

Date 2007-12-31

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**Significant Development Report  
No. 2008-1**

**Excerpt / Atomic Energy of Canada  
Limited (AECL) / Chalk River NRU  
Reactor**

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This document summarizes significant developments for the period of November 20 to December 31, 2007 (AECL excerpt).

Commission Meeting

**January 9, 2008**

**Rapport des faits saillants  
N° 2008-1**

**Extrait / Énergie atomique du Canada  
limitée (EACL) / Réacteur NRU de Chalk  
River**

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Ce rapport résume les faits saillants qui ont marqué la période du 20 novembre au 31 décembre 2007 (Extrait d'EACL).

Réunion de la Commission

**Le 9 janvier 2008**

<b>NOTIFICATION OF OPERATIONAL EVENT/CONDITION</b>		
<b>NOE/C no.</b>	<b>Date issued</b> 2007-12-28	<b>Prepared by – Directorate/Division</b> DNCFR/CRLCLD
<b>Licensee</b> : Atomic Energy of Canada Limited (AECL)	<b>Licence no.</b> NRTEOL-01.00/2011	<b>Licensed activity</b> NRU Reactor Operation
<b>Location at which event/condition happened</b> NRU Reactor – Chalk River Laboratories (CRL)		
<b>When event/condition discovered</b> <b>Date:</b> 2007-11-08 – CNSC post inspection findings (as carried out on 2007-11-05 and 2007-11-07) formally reported to AECL at licensing meeting	<b>When event/condition happened</b> <b>Date:</b> 2007-03-30 – date of revised Safety Analysis Report	<b>When reported to CNSC</b> <b>Date:</b> 2007-11-15
NATURE OF EVENT/CONDITION		
<p><b>This SDR is an update to the SDR reported to the commission at the meeting of December 6<sup>th</sup>, 2007</b></p> <p>As reported to the Commission on December 6, 2007, CNSC staff had discovered that the NRU Reactor facility status, as it existed in the field, did not match AECL's written description of the NRU Reactor as described in the recently submitted revision of the Safety Analysis Report (SAR). More specifically, the Emergency Power Supply (EPS) connection to Main Heavy Water Pumps (MHWP) #4 (P-104) and #5 (P-105) had not been completed. [REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>		
<b>Risk rating :</b>	<b>Applicable SDR criterion:</b> Degradation of a safety system that prevents the system from performing its safety functions as intended, or meeting its defined specifications. [CMD 03-M68 criterion 5.2 (a)]	
EFFECTS OF EVENT/CONDITION – ON		
<b>Persons</b>	<b>Who affected</b> Workers [no.] Public [no.]	<b>How affected</b>
<b>Environment</b>	Potential Radiation releases resulting in an effect on health and safety	
<b>Security</b>		
<b>Licensed activity</b>	November 19, 2007, The NRU Reactor was shutdown for scheduled maintenance. The NRU remained in extended shutdown until Dec 16 <sup>th</sup> , 2007.	

**NOTIFICATION OF OPERATIONAL EVENT/CONDITION****Other**

On December 12, 2007, Bill C-38 was enacted which states "Atomic Energy of Canada Limited may resume and continue the operation of the National Research Universal Reactor at Chalk River in Ontario for a period of 120 days after the coming into force of this Act despite any conditions of its licence under the Nuclear Safety and Control Act relating to the installation of seismically qualified motor starters on the heavy water pumps and the connection to the emergency power supply."

On December 16<sup>th</sup>, 2007 AECL notified CNSC staff that the reactor was restarted at 0344 h

**"IMMEDIATE CAUSES" OF EVENT/CONDITION**

**NOTIFICATION OF OPERATIONAL EVENT/CONDITION**

**Preliminary explanation** AECL committed to perform a complete Root Cause Analysis and to submit the full report to CNSC staff by December 28, 2007. On December 24, 2007, AECL informed CNSC staff that more time is required to complete the full investigation. AECL committed to submit a complete detailed report by January 7, 2008, that will address the root causes and associated corrective actions that were readily apparent.

AECL has indicated to CNSC staff that a second phase has been initiated to consider the possible existence of deeper root causes, with the second phase scheduled to be completed by March 31, 2008.

**EVENTS**



<b>NOTIFICATION OF OPERATIONAL EVENT/CONDITION</b>		
<b>Planned/to be taken</b>	<b>What</b> Connection of MHWP #4 to EPS, addressing gaps identified in review on extent of condition, and addressing corrective actions identified in root cause assessment	<b>When</b> Project schedule in progress (not yet submitted as of December 27, 2007)
<b>Proposed</b>	<b>What</b>	<b>When</b>
<b>CNSC ACTIONS</b>		
<p>Due to the enactment of C-38, compliance work related to the lack of connection of MHWP #4 to EPS has been suspended. However, routine compliance activities related to the operation of the NRU Reactor (i.e., compliance with licence conditions specific to the NRU Reactor and the Facility Authorization [operating limits and conditions]) continue.</p> <p>On December 21, 2007, senior CNSC and AECL staff commenced weekly meetings related to the operation of the facility, the plans for connection of MHWP #4 to EPS, the one-pump safety case, and other issues. The first meeting was held at CRL.</p> <p>CNSC staff is reviewing the safety case for the operation of the reactor with only MHWP #5 connected to EPS. Additional information provided by AECL on December 21, 2007, has been added to the scope of this review. The review is scheduled to be complete by January 8, 2008.</p> <p>CNSC staff is receiving from AECL daily updates on the operation of the reactor and the work to connect MHWP #4 to EPS.</p> <p>CNSC staff has undertaken a review of lessons learned stemming from the Atomic Energy of Canada Limited (AECL) decision to shut down the National Research Universal (NRU) reactor in order to complete safety upgrades. Interim reports will be made on a regular basis, culminating in a presentation to the Commission.</p>		
<b>Planned</b>	<b>What:</b> Follow-up inspection of the NRU Upgrades to close the directives and action notices from the 2006 upgrades audit, review of gaps identified by AECL, and review of corrective actions identified in AECL's root cause assessment. Routine compliance work related to the day-to-day operation of the NRU reactor with respect to the reactor's Facility Authorization and licence conditions (referenced in the CRL Site Licence).	<b>When:</b> Daily rounds, follow-up inspections as appropriate, and desk top reviews of AECL submissions.

<b>NOTIFICATION OF OPERATIONAL EVENT/CONDITION</b>	
<b>REASON(S) THIS EVENT/CONDITION IS OF CONCERN TO CNSC</b>	
<b>Implications – Actual</b> [REDACTED]	
<b>Implications – Potential:</b> Safety degradation (fuel damage probability increased)	
<b>“ROOT CAUSE” ANALYSIS</b>	
<b>Planned?</b> Yes	<b>Expected completion</b> 2007-12-28 revised to 2008-01-07

Signed by / Signé par

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 Barclay Howden  
 Director General / Directeur général  
 Directorate of Nuclear Cycle and Facilities Regulation /  
 Direction de la réglementation du cycle et des installations nucléaires