



## Canadian Nuclear Society / Société Nucléaire Canadienne

*“Supporting nuclear science and technology for over 30 years”  
“plus de 30 ans de promotion de la science et de la technologie nucléaires”*

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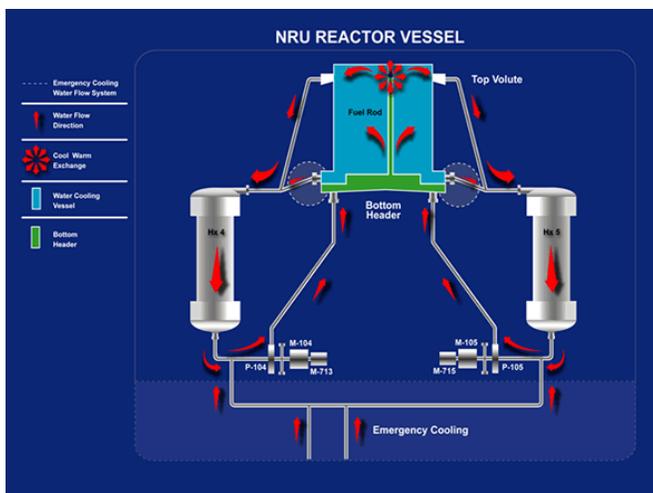
# REPAIR OF THE NRU REACTOR VESSEL

On May 14 2009, a leak of heavy water was detected from the NRU reactor after the reactor was shut down due to an off-site power outage. The leak was immediately investigated using remote cameras and was soon located at a site near the bottom of the vessel wall, which clearly showed water leaking out of a corrosion deposit. A decision was made to remain shut down for an extended outage to assess the condition of the vessel and to implement the required repairs. A major project was quickly launched to integrate the multi-disciplinary efforts required to:

- assess the condition of the vessel by non-destructive examinations and sampling of the vessel material,
- determine areas requiring repair based on “fitness for service” criterion,
- design the repairs taking into account the many limitations involved in introducing tooling into the reactor and reaching the repair sites,
- develop the tooling and train qualified staff to remotely implement the repair, and
- perform post-repair inspections to confirm the adequacy of the repair.

Repair of the vessel was a very technically challenging undertaking, with a high priority and urgent time line because of the shortage of medical isotopes resulting from the extended reactor outage, as well as interruption of important R&D activities that support advances in CANDU reactor technology and the neutron scattering community. After an outage lasting 15 months, the NRU reactor was successfully returned to full power operation and isotope production on August 17 2010. Between 300 and 400 AECL staff were involved in supporting the repair activities and returning the NRU reactor to service. In addition, more than 40 companies were contracted to provide services, contributing the effort of several hundred staff to execute contracted work for the outage.

The Chalk River Branch of the Canadian Nuclear Society (CNS-CRB) is delighted to welcome David Cox to talk about the repair of the NRU reactor vessel. David has worn many hats at CRL in his 25 year career, starting as a Research Engineer in the Fuel Engineering Branch and progressing to Manager of the Fuel Development Branch and, currently, Director of the Safety Engineering and Licensing Division. Most recently, he was the Manager of the NRU Return to Service Project. David will talk about this project in the J.L. Gray Building, Bennett Room on Thursday, Oct. 14<sup>th</sup> from 7:00 pm to 8:00 pm, immediately following the CNS Chalk River Branch Annual General Meeting (AGM) from 6:30 pm to 7:00 pm. The CNS-CRB invites members to join the new executive for 2010-2011.



David Cox, Manager  
NRU Return to Service Project,  
Thursday, October 14<sup>th</sup>, 7:00 to 8:00 pm  
(following CNS-CRB AGM at 6:30 pm)  
J.L. Gray Building, Bennett Room

Members of the public welcome