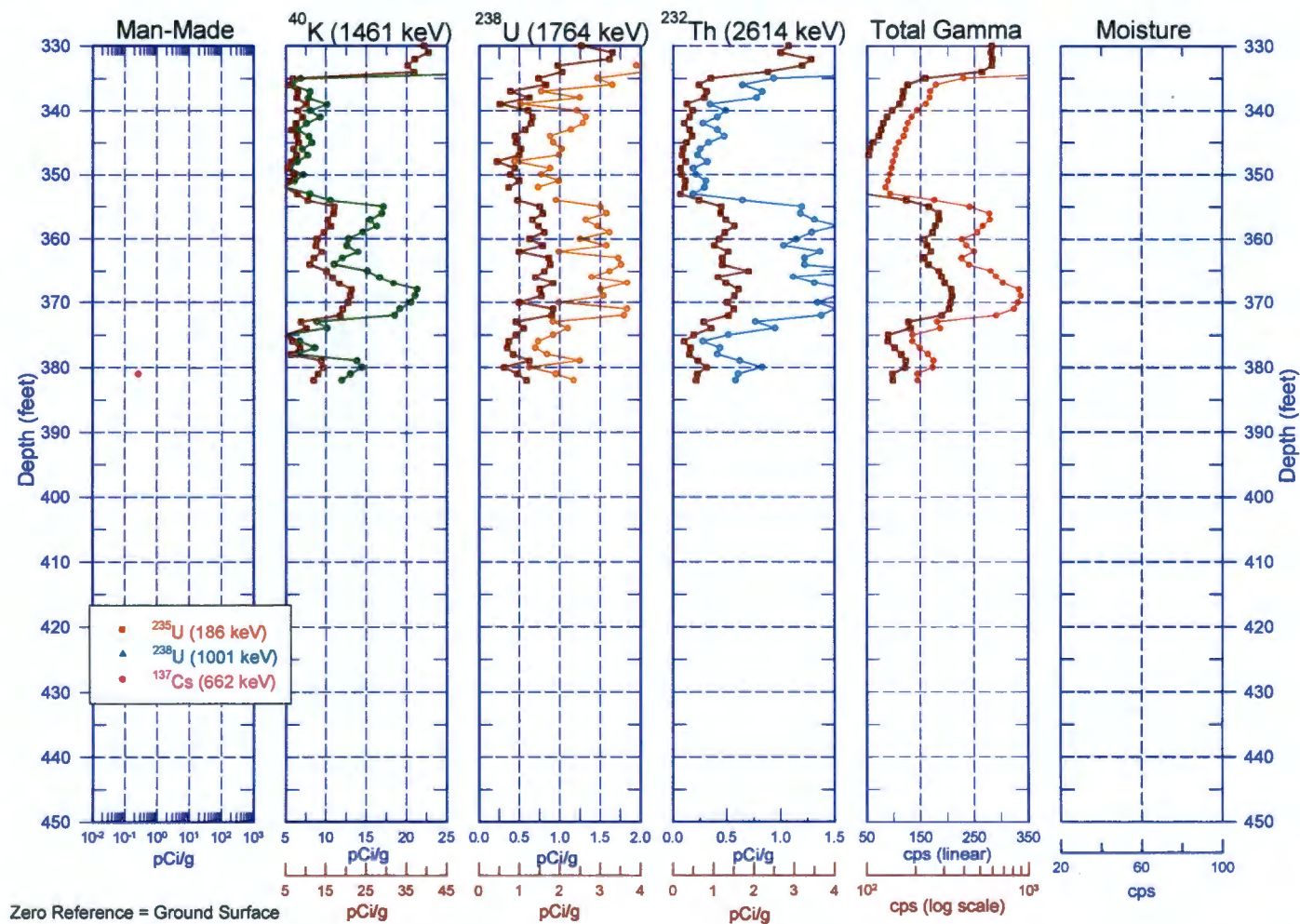
299-E33-50 (C5195) Combination Plot



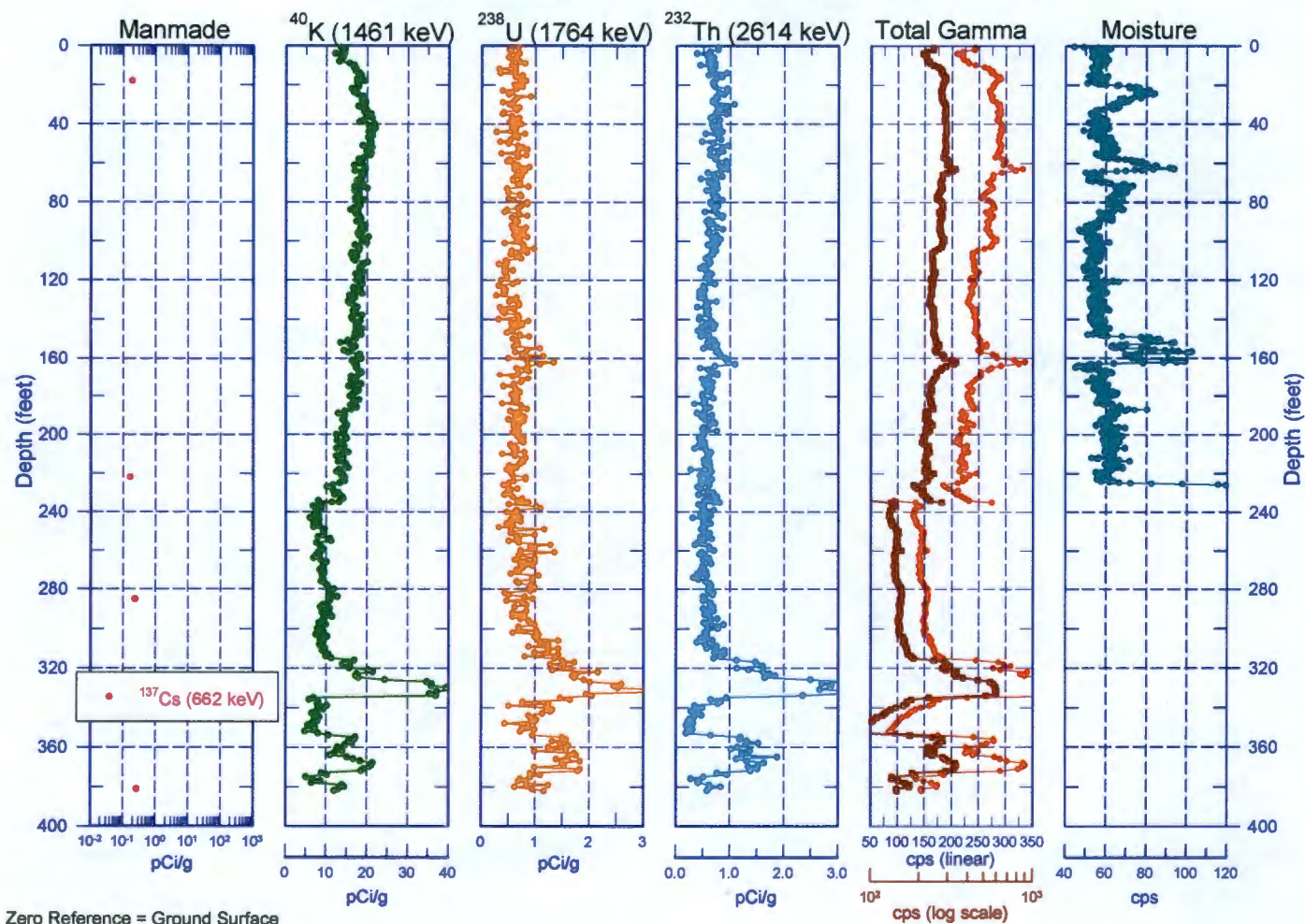
299-E33-50 (C5195) Combination Plot



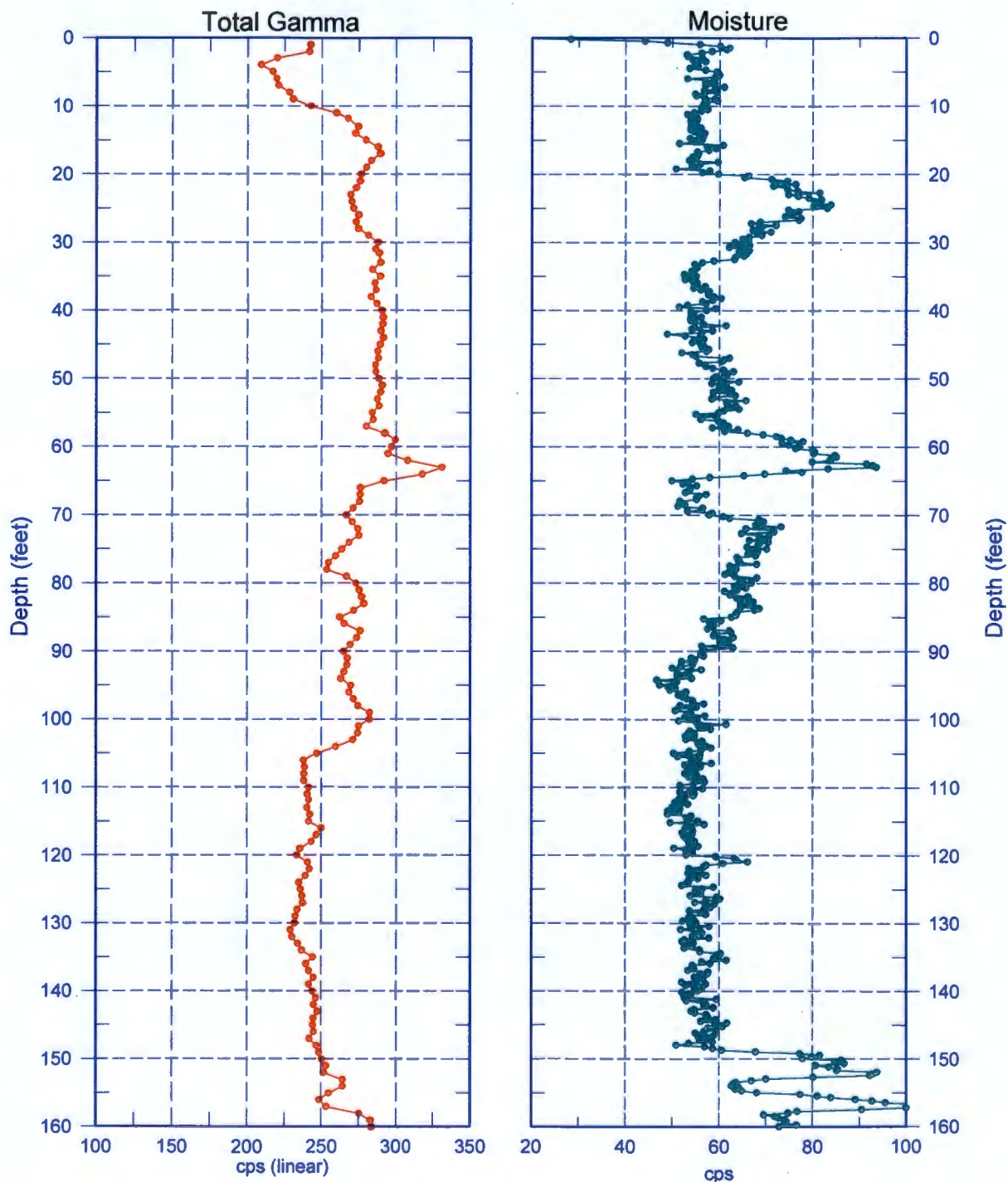
299-E33-50 (C5195) Combination Plot



299-E33-50 (C5195) Combination Plot

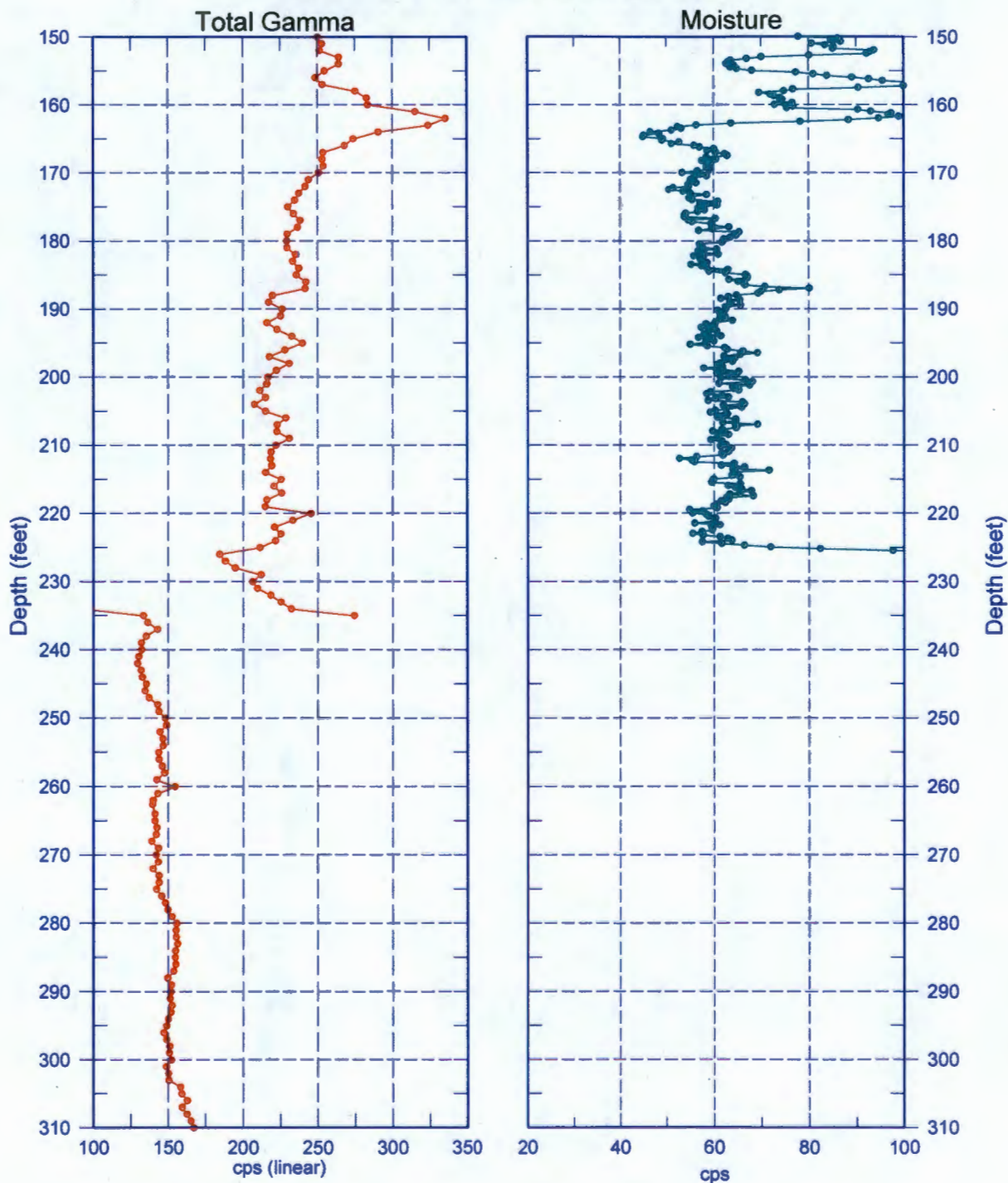


299-E33-50 (C5195)
Total Gamma & Moisture



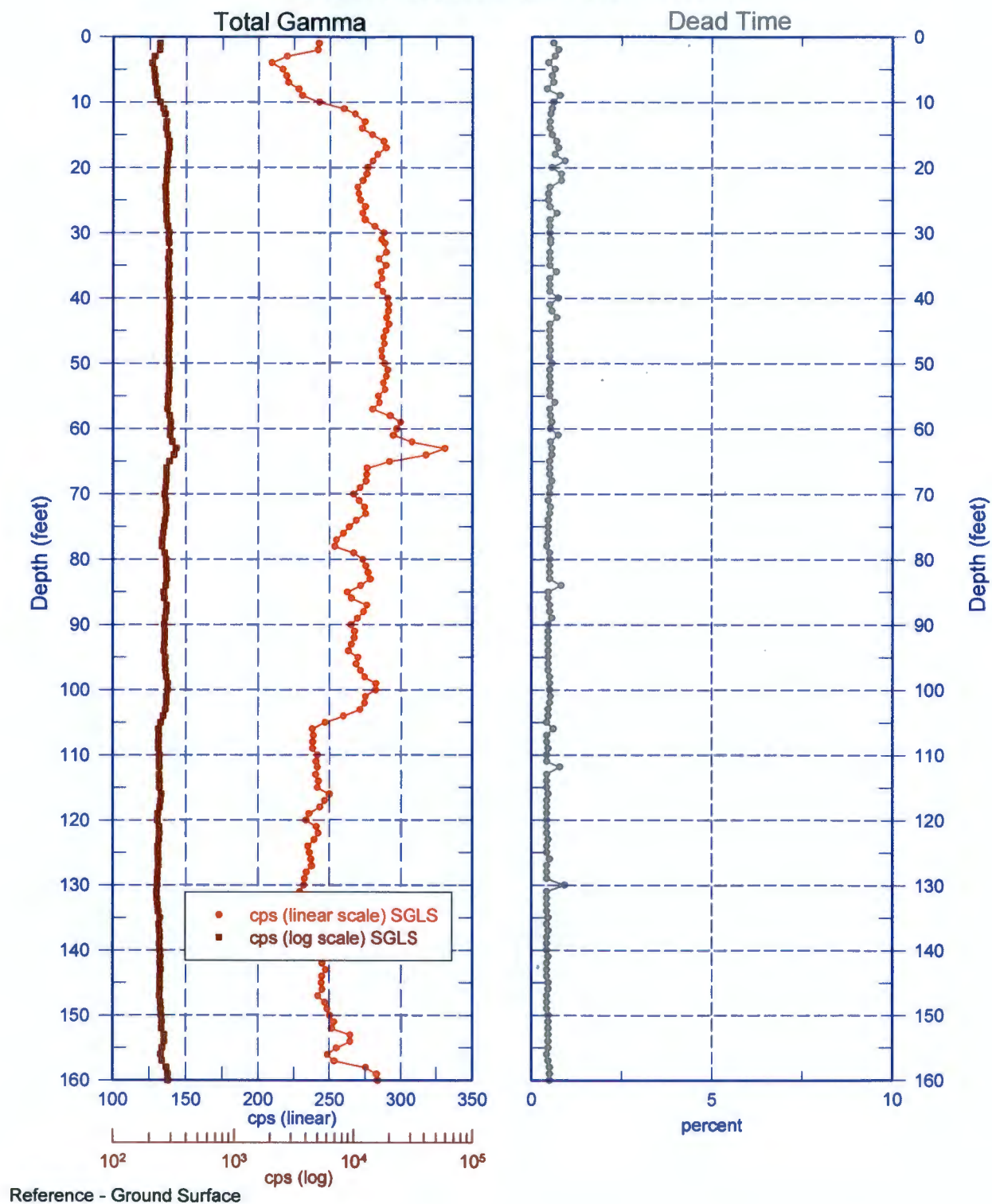
Reference - Ground Surface

299-E33-50 (C5195) Total Gamma & Moisture

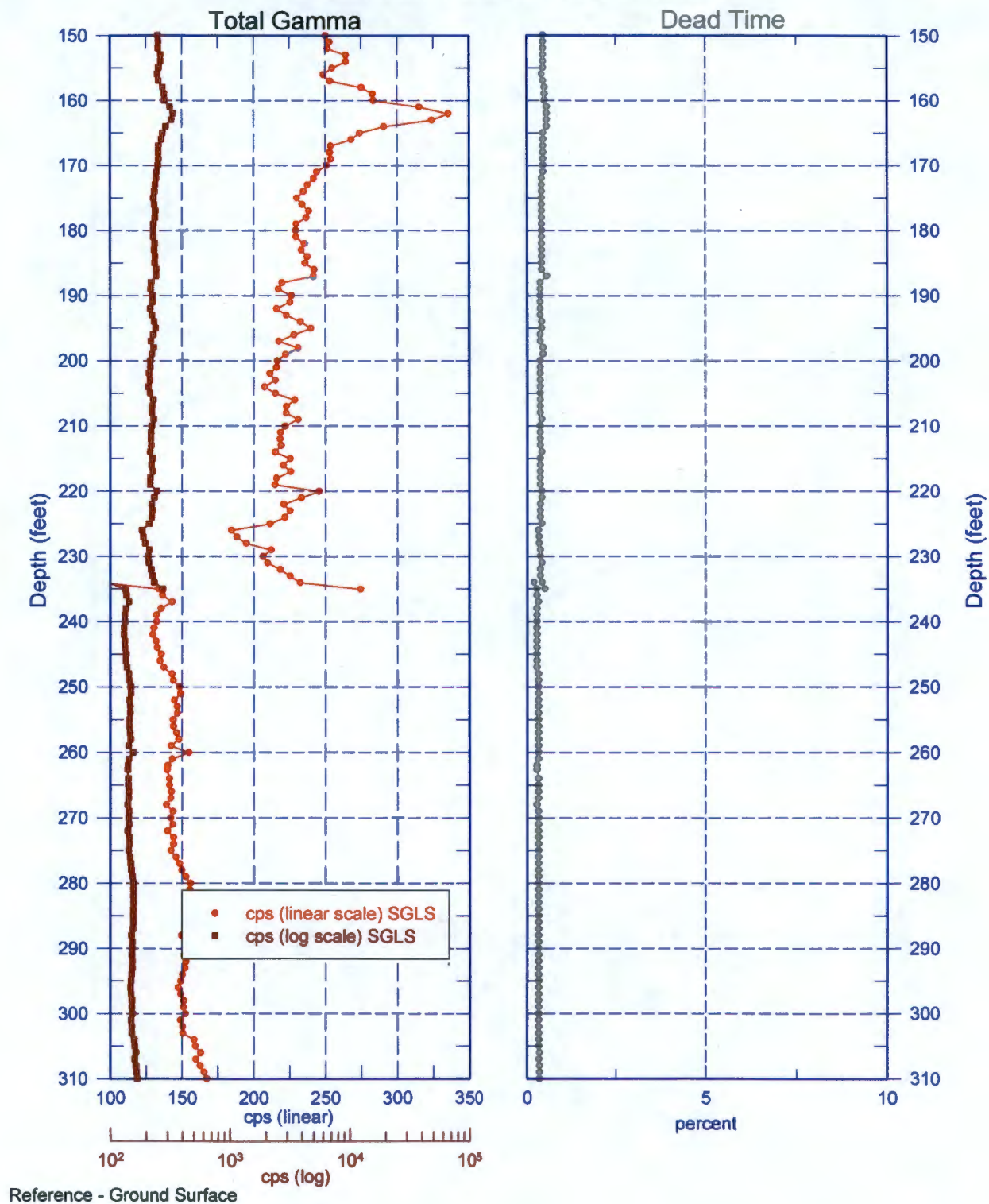


Reference - Ground Surface

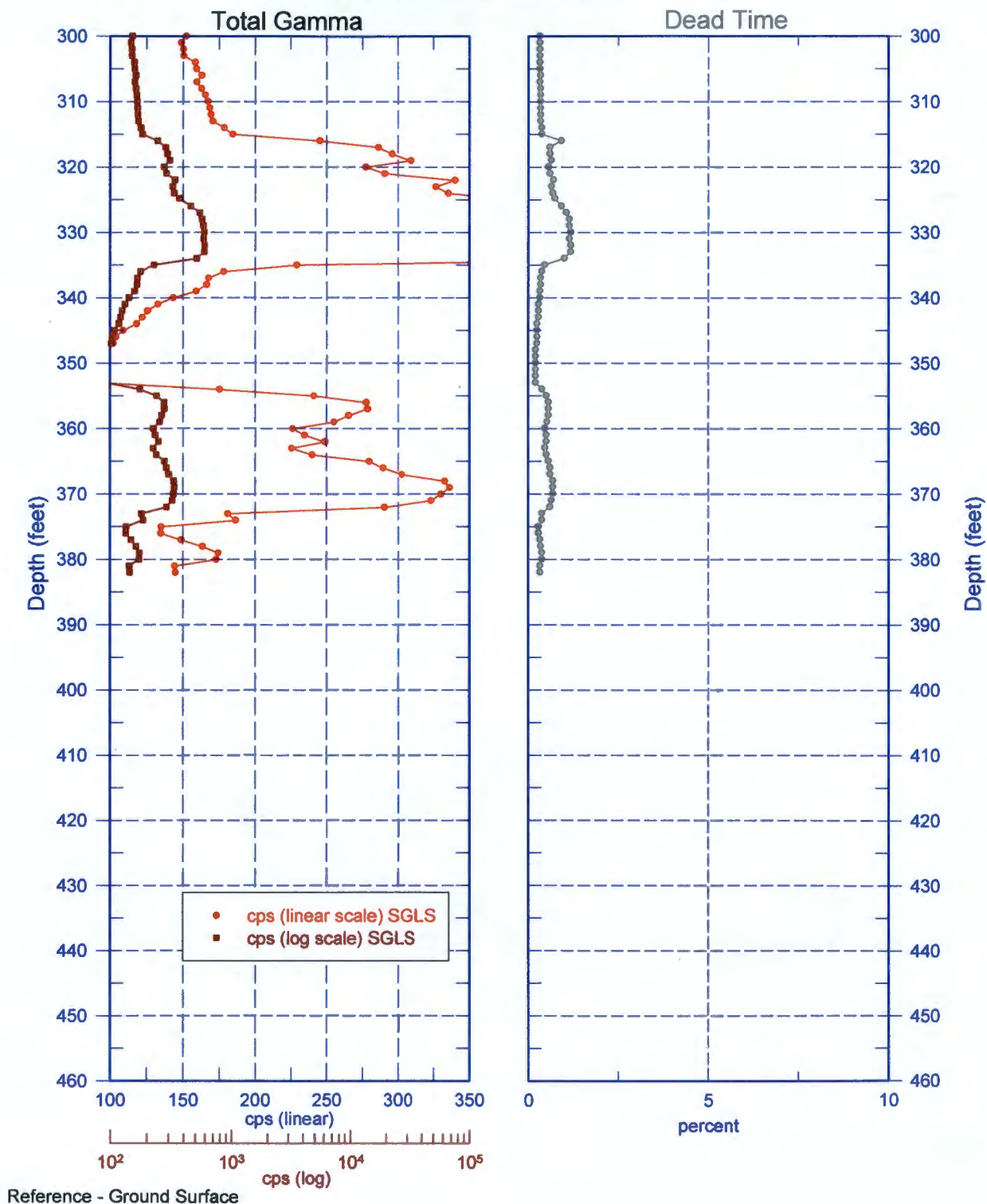
299-E33-50 (C5195) Total Gamma & Dead Time



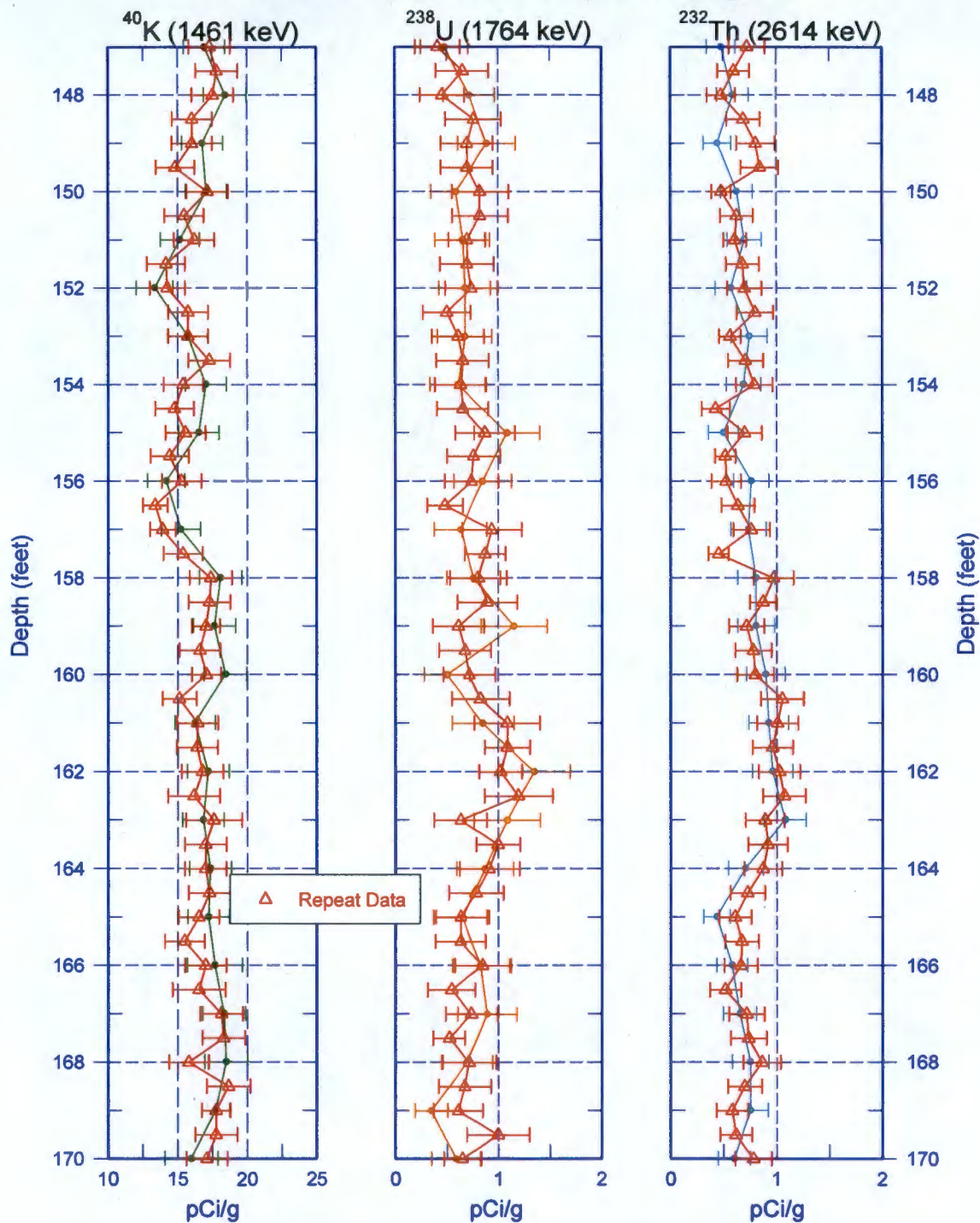
299-E33-50 (C5195) Total Gamma & Dead Time



299-E33-50 (C5195) Total Gamma & Dead Time

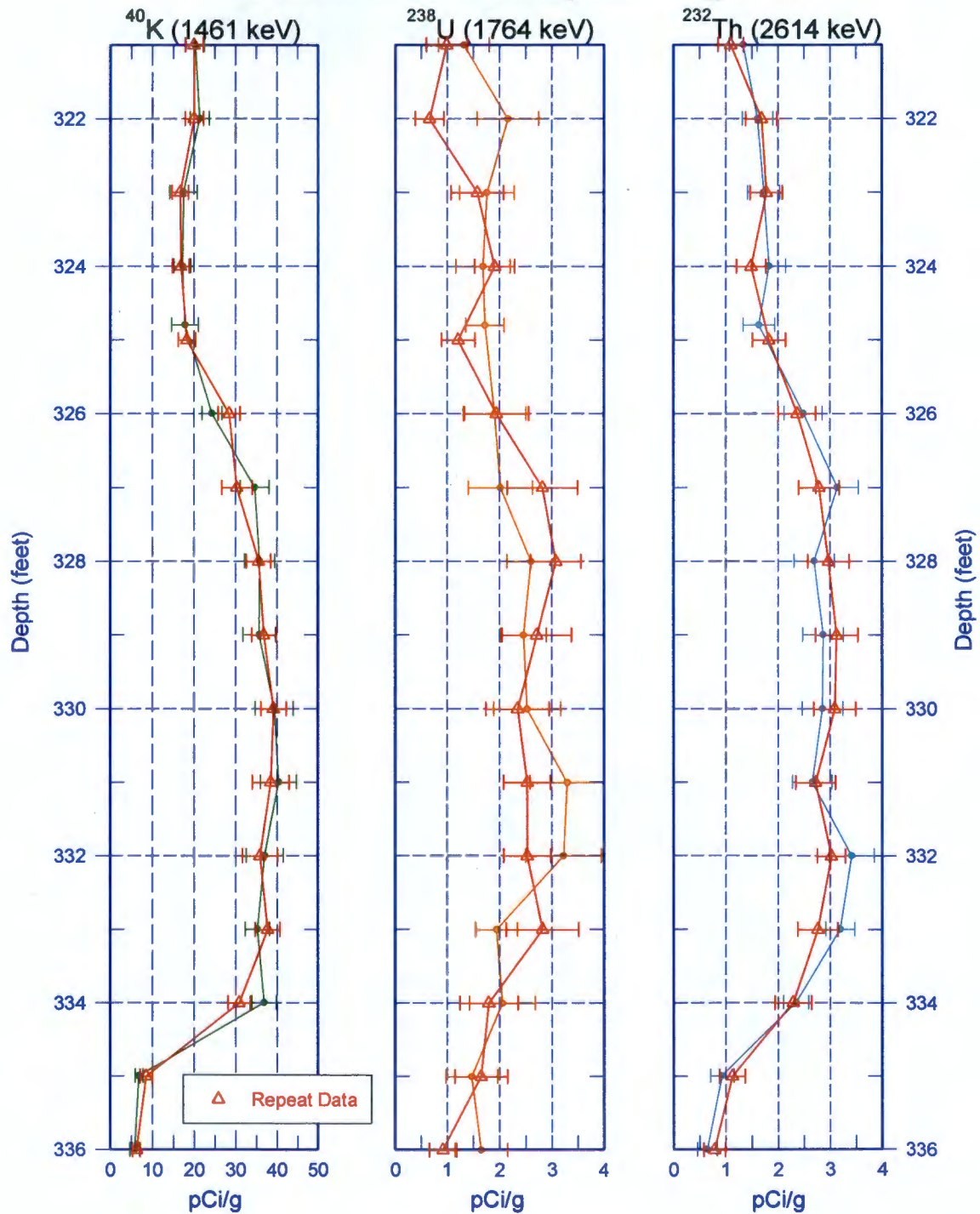


299-E33-50 (C5195) Natural Gamma Repeat Logs



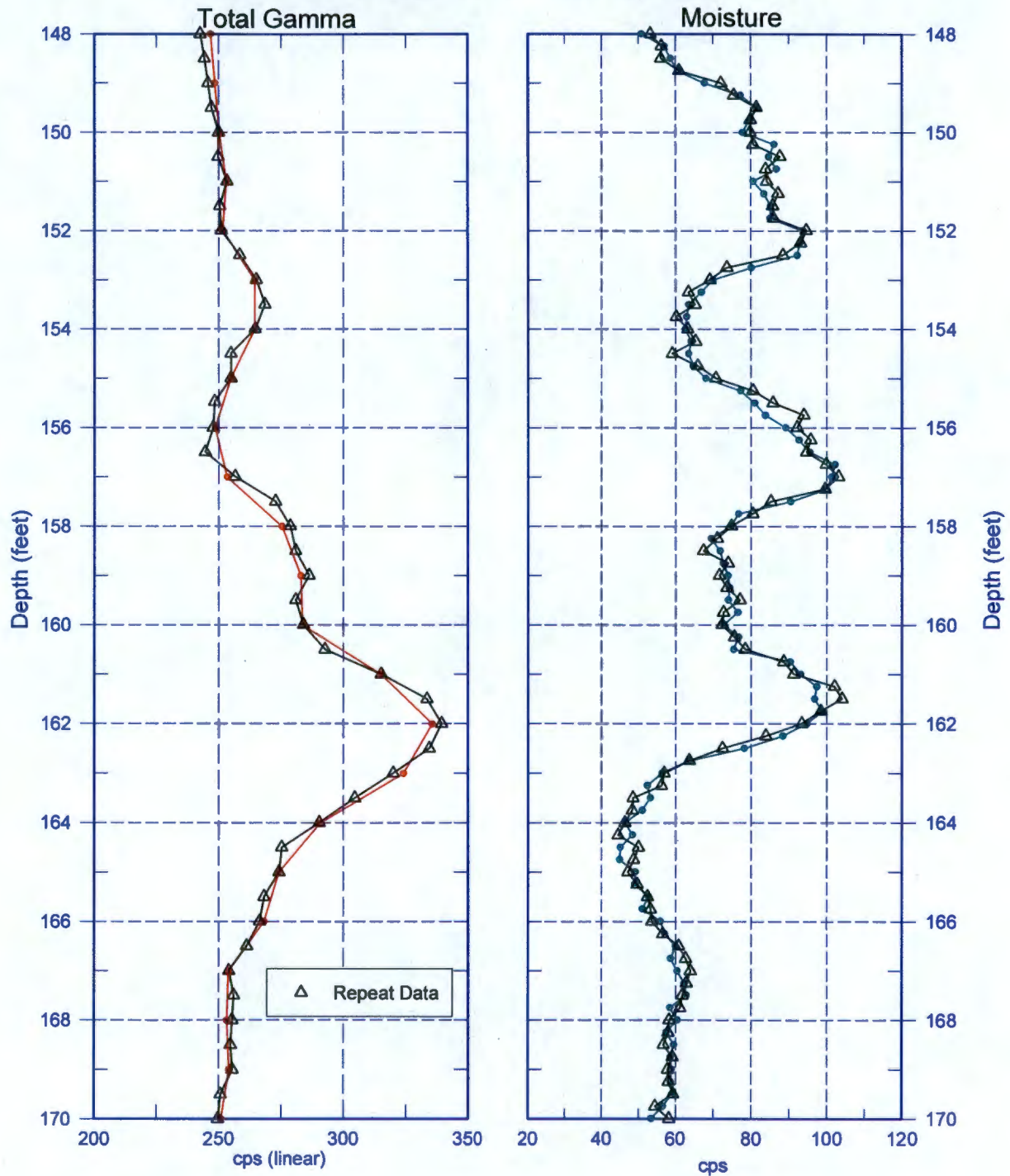
Zero Reference = Ground Surface

299-E33-50 (C5195) Natural Gamma Repeat Logs



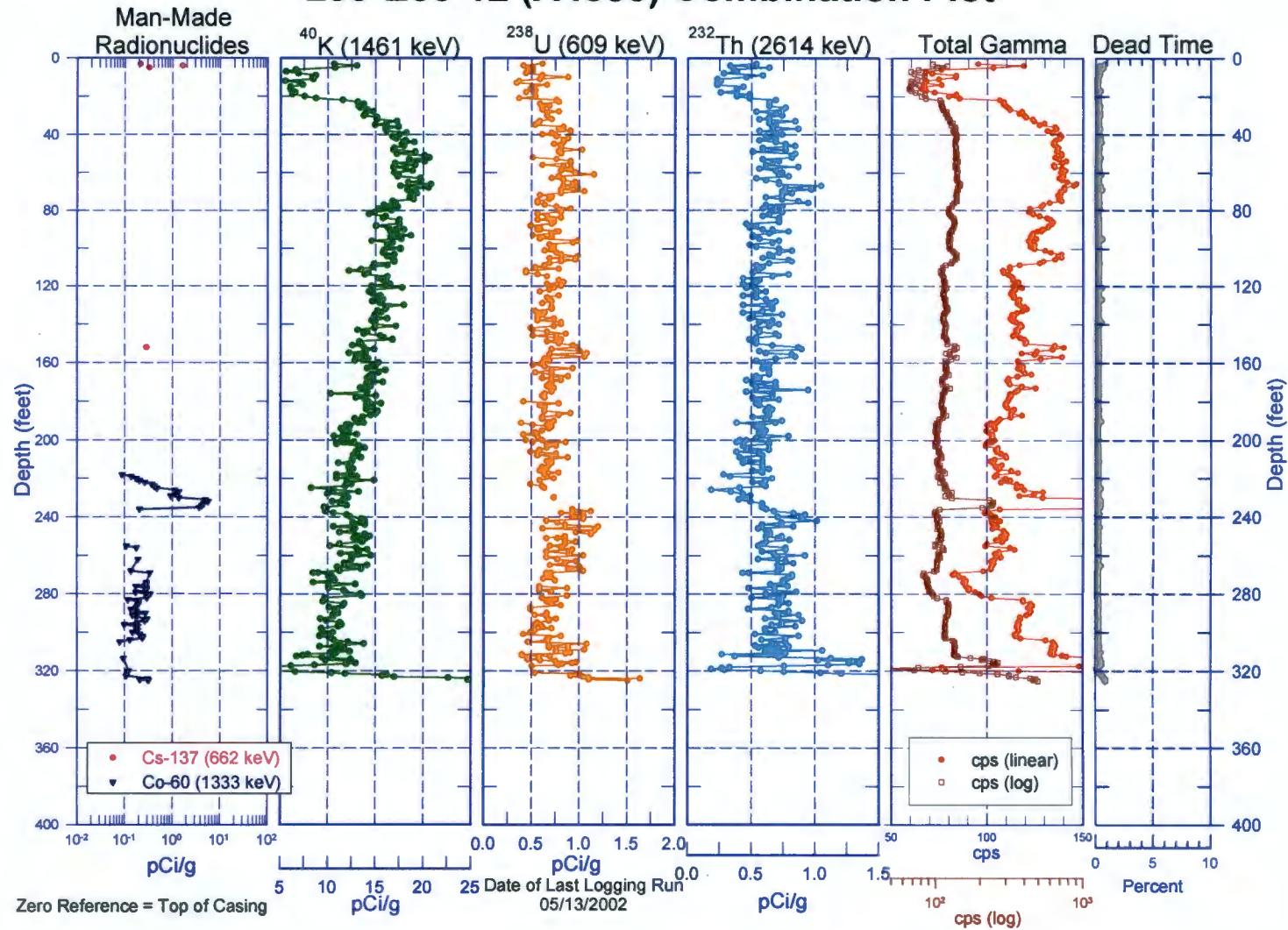
Zero Reference = Ground Surface

299-E33-50 (C5195) Repeat of Total Gamma & Moisture



Reference - Ground Surface

299-E33-12 (A4839) Combination Plot



299-E33-13 (A4840) Combination Plot

