AECL
TECHNOLOGIES INC.

October 22, 2004

Our File: 108US-01321-021-001
108US-ACNU04-0027L
Your File: Project No. 722

U.S. Nuclear Regulatory Commission,
Document Control Desk,
Washington, D.C. 20555

Attention: Ms. B. Sosa
Project Manager, ACR

Reference:
1. Letter B. Sosa to V. Langman, "Requests for Additional Information – ACR-700 Pre-Application Review (TAC NO. MB5765)", May 13, 2003.
2. Letter V. Langman to B. Sosa, "RAI for ACR-700 Physics and Fuel Related data", June 15, 2003.

Re: **ACR-700 Reactor Physics – Sensitivity Simulations for Comparisons Between RFSP/WIMS and MCNP Results of Checkerboard Voiding**

In support of the NRC's pre-application review of the ACR-700, specifically in support of Focus Topic # 9 (Confirmation of negative void reactivity) please find enclosed a CD containing the following two proprietary reports:

- "MCNP Checkerboard Voiding Calculation", AECL Report 108-115530-ASD-001, Rev. 0, October 2004, and
- "Sensitivity of ACR-700 Full-Core Void Reactivity and Power Distribution to the Number of Neutron Energy Groups", AECL Report 10810-03300-ASD-003, Rev. 0, October 2004.

The two aforementioned assessment reports contain the results of the following calculations:

1. Stylized simulations for comparisons of a uniform-burnup model and full checkerboard voiding.
2. Stylized simulations for comparisons of a time-average-like distributed-burnup model and full checkerboard voiding.
3. Finite-core multi-group simulations with DONJON to assess the multigroup effect in checkerboard void reactivity.

The "MCNP Checkerboard Voiding Calculation" report addresses Items 1 and 2, by investigating the phenomenon of checkerboard voiding, where a difference in coolant density develops between the two thermal hydraulic passes in the ACR core. The investigation was

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carried out with full-core models and the MCNP computer code. Comparisons to results obtained with WIMS-RFSP are also documented.

The "Sensitivity of ACR-700 Full-Core Void Reactivity and Power Distribution to the Number of Neutron Energy Groups" report addresses Item 3 by investigating the results of the two-neutron energy-group methodology for the ACR-700 in relation to results obtained with multigroup core calculations.

Please note that the intent of these studies is to help to better understand the phenomenon of checkerboard voiding, the effects of collapsing the lattice properties to various numbers of energy groups, and to serve as a guide in the future development of physics tools and methods for the ACR project.

In a letter dated May 13, 2003 (Reference 1), NRC's RAI 13 stated:
"It is recognized that the following information may not be currently available and it should be provided separately by AECL, when available, but during the ACR-700 pre-application phase:
13. Input specifications and analyzed results from AECL calculations with MCNP on representative ACR core lattices."
In a response letter dated June 15, 2003 (Reference 2), AECL's response was that "The requested information will be provided during the pre-application review for the ACR-700."
The report "MCNP Checkerboard Voiding Calculation", AECL Report 108-115530-ASD-001, Rev. 0, October 2004 (on the enclosed CD) represents our follow-up response to RAI 13.

Please also note that the two reports from the enclosed CD contain proprietary information of the type that AECL normally maintains in confidence and withholds from public disclosure. The information has been handled and classified as proprietary to AECL as cited in the affidavit provided in Attachment 1. Therefore, it is requested that the information in the two reports from the enclosed CD be handled by the USNRC on a confidential basis and be withheld, in their entirety, from public disclosure in accordance with the provisions of 10CFR2.390 and 9.17.

If you have any questions on this letter and/or the enclosed material please contact me at (301) 332-9152.

Yours sincerely,

Glenn Archinoff
Manager ACR Licensing

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/Attachments:

1. Application for the Nuclear Regulatory Commission's withholding from public disclosure of proprietary AECL information

/Enclosure:

1. CD containing the two AECL proprietary reports mentioned in this letter

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ATTACHMENT 1
APPLICATION FOR THE NUCLEAR REGULATORY COMMISSION'S WITHHOLDING FROM PUBLIC DISCLOSURE OF PROPRIETARY AECL REPORTS

10 C.F.R. § 2.390
AFFIDAVIT OF JOHN POLCYN

I, John Polcyn, President, AECL Technologies Inc., do hereby affirm and state:

1. I am the President of AECL Technologies Inc., and have been delegated the function of reviewing the proprietary information sought to be withheld from public disclosure, and am authorized to apply for its withholding on behalf of AECL Technologies Inc.

2. In the attached letter B. Sosa from G. Archinoff, "ACR-700 Reactor Physics – Sensitivity Simulations for Comparisons Between RFSP/WIMS and MCNP Results of Checkerboard Voiding", dated October 22, 2004, in the two reports from the CD enclosed to the letter, AECL Technologies Inc. is providing information in support of the Nuclear Regulatory Commission's (NRC) pre-application review of the Advanced CANDU Reactor (ACR). The information provided constitutes proprietary commercial information that should be held in confidence by NRC pursuant to 10 CFR § 2.390(a)(4) and 9.17(a)(4), because of one, or more, of the following reasons:

   i. This information is confidential and has been held in confidence by AECL, which is the parent company of AECL Technologies Inc. The information is contained in AECL reports or other documents that are normally held in confidence in accordance with AECL's procedures for the protection of information. The reports or other documents are part of AECL's comprehensive safety and technology base for the CANDU design, and their commercial value extends beyond the original development costs, which in themselves are considerable.

   ii. The information is contained in CANDU Owners Group Inc. (COG) reports that are held in confidence by both AECL and the Canadian nuclear utilities that participate in research and development programs via COG. There is a rational basis for holding the reports in confidence since the information contains sensitive technical and/or commercial information relating to the supporting research, design and/or operation of CANDU reactors. Also, COG reports are only distributed to participants in COG research and development programs. These participants expend significant amounts of money to fund the COG research and development programs, which produce the information described in these reports. Additionally, public disclosure by the NRC of the information contained in COG reports, which are supplied in confidence by COG to AECL, could jeopardize the future availability of such information to AECL. AECL is contractually obligated to COG and to other participants in COG programs to maintain the confidentiality of such reports. AECL relies, in part, on COG reports

to improve the safety, operability and maintainability of the ACR, and to help develop and recommend improvements to enhance the safety, operability and maintainability of existing CANDU plants. COG would be reluctant to provide such information to AECL, and could move to restrict AECL Technologies' ability to provide such reports to the NRC, if there was a possibility that the NRC might make the information publicly available, after being supplied to the NRC by AECL Technologies Inc. AECL would suffer harm to its commercial business and competitive position if it did not have access to these reports and was unable to improve existing and future designs. Further, other participants in COG research and development programs would be reluctant to enter into such programs in which AECL was a participant; those participants enter into and fund such programs with the expectation that the results will remain confidential to COG and program participants; if there is a possibility that information generated in such programs would become publicly available through AECL Technologies' provision of COG reports to the NRC, they will not wish to participate in research programs with AECL. For the same reason, disclosure of such reports by the NRC would also hinder the ability of the NRC to receive similar reports in the future from AECL Technologies, since COG would likely withhold such reports from AECL.

iii. This information is being transmitted to the NRC in confidence.

iv. This information is generally not available in public sources and could not be gathered readily from other publicly available information.

v. Public disclosure of this information would create substantial harm to the competitive position of AECL by disclosing sensitive commercial information about the design and/or operation of CANDU reactors and/or the ACR to other parties whose commercial interests may be adverse to those of AECL. Also, the information contained in these reports has been developed at significant cost to AECL (the parent company of AECL Technologies).

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3. Accordingly, AECL Technologies Inc. requests that the information provided in Enclosure 1 be withheld from public disclosure pursuant to the policy reflected in §§ 2.390(a)(4) and 9.17(a)(4).

John Polcyn

John Polcyn, President, AECL Technologies Inc.

Subscribed and sworn before me on this 26 day of October, 2004.

Deborah C. Renz

Notary Public
My commission expires:

DEBORAH C. RENZ
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires July 1, 2006