

DRD GOLD: ERGO

4L10

RADIATION

Activity concentration monitoring

	Name	Representing:	Signature
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1. INTRODUCTION

Crown Gold Recoveries requires closure on the 4L10 site so that Crown Gold recoveries can hand it over to the property owners. The site is located in Germiston, and is surrounded by various types of industry, and is adjacent to the ERGO 4L13 site.

2. PURPOSE AND SCOPE

A radiation survey was performed of a surface area at 4L10 as shown in Figure 1. The survey was conducted to ascertain radiation levels (NORM) [1] of the area after clean – up operations of the area was completed, with some material left in-situ. Some areas on the site is still in the process of being cleaned up, and was not monitored during this survey. The areas between the site and the railway lines still contain some tailings material, and are part of the clean-up in progress. The sand dump on the site was not part of the scope of work.

The survey was done so as to establish if additional clean-up is needed or if an application for closure may be processed based on the survey results.



Figure 1: 4L10 and 4A2 site

3. SURVEY METHODOLOGY

Gamma rays are the most penetrating radiation from natural and man-made sources, and gamma ray spectrometry is a powerful tool for the monitoring and assessment of the radiation environment. Gamma ray surveys are carried out from aircraft, field vehicles, on foot, in boreholes, on the sea bottom and in laboratories. Ground and airborne gamma ray measurements cover large areas of the earth's surface, and many national and regional radiometric maps have been compiled and published. Standardized maps of terrestrial radiation and radioelement concentrations can be compared and regionally unified, showing general regional trends in radionuclide distribution and making the radiological assessment of the environment possible. [3]

The radiation monitoring on site was performed by qualified radiation Protection personnel using a Portable Gamma-Dose Spectrometer RADIATION SOLUTIONS, type RS-230 with serial number 3402 mounted on a quad bike at 1m height above ground, travelling at speeds of less than 7.0 km/hour (walking speed)

Personnel detail and instrument calibration information is provided in Appendix 1 and Appendix 4 respectively.

The radiation levels that were measured are represented in Figure 2 below.

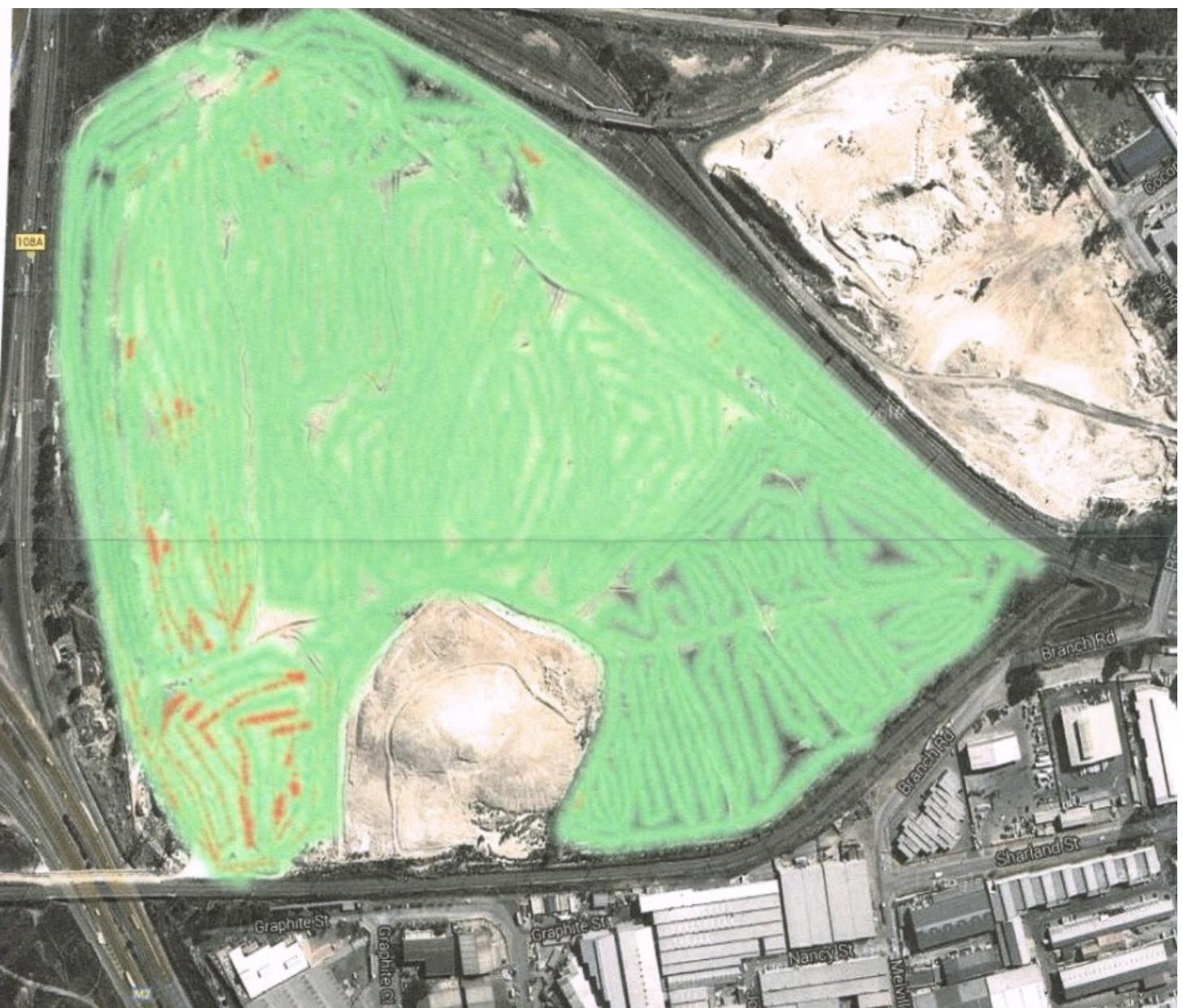


Figure 2: Radioactivity indicated as per survey 10 x 10 m grid

Colour legend

Green lines – 0 to 0.50 Bq/g

Red lines – 0.5 to 1.0 Bq/g

4. SURVEY DATA

The RADIATION SOLUTIONS RS-230 survey data is listed in Appendix 3. A total of 21060 per second measurements were recorded and reported accordingly, with the results as per Table 1. This site was surveyed as an infinite sampling area, and all sampling was done at a height of 1 meter above ground. (The determination of a sample being infinite or not can be established by taking a reading on the ground and at 1m above the ground. It is important to note that the readings should have a statistical uncertainty of $<2\sigma$. Should the ratio be <0.9 , it may be assumed that the source is **not** infinite.) [2][4]

The RS 230 Gamma Ray spectrometers are normally calibrated in multiple units of nSv/h Dose Rate, ppm eU₃O₈, % equivalent Potassium, ppm equivalent Uranium and ppm equivalent Thorium, assuming that no disequilibrium exists in the sample. There are occasions that the reported grade needs to be converted to activity in the units of Becquerel per gram which can be done assuming that the measurement was made on an infinite sample. If the above mentioned assumptions are not met, the conversion can still be made but the non-adherence must be reported together with the results.

The conversion factors per ppm for the different radionuclides and their percentage availability in nature are (ignoring Potassium) [2]:

$$\text{Th} - 232 = 4.06\text{E-}03 \text{Bq/g} \quad \text{availability} = 1.000$$

$$\text{U} - 235 = 5.71\text{E-}04 \text{Bq/g} \quad \text{availability} = 1.007$$

$$\text{U} - 238 = 1.24\text{E-}02 \text{Bq/g} \quad \text{availability} = 0.993$$

Date	Description	Activity concentration				Comments
		Minimum	Maximum	Average	90 th %	
November 2013	RADIATION SOLUTIONS RS-230	0.08	0.80	0.30	0.45	Clean-up operations not complete

Table 1: Activity concentration

5. DOSE RATE MONITORING RESULTS

Dose rate monitoring was done for the whole site, and the results are represented in Table 2. The main aim of the monitoring was to ensure that the completed clean-up of contaminated material was sufficient so that radiation levels of the area do not exceed the contamination limitations as per Section 2 of the Regulations in Terms of Section 36, Read with Section 47 of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999) on Safety Standards and Regulatory Practices (Published in Government Gazette 28755 April 2006) [1]

Date	Description	Dose rate (nSv/h)					Comments
		Minimum	Maximum	Average	90 Th %		
November 2013	RADIATION SOLUTIONS RS-230	17	147.8	55.23163	84.48	Clean-up operations not complete	

Table 2: Dose rate information

- Dose rates were measured on site using the Portable Gamma-Dose Spectrometer RADIATION SOLUTIONS, type RS-230 with serial number 3402.
- The dose rate data were downloaded from the RS-230, inclusive of the survey Chart 1 that was reproduced below.
- All measurements were done at 1 meter.

Chart 1: Dose rate graph 17 October 2013

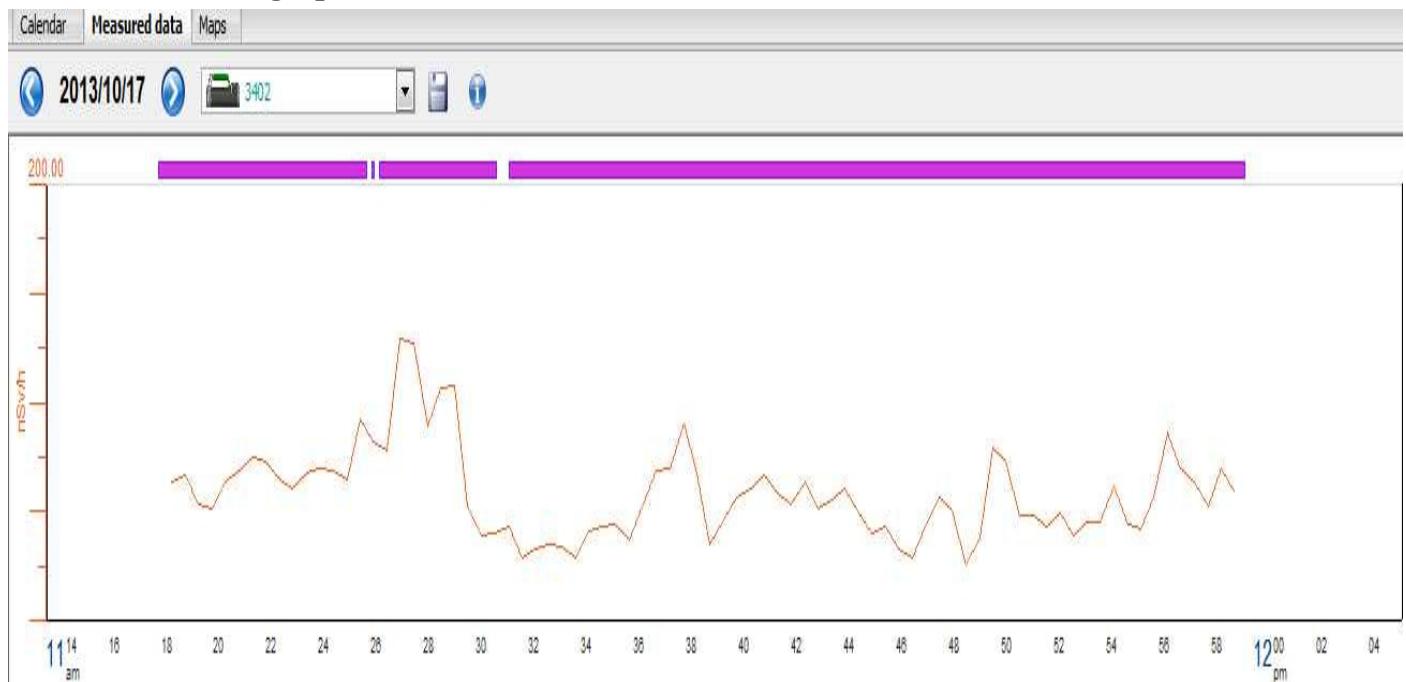


Chart 2: Dose rate graph 13 November 2013

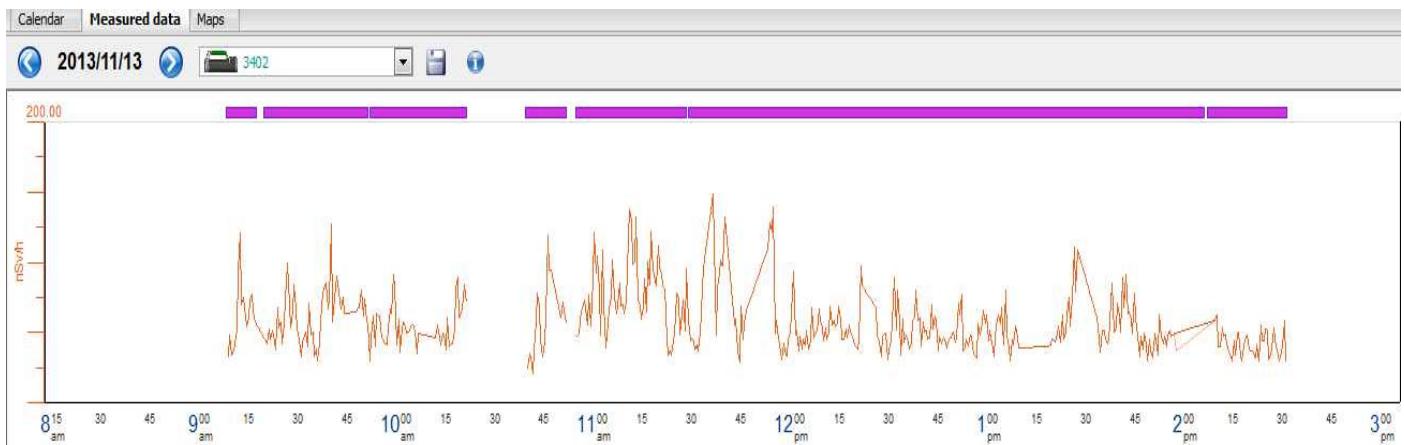


Chart 3: Dose rate graph 14 November 2013

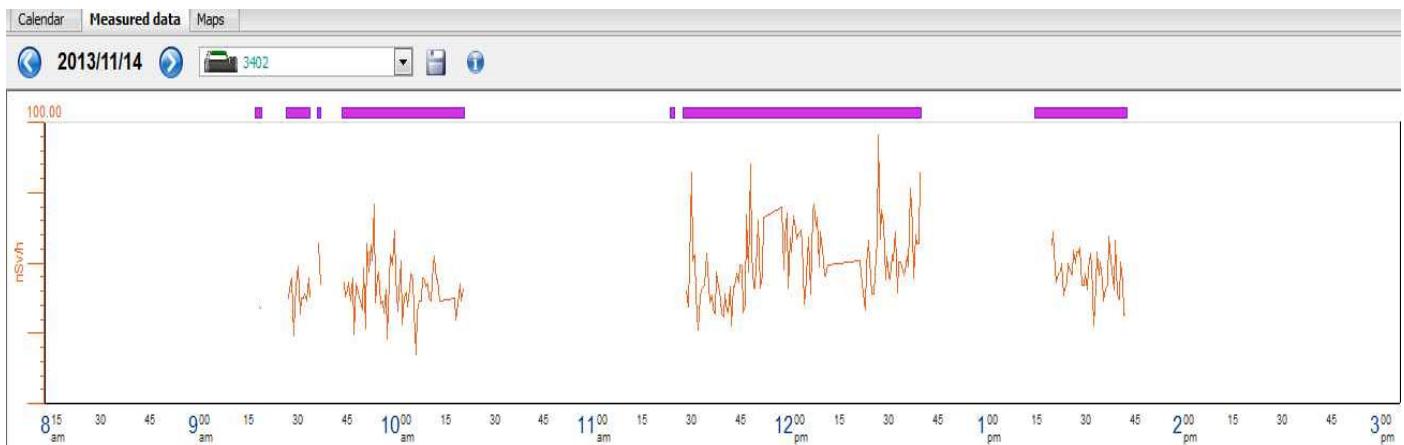
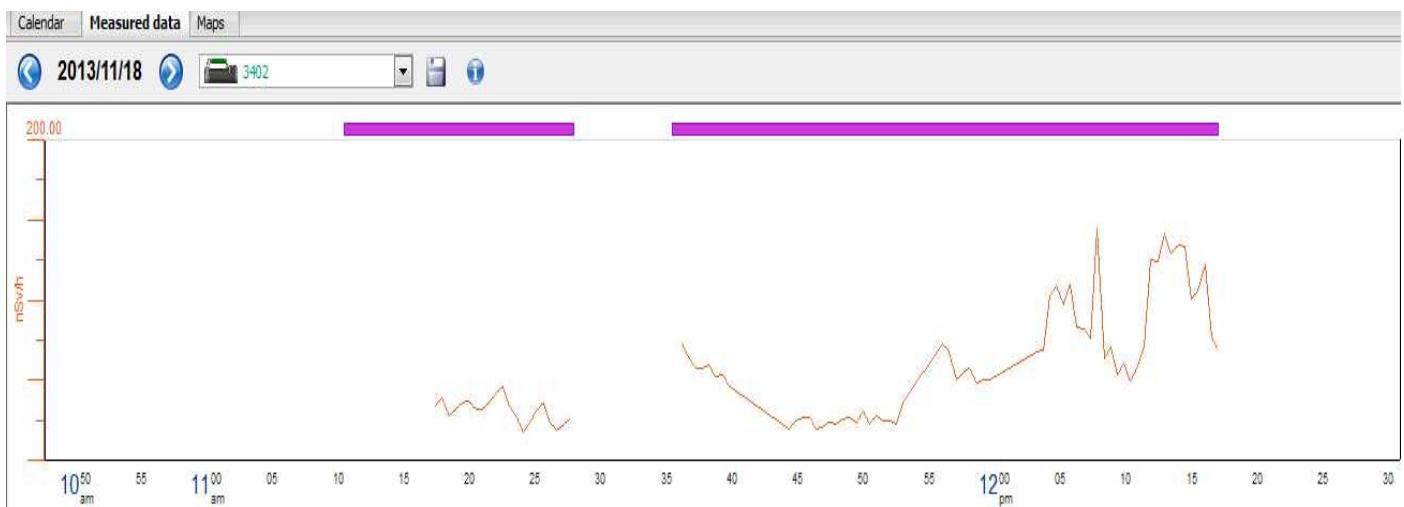


Chart 4: Dose rate graph 18 November 2013



6. INTERPRETATION OF DATA, CONCLUSION AND RECOMMENDATION.

Some of the areas surveyed at 1 meter above ground level as per Figure 2 and attached data as per Appendix 2 indicate values above the 500 Bq per kilogram or 0.5 Bq per gram.
Further confirmatory assessment of the area may be required.
The NNR regulations are not complied with on this site [1]:

7. REFERENCES

- [1] Regulations in Terms of Section 36, Read with Section 47 of the National Nuclear Regulator Act, 1999 (Act No. 47 of 1999) on Safety Standards and Regulatory Practices (Published in Government Gazette 28755 April 2006)
- [2] Activity concentration calculations used based on the Geotron Technical Note 10-2012
- [3] GUIDELINES FOR RADIODELEMENT MAPPING USING GAMMA RAY SPECTROMETRY DATA IAEA, VIENNA, 2003 ; IAEA-TECDOC-1363
- [4] Public domain:

standard deviation equation for a sample of a population

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{N - 1}}$$

where

s = the standard deviation

x = each value in the sample

\bar{x} = the mean of the values

N = the number of values (the sample size)

COUNCIL FOR NUCLEAR SAFETY

This is to certify that

Thomas Nicolaas Spoelstra

has completed the Chamber of Mines Course

Radiation Protection Officer in The Mining Industry

Modules 1, 2 and 3

*and has successfully passed the corresponding examinations
as evaluated by the Council for Nuclear Safety*



B.C. Winkler

B.C. Winkler, Executive Officer

26 September 1995

Date



Certificate of Competency

Radiation Protection Monitor

GEOR-4DIS RT30G/RS-230

Electra DP2R/4A

January 2012

This is to certify that

TM SPOELSTRA (Jnr)
ID NUMBER: 9104185135085

successfully completed the above course.

For EZT

Signed

Date : January 2012

Certificate number: EZ0053

(E-SETA ETQA Identification number - 583)

Appendix 2: List of abbreviations

Abbreviation	Full description
nSv/h	Nanosievert per hour
mSv/h	Millisievert per hour
Bq/g	Becquerel per gram
m	meter
No.	number
Th	Thorium
U	Uranium
NNR	National Nuclear Regulator
Bq	Becquerel
σ	Sigma

Appendix 3: Survey Data

**Concentration of activity in
Bq per gram**

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th- 232	U-235	U-238	Total
4L10	2013/10 /17	11:18: 11	6.9	128.8	4.2	40.4	62.7	26.2094	28.13836	0.25	0.00	0.05	0.31
4L10	2013/10 /17	11:18: 41	7.2	133	3.7	36.2	66.5	26.2094	28.13836	0.27	0.00	0.05	0.32
4L10	2013/10 /17	11:19: 12	4.2	84.9	5.3	48.8	52.5	26.2094	28.13836	0.21	0.00	0.07	0.28
4L10	2013/10 /17	11:19: 43	4.8	91.2	3.6	34.1	50.3	26.2094	28.13836	0.20	0.00	0.04	0.25
4L10	2013/10 /17	11:20: 13	6.5	124.6	5.1	48.8	63.2	26.2094	28.13833	0.26	0.00	0.06	0.32
4L10	2013/10 /17	11:20: 44	6.9	133	5.6	53	68.1	26.2094	28.13799	0.28	0.00	0.07	0.35
4L10	2013/10 /17	11:21: 16	7.2	141.2	7.3	67.5	74	26.2097	28.13735	0.30	0.00	0.09	0.39
4L10	2013/10 /17	11:21: 46	6.9	133.1	5.6	53	72	26.2102	28.1371	0.29	0.00	0.07	0.36
4L10	2013/10 /17	11:22: 17	6.6	124.7	4.7	44.6	64.6	26.2109	28.13706	0.26	0.00	0.06	0.32
4L10	2013/10 /17	11:22: 48	5.7	110	4.7	44.6	60.1	26.2115	28.13706	0.24	0.00	0.06	0.30
4L10	2013/10 /17	11:23: 18	7.1	133	4.1	40.4	66.8	26.2115	28.13705	0.27	0.00	0.05	0.32
4L10	2013/10 /17	11:23: 49	6.7	128.8	5.4	50.9	69.1	26.2115	28.13706	0.28	0.00	0.07	0.35
4L10	2013/10 /17	11:24: 20	6.4	122.6	4.9	46.7	68.7	26.2115	28.13705	0.28	0.00	0.06	0.34
4L10	2013/10 /17	11:24: 51	5.3	105.9	6	55.1	64.1	26.2118	28.13708	0.26	0.00	0.07	0.33
4L10	2013/10 /17	11:25: 21	8.9	170.8	6.9	65.6	91.4	26.2123	28.13719	0.37	0.00	0.08	0.46
4L10	2013/10 /17	11:25: 52	7.4	139.4	5.1	48.8	81.7	26.2129	28.13731	0.33	0.00	0.06	0.39
4L10	2013/10 /17	11:26: 22	6.4	126.8	6.9	63.5	77.4	26.2135	28.13744	0.31	0.00	0.08	0.40
4L10	2013/10 /17	11:26: 53	11.6	227.6	11.3	105. 5	128.4	26.2141	28.13758	0.52	0.00	0.14	0.66
4L10	2013/10 /17	11:27: 24	11.4	217.2	8.5	80.3	126.7	26.2146	28.13791	0.51	0.00	0.10	0.62
4L10	2013/10 /17	11:27: 55	9.4	172.9	4.2	42.6	88.4	26.2152	28.13818	0.36	0.00	0.05	0.41
4L10	2013/10 /17	11:28: 26	10.3	189.8	5.2	51	105.8	26.2153	28.13884	0.43	0.00	0.06	0.49
4L10	2013/10 /17	11:28: 56	10.5	198.1	7.1	67.7	107.1	26.2149	28.13925	0.43	0.00	0.09	0.52
4L10	2013/10 /17	11:29: 27	3.8	80.7	6.6	59.2	51.4	26.2143	28.13925	0.21	0.00	0.08	0.29

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/10/17	11:29:58	3.9	74.4	2.9	27.8	38.5	26.2138	28.13944	0.16	0.00	0.04	0.19
4L10	2013/10/17	11:30:28	3.6	70.2	3.4	32	39	26.2134	28.13978	0.16	0.00	0.04	0.20
4L10	2013/10/17	11:31:03	3.8	74.4	3.9	36.2	42.3	26.2134	28.13977	0.17	0.00	0.05	0.22
4L10	2013/10/17	11:31:31	1.2	28.3	3.4	29.9	28	26.2134	28.13977	0.11	0.00	0.04	0.16
4L10	2013/10/17	11:32:01	2.7	55.6	3.5	32	32.6	26.2134	28.13977	0.13	0.00	0.04	0.18
4L10	2013/10/17	11:32:32	2	47.2	5.2	46.7	33.9	26.2134	28.13977	0.14	0.00	0.06	0.20
4L10	2013/10/17	11:33:03	2.4	51.4	4	36.2	33.2	26.2134	28.13978	0.13	0.00	0.05	0.18
4L10	2013/10/17	11:33:33	1.5	38.8	5	44.6	28.5	26.2134	28.13972	0.12	0.00	0.06	0.18
4L10	2013/10/17	11:34:04	2.1	51.4	6.7	59.2	40.3	26.2135	28.1396	0.16	0.00	0.08	0.25
4L10	2013/10/17	11:34:35	4.4	84.8	3.8	36.2	42.5	26.2134	28.13964	0.17	0.00	0.05	0.22
4L10	2013/10/17	11:35:05	2.7	61.8	6.2	55	43.2	26.2131	28.14017	0.18	0.00	0.08	0.25
4L10	2013/10/17	11:35:36	2.8	59.7	4.5	40.4	36.2	26.2132	28.14076	0.15	0.00	0.06	0.20
4L10	2013/10/17	11:36:38	6	118.4	6.4	59.3	68.7	26.2134	28.14135	0.28	0.00	0.08	0.36
4L10	2013/10/17	11:37:09	6.3	120.5	5.2	48.8	69.5	26.2143	28.14164	0.28	0.00	0.06	0.35
4L10	2013/10/17	11:37:40	8.8	166.6	6.2	59.3	89.5	26.2147	28.14142	0.36	0.00	0.08	0.44
4L10	2013/10/17	11:38:10	5.8	112.1	5.2	48.8	66.9	26.2151	28.14131	0.27	0.00	0.06	0.34
4L10	2013/10/17	11:38:41	2.8	59.7	4.4	40.4	33.9	-26.215	28.14179	0.14	0.00	0.05	0.19
4L10	2013/10/17	11:39:12	3.7	76.5	5.4	48.7	46.1	-26.215	28.14231	0.19	0.00	0.07	0.25
4L10	2013/10/17	11:39:42	4.4	87	5.1	46.7	56.3	-26.215	28.14278	0.23	0.00	0.06	0.29
4L10	2013/10/17	11:40:13	5.6	103.7	3.3	32.1	60.3	26.2148	28.14302	0.24	0.00	0.04	0.29
4L10	2013/10/17	11:40:44	6.1	116.3	4.7	44.6	65.7	26.2145	28.14339	0.27	0.00	0.06	0.32
4L10	2013/10/17	11:41:15	5	99.4	5.5	50.8	58.2	26.2143	28.14373	0.24	0.00	0.07	0.30
4L10	2013/10/17	11:41:46	4.6	89.1	4.3	40.4	52.5	26.2143	28.14375	0.21	0.00	0.05	0.27
4L10	2013/10/17	11:42:17	5.2	105.8	6.5	59.3	62.7	26.2143	28.14379	0.25	0.00	0.08	0.33
4L10	2013/10/17	11:42:47	5.1	97.4	3.8	36.2	50.5	26.2143	28.14378	0.21	0.00	0.05	0.25
4L10	2013/10/17	11:43:18	4.9	97.4	5	46.7	54.9	26.2143	28.14378	0.22	0.00	0.06	0.28

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/10/17	11:43:49	5.6	110	5.2	48.8	60.4	26.2143	28.14378	0.25	0.00	0.06	0.31
4L10	2013/10/17	11:44:20	3.8	78.6	5.1	46.7	48.4	26.2143	28.14377	0.20	0.00	0.06	0.26
4L10	2013/10/17	11:44:50	2	49.3	6.2	55	39.5	26.2142	28.14372	0.16	0.00	0.08	0.24
4L10	2013/10/17	11:45:21	2.9	63.9	5.7	50.8	42.8	26.2142	28.14372	0.17	0.00	0.07	0.24
4L10	2013/10/17	11:45:52	2.9	57.6	3.5	32	32.8	-26.214	28.144	0.13	0.00	0.04	0.18
4L10	2013/10/17	11:46:22	1.8	40.9	3.8	34.1	28.7	-26.214	28.14405	0.12	0.00	0.05	0.16
4L10	2013/10/17	11:46:53	4.3	82.7	3.6	34.1	42.9	-26.214	28.14405	0.17	0.00	0.04	0.22
4L10	2013/10/17	11:47:24	5.2	103.7	6	55	56.2	-26.214	28.14409	0.23	0.00	0.07	0.30
4L10	2013/10/17	11:47:54	5.4	101.6	3.3	32	50	-26.214	28.14409	0.20	0.00	0.04	0.24
4L10	2013/10/17	11:48:25	1.6	32.6	1.9	17.4	25	26.2138	28.14425	0.10	0.00	0.02	0.12
4L10	2013/10/17	11:48:56	2.7	57.6	4.7	42.5	37.3	26.2135	28.14472	0.15	0.00	0.06	0.21
4L10	2013/10/17	11:49:27	5.5	118.4	9.8	88.6	78	26.2132	28.14492	0.32	0.00	0.12	0.44
4L10	2013/10/17	11:49:57	8	149.8	4.8	46.7	72.4	26.2131	28.14497	0.29	0.00	0.06	0.35
4L10	2013/10/17	11:50:28	3.1	68.1	5.9	52.9	48	26.2129	28.14503	0.19	0.00	0.07	0.27
4L10	2013/10/17	11:50:59	3.9	80.6	5.6	50.8	47.6	26.2126	28.14455	0.19	0.00	0.07	0.26
4L10	2013/10/17	11:51:29	4	78.6	4.1	38.3	42.9	26.2123	28.14411	0.17	0.00	0.05	0.22
4L10	2013/10/17	11:52:00	3.9	80.7	5.3	48.8	48.3	26.2119	28.14366	0.20	0.00	0.07	0.26
4L10	2013/10/17	11:52:31	2	47.2	5.3	46.7	38.5	26.2116	28.14334	0.16	0.00	0.07	0.22
4L10	2013/10/17	11:53:01	3.8	78.6	5.3	48.8	44.5	26.2114	28.1431	0.18	0.00	0.07	0.25
4L10	2013/10/17	11:53:32	2.5	61.8	7.9	69.7	44.7	26.2111	28.14271	0.18	0.00	0.10	0.28
4L10	2013/10/17	11:54:03	5.4	110	6.9	63.4	61.2	26.2109	28.14242	0.25	0.00	0.08	0.33
4L10	2013/10/17	11:54:34	2.6	61.8	6.9	61.3	44.1	26.2106	28.14203	0.18	0.00	0.08	0.26
4L10	2013/10/17	11:55:04	1.2	40.9	8.2	71.7	41.4	26.2102	28.14157	0.17	0.00	0.10	0.27
4L10	2013/10/17	11:55:35	5	101.6	6	55.1	56.3	26.2099	28.14109	0.23	0.00	0.07	0.30
4L10	2013/10/17	11:56:07	8.7	164.5	6.2	59.3	85.5	26.2096	28.14059	0.35	0.00	0.08	0.42
4L10	2013/10/17	11:56:36	4.8	99.6	7.5	67.6	69.4	26.2094	28.1401	0.28	0.00	0.09	0.37

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/10/17	11:57:07	6.3	118.4	4.2	40.4	63.2	26.2092	28.13968	0.26	0.00	0.05	0.31
4L10	2013/10/17	11:57:38	4.2	87	5.8	53	51.6	-26.209	28.13919	0.21	0.00	0.07	0.28
4L10	2013/10/17	11:58:08	5.5	114.2	8.1	73.9	69.6	26.2092	28.13889	0.28	0.00	0.10	0.38
4L10	2013/10/17	11:58:39	4.9	97.4	5.3	48.8	58.1	26.2092	28.13846	0.24	0.00	0.07	0.30
4L10	2013/11/13	09:08:45	1.7	40.9	5	44.6	31.8	26.2105	28.13886	0.13	0.00	0.06	0.19
4L10	2013/11/13	09:09:15	4	82.7	5.6	50.8	47.7	26.2105	28.13886	0.19	0.00	0.07	0.26
4L10	2013/11/13	09:09:46	1.2	34.6	6	52.9	33.4	26.2105	28.13886	0.14	0.00	0.07	0.21
4L10	2013/11/13	09:10:17	2.5	55.5	5.4	48.7	36.7	26.2105	28.13886	0.15	0.00	0.07	0.22
4L10	2013/11/13	09:10:47	2	55.5	8.4	73.8	41.9	26.2105	28.13886	0.17	0.00	0.10	0.27
4L10	2013/11/13	09:11:18	1.6	55.6	11.3	99	51.7	26.2104	28.13879	0.21	0.00	0.14	0.35
4L10	2013/11/13	09:11:49	5.4	133.1	16.6	147.2	93.8	26.2101	28.13867	0.38	0.00	0.20	0.59
4L10	2013/11/13	09:12:19	5.9	156.2	22.6	199.7	120.4	26.2098	28.13858	0.49	0.00	0.28	0.77
4L10	2013/11/13	09:12:50	6.2	126.8	7.8	71.8	69.4	26.2096	28.13848	0.28	0.00	0.10	0.38
4L10	2013/11/13	09:13:21	5	116.3	12.3	109.5	74.5	26.2099	28.13832	0.30	0.00	0.15	0.45
4L10	2013/11/13	09:13:51	3.9	91.2	10.2	90.7	67.5	26.2103	28.1384	0.27	0.00	0.13	0.40
4L10	2013/11/13	09:14:22	3.3	74.4	7.6	67.6	53.9	26.2107	28.13846	0.22	0.00	0.09	0.31
4L10	2013/11/13	09:14:53	5.4	105.8	5.5	50.9	59.7	26.2108	28.13869	0.24	0.00	0.07	0.31
4L10	2013/11/13	09:15:23	6	122.6	8.1	73.9	71.8	26.2108	28.13868	0.29	0.00	0.10	0.39
4L10	2013/11/13	09:15:55	5.4	118.4	10.5	94.8	76.4	26.2108	28.13868	0.31	0.00	0.13	0.44
4L10	2013/11/13	09:16:25	5.1	107.9	7.9	71.8	65.2	26.2108	28.13869	0.26	0.00	0.10	0.36
4L10	2013/11/13	09:16:56	5.8	110	4.2	40.4	57.4	26.2108	28.13842	0.23	0.00	0.05	0.28
4L10	2013/11/13	09:20:38	2.9	61.8	4.9	44.6	41.1	26.2132	28.13939	0.17	0.00	0.06	0.23
4L10	2013/11/13	09:21:09	3.5	76.5	6.8	61.4	52.1	26.2127	28.13939	0.21	0.00	0.08	0.30
4L10	2013/11/13	09:21:40	3	66	5.7	50.9	44.3	26.2123	28.13908	0.18	0.00	0.07	0.25
4L10	2013/11/13	09:22:10	4.3	87	5.1	46.7	50.5	26.2119	28.13897	0.21	0.00	0.06	0.27
4L10	2013/11/13	09:22:41	2.9	66	6.9	61.3	44	26.2116	28.13948	0.18	0.00	0.08	0.26

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	09:23:12	1.2	40.9	8.2	71.8	37	26.2114	28.13978	0.15	0.00	0.10	0.25
4L10	2013/11/13	09:23:43	2	72.4	15.9	138.8	67.5	26.2108	28.13969	0.27	0.00	0.20	0.47
4L10	2013/11/13	09:24:13	3.2	76.5	8.8	78.1	52.5	26.2103	28.13962	0.21	0.00	0.11	0.32
4L10	2013/11/13	09:24:44	2.8	72.3	10.3	90.6	57	26.2102	28.13931	0.23	0.00	0.13	0.36
4L10	2013/11/13	09:25:15	3.7	76.4	4.9	44.6	41.4	26.2103	28.139	0.17	0.00	0.06	0.23
4L10	2013/11/13	09:25:45	3.6	82.8	8.5	76	55.6	26.2104	28.13907	0.23	0.00	0.10	0.33
4L10	2013/11/13	09:26:16	5.5	118.4	9.6	86.5	73.6	26.2102	28.13961	0.30	0.00	0.12	0.42
4L10	2013/11/13	09:26:47	8.1	168.7	12	109.6	99	26.2098	28.13992	0.40	0.00	0.15	0.55
4L10	2013/11/13	09:27:17	7.3	137.2	4.6	44.6	69.6	26.2094	28.13988	0.28	0.00	0.06	0.34
4L10	2013/11/13	09:27:48	4.7	95.3	5.8	53	53.1	26.2091	28.13937	0.22	0.00	0.07	0.29
4L10	2013/11/13	09:28:19	6.1	120.5	5.9	55.1	64.1	26.2093	28.13882	0.26	0.00	0.07	0.33
4L10	2013/11/13	09:28:49	6.3	135.1	11.2	101.1	83.1	26.2097	28.13845	0.34	0.00	0.14	0.48
4L10	2013/11/13	09:29:20	3.5	91.2	12.4	109.5	65.9	26.2101	28.13849	0.27	0.00	0.15	0.42
4L10	2013/11/13	09:29:51	3.7	80.7	7.3	65.5	51.9	26.2106	28.13858	0.21	0.00	0.09	0.30
4L10	2013/11/13	09:30:22	3	68.1	6.6	59.2	44.7	26.2108	28.13853	0.18	0.00	0.08	0.26
4L10	2013/11/13	09:30:52	1.4	38.8	6.3	55	32.2	26.2112	28.13861	0.13	0.00	0.08	0.21
4L10	2013/11/13	09:31:23	3.5	70.2	4.4	40.4	42.4	26.2119	28.13869	0.17	0.00	0.05	0.23
4L10	2013/11/13	09:31:54	4.6	89.1	3.8	36.2	46.7	26.2125	28.13869	0.19	0.00	0.05	0.24
4L10	2013/11/13	09:32:24	4	78.6	4.4	40.4	50.1	26.2131	28.13878	0.20	0.00	0.05	0.26
4L10	2013/11/13	09:32:55	2.3	53.5	5.5	48.8	39.4	26.2133	28.13916	0.16	0.00	0.07	0.23
4L10	2013/11/13	09:33:26	5.1	110	9.1	82.3	69.8	26.2128	28.13927	0.28	0.00	0.11	0.40
4L10	2013/11/13	09:33:56	4.5	87	3.9	36.2	48.1	26.2123	28.139	0.20	0.00	0.05	0.24
4L10	2013/11/13	09:34:27	4.2	84.9	5.1	46.7	49.6	26.2118	28.13894	0.20	0.00	0.06	0.26
4L10	2013/11/13	09:34:59	2	45.1	4.5	40.4	32.3	26.2115	28.13953	0.13	0.00	0.06	0.19
4L10	2013/11/13	09:35:29	1.8	49.3	7.4	65.5	37.3	26.2111	28.13964	0.15	0.00	0.09	0.24
4L10	2013/11/13	09:36:00	1.3	34.6	5.3	46.7	28.8	26.2109	28.13962	0.12	0.00	0.07	0.18

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	09:36:31	2.6	63.9	7.8	69.6	43	26.2109	28.13962	0.17	0.00	0.10	0.27
4L10	2013/11/13	09:37:01	3.1	78.6	10.2	90.6	56.7	26.2107	28.13958	0.23	0.00	0.13	0.36
4L10	2013/11/13	09:37:32	4.6	105.9	11.4	101.2	77.4	26.2102	28.13946	0.31	0.00	0.14	0.45
4L10	2013/11/13	09:38:03	5.8	128.9	11.7	105.3	83.8	26.2099	28.13963	0.34	0.00	0.14	0.48
4L10	2013/11/13	09:38:33	7.2	147.7	9.4	86.5	84.6	26.2097	28.13982	0.34	0.00	0.12	0.46
4L10	2013/11/13	09:39:04	5.6	112.1	6.7	61.3	65.7	26.2093	28.13949	0.27	0.00	0.08	0.35
4L10	2013/11/13	09:39:38	5.6	120.5	9.6	86.5	72.5	26.2094	28.13889	0.29	0.00	0.12	0.41
4L10	2013/11/13	09:40:07	6.9	174.9	23.2	205.8	126.7	26.2097	28.13863	0.51	0.00	0.29	0.80
4L10	2013/11/13	09:40:38	4.6	93.2	5.8	53	56.5	26.2099	28.1388	0.23	0.00	0.07	0.30
4L10	2013/11/13	09:41:08	4.2	95.4	9.5	84.4	73.7	26.2101	28.13913	0.30	0.00	0.12	0.42
4L10	2013/11/13	09:41:39	5.9	133.1	13.2	117.9	89.4	26.2099	28.13951	0.36	0.00	0.16	0.53
4L10	2013/11/13	09:42:10	7.1	143.5	9	82.3	84.7	26.2097	28.13973	0.34	0.00	0.11	0.45
4L10	2013/11/13	09:42:40	5.6	120.5	9.8	88.6	71.4	26.2094	28.1395	0.29	0.00	0.12	0.41
4L10	2013/11/13	09:43:11	4.2	97.5	10.4	92.7	65.9	26.2094	28.13906	0.27	0.00	0.13	0.40
4L10	2013/11/13	09:43:42	4.8	108	10.4	92.8	74.1	26.2096	28.13879	0.30	0.00	0.13	0.43
4L10	2013/11/13	09:44:13	6.3	122.5	5.4	50.9	62.6	26.2098	28.1389	0.25	0.00	0.07	0.32
4L10	2013/11/13	09:47:47	4.4	97.4	9.2	82.3	64.6	-26.21	28.13924	0.26	0.00	0.11	0.38
4L10	2013/11/13	09:48:17	4.3	97.5	9.9	88.6	67.3	26.2097	28.13907	0.27	0.00	0.12	0.40
4L10	2013/11/13	09:48:48	4.8	105.8	9.6	86.5	66.9	26.2096	28.13926	0.27	0.00	0.12	0.39
4L10	2013/11/13	09:49:19	5.9	124.7	9.6	86.5	79	26.2098	28.13941	0.32	0.00	0.12	0.44
4L10	2013/11/13	09:49:50	4.3	95.4	8.7	78.1	60.6	26.2096	28.13914	0.25	0.00	0.11	0.35
4L10	2013/11/13	09:50:20	6.1	124.7	8.3	76	73.7	26.2097	28.13932	0.30	0.00	0.10	0.40
4L10	2013/11/13	09:50:51	4	89.1	8	71.8	58.3	-26.21	28.13933	0.24	0.00	0.10	0.34
4L10	2013/11/13	09:51:22	3.2	78.6	10	88.5	56.3	26.2102	28.13937	0.23	0.00	0.12	0.35
4L10	2013/11/13	09:51:52	1.4	38.8	5.8	50.8	29.6	26.2106	28.13951	0.12	0.00	0.07	0.19
4L10	2013/11/13	09:52:23	3.1	70.2	6.8	61.3	46.9	26.2111	28.13955	0.19	0.00	0.08	0.27

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	09:52:54	4.8	99.5	7	63.4	61.1	26.2115	28.13937	0.25	0.00	0.09	0.33
4L10	2013/11/13	09:53:24	3.1	64	4.2	38.3	39.4	26.2118	28.13887	0.16	0.00	0.05	0.21
4L10	2013/11/13	09:53:55	5.1	103.8	6.5	59.3	63	26.2122	28.13887	0.26	0.00	0.08	0.34
4L10	2013/11/13	09:54:26	4.7	99.5	7.7	69.7	61.5	26.2126	28.13909	0.25	0.00	0.09	0.34
4L10	2013/11/13	09:54:57	6.7	126.7	4.6	44.6	61.4	26.2131	28.13918	0.25	0.00	0.06	0.31
4L10	2013/11/13	09:55:27	4.5	84.9	3.1	30	46.1	26.2133	28.13886	0.19	0.00	0.04	0.23
4L10	2013/11/13	09:55:58	3.1	64	4.2	38.3	44.7	26.2129	28.13884	0.18	0.00	0.05	0.23
4L10	2013/11/13	09:56:29	3.1	66	5.2	46.7	41.3	26.2124	28.13882	0.17	0.00	0.06	0.23
4L10	2013/11/13	09:57:00	2.4	57.6	6.4	57	41	26.2119	28.13874	0.17	0.00	0.08	0.25
4L10	2013/11/13	09:57:31	4.7	93.2	5	46.7	52.4	26.2113	28.13872	0.21	0.00	0.06	0.27
4L10	2013/11/13	09:58:02	6.3	124.7	6.4	59.3	66.3	26.2109	28.13866	0.27	0.00	0.08	0.35
4L10	2013/11/13	09:58:32	3.7	87	10	88.6	62.8	26.2105	28.13864	0.25	0.00	0.12	0.38
4L10	2013/11/13	09:59:03	4.9	122.6	15.9	140.9	90.6	26.2099	28.13849	0.37	0.00	0.20	0.56
4L10	2013/11/13	09:59:34	4.8	116.3	13.7	122.1	82.6	26.2099	28.13852	0.34	0.00	0.17	0.50
4L10	2013/11/13	10:00:05	2.2	55.6	7.4	65.5	40.4	26.2103	28.13868	0.16	0.00	0.09	0.26
4L10	2013/11/13	10:00:35	3.7	82.8	7.8	69.7	59.3	26.2107	28.13885	0.24	0.00	0.10	0.34
4L10	2013/11/13	10:01:06	2.7	55.6	4	36.2	35	26.2112	28.13878	0.14	0.00	0.05	0.19
4L10	2013/11/13	10:01:37	4.3	91.1	7	63.4	52.3	26.2117	28.1388	0.21	0.00	0.09	0.30
4L10	2013/11/13	10:02:08	5.7	109.8	4.7	44.5	57.3	26.2122	28.13878	0.23	0.00	0.06	0.29
4L10	2013/11/13	10:02:39	5.4	101.6	3.8	36.2	54.3	26.2128	28.1388	0.22	0.00	0.05	0.27
4L10	2013/11/13	10:03:10	3.7	78.6	6.1	55.1	48.6	26.2132	28.13894	0.20	0.00	0.08	0.27
4L10	2013/11/13	10:03:40	5.1	95.4	3.3	32.1	49.8	-26.213	28.13908	0.20	0.00	0.04	0.24
4L10	2013/11/13	10:04:11	4.7	91.2	4.6	42.5	53.3	26.2126	28.13889	0.22	0.00	0.06	0.27
4L10	2013/11/13	10:04:42	4.8	97.4	6.2	57.2	54.8	26.2131	28.13896	0.22	0.00	0.08	0.30
4L10	2013/11/13	10:05:13	5.1	101.6	5.5	50.9	54.1	26.2127	28.13897	0.22	0.00	0.07	0.29
4L10	2013/11/13	10:05:43	4.1	82.8	5.1	46.7	49.7	26.2121	28.13883	0.20	0.00	0.06	0.26

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	10:06:14	1.7	43	6	52.9	34.2	26.2117	28.1389	0.14	0.00	0.07	0.21
4L10	2013/11/13	10:06:45	4.4	89	5.5	50.8	49	26.2112	28.13889	0.20	0.00	0.07	0.27
4L10	2013/11/13	10:11:57	3.8	80.6	5.8	52.9	45.5	26.2105	28.13904	0.18	0.00	0.07	0.26
4L10	2013/11/13	10:12:28	5.3	101.6	4.3	40.4	54.6	26.2105	28.13904	0.22	0.00	0.05	0.27
4L10	2013/11/13	10:12:59	3.7	76.5	5.6	50.9	51.1	26.2108	28.13921	0.21	0.00	0.07	0.28
4L10	2013/11/13	10:13:29	2.1	53.5	6.9	61.3	40.3	26.2114	28.13923	0.16	0.00	0.08	0.25
4L10	2013/11/13	10:14:00	3.2	72.3	6.8	61.3	49.1	26.2113	28.13937	0.20	0.00	0.08	0.28
4L10	2013/11/13	10:14:30	3.4	74.4	6.6	59.2	48.2	26.2107	28.13936	0.20	0.00	0.08	0.28
4L10	2013/11/13	10:15:01	2.9	61.8	4.7	42.5	37.5	26.2105	28.13932	0.15	0.00	0.06	0.21
4L10	2013/11/13	10:15:32	3	78.6	11.2	99	59.9	-26.211	28.13948	0.24	0.00	0.14	0.38
4L10	2013/11/13	10:16:03	2.8	63.9	6.4	57.1	39.6	26.2113	28.13954	0.16	0.00	0.08	0.24
4L10	2013/11/13	10:16:34	2.5	57.7	5.9	53	40.3	26.2107	28.13949	0.16	0.00	0.07	0.24
4L10	2013/11/13	10:17:04	2.6	59.7	6.4	57.1	41.9	26.2103	28.13924	0.17	0.00	0.08	0.25
4L10	2013/11/13	10:17:35	4.2	84.9	5.1	46.7	51.9	26.2102	28.1388	0.21	0.00	0.06	0.27
4L10	2013/11/13	10:18:06	5.6	126.8	12.5	111.6	80.5	26.2101	28.13875	0.33	0.00	0.15	0.48
4L10	2013/11/13	10:18:36	4.4	114.2	15.9	140.9	88.7	26.2098	28.13867	0.36	0.00	0.20	0.56
4L10	2013/11/13	10:19:07	6.1	114.2	4	38.3	60.1	26.2096	28.1387	0.24	0.00	0.05	0.29
4L10	2013/11/13	10:19:38	4.3	93.3	7.7	69.7	62.6	26.2098	28.13829	0.25	0.00	0.09	0.35
4L10	2013/11/13	10:20:08	5.6	116.3	8.3	76	66.5	26.2102	28.13833	0.27	0.00	0.10	0.37
4L10	2013/11/13	10:20:39	6.5	139.3	11.2	1	83.8	26.2104	28.1384	0.34	0.00	0.14	0.48
4L10	2013/11/13	10:21:11	7	137.1	6.8	63.4	71	26.2104	28.13839	0.29	0.00	0.08	0.37
4L10	2013/11/13	10:39:55	1.7	36.7	3.1	27.8	24.1	26.2105	28.13887	0.10	0.00	0.04	0.14
4L10	2013/11/13	10:40:26	2.4	53.5	4.7	42.5	34.1	26.2105	28.13888	0.14	0.00	0.06	0.20
4L10	2013/11/13	10:40:56	2.1	47.2	4.8	42.5	32.5	26.2105	28.13888	0.13	0.00	0.06	0.19
4L10	2013/11/13	10:41:27	0.9	26.3	4.3	38.3	20.3	26.2105	28.13888	0.08	0.00	0.05	0.14
4L10	2013/11/13	10:41:58	2.4	53.5	5	44.6	36.3	26.2105	28.13887	0.15	0.00	0.06	0.21

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	10:42:28	1.9	64	12.7	111.5	57.7	26.2105	28.13883	0.23	0.00	0.16	0.39
4L10	2013/11/13	10:42:59	7.3	145.6	7.7	71.8	77.8	-26.21	28.13849	0.32	0.00	0.09	0.41
4L10	2013/11/13	10:43:30	6	120.5	6.9	63.5	68.3	26.2102	28.1382	0.28	0.00	0.08	0.36
4L10	2013/11/13	10:44:00	3.3	68.1	4.7	42.5	43.2	26.2109	28.1383	0.18	0.00	0.06	0.23
4L10	2013/11/13	10:44:31	2.6	51.4	3	27.9	32.1	26.2115	28.13844	0.13	0.00	0.04	0.17
4L10	2013/11/13	10:45:02	2.7	57.7	4.7	42.5	42.8	26.2122	28.13846	0.17	0.00	0.06	0.23
4L10	2013/11/13	10:45:32	4.6	93.3	6.3	57.2	62.2	26.2128	28.13854	0.25	0.00	0.08	0.33
4L10	2013/11/13	10:46:03	12.8	236	6.2	61.5	118.5	26.2134	28.13859	0.48	0.00	0.08	0.56
4L10	2013/11/13	10:46:34	9.2	173	6.2	59.3	94	26.2137	28.13817	0.38	0.00	0.08	0.46
4L10	2013/11/13	10:47:05	9.1	173	6.4	61.4	94.3	26.2138	28.13775	0.38	0.00	0.08	0.46
4L10	2013/11/13	10:50:09	4.5	93.3	6.3	57.2	60	26.2114	28.13727	0.24	0.00	0.08	0.32
4L10	2013/11/13	10:50:40	6.5	124.6	5.2	48.8	71	-26.211	28.13733	0.29	0.00	0.06	0.35
4L10	2013/11/13	10:51:10	5.5	112.1	7.2	65.5	65.6	26.2106	28.1373	0.27	0.00	0.09	0.36
4L10	2013/11/13	10:51:41	5.4	101.6	3.8	36.2	56	26.2103	28.13727	0.23	0.00	0.05	0.27
4L10	2013/11/13	10:55:06	4.2	82.8	4.1	38.3	46.8	26.2097	28.1381	0.19	0.00	0.05	0.24
4L10	2013/11/13	10:55:37	5	95.4	3.6	34.1	48.6	26.2097	28.13809	0.20	0.00	0.04	0.24
4L10	2013/11/13	10:56:08	5.2	105.8	6.7	61.4	65	26.2098	28.13806	0.26	0.00	0.08	0.35
4L10	2013/11/13	10:56:38	6.6	128.8	6.3	59.3	66.3	-26.21	28.13811	0.27	0.00	0.08	0.35
4L10	2013/11/13	10:57:09	4.2	99.6	11.6	103.2	72.1	26.2103	28.1381	0.29	0.00	0.14	0.44
4L10	2013/11/13	10:57:40	5.6	116.3	8.4	76	67.4	26.2109	28.13816	0.27	0.00	0.10	0.38
4L10	2013/11/13	10:58:11	4.5	93.3	6.3	57.2	54.6	26.2114	28.13833	0.22	0.00	0.08	0.30
4L10	2013/11/13	10:58:41	6.5	130.9	7.8	71.8	76.9	-26.212	28.13839	0.31	0.00	0.10	0.41
4L10	2013/11/13	10:59:12	5.2	99.5	4.3	40.4	54.2	26.2125	28.13844	0.22	0.00	0.05	0.27
4L10	2013/11/13	10:59:43	7.6	152	8.5	78.2	88.1	26.2131	28.13851	0.36	0.00	0.10	0.46
4L10	2013/11/13	11:00:13	12.6	236	7.4	71.9	120.3	26.2136	28.13842	0.49	0.00	0.09	0.58
4L10	2013/11/13	11:00:44	9.4	173	4.5	44.7	91.8	26.2132	28.13806	0.37	0.00	0.06	0.43

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th- 232	U-235	U-238	Total	
4L10	2013/11 /13	11:01: 15	9.6	185.6	8.1	76.1	103.8	26.2129	28.138	0.42	0.00	0.10	0.52	
4L10	2013/11 /13	11:01: 45	8.4	156.2	4.5	44.7	78.6	26.2127	28.138	0.32	0.00	0.06	0.37	
4L10	2013/11 /13	11:02: 16	3.2	70.3	6.6	59.3	48.2	26.2123	28.13791	0.20	0.00	0.08	0.28	
4L10	2013/11 /13	11:02: 47	11.2	204.5	5.1	51	108.2	26.2119	28.13785	0.44	0.00	0.06	0.50	
4L10	2013/11 /13	11:03: 17	6.8	129	4.7	44.7	69.3	26.2115	28.13767	0.28	0.00	0.06	0.34	
4L10	2013/11 /13	11:03: 49	1.8	47.2	6.9	61.2	38.8	26.2111	28.13754	0.16	0.00	0.08	0.24	
4L10	2013/11 /13	11:04: 20	3.9	84.9	7.3	65.5	55.9	26.2108	28.13757	0.23	0.00	0.09	0.32	
4L10	2013/11 /13	11:04: 50	5.9	120.5	7.4	67.6	67.6	26.2104	28.13759	0.27	0.00	0.09	0.37	
4L10	2013/11 /13	11:05: 21	6.5	133	8.3	76	74.4	26.2101	28.13788	0.30	0.00	0.10	0.40	
4L10	2013/11 /13	11:05: 52	5.3	139.4	20	176.	5	101.1	26.2102	28.13802	0.41	0.00	0.25	0.66
4L10	2013/11 /13	11:06: 22	5.5	116.3	9.1	82.3	74.2	26.2106	28.13804	0.30	0.00	0.11	0.41	
4L10	2013/11 /13	11:06: 53	6	116.3	5.2	48.8	63.1	26.2111	28.13811	0.26	0.00	0.06	0.32	
4L10	2013/11 /13	11:07: 24	4.6	101.6	9.2	82.3	68.4	26.2116	28.13824	0.28	0.00	0.11	0.39	
4L10	2013/11 /13	11:07: 55	5.7	126.8	11.7	105.	4	84.9	-26.212	28.13831	0.34	0.00	0.14	0.49
4L10	2013/11 /13	11:08: 25	5.5	110	6.2	57.2	68.7	26.2126	28.13835	0.28	0.00	0.08	0.36	
4L10	2013/11 /13	11:08: 57	6.5	126.6	6.1	57.1	69.5	26.2129	28.13838	0.28	0.00	0.08	0.36	
4L10	2013/11 /13	11:09: 28	4.8	99.6	7	63.5	63.2	26.2129	28.13838	0.26	0.00	0.09	0.34	
4L10	2013/11 /13	11:09: 58	7	135.1	5.8	55.1	72.8	26.2129	28.13837	0.30	0.00	0.07	0.37	
4L10	2013/11 /13	11:10: 29	10.5	204.5	10	92.9	116.8	26.2132	28.13842	0.47	0.00	0.12	0.60	
4L10	2013/11 /13	11:11: 00	14.3	265.3	7.5	74	137.2	26.2136	28.13841	0.56	0.00	0.09	0.65	
4L10	2013/11 /13	11:11: 31	14.5	269.6	7.7	76.2	130.2	26.2131	28.13828	0.53	0.00	0.09	0.62	
4L10	2013/11 /13	11:12: 01	9.4	183.4	8.6	80.3	98	26.2126	28.13807	0.40	0.00	0.11	0.50	
4L10	2013/11 /13	11:12: 32	10.7	200.2	6.1	59.3	100.3	26.2121	28.13804	0.41	0.00	0.08	0.48	
4L10	2013/11 /13	11:13: 03	13.3	252.8	9.7	92.9	132.3	26.2116	28.13794	0.54	0.00	0.12	0.66	
4L10	2013/11 /13	11:13: 33	6.6	130.9	7.3	67.6	73.3	26.2111	28.1377	0.30	0.00	0.09	0.39	
4L10	2013/11 /13	11:14: 04	4.4	101.7	10.6	94.8	69.3	26.2106	28.13769	0.28	0.00	0.13	0.41	

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	11:14:35	3.6	82.8	8.5	76	59.2	26.2103	28.1379	0.24	0.00	0.10	0.35
4L10	2013/11/13	11:15:05	5.6	118.4	8.6	78.1	67.4	26.2105	28.13793	0.27	0.00	0.11	0.38
4L10	2013/11/13	11:15:36	8.4	162.4	7.2	67.7	87.5	-26.211	28.13797	0.36	0.00	0.09	0.44
4L10	2013/11/13	11:16:07	5.8	116.3	6.4	59.3	63.9	26.2115	28.13813	0.26	0.00	0.08	0.34
4L10	2013/11/13	11:16:38	10	191.7	8	76	99.7	26.2121	28.1382	0.40	0.00	0.10	0.50
4L10	2013/11/13	11:17:08	7.9	151.9	6.8	63.5	83.9	26.2127	28.13826	0.34	0.00	0.08	0.42
4L10	2013/11/13	11:17:39	12.6	236	7.6	74	121.7	26.2133	28.13838	0.49	0.00	0.09	0.59
4L10	2013/11/13	11:18:10	8.9	168.8	6.2	59.4	94.1	26.2135	28.13854	0.38	0.00	0.08	0.46
4L10	2013/11/13	11:19:12	7.1	139.4	7.3	67.7	82.5	26.2131	28.1383	0.33	0.00	0.09	0.42
4L10	2013/11/13	11:19:42	8.6	175.1	11.1	101.2	111.2	26.2118	28.13809	0.45	0.00	0.14	0.59
4L10	2013/11/13	11:20:13	7.8	160.3	10.6	97	95.6	26.2112	28.13787	0.39	0.00	0.13	0.52
4L10	2013/11/13	11:20:44	6.5	145.6	13.6	122.1	91.4	26.2107	28.13783	0.37	0.00	0.17	0.54
4L10	2013/11/13	11:21:14	8.2	160.3	7.9	73.9	82.1	26.2103	28.13793	0.33	0.00	0.10	0.43
4L10	2013/11/13	11:21:45	6.8	141.4	9.7	88.6	80	26.2099	28.13826	0.32	0.00	0.12	0.44
4L10	2013/11/13	11:22:16	2.7	63.9	7.4	65.5	45	26.2102	28.13874	0.18	0.00	0.09	0.27
4L10	2013/11/13	11:22:47	1.5	40.9	6.2	55	33.4	26.2104	28.13884	0.14	0.00	0.08	0.21
4L10	2013/11/13	11:23:17	1.5	40.9	6.5	57.1	36.2	26.2104	28.13884	0.15	0.00	0.08	0.23
4L10	2013/11/13	11:23:49	1.7	43	5.5	48.7	33.4	26.2104	28.13884	0.14	0.00	0.07	0.20
4L10	2013/11/13	11:24:20	3.4	72.3	5.9	52.9	44	26.2104	28.1389	0.18	0.00	0.07	0.25
4L10	2013/11/13	11:24:50	2.6	63.9	7.6	67.6	47.6	26.2103	28.13924	0.19	0.00	0.09	0.29
4L10	2013/11/13	11:25:21	5.6	122.6	10.8	96.9	77	26.2101	28.13976	0.31	0.00	0.13	0.45
4L10	2013/11/13	11:25:52	8	149.8	4.8	46.7	74.2	26.2099	28.14022	0.30	0.00	0.06	0.36
4L10	2013/11/13	11:26:22	3	68.2	6.6	59.2	47.9	26.2102	28.14017	0.19	0.00	0.08	0.28
4L10	2013/11/13	11:26:53	2.9	80.7	12.4	109.5	62	26.2104	28.13986	0.25	0.00	0.15	0.40
4L10	2013/11/13	11:27:24	2.6	82.8	15.6	136.7	72.1	26.2109	28.13981	0.29	0.00	0.19	0.48
4L10	2013/11/13	11:27:55	3.1	72.3	7.8	69.7	50.9	26.2115	28.13988	0.21	0.00	0.10	0.30

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	11:28:25	9.9	185.4	6.1	59.3	95	26.2117	28.13946	0.39	0.00	0.08	0.46
4L10	2013/11/13	11:28:56	5.3	105.8	6	55.1	58.1	-26.212	28.13913	0.24	0.00	0.07	0.31
4L10	2013/11/13	11:29:27	2.3	55.6	6.7	59.2	43.2	26.2125	28.13933	0.18	0.00	0.08	0.26
4L10	2013/11/13	11:29:57	4.1	80.7	4.1	38.3	45.1	-26.213	28.13948	0.18	0.00	0.05	0.23
4L10	2013/11/13	11:30:28	3.9	78.6	4.6	42.5	44	26.2135	28.13935	0.18	0.00	0.06	0.24
4L10	2013/11/13	11:30:59	2.2	51.4	5.7	50.8	37.7	26.2138	28.13929	0.15	0.00	0.07	0.22
4L10	2013/11/13	11:31:29	3.1	68.1	5.6	50.9	40.1	26.2135	28.13977	0.16	0.00	0.07	0.23
4L10	2013/11/13	11:32:00	2.4	51.4	4.3	38.3	35.9	26.2136	28.13922	0.15	0.00	0.05	0.20
4L10	2013/11/13	11:32:31	4.2	84.9	4.8	44.6	48.4	26.2136	28.13952	0.20	0.00	0.06	0.26
4L10	2013/11/13	11:33:01	8.2	154	5.3	50.9	81	-26.214	28.1393	0.33	0.00	0.07	0.39
4L10	2013/11/13	11:33:32	9.8	179.2	4.7	46.8	96.2	26.2146	28.13924	0.39	0.00	0.06	0.45
4L10	2013/11/13	11:36:18	13.6	259.3	10.5	99.3	147.8	-26.214	28.13795	0.60	0.00	0.13	0.73
4L10	2013/11/13	11:36:49	10.5	200.3	8.3	78.2	113.1	26.2138	28.13838	0.46	0.00	0.10	0.56
4L10	2013/11/13	11:37:20	3.2	70.3	6.4	57.2	47.6	26.2136	28.13887	0.19	0.00	0.08	0.27
4L10	2013/11/13	11:37:50	8.3	154	4.6	44.6	81.7	-26.214	28.1392	0.33	0.00	0.06	0.39
4L10	2013/11/13	11:38:21	8.7	162.5	5	48.9	91.7	26.2146	28.13916	0.37	0.00	0.06	0.43
4L10	2013/11/13	11:38:52	10.3	189.7	4.9	48.8	100.7	26.2149	28.13898	0.41	0.00	0.06	0.47
4L10	2013/11/13	11:39:23	11	193.9	2.2	25.8	97.3	26.2153	28.13874	0.40	0.00	0.03	0.42
4L10	2013/11/13	11:39:53	13.1	246.6	8.8	84.6	131.9	-26.215	28.13823	0.54	0.00	0.11	0.64
4L10	2013/11/13	11:42:55	5.9	101.8	0	2.8	54.5	26.2144	28.13819	0.22	0.00	0.00	0.22
4L10	2013/11/13	11:43:26	6.2	106.1	0	2.8	58.5	-26.214	28.13808	0.24	0.00	0.00	0.24
4L10	2013/11/13	11:43:57	3.4	57.8	0	0	35.9	26.2139	28.13847	0.15	0.00	0.00	0.15
4L10	2013/11/13	11:44:27	3.1	53.5	0	0.7	27.7	26.2138	28.13894	0.11	0.00	0.00	0.11
4L10	2013/11/13	11:44:58	7.6	129.2	0	0	67.9	26.2139	28.13873	0.28	0.00	0.00	0.28
4L10	2013/11/13	11:45:29	4.9	85.1	0.2	4.9	44.8	-26.2141	28.13822	0.18	0.00	0.00	0.18
4L10	2013/11/13	11:45:59	6	104	0.2	4.9	56.2	26.2144	28.13841	0.23	0.00	0.00	0.23

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	11:46:30	7.7	131.3	0	0.7	65	26.2151	28.1385	0.26	0.00	0.00	0.26
4L10	2013/11/13	11:53:13	10.4	198.2	7.6	71.9	108.8	26.2149	28.13882	0.44	0.00	0.09	0.54
4L10	2013/11/13	11:53:44	12.9	242.4	8.3	80.4	127.6	26.2145	28.13884	0.52	0.00	0.10	0.62
4L10	2013/11/13	11:54:15	13	236	5.2	53.1	121.3	26.2143	28.13905	0.49	0.00	0.06	0.56
4L10	2013/11/13	11:54:45	15.4	276	4.3	46.8	139.3	26.2148	28.13892	0.57	0.00	0.05	0.62
4L10	2013/11/13	11:55:16	4.2	84.9	5.3	48.8	48.3	26.2143	28.13892	0.20	0.00	0.07	0.26
4L10	2013/11/13	11:55:47	3.9	89.1	9	80.2	58.3	26.2139	28.13929	0.24	0.00	0.11	0.35
4L10	2013/11/13	11:56:17	3.7	76.5	5.4	48.8	45.4	26.2137	28.13936	0.18	0.00	0.07	0.25
4L10	2013/11/13	11:56:48	2.3	57.6	7.1	63.4	40.5	26.2135	28.13944	0.16	0.00	0.09	0.25
4L10	2013/11/13	11:57:20	2.3	49.2	4.2	38.3	30.4	26.2135	28.13944	0.12	0.00	0.05	0.18
4L10	2013/11/13	11:57:51	3	63.9	4.9	44.6	41.9	26.2133	28.1399	0.17	0.00	0.06	0.23
4L10	2013/11/13	11:58:22	2	47.2	5.5	48.7	36.5	26.2132	28.1406	0.15	0.00	0.07	0.22
4L10	2013/11/13	11:58:52	2	45.1	4.3	38.3	32.7	-26.213	28.14105	0.13	0.00	0.05	0.19
4L10	2013/11/13	11:59:23	3.1	66	5.4	48.8	45	26.2125	28.14128	0.18	0.00	0.07	0.25
4L10	2013/11/13	11:59:54	2.7	63.9	7.6	67.6	49.6	26.2119	28.1413	0.20	0.00	0.09	0.29
4L10	2013/11/13	12:00:24	5.1	105.8	7.2	65.5	63.3	26.2114	28.14107	0.26	0.00	0.09	0.35
4L10	2013/11/13	12:00:55	6.7	141.5	11.2	2	92.8	-26.211	28.14109	0.38	0.00	0.14	0.51
4L10	2013/11/13	12:01:26	3	70.2	7.3	65.5	47.8	26.2111	28.14081	0.19	0.00	0.09	0.28
4L10	2013/11/13	12:01:56	3.5	78.6	7.3	65.5	50.9	26.2115	28.14055	0.21	0.00	0.09	0.30
4L10	2013/11/13	12:02:27	2.3	51.3	5.2	46.6	36.9	26.2121	28.14034	0.15	0.00	0.06	0.21
4L10	2013/11/13	12:02:58	3.3	70.2	5.9	52.9	47	26.2126	28.14021	0.19	0.00	0.07	0.26
4L10	2013/11/13	12:03:29	2.8	57.7	4.2	38.3	37.1	-26.213	28.14019	0.15	0.00	0.05	0.20
4L10	2013/11/13	12:03:59	3.9	80.7	5.6	50.9	44.8	26.2131	28.14034	0.18	0.00	0.07	0.25
4L10	2013/11/13	12:04:31	3.5	72.3	5.1	46.7	41	-26.213	28.1409	0.17	0.00	0.06	0.23
4L10	2013/11/13	12:05:01	4.2	82.8	4.1	38.3	51.1	26.2125	28.14117	0.21	0.00	0.05	0.26
4L10	2013/11/13	12:05:32	2.2	51.4	5.7	50.8	37.1	-26.212	28.1412	0.15	0.00	0.07	0.22

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	12:06:02	2.8	61.9	5.7	50.9	43.6	26.2114	28.14103	0.18	0.00	0.07	0.25
4L10	2013/11/13	12:06:33	5.2	112.1	8.9	80.2	67.4	26.2112	28.14099	0.27	0.00	0.11	0.38
4L10	2013/11/13	12:07:04	2.5	57.7	6.4	57.1	45.5	26.2111	28.1409	0.18	0.00	0.08	0.26
4L10	2013/11/13	12:07:35	3.6	78.5	7	63.3	47.3	26.2115	28.14068	0.19	0.00	0.09	0.28
4L10	2013/11/13	12:08:06	3.1	72.3	7.8	69.7	50.9	26.2121	28.1404	0.21	0.00	0.10	0.30
4L10	2013/11/13	12:08:37	3.5	91.2	12.4	109.5	65.9	26.2128	28.14029	0.27	0.00	0.15	0.42
4L10	2013/11/13	12:09:07	4.9	99.5	6.5	59.2	57.6	26.2131	28.14074	0.23	0.00	0.08	0.31
4L10	2013/11/13	12:09:39	4.4	89.1	5.3	48.8	53	26.2125	28.14097	0.22	0.00	0.07	0.28
4L10	2013/11/13	12:10:09	4.1	80.7	4.1	38.3	44.1	-26.212	28.14108	0.18	0.00	0.05	0.23
4L10	2013/11/13	12:10:40	4.2	89.1	6.5	59.2	53.3	26.2115	28.14086	0.22	0.00	0.08	0.30
4L10	2013/11/13	12:11:11	3.8	76.5	4.6	42.5	44.9	26.2116	28.1407	0.18	0.00	0.06	0.24
4L10	2013/11/13	12:11:41	2.3	57.7	7.9	69.7	49	26.2122	28.14052	0.20	0.00	0.10	0.30
4L10	2013/11/13	12:12:12	5.4	114.2	8.4	76	68	26.2127	28.14039	0.28	0.00	0.10	0.38
4L10	2013/11/13	12:12:42	3.2	76.5	8.8	78.1	54.9	26.2128	28.1407	0.22	0.00	0.11	0.33
4L10	2013/11/13	12:13:13	4.5	95.3	7	63.4	57.5	26.2128	28.14071	0.23	0.00	0.09	0.32
4L10	2013/11/13	12:13:44	4.5	93.3	6.5	59.2	54.2	26.2127	28.14075	0.22	0.00	0.08	0.30
4L10	2013/11/13	12:14:14	4.5	93.2	6.5	59.2	55.8	26.2122	28.14098	0.23	0.00	0.08	0.31
4L10	2013/11/13	12:14:45	7.5	141.4	5.1	48.8	67.9	26.2117	28.14085	0.28	0.00	0.06	0.34
4L10	2013/11/13	12:15:16	4.5	93.2	6.3	57.2	59.8	26.2119	28.14082	0.24	0.00	0.08	0.32
4L10	2013/11/13	12:15:46	3.5	72.3	4.9	44.6	44.3	26.2125	28.14073	0.18	0.00	0.06	0.24
4L10	2013/11/13	12:16:17	2.1	53.5	7.2	63.4	44.2	26.2128	28.14045	0.18	0.00	0.09	0.27
4L10	2013/11/13	12:16:48	4.9	95.3	4.5	42.5	51.4	26.2124	28.14055	0.21	0.00	0.06	0.26
4L10	2013/11/13	12:17:19	3.7	78.6	5.8	53	46.1	26.2118	28.14076	0.19	0.00	0.07	0.26
4L10	2013/11/13	12:17:50	4	86.9	7.5	67.5	55.1	26.2124	28.14069	0.22	0.00	0.09	0.32
4L10	2013/11/13	12:18:21	3	70.2	7.6	67.6	50.5	26.2129	28.14044	0.21	0.00	0.09	0.30
4L10	2013/11/13	12:18:52	2.9	66.1	6.4	57.2	46.3	-26.213	28.14006	0.19	0.00	0.08	0.27

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	12:19:22	2.7	61.8	6.2	55	43.8	-26.213	28.14007	0.18	0.00	0.08	0.25
4L10	2013/11/13	12:19:53	1.7	45.1	6.7	59.2	39.3	-26.2126	28.14013	0.16	0.00	0.08	0.24
4L10	2013/11/13	12:20:24	2.1	49.3	5.5	48.8	37.2	-26.2121	28.14027	0.15	0.00	0.07	0.22
4L10	2013/11/13	12:20:54	3	66.1	6.1	55.1	44.2	-26.2115	28.14046	0.18	0.00	0.08	0.25
4L10	2013/11/13	12:21:25	8.1	166.7	10.8	99.1	96.6	-26.211	28.14073	0.39	0.00	0.13	0.53
4L10	2013/11/13	12:21:56	5.8	122.7	9.6	86.5	82.7	-26.2107	28.14077	0.34	0.00	0.12	0.45
4L10	2013/11/13	12:26:02	6	120.5	6.9	63.5	67.3	-26.212	28.13924	0.27	0.00	0.08	0.36
4L10	2013/11/13	12:26:33	3.2	68.1	5.4	48.8	48	-26.2123	28.13927	0.19	0.00	0.07	0.26
4L10	2013/11/13	12:27:04	2.5	57.7	6.2	55	42.1	-26.2127	28.13956	0.17	0.00	0.08	0.25
4L10	2013/11/13	12:27:34	2.1	49.3	5.2	46.7	32.1	-26.2132	28.13957	0.13	0.00	0.06	0.19
4L10	2013/11/13	12:28:05	3.4	76.5	7.5	67.6	47.1	-26.2131	28.14001	0.19	0.00	0.09	0.28
4L10	2013/11/13	12:28:36	1.8	57.7	10.8	94.8	48.6	-26.213	28.14	0.20	0.00	0.13	0.33
4L10	2013/11/13	12:29:06	3.1	72.3	7.8	69.7	48.5	-26.213	28.14	0.20	0.00	0.10	0.29
4L10	2013/11/13	12:29:37	2.6	51.4	3	27.8	29.8	-26.213	28.13999	0.12	0.00	0.04	0.16
4L10	2013/11/13	12:30:08	1	36.7	8.2	71.8	37.6	-26.2124	28.14006	0.15	0.00	0.10	0.25
4L10	2013/11/13	12:30:38	3.2	70.2	6.4	57.1	43.7	-26.2118	28.14028	0.18	0.00	0.08	0.26
4L10	2013/11/13	12:31:09	4.5	95.4	7	63.5	57.2	-26.2113	28.14054	0.23	0.00	0.09	0.32
4L10	2013/11/13	12:31:40	7.5	154.1	10.4	94.9	88.4	-26.2108	28.1408	0.36	0.00	0.13	0.49
4L10	2013/11/13	12:32:10	3.4	72.4	5.6	50.9	51.8	-26.2104	28.14045	0.21	0.00	0.07	0.28
4L10	2013/11/13	12:32:41	4.4	112.1	15	5	132.	-	28.14013	0.32	0.00	0.18	0.51
4L10	2013/11/13	12:33:12	3.3	80.7	9.7	86.4	57	-26.211	28.14005	0.23	0.00	0.12	0.35
4L10	2013/11/13	12:33:42	2.3	49.3	4.3	38.3	33.6	-26.2117	28.14002	0.14	0.00	0.05	0.19
4L10	2013/11/13	12:34:13	5.8	112.1	5	46.7	59.3	-26.2121	28.1395	0.24	0.00	0.06	0.30
4L10	2013/11/13	12:34:44	2.2	55.6	7.6	67.6	42.2	-26.2125	28.13953	0.17	0.00	0.09	0.26
4L10	2013/11/13	12:35:14	2.8	70.2	8.8	78.1	47.3	-26.2131	28.13967	0.19	0.00	0.11	0.30
4L10	2013/11/13	12:35:45	2.5	59.8	6.7	59.2	42.2	-26.2128	28.13989	0.17	0.00	0.08	0.25

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total	
4L10	2013/11/13	12:36:16	2.7	57.6	4.5	40.4	37.3	26.2122	28.14	0.15	0.00	0.06	0.21	
4L10	2013/11/13	12:36:47	1.9	51.4	7.9	69.7	42	26.2116	28.14023	0.17	0.00	0.10	0.27	
4L10	2013/11/13	12:37:18	3.3	78.6	9.3	82.3	57.7	26.2111	28.14051	0.23	0.00	0.11	0.35	
4L10	2013/11/13	12:37:48	4.2	89.1	7	63.5	59.7	26.2107	28.14058	0.24	0.00	0.09	0.33	
4L10	2013/11/13	12:38:19	6.6	133.1	8.1	74	79.9	26.2107	28.1406	0.32	0.00	0.10	0.42	
4L10	2013/11/13	12:38:50	3.3	78.6	8.8	78.1	57.5	26.2104	28.1404	0.23	0.00	0.11	0.34	
4L10	2013/11/13	12:39:20	2.1	66.1	12.5	109.5	59.9	26.2106	28.14018	0.24	0.00	0.15	0.40	
4L10	2013/11/13	12:39:51	1.9	51.4	7.4	65.5	39.5	26.2113	28.14015	0.16	0.00	0.09	0.25	
4L10	2013/11/13	12:40:23	3.3	78.5	9	80.1	57.3	-26.212	28.13991	0.23	0.00	0.11	0.34	
4L10	2013/11/13	12:40:53	2.9	68.1	7.8	69.7	50	26.2124	28.13965	0.20	0.00	0.10	0.30	
4L10	2013/11/13	12:41:24	2.3	64	9.8	86.4	50.5	-26.213	28.13976	0.21	0.00	0.12	0.33	
4L10	2013/11/13	12:41:55	2.7	63.9	6.9	61.3	44.2	26.2125	28.13986	0.18	0.00	0.08	0.26	
4L10	2013/11/13	12:42:25	1.8	55.6	9.8	86.4	45.5	26.2118	28.14005	0.18	0.00	0.12	0.31	
4L10	2013/11/13	12:42:56	2.9	82.8	13.4	117.9	69.4	26.2112	28.14027	0.28	0.00	0.16	0.45	
4L10	2013/11/13	12:43:27	3.7	78.6	6.3	57.2	52.3	26.2107	28.14044	0.21	0.00	0.08	0.29	
4L10	2013/11/13	12:43:57	2.1	68.2	13.4	117.9	61.5	26.2105	28.14022	0.25	0.00	0.16	0.41	
4L10	2013/11/13	12:44:28	2.5	72.3	12	3	105.3	57.8	26.2109	28.14032	0.23	0.00	0.15	0.38
4L10	2013/11/13	12:45:02	1.7	43	5.8	50.9	36.7	26.2115	28.14013	0.15	0.00	0.07	0.22	
4L10	2013/11/13	12:45:30	3.4	74.3	6.6	59.2	47.1	26.2121	28.13987	0.19	0.00	0.08	0.27	
4L10	2013/11/13	12:46:00	1.8	51.4	8.4	73.9	41.6	26.2125	28.13974	0.17	0.00	0.10	0.27	
4L10	2013/11/13	12:46:31	2.3	59.8	8.6	75.9	45.5	26.2124	28.1398	0.18	0.00	0.11	0.29	
4L10	2013/11/13	12:47:02	2.9	66	6.6	59.2	45.1	26.2127	28.1398	0.18	0.00	0.08	0.26	
4L10	2013/11/13	12:47:32	1.9	49.3	6.7	59.2	38.8	-26.213	28.13974	0.16	0.00	0.08	0.24	
4L10	2013/11/13	12:48:04	2.3	57.7	7.1	63.4	42.1	26.2131	28.14034	0.17	0.00	0.09	0.26	
4L10	2013/11/13	12:48:34	2.8	63.9	6.4	57.1	45.6	26.2133	28.14107	0.19	0.00	0.08	0.26	
4L10	2013/11/13	12:49:05	4.5	84.8	2.9	27.8	46	26.2132	28.14151	0.19	0.00	0.04	0.22	

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	12:49:36	4.7	91.1	4.3	40.4	49.4	26.2129	28.14183	0.20	0.00	0.05	0.25
4L10	2013/11/13	12:50:06	3.2	66	4.7	42.5	42.5	26.2126	28.1422	0.17	0.00	0.06	0.23
4L10	2013/11/13	12:50:37	3.7	76.5	5.1	46.7	46.1	26.2121	28.14254	0.19	0.00	0.06	0.25
4L10	2013/11/13	12:51:07	7.2	135.1	4.6	44.6	70.3	26.2117	28.14249	0.29	0.00	0.06	0.34
4L10	2013/11/13	12:51:38	4.4	93.2	7.5	67.6	62.3	26.2114	28.14189	0.25	0.00	0.09	0.35
4L10	2013/11/13	12:52:09	6.1	124.7	8.3	76	76	26.2111	28.14133	0.31	0.00	0.10	0.41
4L10	2013/11/13	12:52:39	3.5	70.2	4.2	38.3	36.6	26.2115	28.14128	0.15	0.00	0.05	0.20
4L10	2013/11/13	12:53:10	2	51.4	6.7	59.2	38.9	-26.212	28.14143	0.16	0.00	0.08	0.24
4L10	2013/11/13	12:53:41	2.3	57.7	7.6	67.6	44.8	26.2123	28.14152	0.18	0.00	0.09	0.28
4L10	2013/11/13	12:54:12	3	59.7	3.5	32	39.1	26.2126	28.14134	0.16	0.00	0.04	0.20
4L10	2013/11/13	12:54:42	3.3	72.3	6.6	59.2	47.9	26.2126	28.14134	0.19	0.00	0.08	0.28
4L10	2013/11/13	12:55:13	2.9	68.1	7.3	65.5	46.3	26.2126	28.14134	0.19	0.00	0.09	0.28
4L10	2013/11/13	12:55:44	2.2	49.3	4.7	42.5	34.7	26.2132	28.14104	0.14	0.00	0.06	0.20
4L10	2013/11/13	12:56:15	3	59.7	3	27.8	33.1	26.2132	28.14139	0.13	0.00	0.04	0.17
4L10	2013/11/13	12:56:45	2.2	47.2	3.8	34.1	31.4	26.2129	28.14165	0.13	0.00	0.05	0.17
4L10	2013/11/13	12:57:16	3	74.4	9.8	86.4	55.9	26.2126	28.14199	0.23	0.00	0.12	0.35
4L10	2013/11/13	12:57:47	3.6	78.6	6.6	59.2	47.4	26.2122	28.1422	0.19	0.00	0.08	0.27
4L10	2013/11/13	12:58:17	4.1	89.1	7.7	69.7	56.5	26.2119	28.14255	0.23	0.00	0.09	0.32
4L10	2013/11/13	12:58:48	5.8	114.2	6.2	57.2	64.9	26.2116	28.14205	0.26	0.00	0.08	0.34
4L10	2013/11/13	12:59:19	4.2	91.1	7.7	69.7	55.5	26.2115	28.1418	0.23	0.00	0.09	0.32
4L10	2013/11/13	12:59:49	5.2	105.8	6.7	61.3	62.2	26.2113	28.14134	0.25	0.00	0.08	0.34
4L10	2013/11/13	13:00:20	3.2	70.2	6.1	55	43.5	26.2117	28.14148	0.18	0.00	0.08	0.25
4L10	2013/11/13	13:00:51	3.6	78.6	7.1	63.4	50.7	26.2122	28.1416	0.21	0.00	0.09	0.29
4L10	2013/11/13	13:01:21	1.8	51.4	8.6	75.9	42.5	26.2127	28.14142	0.17	0.00	0.11	0.28
4L10	2013/11/13	13:01:52	2.4	51.4	4.2	38.3	32.3	26.2132	28.14119	0.13	0.00	0.05	0.18
4L10	2013/11/13	13:02:23	3.5	76.5	6.6	59.2	46.7	26.2129	28.14149	0.19	0.00	0.08	0.27

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	13:02:53	3.1	78.6	10.5	92.7	59.1	26.2126	28.14184	0.24	0.00	0.13	0.37
4L10	2013/11/13	13:03:24	4.3	99.5	10.4	92.7	62.1	26.2126	28.14199	0.25	0.00	0.13	0.38
4L10	2013/11/13	13:03:55	3.8	84.9	8.3	73.9	56.4	26.2122	28.14219	0.23	0.00	0.10	0.33
4L10	2013/11/13	13:04:25	6	118.4	6.2	57.2	66.8	26.2118	28.14219	0.27	0.00	0.08	0.35
4L10	2013/11/13	13:05:00	3.1	63.9	4.7	42.5	40.5	26.2116	28.1417	0.16	0.00	0.06	0.22
4L10	2013/11/13	13:05:27	6.7	135.1	7.8	71.8	79.6	26.2116	28.1415	0.32	0.00	0.10	0.42
4L10	2013/11/13	13:05:57	3.2	72.3	7.3	65.5	47	-26.212	28.14165	0.19	0.00	0.09	0.28
4L10	2013/11/13	13:06:28	1.5	45.1	8.2	71.7	39.5	26.2126	28.1416	0.16	0.00	0.10	0.26
4L10	2013/11/13	13:06:59	2.1	47.2	4.3	38.3	29.3	26.2131	28.14123	0.12	0.00	0.05	0.17
4L10	2013/11/13	13:07:30	3.3	74.4	6.8	61.3	44.8	26.2129	28.14142	0.18	0.00	0.08	0.27
4L10	2013/11/13	13:08:01	1	38.8	9.2	80.1	40.9	26.2129	28.14142	0.17	0.00	0.11	0.28
4L10	2013/11/13	13:08:31	3.4	78.6	8	71.8	54.1	26.2126	28.14166	0.22	0.00	0.10	0.32
4L10	2013/11/13	13:09:02	3.6	82.8	8.2	73.9	51.4	26.2125	28.14174	0.21	0.00	0.10	0.31
4L10	2013/11/13	13:09:33	2.1	49.3	5.7	50.9	38.4	26.2124	28.14184	0.16	0.00	0.07	0.23
4L10	2013/11/13	13:18:41	2.7	59.7	5.2	46.7	39.9	26.2104	28.14171	0.16	0.00	0.06	0.23
4L10	2013/11/13	13:19:11	1.5	43	7.5	65.5	40.8	26.2109	28.14227	0.17	0.00	0.09	0.26
4L10	2013/11/13	13:19:42	4.2	82.8	4.1	38.3	44.9	26.2113	28.14281	0.18	0.00	0.05	0.23
4L10	2013/11/13	13:20:13	2.6	61.8	6.9	61.3	43.8	26.2118	28.14336	0.18	0.00	0.08	0.26
4L10	2013/11/13	13:20:43	3.1	63.9	4.5	40.4	42.7	26.2122	28.14388	0.17	0.00	0.06	0.23
4L10	2013/11/13	13:21:14	3.7	76.5	5.6	50.9	48.8	26.2126	28.1445	0.20	0.00	0.07	0.27
4L10	2013/11/13	13:21:44	4	82.8	5.8	53	53.9	-26.213	28.14517	0.22	0.00	0.07	0.29
4L10	2013/11/13	13:22:16	3.7	74.4	4.2	38.3	43	26.2128	28.14469	0.17	0.00	0.05	0.23
4L10	2013/11/13	13:22:47	4.8	99.4	6.7	61.3	62.4	26.2126	28.14436	0.25	0.00	0.08	0.34
4L10	2013/11/13	13:23:18	4.1	82.8	4.6	42.5	45.1	26.2122	28.1438	0.18	0.00	0.06	0.24
4L10	2013/11/13	13:23:49	4.2	84.9	5.1	46.7	48.6	26.2118	28.14324	0.20	0.00	0.06	0.26
4L10	2013/11/13	13:24:19	5	103.7	7.4	67.6	62.6	26.2114	28.14278	0.25	0.00	0.09	0.35

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	13:24:50	4	97.5	11.6	103.2	73.9	-26.211	28.14222	0.30	0.00	0.14	0.44
4L10	2013/11/13	13:25:21	4.4	91.1	6.5	59.2	54.3	26.2106	28.14166	0.22	0.00	0.08	0.30
4L10	2013/11/13	13:25:51	6.8	135.1	7.3	67.6	73.9	26.2102	28.14114	0.30	0.00	0.09	0.39
4L10	2013/11/13	13:26:22	10.3	202.3	10	92.9	110.1	26.2098	28.14055	0.45	0.00	0.12	0.57
4L10	2013/11/13	13:26:53	5.2	118.4	11.5	103.2	78.1	-26.21	28.14042	0.32	0.00	0.14	0.46
4L10	2013/11/13	13:27:23	11	210.7	8.2	78.2	108.4	26.2098	28.14062	0.44	0.00	0.10	0.54
4L10	2013/11/13	13:33:28	5.7	112	5.7	53	60	26.2118	28.1428	0.24	0.00	0.07	0.31
4L10	2013/11/13	13:33:59	1.9	49.3	7	61.3	46.1	26.2121	28.14333	0.19	0.00	0.09	0.27
4L10	2013/11/13	13:34:29	2.1	47.2	4.8	42.5	34.9	26.2124	28.14399	0.14	0.00	0.06	0.20
4L10	2013/11/13	13:35:00	3.7	80.7	7	63.4	51.1	26.2129	28.14456	0.21	0.00	0.09	0.29
4L10	2013/11/13	13:35:31	4.6	89	3.9	36.2	50.7	-26.213	28.14499	0.21	0.00	0.05	0.25
4L10	2013/11/13	13:36:01	3.6	72.3	4.2	38.3	44.6	26.2127	28.14446	0.18	0.00	0.05	0.23
4L10	2013/11/13	13:36:32	4.1	78.6	3.2	29.9	41.8	26.2123	28.14405	0.17	0.00	0.04	0.21
4L10	2013/11/13	13:37:03	3.5	68.1	3.2	30	43.5	26.2121	28.14348	0.18	0.00	0.04	0.22
4L10	2013/11/13	13:37:35	8.2	151.7	3.8	38.3	70.8	26.2117	28.143	0.29	0.00	0.05	0.33
4L10	2013/11/13	13:38:05	7.7	152	8.2	76.1	84.2	26.2114	28.14254	0.34	0.00	0.10	0.44
4L10	2013/11/13	13:38:36	3.4	74.4	6.6	59.2	49.6	26.2111	28.14193	0.20	0.00	0.08	0.28
4L10	2013/11/13	13:39:07	3.9	82.8	6.3	57.1	52.4	26.2109	28.14167	0.21	0.00	0.08	0.29
4L10	2013/11/13	13:39:38	5.8	120.5	8.3	76	70.1	26.2108	28.14141	0.28	0.00	0.10	0.39
4L10	2013/11/13	13:40:08	5.6	110	5.7	53	61.3	26.2102	28.14104	0.25	0.00	0.07	0.32
4L10	2013/11/13	13:40:39	4.8	93.2	4.1	38.3	50.1	26.2105	28.14145	0.20	0.00	0.05	0.25
4L10	2013/11/13	13:41:09	8.4	162.5	7	65.6	89.1	26.2109	28.14197	0.36	0.00	0.09	0.45
4L10	2013/11/13	13:41:40	5.4	107.9	6.5	59.3	67.6	26.2113	28.14254	0.27	0.00	0.08	0.35
4L10	2013/11/13	13:42:11	8.6	164.6	6.5	61.4	91.2	26.2115	28.1426	0.37	0.00	0.08	0.45
4L10	2013/11/13	13:42:42	3.9	93.1	10.4	92.6	63.4	26.2111	28.14211	0.26	0.00	0.13	0.39
4L10	2013/11/13	13:43:13	5.4	110	6.9	63.4	64.4	26.2107	28.14153	0.26	0.00	0.08	0.35

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	13:43:44	5.1	101.6	6	55.1	59.3	26.2103	28.14112	0.24	0.00	0.07	0.31
4L10	2013/11/13	13:44:14	3.7	74.4	4.4	40.4	48.3	26.2108	28.14148	0.20	0.00	0.05	0.25
4L10	2013/11/13	13:44:45	6.8	135.2	7.6	69.7	77	26.2111	28.14177	0.31	0.00	0.09	0.41
4L10	2013/11/13	13:45:16	5.4	103.7	4.5	42.5	60.4	26.2116	28.14251	0.25	0.00	0.06	0.30
4L10	2013/11/13	13:45:46	3.8	80.6	6.3	57.1	46.9	-26.212	28.14308	0.19	0.00	0.08	0.27
4L10	2013/11/13	13:46:17	2.7	51.4	2.3	21.6	32.6	-26.212	28.14307	0.13	0.00	0.03	0.16
4L10	2013/11/13	13:46:48	5	91.1	1.9	19.5	46.7	-26.212	28.14307	0.19	0.00	0.02	0.21
4L10	2013/11/13	13:47:19	2.8	57.6	4	36.2	37.4	26.2121	28.14311	0.15	0.00	0.05	0.20
4L10	2013/11/13	13:47:49	4.4	89	5.3	48.8	48.3	26.2123	28.14334	0.20	0.00	0.07	0.26
4L10	2013/11/13	13:48:20	2.7	59.7	5.7	50.8	41.8	26.2123	28.1434	0.17	0.00	0.07	0.24
4L10	2013/11/13	13:48:51	1.6	36.7	4.1	36.2	29	26.2122	28.143	0.12	0.00	0.05	0.17
4L10	2013/11/13	13:49:21	3.7	74.4	4.6	42.5	44.6	26.2125	28.14274	0.18	0.00	0.06	0.24
4L10	2013/11/13	13:49:52	3.1	61.8	3.7	34.1	35.9	26.2128	28.14236	0.15	0.00	0.05	0.19
4L10	2013/11/13	13:50:23	1.3	36.7	6	52.9	31.7	26.2131	28.14203	0.13	0.00	0.07	0.20
4L10	2013/11/13	13:50:53	3.6	76.5	6.1	55	49	26.2131	28.14182	0.20	0.00	0.08	0.27
4L10	2013/11/13	13:51:24	4.5	84.8	3.1	29.9	43.9	26.2127	28.14214	0.18	0.00	0.04	0.22
4L10	2013/11/13	13:51:55	3.2	61.8	2.7	25.8	33.6	26.2124	28.14245	0.14	0.00	0.03	0.17
4L10	2013/11/13	13:52:25	6.7	122.5	3	30	61.6	26.2121	28.14271	0.25	0.00	0.04	0.29
4L10	2013/11/13	13:52:57	3.3	68	4.7	42.4	46.3	-26.212	28.14295	0.19	0.00	0.06	0.25
4L10	2013/11/13	13:53:28	2.9	63.9	5.9	52.9	41.7	26.2123	28.14279	0.17	0.00	0.07	0.24
4L10	2013/11/13	13:53:58	4.5	86.9	3.9	36.2	46.9	26.2126	28.14247	0.19	0.00	0.05	0.24
4L10	2013/11/13	13:54:29	2	51.4	6.9	61.3	39.8	26.2128	28.1422	0.16	0.00	0.08	0.25
4L10	2013/11/13	13:55:00	4	78.6	4.1	38.3	47.3	-26.213	28.14198	0.19	0.00	0.05	0.24
4L10	2013/11/13	13:55:30	4.2	84.8	4.8	44.6	50.3	26.2127	28.14229	0.20	0.00	0.06	0.26
4L10	2013/11/13	13:56:01	3.7	76.5	5.4	48.8	46.3	26.2124	28.14264	0.19	0.00	0.07	0.25
4L10	2013/11/13	13:56:32	4	78.6	4.1	38.3	47.6	26.2121	28.14282	0.19	0.00	0.05	0.24

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/13	13:57:03	4.6	89	4.3	40.4	49.1	26.2122	28.14324	0.20	0.00	0.05	0.25
4L10	2013/11/13	13:57:39	1.9	45.1	5.5	48.7	36.2	26.2124	28.14361	0.15	0.00	0.07	0.21
4L10	2013/11/13	14:09:24	4.6	95.3	6.5	59.2	58.4	26.2125	28.14346	0.24	0.00	0.08	0.32
4L10	2013/11/13	14:09:55	5.6	110	5.5	50.9	62	26.2124	28.14377	0.25	0.00	0.07	0.32
4L10	2013/11/13	14:10:25	3	61.8	4	36.2	39.8	26.2125	28.14394	0.16	0.00	0.05	0.21
4L10	2013/11/13	14:10:56	3.1	63.9	4.7	42.5	39.2	26.2127	28.1444	0.16	0.00	0.06	0.22
4L10	2013/11/13	14:11:26	4.1	84.9	5.6	50.9	53	-26.213	28.14477	0.22	0.00	0.07	0.28
4L10	2013/11/13	14:11:57	4.1	82.8	5.1	46.7	46.5	26.2132	28.14478	0.19	0.00	0.06	0.25
4L10	2013/11/13	14:12:28	4.5	86.9	3.9	36.2	47.2	26.2132	28.14441	0.19	0.00	0.05	0.24
4L10	2013/11/13	14:12:58	2.8	61.8	5.4	48.7	41.9	26.2133	28.14391	0.17	0.00	0.07	0.24
4L10	2013/11/13	14:13:29	2.7	55.6	3.5	32	35.4	26.2135	28.14382	0.14	0.00	0.04	0.19
4L10	2013/11/13	14:14:00	2.7	55.6	4	36.2	34.3	26.2138	28.14417	0.14	0.00	0.05	0.19
4L10	2013/11/13	14:14:31	1.6	38.8	4.5	40.4	29	26.2135	28.14457	0.12	0.00	0.06	0.17
4L10	2013/11/13	14:15:02	3.3	72.3	6.3	57.1	43.1	26.2133	28.14486	0.17	0.00	0.08	0.25
4L10	2013/11/13	14:15:32	2.6	53.5	3.5	32	33.8	26.2133	28.14446	0.14	0.00	0.04	0.18
4L10	2013/11/13	14:16:03	3.2	68.1	5.2	46.7	47.9	26.2134	28.14402	0.19	0.00	0.06	0.26
4L10	2013/11/13	14:16:34	3.9	82.7	6.3	57.1	50.1	26.2136	28.14413	0.20	0.00	0.08	0.28
4L10	2013/11/13	14:17:04	2.6	53.5	3.7	34.1	32.3	26.2135	28.14452	0.13	0.00	0.05	0.18
4L10	2013/11/13	14:17:35	2	43	3.8	34.1	29.2	26.2134	28.14457	0.12	0.00	0.05	0.17
4L10	2013/11/13	14:18:06	2.7	59.7	5.7	50.8	39.7	26.2134	28.1442	0.16	0.00	0.07	0.23
4L10	2013/11/13	14:18:36	3.5	72.3	4.9	44.6	43.1	26.2135	28.14428	0.17	0.00	0.06	0.24
4L10	2013/11/13	14:19:07	3.9	78.6	4.9	44.6	47.3	26.2132	28.14449	0.19	0.00	0.06	0.25
4L10	2013/11/13	14:19:37	3.2	68.1	4.9	44.6	37.5	26.2133	28.14393	0.15	0.00	0.06	0.21
4L10	2013/11/13	14:20:08	2.3	51.4	5.2	46.6	36.4	26.2132	28.14356	0.15	0.00	0.06	0.21
4L10	2013/11/13	14:20:39	2.2	49.3	5	44.6	36.5	26.2132	28.14353	0.15	0.00	0.06	0.21
4L10	2013/11/13	14:21:10	3.5	70.2	3.7	34.1	35.2	26.2129	28.14328	0.14	0.00	0.05	0.19

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11 /13	14:21: 40	3.3	61.8	2	19.5	31.6	26.2126	28.14324	0.13	0.00	0.02	0.15
4L10	2013/11 /13	14:22: 11	2.7	59.7	5.7	50.8	40.6	26.2124	28.14295	0.16	0.00	0.07	0.24
4L10	2013/11 /13	14:22: 42	1.4	36.7	5.5	48.7	29.1	26.2127	28.14261	0.12	0.00	0.07	0.19
4L10	2013/11 /13	14:23: 12	4.7	95.3	5.8	52.9	54.5	26.2131	28.14279	0.22	0.00	0.07	0.29
4L10	2013/11 /13	14:23: 43	3.3	68	4.9	44.5	43.5	26.2133	28.14309	0.18	0.00	0.06	0.24
4L10	2013/11 /13	14:24: 14	3	66	5.6	50.8	43.6	26.2132	28.14343	0.18	0.00	0.07	0.25
4L10	2013/11 /13	14:24: 45	4.7	91.1	4.1	38.3	52.1	26.2132	28.14342	0.21	0.00	0.05	0.26
4L10	2013/11 /13	14:25: 16	3.8	78.6	5.4	48.8	50.3	26.2131	28.14328	0.20	0.00	0.07	0.27
4L10	2013/11 /13	14:25: 47	1.7	40.9	4.5	40.4	30.7	26.2127	28.14315	0.12	0.00	0.06	0.18
4L10	2013/11 /13	14:26: 17	2.7	55.5	3.5	32	32.9	26.2126	28.14294	0.13	0.00	0.04	0.18
4L10	2013/11 /13	14:26: 48	4	80.6	5.1	46.7	44.4	26.2129	28.1428	0.18	0.00	0.06	0.24
4L10	2013/11 /13	14:27: 19	4.2	86.9	5.8	53	53.1	26.2132	28.14304	0.22	0.00	0.07	0.29
4L10	2013/11 /13	14:27: 49	3.5	70.2	4.2	38.3	38.2	-26.213	28.14317	0.16	0.00	0.05	0.21
4L10	2013/11 /13	14:28: 24	1.8	47.2	6.5	57.1	37.8	26.2126	28.143	0.15	0.00	0.08	0.23
4L10	2013/11 /13	14:28: 51	1.2	32.6	5.1	44.6	29.5	26.2129	28.14292	0.12	0.00	0.06	0.18
4L10	2013/11 /13	14:29: 21	1.1	32.5	6	52.9	31	-26.213	28.14304	0.13	0.00	0.07	0.20
4L10	2013/11 /13	14:29: 52	2	51.4	6.9	61.3	40.5	26.2128	28.14299	0.16	0.00	0.08	0.25
4L10	2013/11 /13	14:30: 23	4.8	97.4	5.8	53	57.8	26.2131	28.14313	0.23	0.00	0.07	0.31
4L10	2013/11 /13	14:30: 53	2.2	45.1	3.3	29.9	28.2	26.2133	28.14317	0.11	0.00	0.04	0.16
4L10	2013/11 /14	09:18: 16	2.9	59.7	4	36.2	34	26.2134	28.14318	0.14	0.00	0.05	0.19
4L10	2013/11 /14	09:18: 47	3	59.7	3.5	32	33.1	26.2134	28.14318	0.13	0.00	0.04	0.18
4L10	2013/11 /14	09:27: 03	2.6	55.5	4.7	42.5	37	26.2135	28.14224	0.15	0.00	0.06	0.21
4L10	2013/11 /14	09:27: 33	4.2	78.5	2.7	25.8	40.7	26.2133	28.14208	0.17	0.00	0.03	0.20
4L10	2013/11 /14	09:28: 04	2.7	61.8	6.4	57.1	44.6	26.2133	28.14221	0.18	0.00	0.08	0.26
4L10	2013/11 /14	09:28: 35	1.4	30.5	2.4	21.6	23.7	26.2135	28.1425	0.10	0.00	0.03	0.13
4L10	2013/11 /14	09:29: 05	3.1	61.8	3.5	32	35.6	26.2133	28.14239	0.14	0.00	0.04	0.19

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11 /14	09:29: 36	4	80.6	5.1	46.7	45.3	-26.213	28.14231	0.18	0.00	0.06	0.25
4L10	2013/11 /14	09:30: 07	4.8	95.3	5.3	48.7	48.4	26.2133	28.14256	0.20	0.00	0.07	0.26
4L10	2013/11 /14	09:30: 37	2.4	51.4	4	36.2	31.4	26.2135	28.14262	0.13	0.00	0.05	0.18
4L10	2013/11 /14	09:31: 08	3.6	70.2	3.2	29.9	37.4	26.2132	28.14259	0.15	0.00	0.04	0.19
4L10	2013/11 /14	09:31: 39	2.9	61.8	4.7	42.5	37.2	26.2128	28.14242	0.15	0.00	0.06	0.21
4L10	2013/11 /14	09:32: 09	2.8	59.7	4.9	44.6	38.5	26.2131	28.14269	0.16	0.00	0.06	0.22
4L10	2013/11 /14	09:32: 40	3.1	63.9	4.4	40.4	36.4	26.2134	28.14284	0.15	0.00	0.05	0.20
4L10	2013/11 /14	09:33: 11	3.9	78.5	4.6	42.5	44.6	26.2134	28.14284	0.18	0.00	0.06	0.24
4L10	2013/11 /14	09:33: 42	2.7	57.6	4.5	40.4	37.3	26.2136	28.14302	0.15	0.00	0.06	0.21
4L10	2013/11 /14	09:36: 17	4.3	89.1	6.1	55.1	56.8	26.2142	28.14346	0.23	0.00	0.08	0.31
4L10	2013/11 /14	09:36: 48	3.1	66	4.9	44.6	41.6	26.2142	28.14353	0.17	0.00	0.06	0.23
4L10	2013/11 /14	09:44: 00	3.3	68.1	4.7	42.5	43	26.2136	28.14208	0.17	0.00	0.06	0.23
4L10	2013/11 /14	09:44: 31	3.4	68.1	4.2	38.3	37.9	26.2136	28.14209	0.15	0.00	0.05	0.21
4L10	2013/11 /14	09:45: 02	3.6	72.3	3.9	36.2	40.2	26.2139	28.1423	0.16	0.00	0.05	0.21
4L10	2013/11 /14	09:45: 32	3.2	70.2	6.3	57.1	43	26.2142	28.14247	0.17	0.00	0.08	0.25
4L10	2013/11 /14	09:46: 03	3.1	63.9	3.9	36.2	36.2	26.2146	28.14263	0.15	0.00	0.05	0.20
4L10	2013/11 /14	09:46: 34	4	80.6	4.6	42.5	44.6	26.2148	28.14283	0.18	0.00	0.06	0.24
4L10	2013/11 /14	09:47: 04	1.7	34.6	2.4	21.6	24.4	26.2145	28.14269	0.10	0.00	0.03	0.13
4L10	2013/11 /14	09:47: 35	3.9	76.5	3.9	36.2	42.4	26.2141	28.14257	0.17	0.00	0.05	0.22
4L10	2013/11 /14	09:49: 32	2.3	49.3	3.8	34.1	32.9	26.2144	28.14283	0.13	0.00	0.05	0.18
4L10	2013/11 /14	09:50: 03	3.7	78.5	5.8	52.9	47.9	26.2147	28.14298	0.19	0.00	0.07	0.27
4L10	2013/11 /14	09:50: 34	1.9	40.9	3.3	29.9	26.6	26.2144	28.14298	0.11	0.00	0.04	0.15
4L10	2013/11 /14	09:51: 04	4.2	86.9	6.1	55	56.8	-26.214	28.14286	0.23	0.00	0.08	0.31
4L10	2013/11 /14	09:51: 35	3.6	74.4	5.1	46.7	46.6	26.2137	28.14271	0.19	0.00	0.06	0.25
4L10	2013/11 /14	09:52: 06	5.3	101.6	4.5	42.5	56	26.2136	28.14282	0.23	0.00	0.06	0.28
4L10	2013/11 /14	09:52: 36	3.1	68.1	6.4	57.1	50.5	26.2139	28.14305	0.21	0.00	0.08	0.28

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/14	09:53:07	6.6	124.6	4.4	42.5	70.7	26.2143	28.14327	0.29	0.00	0.05	0.34
4L10	2013/11/14	09:53:39	3.2	63.8	3.5	32	35.4	26.2142	28.1434	0.14	0.00	0.04	0.19
4L10	2013/11/14	09:54:09	4.3	82.7	3.9	36.2	44.7	26.2138	28.14312	0.18	0.00	0.05	0.23
4L10	2013/11/14	09:54:40	4.1	80.6	4.1	38.3	46.3	26.2135	28.14288	0.19	0.00	0.05	0.24
4L10	2013/11/14	09:55:11	2.6	53.4	3.8	34.1	35.1	26.2135	28.14253	0.14	0.00	0.05	0.19
4L10	2013/11/14	09:55:42	3.7	70.2	2.7	25.8	36.2	26.2136	28.14221	0.15	0.00	0.03	0.18
4L10	2013/11/14	09:56:12	2.3	49.3	3.8	34.1	31.8	26.2134	28.14202	0.13	0.00	0.05	0.18
4L10	2013/11/14	09:56:43	4	76.5	2.9	27.8	40.2	26.2134	28.1419	0.16	0.00	0.04	0.20
4L10	2013/11/14	09:57:14	1.3	30.5	3.1	27.8	23	26.2135	28.14183	0.09	0.00	0.04	0.13
4L10	2013/11/14	09:57:44	3.6	74.4	4.9	44.6	43.5	26.2133	28.14162	0.18	0.00	0.06	0.24
4L10	2013/11/14	09:58:15	3.6	76.5	6.3	57.1	52.5	26.2135	28.14166	0.21	0.00	0.08	0.29
4L10	2013/11/14	09:58:47	4.7	89	3.6	34.1	49.2	26.2135	28.14144	0.20	0.00	0.04	0.24
4L10	2013/11/14	09:59:17	4.7	97.4	6.5	59.2	61.1	26.2136	28.14187	0.25	0.00	0.08	0.33
4L10	2013/11/14	09:59:48	3.6	72.3	4.4	40.4	44.6	26.2136	28.14196	0.18	0.00	0.05	0.24
4L10	2013/11/14	10:00:19	2.5	51.4	3.3	29.9	32.5	26.2136	28.1421	0.13	0.00	0.04	0.17
4L10	2013/11/14	10:00:49	3.3	68.1	4.7	42.5	39.1	26.2139	28.14224	0.16	0.00	0.06	0.22
4L10	2013/11/14	10:01:20	5.1	95.3	3.3	32	50.7	26.2143	28.1424	0.21	0.00	0.04	0.25
4L10	2013/11/14	10:01:51	1.3	34.6	4.8	42.5	28.2	26.2146	28.14252	0.11	0.00	0.06	0.17
4L10	2013/11/14	10:02:22	3	61.8	4.4	40.4	37.5	26.2149	28.14253	0.15	0.00	0.05	0.21
4L10	2013/11/14	10:02:52	2.7	59.7	5.7	50.8	39	26.2146	28.14241	0.16	0.00	0.07	0.23
4L10	2013/11/14	10:03:23	2.3	49.3	4.3	38.3	34.3	26.2143	28.14228	0.14	0.00	0.05	0.19
4L10	2013/11/14	10:03:54	4.2	80.6	3.1	29.9	40.5	26.2139	28.14213	0.16	0.00	0.04	0.20
4L10	2013/11/14	10:04:24	4.3	82.7	3.6	34.1	45.7	26.2137	28.14209	0.19	0.00	0.04	0.23
4L10	2013/11/14	10:04:55	3.7	76.4	4.9	44.6	44.2	26.2139	28.14204	0.18	0.00	0.06	0.24
4L10	2013/11/14	10:05:26	3	57.6	2.8	25.8	32.6	26.2143	28.14217	0.13	0.00	0.03	0.17
4L10	2013/11/14	10:05:56	1.5	30.5	1.9	17.4	17.3	26.2147	28.14228	0.07	0.00	0.02	0.09

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/14	10:06:27	2.8	55.5	2.8	25.7	32.5	26.2149	28.14232	0.13	0.00	0.03	0.17
4L10	2013/11/14	10:06:58	2.8	59.7	4.5	40.4	36.3	26.2146	28.14219	0.15	0.00	0.06	0.20
4L10	2013/11/14	10:07:28	2.9	57.6	3.5	32	36	26.2143	28.14204	0.15	0.00	0.04	0.19
4L10	2013/11/14	10:07:59	3.9	76.5	3.9	36.2	44.2	26.2139	28.14193	0.18	0.00	0.05	0.23
4L10	2013/11/14	10:08:30	4.2	80.7	3.4	32	43.9	26.2137	28.14175	0.18	0.00	0.04	0.22
4L10	2013/11/14	10:09:01	3.3	68.1	4.9	44.6	41.2	-26.214	28.14184	0.17	0.00	0.06	0.23
4L10	2013/11/14	10:09:31	3.2	68.1	5.1	46.7	42.3	26.2144	28.14194	0.17	0.00	0.06	0.23
4L10	2013/11/14	10:10:02	3	61.8	4.4	40.4	37	26.2147	28.14205	0.15	0.00	0.05	0.20
4L10	2013/11/14	10:10:33	3.6	70.2	3.2	29.9	36.2	-26.215	28.14205	0.15	0.00	0.04	0.19
4L10	2013/11/14	10:11:03	3.9	78.6	5.1	46.7	49.6	26.2147	28.14193	0.20	0.00	0.06	0.26
4L10	2013/11/14	10:11:34	5	95.3	3.8	36.2	51.8	26.2143	28.14178	0.21	0.00	0.05	0.26
4L10	2013/11/14	10:12:05	3.5	70.2	4.4	40.4	43.6	26.2143	28.14167	0.18	0.00	0.05	0.23
4L10	2013/11/14	10:12:35	3	66	5.9	52.9	43.8	26.2146	28.14177	0.18	0.00	0.07	0.25
4L10	2013/11/14	10:13:06	3.2	61.8	2.7	25.8	36.4	26.2149	28.14183	0.15	0.00	0.03	0.18
4L10	2013/11/14	10:17:41	2.1	49.3	5.2	46.7	37	26.2149	28.14146	0.15	0.00	0.06	0.21
4L10	2013/11/14	10:18:11	2.7	51.4	2.3	21.6	29.3	-26.215	28.14177	0.12	0.00	0.03	0.15
4L10	2013/11/14	10:18:42	2.8	59.7	4.4	40.4	34.9	26.2149	28.14168	0.14	0.00	0.05	0.20
4L10	2013/11/14	10:19:12	3.6	70.2	3.7	34.1	42.2	26.2149	28.14177	0.17	0.00	0.05	0.22
4L10	2013/11/14	10:19:44	2.4	53.5	4.7	42.5	36	26.2145	28.14186	0.15	0.00	0.06	0.20
4L10	2013/11/14	10:20:14	3.8	72.3	2.9	27.8	40.7	26.2141	28.14197	0.17	0.00	0.04	0.20
4L10	2013/11/18	11:17:24	3.2	61.8	3	27.8	33.8	26.2138	28.14366	0.14	0.00	0.04	0.17
4L10	2013/11/18	11:17:54	3.4	68.1	3.7	34.1	38.2	26.2134	28.14338	0.16	0.00	0.05	0.20
4L10	2013/11/18	11:18:25	2.2	43	2.1	19.5	27.4	26.2134	28.14334	0.11	0.00	0.03	0.14
4L10	2013/11/18	11:18:56	3.3	63.9	3	27.8	31.1	26.2134	28.14335	0.13	0.00	0.04	0.16
4L10	2013/11/18	11:19:26	2.5	55.5	5.2	46.6	35.6	26.2136	28.14349	0.14	0.00	0.06	0.21
4L10	2013/11/18	11:19:57	2.7	59.7	5.4	48.7	36.4	26.2138	28.14374	0.15	0.00	0.07	0.21

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/18	11:20:28	2.2	45.1	3.3	29.9	31.2	26.2139	28.14395	0.13	0.00	0.04	0.17
4L10	2013/11/18	11:20:58	2.3	49.3	3.8	34.1	30.8	26.2136	28.1437	0.13	0.00	0.05	0.17
4L10	2013/11/18	11:21:30	2.7	55.5	3.5	32	35	26.2133	28.14363	0.14	0.00	0.04	0.19
4L10	2013/11/18	11:22:01	2.7	59.7	5.2	46.7	41.6	26.2137	28.14388	0.17	0.00	0.06	0.23
4L10	2013/11/18	11:22:32	4.2	80.6	3.6	34.1	45.6	26.2139	28.14416	0.19	0.00	0.04	0.23
4L10	2013/11/18	11:23:02	1.7	43	5.5	48.7	33.6	26.2136	28.14389	0.14	0.00	0.07	0.20
4L10	2013/11/18	11:23:33	1.6	36.7	3.6	32	25.7	26.2133	28.14362	0.10	0.00	0.04	0.15
4L10	2013/11/18	11:24:04	0.6	15.8	2.7	23.7	17	26.2134	28.14323	0.07	0.00	0.03	0.10
4L10	2013/11/18	11:24:34	1.1	26.3	2.9	25.7	23.1	26.2134	28.14325	0.09	0.00	0.04	0.13
4L10	2013/11/18	11:25:05	3.2	59.7	2	19.5	30.4	26.2135	28.1433	0.12	0.00	0.02	0.15
4L10	2013/11/18	11:25:36	3.6	68.1	2.5	23.7	35.2	26.2138	28.1436	0.14	0.00	0.03	0.17
4L10	2013/11/18	11:26:07	1.5	34.6	3.6	32	22.9	26.2141	28.14376	0.09	0.00	0.04	0.14
4L10	2013/11/18	11:26:38	0.7	20	3.4	29.9	18.1	26.2141	28.14353	0.07	0.00	0.04	0.12
4L10	2013/11/18	11:27:09	1.2	30.5	4.3	38.3	22.2	-26.214	28.1435	0.09	0.00	0.05	0.14
4L10	2013/11/18	11:27:40	2.3	47.2	3	27.8	25.2	26.2139	28.14333	0.10	0.00	0.04	0.14
4L10	2013/11/18	11:36:10	7.1	133	4.4	42.5	72.6	26.2106	28.13712	0.29	0.00	0.05	0.35
4L10	2013/11/18	11:36:41	4.8	101.6	7.9	71.8	63.7	26.2104	28.13714	0.26	0.00	0.10	0.36
4L10	2013/11/18	11:37:12	5.3	101.6	4.5	42.5	57.1	-26.21	28.13716	0.23	0.00	0.06	0.29
4L10	2013/11/18	11:37:42	4.7	93.2	5.3	48.8	56.8	26.2098	28.13746	0.23	0.00	0.07	0.30
4L10	2013/11/18	11:38:13	5.5	107.9	5.5	50.9	58.6	26.2096	28.13782	0.24	0.00	0.07	0.31
4L10	2013/11/18	11:38:43	4.9	93.2	3.6	34.1	51.7	26.2097	28.13778	0.21	0.00	0.04	0.25
4L10	2013/11/18	11:39:14	3.9	78.6	4.6	42.5	52.6	26.2099	28.13739	0.21	0.00	0.06	0.27
4L10	2013/11/18	11:39:45	2.3	55.6	6.4	57.1	45.2	26.2101	28.13733	0.18	0.00	0.08	0.26
4L10	2013/11/18	11:44:19	2.2	36.8	0	0.7	18.7	26.2107	28.1373	0.08	0.00	0.00	0.08
4L10	2013/11/18	11:44:50	3	51.4	0	0.7	23.8	26.2103	28.13731	0.10	0.00	0.00	0.10
4L10	2013/11/18	11:45:21	3	51.4	0	0.7	26.5	26.2106	28.13715	0.11	0.00	0.00	0.11

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11/18	11:45:51	3.4	57.7	0	0.7	25.7	26.2109	28.13711	0.10	0.00	0.00	0.10
4L10	2013/11/18	11:46:22	2.2	36.8	0	0	19.2	26.2113	28.13708	0.08	0.00	0.00	0.08
4L10	2013/11/18	11:46:53	2	34.7	0.2	2.8	19.8	26.2116	28.13714	0.08	0.00	0.00	0.08
4L10	2013/11/18	11:47:23	2.8	49.3	0.4	4.9	23.5	26.2118	28.13724	0.10	0.00	0.00	0.10
4L10	2013/11/18	11:47:54	2.8	47.2	0	0	22	26.2119	28.13721	0.09	0.00	0.00	0.09
4L10	2013/11/18	11:48:25	3	51.4	0.1	2.8	25.3	26.2119	28.13717	0.10	0.00	0.00	0.10
4L10	2013/11/18	11:48:56	2.9	49.4	0	0	26.2	26.2122	28.13729	0.11	0.00	0.00	0.11
4L10	2013/11/18	11:49:27	2.2	36.8	0	0	23.3	26.2124	28.13735	0.09	0.00	0.00	0.09
4L10	2013/11/18	11:49:58	3.9	66.1	0	0	30.3	26.2124	28.13737	0.12	0.00	0.00	0.12
4L10	2013/11/18	11:50:28	2	34.7	0.4	4.9	21.6	26.2127	28.13739	0.09	0.00	0.00	0.09
4L10	2013/11/18	11:50:59	3	53.5	0.6	7	27.4	-26.213	28.13743	0.11	0.00	0.01	0.12
4L10	2013/11/18	11:51:30	2.6	45.2	0	0.7	24.2	26.2132	28.13741	0.10	0.00	0.00	0.10
4L10	2013/11/18	11:52:00	2.5	43.1	0	0.7	23.7	26.2134	28.1375	0.10	0.00	0.00	0.10
4L10	2013/11/18	11:52:31	2	36.8	0.9	9	22.1	26.2138	28.13758	0.09	0.00	0.01	0.10
4L10	2013/11/18	11:53:02	3.9	66.2	0.1	2.8	36.1	26.2142	28.13769	0.15	0.00	0.00	0.15
4L10	2013/11/18	11:56:01	7.1	131	3.4	34.2	72	26.2125	28.13749	0.29	0.00	0.04	0.33
4L10	2013/11/18	11:56:32	6.5	124.7	5.2	48.8	66.9	26.2121	28.13742	0.27	0.00	0.06	0.34
4L10	2013/11/18	11:57:03	4.7	89.1	3.6	34.1	50	26.2119	28.13737	0.20	0.00	0.04	0.25
4L10	2013/11/18	11:57:33	5.6	103.7	3.3	32	53.7	26.2115	28.13736	0.22	0.00	0.04	0.26
4L10	2013/11/18	11:58:04	5.2	101.6	4.8	44.6	56.9	26.2111	28.13733	0.23	0.00	0.06	0.29
4L10	2013/11/18	11:58:35	5.6	101.6	1.8	19.5	48	-26.2107	28.13734	0.19	0.00	0.02	0.22
4L10	2013/11/18	11:59:05	4.3	87	5.6	50.9	50.1	26.2104	28.13741	0.20	0.00	0.07	0.27
4L10	2013/11/18	11:59:36	4.4	89.1	5.5	50.9	50.1	26.2104	28.13745	0.20	0.00	0.07	0.27
4L10	2013/11/18	12:03:10	7.6	137.3	2.9	30	67.6	26.2132	28.13761	0.27	0.00	0.04	0.31
4L10	2013/11/18	12:03:41	6.7	124.8	4	38.4	68	26.2136	28.13769	0.28	0.00	0.05	0.33
4L10	2013/11/18	12:04:11	10.4	189.7	4.7	46.8	102.3	26.2137	28.13793	0.42	0.00	0.06	0.47

Id	Date	Time	U [ppm]	U [cpm]	Th [ppm]	Th [cpm]	Dose nSv/h	Lat	Long	Th-232	U-235	U-238	Total
4L10	2013/11 /18	12:04: 42	12.1	221.3	5	51	107.7	26.2133	28.13782	0.44	0.00	0.06	0.50
4L10	2013/11 /18	12:05: 13	7.8	150	7.1	65.7	96.6	26.2129	28.13773	0.39	0.00	0.09	0.48
4L10	2013/11 /18	12:05: 44	11.3	208.7	5.6	55.2	108.8	26.2125	28.13766	0.44	0.00	0.07	0.51
4L10	2013/11 /18	12:06: 14	9.1	164.6	3.1	32.1	82.2	26.2121	28.1376	0.33	0.00	0.04	0.37
4L10	2013/11 /18	12:06: 45	9.2	168.7	4	40.5	81.8	26.2118	28.13753	0.33	0.00	0.05	0.38
4L10	2013/11 /18	12:07: 16	7.5	139.3	3.9	38.3	75.6	26.2115	28.13756	0.31	0.00	0.05	0.35
4L10	2013/11 /18	12:07: 47	15.5	284.3	6.9	69.9	144.3	26.2115	28.13761	0.59	0.00	0.08	0.67
4L10	2013/11 /18	12:08: 18	5.6	110	5.7	53	63.1	26.2118	28.13763	0.26	0.00	0.07	0.33
4L10	2013/11 /18	12:08: 48	5.5	114.2	8.1	73.9	70.5	26.2122	28.13765	0.29	0.00	0.10	0.39
4L10	2013/11 /18	12:09: 19	5.3	99.5	3.3	32.1	52.4	26.2126	28.13768	0.21	0.00	0.04	0.25
4L10	2013/11 /18	12:09: 50	4.3	93.3	7.7	69.7	60.4	26.2125	28.13775	0.25	0.00	0.09	0.34
4L10	2013/11 /18	12:10: 20	3.9	80.7	5.6	50.9	48.4	26.2121	28.13774	0.20	0.00	0.07	0.27
4L10	2013/11 /18	12:10: 51	5.5	105.8	4.3	40.4	57.9	26.2123	28.1378	0.24	0.00	0.05	0.29
4L10	2013/11 /18	12:11: 22	8.1	145.7	2.1	23.7	69.8	26.2126	28.13784	0.28	0.00	0.03	0.31
4L10	2013/11 /18	12:11: 53	12.1	221.4	5.8	57.3	124.4	26.2129	28.13778	0.51	0.00	0.07	0.58
4L10	2013/11 /18	12:12: 24	13.4	244.1	5.2	53	124.1	26.2132	28.13785	0.50	0.00	0.06	0.57
4L10	2013/11 /18	12:12: 55	15.9	290.5	6.4	65.7	141.1	26.2136	28.13799	0.57	0.00	0.08	0.65
4L10	2013/11 /18	12:13: 26	12.9	238.2	6.9	67.8	128.9	26.2134	28.13805	0.52	0.00	0.08	0.61
4L10	2013/11 /18	12:13: 56	14	259.2	7.5	74.1	133.9	26.2135	28.1382	0.54	0.00	0.09	0.64
4L10	2013/11 /18	12:14: 27	14.2	259.2	6.1	61.5	132.9	26.2135	28.13815	0.54	0.00	0.08	0.61
4L10	2013/11 /18	12:14: 58	9.7	181.4	5.7	55.2	100.1	26.2132	28.13797	0.41	0.00	0.07	0.48
4L10	2013/11 /18	12:15: 28	11.6	208.6	3.4	36.3	105.6	26.2129	28.13793	0.43	0.00	0.04	0.47
4L10	2013/11 /18	12:15: 59	13.7	248.5	4.9	51	121.2	26.2129	28.13784	0.49	0.00	0.06	0.55
4L10	2013/11 /18	12:16: 29	7.2	133.1	3.9	38.4	76.8	26.2133	28.1378	0.31	0.00	0.05	0.36
4L10	2013/11 /18	12:17: 00	6.6	126.8	5.2	48.8	68.1	26.2137	28.13769	0.28	0.00	0.06	0.34

Note: All 1 meter readings are not within the 0.5 Bq/g limit.

Appendix 4: Copy of Calibration certificate



GEOTRON SYSTEMS (Pty) Ltd.

Tel.: (018) 294-4004
 Int.: 27-18-294-4004
 Fax: (018) 294-6116
 Reg. No.: 1987/001003/07
www.geotron.co.za

10 Jeppe Street
 P.O. Box 2656
 POTCHEFSTROOM
 2520
 South Africa

CALIBRATION SHEET

METER: RS-230

SERIAL: 3402

DATE: 13 May 2013

	ORIGINAL	RECALIB		
Channels:	1024	1024	Energy Calibration:	
High Voltages:	842	797	A3-0	0.000000
Peak Channel Cs:	220	221	A3-1	3.000000
FWHM (Cs):	971		A3-2	0.000000

R01#	Channels	IAEA spec [keV]	Label	Sensitivity Cpm/unit conc	Recalib Value
1	136-936	410-2810	Total Count		
2	456-523	1370-1570	Potassium K	193.87	192.2
3	553-620	1660-1860	Uranium U	17.33	17.43
4	803-936	2410-2810	Thorium Th	8.67	8.59

Stripping constant	Original	Recalib
Alpha	0.279	0.279
Beta	0.390	0.390
Gamma	0.705	0.705
a	0.038	0.038
b	-0.003	-0.003
g	-0.006	-0.006

Control Measurements Original		
PAD	Accept Range	Measured
K	6.5-8.3(%)	7.7
U	35.8-54.2(ppm)	40.4
TH	97-134.2(ppm)	105.7

Th Control Measurements Recalib		U Control Measurements Recalib		
K	1.6-2.6(%)		K	11-17%
U	50-70(ppm)		U	700-800ppm
TH	1800-2400(ppm)		TH	141-170ppm

NOTES:

1. Energy peak for Cs from 220 to 221 due to voltage stabilization.
2. Sensitivity change <0.9%
3. No change to stripping constants.
4. Files: cIRSData/Mine Waste130-Mar-12 & 13-May-13

Tech: RVR

Calib Date: 13-May-2013

DIRECTOR: R.J. van Rensburg