



July 13, 2009

Peter Kusugak  
Manager of Field Operations  
Indian and Northern Affairs Canada  
P.O Box 2200  
Iqaluit, NU X0A 0H0  
[KusugakP@inac-ainc.gc.ca](mailto:KusugakP@inac-ainc.gc.ca)  
Fax 867-975-6445

Stephan Hartman  
Kivalliq Inuit Association  
P.O Box 340  
Rankin Inlet, NU S0C 0G0  
[shartman@kivalliqinuit.ca](mailto:shartman@kivalliqinuit.ca)  
Fax: 867-645-2448

Phyllis Beaulieu  
Manager of Licensing  
PO Box 119  
Gjoa Haven NU X0E 1J0  
[licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)  
Fax: 867-360-6369

Environmental Protection Operations  
Environmental Emergencies  
Twin Atria #2, Room 200, 4999-98 Ave  
Edmonton, Alberta T6B 2X3  
Fax 780-495-2451

To All:

**Re: Kiggavik – Follow-up Report to June 13, 2009 spill of mineralized core**

Please find the attached 30-day follow-up report as required in accordance with Nunavut Water Board Licence No 2BE-KIG0812 and AREVA's Spill Contingency Plan Version 4. The report is submitted to Indian & Northern Affairs Canada (INAC), the Nunavut Water Board (NWB), the Kivalliq Inuit Association (KIA) and Environment Canada (EC).



The 30-day follow-up report is intended to provide a summary of the incident, a review of the impact assessment, and the status of remedial and preventative measures implemented.

Yours truly,

A handwritten signature in blue ink, appearing to read 'Kim Sarauer', written over a horizontal line.

Kim Sarauer  
Environment and Radiation Protection Supervisor



**AREVA Resources Canada Inc.**  
**Kiggavik Project, Nunavut**

**Final Incident Report for June 13, 2009 Spill**

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## INTRODUCTION

On June 13, 2009 an incident involving mineralized core occurred at the AREVA Resources Canada Kiggavik Project exploration site, located 80 km west of the community of Baker Lake in Nunavut. As full core boxes were being transported from a drill back to camp one core box dropped and landed in a small runoff pond as shown in Figures 1-3. The pond covered an area of approximately 7 m<sup>2</sup> and 12 cm at it's deepest point. The UTM coordinates for the spill are 14W 0565307 7146941.

The incident was reported on June 14. This 30-day follow-up report is required in accordance with Nunavut Water Board License No 2BE-KIG0812 and AREVA's Spill Contingency Plan Version 4. The report is to be submitted to Indian & Northern Affairs Canada (INAC), the Nunavut Water Board (NWB), the Kivalliq Inuit Association (KIA), and Environment Canada within 30 days of the incident. It is intended to provide a summary of the incident, a review of the impact assessment, and the status of remedial and preventative measures.

## INCIDENT SUMMARY

A summary of the events surrounding the incident is as follows:

### June 13

- Approximately 9:00 am - Full core boxes, containing approximately 4 m of core in each, are slung in a basket by helicopter to camp from the two drills located in the End Grid area. These drills are located at holes END-09-02 and END-09-03 which have the UTM coordinates 14W 7135934N 0554542E and 14W 7135912N 0554582E respectively. Shortly after the helicopter took off a Boart Longyear employee on the ground saw a core box drop.
- Geology group located at Kiggavik camp discover one core box is missing and are unsure as to where it went
- Evening – Boart Longyear employee reports to his foreman that he saw a core box drop from the helicopter.

### June 14

- 6:45 am The Environment and Radiation Protection (E&R) Supervisor is informed at the morning supervisor's meeting that box of core fell from a helicopter
- E&R Group looks for the dropped core box with the help of the Boart Longyear employee who saw it drop
- 8:10 am - E&R Group inspect spill site, see Figures 1-4.
- 8:15 am - E&R Group pick up spilled core and broken core box. All material spilled is in solid form and is easily cleaned up.
- 8:30 am - Gamma survey is conducted on the immediate and surrounding area (Appendix I).

- 11:50 am – The incident is reported as a spill to the GN 24 hr Spill Report Line by E&R Supervisor
- NWB, INAC and EC are contacted by E&R Supervisor and informed of the incident
- All recovered core is brought back to camp where geology personnel pieced the core back together. The collected core filled one core box completely, confirming that all core spilled had been collected.
- Project geologist estimates that out of the 4 meters of core spilled a maximum of 1 meter is mineralized

## INCIDENT CAUSE

The method used to transport core from the drill rigs is as follows. Core boxes with sealed lids are placed in a metal basket with an open top (Figure 5) The metal basket with the core boxes is then slung at the end of a line under the helicopter from the drill rig to the core assessment area at Kiggavik (Figure 4). This method of transporting core boxes is new in 2009.

During the 2007 and 2008 field seasons core samples were being transported back to camp by tying sling straps around each end of a stack of core boxes and then slung in a net at the end of a line beneath the helicopter. On several occasions the helicopter pilot noticed the core spinning and twisting around. Before the start of the 2009 field season the method was changed to stacking the core boxes in metal baskets and slinging the baskets. This change was to reduce the chance of spinning and make the transport of core boxes more secure. The weight of the core limited the number of core boxes that could be loaded into the basket to 30 and limited how close the core boxes would come to the open top of the basket to approximately 20 cm from the top. As well, it was believed that the weight of the core would prevent the core boxes from lifting out of the basket.

During transport on June 13 the core boxes were loaded into the basket and shortly after take-off, there was enough wind to lift a box enough so that it flew out of the basket and onto the ground.

## IMPACT ASSESSMENT

### Gamma Radiation

A post-incident gamma radiation survey was conducted to measure the radioactivity levels in and around the spill area. Radioactivity measurements were collected using an Automess gamma survey instrument. Readings were taken at 1 m intervals at a height of 1 m off of the ground with an average reading of 0.054 between and a maximum reading of 0.142  $\mu\text{Sv/h}$ . Routine pre-gamma surveys conducted at each drill hole located in the End Grid, which is approximately 1 km from the spill location, had readings ranging between 0.000 and 0.600  $\mu\text{Sv/h}$ . Comparison of the pre-gamma surveys conducted in this area indicates that gamma levels in the vicinity of the spill remain similar to pre-spill conditions. Radiation survey data are shown in Appendix II.

In accordance with permit conditions, AREVA's Uranium Exploration Plan, Radiation Protection Plan and the Abandonment and Restoration Plan, drill sites do not require remedial action (radiologically) when the measured gamma dose rate at a height of 1 m is less than 1  $\mu\text{Sv/h}$  above background. It is AREVA's practice to reduce elevated radiation readings wherever practical when remediating a spill.

### **Aquatic/ Wildlife**

It is assumed due to the size of this small seasonal pond that it is not inhabited by any aquatic life and no wildlife was injured.

## **CORRECTIVE AND PREVENTATIVE MEASURES**

AREVA now requires all personnel who are involved with loading core samples into metal baskets to use ratchet straps to secure the core boxes into the metal basket prior to transport. Employees involved directly or indirectly in slinging core are trained in the revised procedures for loading and unloading core boxes for transport. As a final check, should the core come back to camp loose in the basket the geology group at camp has been instructed to contact both the E&RP Supervisor and the Boart Longyear Foreman so that the issue may be dealt with immediately.

## **CONCLUSION**

On June 13, 2009, a core box containing mineralized core dropped from a sling basket while in transport from drilling area to camp and was reported as a spill. The lost core and box was recovered. The follow-up investigations conclude that:

- All gamma radiation readings of the spill area show that pre spill radiation readings have been restored and no additional remedial action (radiologically) is necessary
- No adverse impact to area or wildlife
- Slinging procedures have been modified to prevent a re-occurrence and workers are trained in the revised procedures





**Figure 1 - Broken Core Box and Core Prior to Recovery, June 14, 2009**



**Figure 2 – Pond Prior to Recovery June 14, 2009 – Looking North West**





**Figure 3 – Pond After Recovery June 14, 2009 Looking West**



**Figure 4 – Helicopter Slings Core June 14, 2009**



**Figure 5 – Core Basket as Received by Geology Group**

## **APPENDIX I**

### **GAMMA RADIATION SURVEY**



Date: June 14, 2009

## Kiggavik Project - Gamma Survey

Form KIG-741-09-01

Version: 01

April 27, 2009

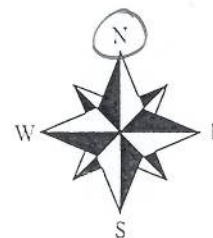
Site Name: Core box spill

Site Coordinate: 7146941 N 0565307 E

Technicians Name: Kim Sarauer + Doug Ramage

Grid Spacing: 1 m x 1 m

Automess #: 125728



- all gamma readings will be written as  $\mu\text{Sv}$  (3 decimal)
- shade site location
- circle grid direction (N,E,S,W) and survey type

Pre-Gamma or Post-Gamma

## **APPENDIX II**

### **NUNAVUT SPILL REPORT**



**NUNAVUT SPILL REPORT** (Oil, Gas, Hazardous Chemicals or other Materials)

ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ)

24-Hour Report Line 24-ᓄᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ

Phone/ᑎᓄᓐᓂᑦ (867) 920-8130

Fax/ᑎᓄᓐᓂᑦ (867) 873-6924

<b>A</b> Report Date and Time ᑎᓄᓐᓂᑦ / ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ June 14, 2009 11:50 am		<b>B</b> Date and Time of Spill (if known) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ) June 13, 2009 Approx. 9:00 am		<b>C</b> <input type="checkbox"/> Original Report ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ <input checked="" type="checkbox"/> Update No. 09 294 ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ		Spill Number ᑎᓄᓐᓂᑦ	
<b>D</b> Location and Map Coordinates (if known) and Direction (if moving) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ) UTM 14W 0565307 7146941							
<b>E</b> Party Responsible for Spill (Full Name and Address) ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ) AREVA Resources Canada Inc. Box 9204-817-45th St. West, Saskatoon SK, S7K 3X5							
<b>F</b> Product(s) Spilled and Estimated Quantities (provide metric volumes/weights if possible) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ) Approximately 4 meters of core with a maximum of 1 meter of mineralized core.							
<b>G</b> Cause of Spill ᑎᓄᓐᓂᑦ Core boxes were being slung by a helicopter back to camp and was not properly secure. One box of core fell out of basket being used.							
<b>H</b> Is Spill Terminated? ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ <input checked="" type="checkbox"/> Yes/ᑎᓄᓐᓂᑦ <input type="checkbox"/> No/ᑎᓄᓐᓂᑦ		<b>I</b> If Spill is Continuing, Give Estimated Rate ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ		<b>J</b> Is Further Spillage Possible? ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ <input type="checkbox"/> Yes/ᑎᓄᓐᓂᑦ <input checked="" type="checkbox"/> No/ᑎᓄᓐᓂᑦ		<b>K</b> Extent of Contaminated Area (in square metres if possible) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ) Approx 3m <sup>3</sup>	
<b>L</b> Factors Affecting Spill or Recovery (weather conditions, terrain, snow cover, etc.) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ) None				<b>M</b> Containment (natural depression, dikes, etc.) ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ (ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ) This was solid material that was easily picked up and collected.			
<b>N</b> Action, if any, taken or Proposed to Contain, Recover, Clean Up or Dispose of Product(s) and Contaminated Materials ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ All core was picked up and put into a secure container and brought back to camp.							
<b>O</b> Do You Require Assistance? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, describe: ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ? ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ				<b>P</b> Possible Hazards to Persons, Property or Environment e.g. fire, drinking water, fish or wildlife ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ None			
<b>Q</b> Comments and/or Recommendations ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Actions have been taken to secure core boxes within the transport cage in order to prevent any future occurrences.						<b>FOR SPILL LINE USE ONLY</b> ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Lead Agency ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Spill Significance ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Lead Agency Contact and Time ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Is this file now closed? ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ	
Reported By ᑎᓄᓐᓂᑦ Kim Sarauer		Position, Employer, Location ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Environment and Radiation Protection Supervisor, Kiggavik Project.				Telephone ᑎᓄᓐᓂᑦ (306) 683-9843	
Reported To ᑎᓄᓐᓂᑦ Terry		Position, Employer, Location ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ, ᑎᓄᓐᓂᑦ ᑎᓄᓐᓂᑦ Station operator, Spill line				Telephone ᑎᓄᓐᓂᑦ (867) 920-8130	