

# Investing in the Future: MDS Nordion's Maple Medical Isotope Reactor Project

Being the world's number one producer of medical isotopes is a role MDS Nordion is proud of and a role it takes seriously. That much of the world depends on the company for radioisotopes for critical nuclear medicine procedures was the key to its decision to make a \$140 million investment in the future, that is, to build two new isotope-producing reactors.

MDS Nordion's primary source of reactor isotopes is the NRU reactor in Chalk River, Ontario, Canada. The NRU reactor is owned and operated by Atomic Energy of Canada Limited (AECL), a Canadian government corporation. Since 1958, the NRU reactor has supplied critical isotopes such as  $^{99}\text{Mo}$ ,  $^{131}\text{I}$ ,  $^{133}\text{Xe}$  and  $^{125}\text{I}$ .

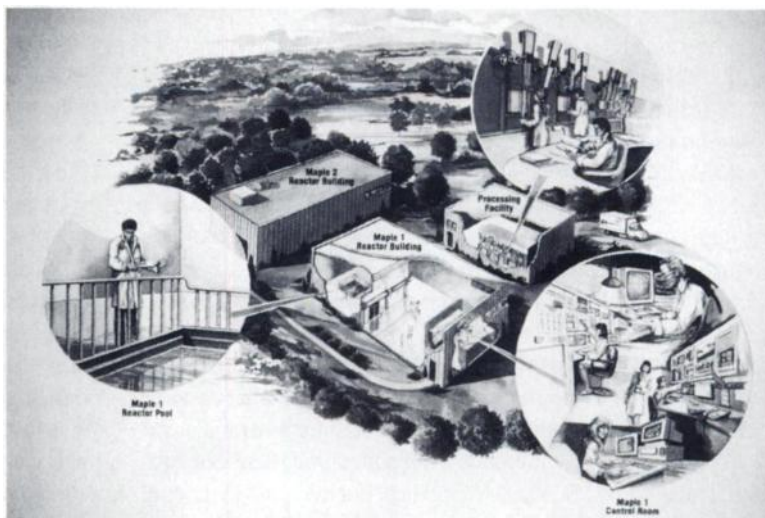
Realizing that the NRU reactor was approaching the end of its useful life as a reliable source of isotopes, MDS Nordion decided to begin building for the future. In July 1996, the company reached an agreement with AECL and the Canadian government to ensure a continued supply of medical isotopes for hospitals and clinics throughout the world. This agreement, the Maple Medical Isotope Reactor Project, marked the beginning of an important investment for MDS Nordion. The project also addresses an issue of considerable concern to many: the reliance of the nuclear medicine industry, particularly in North America, on a single, aging reactor.

The Maple Medical Isotope Reactor Project includes the building of two small, specialized Maple reactors at the AECL Chalk River Laboratories site. The Maple 1 reactor is scheduled to begin operations in 1999, and the Maple 2 reactor is slated to begin operations a year later, in 2000. AECL's NRU reactor will continue to supply MDS Nordion with medical isotopes until the new facilities are completed.

The two 10-MW reactors will be dedicated to isotope production. They are pool-type reactors with a compact core of low-enriched uranium fuel surrounded by a vessel of heavy water. Each reactor will be at the bottom of a light-water-filled pool providing shielding of the core. The reactor core will be about the size of a 20-gallon drum. The Maple project also includes a processing facility. This processing facility will be joined to each Maple reactor by a corridor through which materials irradiated in the reactors will be brought to shielded facilities. There the isotopes will be extracted and packaged for shipment to MDS Nordion's facilities in Kanata.

The Maple 1 reactor will be the main isotope producer. Maple 2 will provide alternate production during shutdowns of the primary reactor. The backup capability furnished by Maple 2 will allow a fail-safe system for secure medical isotope availability for meeting the world's isotope requirements for the next 20 years.

An important difference between the NRU reactor and the new Maple 1 and Maple 2 reactors is that MDS Nordion will own the



Artist's drawing of MDS Nordion's Maple Medical Isotope Reactor Project facility.

new reactors and the processing facility. In addition, the facility's  $^{99}\text{Mo}$  production process will be improved through the development of a solidification process that reduces the volume of radioactive liquid waste and eliminates long-term fissile waste storage in tanks.

MDS Nordion planned the facility in consultation with the radiopharmaceutical manufacturing industry and the nuclear medicine profession. The project is on track, with several key milestones already achieved:

- The environmental screening report has been approved by the Atomic Energy Control Board (AECB), the Canadian regulator of safety and licensing.
- The Maple 1 building is complete.
- The AECB has provided construction approval for the Maple reactors and the processing facility.
- Site preparation for the Maple 2 building and the processing facility is under way.
- The turnkey contract for the processing facility has been awarded to an engineering contractor.

The processing facility will be completed in July 1999. Target irradiations will start in September 1999, and acceptance tests will be conducted to demonstrate Maple 1's capabilities. Maple 2 target irradiations will start in May 2000.

Visit the MDS Nordion booth at the 45th Annual Meeting of the Society of Nuclear Medicine in Toronto, Ontario, Canada, June 7-11, 1998, for the latest information. You can also find out more about this project on MDS Nordion's Web site: [www.mds.nordion.com/business/products/radioisotopes.html](http://www.mds.nordion.com/business/products/radioisotopes.html).

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