

10-05-08, 299-E25-98 (A6533), Log Data Report

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-08RV14800



P.O. Box 850
Richland, Washington 99352

10-05-08, 299-E25-98 (A6533), Log Data Report

P. D. Henwood
Washington River Protection Solutions

Date Published
September 2015

To be Presented at
N/A

WRPS
N/A

N/A

Published in
N/A

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-08RV14800



P.O. Box 850
Richland, Washington 99352

Copyright License

By acceptance of this article, the publisher and/or recipient acknowledges the U.S. Government's right to retain a non exclusive, royalty-free license in and to any copyright covering this paper.

APPROVED
By Janis Aardal at 1:57 pm, Apr 05, 2022

Release Approval

Date

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This report has been reproduced from the best available copy.

Printed in the United States of America



10-05-08
299-E25-98 (A6533)
Log Data Report

Borehole Information:

Log Date:	2015-03-11	Filename:	A6533_HG_2015-03-11	Site:	A Farm
Coordinates (WA St Plane)		DTW¹ (ft) :	Dry	GWL Date:	02/19/15
North (m)	East (m)	Drill Date	TOC² Elevation	Total Depth (ft)	Type
N/A	N/A	04/30/1962	N/A	75	Cable Tool

Casing Information:

Casing Type	Stickup (ft)	Diameter (in.)		Thickness (in.)	Top (ft)	Bottom (ft)
		Outer	Inside			
Welded Steel	0.0	N/A	6	0.280	0.0	75

Borehole Notes:

A re-baseline of selected boreholes in A Farm was conducted in 2015 for comparison with the initial baseline data acquired in 1996. This Log Data Report includes SGLS³ data acquired in 1996 and 2015. Temperature data were not collected in 2015.

Borehole information and casing data are as reported in the original log data report contained in the *Tank Summary Data Report for Tank A-105* (DOE 1998). Casing thicknesses are derived from published values for schedule 40-steel pipe.

The maximum accessible depth in 1996 and 2015 was 55 ft.

The zero reference is the TOC.

Logging Equipment Information:

Logging System:	Gamma 2	Type:	DHMCA ⁴ SGLS BR
Effective Calibration Date:	03/20/14	Serial No.:	48-TP50478A
Calibration Reference:	HGLP-CC-103, Rev. 1	Logging Procedure:	HGLP-MAN-002, Rev. 2a

SGLS Log Run Information:

Log Run	1	2 Repeat			
HEIS Number	1016238	1016239			
Date	03/11/15	03/11/15			
Logging Engineer	Spatz/ Felt/McClellan	Spatz/ Felt/McClellan			
Start Depth (ft)	0.0	10.0			
Finish Depth (ft)	54.51	16.0			
Count Time (sec)	100	100			
Live/Real	R	R			

¹ Depth to water inside casing

² top of casing

³ Spectral Gamma Logging System

⁴ Down-Hole Multi-Channel Analyzer



Stoller Newport News Nuclear

Log Run	1	2 Repeat			
Shield (Y/N)	N	N			
MSA Interval (ft)	0.5	0.5			
Log Speed (ft/min)	N/A	N/A			
Pre-Verification	_B_15311	1016238_B_15311			
Start File	D_000000	D_001000			
Finish File	D_005451	D_001600			
Post-Verification	1016239_A_15311	_A_15311			
Depth Return Error (in.)	N/A	0.0			
Comments	No fine gain adjustments made	No fine gain adjustments made			

Logging Operation Notes:

Data were collected using Gamma 2, HO 68B-3572. Pre- and post-survey verification measurements were acquired in the KUTH-082 field verifier. A centralizer was not installed on the sonde. During logging, the boom was extended over the A Farm perimeter fence boundary using the remote standoff.

Analysis Notes:

Analyst:	P.D. Henwood	Date:	09/22/15	Reference:	HGLP-MAN-003, Rev. 1a
-----------------	--------------	--------------	----------	-------------------	-----------------------

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

A casing correction for 0.280-in. thick casing was applied during analysis.

SGLS spectra were processed in batch mode in APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated in an EXCEL template identified as 20140320_BR, using an efficiency function and corrections for casing and dead time as determined by annual calibrations.

During routine processing of gamma spectra, regions of interest are forced at specific energy levels associated with natural and manmade radionuclides that can be anticipated to be present. This processing approach sometimes results in an isolated “detection” near the MDL⁵ resulting in a false positive. Where these detections occur, the individual spectrum is scrutinized and a determination is made regarding the validity of the detection. If the detection is deemed not representative of a full energy peak, or if confirming peaks are not detected, it is removed from the data set. The integrity of the raw data files and the processed files are maintained should questions arise in the future regarding these determinations.

To assure comparability, the same casing correction used for the 2015 data was applied to the original 1996 processed files. The efficiency function and dead time correction in place in 1996 was applied during reprocessing. For purposes of comparison with the 2015 data, the Cs-137 concentrations were decayed to a common date of March 11, 2015.

Results and Interpretations:

Cs-137 was detected discontinuously from ground surface to approximately 21 ft. A maximum concentration of approximately 87 pCi/g was measured at 7 ft. Comparisons with the 1996 SGLS data indicate no significant changes.

Although not detected in 1996 or 2015, MDLS for Co-60 and Eu-154 are plotted on the comparison plot of manmade radionuclides.

⁵ minimum detectable level



Stoller Newport News Nuclear

List of Log Plots:

Depth Reference is top of casing:

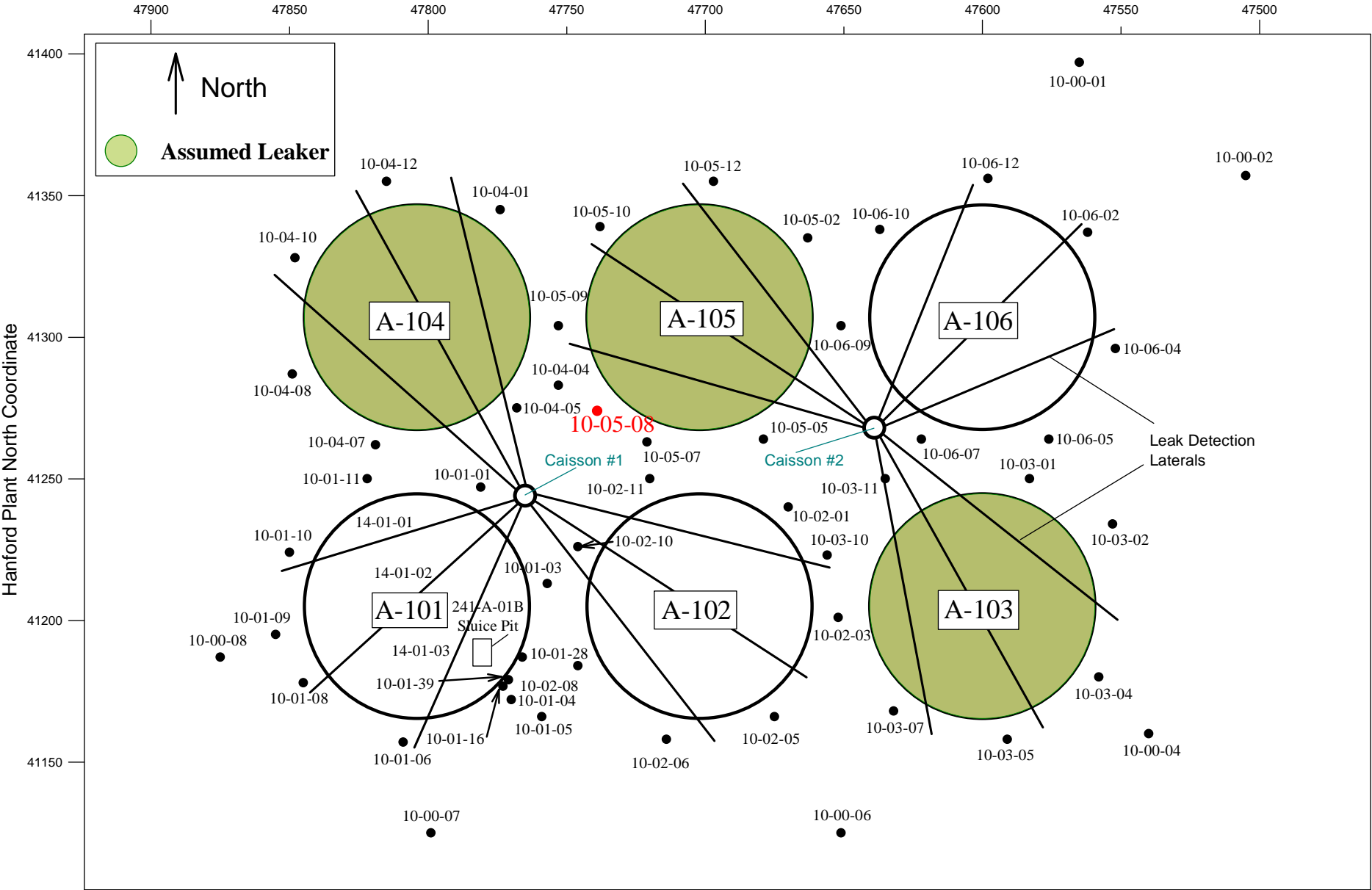
Borehole Location Map for A Farm
Combination Plot (2015) (0-100 ft)
Comparison of Manmade Radionuclides (2015 & 1996) (0-100 ft)
Manmade Repeat Section (10-16 ft)
Repeat Section of Natural Gamma Logs (10-16 ft)

References:

U.S. Department of Energy (DOE). 1998. *Hanford Tank Farms Vadose Zone, Tank Summary Data Report for Tank A-105*. GJ-HAN-110. Prepared by MACTEC-ERS for the Grand Junction Office. Grand Junction, Colorado.

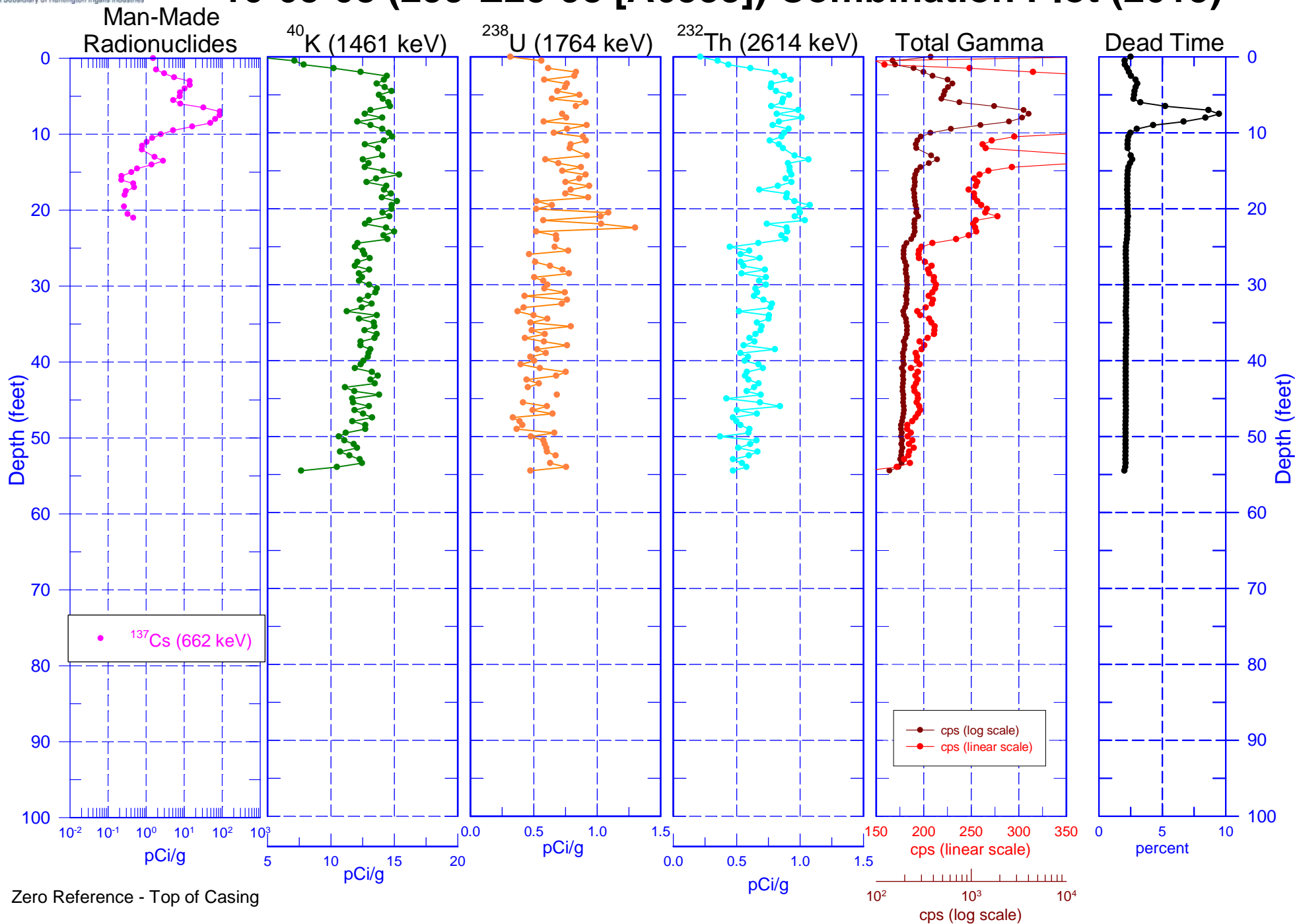
Borehole Location Map for A Farm

Hanford Plant West Coordinate





10-05-08 (299-E25-98 [A6533]) Combination Plot (2015)

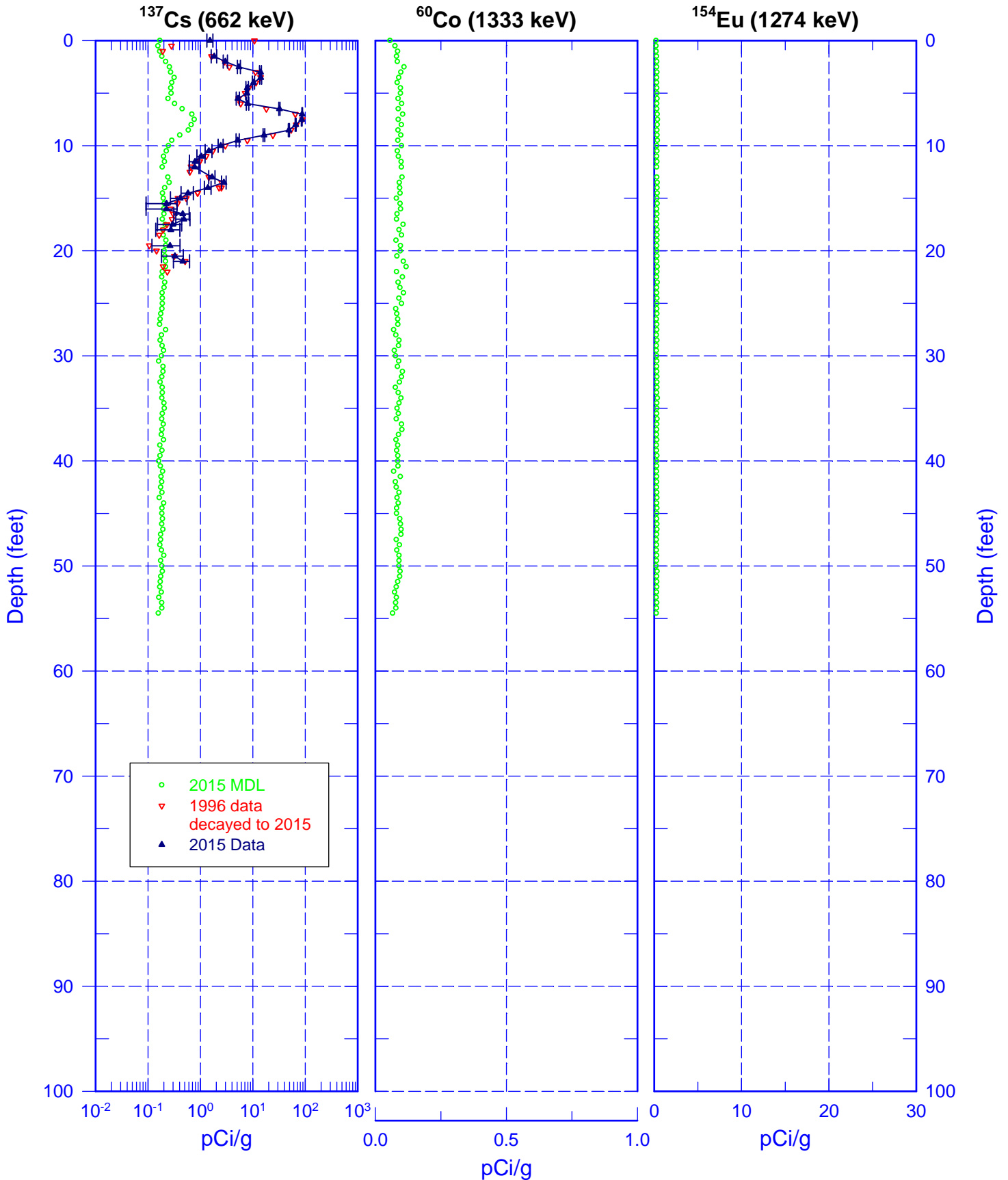


Zero Reference - Top of Casing



10-05-08 (299-E25-98 [A6533])

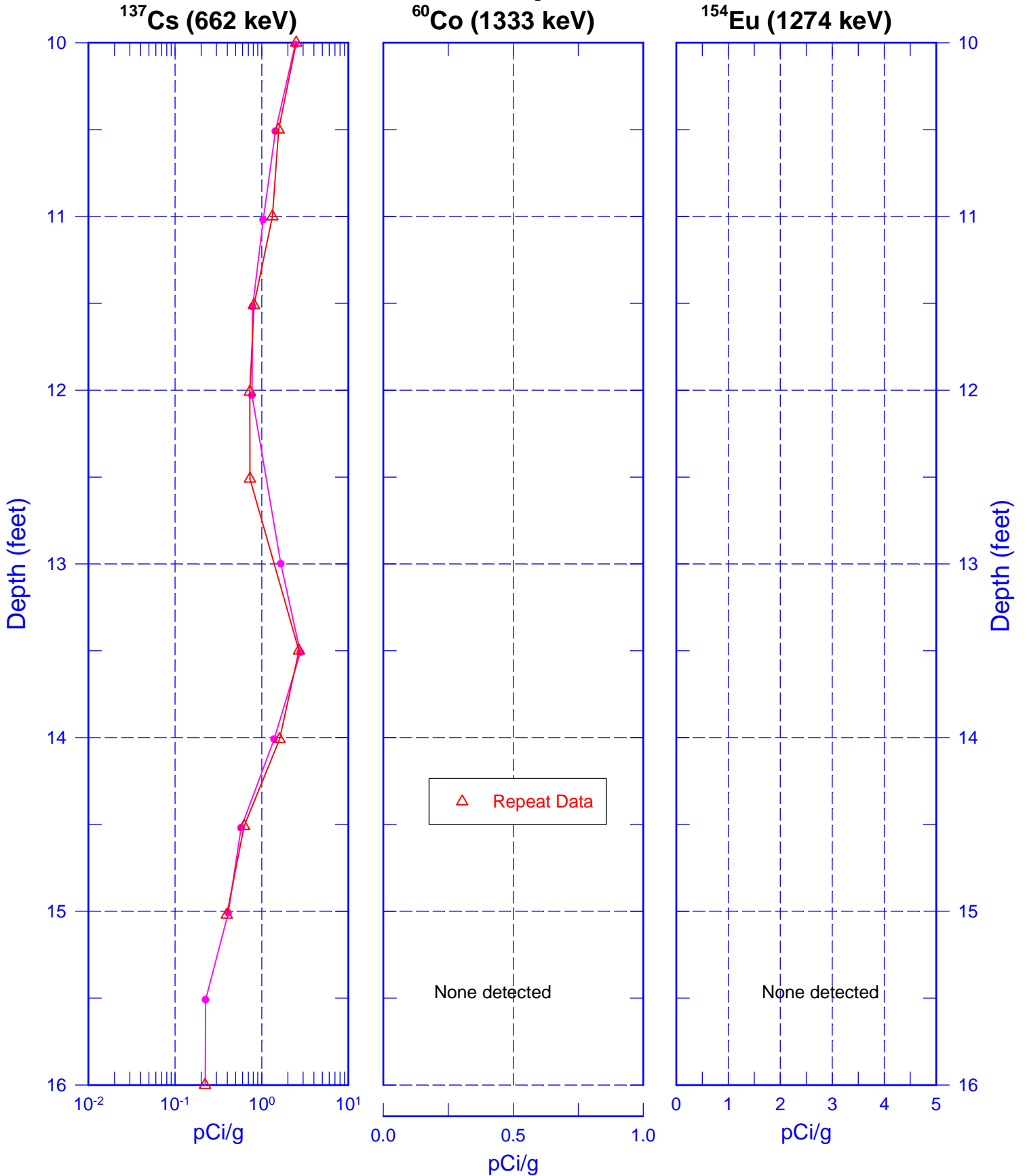
Comparison of Manmade Radionuclides (2015 & 1996)



Zero Reference - Top of Casing



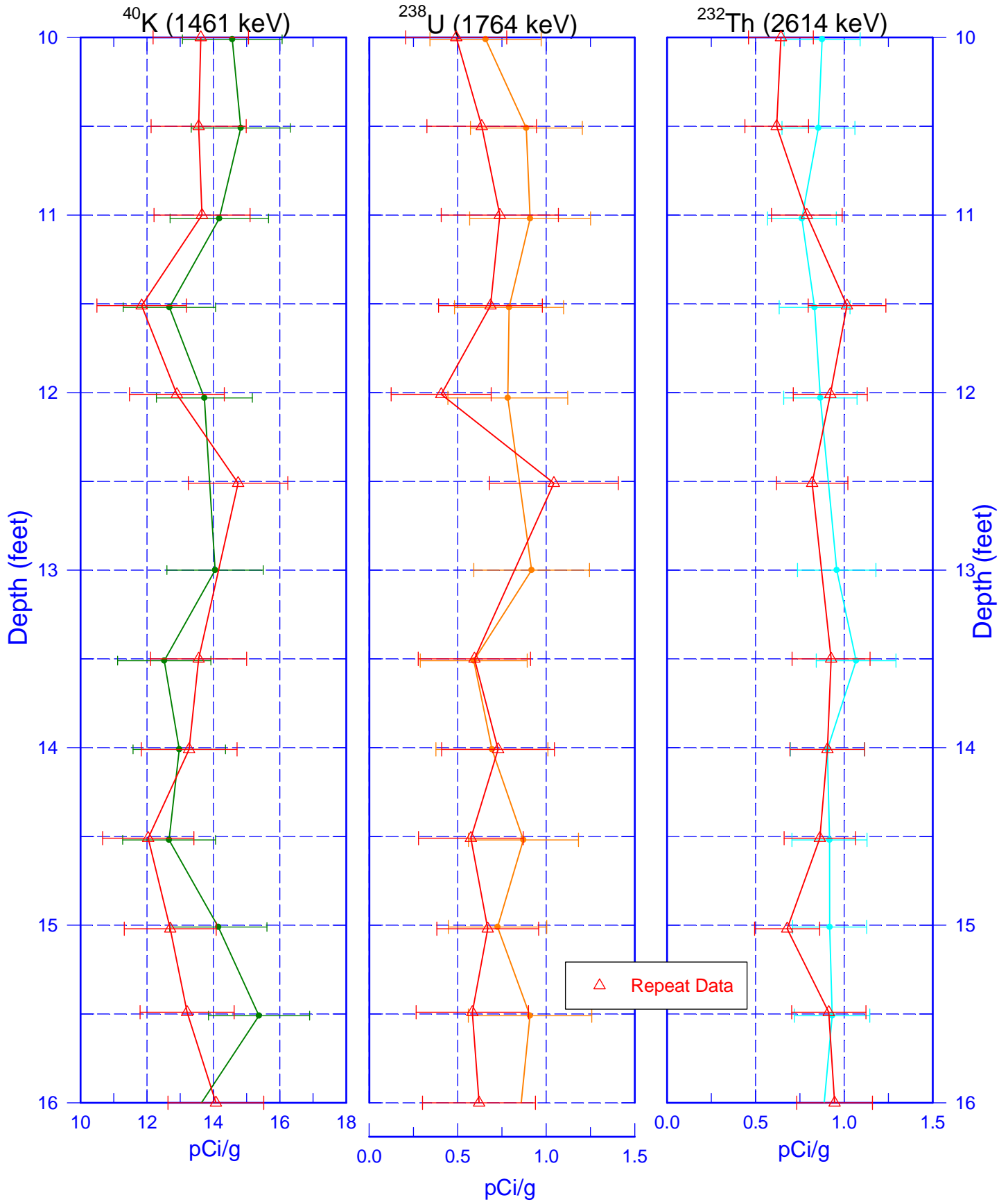
10-05-08 (299-E25-98 [A6533]) Manmade Repeat Section



Zero Reference - Top of Casing



10-05-08 (299-E25-98 [A6533]) Repeat Section of Natural Gamma Logs



Zero Reference - Top of Casing