



Canadian Nuclear
Laboratories

Laboratoires Nucléaires
Canadiens

Technical Meeting on the Management and Preservation of Spent Fuel Data - Presentation



C. Stanley

2022 Dec 06-08

UNRESTRICTED / ILLIMITE

Reactor Operations

Nuclear Power Demonstration (NPD) – Operation 1962 until 1987

- First Canadian nuclear power reactor and the prototype for the CANDU® reactor design

Gentilly-1 – Operation 1972 until 1984

- Prototype 250 megawatt (MWe) CANDU® boiling water reactor

Douglas Point Generating Station – Operation 1967 until 1984

- The 200 megawatt CANDU® reactor was Canada's first full-scale nuclear power plant

WR-1 Research Reactor – Operation 1965 until 1985

- Organically cooled research reactor

National Research Experimental (NRX) Operation 1947 until 1992

- Canada's first large-scale research reactor

National Research Universal (NRU) – Operation 1957 until 2018

- The NRU was a multi-mission research reactor





Operational Fissionable Material Management

Operations Inventory Database

- Item Identifier
- Storage Location
- First Installation into Reactor
- Final Removal Date from Reactor
- Fissionable Material Quantities

Operator Records

- Operator Logs
- Rod Transfer Sheets – Fuel Cards
- Safeguards Inventory Change Documents

Safeguards Inventory

A computerized system for the management of CNL fissionable material transfer, reporting and inventory data. It provides:

- A common application, usable by all CNL Material Balance Areas (MBAs) for the maintenance and reporting of fissionable material inventories;
- A common document, the Canadian Nuclear Safety Commission (CNSC) “Inventory Change Document” (ICD) for fissionable material transactions, which includes the following transaction types: a transfer of fissionable material on-site, a shipment to or from the site, a gain/loss of fissionable material, a safeguards change, or a change of form and/or type of fissionable material.



Planning for the Future - Integrated Data Management System

Data Gathering

- Initial mass of fissionable material (uranium, enrichment, thorium, plutonium).
- Initial Fuel composition.
- Burnup and peak power.
- Specification of cladding and other construction materials (chemical composition).
- Dimensions and physical layout of fuel unit.
- Date of removal from the reactor and the reactor in which it was used.
- Post irradiation fissionable material values

Information Errors/Gaps

