

299-W22-47 (C4667)
Log Data Report

Borehole Information:

Borehole: 299-W22-47 (C4667)		Site: 216-S-1 Crib			
Coordinates (WA State Plane)		GWL (ft)¹: 228.35		GWL Date: 01/25/05	
North	East	Drill Date	TOC² Elevation	Total Depth (ft)	Type
Not available	Not available	01/05	Not available	349	Becker

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded Steel	0	6 5/8	5 3/8	5/8	0	10
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 0-10 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 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 Repeat
Date	12/27/04	12/27/04	01/25/05	01/25/05	01/25/05
Logging Engineer	Spatz	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	8.0	8.0	348.0	142.5	50.0
Finish Depth (ft)	0.0	3.0	143.0	7.0	16.0
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	0.5 ft	0.5 ft	0.5 ft
MSA Interval (ft)	1.0	1.0	N/A	N/A	N/A

Log Run	1	2 Repeat	3	4	5 Repeat
Log speed (ft/min)	N/A	N/A	1.0	1.0	1.0
Pre-Verification	DE531CAB	DE531CAB	DE591CAB	DE591CAB	DE591CAB
Start File	DE541000	DE541009	DE591000	DE591411	DE591683
Finish File	DE541008	DE541014	DE591410	DE591682	DE591751
Post-Verification	DE541CAA	DE541CAA	DE591CAA	DE591CAA	DE591CAA
Depth Return Error (in.)	0	0	N/A	N/A	- 3
Comments	No fine-gain adjustment.				

Logging Operation Notes:

The borehole was initially drilled to 10 ft in depth and logged December 27, 2004. After completion of drilling in January 2005 to a depth of approximately 349 ft, logging was performed January 25 inside the Becker dual walled casing.

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 is run in continuous mode with a logging speed of 1 ft/min. and a count time equivalent to a depth increment of 0.5 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 4E. Pre- and post-survey verification measurements employed the Amersham KUT (⁴⁰K, ²³⁸U, and ²³²Th) verifier with serial number 115. Logging was performed with a centralizer installed on the sonde. Zero reference was the ground surface. Maximum logging depth achieved was 348 ft.

Analysis Notes:

Analyst:	Henwood	Date:	06/13/05	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.

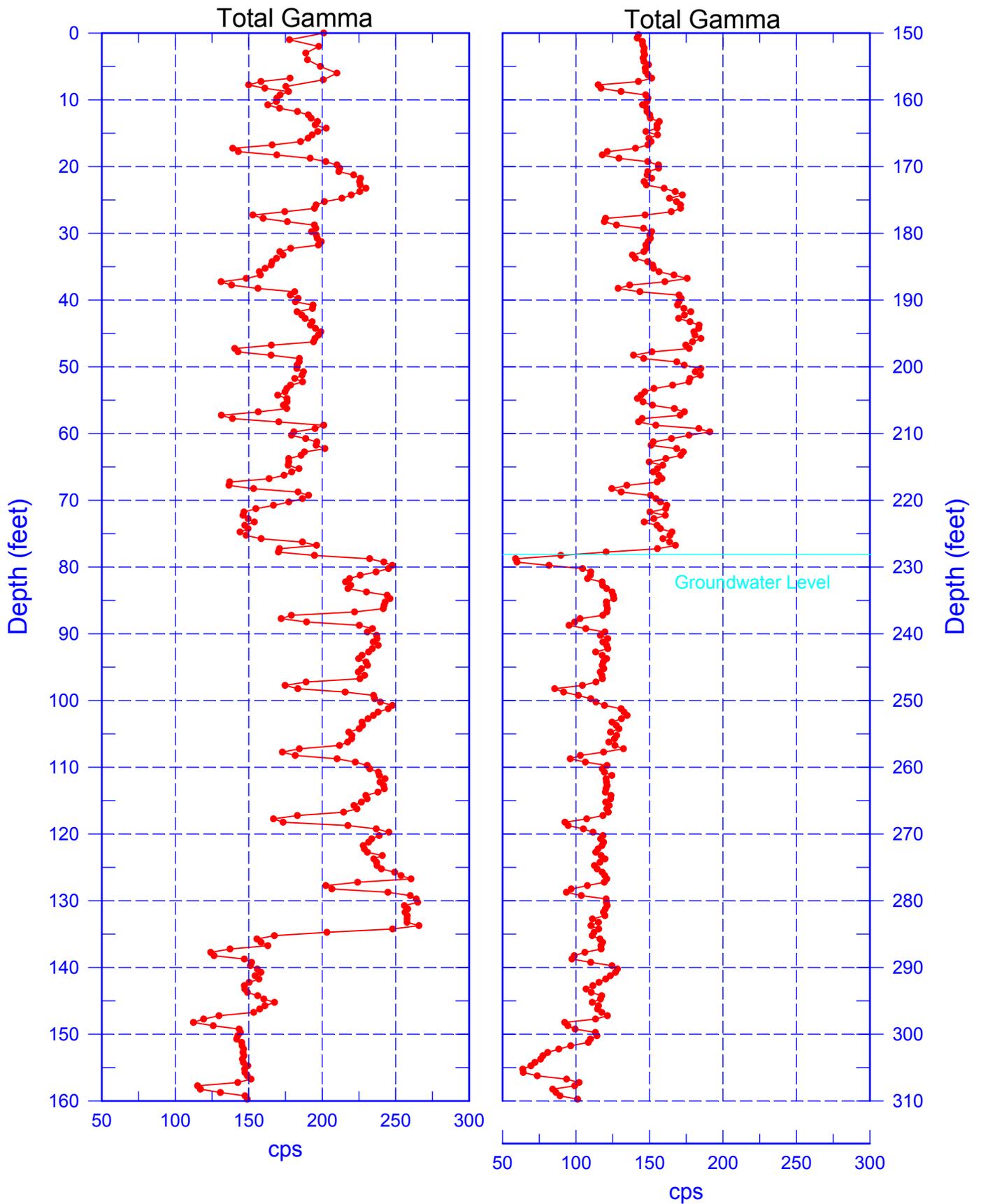
A plot of the repeat log demonstrates reasonable repeatability of the total gamma log.

¹ GWL – groundwater level

² TOC – top of casing

³ N/A – not applicable

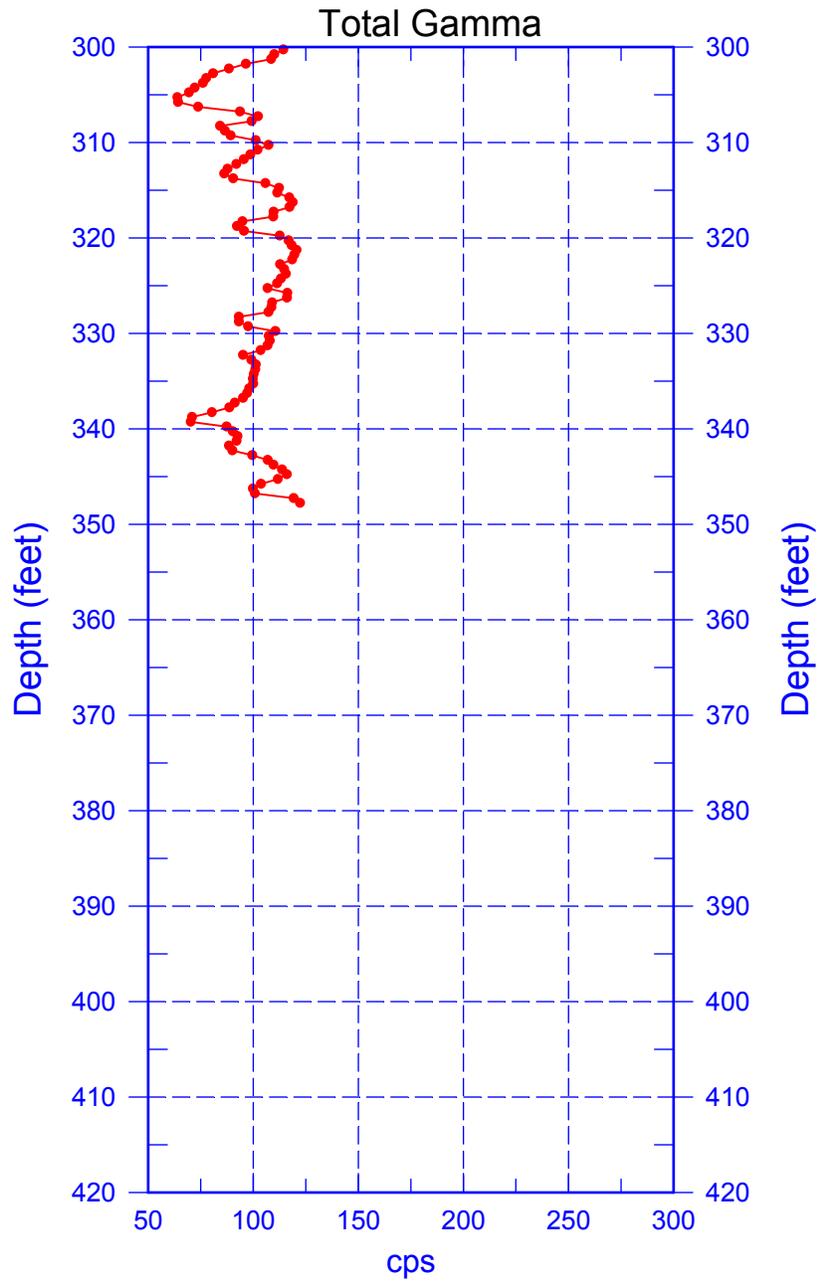
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Zero Reference = Ground Surface

Date of Last Logging Run - 01/25/05

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Zero Reference = Ground Surface

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Repeat of Total Gamma Log (16-50 ft)

