



## PROJECT PROFILE

### CANDU USED FUEL DEEP GEOLOGICAL REPOSITORY (DGR)

Client Name: SNC Lavalin Nuclear, NWMO

Project Name: Adaptive Phased Management Deep Geological Repository

Duration of the Project: 12 months

The Nuclear Waste Management Organization (NWMO) was established by Canada's nuclear electricity generators in 2002, as required by the *Nuclear Fuel Waste Act*, to develop an approach for the long-term care of used nuclear fuel. Since that time a policy of Adaptive Phased Management (APM) has emerged as the best all round approach to nuclear waste management. From a technical perspective, APM has as its ultimate goal centralized containment and isolation of all Canadian generated used nuclear fuel in a deep geological repository in a suitable rock formation. The program has been mandated to allow for ultimate retrieval of the fuel, should it become necessary in the future. The scale of the program, with ultimate costs of several billion dollars, involves the design, licence and construction of an underground characterization facility and optional shallow storage facility, at a site to be determined in the future.

In 2009, Palladium was retained for our expertise in reactor core construction, shielding and containment technologies for the safe handling of irradiated materials. This design experience, as well as working knowledge of flask/cask handling and transportation systems was required to review, assess and provide the necessary technical design guidance and documentation for the following key systems in the project:

- At Reactor Used Fuel Packaging and Transport Cask Loading
- Used Fuel Transportation System
- Deep Storage Design
- Container Retrieval

The project objective was to review, assess, and advance the conceptual design of the infrastructure and facilities to be constructed, equipment requirements and procedural systems, for the used fuel deep geological repository. The total project involved several disciplines and international collaboration on the Civil, Mining and Environmental aspects of the project. Adherence to applicable nuclear regulations, codes and standards was a governing project component. From Palladium's assessment, technical memorandums and specifications were developed for the infrastructure, facilities and procedural systems including: work breakdown structures, BOM infrastructure, facilities and equipment lists, CAD layouts and overall financial costs.

