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Supplementary Information
Oral intervention

Presentation from
Don Hancock

In the Matter of

Ontario Power Generation Inc.

Proposed Environmental Impact Statement for OPG's Deep Geological Repository (DGR) Project for Low and Intermediate Level Waste

Joint Review Panel

September 16 to October 12, 2013

Renseignements supplémentaires
Intervention orale

Présentation de
Don Hancock

À l'égard de

Ontario Power Generation Inc.

Étude proposée pour l'énoncé des incidences environnementales pour l'Installation de stockage de déchets radioactifs à faible et moyenne activité dans des couches géologiques profondes

Commission d'examen conjoint

Du 16 septembre au 12 octobre 2013

Canada

Waste Isolation Pilot Plant (WIPP) and International Experience with Deep Geologic Repositories

Joint Review Panel
Kincardine, Ontario
September 23, 2013

DON HANCOCK
Prepared for Northwatch

OPG states:

"The DGR Project is proposed because:

* it is consistent with international best practice;"

Environmental Impact Statement, page 1-2.

Three DGRs have operated for a decade or longer

- Asse – Germany – 1967 to 1978
- Morsleben – Germany – 1971 to 1998
- Waste Isolation Pilot Plant (WIPP) – U.S.A. – March 1999 to present

Asse

- Domal Salt – 511 to 750 meters below surface
- 125,787 drums and packages of waste, ~ 47,000 cubic meters
- Instability from water leaks, salt creep
- Federal Office for Radiation Protection determined that all waste should be retrieved
- Unknown number of years and costs to complete retrieval and decommissioning

Morsleben

- Domal Salt – 400 to 600 meters below surface
- 36,753 cubic meters of drums and packages of L&ILW
- Instability from salt creep and water leaking
- Stabilized with backfill, during development and implementation of decommissioning plan
- Unknown number of years and costs to complete decommissioning

WIPP

- Bedded salt – 655 meters below surface
- Capacity limit – 175,564 cubic meters of defense transuranic (TRU) waste
- As of 8/17/2013:

  88,530 m3 Total TRU waste
- Consisting of:

  87,915 m3 of Contact-Handled (CH) TRU
  615 m3 of Remote-Handled (RH) TRU

International Experience

- No DGR has operated to fully dispose of the planned waste capacity.
- Asse and Morsleben were closed prematurely because of safety concerns; decommissioning will take years with unknown costs
- WIPP's experience is ongoing and changing, but different in significant ways than OPG describes

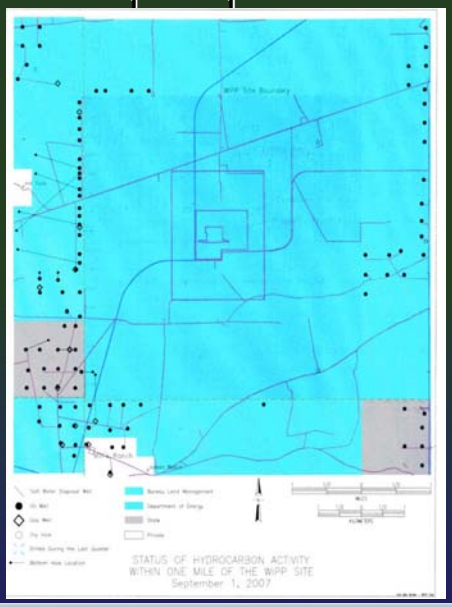
WIPP Panel and Shaft Seals

- Panel Closure approved in 1998 not used
- Panels 1, 2, and 5 temporarily closed with 12-foot-thick (3.6 meters) explosion-isolation wall
- Panels 3 and 4 temporarily closed with bulkheads
- Public regulatory processes in 2013-2014 to determine alternative panel closure
- Closure of 4 shafts approved in 1998 may change, not implemented for decades

WIPP Institutional Controls

- OPG PSR: "A period of 300 years is assumed over which such controls, including societal memory, are effective, consistent with international practice."
- 40 CFR§194.41(b): "Performance assessments shall not consider any contributions from active institutional controls for more than 100 years after disposal."
- EPA Certification: "The DOE stated in the CCA that the proposed AICs will be maintained for 100 years, and that regular surveillance could be expected to detect a drilling operation."

~100 oil and natural gas wells with 1.6 km of site



WIPP Backfill

- OPG states: WIPP has no backfill. IR EIS 09-410, Table 1.
- 40 CFR § 194.44(a): "Disposal systems shall incorporate engineered barrier(s) designed to prevent or substantially delay the movement of water or radionuclides…."
- EPA Certification: "The EPA determined that MgO will be an effective barrier, based on DOE's scientific evaluation of the proposed barrier's ability to prevent …"
- MgO backfill sacks are placed in each room on stacks of waste packages.

WIPP Unplanned Changes

- Instability of Panel 1 and tunnels – < 60% of Panel 1 filled – Change underground waste transport route; Panels 9 and 10
- Releases of carbon tetrachloride
- Emplacing empty or “dunnage” containers
- Annual shutdown for maintenance
- RH waste – failure to have sufficient space

Some WIPP Operational Lessons

- Despite more than 15 years of investigations and decades of mining experience, mine instability and maintenance requirements are different and more than expected; operational changes have been required
- Releases of carbon tetrachloride are much higher and more persistent than expected
- Monitoring equipment can be inadequate
- Some underground space underused, so actual RH-waste capacity is insufficient

Some Other WIPP Lessons

- Initial Panel Closure System substantially changed
- Approved shaft seal/institutional controls may change
- MgO backfill required and emplaced
- Local acceptance strong; State supports mission, not necessarily mission changes
- Legal limits/Safety case may not prevent changes in amounts and types of waste

WIPP Mission and Changes

- WIPP Mission is disposal of up to 175,564 m3 of defense TRU waste
- Ban on High-Level Waste/Spent Nuclear Fuel

However, DOE now proposes:

- Greater-Than-Class C waste
- Commercial waste from West Valley, NY
- Elemental Mercury storage
- Rename HLW in tanks, then ship to WIPP

July 2, 2013 NM Environment Dept. rejected and will have public hearings

WIPP Experience and the DGR

Basic WIPP design features have changed or may change, which aspects of the DGR could change after licensing?

WIPP is failing to fulfill the RH waste mission, is OPG overly optimistic about how much ILW it can handle?

WIPP legal requirements that were integral to state acceptance could be significantly eviscerated, can community and aboriginal people rely on current DGR requirements?

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