



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

President

Président

Ottawa, Canada  
K1P 5S9

Your file      Votre référence

Our file      Notre référence

**JAN 29 2009**

## **MEMORANDUM TO THE MINISTER**

**SUBJECT:**    Media Reports dealing with Two Separate Leaks at the NRU

### **PURPOSE**

As per your request, this is to provide you with a written report from the Canadian Nuclear Safety Commission (CNSC) regarding media reports dealing with two separate leaks at the National Research Universal (NRU) research reactor.

### **BACKGROUND**

In December 2007, the Government of Canada issued a Health Directive which requires the CNSC to take into account the health of Canadians in regulating the production, possession and use of nuclear substances.

In January 2008, a “Protocol for Notification and Information Sharing Amongst AECL, NRCan, and Health Canada Concerning Shortages of Medical Isotopes” (Protocol) was established requiring Atomic Energy of Canada Limited (AECL) to advise Natural Resources Canada (NRCan) and Health Canada of any situation at the Chalk River Laboratories which could create a shortage in isotope supply, whether due to a planned or unplanned outage of the NRU reactor, or any other event which may occur at AECL’s Chalk River Laboratories.

In October 2008 and as a result of the Health Directive, the CNSC amended AECL’s operating licence for the Chalk River Laboratories site requiring them to immediately report to the CNSC on any disruptions or potential disruptions to the supply of isotopes. This new requirement is in addition to eight other licence conditions requiring AECL to report to the CNSC on events ranging from immediate reporting on emergencies to annual reports on performance. All reported events are assessed for risks to health, safety, security and the protection of the environment. Significant events are reported to the Commission in public meetings.

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**Canada**

## CONSIDERATIONS

AECL decided to shut down the NRU on December 4, 2008. It triggered isotope supply concerns and the formal communications Protocol. During the subsequent restart activities, a heavy water leak was detected. Given the potential impact on health stemming from an isotope supply shortage, the NRU shutdown activities were widely communicated by AECL within the federal government and ultimately to the public. AECL informed the CNSC of the heavy water leak according to the requirements in its licence. However, because this leak did not pose a risk to the public or environment, reporting to the public was deemed unnecessary.

The second leak referred to in the media reports involves light water (essentially purified) from the NRU reflector system. It is collected by AECL and purified in the Waste Treatment Centre prior to its release to the Ottawa River. Such water released into the Ottawa River is treated and monitored by AECL according to environmental standards. The leakage is a longstanding and variable condition of the NRU that is managed by AECL. Although the leakage is not a concern to the CNSC from a health, safety or environmental perspective, AECL has plans to reduce the current leakage rate for operational reasons.

The attached chronology focuses on the heavy water leak and associated communications. Additional details on both leaks are found in the attached news release.

## SUMMARY

I would like to provide you with the following assurances:

- At no time was the public or the environment at risk.
- There is no radioactive material leaking into the Ottawa River associated with these leaks.
- AECL acted appropriately in its reporting to the CNSC.
- Since the heavy water leak did not pose a risk to the public or the environment, reporting of the leak to the public was deemed unnecessary.

**NEXT STEPS**

Given the public interest, AECL and CNSC staff have been asked to provide an update on the leaks to the Commission at its previously scheduled public meeting on February 19, 2009.

As well, I have asked my staff to review the reporting processes to the public by the CNSC and its licensees.

A handwritten signature in black ink, appearing to read "M. Binder". The signature is written in a cursive, flowing style.

Michael Binder

c.c. C. Doyle, Deputy Minister, Natural Resources Canada

(Attachments)

# News Release

09-03

FOR IMMEDIATE RELEASE

January 28, 2009

## No leak into the Ottawa River Public not at risk due to leaks at NRU facility

Further to recent media reports of two separate leaks at the Atomic Energy of Canada Limited (AECL) National Research Universal reactor (NRU), the Canadian Nuclear Safety Commission (CNSC) would like to set the record straight. **At no time was the public or the environment at risk. There is no radioactive material leaking into the Ottawa River associated with these leaks.** CNSC has on-site staff that monitors the NRU and ensures that it operates safely and is in compliance with its licence conditions. Any water released into the Ottawa River is treated and monitored by AECL according to environmental standards.

On Friday evening, December 5, 2008, AECL discovered a very small heavy water leak that was confined to the NRU. AECL reported the event to the CNSC on Saturday, December 6, 2008 and acted appropriately in delaying re-starting the reactor until the leak was investigated. Any water resulting from the leak was placed in storage tanks before being sent to the Waste Treatment Centre at the Chalk River Laboratories. This leak has stopped and has not reoccurred. There was evaporation of some heavy water resulting in a small release of tritium through normal ventilation which was well below regulatory limits.

Contrary to media reports, it did not take four days for AECL to inform the CNSC of the leak. The CNSC was made aware within hours of the leak and verified that it did not pose any significant risk to the public, workers or the environment. On December 8, 2008, AECL confirmed that the leak was a reportable event as it was more than the 10 kg reporting limit. AECL officially submitted a preliminary report to the CNSC within 24 hours as per regulatory requirements. As per normal practice, AECL is required to continuously monitor for leaks from NRU's cooling system and to take prompt action if a leak is detected. AECL has been asked to provide an update to the Commission at its previously scheduled public meeting on February 19, 2009.

The second leak referred to in the media reports involves light water leaking from the NRU reflector system. This water is collected by AECL and purified in the Waste Treatment Centre. **Therefore, there is no leak into the Ottawa River and there is no risk to the public or the environment.**

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The CNSC would like to reassure the public that it monitors the operation of all nuclear facilities in Canada to ensure that they operate safely and are in compliance with licence conditions. The CNSC's mandate to protect the health, safety and security of Canadians as well as the environment will not be compromised under any circumstances.

**Contact:**

Aurèle Gervais

Media and Community Relations

Canadian Nuclear Safety Commission

613-996-6860

1-800-668-5284

# **CNSC Chronology**

## **Relating to the NRU Shutdown in December 2008**

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### **Overview**

This information note provides a chronology of CNSC's actions and communications relating to the NRU shutdown in December 2008.

### **Chronology of Events**

- Thursday December 4/08      End of day, AECL shuts down the NRU to remove fuel from their testing loop.
- As per the Government's Directive on the Health of Canadians, AECL is required to inform the CNSC of any potential impact on isotope supply. Consequently, AECL informs the CNSC's Duty Officer that it had shutdown the NRU, which may affect the supply of medical isotopes.
- Friday December 5/08      AECL confirms that there may be a potential impact on isotope supply and activates the Government's "Protocol for Notification and Information Sharing Amongst AECL, NRCAN and Health Canada Concerning Shortages of Medical Isotopes" (Protocol), informing PCO, NRCAN, Health Canada and the CNSC by e-mail of the NRU shutdown.
- Later, AECL prepares to restart the NRU. During the restart, AECL discovers minor heavy water leakage from the reactor into the NRU sump.
- Saturday December 6/08      AECL sends e-mail update through the Protocol to the interdepartmental community on the NRU shutdown noting equipment problems and the potential impact on isotope supply.
- AECL informs the CNSC's Duty Officer that they had delayed the restart of NRU because "heavy water leakage had been discovered" and that "leakage search was in progress." Their report to the CNSC indicated a very small leak rate (around 250 ml per hour). Given the information reported, the CNSC determines there is no immediate risk associated with the leak.
- AECL updates the interdepartmental community, indicating that they are performing a leak search and noting the potential impact on isotope supply.

- Sunday December 7/08 AECL continues to update the interdepartmental community on the status of the leak search and the potential impact on isotope supply.
- Monday December 8/08 CNSC reporting standards require AECL to report to the CNSC any heavy water leaks in excess of 10 kg within 24 hours of making this determination. Upon informal inquiry by the CNSC, AECL confirms that the leak was a reportable event.
- AECL continues to send e-mail updates through the Protocol to the interdepartmental community on the NRU shutdown due to the potential impact on isotope supply. CNSC also informally confirms with NRCan that there are no safety issues with restarting the NRU.
- Tuesday December 9/08 AECL formally files the preliminary report to the CNSC, as required by its operating licence. By this point the leak has completely stopped.
- CNSC site inspectors confirm that AECL is appropriately handling the leak search.
- AECL continues to send e-mail updates through the Protocol to the interdepartmental community on the NRU shutdown due to the potential impact on isotope supply.
- Wednesday December 10/08 CNSC on-site inspector attends, as an observer, AECL's decision-making meeting on the restart of NRU. He notes that while the source of the leak could not be positively identified, AECL had measures in place to respond in case the leak reappears during the restart of the reactor.
- Thursday December 11/08 AECL re-starts the NRU reactor. No further heavy water leaks were observed.
- Friday December 12/08 CNSC refers request for information from CTV to AECL. CNSC did not respond to request for information from Canwest.
- AECL issues news release on the status of the NRU reactor.
- Thursday January 22/09 CNSC provides preliminary report to Sun Media, after consultation with AECL.

Friday January 23/09

The CNSC reporting standard (S-99) requires a formal follow-up report within 45 days of the initial report. AECL files their detailed report to the CNSC indicating a loss of approximately 47 kg of heavy water, with 28.5 kg sent to a tank in waste management for future processing, 4.5 kg was lost through evaporation in the ventilation stack and 14 kg was placed in storage drums. The report contains appropriate corrective actions to fully investigate potential sources of the leak and improve the handling of the collected heavy water. In the report AECL commits to review and address all corrective actions by August 2009. The CNSC concurs with the timelines in the report, given the complex nature of the investigations.

CNSC staff will monitor the progress on the corrective actions and intervene if necessary.

CNSC updates NRCan and AECL of media inquiries.

Monday January 26/09

CNSC provides response to specific questions from Sun Media, confirming “No safety concern with such a small leak” and “AECL acted appropriately.” NRCan is apprised of the CNSC’s responses to the media.

CNSC released the formal follow-up report to Sun Media, with the understanding that AECL had previously released their report. This information subsequently re-confirmed with AECL.

Tuesday January 27/09

CNSC responds to inquiries from CBC (TV and radio), CTV and the Ottawa Citizen, confirming that “there is no risk to the public or the environment” and that “there is no radioactive material leaking into the river.”

Thursday January 28/09

CNSC issues a News Release, *No Leak in the Ottawa River – Public not at risk due to leaks at NRU facility.*