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July 19, 2001

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

Request for Public Meeting

Dear Chairman Meserve,

We are writing in response to MDS Nordion's second annual submission to the Commission, dated May 31, 2001, on its progress in converting production of medical isotopes from targets of bomb-grade, highly enriched uranium (HEU) to targets of low enriched uranium (LEU) not suitable for weapons. Nordion, based on the submission, appears to have finally begun to take some steps toward an active program to develop LEU targets. However, Nordion's submission also raises some very troubling questions about its commitment to actually convert to these targets. As you know, such a commitment is a prerequisite, under the Schumer Amendment to the Energy Policy Act of 1992, for Nordion to continue receiving exports of HEU targets, which are permitted only on an interim basis prior to conversion.

Accordingly, we urge the Commission to convene a public meeting to gather further information from Nordion, as well as from officials of the RERT Program at Argonne National Laboratory, the U.S. executive branch, the Nuclear Control Institute, and possibly other non-governmental organizations. You will recall that the Commission, in its decision approving Nordion's export license (XSNM 03060), explicitly reserved the right to call such a meeting after each annual progress report, and did convene such a meeting after the first annual progress report last summer.

A new meeting should address at least four issues: (1) the schedule for Phase 2 of the conversion program; (2) the schedule for Phase 3 of the conversion program; (3) the anticipated accumulation of large surplus stocks of HEU by Nordion due to delays in start-up of the MAPLE reactors; and (4) Nordion's revelation that it will request an increase in the amount of HEU authorized for export under the license.

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Strategies for stopping the spread and reversing the growth of nuclear arms.

Paul L. Leventhal, President, Peter A. Bradford, Julian Koenig, Sharon Tanzer, Roger Richter, Dr. Theodore B. Taylor
BOARD OF DIRECTORS

Schedule for Phase 2 of the Conversion Program

Some members of the Commission may previously have been reluctant to explore the details of Nordion's conversion schedule. However, that schedule now has been stretched out to such an extent that it demands oversight by the Commission in order to reassess compliance with the Schumer requirements. Last year, Phase 2 of the conversion program was estimated by Nordion to require a total of 18 months, culminating at the end of 2001. Now Nordion estimates it will require 42 months, culminating at the end of 2003. Thus, the new time estimate is some 233% of the original. Nordion provides little justification for this delay in its submission. If Nordion is stretching out the schedule far beyond what is necessary, it calls into question its actual commitment to conversion, pursuant to Schumer. If the Commission approves of such delays now without adequate justification, it will only increase the likelihood of further delays in the future that may also run afoul of Schumer compliance.

Schedule for Phase 3 of the Conversion Program

Nordion provides even less justification for its estimate that Phase 3 – the obtaining of regulatory approval – will require three years. Such a time estimate might make sense if the applicant were seeking safety approval of a new nuclear reactor, and if the applicant could not begin submitting data to regulators until the beginning of this phase. But neither is true in this case. The main nuclear regulatory approval being sought from Canadian regulators is for modification of a waste processing component at the back end of the New Processing Facility (NPF), a matter far less complicated and time-consuming than evaluating the safety of a new nuclear reactor.

Moreover, Nordion should be able to begin submitting data to Canadian nuclear regulators prior to the beginning of Phase 3, as it is obtained during the preceding Phase 2. The other main regulatory approval being sought is from Canadian and American health officials for actual clinical use of the isotopes produced with the LEU targets. Such approvals previously have been estimated to require only six to nine months. Thus, it is hard to envision how Phase 3 could require anywhere close to three years unless Nordion were deliberately dragging its feet. This concern is underscored by the published report citing an official at Argonne National Laboratory that appeared in a recent *Nuclear Fuel* article (June 25, 2001): "The ANL official expressed some doubt about the timetable for Phase 3."

Nordion has tried to offer rhetorical justification of its protracted schedules for Phases 2 and 3 – which Nordion estimates will require a combined six and a half years – by drawing inappropriate analogies. Nordion cites the example of Indonesia, whose LEU target development program will have required a total of approximately eight years when it reaches fruition later this year. However, it is ludicrous for Nordion to suggest that its target development program in Canada should take anywhere as long as that in a developing country. Nordion also cites the core conversion program at Petten's HFR reactor, which U.S. officials have acknowledged could take as long as six years due to regulatory delays, but this analogy is likewise inapt. The safety and regulatory concerns

associated with converting the fuel in Petten's reactor core are significantly greater than those associated with converting the calcining component for solidification of liquid waste in Nordion's NPF. This is especially true given that Nordion's new calcining component will replace an existing one that already has received regulatory approval to process HEU waste, which is subject to greater criticality concerns.

Anticipated Accumulation of Surplus Stocks of HEU

Nordion continues to import HEU targets despite its inability to begin irradiating these targets due to a significant delay in start-up of the MAPLE reactors. This delay stems from technical problems and the safety concerns of Canadian regulators. Accordingly, unless the Commission takes action, Nordion is on track to acquire increasingly large surpluses of U.S.-origin HEU, directly in contradiction to U.S. policy opposing the accumulation of surpluses of weapons-usable nuclear material, even by close allies. To appreciate the extent of this anticipated surplus, it is necessary to explore in detail the schedules for both the import of HEU targets and the start-up of the MAPLE reactors, as follows.

In its submission, Nordion anticipates that "resumption of nuclear commissioning would be in September 2001, at the earliest. Assuming no further regulatory delays and/or technical problems, the MAPLE 1 Reactor and the NPF would be in service in March 2002 and the MAPLE-2 reactor in August 2002." (p. 3) Based on more recent information, however, this schedule already has slipped. In reality, nuclear commissioning cannot commence until at least November 2001, because Nordion must first apply to the CNSC, and it cannot do so until a meeting in October 2001 because it already has missed the deadline for the docket of the August meeting. Assuming optimistically that Nordion is able to apply in October and receives approval to commence commissioning in November, the MAPLE 1 reactor would not enter service until May 2002.

Actual commercial production of isotopes, however, almost certainly could not begin immediately upon the MAPLE 1 reactor entering into service. This is because Nordion first must obtain approval from U.S. and Canadian health regulators for clinical use of the isotopes produced with the new MAPLE HEU targets and NPF process. In order to apply for such regulatory approval, Nordion first must run a sample batch of HEU targets through a MAPLE reactor and the NPF, and then submit the resulting data to regulators. (The same is true for LEU targets, as noted on p. 11 of the submission.) We estimate that obtaining such regulatory approval from health officials will require the same amount of time that Nordion previously has indicated in testimony will be required for the analogous steps with LEU targets, approximately an additional six to nine months. Thus, even with the most optimistic assumption that the test irradiation could commence during the commissioning phase of the MAPLE reactors, Nordion could not begin actual commercial production of isotopes until around the beginning of 2003.

However, by the end of 2002, Nordion is scheduled to have imported some 60 kilograms of HEU targets. Thus, under current plans, Nordion will acquire a stockpile of

60 kilograms of HEU before it even could begin irradiating the targets for isotope production. In light of the fact that Nordion plans to irradiate no more than 20 kilograms of targets annually, there is no justification for it to accumulate such an excessive surplus. Indeed, Nordion itself states that it only requires a maximum of 40 kilograms of targets on hand at any one time. (Even such a smaller surplus requires more justification than Nordion provides in its submission.)

Based on its current plans, Nordion will have acquired this desired stock of 40 kilograms of targets by the end of 2001. Thus, given that Nordion will not start commercial isotope production until 2003, there is no justification for Nordion to import any further HEU targets from the United States in 2002. Indeed, for the Commission to permit exports whose sole purpose is to enable Nordion to build up a surplus of HEU would run directly contrary to longstanding U.S. nonproliferation policy, which discourages accumulation of such surpluses of nuclear weapons material.

Nordion's Planned Request to Authorize Additional HEU Exports

The commission originally authorized export of a total of 130.65 kg of HEU, authorizing export of specific amounts in each calendar year of the license. When Nordion failed to export any HEU in 1999, the Commission "observed that the authorization for export of 40.2 kg HEU in calendar year 1999 had expired without action. The Commission stated that for the remaining 3½ years of the license, the total amount of HEU authorized for export to MAPLE under XSNM03060 was reduced from 130.65 kg to 90.4 kg of HEU subject to the conditions set forth in the license." (SECY-01-0047) In their submission, Nordion officials state that they "currently foresee a need to seek amendment of XSNM03060 to extend the term of the license at least two more years and allow the 40 kgs that could not be exported in 1999, to be exported at a later time, 20 kgs in 2004 and 20 kgs in 2005, thus utilizing the entire 130.65 kgsU authorized by the existing license." (p. 6)

We wish to underscore that such a request should take the form of a new license application rather than an amendment to the existing license, because it seeks export of more than "the total amount of HEU authorized for export to MAPLE under XSNM03060," in the Commission's own words. More fundamentally, we do not see any legitimate need for Nordion to obtain more HEU than that currently authorized in the license. Indeed, we are skeptical that Nordion even would require all of the HEU currently authorized for export if it were to pursue conversion to LEU expeditiously and in good faith. Our views are based on two fundamental realities: the unexpected, protracted delay in starting up isotope production in the MAPLE reactors using HEU targets; and the fact that ongoing development of LEU targets should not be delayed significantly, if at all, by this delay in commencing irradiation of HEU targets.

As noted above, the earliest that Nordion realistically can commence commercial isotope production in the MAPLE reactors and NPF is 2003. Given that the existing license authorizes export of 90 kgs of HEU targets, and Nordion estimates a maximum usage of 20 kgs annually, the current license already enables isotope production using

HEU targets until approximately the end of 2007. Meanwhile, by Nordion's own extremely conservative conversion schedule, LEU targets should be ready for use no later than the end of 2006. Accordingly, there is no justification at this time for the Commission even to consider a request from Nordion to authorize additional HEU exports. Indeed, the fact that Nordion officials "currently foresee a need to seek amendment of XSNM03060" to obtain additional HEU that only could be irradiated in 2008 and beyond, suggests a disconcerting lack of sincerity in their commitment to convert to LEU targets in accordance with the schedule they have presented to the Commission.

Recommendations

In order to satisfy the Commission's statutory responsibility under the Schumer Amendment and other relevant U.S. law, we urge the Commission to take several steps:

1. Convene a public meeting at the earliest possible date to address the four concerns cited above, specifically: (1) Why has the schedule for Phase 2 been stretched to 233% of its original length? (2) Why is the schedule for Phase 3 three years long, when the indicated tasks can be accomplished in about half that time? (3) Why should the Commission permit Nordion to continue acquiring an excessive stockpile of HEU targets, even larger than Nordion says is necessary, before Nordion is licensed to begin commercial isotope production using these targets? (4) Why has Nordion indicated a need to import additional HEU targets beyond those already authorized, for use after the date of its scheduled conversion to LEU targets?
2. Declare a moratorium on further exports of HEU targets for the MAPLE reactors after the end of 2001 – by which time Nordion already will have acquired its desired working inventory of 40 kgs of such targets – until the start of commercial isotope production using these targets. Such commercial production cannot occur until U.S. and Canadian health officials have authorized clinical use of the isotopes produced with HEU targets in this new process, which cannot realistically occur until at least 2003 based on information provided by Nordion. If the Commission fails to declare a moratorium, it will permit Nordion to acquire an excessively large stockpile of bomb-grade uranium, directly contrary to both longstanding U.S. nonproliferation policy and previous Commission decisions. For example, in its recent decision on Nordion's application for 10 kgs of HEU for isotope production at the NRU reactor (XSNM03171), the Commission authorized immediate export of only half the requested amount to ensure against exporting more HEU than was absolutely necessary.
3. Declare that any request by Nordion for authorization of HEU exports for use in the MAPLE reactors beyond "the total amount of HEU authorized for export to MAPLE under SXNM03060" would have to take the form of a new export license application, not merely an amendment to the existing license.

The Commission also should declare that it will not be receptive to any new license application from Nordion that anticipates use of HEU targets beyond Nordion's self-declared target date for conversion to LEU targets.

4. Finally, in light of possible continuing delays in the start-up of the MAPLE reactors, the Commission should strongly encourage Nordion to expedite its development of LEU targets, which might obviate the need for any further exports of HEU. Indeed, if the start-up of the MAPLE reactors is delayed for several more years due to a prolongation of safety concerns, and if LEU target development meanwhile was expedited to permit completion during this period, then it still might be possible for Nordion to convert to LEU targets prior to starting commercial production in the MAPLE reactors and NPF. This would be the most desirable outcome from the standpoint of U.S. nonproliferation policy, as it would minimize the amount of HEU in international commerce.

Thank you for your consideration of this important matter. We stand ready to meet with you and to provide further information upon your request.

Sincerely,



Alan J. Kuperman
Senior Policy Analyst



Paul L. Leventhal
President

Enclosure

Cc: NRC Commissioners
NRC Office of International Programs
DOE Office of Arms Control and Non-Proliferation