



Protocol for National Research Universal Licensing Activities

December 2010

Revision 2

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Summary of Changes

Revision 2

| Section | Changes |
|---------|---|
| 1.0 | Health directive for disruption of isotopes modified as "...taking into account the directive from the Governor in Council to consider the health of Canadians as it relates to the production of medical isotopes as an input for evaluating various options, without compromising safety". |
| 3.0 | Inclusion of the remaining high relevance activities from restart protocol indicated. |
| 5.1 | Formation of CNSC NRU ISR Core Group added. |
| 6.0 | AECL and CNSC Organization Representatives revised. |
| 7.0 | Remaining high relevance activities from restart protocol included in "Statement of Work". |
| 7.1 | <p>High relevance remaining activities from restart protocol included in "Technical Scope".</p> <p>Title "Table 1: Phases of Integrated Safety Review and Global Assessment for licence renewal" inserted as the title for the table showing the phases of ISR and Table 1 updated. Statement "The scope and schedule for Phase IV is established by the CNSC accepted IIP" included.</p> <p>"Table 2: Additional remaining tasks after the termination of the Restart Protocol" added.</p> |
| 7.2.1 | <p>Title "Table 3: Protocol deliverables, target dates and responsible organizations" added as the title for the table defining the Protocol deliverables.</p> <p>"Preliminary draft GAR and IIP", "Final draft GAR and IIP" and Supplemental CMD-NRU IIP results and proposed LCH addendum" are added as new deliverables.</p> <p>Following deliverables in Table 3 updated: EA Screening Report, Complete CNSC staff's assessment of Safety Factors Reports, CNSC decision on EA approval, Final submission of GAR for CNSC assessment and IIP for CNSC assessment and acceptance, Assessment of GAR and assessment and acceptance of IIP,</p> |

| | |
|---------|---|
| | <p>CMDs for Hearing Day Two and Phase IV is described as “If NRU operation continues under a renewed licence, execution of the CNSC accepted NRU IIP”.</p> <p>Follow-up Activities from the NRU Restart Protocol are included in Table 3.</p> |
| 7.2.2.1 | AECL participants of working and executive level meetings revised. |
| 9.0 | Extended outage impact on the NRU ISR updated. |
| 10.0 | References updated |
| 11.0 | Glossary updated. |

Summary of Changes

Revision 1

| Section | Changes |
|---------|--|
| | Title “Extent of the Protocol” added and the purpose of revision defined. |
| 5.2 | AECL Governance Structure revised by AECL. |
| 6.0 | AECL Organization Representatives revised by AECL. |
| 7.1 | <p>NRU Relicensing Technical Scope updated and modified to show completions.</p> <p>Periodic press releases not included in the scope for Phase I to III.</p> |
| 7.2.1 | Document Deliverables Table updated and the status of deliverables shown. |
| 7.2.2.1 | <p>“Working Level Meetings” updated to indicate changes by both Organizations.</p> <p>“Quarterly Reports” revised to indicate the role of each organization.</p> |
| 7.2.2.2 | AECL’s responses to actions from meetings between AECL and CNSC and submission of supporting documents modified to include AECL’s acceptance and agreement. |
| 7.2.2.3 | CNSC Additional Deliverables on EA updated. |
| 9.0 | A section titled “Extended Outage Impact on the NRU ISR” added. |
| 10.0 | References updated. |
| 11.0 | Glossary updated. |

Extent of the Protocol

This protocol is essentially administrative in nature. Nothing in this protocol or any statement in this protocol is to be construed or interpreted as affecting the jurisdiction and discretion of the Commission in any assessment of any application for licensing purposes under the *Nuclear Safety and Control Act* (NSCA). It is not intended to constitute a deviation or inference to a proposed amendment to the current licence for the National Research Universal (NRU).

This revision reflects the developments in NRU Integrated Safety Review (ISR) management and process that have occurred since Rev. 1 of this Protocol [1].

1. OBJECTIVE

The objective of this protocol is to provide a framework within which AECL and CNSC staff will work to prepare the necessary information for the Commission to assess the continued operation of the NRU reactor beyond the current licence period. NRU is operated under the Nuclear Research and Test Establishment Operating Licence for Chalk River Laboratories [2] that expires on October 31, 2011. Licensing activities for NRU will take place within the wider context of licence renewal for Chalk River Laboratories, taking into account the directive from the Governor in Council to consider the health of Canadians as it relates to the production of medical isotopes as an input for evaluating various options, without compromising safety.

2. INTRODUCTION

The legal framework for licence renewal is derived from the *Nuclear Safety and Control Act* (NSCA) [3] and supporting Regulations.

Following the Directive [4] from the Governor in Council, in considering all the risk to Canadians, AECL and CNSC staffs are coordinating their effort for the licensing of the NRU Reactor, to meet the mandates and accountability responsibilities of both organizations.

In engaging in this coordinated effort and working responsibly in the public interest, the CNSC maintains its independence as the Canadian nuclear regulator and AECL continues to be solely responsible for the safe operation of the NRU reactor.

It is understood that:

- safety will not be compromised in making licensing recommendations to the Commission;
- the licensing activities will be conducted on a best effort basis to minimize, to the extent possible, disruption of the production of medical isotopes; and
- the objective is to produce a comprehensive body of information and recommendations to allow the Commission to render its decision regarding the application for a licence renewal.

This protocol sets out the framework within which both organizations will work and establishes a high level estimate of the time line.

3. APPROACH TO LICENSING

To fully address the responsibilities for safety and accountability, and to serve the Canadian public, both the Canadian Nuclear Safety Commission and Atomic Energy of Canada Limited recognize the importance of a well-planned and coordinated working arrangement.

Both organizations recognize the complexity of the matter and agree to implement an Integrated Safety Review (ISR) of the facility. The ISR process for NRU will be fully defined at an early stage of the work process. It will rely on the guidance set out in the IAEA Safety Guide: “Periodic Safety Review of Nuclear Power Plants” [5] and the CNSC Regulatory Document: “Life Extension of Nuclear Power Plants” [6], recognizing that NRU is a research and medical isotope production facility approaching licence renewal, not a power plant undergoing life extension.

This Protocol also addresses the completion of remaining activities from the Restart Protocol considered of high relevance [7].

4. SCHEDULE

The schedule set out in the statement of work in this protocol is intended to align with the time line for the site licence renewal in 2011 and the lead time notices required in the *Canadian Nuclear Safety Commission Rules of Procedure*.

It is recognized that the schedule includes a large amount of work and there may be execution risks that could cause delays. To preserve the completion of the objectives, the delay risks will be dealt with in a timely manner through adjustments of resources or the time line of this protocol. These adjustments will be made through the protocol revision process outlined below.

5. ROLES AND RESPONSIBILITIES

5.1 CNSC Governance Structure

The CNSC has created the NRU Licensing Extension Steering Committee (NRULESC) to provide strategic level direction and senior management oversight and support to the programs associated with NRU licence renewal beyond 2011.

The NRULESC is chaired by the Executive VP, Regulatory Operations Branch (ROB) and formed by all relevant executive directorates, including:

- Vice-President of the Technical Support Branch;
- Vice-President of the Regulatory Affairs Branch;
- Director General of the Directorate of Nuclear Cycle and Facilities Regulation;
- Director General of the Directorate of Assessment and Analysis;
- Director General of the Directorate of Environmental and Radiation Protection and Assessment;
- Director of Chalk River Laboratories Compliance and Licensing Division;
- Director of Reactor Thermalhydraulics Division; and
- Project Manager (Secretary).

The objective of the Steering Committee is to enable CNSC staff to fulfill its mandate of providing recommendations to the Commission regarding the re-licensing of the NRU reactor in 2011. Its enabling function is fulfilled by ensuring that this NRU licensing activity:

- receives appropriate priority;
- is adequately resourced;
- progresses;
- is conducted in accordance with project management practices;
- contains appropriate review plans;
- is consistent in its application and requirements; and
- follows agreed process and technical direction.

The NRULESC is directly accountable to the CNSC President through the EVP ROB.

The NRULESC has created the NRU ISR Core Group to perform an advisory role.

5.2 AECL Governance Structure

AECL has established a Site Senior Management Review Team (SSMRT) to review and approve the recommendations from the NRU ISR on behalf of AECL. This team is led by the Vice-President Operations/Chief Nuclear Officer (CNO), and includes representation from CRL Operations, Engineering and Regulatory Affairs, as follows:

- General Manager, Isotope Supply Reliability Program;
- General Manager, Programs and Nuclear Oversight, and Chief Regulatory Officer;
- General Manager, Engineering and Projects, Chief Nuclear Engineer;
- Director, NRU Operations and Facility Authority;
- Chairman of the Safety Review Committee (as an observer); and
- Director ISRP IIP (Secretary).

6. ORGANIZATION REPRESENTATIVES

The Organization Representatives (ORs) for these activities are responsible for all matters concerning the work described in Section 7 of this Protocol and bring the matter to their respective governance bodies, should problems arise during the work that may affect the schedule or the scope of the work.

For the purposes of this Protocol, CNSC staff shall be represented by:

- 1) The Director, CRLCL Division, DNCFR (position currently held by M. Santini), for matters related to governance.

Telephone number: (613) 943-2923

Mobile telephone: (613) 222-2064

Fax number: (613) 995-5086

E-mail: miguel.santini@cnsccsn.gc.ca

- 2) The NRU LE-Project Manager (position currently held by I. Erdebil), for matters related to implementation.

Telephone number: (613) 992-3870
Mobile telephone: (613) 894-3425
Fax number: (613) 995-5086
E-mail: ismail.erdebil@cnsccsn.gc.ca

For the purposes of this Protocol, AECL shall be represented by:

- 1) Director, ISRP IIP (position currently held by J. McKenna), for matters related to governance.

Telephone number: (613) 584-8811 ext. 48273
Mobile telephone: (613) 639-9179
E-mail: mckennaj@aecl.ca

- 2) The Manager, Safety Assurance (position currently held by A. Ashworth), for matters related to implementation.

Telephone number: (613) 584-8811 ext. 45288
Mobile telephone: (613) 633-1396
E-mail: ashwortha@aecl.ca

Either Party hereto may, by written notice, change any of its appointees mentioned above.

7. STATEMENT OF WORK

NRU Integrated Safety Review (ISR)

This set of NRU ISR high level tasks / milestones are derived from the ISR process documented in RD-360. It is recognized that work performed in support of relicensing in 2005 and 2006 provides a basis for a comprehensive ISR. The work described in this protocol builds on that basis. This protocol defines the high-level structure of the ISR process that will be followed. An early activity was to gather the necessary information to form a complete Level I plan, with milestones and deliverables.

Restart Protocol

There were several items in the Restart Protocol considered of high relevance that require follow-up post return to service [7]. Given their high relevance, these items have been added to the Protocol for NRU Licensing Activities to provide a solid working framework for resolution.

7.1 NRU Relicensing Technical Scope

The technical scope of the work includes:

- The production and review of documentation generated by the Integrated Safety Review of the NRU Reactor for the licence renewal in 2011 (refer to Table 1), presentation of recommendations to the Commission in relation of the licence renewal, and related improvements to the NRU reactor as determined by the Commission in the operating licence; and
- Completion of remaining high relevance tasks from Restart Protocol [7] requiring follow-up post return to service and presentation of their status and/or completion to the Commission (refer to Table 2).

Table 1: Phases of Integrated Safety Review and Global Assessment for Licence Renewal

| | | |
|-----------|---|--|
| Phase I | Definition and development of a specific ISR approach for NRU | Assessment of Status Quo – Complete |
| | | Level I project Plans – Complete |
| | | ISR scope and basis – Complete |
| Phase II | Integrated Safety Review execution | Level II Project Plan – Complete |
| | | Presentation to the Commission at mid-Term (CMDs) – Complete |
| | | Safety factors reports (production and assessment) – Complete |
| | | EA Screening Report Decision |
| | | Global Assessment Report production and CNSC assessment; and IIP production and CNSC assessment and acceptance |
| Phase III | Licence renewal | Production and submission of CMDs to the Commission for licensing decision |
| | | Presentations to the Commission |
| Phase IV | Initiate CNSC accepted Integrated Implementation Plan | Scope defined by the IIP |

The time periods for each phase are shown in Section 7.2.

The scope for Phases I to III include:

- 1) Development and review of documents described in Section 7.2 that will be updated as necessary and agreed in writing by both parties, and such other documents that may be necessary to support the topical reviews.

Discussion of any issues arising from the work performed under this protocol that could be considered as a potential barrier to future operation of NRU. Set-up and implement a conflict resolution mechanism on the technical issues described in Section 7.3.

- 2) Quarterly reporting, in format agreed by the parties, of technical and schedule progress and percentage of work completed.
- 3) Periodic reporting to Government on progress.
- 4) AECL request for CRL site licence renewal which includes continued operation of the NRU reactor.
- 5) CNSC staff issuance of a recommendation to the Commission with respect to licence renewal beyond 2011.

The scope and schedule for Phase IV is established by the CNSC accepted IIP.

Table 2: Additional Remaining Tasks after the Termination of the Restart Protocol

| | |
|---|---|
| High Relevance remaining tasks from the Restart Protocol | Dispositioning and assessment of condition assessment gap analysis (addressed by provision of Supplementary Report to Safety Factor Report 2) |
| | Implementation of Voyageur 2 (AECL's organizational Corrective Action Plan) |
| | Implementation of the In-Service Inspection program |
| | Implementation of extended outages, including periodic vessel fitness for service re-examination |

7.2 Activities and Deliverables

The deliverables in the following sections are divided in:

- Documents;
- Other Deliverables;
- Common Deliverables;
- Meetings;
- Quarterly Reports;
- AECL Additional Deliverables; and
- CNSC Additional Deliverables.

7.2.1 Document Deliverables

Document deliverables target dates and responsible organizations are given in Table 3.

Table 3: Protocol Deliverables, Target Dates and Responsible Organizations

| Document Deliverables | Target Dates | Status and Actioned Organization(s) |
|---|---------------|-------------------------------------|
| Phase I | | |
| Comprehensive list of issues produced for NRU, from ImpActs, fire hazard assessment, previous safety assessments, audits, licensing correspondence, etc. | August 2008 | Complete AECL |
| Risk prioritization of outstanding issues in the current Licensing Strategy document [8]. | August 2008 | Complete CNSC / AECL |
| Discussions and agreement on the scope of key issues including: <ul style="list-style-type: none"> - Tritium issues in coolant and bays - Waste management strategy | October 2008 | Complete CNSC / AECL |
| Discussions on whether EA is required and if so, its scope. | October 2008 | Complete CNSC / AECL |
| Complete Level I project plan. | November 2008 | Complete AECL |
| Complete Level I review plan. | November 2008 | Complete CNSC staff |
| Discussions and agreement on ISR scope and project plan. | December 2008 | Complete CNSC / AECL |
| Phase II | | |
| ISR Basis | March 2009 | Complete AECL |
| EA determination for the cumulative effects from the proposed extended long-term operation. | March 2009 | Complete CNSC staff |
| Acceptance of ISR Basis Document [9]. | April 2009 | Complete CNSC staff |
| Complete Level II coordinated project plans. | May 2009 | Complete CNSC / AECL |

| Document Deliverables | Target Dates | Status and Actioned Organization(s) |
|---|---|--|
| Phase II (cont'd) | | |
| EA Guidelines for relicensing to the Commission [10] and [11]. | June 2009 | Complete CNSC staff |
| ISR presentation (mid-term report for CRL site licence) to the Commission for information. | 2009 | Complete CNSC / AECL |
| Delivery of first set of Safety Factor Reports (8-17). | January 31, 2010 | Complete |
| Environmental statement report. | January 2010 | Complete |
| Delivery of second set of Safety Factor Reports (1-7). | March 31, 2010 | Complete |
| EA Screening Report. | December 2010– January 2011 | CNSC staff |
| Complete CNSC staff's assessment of Safety Factors Reports. | October 2010 | Complete |
| Preliminary draft version of Global Assessment Report (GAR) and Integrated Implementation Plan (IIP). | December 1, 2010 (GAR) December 10, 2010 (IIP) | AECL, Complete |
| Final draft version of GAR and IIP. | January 31, 2011 | AECL |
| CNSC decision on EA approval. | February 2011 | CNSC Commission |
| Final submissions (Revision 0) of GAR for CNSC assessment and IIP for CNSC assessment and acceptance. | February 28, 2011 | AECL |
| Assessment of final submissions of GAR and assessment and acceptance of IIP. | May 2011 | CNSC staff |
| Phase III | | |
| CMDs for Hearing Day One. | April 2011 | All |
| Licence renewal Day One. | June 2011 | All |
| Supplemental CMD-NRU IIP results and proposed LCH addendum. | July – August 2011 | CNSC staff |
| CMDs for Hearing Day Two. | August 2011 | All |
| Licence renewal Day Two. | September 2011 | All |
| CNSC licensing decision. | October 2011 | CNSC Commission |

| Document Deliverables | Target Dates | Status and Actioned Organization(s) |
|--|--|--|
| Phase IV | | |
| If NRU operation continues under a renewed licence, execution of the CNSC accepted NRU IIP. | | |
| Follow-up Activities from the NRU Restart Protocol | | |
| Dispositioning and assessment of condition assessment gap analysis (addressed by provision of Supplementary Report to Safety Factor Report 2). | January 31, 2011 | AECL |
| CNSC assessment of gap analysis of condition assessment. | May 2011 (linked to CA under IIP) | CNSC staff |
| Implementation of Voyageur 2 [12]. | Plan in place, ongoing | AECL, semi-annual updates to the Commission for two years |
| Implementation of the In-Service Inspection (ISI) program (vessel) (See Note 1). | Plan in place, ongoing | AECL, update provided via CNSC's routine compliance program |
| Implementation of the first extended outage. | March - May 2011 | AECL |
| Implementation of future extended outages. | Scheduled annually or more frequently if necessary based upon ISI findings | AECL, specific requirement to be included in the new licence |

Note:

1. The In-Service Inspection program document describes the scope of the inspection activities required during normal operational outages and extended outages to verify vessel condition. Inspection findings will be dispositioned by AECL and form the basis for periodic re-evaluations of the vessel fitness-for-service. Dispositions and fitness-for-service re-evaluations will be reviewed by CNSC staff as part of on-going licence compliance activities.

7.2.2 Other deliverables

7.2.2.1 Common Deliverables

Meetings

Working Level Meetings

Monthly AECL / CNSC review meetings will be held to review progress on the work and highlight any potential major issues or disputes. Attendance at these review meetings will be,

two or more of:

- Director, CRLCLD (CNSC),
- Project Manager, CRLCLD (CNSC); and
- Backup Project Manager, CRLCLD (CNSC)

two or more of:

- Director, ISRP IIP (AECL),
- Director, ISRP Safety and Licensing (AECL),
- Manager, ISRP Safety Assurance (AECL); and
- Manager, Isotope Safety and Licensing (AECL).

Technical Meetings

Meetings between technical experts at the CNSC and AECL will be arranged as the need arises. The organization representatives, or their designates, will participate in technical meetings to provide continuity across licensing activities.

Executive Meetings

To be arranged quarterly or more frequently to follow up progress and/or deal with the conflict resolution process. Minimum attendance at these Executive meetings will be the Executive Vice-President/ROB from CNSC; and the Vice-President Operations/CNO from AECL.

Quarterly Reports

Quarterly reports to the respective Governance (Sections 5.1 and 5.2) and Presidents are to be prepared by one organization and reviewed by the other with roles alternating for each submission.

Other Updates

Coordinated periodic updates to Government on progress will be prepared and presented by AECL. AECL and CNSC staff will review and contribute to third party updates.

7.2.2.2 AECL Additional Deliverables

In addition to the deliverables described in previous sections, AECL will deliver:

- EA impact statements;
- CMDs as required; and
- For Phases I to III, AECL will provide responses to accepted actions from meetings between AECL and CNSC representatives pursuant to this Protocol and submit any supporting documents, as appropriate, that are agreed between AECL and the CNSC to be required to address issues identified.

7.2.2.3 CNSC Additional Deliverables

In addition to the deliverables described in previous sections, CNSC will deliver:

- EA screening report for re-licensing;
- CMDs as required;
- Letters on submissions indicating the general acceptability or otherwise of the submission or topics and identify any items for resolution; and
- Any issues relating to NRU relicensing or licensability identified by CNSC in the course of the reviews will be resolved by a closure letter or documented path forward.

7.3 Conflict Resolution Process

CNSC staff and AECL staff have agreed to coordinate licensing work related to NRU operation beyond 2011 under the *Nuclear Safety and Control Act*. Disagreements may arise during the execution of the work. A review and dispute resolution mechanism will be used during the review to ensure fairness and assist timely completion.

Step 1: Identification of the Issue & Resolution at the staff level

- 1) Monthly AECL / CNSC review meetings will be held to review progress and highlight any potential major issues or disputes.
- 2) The framework for a decision on an issue will be the Government policies on regulatory effectiveness and the licensing requirements stated in, or referenced in, the ISR Basis Document, as agreed to by both parties.
- 3) It is the intention of both parties to resolve issues at this level.
- 4) If an issue cannot be resolved at this level, it will be documented (typically, a brief factual summary of the issue and a paragraph representing the view of each organization) by the individuals in Paragraph 1 within two weeks of failure to resolve, and forwarded to the Senior Management Level (Step 2).

Step 2: Resolution at the Senior Management Level

- 1) A Step 1 issue, once documented, will be provided to the Director General, Directorate of Nuclear Cycle and Facilities Regulation (CNSC), the Director General, Assessment and Analysis (CNSC), the General Manager Programs and Nuclear Oversight (AECL), and the General Manager for the Isotope Supply Reliability Program (AECL) for resolution. A meeting will be called, normally within 30 days, to resolve the issue, and the resolution documented.
- 2) Issues that cannot be resolved at this level will be referred to the Executive Level (Step 3) within two weeks, supported by the original or revised documentation from Step 1.

Step 3: Resolution at the Executive Level

- 1) A Step 2 issue, with documentation, will be sent to the Executive Vice-President, Regulatory Operations Branch (CNSC) and the Vice-President Operations/CNO (AECL) for resolution. A meeting will be called, normally within 30 days, to resolve the issue, and the resolution documented.

8. FUTURE REVISIONS OF THE PROTOCOL

Revisions of this protocol will be coordinated by the organization representatives and must be approved by the organizations' governance structures and Presidents.

Revisions may include:

- 1) Adjustments to the time table;
- 2) Inclusion of temporary licence extension strategy; and
- 3) Other revisions as required.

9. EXTENDED OUTAGE IMPACT ON THE NRU ISR

The extended outage associated with repair of the NRU vessel leak and NRU return to service has had an impact on the NRU ISR. As part of the Extended Activities Program (EAP), some refurbishment work has been performed on NRU that otherwise would not necessarily have been completed prior to finishing the NRU ISR. As a result, some of the recommendations that would have come from the Global Assessment have already been addressed (e.g., vessel refurbishment, establishing a detailed vessel fitness for service program, heavy water moderator replacement, process water system refurbishment and heavy water system inspections).

10. REFERENCES

- [1] Protocol for National Research Universal Licensing Activities, Revision 1, January 11, 2010 (E-DOCS-#3484993).
- [2] Nuclear Research and Test Establishment Operating Licence, Chalk River Laboratories, NRTEOL-01.07/2011.
- [3] *Nuclear Safety and Control Act*, 1997, c.9 N-28.3.
- [4] *Nuclear Safety and Control Act*, Directive from Governor in Council to the Canadian Nuclear Safety Commission Regarding the Health of Canadians, SOR/2007-282.
- [5] IAEA Safety Guide, Periodic Review of Nuclear Power Plants, NS-G-2.10, 2003.
- [6] Regulatory Document, Life Extension of Nuclear Power Plants, RD-360, February 2008.
- [7] Letter from M. Santini to W. Pilkington, “*NRU Return to Service Protocol Termination*”, June 02, 2010 (E-DOCS-#3556389).
- [8] Licensing Strategy for AECL’s NRU Licensability Extension project, Lamarre to McGee February 28, 2006 (referenced by Condition 19 in the CRL Licence).
- [9] NRU Integrated Safety Review (ISR) Basis Document, April 28, 2009.
- [10] Scoping Information Document - NRU Reactor Long-term Management Project AECL CRL, June 30, 2009.
- [11] Record of Proceedings - Atomic Energy of Canada Limited - Proposed Environmental Assessment Scoping Information Document for the National Research Universal Reactor Long-Term Management Project at Chalk River Laboratories, July 16, 2009.
- [12] Record of Proceedings - AECL Request for the Approval of the Return to Service of the NRU Reactor, July 5, 2010 (E-DOCS-#3594641).

11. GLOSSARY OF TERMS

| | |
|---------|---|
| AECL | Atomic Energy Canada Limited |
| CMD | Commission Member Document |
| CNSC | Canadian Nuclear Safety Commission |
| CNO | Chief Nuclear Officer (AECL) |
| CRL | Chalk River Laboratories |
| CRLCLD | Chalk River Laboratories Compliance and Licensing Division (CNSC) |
| DNCFR | Directorate of Nuclear Cycle and Facilities Regulation |
| EA | Environmental Assessment |
| IIP | Integrated Implementation Plan |
| ISR | Integrated Safety Review |
| LE | Licensing Extension |
| NRU | National Research Universal reactor |
| NRULESC | NRU Licensing Extension Steering Committee (CNSC) |
| OR | Organization Representative (see Section 6) |
| PSR | Periodic Safety Review |
| ROB | Regulatory Operations Branch (CNSC) |
| SSMRT | Site Senior Management Review Team (AECL) |

Original signed by

Dec. 13, 2010

Date: _____

Hugh MacDiarmid
President and Chief Executive Officer
ATOMIC ENERGY OF CANADA LIMITED

Original signed by

13/12/2010

Date: _____

Michael Binder
President and Chief Executive Officer
CANADIAN NUCLEAR SAFETY COMMISSION