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Science Advancing Health

May 31, 2000

Ronald D. Hauber
Director
Division of Non-Proliferation
Exports and Multilateral Relations
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Washington, D.C. 20852

Re: License No. XSNM-03060

Dear Mr. Hauber:

I am enclosing the annual status report prepared by MDS Nordion in accordance with Condition 10 of the above referenced export license and the Commission's request in its June 29, 1999, Memorandum and Order, requiring the "the Applicants to submit in writing to the Commission a yearly status report detailing the progress of the program and Canadian co-operation in developing LEU targets for the MAPLE reactors".

I trust you will find the enclosed report satisfactorily meets the requirements and spirit of the USNRC Order and license. If you have any need for clarification, please feel free to contact me.

Yours very truly,

A handwritten signature in cursive script, appearing to read "Grant Malkoske".

Grant Malkoske
Vice-President
Engineering & Technology

Enclosure

c.c.: J. P. Labrie, AECL

YEARLY STATUS REPORT

TO THE USNRC ON THE PROGRESS
OF THE PROGRAM AND
CANADIAN CO-OPERATION

III

DEVELOPING LEU TARGETS FOR THE MAPLE REACTORS

(PREPARED IN ACCORDANCE WITH CONDITION 10 OF
USNRC EXPORT LICENSE NUMBER XSNM03060)

May 31, 2000



Science Advancing Health

1. INTRODUCTION

In its June 29, 1999 Memorandum and Order in the matter of Transnuclear, Inc. (Export of 93.3% Enriched Uranium) CLI-99-20, 49 NRC 469 (1999), the Commission directed the Office of International Programs to issue license XSNM-03060 to Transnuclear Inc., authorizing the export to Canada of highly enriched uranium (HEU), containing approximately 121 kilograms of U-235 in the form of uranium oxide (UO₂) targets. Such targets will be irradiated in the MAPLE reactors, near Chalk River, to produce molybdenum-99 (Mo-99) for diagnosis of patients with serious illnesses.

In its Memorandum and Order, the Commission directed the "Applicants" to "submit in writing to the Commission a yearly status report detailing the progress of the program and Canadian cooperation in developing low enriched uranium (LEU) targets for the MAPLE reactors." This requirement is embodied in the License (XSNM-03060) as Condition number 10. In compliance with the Commission's Memorandum and Order and Condition number 10 of XSNM 03060, MDS Nordion respectfully submit this Annual Report to the Commission. In its Memorandum and Order, the Commission recognized MDS Nordion's involvement in this proceeding, noting that "Transnuclear, AECL and Nordion will be referred to in this Memorandum and Order as 'Applicants'". CLI-99-20, page 1, footnote 1. In preparing this report, MDS Nordion has worked closely with Atomic Energy of Canada, Ltd. (AECL) and has consulted with the U.S. Department of State, the Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) staff.

In response to another aspect of the Commission's Memorandum and Order, on April 17, 2000, MDS Nordion submitted a report to the Commission, the State Department and DOE to assist Argonne National Laboratory (ANL) in preparing a study of the feasibility of making minor modifications to the MAPLE reactors and the associated New Processing Facility (NPF) before those facilities came on line in order to "preserve the opportunity to move to LEU targets in the future." (CLI-99-20 at page 13). Since MDS Nordion's April 17, 2000 Report to the Commission deals with conversion of the MAPLE reactors and NPF to use LEU targets, the matters discussed therein are clearly relevant to this Annual Report to the Commission. To avoid the repetition of matters discussed more fully in MDS Nordion's April 17 Report to the Commission, this Annual Report refers, as appropriate, to the April 17 Report.

As shown in this Report and the April 17 Report, MDS Nordion and AECL, in consultation with the U.S. Executive Branch, ANL and Canadian regulatory authorities, have worked diligently to evaluate the technical, regulatory and economic aspects of converting the MAPLE reactors and the NPF to operate with LEU targets. In so doing, MDS Nordion has expended significant funds and devoted substantial human resources to this important task, which has a priority status that is regularly monitored at the highest levels of the company.

In Section 2 of this Report, MDS Nordion concisely reviews the steps taken by MDS Nordion and AECL over the past year to pursue the conversion of the MAPLE reactors and NPF to use LEU targets. Nearly a year ago, MDS Nordion met in Washington, D.C., with Executive Branch and NRC officials to discuss its plan to carry out the technical, regulatory and other studies that are necessary to determine how to implement a conversion to LEU targets in compliance with Canadian regulatory requirements. This must be done in a manner that ensures the uninterrupted availability of Mo-99, which the Commission has recognized is vital to the treatment annually of thousands of seriously ill patients in the United States and worldwide. As shown in Section 2, MDS Nordion's efforts to comply with the Commission's June 29, 1999 Memorandum and Order were begun promptly following issuance of that Order and have proceeded as rapidly as is feasible. Throughout these efforts, MDS Nordion and AECL consulted with U.S. and Canadian governmental officials and responded quickly to their suggestions and questions.

Section 3 of this Report reviews the principal work products and conclusions to date by MDS Nordion and AECL regarding technical issues that must be resolved in order to prepare safety and environmental reports to demonstrate to Canadian regulators that the conversion to LEU targets can be accomplished in a manner that is consistent with applicable Canadian laws and regulations. As shown in Section 3, in determining a reasonable path and milestones for conversion to LEU targets, MDS Nordion and AECL have properly taken into account the time required to comply with Canadian regulatory requirements.

MDS Nordion's plan for completion of its ongoing effort to convert the MAPLE reactors and NPF to use LEU targets is set forth in Section 4 of this Report. As discussed in MDS Nordion's April 17, 2000 Report to the Commission, the initial conversion feasibility assessment was conducted by AECL and MDS Nordion from July 1999 through April 2000. Earlier this month, MDS Nordion proposed a "preliminary conversion development program," which it will seek to complete on an expedited schedule. When the results of that development program are available, MDS Nordion will then promptly pursue an implementation program in accordance with the findings of the development program.

As MDS Nordion has discussed with U.S. Executive Branch and NRC staff, the health, safety and environmental requirements for converting the MAPLE reactors and the NPF to use LEU targets are administered by the newly created Canadian Nuclear Safety Commission, the successor to the Atomic Energy Control Board (AECB), (hereafter "CNSC"). The CNSC will operate with new procedures and personnel to carry out a significantly expanded mission and to exercise important new regulatory authority, including new provisions for public hearings and appeals. The CNSC will conduct a rigorous review of proposed changes to the MAPLE reactors, the NPF and other facilities within its licensing jurisdiction. As explained in Section 5 of this Report, MDS Nordion and AECL have consulted with AECB officials to inform them of MDS Nordion's commitment to comply with the requirements of the Commission's Memorandum and Order. They have also consulted with AECB concerning the nature of the regulatory review process and the time that will be necessary for CNSC to conduct statutorily required safety and

environmental reviews of the conversion of the MAPLE reactors and the NPF to use LEU targets.

As shown in this Report, substantial progress has been made over the past year toward conversion of the MAPLE reactors and the NPF to use LEU targets. An LEU target design has been developed by AECL and use of such targets in the NPF has been the subject of detailed technical studies, funded by MDS Nordion, regarding the recovery of molybdenum and the management of fissile waste from the chemical processing of LEU targets and the ability of the existing NPF to meet those requirements in a manner that satisfies CNSC's environmental, safety and health regulations with respect to the design and operation of facilities modified or newly constructed to use LEU targets, including regulations governing the treatment, storage and disposition of the radioactive waste that will result from the processing of LEU rather than HEU targets. Although use of LEU targets will not materially increase the total radioactivity of the waste generated through processing of targets in the NPF, it will be necessary to manage an increased volume of waste.

In summary, MDS Nordion believes that the progress documented in this Annual Report meets both the letter and spirit of the Commissioner's Memorandum and Order. MDS Nordion believes the work that has been documented also complies with the spirit of the Schumer Amendment.

2. STATUS OF CANADIAN COOPERATION IN THE DEVELOPMENT OF LEU TARGETS FOR THE PRODUCTION OF MO-99

MDS Nordion clearly has made a major effort over the past year to convert the MAPLE reactors and the NPF to the use of LEU targets. This commitment can be measured in terms of its funding of research and analytical studies performed by AECL in support of this objective and its major commitment of human resources, including hundreds of hours of time spent by senior executives of MDS Nordion in overseeing the preparation of these studies and in meeting with Canadian and U.S. governmental officials to discuss steps taken by MDS Nordion and address questions and comments received from these officials.

While Canadian cooperation toward achieving this objective is ongoing on a regular basis, highlights of this cooperation over the past year are shown in Table A, set forth below, which concisely shows the interactive nature of these efforts. As is evident from the list of meetings set forth in Table A, MDS Nordion has recognized the importance of a dialogue with Canadian and U.S. officials, and therefore has initiated and participated in numerous meetings over the past year to discuss technical issues and progress toward program milestones. During such meetings, MDS Nordion has candidly reviewed its progress toward achieving this goal and identified key technical and regulatory issues that have arisen. It has also sought—and received—"feedback" from U.S. and Canadian officials concerning MDS Nordion's approach to the design of an LEU target, conversion of the NPF to process LEU targets and other important

aspects of this program. Throughout this process MDS Nordion has sought to be responsive to concerns advanced by U.S. and Canadian officials and has followed their principal suggestions.

Table A: Status of Canadian Co-Operation

- June 16, 1999 USNRC public meeting on HEU export permit application.
- Aug. 04, 1999 MDS Nordion meets with AECB to discuss intent to convert to LEU targets.
- Sept.07, 1999 MDS Nordion meets with AECB to provide update on HEU to LEU conversion feasibility study progress.
- Sept.20, 1999 MDS Nordion corresponds with ANL to provide update on conversion feasibility study.
- Oct. 28, 1999 MDS Nordion meets with U S State Department, USDOE, USNRC to provide progress report.
- Apr. 17, 2000 MDS Nordion issues report on conversion feasibility study to AECB, US State Department, USDOE and USNRC.
- Apr. 19, 2000 MDS Nordion meets with AECB to discuss report submitted April 17, 2000.
- Apr. 20, 2000 MDS Nordion meets with U S State Department, USNRC, USDOE and ANL to discuss report submitted April 17, 2000.
- May 24, 2000 MDS Nordion meets with USNRC to discuss yearly status report.

To supplement these meetings in Washington, D.C., MDS Nordion has invited representatives of the State Department, DOE and NRC to visit the MAPLE reactors and NPF. Such visits should assist U.S. Government officials in communicating their views regarding the ongoing efforts to convert these facilities to operate with LEU targets. In addition, MDS Nordion has invited ANL representatives to travel to France to join AECL and MDS Nordion in meetings with SGN officials concerning the calcining and storage of high level waste generated through the processing of LEU targets in the NPF.

A significant portion of the Canadian LEU target conversion activities over the past year concerned the conduct of technical studies and submission of a Report to the Commission in support of ANL's preparation of a feasibility study that the Commission intended AECL to have in hand so that it could consider "whether minor modifications could be made prior to the MAPLE reactors and their processing facility coming on line that would permit the use of LEU targets, or take other reasonable measures that would at least preserve the opportunity to move to LEU targets in the future" (CLI-99-20, at page 13). Based on detailed technical studies carried out by AECL and SGN, the designer of certain equipment in the NPF, MDS Nordion advised the Commission that it was unable to identify any minor modifications to the MAPLE reactors and the NPF that were feasible prior to the introduction of radioactive material into these facilities, to facilitate their use of LEU targets in the future.

While the studies funded by MDS Nordion and performed by AECL over the past year did not disclose any minor modifications that were feasible prior to start-up of the MAPLE reactors and the NPF that would facilitate their conversion to LEU, they added significantly to an understanding of the impact on the NPF process chemistry of using LEU targets. They also identified important waste handling, processing and storage constraints arising from the use of LEU targets. These conclusions are described in detail in MDS Nordion's April 17, 2000 Report to the Commission. In the interest of brevity, they are not repeated here. These findings will serve as a foundation for the Preliminary Conversion Development Program that MDS Nordion has proposed to conduct, as discussed in Section 4 of this Report.

3. PROGRESS OF THE LEU TARGET CONVERSION PROGRAM

In addition to the meetings and other developments discussed in Section 2 of this Report, the progress of the LEU target conversion program may be assessed in terms of the contract executed by MDS Nordion and AECL last July to pursue this conversion program and the work performed over the past year under that contract.

In July 1999, MDS Nordion executed a contract with AECL authorizing AECL to conduct a feasibility study of the conversion of the MAPLE reactors and the NPF to use LEU targets. This contract charged AECL with (1) responsibility for developing the chemical processing requirements for the recovery of Mo-99 from LEU targets; (2) assessing the design of the waste management systems for treating waste from the chemical processing of LEU targets; (3) identifying changes to the MAPLE reactors and NPF for processing LEU targets; and (4) overseeing a contract executed with SGN in October 1999, to assess waste calcining systems for treating fissile waste from processing LEU targets. As set forth below in Table B, AECL and MDS Nordion held numerous meetings over the past year to review progress on the study, whose results were summarized in MDS Nordion's April 17, 2000 Report to the Commission.

Table B: Progress of the LEU Target Development Program

Review Meetings with AECL:

- July 22, 1999 Feasibility Study contract awarded to AECL.
- Aug.09, 1999 Review & finalize scope of work.
- Aug.13, 1999 Review chemical flowsheet for LEU targets.
- Aug.27, 1999 Review uranium dissolution results.
- Sept.17, 1999 Review molybdenum recovery results.
- Oct.01, 1999 Review molybdenum recovery results.
- Oct.15, 1999 Review progress on waste management system evaluation.
- Oct.18, 1999 Review impact on possible changes to New Processing Facility.
- Jan. 17, 2000 Review results of conversion feasibility study

Review Meeting with AECL & SGN:

- Nov. 22, 1999 Discuss NPF calcining process systems design and limitations.

As discussed in MDS Nordion's April 17, 2000 Report to the Commission, AECL's preparation of an LEU target design for the MAPLE reactor was a major accomplishment of the LEU conversion program during the past year. Figure 1 shows the LEU target concept for the MAPLE reactors.

Over the past year, AECL's success in designing an LEU target for the MAPLE reactors was accompanied by its findings showing important technical and regulatory obstacles to the conversion of the NPF to process LEU rather than HEU targets. As a result of the study conducted by AECL, the technological aspects of converting the NPF to LEU are now better understood. In particular, it has become clear that management of the waste arising from processing LEU targets presents a technological challenge and requires further development work.

As Canadian regulatory authorities have recognized, it will be necessary to address any safety and environmental issues raised by an LEU conversion program that would result in the generation of additional volumes of radioactive waste as a result of processing LEU rather than HEU targets in the NPF. Although the amount of radioactivity will not materially increase, there will be additional volume of total material as a result of more uranium being used for isotope production. Before allowing modification of the NPF to use LEU targets, the Canadian regulators will require that AECL demonstrate the efficacy of measures to ensure that this additional volume of waste can be safely processed without adverse impacts on the public health and safety or the environment. The key issue to address is the capacity and capability of the NPF calcining system. Moreover, if new calcining and waste storage facilities must be constructed to handle such expanded volumes of high level waste, MDS Nordion will be required to provide a financial guarantee for the eventual decommissioning of those facilities, in accordance with the new Canadian law that is discussed in Section 5 of this Report.

The study summarized in MDS Nordion's April 17, 2000 Report to the Commission demonstrated the substantial technical, regulatory and economic challenges associated with processing LEU targets in the NPF. In response to these challenges, MDS Nordion proposes to implement Phase 2 of a program that will allow it to continue to produce adequate quantities of a vitally needed medical radioisotope while meeting its publicly stated commitment to take reasonable and timely measures to attempt to convert the MAPLE reactors and the NPF to use LEU targets, in a manner that will satisfy Canadian regulatory requirements. The manner in which MDS Nordion has pledged to pursue these twin objectives is discussed in Section 4 of this Report.

4. OUTLINE OF MDS NORDION'S PROGRAM FOR CONVERTING THE MAPLE REACTOR AND NPF TO USE LEU TARGETS

Now that MDS Nordion and AECL have completed the initial study of the feasibility of converting the MAPLE reactors and the NPF to use LEU targets, they will await ANL's

preparation of its own feasibility study, as required by the Commission in its Memorandum and Order and any comments that the Executive Branch may offer on MDS Nordion's April 17, 2000 Report and ANL's study. MDS Nordion must also take into account the comments of the Executive Branch concerning this Annual Report. After evaluating and responding to those comments, MDS Nordion intends to pursue Phase 2 of this LEU conversion project, which consists of a "Preliminary Conversion Development Program."

MDS Nordion's proposed Preliminary Conversion Development Program includes additional technical studies to address the obstacles identified in its April 17, 2000 Report to the Commission with respect to calcining, storing and disposal of the additional volume of waste that will be generated through the use of LEU rather than HEU targets. During this Phase 2 effort, potential methods of overcoming these obstacles will be addressed and the economic and regulatory aspects of such options will be identified. In performing this Phase 2 effort, MDS Nordion and AECL intend to take into account all available information concerning state-of-the-art waste processing and calcining systems and draw upon the experience of SGN and other entities that may be able to make a contribution to this effort.

The proposed Phase 2 effort also includes further identification of regulatory and technical requirements with respect to the LEU target design for the MAPLE reactors. While these efforts present fewer challenges than arise from the conversion of the NPF to use LEU targets, it is nevertheless important to establish a firm regulatory foundation for the CNSC's review of the LEU target design.

In addition to consulting with the DOE, State Department and NRC staff concerning the content and schedule of these Phase 2 activities, MDS Nordion plans to conduct meetings with the U.S. Food and Drug Administration (USFDA) and its Canadian counterpart to discuss their requirements with regard to production of radioisotopes for medical use through a process employing LEU targets. MDS Nordion has a particular interest in the USFDA and Canadian assessment of the time these agencies will require to comment on product equivalence of sample quantities of Mo-99 obtained from a new LEU process and their identification of any regulatory issues arising from conversion to LEU targets. Their views will be taken into account by MDS Nordion, of course, in its conduct of Phase 2 activities.

For the reasons mentioned above, it is difficult at this time to provide firm dates for meeting project milestones for Phase 2 and the follow-on Phase 3, involving implementation of the LEU conversion program. Accomplishment of many of these project milestones will depend upon the nature of the licensing review conducted by the CNSC and the time it requires to complete its review. However, as should be evident from its repeated initiation of meetings with government authorities and its voluntary preparation of the April 17, 2000 Report to the Commission on a matter that the Commission entrusted to ANL, MDS Nordion has a strong commitment to the expeditious and definitive conclusion of this project to convert the MAPLE reactors and NPF to use LEU targets.

In considering conversion of the MAPLE reactors and NPF to use LEU targets, the important mission of those facilities should be taken into account. Production of Mo-99 and other radioisotopes for use in treating patients is the sole purpose of those facilities. MDS Nordion supplies about two-thirds of the world's medical isotopes. Each day, some 50,000 nuclear medicine procedures are carried out around the world to diagnose cancer, heart disease, as well as to detect other problems in the brain, heart, lungs, liver, thyroid, kidneys and bone. The new MAPLE reactors will allow MDS Nordion to continue to supply essential radioisotopes for a substantial portion of these daily procedures. MDS Nordion's radioisotopes are used, for example, in some 5,000 hospitals in North America, and mostly in the United States, and are shipped to over 60 other countries on a near-weekly and, frequently, a daily basis.

In summary, MDS Nordion's proposed Phase 2 effort will be developed and implemented in consultation with both U.S. and Canadian regulatory authorities. While MDS Nordion submits that suitable progress is being made, it strongly desires to successfully complete all Phases of this project and accomplish the conversion objective in the shortest time possible. After embarking on this Phase 2 effort, MDS Nordion will make every reasonable effort to complete this important Phase in a highly expeditious manner.

5. COMPLIANCE WITH CANADA'S ENVIRONMENTAL, SAFETY AND HEALTH REQUIREMENTS IN A RAPIDLY CHANGING REGULATORY CLIMATE

As provided in a September 4, 1997, exchange of diplomatic notes, the U.S. and Canadian Governments "intend to consult as appropriate, and at the request of either party, on issues, such as technical, environmental, regulatory and economic considerations, relevant to the use of a LEU target" The two Governments explicitly recognized that "regulatory" considerations affect the use of LEU targets in Canadian facilities. Therefore, this Annual Report includes a brief review of the implications with respect to conversion from HEU to LEU, of important recent changes in Canadian law concerning the regulation of the MAPLE reactors and other Canadian nuclear facilities that are now licensed by the CNSC.

On March 20, 1997, Canada's Parliament passed the Nuclear Safety and Control Act,^{1/} which substantially modifies the Canadian nuclear regulatory process. Canada's law governing the MAPLE reactors, the NPF and other nuclear facilities will now be administered by the newly established CNSC. The new Act gives the CNSC "a clear mandate" to enforce newly established "national standards" concerning the "control of the health, safety and environmental consequences of nuclear activities regulatory environment."^{2/} Some commentators expect that the Act will establish a more prescriptive regulatory environment and cause the CNSC to be a

^{1/} Nuclear Safety and Control Act, Act of March 20, 1997, ch. 9, 1996-1997 S.C. (Can.).

^{2/} Atomic Energy Control Board, "Background" on Key Elements of the Nuclear Safety and Control Act.

more active and possibly more intrusive regulator of Canada's nuclear activities. Public and worker health and safety are now included in the CNSC's mandate together with the responsibility to set national standards in those areas. Moreover, the CNSC's authority explicitly extends to protection of the environment. Another major change is the Act's newly established requirement of financial guarantees to ensure compliance with licensing conditions, which is expected to have a material impact in the areas of decommissioning of licensed facilities and nuclear waste disposal.

Perhaps the most significant aspect of the new Act is its establishment of a new seven-member Commission differing in structure from the AECB and possessing significantly greater authority to conduct hearings and enforce its orders. The Act declares that the CNSC, unlike the AECB, is a "court of record," with powers to conduct formal public hearings, hear witnesses, take evidence and control its proceedings. Moreover, the Act gives the CNSC a greater choice of enforcement tools than were available to the AECB, along with explicit powers of enforcement and new authority to investigate alleged violation of the Act. In addition, the Act sets out a formal system for review and appeal of decisions and orders made by the CNSC. A key objective of the Act was to improve the openness and transparency of the Canadian nuclear regulatory decision making process.

The CNSC has promulgated extensive new regulations to implement the Act's requirements. As pointed out by Dr. Agnes J. Bishop, President of the AECB, in a February 15, 2000 speech to the Canadian Nuclear Association's Annual Winter Seminar, the CNSC has also instituted comprehensive training programs to enable its staff to interpret and apply the Act consistently and effectively.

MDS Nordion and AECL have sought to become fully aware of the CNSC's regulatory requirements governing conversion of the MAPLE reactors and the NPF to employ LEU rather than HEU targets and the time that probably will be necessary for the CNSC to perform these regulatory duties. The establishment of the CNSC and its issuance of new regulations is likely to inject some major uncertainties into this review process. Some uncertainties stem from the Act's establishment of various formal licensing requirements for many matters that were formerly governed by policies or guidelines administered by the AECB.

The new Canadian regulatory climate described above will affect several key decisions concerning the conversion of the MAPLE reactors and the NPF to employ LEU. These include: (1) preparation and approval of an environmental assessment; (2) initial considerations and decisions to grant licenses to operate the MAPLE reactors and the NPF with LEU targets; and (3) construction approval and operating licenses for facilities to store high level and low level radioactive waste arising from the processing of targets irradiated in the MAPLE reactors.

With the CNSC scheduled to begin its existence at approximately the same time that this Report is submitted to the USNRC, MDS Nordion and AECL are now planning to seek opportunities to consult with the CNSC and determine as quickly as possible whether the

requirements of the Act and the CNSC's new regulations and policies may alter the regulatory steps that must be taken before the MAPLE reactors and the NPF can be converted to operate with LEU targets or increase the time required to carry out such steps.

Although compliance with the requirements of the new Act and the CNSC's new regulations may require additional time and effort on the part of AECL and MDS Nordion, these regulatory changes in Canada have not affected MDS Nordion's plan to convert the MAPLE reactors and NPF to operate with LEU targets. MDS Nordion and AECL are optimistic that the CNSC will authorize the use of LEU targets in the MAPLE reactors. However, considerable technical analysis and licensing evaluation nevertheless will be required to ensure that the CNSC's licensing criteria are satisfied. Moreover, CNSC will require sufficient time to thoroughly review the new LEU target design being developed by AECL, under contract with MDS Nordion.

For the foregoing reasons, the time required to complete technical analysis of LEU targets validated by the results of critical heat flux tests and irradiation measurements and to license the use of such LEU targets in the MAPLE reactors cannot be foreseen with certainty. Moreover, modification of the NPF or construction of a new processing facility obviously will require review and approval under the new nuclear regulatory regime administered by the CNSC. Therefore, it appears advisable not to attempt to specify precise dates for the initiation or completion of the Preliminary Conversion Development Program or the implementation of the Conversion Program, as discussed above. However, MDS Nordion reaffirms its commitment to timely completion of the Preliminary Conversion Development Program and prompt implementation of the Conversion Program in accordance with the results of the Development Program. AECL's senior managers remain committed to devote the human and other resources necessary to perform these tasks, pursuant to contractual arrangements with MDS Nordion for these purposes.

6. CONCLUSION

For the reasons discussed in this Annual Report and its April 17, 2000 Report to the Commission, MDS Nordion submits that the requirements specified by the Commission in its June 29, 1999 Memorandum and Order continue to be satisfied. MDS Nordion will be glad to respond to any questions or requests that the Commission may have in connection with this Annual Report.

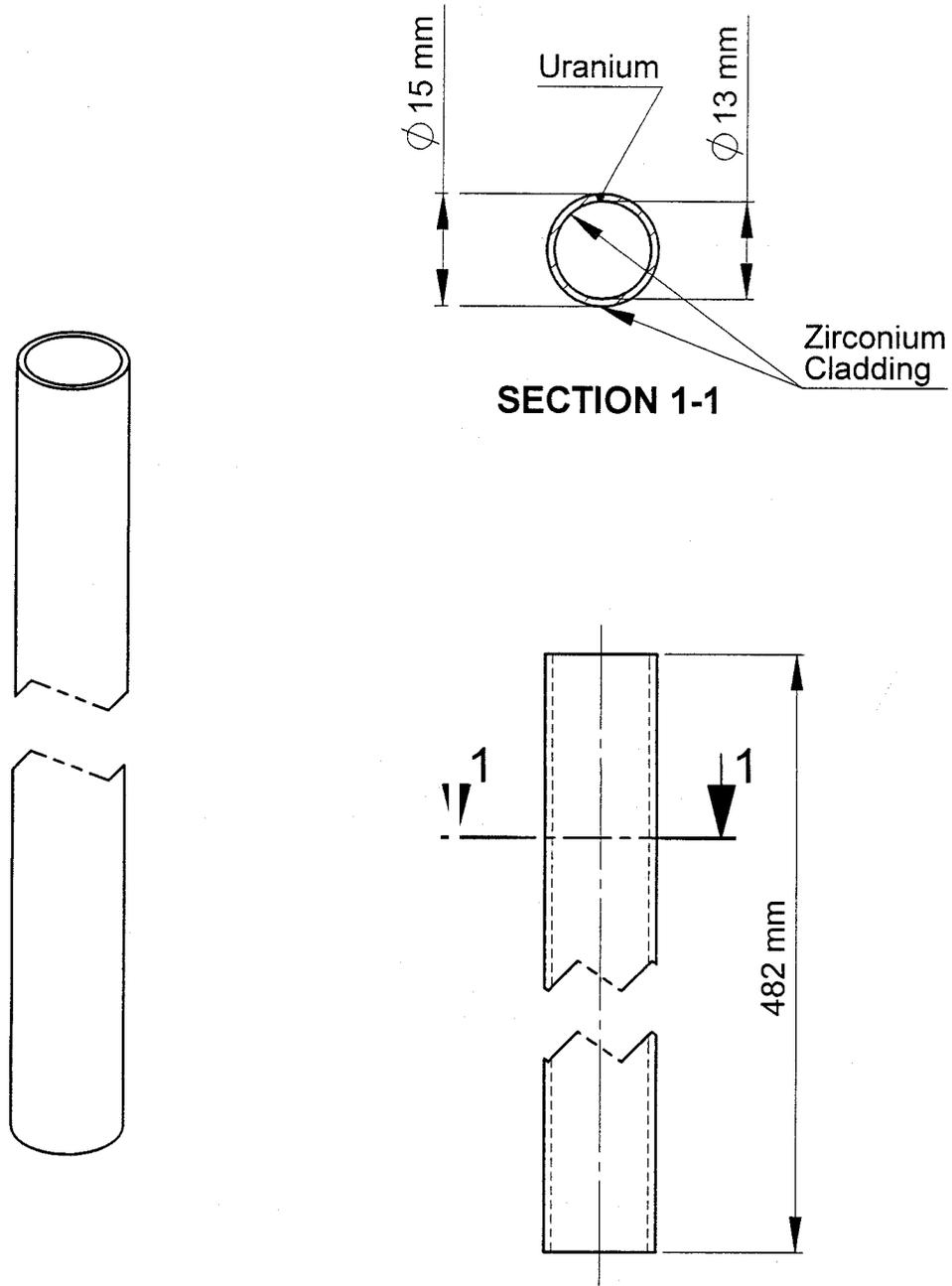


Figure 1. LEU Target Concept For The MAPLE Reactor