

January 4, 2018

Ms. Linda Gersey
U.S. Nuclear Regulatory Commission
Region IV
1600 Lamar Boulevard
Arlington, TX 76011-4511

SUBJECT: ORISE CONTRACT NO. DE-SC0014664
LETTER REPORT FOR ANALYTICAL RESULTS FOR 31 SOIL SAMPLES
ASSOCIATED WITH THE URANIUM ONE – IRIGARAY MINE UNITS 1-9 IN
JOHNSON COUNTY, WYOMING
DOCKET NO. 04008502; DCN: 5317-LR-02-0; SDG: 13965-2

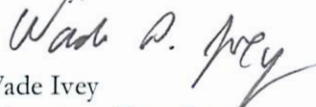
Dear Ms. Gersey:

The Oak Ridge Institute for Science and Education (ORISE) is pleased to provide the enclosed data package for 31 soil samples received on November 20, 2017 associated with the Uranium One – Irigaray Mine Units 1-9 in Johnson County, Wyoming. All samples were analyzed for Ra-226, U-235, and U-238 by gamma spectrometry. The samples were sealed for approximately 30 days to allow the ingrowth of the progeny of Ra-226. The gamma ray of Pb-214 was used to quantify the Ra-226, and the gamma ray of Th-234 was used to quantify the U-238. The analytical data, along with the procedure references, are presented in the attached reports.

Quality Control (QC) requirements were met for this analysis and are available for your review upon request.

Please feel free to contact me at 865.576.9184 or Forrest Smith at 865.574.9802 with any questions or comments.

Sincerely,


Wade Ivey
Laboratory Team Lead
ORAU

WPI:lw

Enclosures

Electronic distribution: T. Carter, NRC S. Roberts, ORAU
E. Bailey, ORAU D. Hagemeyer, ORAU
File code: 5317 Lab code: 13965

Distribution approval and concurrence:	Initials
Technical Review	ENB
Quality Review	JB

Gamma Spectrometry Summary Results By Analyte



Report Date: December 27, 2017

Analyte:	Ra-226 by Pb-214	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	351.93 (KeV)
Project # :	201213965	SDG # :	201213965-2

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
DN73	13965S0033	3.52	0.22	0.13	pCi/g		GS0631
DO74	13965S0034	4.18	0.30	0.25	pCi/g		GS0631
BS93	13965S0035	2.62	0.18	0.13	pCi/g		GS0631
	13965S0035Dup	2.55	0.15	0.08	pCi/g		GS0631
DQ76	13965S0036	8.71	0.24	0.16	pCi/g		GS0631
DJ66	13965S0037	2.21	0.14	0.10	pCi/g		GS0631
AS112	13965S0038	1.348	0.063	0.069	pCi/g		GS0631
CB95	13965S0039	2.49	0.16	0.11	pCi/g		GS0631
CH92	13965S0040	3.87	0.23	0.12	pCi/g		GS0631
BF106	13965S0041	3.20	0.12	0.13	pCi/g		GS0631
X103	13965S0042	2.25	0.15	0.12	pCi/g		GS0631
AW99	13965S0043	1.72	0.12	0.10	pCi/g		GS0631
CK82	13965S0044	2.35	0.14	0.08	pCi/g		GS0631
P110	13965S0045	3.71	0.12	0.11	pCi/g		GS0631
DF66	13965S0046	4.13	0.24	0.13	pCi/g		GS0631
CF82	13965S0047	1.59	0.11	0.10	pCi/g		GS0631
AU109	13965S0048	1.42	0.10	0.10	pCi/g		GS0631
BM99	13965S0049	2.477	0.089	0.073	pCi/g		GS0631
CE84	13965S0050	1.81	0.12	0.10	pCi/g		GS0631
K99	13965S0051	2.31	0.15	0.10	pCi/g		GS0632
	13965S0051Dup	2.270	0.085	0.072	pCi/g		GS0632
CM81	13965S0052	3.17	0.21	0.13	pCi/g		GS0632
BW88	13965S0053	2.41	0.15	0.10	pCi/g		GS0632
DG67	13965S0054	2.96	0.19	0.12	pCi/g		GS0632
AU101	13965S0055	2.351	0.085	0.077	pCi/g		GS0632
AF103	13965S0056	1.77	0.13	0.12	pCi/g		GS0632
BA107	13965S0057	2.88	0.18	0.12	pCi/g		GS0632
DD69	13965S0058	2.26	0.15	0.10	pCi/g		GS0632
AZ105	13965S0059	2.28	0.15	0.13	pCi/g		GS0632
CY67	13965S0060	1.683	0.071	0.079	pCi/g		GS0632
BD104	13965S0061	2.94	0.19	0.14	pCi/g		GS0632

Qualifier Flags:
 U = Analyte not detected (< MDC)

TPU = Total Propagated Uncertainty
 MDC = Minimum Detectable Concentration

Gamma Spectrometry Summary Results By Analyte



Report Date: December 27, 2017

Analyte:	Ra-226 by Pb-214	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	351.93 (KeV)
Project # :	201213965	SDG # :	201213965-2

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
AI105	13965S0062	1.96	0.13	0.10	pCi/g		GS0632
CO79	13965S0063	2.61	0.15	0.07	pCi/g		GS0632

Electronically Validated By:

John Cox- 12/27/2017 07:35, William Smith - 12/27/2017 07:53

Electronically Approved By:

Wade Ivey 12/27/2017 08:06

Qualifier Flags:

U = Analyte not detected (< MDC)

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Gamma Spectrometry Summary Results By Analyte



Report Date: December 27, 2017

Analyte:	U-235	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	143.76 (KeV)
Project # :	201213965	SDG # :	201213965-2

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
DN73	13965S0033	0.28	0.15	0.35	pCi/g	U	GS0631
DO74	13965S0034	0.29	0.21	0.48	pCi/g	U	GS0631
BS93	13965S0035	0.21	0.14	0.32	pCi/g	U	GS0631
	13965S0035Dup	0.17	0.10	0.23	pCi/g	U	GS0631
DQ76	13965S0036	0.27	0.15	0.36	pCi/g	U	GS0631
DJ66	13965S0037	0.18	0.14	0.32	pCi/g	U	GS0631
AS112	13965S0038	0.008	0.083	0.199	pCi/g	U	GS0631
CB95	13965S0039	0.12	0.15	0.36	pCi/g	U	GS0631
CH92	13965S0040	0.25	0.14	0.32	pCi/g	U	GS0631
BF106	13965S0041	0.21	0.11	0.24	pCi/g	U	GS0631
X103	13965S0042	0.10	0.14	0.34	pCi/g	U	GS0631
AW99	13965S0043	0.11	0.11	0.26	pCi/g	U	GS0631
CK82	13965S0044	0.07	0.10	0.24	pCi/g	U	GS0631
P110	13965S0045	0.05	0.10	0.25	pCi/g	U	GS0631
DF66	13965S0046	0.02	0.18	0.44	pCi/g	U	GS0631
CF82	13965S0047	0.13	0.10	0.24	pCi/g	U	GS0631
AU109	13965S0048	0.10	0.12	0.29	pCi/g	U	GS0631
BM99	13965S0049	0.149	0.091	0.210	pCi/g	U	GS0631
CE84	13965S0050	0.16	0.14	0.34	pCi/g	U	GS0631
K99	13965S0051	0.15	0.12	0.27	pCi/g	U	GS0632
	13965S0051Dup	0.146	0.094	0.217	pCi/g	U	GS0632
CM81	13965S0052	0.27	0.14	0.33	pCi/g	U	GS0632
BW88	13965S0053	0.03	0.10	0.25	pCi/g	U	GS0632
DG67	13965S0054	0.15	0.13	0.29	pCi/g	U	GS0632
AU101	13965S0055	0.11	0.10	0.24	pCi/g	U	GS0632
AF103	13965S0056	0.12	0.13	0.31	pCi/g	U	GS0632
BA107	13965S0057	0.13	0.12	0.29	pCi/g	U	GS0632
DD69	13965S0058	0.13	0.15	0.36	pCi/g	U	GS0632
AZ105	13965S0059	0.18	0.12	0.28	pCi/g	U	GS0632
CY67	13965S0060	0.127	0.087	0.203	pCi/g	U	GS0632
BD104	13965S0061	0.21	0.16	0.38	pCi/g	U	GS0632

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Gamma Spectrometry Summary Results By Analyte



Report Date: December 27, 2017

Analyte:	U-235	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	143.76 (KeV)
Project # :	201213965	SDG # :	201213965-2

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
AI105	13965S0062	0.10	0.11	0.26	pCi/g	U	GS0632
CO79	13965S0063	0.035	0.093	0.222	pCi/g	U	GS0632

Electronically Validated By:

John Cox- 12/27/2017 07:35, William Smith - 12/27/2017 07:53

Electronically Approved By:

Wade Ivey 12/27/2017 08:06

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Gamma Spectrometry Summary Results By Analyte



Report Date: December 27, 2017

Analyte:	U-238 by Th-234	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	63.29 (KeV)
Project # :	201213965	SDG # :	201213965-2

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
DN73	13965S0033	2.93	0.88	1.35	pCi/g		GS0631
DO74	13965S0034	3.5	1.1	1.7	pCi/g		GS0631
BS93	13965S0035	3.13	0.91	1.34	pCi/g		GS0631
	13965S0035Dup	2.96	0.79	1.00	pCi/g		GS0631
DQ76	13965S0036	3.9	1.0	1.3	pCi/g		GS0631
DJ66	13965S0037	2.04	0.96	1.95	pCi/g		GS0631
AS112	13965S0038	1.60	0.48	0.75	pCi/g		GS0631
CB95	13965S0039	2.52	0.98	1.85	pCi/g		GS0631
CH92	13965S0040	3.63	0.97	1.23	pCi/g		GS0631
BF106	13965S0041	4.3	1.0	0.8	pCi/g		GS0631
X103	13965S0042	2.4	1.0	2.0	pCi/g		GS0631
AW99	13965S0043	2.17	0.68	1.08	pCi/g		GS0631
CK82	13965S0044	3.11	0.79	0.87	pCi/g		GS0631
P110	13965S0045	2.13	0.61	0.91	pCi/g		GS0631
DF66	13965S0046	3.0	1.2	2.4	pCi/g		GS0631
CF82	13965S0047	1.83	0.60	1.00	pCi/g		GS0631
AU109	13965S0048	1.5	1.1	2.4	pCi/g	U	GS0631
BM99	13965S0049	2.45	0.65	0.83	pCi/g		GS0631
CE84	13965S0050	1.34	0.92	2.04	pCi/g	U	GS0631
K99	13965S0051	3.1	1.1	2.0	pCi/g		GS0632
	13965S0051Dup	2.32	0.63	0.83	pCi/g		GS0632
CM81	13965S0052	3.02	0.88	1.30	pCi/g		GS0632
BW88	13965S0053	2.39	0.66	0.89	pCi/g		GS0632
DG67	13965S0054	2.26	0.73	1.23	pCi/g		GS0632
AU101	13965S0055	2.26	0.61	0.81	pCi/g		GS0632
AF103	13965S0056	1.41	0.94	2.08	pCi/g	U	GS0632
BA107	13965S0057	3.67	0.97	1.22	pCi/g		GS0632
DD69	13965S0058	1.69	0.97	2.09	pCi/g	U	GS0632
AZ105	13965S0059	3.39	0.90	1.14	pCi/g		GS0632
CY67	13965S0060	1.71	0.48	0.68	pCi/g		GS0632
BD104	13965S0061	3.6	1.3	2.3	pCi/g		GS0632

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Gamma Spectrometry Summary Results By Analyte



Report Date: December 27, 2017

Analyte:	U-238 by Th-234	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	63.29 (KeV)
Project # :	201213965	SDG # :	201213965-2

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
AI105	13965S0062	2.51	0.74	1.10	pCi/g		GS0632
CO79	13965S0063	2.43	0.64	0.79	pCi/g		GS0632

Electronically Validated By:

John Cox- 12/27/2017 07:35, William Smith - 12/27/2017 07:53

Electronically Approved By:

Wade Ivey 12/27/2017 08:06

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