

## ACTION ITEM

**DATE RECEIVED:** 06/12/00

**CORRESPONDENCE DATE:** 06/08/00

**TICKET NUMBER:** LTR-00-0375

**AUTHOR/REQUESTER & AFFILIATION:**

Grant Malkoske, Canada

**ADDRESSEE:**

Richard Meserve

**SUBJECT:** MDS Nordion's Response to the Nuclear Control Institute Letter to the AECB of May 3, 2000

**ACTION:** Appropriate - Note: No action required except to place it into ADAMS as part of XSNM03060 case.

**DUE DATE:**

**ASSIGNED TO:**  
BLW

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**COMMENTS:** ERIDS = SECY-05 OWNER = OIP, SECY, OCM  
TEMPLATE = SECY-017

**OFFICE OF THE SECRETARY  
CORRESPONDENCE CONTROL TICKET**

*Date Printed: Jun 09, 2000 14:08*

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**PAPER NUMBER:** LTR-00-0375

**LOGGING DATE:** 06/09/2000

**ACTION OFFICE:** OIP

**AUTHOR:** GRANT MALKOSKE

**AFFILIATION:** CANADA

**ADDRESSEE:** CHRM RICHARD MESERVE

**SUBJECT:** MDS NORDION'S RESPONSE TO THE NUCLEAR CONTROL INSTITUTE LETTER TO  
THE AECB OF MAY 3, 2000

**ACTION:** Appropriate

**DISTRIBUTION:** CHAIRMAN, COMRS, OGC, RF

**LETTER DATE:** 06/08/2000

**ACKNOWLEDGED** No

**SPECIAL HANDLING:**

**NOTES:**

**FILE LOCATION:** ADAMS

**DATE DUE:**

**DATE SIGNED:**

117 March Road  
Kanata, Ontario  
Canada K2K 1X8  
Tel: 613 592-2790



Via Fax # 301-415-1672

June 8, 2000

REC'D BY

Hon. Richard Meserve  
Chairman  
U.S. Nuclear Regulatory Commission  
One White Flint North Building  
11555 Rockville Pike  
Rockville, MD  
20852

9 JUN 0

Dear Mr. Meserve:

We are writing to you with respect to a letter dated May 3, 2000, that was sent by the Nuclear Control Institute to the Atomic Energy Control Board (AECB), now known as the Canadian Nuclear Safety Commission (CNSC).

For your interest, we are sending you a copy of our response to the CNSC. Should you have any questions on this matter, please feel free to contact me.

Yours sincerely,

Grant Malkoske,  
Vice-President  
Engineering & Technology

Attach.

c.c.: NRC Commissioners: G. Dicus  
N. Diaz  
E. McGaffigan  
J. Merrifield

447 March Road  
Kanata, Ontario  
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*Science Advancing Health*

June 8, 2000

Dr. Agnes Bishop  
President  
Canadian Nuclear Safety Commission  
280 Slater Street  
P.O. Box 1046, Station B  
Ottawa  
K1P 5S9

Dear Dr. Bishop:

**MDS Nordion's Response to  
the Nuclear Control Institute Letter  
to the AECS of May 3, 2000**

We are writing in response to a letter dated May 3, 2000, that was sent by the U.S.-based Nuclear Control Institute (NCI) to the Atomic Energy Control Board (AECB), now the Canadian Nuclear Safety Commission (CNSC).

Although we were not sent a copy of this letter directly, it has come to our attention. The NCI letter outlines a series of objections and recommendations about MDS Nordion's plans to use high-enriched uranium (HEU) for the MAPLE reactor and New Processing Facility and, in doing so, misrepresents our progress toward conversion to low-enriched uranium (LEU) targets for medical isotope production. It is our view that there are serious shortcomings with NCI's statements, analysis and conclusions. This group also declares that it is our intention to "evade" U.S. law. Our letter clarifies and corrects the record with respect to a number of significant points made by this group, as addressed further below.

It is our view that MDS Nordion is fully complying with the letter and spirit of U.S. law. We are also making considerable progress toward better understanding how to convert to LEU within the terms of the U.S. license granted by the Nuclear Regulatory Commission (NRC) in that country. Moreover, we are doing this while ensuring that we can continue to supply some 65 per cent of the world's supply of essential medical radioisotopes which are used by physicians to diagnose and treat disease. We are pleased to keep the CNSC informed of our efforts to convert to LEU under the requirements set out by the U.S. NRC license. For your interest, on May 31, 2000 we sent the CNSC a copy of our recent Annual Status Report to the NRC which outlines the comprehensive steps being taken on LEU conversion.

While there is a formal process underway in the United States to consider our conversion progress, it is our view that NCI's request to the CNSC is unfounded and inappropriate. The NCI asked the CNSC to revoke or suspend the operating licenses of our facilities at Chalk River. It is our view that the licensing of MAPLE 1 and 2 and the new Processing Facility are unrelated to the issue before the U.S. NRC. The NRC license is designed to encourage licensees to comply with U.S. legislation (the Schumer Amendment), which imposes restrictions on exports of HEU fuel and targets. The objective is to have reactor operators convert from HEU to LEU in support of U.S. non-proliferation initiatives. We believe we are addressing the licensing requirements of the U.S. legislation. Moreover, as there are no substantial modifications required for the MAPLE design for eventual use of LEU, the MAPLE license is not an issue.

### Background

As a matter of background, on June 29, 1999, Transnuclear Inc., acting on behalf of Atomic Energy of Canada Limited (AECL) and MDS Nordion received a five-year license by the NRC to export HEU targets from the United States. The NRC's Memorandum and Order ("the memorandum") noted that MDS Nordion was in compliance with the Schumer Amendment which is referred to in this letter. The Schumer Amendment indicates that the NRC may issue a license for the export of HEU to be used as a fuel or target provided that: (1) there is no alternative that can be used in the reactor (2) the recipient has provided assurances that whenever an alternative fuel or target can be used it will use that alternative to HEU, and (3) the U.S. Government is actively developing an alternative nuclear reactor fuel or target.

### MDS Nordion's response to the NCI letter

In the NCI letter: Page 1 Paragraph 3: *use of HEU fuel*

NCI may leave the impression that the MAPLE reactors are using HEU fuel.

- To clarify the point, the MAPLE reactors will operate with LEU fuel. Only the molybdenum-99 targets will utilize HEU.

Page 2 Paragraph 1: *use of LEU and radioisotope production*

NCI notes that Australia produces radioisotopes with LEU.

- It is true that Australia already produces molybdenum-99 with LEU. However, Australia only produces, on a weekly basis, about 5% of the volume produced by MDS Nordion.
- Volume is a significant issue. Indeed, the NRC memorandum concluded that: "There is no dispute as to whether the first [Schumer] criterion has been satisfied; all participants agree there is currently no LEU target available that "can be used" in the MAPLE reactors" (page 5, NRC report, June 1999).
- As addressed in the Schumer Amendment (point #2), MDS Nordion is engaged in a program to consider how to convert targets to LEU from HEU. Research to date indicates that we must consider one key issue before converting. We must determine how to manage the increased solid waste in the New Processing Facility (NPF) which would arise from the use of LEU targets. This concern can be described as a capability and capacity issue with the calcination process in the NPF.
- MDS Nordion is confident that it can use LEU targets for production of molybdenum-99.

Page 2 Paragraph 2: *volume of HEU use*

The NCI expresses concern with the volume ("a ton or more") of HEU being exported to Canada.

- In fact, the annual consumption of HEU for molybdenum-99 targets is estimated to be 20 kg/year for a total amount of 100 kilograms over five years.
- Moreover, as noted at the outset, the U.S. Nuclear Regulatory Commission approved the export of HEU to Canada and concluded that: "this proposed export will not be inimical to the common defense and security of the United States. Indeed [the memorandum continued] the conditional approval of this license to export HEU targets for use in the short term, promotes a program for use of LEU targets in the long term which directly serves the objective of the Schumer Amendment and the U.S. policy goal of reducing international commerce in weapons-grade material" (page 11).

Page 2 Paragraph 3: *modifying MAPLE's New Processing Facility (NPF)*

NCI declares that some modifications might be necessary to the NPF and that such changes could be done prior to MAPLE starting up to ensure against any interruption of the world's supply of vital medical isotopes.

- Over the last year, we investigated whether any modifications could have been made to the New Processing Facility prior to start up. Our analysis did not identify any such modifications that could prudently be made to the NPF before it began processing radioactive material in order to minimize the future cost of conversion from HEU to LEU targets. Nonetheless, our efforts were instrumental in making a number of key conclusions that will assist us to move forward; notably, (1) we determined that we do not foresee any significant economic or technical issues that would hinder or delay making any required changes in the MAPLE reactors in order to use LEU targets, after those reactors have commenced operation, and (2) we concluded that the key issue to converting to LEU targets rests with the capability and capacity of the waste management process. More specifically, before we convert to LEU, we must determine how to handle five times the amount of solid waste.
- In fact, this approach is in keeping with the NRC license. Operational experience will allow us to determine how to best ensure a successful conversion to LEU targets without jeopardizing the continued supply of essential radioisotopes.
- With respect to determining whether minor modifications could be made, AECL took a leading role on our behalf. AECL considered the chemical processing requirements and process equipment to dissolve the LEU targets and recover radioisotopes. AECL also assessed the design of the waste treatment equipment and its various components. Finally, AECL assessed the design of the waste transfer and storage system.

Page 2 Paragraph 4: *timeline of a study of possible minor modifications*

The NCI noted that AECL and Argonne National Laboratory could consider completing a feasibility study and outline minor modifications that could be made prior to MAPLE coming on line by September 1999 or within three months of the license approval.

- In June 1999 the NRC report expressed its interest in having a feasibility study as soon as possible so that minor modifications could be considered before the MAPLE reactors came on line. However, over the course of the summer, it became clear to us that such a study would take longer than expected.

- MDS Nordion commissioned AECL to carry out a feasibility study to identify any changes that should be put in place prior to the NPF going active. (See next section made under the heading of page 3, paragraph 2 for additional information on contract with AECL.)
- It is our understanding that Argonne planned to carry out a feasibility study based on the parameters associated with the details of AECL's chemical process for treating molybdenum-99. As such, MDS Nordion commissioned AECL to carry out a number of experiments to determine the factors that would limit their ability to process LEU targets. This work demonstrated that there were unlikely to be any issues with processing product in an acceptable time with acceptable yield. The single issue that was identified had to do with waste processing. Notably, that the process would yield five times more solid waste.
- When the waste issue was first identified based on the design criteria of the supplier of the equipment (i.e., SGN, a French company), it was considered appropriate to have detailed technical discussions in France to determine whether the in-cell equipment could be modified to achieve the increased throughput. The supplier was emphatic that based on their experience, it was not possible. It is MDS Nordion's plan to work with the in-cell equipment once it is operating in order to determine how it could be upgraded.

Page 3 Paragraph 2: *Argonne's role*

NCI noted that the NRC should require the U.S. Executive Branch to make funds available to Argonne to develop a LEU target.

- Argonne National Laboratory has been apprised of the AECL process and equipment to assess the impact of a conversion to LEU. However, not all the detailed technical information that was requested by Argonne National Laboratory on the results of tests could be provided for significant commercially-competitive reasons. Given that Argonne has offered to support LEU target development with MDS Nordion's competitors, this places us in a commercially difficult position. However, we do want to cooperate as much as possible and we have briefed Argonne National Laboratory on our broad findings. We have also offered that they accompany us on a visit to SGN, AECL's subcontractor, to understand the waste issue.
- MDS Nordion will be funding the study to identify improvements that can be made to the waste processing facility and, ultimately, in making actual improvements.

Page 3 Paragraph 3: *modifications prior to start-up*

NCI declared that "the applicant already is violating the terms of the NRC's order and does not intend to modify the NPF prior to start-up."

- MDS Nordion is fully complying with the terms, and the spirit, of NRC license.

Page 3 Paragraph 4: *modifying the terms of the license*

NCI states that MDS Nordion has inquired about modifying the terms of license, first, in one or two large shipments to avoid annual NRC review and, second, to have HEU exported as metal rather than as fabricated targets.

- NCI's suggestion that MDS Nordion is attempting to modify the terms of the license and therefore "undermine the intent of the Schumer Amendment and the NRC's order" is irresponsible and unfounded.
- Due to scheduling reasons only, MDS Nordion did not import the first shipment of 20kg HEU in 1999. For this basic reason, for the year 2000, it has requested that the 1999 and 2000 shipments be consolidated together.

- MDS Nordion has not sought permission to amend the license to have the HEU exported as uranium oxide rather than fabricated targets.
- AECL receives HEU metal under a separate export license for the production of medical isotopes in the NRU reactor.

Page 4 Paragraph 2: *MDS Nordion's integrity*

NCI "strongly suggests" that MDS Nordion is attempting "to evade" U.S. law and the NRC order.

- This statement is highly objectionable and false. As noted in the foregoing letter, MDS Nordion has an active program underway to determine how to convert to LEU targets. While fully complying with the NRC licence, we have made substantial progress over the last year toward this end while, at the same time, ensuring that the continued supply of radioisotopes will be assured.

Page 4 Paragraph 2: *completion of feasibility study*

NCI declares that the AECB should not grant the NPF operating license until the feasibility study is completed.

- Not only is the preliminary feasibility study completed, but MDS Nordion remains in compliance with the NRC requirements. This situation has no bearing on the NPF license or regulatory situation in Canada.

In conclusion, it is our view that the NCI letter contains serious shortcomings on fact, analysis and conclusions. Meanwhile, we are working to convert to LEU within the terms and spirit of the U.S. NRC license.

We would be pleased to address any questions that the CNSC may have on this issue.

Yours sincerely,



(for) Grant Malkoske  
Vice-President  
Engineering & Technology

cc. Ms. Carmen Ellyson, Board Operations Officer, CNSC  
Mr. Mark Gwozdecky, Director, Department of Foreign Affairs & International Trade  
Mr. Eric Hoskins, Office of the Minister of Foreign Affairs  
Mr. Richard Meserve, Chairman, U.S. Nuclear Regulatory Commission  
Mr. Leonard Spector, Deputy Assistant Secretary, U.S. Department of Energy  
Mr. Richard Stratford, Director, U.S. Department of State



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**Fax Transmission**

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To: Distribution Below  
Company:  
Sender Carol Chateauvert for Grant Malkoske  
MDS Nordion

Fax: 301 415-1672  
Date: June 8, 2000  
Copy:

Total # of pages including this page: 7

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**Message:**

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Please distribute to: Richard Meserve  
G. Discus  
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J. Merrifield

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