

December 4, 2017

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 32 SOIL SAMPLES
ASSOCIATED WITH THE URANIUM ONE – IRIGARAY MINE UNITS 1-9 IN
JOHNSON COUNTY, WYOMING
DOCKET NO. 04008502; DCN: 5317-LR-01-0; SDG: 13965-1

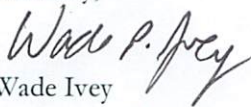
Dear Ms. Gersey:

The Oak Ridge Institute for Science and Education (ORISE) is pleased to provide the enclosed data package for 32 soil samples received on October 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 Manager
ORAU

WPI:lw

Enclosures

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

Distribution approval and concurrence:	Initials
Quality Review	
Technical Review	

Gamma Spectrometry Summary Results By Analyte



Report Date: November 29, 2017

Analyte:	Ra-226 by Pb-214	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	351.93 (KeV)
Project # :	201213965	SDG # :	201213965-1

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
BD106	13965S0001	6.65	0.40	0.20	pCi/g		GS0614
	13965S0001Dup	6.61	0.37	0.16	pCi/g		GS0614
CH93	13965S0002	3.79	0.21	0.10	pCi/g		GS0614
Building Site	13965S0003	16.08	0.84	0.23	pCi/g		GS0614
DP74	13965S0004	8.86	0.50	0.19	pCi/g		GS0614
DP75	13965S0005	5.03	0.16	0.12	pCi/g		GS0614
DV68	13965S0006	3.58	0.21	0.12	pCi/g		GS0614
DM73	13965S0007	2.56	0.17	0.12	pCi/g		GS0614
EB77	13965S0008	3.35	0.12	0.10	pCi/g		GS0614
DN63	13965S0009	3.18	0.20	0.14	pCi/g		GS0614
DX66	13965S0010	5.02	0.30	0.16	pCi/g		GS0614
DJ84	13965S0011	3.15	0.11	0.09	pCi/g		GS0614
DW78	13965S0012	2.74	0.19	0.15	pCi/g		GS0614
DL75	13965S0013	3.25	0.20	0.13	pCi/g		GS0614
DT72	13965S0014	3.80	0.24	0.16	pCi/g		GS0614
DN74	13965S0015	3.39	0.12	0.11	pCi/g		GS0614
DW66	13965S0016	3.98	0.24	0.16	pCi/g		GS0614
DL78	13965S0017	3.01	0.19	0.13	pCi/g		GS0615
	13965S0017Dup	3.06	0.11	0.08	pCi/g		GS0615
DW67	13965S0018	3.28	0.13	0.13	pCi/g		GS0615
DL73	13965S0019	1.95	0.13	0.12	pCi/g		GS0615
DU72	13965S0020	4.13	0.25	0.15	pCi/g		GS0615
DU70	13965S0021	3.64	0.13	0.11	pCi/g		GS0615
DI81	13965S0022	2.70	0.17	0.13	pCi/g		GS0615
DL83	13965S0023	3.32	0.21	0.14	pCi/g		GS0615
DM76	13965S0024	2.550	0.097	0.093	pCi/g		GS0615
DV67	13965S0025	3.82	0.21	0.09	pCi/g		GS0615
DM75	13965S0026	4.25	0.25	0.13	pCi/g		GS0615
DN75	13965S0027	2.27	0.15	0.12	pCi/g		GS0615
DP72	13965S0028	2.14	0.14	0.11	pCi/g		GS0615
DZ65	13965S0029	2.95	0.11	0.10	pCi/g		GS0615

Qualifier Flags:

U = Analyte not detected (< MDC)

TPU = Total Propagated Uncertainty
MDC = Minimum Detectable Concentration

Gamma Spectrometry Summary Results By Analyte



Report Date: November 29, 2017

Analyte:	Ra-226 by Pb-214	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	351.93 (KeV)
Project # :	201213965	SDG # :	201213965-1

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
DM72	13965S0030	5.82	0.33	0.14	pCi/g		GS0615
DX77	13965S0031	3.30	0.21	0.14	pCi/g		GS0615
DV78	13965S0032	2.64	0.11	0.10	pCi/g		GS0615

Electronically Validated By:
John Cox- 11/29/2017 12:32

Electronically Approved By:

Wade Ivey 11/29/2017 12:37

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Gamma Spectrometry Summary Results By Analyte



Report Date: November 29, 2017

Analyte:	U-235	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	143.76 (KeV)
Project # :	201213965	SDG # :	201213965-1

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
BD106	13965S0001	0.41	0.23	0.53	pCi/g	U	GS0614
	13965S0001Dup	0.28	0.20	0.47	pCi/g	U	GS0614
CH93	13965S0002	0.12	0.11	0.26	pCi/g	U	GS0614
Building Site	13965S0003	1.16	0.31	0.68	pCi/g		GS0614
DP74	13965S0004	0.28	0.10	0.37	pCi/g	U	GS0614
DP75	13965S0005	0.21	0.12	0.28	pCi/g	U	GS0614
DV68	13965S0006	0.14	0.15	0.35	pCi/g	U	GS0614
DM73	13965S0007	0.17	0.12	0.28	pCi/g	U	GS0614
EB77	13965S0008	0.13	0.11	0.25	pCi/g	U	GS0614
DN63	13965S0009	0.03	0.14	0.34	pCi/g	U	GS0614
DX66	13965S0010	0.33	0.16	0.36	pCi/g	U	GS0614
DJ84	13965S0011	0.116	0.100	0.234	pCi/g	U	GS0614
DW78	13965S0012	0.05	0.15	0.37	pCi/g	U	GS0614
DL75	13965S0013	0.16	0.16	0.37	pCi/g	U	GS0614
DT72	13965S0014	0.29	0.14	0.33	pCi/g	U	GS0614
DN74	13965S0015	0.11	0.11	0.26	pCi/g	U	GS0614
DW66	13965S0016	0.02	0.17	0.40	pCi/g	U	GS0614
DL78	13965S0017	-0.01	0.14	0.32	pCi/g	U	GS0615
	13965S0017Dup	0.157	0.094	0.216	pCi/g	U	GS0615
DW67	13965S0018	0.19	0.13	0.31	pCi/g	U	GS0615
DL73	13965S0019	0.12	0.16	0.37	pCi/g	U	GS0615
DU72	13965S0020	0.15	0.13	0.30	pCi/g	U	GS0615
DU70	13965S0021	0.08	0.12	0.29	pCi/g	U	GS0615
DI81	13965S0022	0.43	0.16	0.36	pCi/g		GS0615
DL83	13965S0023	0.16	0.12	0.28	pCi/g	U	GS0615
DM76	13965S0024	0.12	0.10	0.24	pCi/g	U	GS0615
DV67	13965S0025	0.15	0.13	0.31	pCi/g	U	GS0615
DM75	13965S0026	0.19	0.16	0.38	pCi/g	U	GS0615
DN75	13965S0027	0.14	0.12	0.28	pCi/g	U	GS0615
DP72	13965S0028	0.14	0.14	0.33	pCi/g	U	GS0615
DZ65	13965S0029	0.17	0.10	0.24	pCi/g	U	GS0615

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Gamma Spectrometry Summary Results By Analyte



Report Date: November 29, 2017

Analyte:	U-235	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	143.76 (KeV)
Project # :	201213965	SDG # :	201213965-1

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
DM72	13965S0030	0.20	0.19	0.45	pCi/g	U	GS0615
DX77	13965S0031	0.27	0.13	0.31	pCi/g	U	GS0615
DV78	13965S0032	0.12	0.10	0.24	pCi/g	U	GS0615

Electronically Validated By:
John Cox- 11/29/2017 12:32

Electronically Approved By:

Wade Ivey 11/29/2017 12:37

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Gamma Spectrometry Summary Results By Analyte



Report Date: November 29, 2017

Analyte:	U-238 by Th-234	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	63.29 (KeV)
Project # :	201213965	SDG # :	201213965-1

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
BD106	13965S0001	7.1	1.8	2.0	pCi/g		GS0614
	13965S0001Dup	7.4	2.3	3.8	pCi/g		GS0614
CH93	13965S0002	3.05	0.80	0.97	pCi/g		GS0614
Building Site	13965S0003	25.3	5.8	5.3	pCi/g		GS0614
DP74	13965S0004	5.3	1.4	1.8	pCi/g		GS0614
DP75	13965S0005	2.74	0.77	1.10	pCi/g		GS0614
DV68	13965S0006	2.3	1.1	2.3	pCi/g	U	GS0614
DM73	13965S0007	2.73	0.71	1.18	pCi/g		GS0614
EB77	13965S0008	2.90	0.74	0.87	pCi/g		GS0614
DN63	13965S0009	2.3	1.1	2.4	pCi/g	U	GS0614
DX66	13965S0010	3.4	1.0	1.6	pCi/g		GS0614
DJ84	13965S0011	1.53	0.52	0.91	pCi/g		GS0614
DW78	13965S0012	2.40	0.84	1.48	pCi/g		GS0614
DL75	13965S0013	2.4	1.1	2.2	pCi/g		GS0614
DT72	13965S0014	4.1	1.1	1.4	pCi/g		GS0614
DN74	13965S0015	2.95	0.78	0.98	pCi/g		GS0614
DW66	13965S0016	2.9	1.3	2.7	pCi/g		GS0614
DL78	13965S0017	2.27	0.75	1.27	pCi/g		GS0615
	13965S0017Dup	2.16	0.60	0.81	pCi/g		GS0615
DW67	13965S0018	3.51	0.91	1.10	pCi/g		GS0615
DL73	13965S0019	2.6	1.0	2.0	pCi/g		GS0615
DU72	13965S0020	2.78	0.86	1.38	pCi/g		GS0615
DU70	13965S0021	3.23	0.84	1.03	pCi/g		GS0615
DI81	13965S0022	6.8	1.8	2.3	pCi/g		GS0615
DL83	13965S0023	3.34	0.84	1.28	pCi/g		GS0615
DM76	13965S0024	2.08	0.57	0.76	pCi/g		GS0615
DV67	13965S0025	4.3	1.1	1.1	pCi/g		GS0615
DM75	13965S0026	3.4	1.3	2.3	pCi/g		GS0615
DN75	13965S0027	3.18	0.88	1.17	pCi/g		GS0615
DP72	13965S0028	3.2	1.3	2.4	pCi/g		GS0615
DZ65	13965S0029	1.94	0.56	0.82	pCi/g		GS0615

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Gamma Spectrometry Summary Results By Analyte



Report Date: November 29, 2017

Analyte:	U-238 by Th-234	SOP (Rev. #)	CP1 (21)
Project Name:	Uranium One	Energy Signature:	63.29 (KeV)
Project # :	201213965	SDG # :	201213965-1

Client Sample ID:	Lab Sample ID:	Result	TPU (2s)	MDC	Units	Qualifier Flag	Batch #
DM72	13965S0030	2.4	1.2	2.5	pCi/g	U	GS0615
DX77	13965S0031	2.46	0.79	1.31	pCi/g		GS0615
DV78	13965S0032	2.71	0.66	0.90	pCi/g		GS0615

Electronically Validated By:
John Cox- 11/29/2017 12:32

Electronically Approved By:

Wade Ivey 11/29/2017 12:37

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