

**RIO  
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ENERGY  
AMERICA

**Rio Tinto Energy America**  
Kennecott Uranium Company  
Post Office Box 1500  
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27 January 2009

Mr. Keith I. McConnell, Deputy Director  
Division of Waste Management and Environmental Protection  
Office of Federal and State Materials and Environmental Management Programs  
U.S. Nuclear Regulatory Commission  
11545 Rockville Pike, Mail Stop T7-E18  
Rockville, MD 20852

Dear Mr. McConnell:

**SUBJECT: Sweetwater Uranium Project - Docket Number 40-8584  
Source Materials License SUA-1350 - Semiannual 10 CFR 40.65 Report  
Airborne Effluents**

Enclosed is Kennecott Uranium Company's Semiannual 10 CFR 40.65 Report for the second half of 2008 for airborne effluents. This report addresses the requirements of License Condition 11.5 of SML #SUA-1350, as well as the requirements of 10 CFR 40.65(a)(1).

Kennecott Uranium Company is only required to monitor for ambient gamma and airborne particulates at the downwind location (Air 4A) and radon at the upwind (Air 2) and downwind (Air 4A) locations as long as operations remain suspended as per License Condition 11.5. Kennecott is not required to perform stack, soil, sediment or vegetation sampling as long as operations remain suspended.

Kennecott Uranium Company has examined the data included in this report, calculated the dose to the nearest resident in millirems per year for the second half of 2008 from the licensed activities and concluded that the dose does not exceed the 100 mrem per year dose limit. A copy of the calculation sheet as well as an explanation of the calculation method is included. This is being done at the request of Elaine Brummett, previously of your staff, in an email dated September 7, 2001.

Should you have any questions, please contact me at (307) 328-1476.

Sincerely yours,



Oscar Paulson  
Facility Supervisor

cc: James Webb, Project Manager  
Director - USNRC DMSS, Region IV (w/o enc.)  
Darryl Maunder - RTEA

KENNECOTT URANIUM COMPANY  
 SWEETWATER URANIUM PROJECT  
 Source Material License SUA-1350

2008  
 RadTrak Radon Monitor  
 (pCi/L)

DATE	LOCATION	RADIOISOTOPE	CONCENTRATION	STD DEVIATION/ STD COUNTING ERROR	LOWER LIMIT OF DETECTION (LLD)	
					pCi/L-Days	pCi/L
1/2/08 – 4/1/08 1/2/08 – 4/1/08	Downwind - Air 4A Upwind - Air 2	Radon Radon	2.1 pCi/L 3.4 pCi/L	5.4 4.4	6.0 6.0	0.06 0.06
4/1/08 – 7/2/08 4/1/08 – 7/2/08	Downwind - Air 4A Upwind - Air 2	Radon Radon	1.6 pCi/L 2.2 pCi/L	4.9 4.4	6.0 6.0	0.06 0.06
7/2/08 – 10/1/08 7/2/08 – 10/1/08 8/6/08 – 10/1/08	Downwind - Air 4A Upwind - Air 2-A <sup>1</sup> Upwind - Air 2-B <sup>1</sup>	Radon Radon Radon	2.9 pCi/L 5.1 pCi/L 2.0 pCi/L	4.3 3.4 4.6	6.0 6.0 6.0	0.06 0.06 0.06
10/1/08 – 1/4/09 10/1/08 – 1/4/09 10/1/08 – 1/4/09	Downwind - Air 4A Upwind - Air 2-A <sup>2</sup> Upwind - Air 2 -B <sup>2</sup>	Radon Radon Radon	2.9 pCi/L 3.2 pCi/L 3.6 pCi/L	4.2 4.0 3.8	6.0 6.0 6.0	0.06 0.06 0.06
	Average (Air2) <sup>2</sup>		3.4 pCi/L			

<sup>1</sup> See attached explanation – Item 1

<sup>2</sup> See attached explanation – Item 2

**KENNECOTT URANIUM COMPANY  
SWEETWATER URANIUM PROJECT  
Source Material License SUA-1350**

**Explanation of RadTrak data:**

1. At 10:23am on August 5, 2008 during a routine check of the monitoring station the RadTrak unit was found on the ground because the holder had fallen apart. The holder was repaired and the RadTrak unit replaced. Because the RadTrak Unit had lain on the ground for an undetermined period of time and because the effect of lying on the ground and the result was unknown, a second RadTrak unit (Upwind Air 2-B) was installed at the station on August 6, 2008. Both RadTraks were collected on October 1, 2008 and sent for processing. The initial RadTrak unit (Upwind Air 2-A) had a slightly elevated reading (5.1 pCi/L) while the RadTrak installed on August 6, 2008 (Upwind Air 2-B) had a low reading (2.0 pCi/L). The RadTraks were reread by Landauer, Inc. They reported that there was no change in the results. The e-mail from Landauer, Inc. is attached. This information was discussed in a telephone conversation with James Webb and the discussion is documented in the attached e-mail dated November 4, 2008. For dose calculation purposes it has been decided to use the average of the third quarter RadTrak data from January 1992 to June 2008 in place of the third quarter 2008 RadTrak reading. This value is 3.89 pCi/L. A listing of the Air 2 RadTrak monitoring data used in generating this average value is attached.
2. Since a second RadTrak holder was installed at the Air 2 monitoring location on August 6, 2008, a second RadTrak was deployed at the Air 2 location during the fourth quarter of 2008 for comparative and quality assurance/quality control purposes. The results from both RadTraks were averaged to generate the final value for the fourth quarter of 2008 for monitoring station Air – 2.

**Paulson, Oscar (RTEA)**

**From:** Paulson, Oscar (RTEA)  
**Sent:** Tuesday, November 04, 2008 4:24 PM  
**To:** 'James Webb'  
**Cc:** Schutterle, Shelley (RTEA)  
**Subject:** Sweetwater Uranium Project - SUA-1350 Downwind Radon Detector

James Webb:

This e-mail will document our discussion over the telephone regarding the upwind radon detector for the facility. The following pertains:

- At 10:23 a.m. on August 5, 2008 the upwind/background RadTrak radon detector for the facility was found on the ground during a routine check. The RadTrack holder had fallen apart.
- The RadTrak holder was repaired, the RadTrak unit replaced in it and the holder remounted on the support.
- Radon concentrations are higher near the so there was a concern that the detector's reading could be elevated because of the time it spent near the ground.
- Due to this concern, a second RadTrak holder and RadTrak detector was installed at that location on August 6, 2008.
- Both RadTrak detectors were collected at the beginning of the next quarter (October 1, 2008) and replaced with new ones for the fourth quarter 2008.
- The readings for the two (2) upwind /background RadTrak detectors were as follows:

Date Placed	Date Retrieved	Result
July 2, 2008	October 1, 2008	5.1 picoCuries per liter
August 6, 2008	October 1, 2008	2.0 picoCuries per liter

- The result for the unit left in place for the quarter that fell to the ground appears elevated.
- The result for the unit installed on August 6, 2008 appears low.
- This is based on the average upwind reading for the facility (July 1, 1991 to July 3, 2007) of 3.14 picoCuries per liter
- Landauer, Inc. is rereading both of the RadTrak detectors to verify the results.
- In cases like this in the past, the facility has used the average value for the upwind detector, in place of the actual upwind detector value for a quarter in which the upwind detector was damaged.

If you have any questions please do not hesitate to contact me.

Oscar Paulson

Facility Supervisor  
 Kennecott Uranium Company  
 Sweetwater Uranium Project  
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1/27/2009

**Kennecott Uranium Company - Sweetwater Uranium Facility**

UPWIND RADON DATA								
RADTRAK DATA ONLY								
AIR 2 MONITORING STATION								
				STATION	AIR 2	AIR 2	AIR 2	AIR 2
			DETECTOR	AIR 2	AVERAGES	QUARTERS	QUARTERS	QUARTERS
	START DATE	END DATE	TYPE	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
1991	01-Jul-91	01-Aug-91	TRACKETCH	4.20				
	01-Aug-91	01-Sep-91	TRACKETCH	4.20	4.20			4.20
	01-Sep-91	01-Oct-91	TRACKETCH	4.20				
	01-Oct-91	01-Nov-91	TRACKETCH	2.80				
	01-Nov-91	01-Dec-91	TRACKETCH	2.80	2.80			
	01-Dec-91	03-Jan-92	TRACKETCH	2.80				
1992	10-Jan-92	07-Feb-92	TRACKETCH	3.90				
	07-Feb-92	03-Mar-92	TRACKETCH	3.20	4.34	4.34		
	03-Mar-92	02-Apr-92	TRACKETCH	5.93				
	02-Apr-92	11-May-92	TRACKETCH	3.07				
	11-May-92	01-Jun-92	TRACKETCH	3.07	3.07		3.07	
	01-Jun-92	01-Jul-92	TRACKETCH	3.07				
	01-Jul-92	01-Aug-92	TRACKETCH	3.80				
	01-Aug-92	01-Sep-92	TRACKETCH	3.80	3.80			3.80
	01-Sep-92	06-Oct-92	TRACKETCH	3.80				
	06-Oct-92	01-Nov-92	TRACKETCH	3.00				
1993	01-Nov-92	01-Dec-92	TRACKETCH	3.00	3.00			
	01-Dec-92	04-Jan-93	TRACKETCH	3.00				
	04-Jan-93	01-Feb-93	TRACKETCH	3.20				
	01-Feb-93	01-Mar-93	TRACKETCH	3.20	3.20	3.20		
	01-Mar-93	01-Apr-93	TRACKETCH	3.20				
	01-Apr-93	01-May-93	TRACKETCH	2.50				
	01-May-93	01-Jun-93	TRACKETCH	2.50	2.50		2.50	
	01-Jun-93	30-Jun-93	TRACKETCH	2.50				
	30-Jun-93	01-Aug-93	TRACKETCH	4.80				
	01-Aug-93	18-Aug-93	TRACKETCH	4.80	4.80			4.80
	18-Aug-93	01-Oct-93	TRACKETCH	4.80				
	01-Oct-93	04-Nov-93	TRACKETCH	4.80				
	04-Nov-93	30-Nov-93	TRACKETCH	4.80	4.80			
	30-Nov-93	03-Jan-94	TRACKETCH	4.80				
1994	03-Jan-94	31-Jan-94	TRACKETCH	5.30				
	31-Jan-94	21-Feb-94	TRACKETCH	5.30	5.30	5.30		
	21-Feb-94	31-Mar-94	TRACKETCH	5.30				
	31-Mar-94	27-Apr-94	TRACKETCH	3.10				
	27-Apr-94	31-May-94	TRACKETCH	3.10	3.10		3.10	
	31-May-94	01-Jul-94	TRACKETCH	3.10				
	01-Jul-94	03-Aug-94	TRACKETCH	3.70				
	03-Aug-94	07-Sep-94	TRACKETCH	3.70	3.70			3.70
	07-Sep-94	03-Oct-94	TRACKETCH	3.70				
	03-Oct-94	02-Nov-94	TRACKETCH	3.00				
02-Nov-94	01-Dec-94	TRACKETCH	3.00	3.00				
01-Dec-94	03-Jan-95	TRACKETCH	3.00					

Kennecott Uranium Company - Sweetwater Uranium Facility								
UPWIND RADON DATA								
RADTRAK DATA ONLY								
AIR 2 MONITORING STATION								
				STATION	AIR 2	AIR 2	AIR 2	AIR 2
	START DATE	END DATE	DETECTOR TYPE	AIR 2 pCi/L	AVERAGES pCi/L	FIRST QUARTERS pCi/L	SECOND QUARTERS pCi/L	THIRD QUARTERS pCi/L
1995	03-Jan-95	01-Feb-95	TRACKETCH	3.10				
	01-Feb-95	02-Mar-95	TRACKETCH	3.10	3.10	3.10		
	02-Mar-95	31-Mar-95	TRACKETCH	3.10				
	31-Mar-95	30-Apr-95	TRACKETCH	2.40				
	30-Apr-95	31-May-95	TRACKETCH	2.40	2.40		2.40	
	31-May-95	30-Jun-95	TRACKETCH	2.40				
	30-Jun-95	31-Jul-95	TRACKETCH	4.50				
	31-Jul-95	31-Aug-95	TRACKETCH	4.50	4.50			4.50
	31-Aug-95	30-Sep-95	TRACKETCH	4.50				
	30-Sep-95	31-Oct-95	TRACKETCH	4.80				
	31-Oct-95	30-Nov-95	TRACKETCH	4.80	4.80			
	30-Nov-95	03-Jan-96	TRACKETCH	4.80				
1996	03-Jan-96	01-Feb-96	TRACKETCH	2.20				
	01-Feb-96	01-Mar-96	TRACKETCH	2.20	2.20	2.20		
	01-Mar-96	01-Apr-96	TRACKETCH	2.20				
	01-Apr-96	01-May-96	TRACKETCH	2.90				
	01-May-96	01-Jun-96	TRACKETCH	2.90	2.90		2.90	
	01-Jun-96	01-Jul-96	TRACKETCH	2.90				
	01-Jul-96	01-Aug-96	TRACKETCH	4.10				
	01-Aug-96	01-Sep-96	TRACKETCH	4.10	4.10			4.10
	01-Sep-96	30-Sep-96	TRACKETCH	4.10				
	30-Sep-96	01-Nov-96	TRACKETCH	2.90				
	01-Nov-96	01-Dec-96	TRACKETCH	2.90	2.90			
	01-Dec-96	03-Jan-97	TRACKETCH	2.90				
1997	03-Jan-97	01-Feb-97	TRACKETCH	1.70				
	01-Feb-97	01-Mar-97	TRACKETCH	1.70	1.70	1.70		
	01-Mar-97	01-Apr-97	TRACKETCH	1.70				
	01-Apr-97	01-May-97	TRACKETCH	3.40				
	01-May-97	01-Jun-97	TRACKETCH	3.40	3.40		3.40	
	01-Jun-97	30-Jun-97	TRACKETCH	3.40				
	30-Jun-97	01-Aug-97	TRACKETCH	2.70				
	01-Aug-97	01-Sep-97	TRACKETCH	2.70	2.70			2.70
	01-Sep-97	01-Oct-97	TRACKETCH	2.70				
	01-Oct-97	01-Nov-97	TRACKETCH	3.90				
	01-Nov-97	01-Dec-97	TRACKETCH	3.90	3.90			
	01-Dec-97	03-Jan-98	TRACKETCH	3.90				
1998	03-Jan-98	03-Feb-98	TRACKETCH	2.40				
	03-Feb-98	03-Mar-98	TRACKETCH	2.40	2.40	2.40		
	03-Mar-98	01-Apr-98	TRACKETCH	2.40				
	01-Apr-98	01-May-98	TRACKETCH	2.20				
	01-May-98	01-Jun-98	TRACKETCH	2.20	2.20		2.20	
	01-Jun-98	01-Jul-98	TRACKETCH	2.20				
	01-Jul-98	01-Aug-98	TRACKETCH	3.00				
	01-Aug-98	01-Sep-98	TRACKETCH	3.00	3.00			3.00
	01-Sep-98	30-Sep-98	TRACKETCH	3.00				
	30-Sep-98	30-Oct-98	TRACKETCH	2.80				
	30-Oct-98	30-Nov-98	TRACKETCH	2.80	2.80			
	30-Nov-98	04-Jan-99	TRACKETCH	2.80				

**Kennecott Uranium Company - Sweetwater Uranium Facility**

UPWIND RADON DATA RADTRAK DATA ONLY AIR 2 MONITORING STATION								
			DETECTOR	STATION	AIR 2	AIR 2	AIR 2	AIR 2
	START DATE	END DATE	TYPE	AIR 2	AVERAGES	FIRST	SECOND	THIRD
				pCi/L	pCi/L	QUARTERS	QUARTERS	QUARTERS
						pCi/L	pCi/L	pCi/L
1999	04-Jan-99	04-Feb-99	TRACKETCH	2.60				
	04-Feb-99	04-Mar-99	TRACKETCH	2.60	2.60	2.60		
	04-Mar-99	11-Apr-99	TRACKETCH	2.60				
	11-Apr-99	11-May-99	TRACKETCH	2.70				
	11-May-99	11-Jun-99	TRACKETCH	2.70	2.70		2.70	
	11-Jun-99	04-Jul-99	TRACKETCH	2.70				
	04-Jul-99	04-Aug-99	TRACKETCH	3.90				
	04-Aug-99	04-Sep-99	TRACKETCH	3.90	3.90			3.90
	04-Sep-99	03-Oct-99	TRACKETCH	3.90				
	03-Oct-99	03-Nov-99	TRACKETCH	6.40				
	03-Nov-99	03-Dec-99	TRACKETCH	6.40	6.40			
	03-Dec-99	02-Jan-00	TRACKETCH	6.40				
2000	02-Jan-00	02-Feb-00	TRACKETCH	1.80				
	02-Feb-00	02-Mar-00	TRACKETCH	1.80	1.80	1.80		
	02-Mar-00	04-Apr-00	TRACKETCH	1.80				
	04-Apr-00	04-May-00	TRACKETCH	3.50				
	04-May-00	04-Jun-00	TRACKETCH	3.50	3.50		3.50	
	04-Jun-00	05-Jul-00	TRACKETCH	3.50				
	05-Jul-00	05-Aug-00	TRACKETCH	5.70				
	05-Aug-00	05-Sep-00	TRACKETCH	5.70	5.70			5.70
	05-Sep-00	01-Oct-00	TRACKETCH	5.70				
	01-Oct-00	01-Nov-00	TRACKETCH					
	01-Nov-00	01-Dec-00	TRACKETCH			No data. Knocked Down		
	01-Dec-00	02-Jan-01	TRACKETCH					
2001	02-Jan-01	02-Feb-01	TRACKETCH	6.20				
	02-Feb-01	02-Mar-01	TRACKETCH	6.20	6.20	6.20		
	02-Mar-01	01-Apr-01	TRACKETCH	6.20				
	01-Apr-01	01-May-01	TRACKETCH	2.50				
	01-May-01	01-Jun-01	TRACKETCH	2.50	2.50		2.50	
	01-Jun-01	01-Jul-01	TRACKETCH	2.50				
	01-Jul-01	01-Aug-01	TRACKETCH	3.10				
	01-Aug-01	01-Sep-01	TRACKETCH	3.10	3.10			3.10
	01-Sep-01	01-Oct-01	TRACKETCH	3.10				
	01-Oct-01	01-Nov-01	TRACKETCH	4.10				
	01-Nov-01	01-Dec-01	TRACKETCH	4.10	4.10			
	01-Dec-01	02-Jan-02	TRACKETCH	4.10				
2002	02-Jan-02	02-Feb-02	TRACKETCH	2.70				
	02-Feb-02	02-Mar-02	TRACKETCH	2.70	2.70	2.70		
	02-Mar-02	31-Mar-02	TRACKETCH	2.70				
	31-Mar-02	30-Apr-02	TRACKETCH	2.30				
	30-Apr-02	31-May-02	TRACKETCH	2.30	2.30		2.30	
	31-May-02	01-Jul-02	TRACKETCH	2.30				
	01-Jul-02	01-Aug-02	TRACKETCH	3.40				
	01-Aug-02	01-Sep-02	TRACKETCH	3.40	3.40			3.40
	01-Sep-02	01-Oct-02	TRACKETCH	3.40				
	01-Oct-02	01-Nov-02	TRACKETCH	4.20				
	01-Nov-02	01-Dec-02	TRACKETCH	4.20	4.20			
	01-Dec-02	02-Jan-03	TRACKETCH	4.20				

**Kennecott Uranium Company - Sweetwater Uranium Facility**

UPWIND RADON DATA								
RADTRAK DATA ONLY								
AIR 2 MONITORING STATION								
				STATION	AIR 2	AIR 2	AIR 2	AIR 2
			DETECTOR	AIR 2	AVERAGES	FIRST	SECOND	THIRD
	START DATE	END DATE	TYPE	pCi/L	pCi/L	QUARTERS	QUARTERS	QUARTERS
						pCi/L	pCi/L	pCi/L
2003	02-Jan-03	02-Feb-03	TRACKETCH	2.60				
	02-Feb-03	02-Mar-03	TRACKETCH	2.60	2.60	2.60		
	02-Mar-03	31-Mar-03	TRACKETCH	2.60				
	31-Mar-03	30-Apr-03	TRACKETCH	3.90				
	30-Apr-03	31-May-03	TRACKETCH	3.90	3.90		3.90	
	31-May-03	30-Jun-03	TRACKETCH	3.90				
	30-Jun-03	30-Jul-03	TRACKETCH					
	30-Jul-03	30-Aug-03	TRACKETCH			No data. Lost by Landauer		
	30-Aug-03	01-Oct-03	TRACKETCH					
	01-Oct-03	01-Nov-03	TRACKETCH	3.50				
	01-Nov-03	01-Dec-03	TRACKETCH	3.50	3.50			
	01-Dec-03	01-Jan-04	TRACKETCH	3.50				
2004	01-Jan-04	01-Feb-04	TRACKETCH	2.70				
	01-Feb-04	01-Mar-04	TRACKETCH	2.70	2.70	2.70		
	01-Mar-04	01-Apr-04	TRACKETCH	2.70				
	01-Apr-04	01-May-04	TRACKETCH	2.40				
	01-May-04	01-Jun-04	TRACKETCH	2.40	2.40		2.40	
	01-Jun-04	30-Jun-04	TRACKETCH	2.40				
	30-Jun-04	30-Jul-04	TRACKETCH	3.60				
	30-Jul-04	30-Aug-04	TRACKETCH	3.60	3.60			3.60
	30-Aug-04	03-Oct-04	TRACKETCH	3.60				
	03-Oct-04	03-Nov-04	TRACKETCH	3.90				
	03-Nov-04	03-Dec-04	TRACKETCH	3.90	3.90			
	03-Dec-04	01-Jan-05	TRACKETCH	3.90				
2005	01-Jan-05	01-Feb-05	TRACKETCH	2.30				
	01-Feb-05	01-Mar-05	TRACKETCH	2.30	2.30	2.30		
	01-Mar-05	04-Apr-05	TRACKETCH	2.30				
	04-Apr-05	04-May-05	TRACKETCH	2.60				
	04-May-05	04-Jun-05	TRACKETCH	2.60	2.60		2.60	
	04-Jun-05	03-Jul-05	TRACKETCH	2.60				
	03-Jul-05	03-Aug-05	TRACKETCH	4.30				
	03-Aug-05	03-Sep-05	TRACKETCH	4.30	4.30			4.30
	03-Sep-05	01-Oct-05	TRACKETCH	4.30				
	01-Oct-05	01-Nov-05	TRACKETCH	3.90				
	01-Nov-05	01-Dec-05	TRACKETCH	3.90	3.90			
	01-Dec-05	01-Jan-06	TRACKETCH	3.90				
2006	01-Jan-06	01-Feb-06	TRACKETCH	2.60				
	01-Feb-06	01-Mar-06	TRACKETCH	2.60	2.60	2.60		
	01-Mar-06	03-Apr-06	TRACKETCH	2.60				
	03-Apr-06	03-May-06	TRACKETCH	4.60				
	03-May-06	03-Jun-06	TRACKETCH	4.60	4.60		4.60	
	03-Jun-06	05-Jul-06	TRACKETCH	4.60				
	05-Jul-06	05-Aug-06	TRACKETCH	3.60				
	05-Aug-06	05-Sep-06	TRACKETCH	3.60	3.60			3.60
	05-Sep-06	02-Oct-06	TRACKETCH	3.60				
	02-Oct-06	02-Nov-06	TRACKETCH	3.50				
	02-Nov-06	02-Dec-06	TRACKETCH	3.50	3.50			
	02-Dec-06	02-Jan-07	TRACKETCH	3.50				



Kennecott Uranium Company - Sweetwater Uranium Facility								
UPWIND RADON DATA								
RADTRAK DATA ONLY								
AIR 2 MONITORING STATION								
				STATION	AIR 2	AIR 2	AIR 2	AIR 2
			DETECTOR	AIR 2	AVERAGES	FIRST	SECOND	THIRD
	START DATE	END DATE	TYPE	pCi/L	pCi/L	QUARTERS	QUARTERS	QUARTERS
						pCi/L	pCi/L	pCi/L
2007	02-Jan-07	02-Feb-07	TRACKETCH	16.90				
	02-Feb-07	02-Mar-07	TRACKETCH	16.90	Erroneous Data, Found on Ground			
	02-Mar-07	02-Apr-07	TRACKETCH	16.90				
	02-Apr-07	02-May-07	TRACKETCH					
	02-May-07	02-Jun-07	TRACKETCH		No data. Damaged - No Reading			
	02-Jun-07	03-Jul-07	TRACKETCH					
	03-Jul-07	01-Aug-07	TRACKETCH	3.90				
	01-Aug-07	01-Sep-07	TRACKETCH	3.90	3.90			3.90
	01-Sep-07	03-Oct-07	TRACKETCH	3.90				
	03-Oct-07	01-Nov-07	TRACKETCH	3.40				
	01-Nov-07	01-Dec-07	TRACKETCH	3.40	3.40			
	01-Dec-07	02-Jan-08	TRACKETCH	3.40				
2008	02-Jan-08	01-Feb-08	TRACKETCH	3.40				
	01-Feb-08	01-Mar-08	TRACKETCH	3.40	3.40	3.40		
	01-Mar-08	01-Apr-08	TRACKETCH	3.40				
	01-Apr-08	01-May-08	TRACKETCH	2.20				
	01-May-08	01-Jun-08	TRACKETCH	2.20	2.20		2.20	
	01-Jun-08	02-Jul-08	TRACKETCH	2.20				
	02-Jul-08	01-Aug-08	TRACKETCH	5.10				
	01-Aug-08	01-Sep-08	TRACKETCH	5.10	5.10			
	01-Sep-08	01-Oct-08	TRACKETCH	5.10				
				<b>AVERAGE</b>		<b>3.17</b>	<b>3.07</b>	<b>2.89</b>
1-IF MORE THAN ONE READING WAS TAKEN FOR THE PERIOD THEN THE RESULT SHOWN IS AN AVERAGE OF THE READINGS TAKEN								
2-IF THREE (3) IDENTICAL READINGS FOR A SINGLE STATION APPEAR IN SUCCESSION AND ARE MARKED BY A SINGLE VERTICAL LINE IN ALL THREE MONTHS OF A GIVEN CALENDER QUARTER								
dsstssss								
THE INDIVIDUAL MONTHLY READINGS ARE THE SINGLE QUARTERLY READING REPEATED FOR EACH MONTH								

**Paulson, Oscar (RTEA)**

**From:** Rose Elza [relza@landauerinc.com]  
**Sent:** Wednesday, November 05, 2008 2:54 PM  
**To:** Paulson, Oscar (RTEA)  
**Subject:** RE: RadTrak Rechecks

There was no change in the results.

Rose Elza  
Customer Service Representative  
*Radon Products*  
Landauer, Inc.  
(708) 441-8342 direct  
(708) 755-7048 fax  
(800) 528-8327 X 8342  
[relza@landauerinc.com](mailto:relza@landauerinc.com)  
[www.landauerinc.com](http://www.landauerinc.com)

***Dosimetry for the Twenty-First Century***

**From:** Paulson, Oscar (RTEA) [mailto:Oscar.Paulson@riotinto.com]  
**Sent:** Monday, November 03, 2008 1:02 PM  
**To:** Rose Elza  
**Cc:** Schutterle, Shelley (RTEA); Haag, Kelly (RTEA-Temp)  
**Subject:** RE: RadTrak Rechecks

Rose:

Thank you!

Oscar

**From:** Rose Elza [mailto:relza@landauerinc.com]  
**Sent:** Monday, November 03, 2008 11:53 AM  
**To:** Paulson, Oscar (RTEA)  
**Subject:** RE: RadTrak Rechecks

I'll have them re-read. I'll let you know the results of the re-read as soon as they become available.

Rose Elza  
Customer Service  
HomeBuyer's Preferred, Inc.  
(708) 441-8342 direct  
(708) 755-7048 fax  
(800) 325-5506 x8342  
[relza@homebuyerspreferred.com](mailto:relza@homebuyerspreferred.com)  
[www.homebuyerspreferred.com](http://www.homebuyerspreferred.com)  
A wholly owned subsidiary of Landauer, Inc. (NYSE:LDR)

***Setting The Industry Standard For Quality In Radon Protection Plan Services***

**From:** Paulson, Oscar (RTEA) [mailto:Oscar.Paulson@riotinto.com]

2/18/2009

**Sent:** Monday, November 03, 2008 12:38 PM

**To:** Rose Elza

**Cc:** Schutterle, Shelley (RTEA)

**Subject:** RadTrak Rechecks

Rose:

Please recheck the following two (2) RadTrak detector results:

- Detector Number: 4729311
- Detector Number: 4745499

Thanks!

Oscar

Facility Supervisor  
Kennecott Uranium Company  
Sweetwater Uranium Project  
P.O. Box 1500  
42 Miles Northwest of Rawlins  
Rawlins, Wyoming 82301-1500

Telephone: (307)-324-4924  
Fax: (307)-324-4925  
Cellular: (307)-320-8758

E-mail: [oscar.paulson@riotinto.com](mailto:oscar.paulson@riotinto.com)

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2/18/2009

**KENNECOTT URANIUM COMPANY  
SWEETWATER URANIUM PROJECT  
Source Material License SUA-1350**

**2008  
DIRECT RADIATION MEASUREMENTS  
(TLD)**

<b>Location</b>	<b>Date</b>	<b>Exposure Rate (mr/Qtr)</b>	<b>Lower Limit of Detection (LLD) Millirems</b>
<b>TLD</b> 0000 - Control 0004 - Air 4A	1/2/08 - 4/1/08 1/2/08 - 4/1/08	36.2 39.0	10 <sup>1</sup> 10 <sup>1</sup>
<b>TLD</b> 0000 - Control 0004 - Air 4A	4/1/08 - 7/1/08 4/1/08 - 7/1/08	33.4 42.8	10 <sup>1</sup> 10 <sup>1</sup>
<b>TLD</b> 0000 - Control 0004 - Air 4A	7/1/08 - 10/1/08 7/1/08 - 10/1/08	38.2 43.2	10 <sup>1</sup> 10 <sup>1</sup>
<b>TLD</b> 0000 - Control 0004 - Air 4A	10/1/08 - 1/5/09 10/1/08 - 1-5-09	36.0 46.1	10 <sup>1</sup> 10 <sup>1</sup>

<sup>1</sup> Please see the following copy of a letter from ThermoNUTech on Lower Limits of Detection (LLDs).

## Lower Limits of Detection (LLDs)

1990 DOELAP Study (See DOELAP Handbook § 3.4)  
 95% Confidence Level Values

Known Fields: LLD in mrem per period					
Radiation Field		Deployment Period			
Type	Test Source	Monthly*	Quarterly	Semi-Annual*	Annual*
gamma	<sup>137</sup> Cs	6	11	16	22
X-ray	mixed beam	6	11	16	22
hard beta	<sup>90</sup> Sr/Y	8	13	18	26
soft beta	<sup>204</sup> Tl	36	63	89	123
slow neutron	<sup>252</sup> Cf mod.	5	8	11	16
fast neutron	<sup>252</sup> Cf unmod.	43	74	105	148

\*Extrapolated from quarterly values. The study was done using a period of one quarter.

~For routine reporting purposes, the LLD is taken to be 10 mrem.~  
 This value is very close to the measured LLD for most commonly encountered radiation fields.  
 No values less than this nominal LLD are reported.

**KENNECOTT URANIUM COMPANY  
SWEETWATER URANIUM PROJECT  
Source Material License SUA-1350**

**CONTINUOUS LOW-VOLUME AIR PARTICULATE ANALYSIS**

**STATION 4A – 2008**

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/ml	Error Estimate μCi/ml	LLD μCi/ml	Effluent Conc.* pCi/ml	% Effluent Concentration
<b>1st Quarter</b> 1/2/08 – 3/31/08 Air Vol in mLs 3.81E+10	U-nat	<1.00 E-16	N/A	1.00 E-16	9.00 E-14	<1.11 E-01
	Th-230	1.08 E-16	3.68 E-17	1.00 E-16	3.00 E-14	3.59 E-01
	Ra-226	<1.00 E-16	N/A	1.00 E-16	9.00 E-13	<1.11 E-02
	Pb-210	1.45 E-14	5.41 E-16	2.00 E-15	6.00 E-13	2.42 E+00
<b>2nd Quarter</b> 3/31/08 – 7/1/08 Air Vol in mLs 4.77 E+10	U-nat	<1.00 E-16	N/A	1.00 E-16	9.00 E-14	<1.11 E-01
	Th-230	1.45 E-16	4.19 E-17	1.00 E-16	3.00 E-14	4.82 E-01
	Ra-226	<1.00 E-16	N/A	1.00 E-16	9.00 E-13	<1.11 E-02
	Pb-210	7.09 E-15	6.02 E-16	2.00 E-15	6.00 E-13	1.18 E+00
<b>3rd Quarter</b> 7/1/08 – 10/6/08 Air Vol in mLs 4.72E+10	U-nat	<1.00E-16	N/A	1.00 E-16	9.00 E-14	<1.11E-01
	Th-230	<1.00E-16	N/A	1.00 E-16	3.00 E-14	<3.33E-01
	Ra-226	<1.00E-16	N/A	1.00 E-16	9.00 E-13	<1.11E-02
	Pb-210	2.18e-14	5.93E-16	2.00 E-15	6.00 E-13	3.64E+00
<b>4th Quarter</b> 10/6/08 –1/3/09 Air Vol in mLs 3.87E+10	U-nat	<1.00E-16	N/A	1.00 E-16	9.00 E-14	<1.11E-01
	Th-230	1.63E-16	5.95E-17	1.00 E-16	3.00 E-14	5.43E-01
	Ra-226	<1.00E-16	N/A	1.00 E-16	9.00 E-13	<1.11E-02
	Pb-210	9.46E-15	2.00E-15	2.00 E-15	6.00 E-13	1.59E+00

LLD's are as published in Reg. Guide 4.14

\*Effluent Concentration from the NEW 10 CFR Part 20 - Appendix B - Table 2

Year for Natural Uranium

Year for Thorium-230

Week for Radium-226

Day for Lead-210



## Memorandum

**Oscar Paulson**  
*Facility Supervisor*  
*Kennecott Uranium Company*

27 January 2009

To: File – 10 CFR 40.65 Report

Subject: Dose to the General Public in Millirems per Year as Represented by the Nearest Resident – Second Half 2008

The following is a dose calculation for the nearest resident (the contract security guard) for the second half of 2008.

### Calculation Assumptions:

1. The nearest resident for dose calculation purposes is considered to be the site security officer when he is not on duty and sleeping inside the Security Trailer. The site security officer is scheduled to be on site from 5:30 p.m. on Thursday of each week to 10:00 p.m. the following Sunday, on holidays and at times that the Senior Facility Technician is on vacation. In spite of the fact that the site security officer does not reside on site continuously, no occupancy factor is assigned to him and for dose calculation purposes he is assumed to reside on site continuously. The security officer's trailer is located immediately south of the sites' southern chain link fence. As such the calculated dose to the security officer would also apply to any member of the general public approaching the site fence. No member of the general public would be in close proximity to the site for as long as the security officer whose dose is calculated based on continuous occupancy in spite of the fact that he does not reside on site continuously.
2. Radon concentrations are measured in the Security Trailer with RadTrak detectors placed in the kitchen and bedroom and changed quarterly. The results from these detectors are averaged to derive a semiannual radon concentration in Pico curies per liter for the Security Trailer.
3. Radon exposures in working levels are measured semiannually in the Security Trailer using a calibrated Buck Basic 12, Bendix BDX-44, MSA or Sensidyne GilAir II air pump and filter. The filter is counted by the modified Kusnetz Method.
4. The radon concentration and exposure are used to calculate the equilibrium factor. The equilibrium factors calculated semiannually are averaged to derive a site equilibrium factor.
5. This equilibrium factor is applied to the upwind radon concentrations to derive a background radon dose and to the average semiannual radon concentration in the Security Trailer to derive a radon dose to the nearest resident. An equilibrium factor table is attached.
6. The dose from the semiannual downwind airborne particulate concentrations of natural uranium, radium-226 and thorium-230 are used to calculate the dose from airborne particulates in the Security Trailer in spite of the fact that the Security Trailer is not downwind of the facility.
7. The gamma dose from the downwind gamma radiation monitor (environmental thermoluminescent dosimeter) is used to calculate the gamma radiation dose in the Security Trailer.
8. The doses from radon-222, airborne particulate radionuclides and gamma radiation are summed to produce a dose to the nearest resident (the Security Trailer).

9. The radon concentrations measured at the upwind air monitoring stations during the two (2) quarters for a given semiannual period are averaged, corrected for the site equilibrium factor and converted to a background radon dose for the facility.
10. This background radon dose is summed with the background gamma radiation dose (from the revised Environmental Report – dated August 1994) and the doses derived from the background airborne particulate concentrations (natural uranium, radium-226 and thorium-230 as described in the revised Environmental Report dated August 1994) to yield a background radiation dose for the facility for the given semiannual period.
11. The background dose is subtracted from the calculated dose to the nearest resident (Security Trailer) to derive a dose to the nearest resident for the facility.

### BACKGROUND

		Average Concentration	Dose (mrem)
Gamma Exposure:			200.70 (approx. 22.9 uR/hr)
Airborne Particulates:			
	U nat	6.2 E-16 µCi/ml	0.34
	Ra-226	3.9 E-16 µCi/ml	0.22
	Th-230	3.9 E-16 µCi/ml	0.65
Gases:			
	Radon-222	3.65 pCi/l	290.7
<b>Total</b>			<b>492.6</b>

#### Notes:

1. An equilibrium factor of 0.181 was used for radon based on twenty-four (24) comparisons of radon-222 and radon-222 daughter concentrations over 15 years. Please see attached sheet entitled "Equilibrium Factors for Nearest Resident".
2. Gamma and airborne particulate background data is from the revised Environmental Report (August 1994).
3. The average background radon concentration for the third quarter of 2008 (3.89 pCi/L) at the upwind air station (Air 2) was used to calculate background radon dose.
4. Calculation: (Radon concentration (pCi/l))\*(Equilibrium factor)\*(0.44 rems/pCi/l) = Dose (rems)
5. The average background radon concentration of the Rad Traks deployed in the fourth quarter of 2008 of 3.4 pCi/L was used for the fourth quarter 2008 concentration.

### SECURITY TRAILER

		Average Concentration	Dose (mrem)
Gamma Exposure:			178.6
Airborne Particulates:			
	U nat	1.00 E-16 µCi/ml	0.06
	Ra-226	1.00 E-16 µCi/ml	0.01
	Th-230	1.32 E-16 µCi/ml	0.22
Gases:			
	Radon-222	2.83 pCi/l	225.4
<b>Total</b>			<b>404.3</b>

#### Notes:



1. An equilibrium factor of 0.181 was used for radon based on twenty-four (24) comparisons of radon-222 and radon-222 daughter concentrations over 15 years.
2. Downwind airborne particulate concentrations and gamma doses for the third and fourth quarters of 2008 were used for the security trailer. These doses were converted to millirems per year (mrem/yr).
3. Radon concentration was measured in the security trailer for the third and fourth quarters of 2008 and is based on an average of RadTrak units located in two (2) locations; the kitchen and the bedroom. The monitoring results are in the table below.

<b>Second Half - 2008</b>			
	<b>Third Quarter</b>	<b>Fourth Quarter</b>	
Kitchen	2.4 pCi/L	3.4 pCi/L	
Bedroom	2.6 pCi/L	2.9 pCi/L	
<b>Trailer Average:</b>			<b>2.83 pCi/L</b>

4. The gamma dose rate is based upon the TLD dosimeters for the first and second quarters converted to an annual dose rate

The calculated net (dose to the nearest resident minus background dose) annual TEDE from the licensed operations for the second half of 2008 is 0.0 mrem/year, which is below the 100 mrem/year dose limit to members of the general public.

*Oscar A Paulson*  
 Oscar Paulson  
 Avg dose.doc

**Kennecott Uranium Company  
Sweetwater Uranium Project  
Equilibrium Factor for Nearest Residence  
(Security Guard Trailer)**

<b>Date</b>	<b>Radon Concentration (pCi/L)</b>	<b>Exposure (WL)</b>	<b>Equilibrium Factor</b>
1/1/93 – 6/30/93	3.2	0.009	0.28
1/1/97 – 6/30/97	1.5	0.003	0.20
7/1/97 – 12/31/97	2.2	0.002	0.09
1/1/98 – 6/30/98	1.65	0.003	0.18
1/1/99 – 6/30/99	1.90	0.009	0.47
7/1/99 – 12/31/99	3.25	0.002	0.06
1/1/00 – 6/30/00	2.12	0.004	0.19
7/1/00 – 12/31/00	3.05	0.009	0.30
1/1/01 – 6/30/01	3.60 <sup>1</sup>	0.012	0.33
7/1/01 – 12/31/01	2.78	0.013 <sup>2</sup>	0.47
1/1/02 – 6/30/02	2.48	0.009 <sup>2</sup>	0.34
7/1/02 – 12/31/02	2.80	0.003 <sup>2</sup>	0.11
1/1/03 – 6/30/03	2.40	0.004 <sup>2</sup>	0.17
7/1/03 – 12/31/03	3.75 <sup>3</sup>	0.006 <sup>2</sup>	0.16
1/1/04 – 6/30/04	2.08	0.003 <sup>2</sup>	0.14
7/1/04 – 12/31/04	3.0	0.0005 <sup>2</sup>	0.017
1/1/05 – 6/30/05	2.55	0.0013 <sup>2</sup>	0.051
7/1/05 – 12/31/05	3.22	0.0035 <sup>2</sup>	0.109
1/1/06 – 6/30/06	2.40	0.0 <sup>2</sup>	0.0
7/1/06 – 12/31/06	2.13	0.014 <sup>2</sup>	0.66
1/1/07 – 6/30/07	1.65	0.0 <sup>2</sup>	0.0
6/30/07 – 12/31/07	2.10 <sup>4</sup>	0.0001 <sup>2</sup>	0.005
1/1/08 – 6/30/08	3.28	0.0 <sup>2</sup>	0.0
6/30/08 – 12/31/08	2.83	0 <sup>2</sup>	0.00
<b>Average</b>			<b>0.181</b>

<sup>1</sup> This value is based upon an average of three (3) RadTrak detectors. The second quarter RadTrak detector in the Security Trailer bedroom was lost.

<sup>2</sup> Average of two (2) measurements

<sup>3</sup> Fourth quarter 2003 concentration only. Landauer, Inc. lost the third quarter 2003 RadTrak units.

<sup>4</sup> This value is based upon an average of three (3) RadTrak detectors. The fourth quarter RadTrak detector in the Security Trailer kitchen was lost.

### Calculation Parameters

1. Radon concentrations in the Security Trailer are calculated based upon the results of two (2) RadTrak detectors (one in the kitchen and one in the bedroom) that are changed quarterly. The radon concentration for a given semiannual period is an average of the results of four (4) RadTrak detections, one in the kitchen and one in the bedroom, changed quarterly.
2. Radon exposures (radon daughters concentrations measured in Working Levels) are taken semiannually in the trailer in two (2) locations (kitchen and bedroom) using a Buck Basic 12, Bendix BDX-44, MSA or Sensidyne GilAir II air pump and a filter. The filter is evaluated using the modified Kusnetz Method.
3. The equilibrium factor is calculated.

Radon Dose (rems) = (Radon Concentration (pCi/L)) \* (Equilibrium Factor) \* (0.44 rem/pCi/L)

An occupancy factor may be added as required.

1 WL ~ 100 pCi/L with daughters present (100% equilibrium)

Equilibrium Factor Formula: Equilibrium Factor = Exposure (WL) \* 100 / Concentration (pCi/L)

*Source: National Council on Radiation Protection (NCRP) Report #97*