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NUCLEAR WASTE MANAGEMENT ORGANIZATION
SOCIÉTÉ DE GESTION DES DÉCHETS NUCLÉAIRES

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NWMO BACKGROUND PAPERS
6. TECHNICAL METHODS

6-8 REVIEW OF THE FUNDAMENTAL ISSUES AND KEY CONSIDERATIONS RELATED TO THE TRANSPORTATION OF SPENT NUCLEAR FUEL

EXECUTIVE SUMMARY

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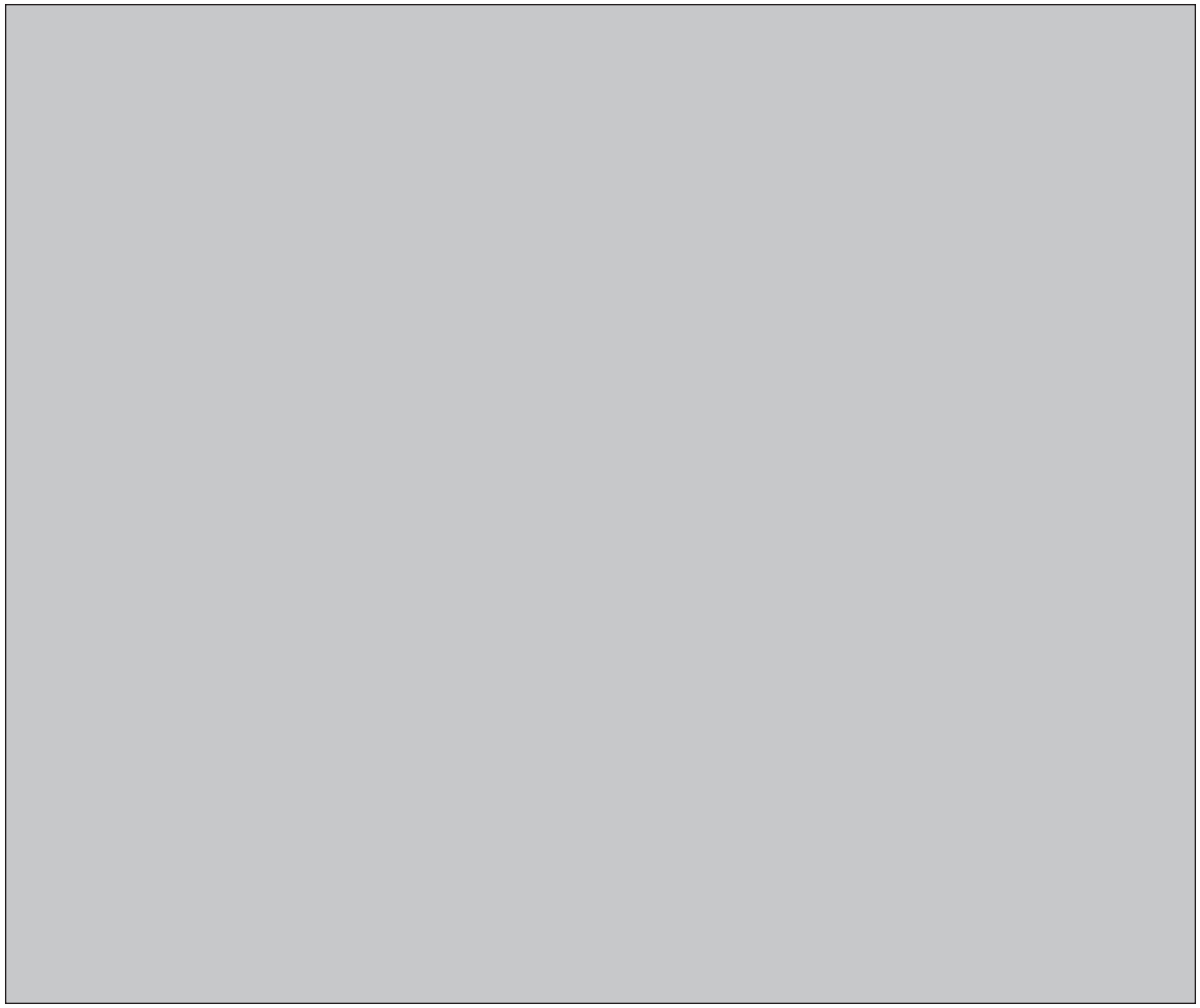

EXECUTIVE SUMMARY

Canada is currently weighing its options for managing spent fuel from its nuclear power stations. The transportation of spent fuel is being considered as part of this process.

Spent fuel could be transported from nuclear reactor sites to a central storage or disposal facility in Canada. In addition to road and rail transportation, it is conceivable that spent fuel could be transported by ships if Canada decides to reprocess its spent fuel overseas, to move spent fuel from one side of the country to the other, or to ship it via internal waterways.

Radioactive material is categorized as hazardous. While shipments of radioactive material account for a small proportion of total hazardous material shipments, they are transported in large numbers every day around the world, including in Canada.

The International Atomic Energy Agency is a United Nations agency with 137 member states. It has set the standards by which spent nuclear fuel is transported. The IAEA established a safety philosophy in the 1960s whereby the package in which nuclear material is transported is designed to provide protection to workers, the public and environment in severe accident conditions.

Spent fuel casks are massive structures typically manufactured from forged steel. In line with IAEA standards, these packages must meet a series of stringent regulations covering impact, fire and immersion. Because of the strength of these casks, spent fuel has been transported safely for over forty years.

Ships that move spent fuel are separately regulated by the International Maritime Organization, a United Nations body, which sets standards for their design. This provides an additional layer of protection for sea shipments of spent fuel.

While Canada has so far moved only a limited number of spent fuel casks, there is broad international experience stretching back for forty years. This experience covers accidents and incidents that have happened. It also includes technical studies that have examined a range of accident scenarios, including analyses of what would have happened if spent fuel had been transported during some of the most severe hazardous material accidents.

Studies have also been conducted to evaluate the level of risk associated with transportation of spent fuel. These studies have consistently shown that the levels of risk are very low whether spent fuel is transported by land or sea.

The IAEA has also set standards for the physical protection of nuclear material and produced guidelines for member states to plan for and respond to emergency situations.

Canada will have greater flexibility in dealing with its spent fuel if it has a transport system in place. This will allow optimum choices to be made for storage or disposal

alternatives. In addition to the technical issues, one of the additional factors for Canada to consider is the provision of public information.