

299-W14-11 (C4668)
Log Data Report

Borehole Information:

Borehole: 299-W14-11 (C4668)		Site: UPR 200-W-99			
Coordinates (WA State Plane)		GWL (ft)¹: 224.25		GWL Date: 05/02/05	
North	East	Drill Date	TOC² Elevation	Total Depth (ft)	Type
Not available	Not available	04/05	Not available	349	Becker

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded Steel	0	6 5/8	5 3/8	5/8	0	50
Becker dual wall - inner	2.9	6 1/4	6	0.12	0	349
Becker dual wall - outer	2.3	9	8	1/2	0	349

The logging engineer measured the casing using a steel tape for the casing from 0-50 ft. The casing thicknesses for both the 6- and 8-in. casings are from published data for Becker dual wall casing.

Borehole Notes:

Zero reference is the ground surface. This borehole was logged through the drill pipe.

The Becker drilling system uses a dual-wall casing. Air flows down the annulus and cuttings are returned inside the inner casing. Total wall thickness is 0.620 in., increasing to 1.115 in. at the casing joints that occur at 10-ft intervals.

Logging Equipment Information:

Logging System:	Gamma 1E	Type:	70% HPGe (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:	70% HPGe (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
Date	12/27/04	12/27/04	04/29/05	04/29/05	05/02/05
Logging Engineer	Spatz	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	49.0	15.0	348.0	192.0	48.0
Finish Depth (ft)	0.0	10.0	191.25	179.0	347.0

Log Run	1	2 Repeat	3	4	5
Count Time (sec)	100	100	100	100	100
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
Sample Interval	N/A ³	N/A	0.25 ft	0.25 ft	1 ft
MSA Interval (ft)	1.0	1.0	N/A	N/A	N/A
Log speed (ft/min)	N/A	N/A	1.0	1.0	1.0
Pre-Verification	DE531CAB	DE531CAB	AE058CAB	AE058CAB	AE059CAB
Start File	DE531000	DE531050	AE058000	AE058628	AE059000
Finish File	DE531049	DE531055	AE058627	AE058680	AE059299
Post-Verification	DE531CAA	DE531CAA	AE058CAA	AE058CAA	AE059CAA
Depth Return Error (in.)	0	0	N/A	- 1	N/A
Comments	No fine-gain adjustment.	No fine-gain adjustment.	Files were not retrieved; re-logging necessary.	Files were not retrieved; re-logging necessary.	No fine-gain adjustment.

Log Run	6 Repeat				
Date	05/02/05				
Logging Engineer	Spatz				
Start Depth (ft)	100.0				
Finish Depth (ft)	129.0				
Count Time (sec)	100				
Live/Real	R				
Shield (Y/N)	N				
Sample Interval	1 ft				
MSA Interval (ft)	N/A				
Log speed (ft/min)	1.0				
Pre-Verification	AE059CAB				
Start File	AE059300				
Finish File	AE059329				
Post-Verification	AE059CAA				
Depth Return Error (in.)	- 1				
Comments	No fine-gain adjustment.				

Logging Operation Notes:

The borehole was initially drilled to 50 ft in depth and logged December 27, 2004 with SGLS G4E. After completion of drilling in April 2005 to a depth of approximately 348 ft, logging was performed April 29 inside the Becker dual walled casing with SGLS G1E. These data files could not be retrieved and re-logging of the borehole was conducted May 2.

Gamma attenuation changes significantly as the sonde passes through the Becker dual walled pipe joints; therefore, it is not possible to provide accurate casing correction factors. The log (log runs 5 and 6) was conducted in continuous mode with a logging speed of 1 ft/min. and a count time equivalent to a depth increment of 1 ft. A total gamma log is produced for correlation purposes. Gamma energy spectra are available but counting statistics are relatively poor for most individual peaks.

Total gamma data were collected using Gamma 1E and 4E. Pre- and post-survey verification measurements employed the Amersham KUT (⁴⁰K, ²³⁸U, and ²³²Th) verifier with serial numbers 115 and 118 for G1E and Gamma 4E, respectively. Logging was performed with a centralizer installed on the sondes. Zero reference is the ground surface. Maximum logging depth achieved was 348 ft.

Analysis Notes:

Analyst:	Henwood	Date:	06/14/05	Reference:	
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Pre-run and post-run verification spectra were collected at the beginning and end of the day and compared to the acceptance criteria. All of the verification spectra were within the acceptance criteria.

Log spectra were processed in batch mode using APTEC SUPERVISOR to determine gross counts, and count rates were calculated in EXCEL. Water and dead time corrections were not applied to the data. The influence of the thick joints is apparent on the total gamma where reduced count rates are exhibited at approximately 10-ft depth intervals.

Log Plot Notes:

Log plots are provided for total gamma counts per second. A plot of the repeat log versus the original log is included.

Results and Interpretations:

A decrease in gamma activity occurs at each casing joint, where the increase in wall thickness results in greater attenuation of gamma activity. No anomalous gamma activity was observed. This observation suggests no significant concentrations of man-made radionuclides.

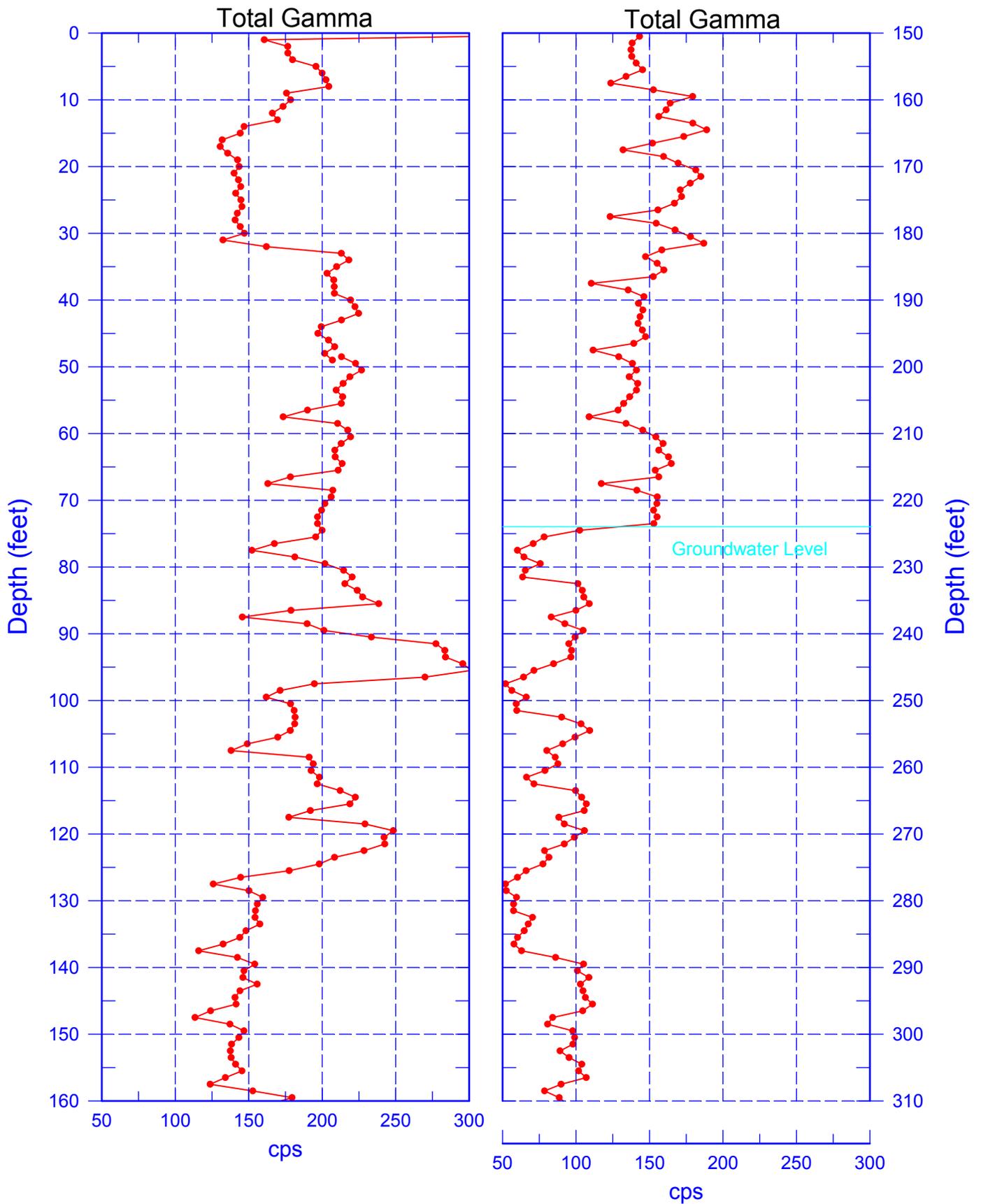
A plot of the repeat log demonstrates reasonable repeatability of the total gamma log.

¹ GWL – groundwater level

² TOC – top of casing

³ N/A – not applicable

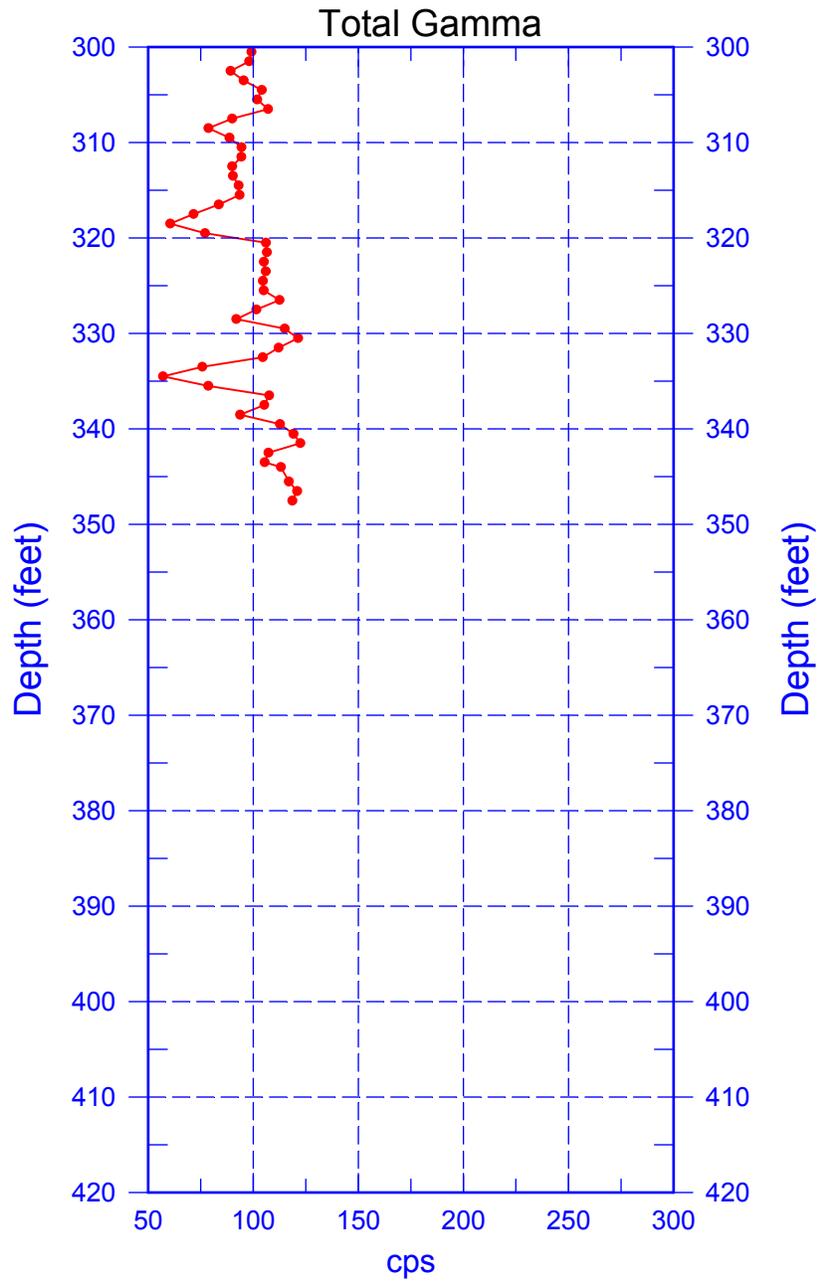
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Zero Reference = Ground Surface

Date of Last Logging Run - 05/02/05

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Repeat of Total Gamma Log (100-129 ft)

