

POLICY ISSUE NOTATION VOTE

November 29, 2001

SECY-01-0217

FOR: The Commissioners

FROM: Janice Dunn Lee, Director
Office of International Programs

SUBJECT: **APPLICATION TO AMEND LICENSE XSNM03171 FOR THE EXPORT
OF HIGH ENRICHED URANIUM TO CANADA TO CONTINUE
PRODUCING MEDICAL ISOTOPES USING THE NRU REACTOR**

PURPOSE:

To obtain Commission review and approval of Transnuclear, Inc.'s (Transnuclear) application (Attachment 1) to amend NRC export license XSNM03171 by:

- (1) increasing the quantity of high enriched uranium (HEU) authorized for export to the NRU reactor (NRU) at Chalk River Laboratories (CRL) in Canada from 10.05 kilograms (kg) of uranium enriched to a maximum of 93 percent (9.377 kg U-235) to a total of 20.05 kg high enriched uranium (HEU) (18.707 kg U-235); and
- (2) extending the expiration date of the license from April 30, 2002 to September 30, 2002 to allow the continued production of medical isotopes using NRU.

BACKGROUND:

Status of HEU Exports Approved for the NRU and MAPLE Reactors

The delays in the start-up of the MAPLE 1 and 2 reactors and the New Processing Facility (NPF), which were designed and built by Atomic Energy of Canada Limited (AECL) specifically for medical isotope production, have required use of the NRU for this purpose longer than anticipated. Other than NRU, a multi-purpose research reactor built in the 1970's, there is no back-up source of medical isotopes until the MAPLE facilities reach commercial operational status. Managing wastes generated from NRU medical isotope production remains a concern, and the options of increasing the uranium concentration level in the Fissile Storage Solution Tank (FISST) and/or cementing some of the fissile waste, each present their own challenges.

NRC license XSNM03171 issued in April 2001, authorized Transnuclear to export 10.05 kg HEU metal (9.377 kg U-235) for the NRU reactor in two increments. The license permitted the immediate shipment to CRL of the first increment of 5.0 kg HEU. Before scheduling shipment of the second increment of 5.05 kg HEU, the licensee was required to provide NRC with at least

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60 days' advance notice. The purpose of the notice was to update the status of NRU and the need for the additional material. Transnuclear has since provided the advance notice required, the NRC accepted it, and the second increment of HEU authorized for export by NRC license XSNM03171 was shipped to CRL in September 2001. (Prior to issuing XSNM03171, the NRC issued XSNM03012 in June 1998, authorizing the export of 26.738 kg of HEU containing 24.947 kg of U-235 for use in the NRU. As for HEU fabrication scrap transferred to the Dounreay facility in the U.K., it is still uncertain whether or when this material will be processed and returned to AECL.)

As for the export of HEU uranium dioxide targets to the MAPLE facilities under NRC export license XSNM03060¹, NRC sought written assurances (letter dated April 9, 2001) from Transnuclear that no 2001 shipments authorized by this license would be scheduled until NRC reviewed the required annual report on the program to convert the MAPLE facilities to LEU targets. After that, Transnuclear was to consult with NRC before finalizing the 2001 shipping schedules. These consultations were completed and NRC concluded that schedules proposed for shipping the 22.6125 kg HEU (21.0975 kg U-235) authorized for export to MAPLE in 2001 under XSNM03060 were reasonable. (See memorandum to the Commission dated July 12, 2001.)

AECL subsequently informed NRC that it decided to delay February 2002, March 2002, and May 2002 shipments of HEU targets for the MAPLE facilities authorized by export license XSNM03060. The reason is that upon completion of the 2001 shipments, there should be enough HEU targets available at CRL to commission and operate both MAPLE Reactors for up to one year as well as enough additional HEU targets for a one-year operational reserve. Future decisions on schedules for shipping HEU targets to CRL for the MAPLE Reactors will thus be deferred at least until the second half of 2002. By that time, AECL will have submitted the annual report to NRC required by XSNM03060 (due on May 31, 2002), and expects to be better informed about future HEU target inventory requirements.

Justification for Continued Reliance on NRU

The amendment application currently under consideration (XSNM03171/01) was submitted by Transnuclear on behalf of AECL, (Attachment 1) to add 10 kg HEU (9.33 kg U-235) to the 10.05 kg HEU (9.377 kg U-235) already authorized by NRC for export to CRL to produce medical isotopes in NRU. Also included was a request to extend the expiration date of this export license from April 30, 2002 to September 30, 2002.

An addendum to this amendment application (Attachment 2) provides rationale for the revised estimates of HEU needed for medical isotope production using NRU. As noted in the annual report on the MAPLE program submitted to NRC on May 31, 2001, AECL is preparing to rely on the NRU for at least four to six months longer than it had anticipated when the original XSNM03171 export application was submitted in October 2000. This coupled with an

¹XSNM03060, issued July 1999, authorizes the export of HEU in the form of uranium dioxide targets to the MAPLE 1 and 2 Reactors for startup testing and initial operation. In any one of calendar years 2000 through 2003 exports are limited to no more than 22.6125 kg (21.0975 kg U-235). An annual progress report on converting to LEU targets is required.

unexpected increase in the demand for medical isotopes this year means that 10.05 kg of HEU authorized for export in XSNM03171 will not be sufficient. Specifically, instead of sustaining NRU medical isotope production through July 2002, the revised estimate is that it will satisfy demand only until March 2002.

AECL now estimates that it will require an additional 5.0 kg of HEU metal by December 2001 to begin fabricating the targets to ensure their availability for irradiation in NRU when the current supply is exhausted in March 2002. This initial increment of HEU is projected to last through August 2002, and most likely an additional shipment of 5.0 kg of HEU will be needed in early 2002 to produce the targets for NRU from September 2002 through the end of calendar year 2002. This is based on AECL's current expectation that CNSC will authorize the resumption of operational tests at the MAPLE facilities either in late 2001 or early 2002.² If this happens, AECL estimates that it will take until the end of calendar year 2002 to perform tests and obtain the necessary authorizations to produce medical isotopes using the MAPLE facilities on a commercial basis.

In light of the uncertainties, the applicant proposes to initially ship only one-half, or 5.0 kg, of the additional 10 kg of HEU currently requested for NRU immediately after the pending amendment is approved. If it is subsequently determined that the remaining balance of 5.0 kg requested is needed, the applicant proposes notifying the NRC at least 60 days in advance of the second shipping date. The notification would include information on the operational status of the NRU, the MAPLE Reactors and the NPF, as well as any other information that may be relevant to AECL's receipt of the material.

Executive Branch Views

In a letter dated October 22, 2001, (Attachment 3), the Executive Branch informed NRC that based on its review of the new application for the export of HEU to NRU, it has concluded that the requirements of the Atomic Energy Act, as amended, have been met and that approving an amendment to the export license would not be inimical to the common defense and security of the United States. After reviewing the physical security measures applicable to the proposed export and based on consultations with the Department of Defense as required under Section 133 of the Atomic Energy Act, as amended, the Executive Branch determined that the physical protection of the material to be exported will be adequate to deter theft, sabotage, and other acts of international terrorism, which could result in the diversion of that material. This determination was made after the events of September 11, 2001.

The Executive Branch also concluded that the specific requirements for HEU exports contained in Section 134 of the Atomic Energy Act as amended (Schumer amendment) are met.

DISCUSSION:

²The CNSC scheduled a public hearing for December 13, 2001 on AECL's application to resume low power commissioning of the MAPLE 1 reactor, and to load fuel in the MAPLE 2 reactor, and to begin active commissioning of NPF.

Canada remains a close and reliable nuclear trading partner of the U.S. Based on Canada's compliance with the terms of the U.S.-Canada Agreement for Cooperation, its acceptance of IAEA full-scope safeguards under the Nuclear Non-Proliferation Treaty (NPT), and its application of adequate physical security and re-export controls over U.S.-supplied or obligated material and equipment, the Commission has in past export cases concluded that Canada meets the export licensing criteria set forth in sections 127 and 128 of the Atomic Energy Act. Moreover, in such cases, including ones specifically involving exports of HEU to AECL/CRL, in addition to meeting the requirements of the Schumer Amendment, the Commission has concluded that the issuance of such export licenses would not be inimical to the common defense and security or constitute an unreasonable risk to the health and safety of the public, pursuant to sections 53 and 57 of the Act.

In summary, NRC staff believes that in addition to legal and regulatory requirements, license conditions have provided opportunities for effectively monitoring the status of the two different forms of HEU exports to Canada and, with the continued cooperation of AECL, ensuring that inventories maintained at CRL for medical isotope production are sufficient without being excessive.

CONCLUSION:

The staff concurs with the Executive Branch judgment that issuing the license amendment authorizing the export of an additional 10 kg of HEU and extending the expiration date of that license by five months would not be inimical to the common defense and security of the United States and would be consistent with the provisions of the Atomic Energy Act of 1954, as amended. The Office of the Executive Director for Operations and the Office of Nuclear Material Safety and Safeguards concur. The Office of General Counsel has no legal objection.

RECOMMENDATIONS:

That the Commission authorize the approval of License Amendment No. 1 (XSNM03171/01) increasing the amount of HEU that Transnuclear is authorized to export to NRU from 10.05 kg to a total of 20.05 kg; and extend the expiration date of the license from April 30, 2002 to September 30, 2002;

/RA/

Janice Dunn Lee, Director
Office of International Programs

Attachments: 1. Export License Amendment Application from Transnuclear (XSNM03171/01) dated August 9, 2001
2. Letter and Supplemental Information from AECL dated August 8, 2001
3. 10/22/01 DOS Letter R.J.K. Stratford to J.D. Lee
With Assurances from Canadian Government

DISTRIBUTION:

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XSNM03060

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*Previously concurred

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