OVERVIEW OF THE GOVERNMENT OF CANADA'S NUCLEAR LEGACY LIABILITIES PROGRAM

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Summary

Nuclear legacy liabilities have resulted from 60 years of nuclear research and development carried out on behalf of Canada by the National Research Council (1944 to 1952) and Atomic Energy of Canada Limited (AECL, 1952 to 2006). These liabilities are located at AECL research and prototype reactor sites, and consist of shutdown reactors, research facilities and associated infrastructure, a wide variety of buried and stored waste, and affected lands.

In 2006, the Government of Canada adopted a new long-term strategy to deal with the nuclear legacy liabilities and initiated a five-year, $520 million start-up phase, thereby creating the Nuclear Legacy Liabilities Program (NLLP). The objective of the long-term strategy is to safely and cost-effectively reduce risks and liabilities based on sound waste management and environmental principles in the best interests of Canadians.

Over the course of the start-up phase, progress has been made in implementing the long-term strategy, and liabilities and risks have been reduced. Example accomplishments include the following:

- At Chalk River Laboratories (CRL), a large radioisotope laboratory and the former plant hospital were decontaminated and dismantled, and a fire break was created between the NRX reactor and its former spent fuel handling facility by removing a 30 m section of a highly contaminated building.
- At Whiteshell Laboratories (WL), the main engineering and administration building and the cafeteria were demolished, experimental facilities and equipment were removed from the main R&D complex and the Shielded Facilities, and the inventory of legacy radioactive liquid waste was solidified and placed into safe storage.
- In terms of environmental restoration, buried fuel rods and solvents and two historic experimental waste emplacements were recovered at CRL, and a spent fuel storage pool that had been leaking contamination into the groundwater was drained. Further, approximately 150,000 litres of legacy liquid waste was shipped to the U.S. for treatment and disposal.
- Regarding waste management facilities, new waste clearance facilities were established at CRL and WL to confirm that waste believed to be free of radioactive contamination can be shipped offsite as conventional waste, at a significant costs savings. In addition, a new waste handling facility was established at WL to enhance waste characterization and routing of waste to the most appropriate storage or disposition path.
- In May 2010, public information sessions were held in three communities near the CRL site. In conjunction with the sessions, information materials were developed to explain the

program and highlight some of the projects underway, and a dedicated NLLP website was created (http://www.nuclearlegacyprogram.ca/).

The NLLP is in the process of being renewed for a second, three-year phase. Projects and activities during the second phase will continue the work initiated during the first five years, including infrastructure decommissioning, environmental restoration, improving the management of legacy radioactive waste, as well as required care and maintenance activities.

Over the next three years, there will be an increased emphasis on developing and implementing long-term solutions for the legacy waste and affected lands. The first step will be the elaboration and refinement of an Integrated Waste Plan that provides an assessment of viable options and schedule requirements for the treatment and long-term management of the legacy waste inventory. The Integrated Waste Plan will include a consolidated and refined legacy waste inventory, and an assessment of the waste management facilities needed to characterize and treat the waste generated by infrastructure decommissioning and environmental restoration activities, as well as the legacy waste that is currently in storage. The Plan will provide the necessary integrated information for evaluating options for long-term management of these wastes including in-place management of buried wastes and affected lands, requirements for new long-term management facilities, and the potential to use offsite management facilities for treatment or disposal.

The NLLP is being implemented through a Memorandum of Understanding between Natural Resources Canada (NRCan) and AECL whereby NRCan is responsible for policy direction and oversight, including control of funding, and AECL is responsible for carrying out the work and holding and administering all licences, facilities and lands.

The paper summarizes achievements during the first five years of program implementation and the planned scope of work for the coming three years in the context of the long-term, 70-year strategy for addressing Canada's nuclear legacy liabilities.

Keywords: decommissioning, radioactive waste management, site restoration, long-term strategy.