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Supplementary Information

Presentation from Anna Tilman

Renseignements supplémentaires

Présentation d' Anna Tilman

In the Matter of the

Canadian Nuclear Laboratories, Douglas Point Waste Facility

Application to amend the waste facility decommissioning licence for the Douglas Point Waste Facility

Commission Public Hearing

November 25-26, 2020

À l'égard de

Les Laboratoires Nucléaires Canadiens, installation de gestion des déchets de Douglas Point

Demande de modification du permis de déclassement de l'installation de gestion des déchets de Douglas Point

Audience publique de la Commission

25 et 26 novembre 2020

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Presentation to the Canadian Nuclear Safety Commission (CNSC)

CNL's Application for an Amendment to its decommissioning licence for the Douglas Point Waste Facility (DPWF)

November 26, 2020

Anna Tilman

CNL's Proposed Amendment

- Current Status of DPWF: Storage with Surveillance
- CNL is seeking an amendment to its 14-year licence period (2020-2034)
- Its proposed amendment includes clearing out the reactor building which would advance specific decommissioning activities beyond what is stipulated in its current licence.

Fundamental Questions

Does CNL's proposed amendment consider:

- The radiological and non-radiological hazards to the workforce and the training to protect the workers;
- The impact of fugitive materials on the health and well-being of the workforce, the local community and the environment;
- The frequency and type of inspections and monitoring required;
- The need to update emergency and evacuation plans; and
- Options to store L&ILW other than shipping this waste to other locations, e.g., Chalk River Laboratories (CRL).

Phased Approach to Deferred Decommissioning

Current Licence

- Phase 1 (1985-1994) – **Safe, Sustainable, and Shutdown State:** reduced radioactive inventories, implemented monitoring and surveillance, defueled and dewatered the reactor, constructed a dry-storage facility for irradiated fuel.
- Phase 2 - **Storage-with-Surveillance (SWS)** - removal of hazardous substances, reducing the quantity of stored radioactive waste.
- Phase 3 - **Final Decommissioning** - decommissioning and dismantling all remaining structures ~ 50 years.

DPWF WASTE ACTIVITIES 2014-2019 license period

- CNL removed several non-nuclear buildings and structures to reduce waste on site.
  - ~99% of this waste was declared as "predominately Clean Waste".
- 13 shipments of the spent exchange resins i.e., (ILW) and 21 shipments of LLW were made to CRL and "other licensed facilities".
  - CNL does not indicate the nature of these facilities.

CNL's Proposed Timelines - Impact

Shortens timeframe for all decommissioning activities:

- Non-nuclear buildings and structures: ~ 5 years;
- Nuclear buildings and structures : ~ 46 years.
- Reactor-Building Clearance: 2022-2029 instead of 2055-2070.

Issues

- Poses challenges and limitations as to safety, capacity and location for the safe storage of the wastes.
- There is no rationale or advantage to hasten the timelines for decommissioning, **quite the opposite!**

Storing HLW (spent fuel)

As stated in CNL's submission:

Douglas Point's spent nuclear fuel "will be emplaced in the Nuclear Waste Management Organization's high level waste disposal facility."

"Once the selected site is announced (scheduled for 2023) - a decision will be made as to whether to continue interim storage of the fuel at the Douglas Point site or to transfer it to central interim storage to at the CRL site."

Any dates proposed for announcing or receiving such waste (e.g., 2070), are highly speculative.

Classification of Radioactive Waste (L&ILW–non-fuel waste)*

LLW:

- Contains primarily short-lived radionuclides (i.e., half-lives shorter than or equal to 30 years).
- The concentration or quantity of radionuclides is above clearance levels and exemption quantities
- Does not normally require significant shielding for worker protection during handling and storage.

ILW:

- Can range from very low-level waste with low hazard to highly hazardous waste containing significant quantities of long-lived radionuclides.
- Often requires shielding for worker protection during handling.

* Established by the Nuclear Substances and Radiation Devices Regulations

"Minimizing" LLW Clearance Levels –"Likely Clean" Waste

If LLW meets or is below specific "clearance levels" or "acceptance criteria", it is no longer considered "radioactive" and deemed to be "Likely Clean".

This **"waste"** can be transferred off-site without any means to track it.

Nuclear facilities and the CNSC can claim that the amount of LLW radioactive wastes has been "minimized" or "reduced".

This is not reducing or minimizing waste but dispersing it in the public domain without their knowledge or any consequences.*

*Amendments made to the *Nuclear Substances and Radiation Devices Regulations* (NSRDR) in 2008 added "clearance levels".

Waste Estimates*

Planning Envelop Phase	PE-A Non-nuclear area	PE-B Parts of nuclear area	PE-C Reactor Building Clear-out	Total	Target Dates
Potentially clearable waste	23 451 m^3 3578 MT	9694 m^3 944 MT	0 m^3 596 MT	33 145 m^3 5 118 MT	2021-2025
Hazardous waste	340 m^3 32 MT	0	0	340 m^3 32 MT	2022-2025
Radioactive - LLW	0 0	22 m^3 19 MT	0 214 MT	22 m^3 233 MT	2025-2030
Radioactive - ILW & HLW	0 0	0 0	0 0	0 0	After current licence
Total	**23 791 m^3 3 610 MT**	**9716 m^3 963 MT**	**0 810 MT**	**33 507 m^3 5383 MT**	

*CNSC Doc H-4 EPRR Table 1.3, p. 9-12

Waste Estimates - Inventory?

While estimates (volume and mass) of stored waste are provided, however…

No inventory of the amount and/or activity of specific radionuclides in any waste categories (LLW, ILW and spent fuel - HLW) is provided in CNL's or CNSC's staff submission.

It is paramount that the CNSC require CNL to provide such an inventory.

Radiological Releases to Air and Water (2014-2019) – in Becquerels

	Tritium	Gross Alpha	Carbon-14
Air	1.35E+10 - 7.96E+11	1.64E+03- 4.94E+03	3.07E+08- 6.10E+09
DRLs for Air*	5.46E+17	3.69E+12	3.22E+15
Water	2.23E+10 - 5.19E+10	6.75E+06- 1.18E+07	n.a.
DRLs for Water	2.04E+17	3.43E+13	n.a.

***DRLs – Derived Release Limits**

Health Issues – Cumulative Impacts Bruce site & the DPWF

Increase in emissions of "dust", contaminants to air and water, and increase in noise levels.

Effects of exposure - vulnerable populations

- ✓Local communities in closest proximity to and downwind of the Bruce site;
- ✓Vulnerable populations - foetuses, infants, pregnant women, the elderly, and people whose health is already compromised (e.g., asthmatics).

The effects on human health and the environment resulting from all these operations are cumulative.

Decommissioning &"Clean-up" Activities

Occupational Health & Safety

- These activities require a well-trained workforce that receives the highest level of protection from exposure to the hazardous substances.
- Decommissioning reactors will be ever increasing as reactors reach their end-of-life.
- "Haste" in such work can lead to long-term serious problems that cannot be reversed.

Potential Effects on the Workforce

- The cumulative, synergistic, long-term effects of exposure to both radioactive and non-radioactive hazardous substances are not addressed.
- The potential for accidents places front-line workers especially at risk.
  - Do emergency and evacuation plans take into account the hazards of the work involved?
- **What can be done to ensure that the safest, most thoughtful procedures are followed in such work?**

Groundwater Contamination: Legacy Wastes – a lesson from the past

- The Radioactive Waste Operations Site (RWOS1) stored L&ILW generated primarily by the Douglas Point reactor from 1966-1976.
- In the late 1990s, it was discovered that radioactivity had escaped from the site to groundwater and to the Inverhuron Park Wetlands.
- Some of the waste was transferred to OPG's waste facility (RWOS2), now called the Western Waste Management Facility (WWMF).
- Poor conditions of grouting, poor record-keeping were noted as weaknesses allowing these wastes to escape.

Final Comments

- Speeding up decommissioning, e.g., the clearing out and dismantling the reactor building, is far too premature and dangerous to undertake.
- Shifting the onus of hazardous and radioactive waste on the local area, the workers, future generations is not fair or just.
- Shipping and dispersing nuclear waste (LLW &ILW) is not a solution.

This means keeping the site under surveillance for a long period, while monitoring contaminants.

Recommendations

- It is recommended that CNSC not grant CNL the amended licence as requested.
- It is also recommended that
  - CNSC request CNL to prepare detailed plans for each phase of decommissioning and clarify the status and activity of each phase.
  - CNL be required to produce a detailed inventory of radiological and non-radiological wastes.
  - The licence term be no more than 10 years, with an opportunity for public engagement, at the very least within a 5-year interval.