August 10, 2005

ORGANIZATION: ATOMIC ENERGY OF CANADA LIMITED (AECL)

SUBJECT: SUMMARY OF MEETING HELD ON JULY 7, 2005, TO DISCUSS ADVANCED CANDU REACTOR (ACR) PRESSURE BOUNDARY DESIGN

The Nuclear Regulatory Commission (NRC) hosted two meetings; a public meeting and a closed meeting with Atomic Energy of Canada Limited (AECL) on July 7, 2005, at NRC Headquarters in Rockville, MD. The purpose of this meeting was to discuss topical reports "Advanced CANDU Reactor (ACR-700) Pressure Tube Integrity" and "Codes, Standards and Acceptance Criteria For ACR-700 Reactor Coolant Pressure Boundary (RCPB) and On-Line Fueling Components and Systems" to provide clarification on areas needed to facilitate staff review. For a list of meeting attendees refer to Enclosure 1.

AECL requested a Safety Evaluation Report (SER) for specific issues and conclusions identified in the topical reports concerning qualification of the material used in the reactor coolant pressure boundary components. In response, the NRC staff indicated that a safety-assessment-type of report is more appropriate since the ACR-700 is still in a pre-application phase and the SER is an end product of design certification review.

Following the opening remarks, AECL provided the NRC staff with the following presentations:

- Overview on RCPB Codes, Standards, and Acceptance Criteria
- Application of Codes and Standards to ACR Pressure Tube
- ACR Pressure Tube Integrity
- Compliance Examples from CANDU Specific Design

During the presentations, AECL stated that its responses to specific issues identified in Section 1 (Focus Topic 1 - Class 1 Pressure Boundary Design) of the Pre-Application Safety Assessment Report (PASAR) are addressed in the topical reports. ACR document 108US-30000-LS-001, "Codes, Standards and Acceptance Criteria For ACR-700 Reactor Coolant Pressure Boundary (RCPB) and On-Line Fueling Components and Systems" describes the codes and standards and the proposed acceptance criteria for major reactor and fuel handling components for the ACR with respect to United States regulatory requirements. Also the overview of design aspects and supplementary requirements used in the pressure tube design and codes and standards for ACR pressure tube were discussed.

The NRC staff asked whether AECL would pursue the American Society of Mechanical Engineers (ASME) Code process for pressure tube material; AECL replied that there is no advantage to go through the ASME Code adjudication process for just pressure tube material. The NRC staff stated that for each specific exception to ASME Code, AECL must provide the approach to meet the equivalent level of safety requirements specified in the ASME Code.

After the public meeting, a closed meeting was convened to discuss proprietary data on the pressure tube design requirements, operating conditions, and development of fatigue design curves due to load combinations and stress limits and irradiation effects of pressure tubes. Although limited testing of irradiated material and fatigue testing have been performed, the NRC staff requested that AECL provide additional analyses and assessments to validate the irradiation creep and environmental fatigue on pressure tubes due to lack of the ACR-related fatigue and creep data.

The final aspect of the meeting involved discussions by NRC and AECL on plans for whether a type of assessment report or SER for the pressure boundary design topical reports should be developed. It was agreed that management inputs may be required to determine the scope of the review effort and the type of report to be developed.

Additional details on the material covered in this meeting may be accessed through the ADAMS system under Accession No. ML051930394. If you do not have access to ADAMS or if there are problems in accessing the handouts located in ADAMS, contact the NRC Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr@nrc.gov.

Members of the public were in attendance but did not make public comments.

/RA/

James Kim, Project Manager
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Project No. 722

Enclosures: As stated

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ACR-700 Pressure Boundary Meeting
July 7, 2005

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Enclosure 1

ACR-700

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