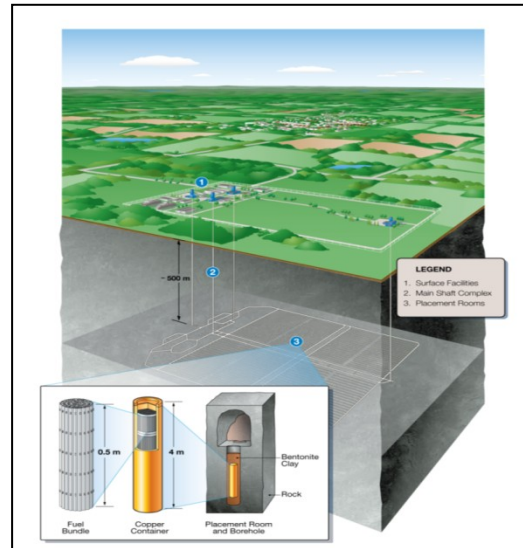


The Long-term Management of Used Nuclear Fuel in Canada- A Geoscientific Perspective

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The Nuclear Waste Management Organization (NWMO) is responsible for implementing Adaptive Phased Management, the approach selected by the Government of Canada for the long-term management of used nuclear fuel generated by Canadian nuclear reactors. The ultimate objective of the approach is centralized containment and isolation of the used fuel in a Deep Geological Repository in a suitable crystalline or sedimentary rock formation at a depth of about 500m. The repository will consist of access and service shafts and a series of tunnels leading to placement rooms where used fuel will be placed and sealed in competent rock which is one element of a multi-barrier system that includes long lived, specially designed containers and sealing materials such as bentonite. The used fuel will be monitored throughout all phases of implementation and will also remain retrievable for an extended period of time.



The geoscientific suitability of potential candidate sites will be assessed in a stepwise manner following a thorough site evaluation process that addresses a series of geoscientific factors revolving around the following safety functions:

- Safe containment and isolation of used nuclear fuel;
- Long-term resilience to future geological processes and climate change;
- Isolation of used fuel from future human activities;
- Amenable to site characterization and data interpretation activities; and
- Safe construction, operation and closure of the repository.

To support the implementation of Adaptive Phased Management (APM), the NWMO is pursuing an active technical program in areas such as repository engineering, repository geoscience and repository safety. The main objectives of the geoscience program are to develop readiness for evaluating potential candidate sites and to further advance the NWMO's understanding of geosphere stability and its long-term resilience to external perturbations. This is achieved through a multidisciplinary approach involving the coordinated effort of technical groups drawn from universities, consultants, and international nuclear waste management organizations.

The presentation provides an overview of Adaptive Phased Management, the used nuclear fuel deep geological repository concept and key geoscience issues that are relevant to the safety of the concept.