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Written submission from Evelyn Gigantes

Mémoire de Evelyn Gigantes

In the Matter of the

À l'égard de

Canadian Nuclear Laboratories, Douglas Point Waste Facility

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

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

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

Commission Public Hearing

Audience publique de la Commission

November 25-26, 2020

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From: Evelyn Gigantes

Subject: CNL Application for Licence Change concerning Douglas Point Reactor Waste

Proposal to Speed-up first phase of Waste Disposal from Douglas Point Reactor

The submission by CNL to change its license to dispose of waste from the Douglas Point Reactor is dated Sept 10, 2020. The Canadian Nuclear Safety Commission gave those wishing to respond to that submission until the date of Oct 26, 2020. This is a limited time for members of the public to respond. I have left a complaint at CNSC that I have been unable to become a "New Subscriber" using the link offered on the website. The link appears to be out of order.

I very much appreciate having been granted until October 30, Noon, to submit this response.

The focus of the CNL license amendment application is to spell out how the application for a licence change meets all requirements for the Douglas Point reactor site and the surrounding environment.

My response focusses instead on how the proposed licence change would affect the place which would receive the waste – the Chalk River site on the Ottawa River. The waste which would be transported to that site includes "Low Level Waste" and "Intermediate Level Waste".

CNL currently has a proposal under consideration to construct a Near Surface Disposal Facility for nuclear waste at the CNR site. That proposal is under review by the CNSC. It is the subject of a submission I made to the CNSC, and the last CNSC document I have been able to find related to the review is called Information Requirements Directed to CNL for NSDF project received Dec24/2018.

This document requires CNL to produce extensive additional information on a wide range of elements involved in the NSDF, a number of which are associated with issues I raised in my response to the Revised EIS for the project (May 2017).

Since that time (Sept. 2019) the IAEA has carried out a review of Canadian nuclear safety regulations and made a number of suggestions and recommendations for improvements. The report's most sweeping comments relate to the overall policy requirements:

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES

Observation: The Canadian Radioactive Waste Management Policy Framework presents the overall principles for radioactive waste management. However, this does not encompass all the needed policy elements nor a detailed strategy or corresponding arrangements that provide a strategy for radioactive waste management in Canada.

(1) BASIS: GSR Part 5 Requirement 2: National policy and strategy on radioactive waste management states that "To ensure the effective management and control of radioactive waste, the government shall ensure that a national policy and a strategy for radioactive waste management are established. The policy and strategy shall be appropriate for the nature and the amount of the radioactive waste in the State, shall indicate the regulatory control required, and shall consider relevant societal factors. The policy and strategy shall be compatible with the fundamental safety principles [2] and with international instruments, conventions and codes that have been ratified by the State. The national policy and strategy shall form the basis for decision making with respect to the management of radioactive waste."

(**2) BASIS: GSR Part 5 paragraph 3.6. states that** "The national strategy for radioactive waste management has to outline arrangements for ensuring the implementation of the national policy. It has to provide for the coordination of responsibilities. It has to be compatible with other related strategies such as strategies for nuclear safety and for radiation protection."

R1 Recommendation: The Government should enhance the existing policy and establish the associated strategy to give effect to the principles stated in the Canadian Radioactive Waste Management Policy Framework "

(page 20 of the IAEA report)

This is a key recommendation, repeated in the report Summary (page 22).

It has yet to be implemented.

During the public discussion and responses to the proposed NSWF, there were concerted public attempts to understand the definitional difference between low level waste (LLW) and intermediate level waste (ILW). From the point of view of members of the public, that proved unsuccessful.

Now CNL is once again describing the quantity of LLW compared to ILW that will be shipped from Douglas Point to Chalk River (20 shipments of 200 cubic metres LLW compared to 1 shipment of 6 cubic metres ILW). This will be added to the existing quantity of waste that has

been shipped from various sources to Chalk River during the period of 2014-2019 – namely 22 shipments of LLW and 13 shipments of ILW.

In the revised EIS for the NSDF that CNL has submitted to the CNSC (Nov 13, 2019) the Executive Summary states:

"Essentially all of the waste to be emplaced in the NSDF will be low-level waste (LLW); however, the NSDF Project may also accept approximately 1% by volume of intermediate-level waste (ILW) and mixed wastes. Low-level waste is material with radionuclide content above established clearance levels and exemption quantities, but with limited amounts of long-lived activity (IAEA 2009). The ILW are wastes with higher levels of radioactivity that may require shielding for worker protection during handling, and may contain higher concentrations of longer-lived radionuclides (IAEA 2009). Mixed waste is radioactive waste that also contains hazardous substances. All waste to be disposed at the NSDF Project will be required to meet the waste acceptance criteria (WAC) established to assure operational and post-closure safety requirements."

<u>Whatever they may be.</u>

How is this loose language to be squared with the CNL application for a change in the licence to deal with Point Douglas ILW waste to be shipped to Chalk River to supplement the existing stock of ILW that is already there?

The IAEA Report had several trenchant analyses, comments, suggestions and recommendations that can and should be applied to the current CNL application to amend the waste disposal licence for the Douglas Point reactor.

"The most significant challenges to Canada relate to the enhancement of the national policy and strategy for the radioactive waste management and the alignment of radiation protection requirements with IAEA safety standard GSR Part 3. The IRRS team made recommendations and suggestions that indicate where improvements are necessary or desirable to continue enhancing the effectiveness of regulatory functions in line with IAEA safety standards. The IRRS team recognized that some of its findings also endorsed the actions identified by Canada as a result of its self-assessment. The IRRS team also identified some other areas for improvement including:

• The CNSC should:

- Establish public exposure dose constraints for all Class I type facilities.
- Align transportation regulatory documents with IAEA SSR-6."

Page 10, IAEA Report

IAEA Report: 5.12. SUMMARY

"The following areas for improvement were identified:

• Justification in the licensing process of radiation sources;

• Provisions for notification or registration of nuclear substances and radiation devices;

• Establishment and consistent application of dose constraints for all Class I facilities;

• Revision of requirements for decommissioning."

P.53

Also, at page 52 of the IAEA report:

"The requirements for authorisation for Class I facilities and uranium mines and mills include preparation of an Environmental Risk Assessment (ERA), including a human health risk assessment, demonstration of ALARA and the application of Best Available Technologies Economically Achievable (BATEA) within facility design and associated pollution prevention equipment and procedures, measures for control of releases to the environment, baseline studies prior to operation, development of an effluent monitoring programme, an environmental monitoring programme, groundwater protection and monitoring, and an environmental management system that meets the recognised standard ISO 14001. These requirements are applied to other facilities utilizing a graded approach based on the CNSC review of the application and the potential for releases and their interaction with the environment. The REGDOC- 2.9.1 outlines the CNSC's regulatory expectations in this area, as well as other applicable guides and standards. The CNSC's approach to authorising releases to the environment includes limits and controls on the amount and characteristics of release are put in place. These include establishing derived releases limits (DRL) and actions levels which are identified within the licence or LCH. The DRLs are, depending on the facility, calculated based on effective dose criteria ranging from 1 mSv per year to 0.05 mSv per year as specified by the CNSC. Action levels are levels of releases, based on a fraction of the DRL, exceedances of which are required to be reported to the CNSC. Action levels are used to allow early identification of any potential deviation from normal performance of the control measures. Appropriate use of them should keep doses to the public well within the annual dose limit. A comparable authorisation system also applies to approval of remediation plans for

contaminated sites. For a site undergoing remediation, the licensee is required to submit the remediation plan to CNSC staff for review and approval; this often includes a long-term assessment of impacts on the environment and the public based on a scenario of expected evolution of a site or facility. Some nuclear facilities with very low releases are deemed not to require a DRL. Instead their licences incorporate conditions for releases which are either adopted directly from IAEA-TECDOC-1000 or are calculated using the same principles and methodology. The IRRS team noted that dose constraints are not explicitly established for all Class I facilities. The focus is on optimization through the application of ALARA and BATEA especially in facility design. However, inconsistencies are evident in the derivation of DRLs, with some facilities required to calculate their DRLs from a specified dose constraint while others have DRLs based on the public dose limit (i.e., nuclear power plants). All facilities are required to comply with the dose limits for public exposure established in the RPR and these dose limits are in line with the GSR Part 3. The IRRS team noted that, with the exception of the lack of consistent application of the concept of dose constraints, as a further tool to drive optimisation for some Class I facilities, the authorisation requirements are in line with the IAEA requirements. The IRRS team noted that the CNSC has recognised that there are different approaches used to the regulation of the control and authorization of releases for different types of facilities and is currently drafting a new Environmental Protection REGDOC with the working title REGDOC-2.9.2 "Environmental Protection – Controlling Releases to the Environment". This REGDOC aims to further clarify certain elements of the control measures around environmental and public protection, including the process for authorization of limits for discharges. "

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES Observation: The CNSC imposes dose limits for public exposure for all facility types and also requires BATEA to be demonstrated as part of a licence application. However, dose constraints have not been established for all Class I facilities and the DRLs for NPPs are based on 1mSv/y.

(1) BASIS: GSR Part 3 Requirement 29, Para. 3.120 states that "The government or the regulatory body shall establish or approve constraints on dose and constraints on risk to be used in the optimization of protection and safety for members of the public."

(2) BASIS: GSR Part 3 Requirement 29, para. 123(b) states that "The regulatory body shall establish or approve operational limits and conditions relating to public exposure, including authorized limits for discharges.

The new REGDOC-2.9.2 is still under development according to the CNSC website. The underlining in the above selections is mine.

A clear example of the current situation is the following Dec 24, 2019 requirement section by CNSC staff contained in the Consolidated Near Surface Facility Project EIS Review Comments, page 4.

“Section 3.2.2.2 provides maximum dose rate limits of waste packages for contact-handleable and for remote handling waste. These are as follows:

The dose rate limits of Type 5 waste packages for contact-handleable waste are as follows:

· the maximum gamma-radiation level of each waste package, measured on contact, must be less than 2 millisieverts per hour (mSv/h)

· the maximum gamma-radiation level of each waste package, measured at 1 m, must be less than 0.1 mSv/h

· the maximum beta-particle radiation field of each waste package, measured on contact, must be less than 10 Sv/h The dose rate limits of waste packages are as follows for remote handling:

· the maximum gamma-radiation level of each waste package, measured on contact, must be less than 50 mSv/h

· the maximum gamma-radiation level of each waste package, measured at 1 m, must be less than 1 mSv/h

· the maximum beta-particle radiation field of each waste package, measured on contact, must be less than 200 mSv/h

The maximum beta-particle radiation field of each waste package, measured on contact, for contact-handleable waste is considerably higher than the maximum dose rate for remote handling. Technically, there should be an insignificant beta dose rate measured outside of any waste packages since the majority, if not all, of the beta emissions are usually blocked by the waste packages (e.g., by high integrity containers). Also, the rationale for not using dose rate limits for the other types of waste, e.g., the Type 4, Decommissioning and Demolition Waste and the Type 6, Miscellaneous Waste is not provided. Expectation to address comment: Please revise and justify the selected maximum beta-particle dose rates for contact-handleable and for remote handling wastes. Also, an explanation for not having maximum dose rates in place for the other types of waste, to be handled by workers, has to be provided.”

Another concern I want to express is that the Chalk River site already has additional other significant nuclear waste in various forms and states. It was the location of a ZEEP test reactor in 1942, next the NRX and the NRU. The NRX produced the world’s first reactor meltdown following a loss of coolant and a large hydrogen explosion in 1954. In 1958 the NRU

experienced a fire which contaminated the area and created the need to bury spent fuel rods on the site.

Further, this area is also proposed for the location of a “research” SMR - a proposal by Global First Power for a reactor with a molten salt heat-transfer system. This proposal is also currently under review by the CNSC.

All this is proposed in a location which is seismically risky and also at significant risk of flooding, which I examined carefully in my previous submission concerning the CNL Near Surface Facility Project for dealing with waste. It’s almost as if every time Canada develops a dangerous new nuclear path to follow, the path leads to Chalk River.

I believe it’s time to stop using the CRL as the appropriate testing ground for bad new nuclear proposals. I also believe it is past time that this country should stop creating new nuclear wastes and become the first country in the world to figure out how to safely deal with the sizeable nuclear wastes we have already generated.

Once again, I am grateful that I have been allowed an extra few days to submit this response, and hopeful that I will be admitted as a “New Subscriber” so I can in the future be informed of developments in CNSC matters.

Evelyn Gigantes