Date: January 2, 2017

From: J. R. Walker

To: Lucia Abellan, Environmental Assessment Officer
Canadian Nuclear Safety Commission

By email: cnsc.ea-ee.ccsn@canada.ca

Subject line: ATTN: Lucia Abellan - Comments on the Draft Environmental Impact Statement: Nuclear Power Demonstration Closure Project (CEA Registry Number 80121)

CEAA Reference number: 80121

Comments:

Dear Ms Abellan,

Thank you for the opportunity to comment on the Draft EIS for the Nuclear Power Demonstration Closure Project.

My comments are attached.

Best Regards,
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Dr. J.R. Walker

Thank you for the opportunity to provide comments on the Draft Environmental Impact Statement (EIS) [1] for the proposed *Nuclear Power Demonstration (NPD) Closure Project*. My comments follow.

1.0 Introduction

The Draft EIS [1] and the associated project proposal contain numerous deficiencies. The extent and gravity of these deficiencies preclude a conclusion that the project is unlikely to cause significant adverse environmental effects, taking into consideration the implementation of mitigation measures.

These deficiencies include:

a) The proposal does not discharge Canada's liabilities concerning the NPD Reactor;

b) The proposal fails to address Canada's international obligations; and

c) The proposal and its assessment lack credibility.

2.0 Failure to Discharge Canada's Liabilities

2.1 Introduction

The proposed project is funded by the Government of Canada through Atomic Energy of Canada Limited (AECL). In its *Corporate Plan Summary 2017/18 to 2021/22* [2], AECL states:

> The objective is to safely and efficiently reduce the Government of Canada's radioactive waste liabilities by decontaminating and decommissioning infrastructure which is no longer necessary, remediating sites and safely storing and disposing of radioactive waste in a manner that protects the public, workers and the environment. This is done at AECL sites and other sites for which the government has accepted responsibility.

AECL has expressed this rather more prosaically in a recent presentation [3]:

> Aim is to get these liabilities off the books of Canada within the agreed timeframe.

Unfortunately, the proposal described in the Draft EIS [1] fails to meet the stated objective and aim.

2.2 Decommissioning

The proposal described in the Draft EIS [1] is for the entombment of NPD with grout. The International Atomic Energy Agency (IAEA), defining the safety requirements for the decommissioning of facilities in *General Safety Requirements Part 6: Decommissioning of Facilities* [4], describes two possible decommissioning strategies, namely *immediate dismantling* and *deferred dismantling.* In discussing these two strategies, the IAEA notes the inappropriateness of entombment, as follows:

> 1.10. A combination of these two strategies may be considered practicable on the basis of safety requirements or environmental requirements, technical considerations and local conditions, such as the intended future use of the site, or financial considerations. **Entombment, in which all or part of the facility is encased in a structurally long lived material, is not considered a decommissioning strategy and is not an option in the case of planned permanent shutdown. It may be considered a solution only under exceptional circumstances (e.g., following a severe accident).**[1]

Further explanation regarding the inappropriateness of entombment as a decommissioning strategy is provided in the IAEA's Specific Safety Guide SSG-47, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities* [5]:

> 5.17. Entombment, in which all or part of the facility is encased in a structurally long lived material, should not be considered an acceptable strategy for planned decommissioning. It may be considered as a last option for managing of facilities damaged in an accident, if other options are not possible owing to high exposures of workers or technical difficulties.
>
> 5.18. Even if it may be the only appropriate alternative, the choice of entombment may lead to technical and regulatory difficulties, owing to a lack of specific regulations and guidance in the State and a lack of acceptability of entombment. Additionally, the intention to apply entombment may not be accepted by the public. In this context, all efforts should be made to reduce the parts of the facility that will be subject to entombment and to reduce to the extent possible the radioactive inventory that will be encased on the site, especially the long lived radionuclides. Entombment actions should not reduce the technical feasibility of surveillance and maintenance of the remaining barriers. If entombment is selected, it will impose a burden on future generations owing to the need for long term monitoring of the site and owing to possible future actions necessary to prevent and reduce leakages of radioactive material from the facility.

An example of how this safety requirement is incorporated into the policies of IAEA Member States can be seen in a recent regulatory basis document from the US Nuclear Regulatory Commission (NRC) [6], which states that "The NRC staff position is that entombment should be used as a last resort for the decommissioning of power reactor facilities, with the expectation that this method would be selected only under unique decommissioning circumstances." The US NRC document [6] goes on to say that "Entombment should be used only if this option provides more benefit than harm to public health and safety and the environment and does not create a legacy situation to be managed by future generations."

This safety requirement has not been incorporated into the proposal described in the Draft EIS [1]. Through entombment of the NPD reactor, the proposal in the Draft EIS [1] would create a near surface disposal facility for long-lived intermediate level waste that extends to approximately 25 m below grade [1].

1 Emphasis mine.

The proposed entombment is located in the accessible biosphere, and will become accessible at the end of the institutional control period (stated to be 100 years [1]). The material contained in the proposed facility will remain hazardous for tens of thousands of years, which is far longer than the expected life of the proposed facility, its cover, and the grout. To prevent unacceptable radiological exposures to people and non-human biota, it will be necessary to remediate the facility in the future. The presence of the grout will add additional hazard and costs to the remediation. The liability to the Government of Canada represented by the NPD reactor is not “taken off the books” by the proposed entombment. Arguably, the proposal described in the Draft EIS [1] would increase the liability due to the cost of the future remediation requirements.

2.3 Radioactive Waste Disposal

In *Disposal of Radioactive Waste* [7], the International Atomic Energy Agency (IAEA) notes that the specific aims of radioactive waste disposal are:

(a) To contain the waste;
(b) To isolate the waste from the accessible biosphere and to reduce substantially the likelihood of, and all possible consequences of, inadvertent human intrusion into the waste;
(c) To inhibit, reduce and delay the migration of radionuclides at any time from the waste to the accessible biosphere;
(d) To ensure that the amounts of radionuclides reaching the accessible biosphere due to any migration from the disposal facility are such that possible radiological consequences are acceptably low at all times.

Different classes of radioactive waste require different disposal concepts, depending upon the length of time that the waste remains a hazard. This is discussed at length in both Canadian and international guidance [7 – 12].

Near surface disposal is only appropriate for very low level waste (VLLW) and low level waste (LLW), because near surface disposal facilities are located in the biosphere, and, hence, can be accessed by members of the public at the end of the institutional control period. Intermediate level waste (ILW) and high level waste (HLW), which contain larger quantities of long lived radionuclides, must be disposed in deeper geological disposal facilities [11].

Consequently, the definitions of low level and intermediate level waste given in the *Classification of Radioactive Waste,* GSG-1, International Atomic Energy Agency (IAEA), 2009 [9] reflect the different technologies required for disposal of these wastes:[2]

> *Low level waste (LLW):* Waste that is above clearance levels, but with limited amounts of long lived radionuclides. Such waste requires robust isolation and containment for periods of up to a few hundred years and is suitable for disposal in engineered near surface facilities. This class covers a very broad range of waste. LLW may include short lived radionuclides at higher levels

2 Similar concepts and wording are used in Canadian Standard N292.0-14, *General Principles for the Management of Radioactive Waste and Irradiated Fuel* [12].

of activity concentration, and also long lived radionuclides, but only at relatively low levels of activity concentration.

Intermediate level waste (ILW): Waste that, because of its content, particularly of long lived radionuclides, requires a greater degree of containment and isolation than that provided by near surface disposal. However, ILW needs no provision, or only limited provision, for heat dissipation during its storage and disposal. ILW may contain long lived radionuclides, in particular, alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon. Therefore, waste in this class requires disposal at greater depths, of the order of tens of metres to a few hundred metres.

The various technological requirements for the disposal of radioactive wastes are summarized in FIG. 1 [9]:

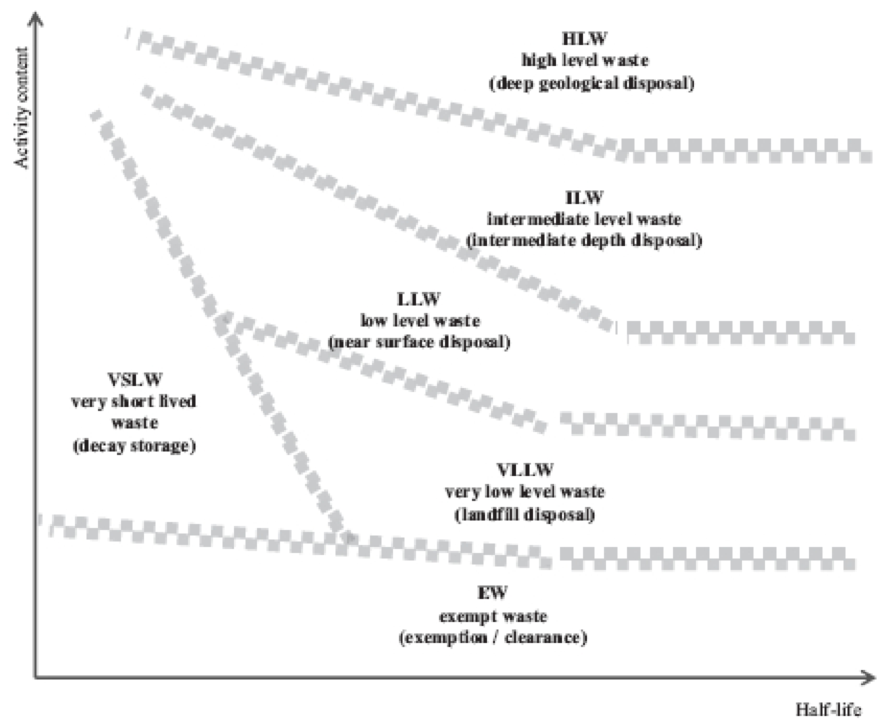

FIG. 1. Conceptual illustration of the waste classification scheme.

As per Canadian and international guidance [7 – 12]:

a) Ontario Power Generation (OPG) is currently seeking to dispose of low level and intermediate level wastes in a deep geologic repository [13]; and
b) Canadian Nuclear Laboratories (CNL) announced in 2017 October that it would follow IAEA guidance and would no longer attempt to dispose of intermediate level wastes in a proposed near surface disposal facility at Chalk River Laboratories in Ontario and would, instead, manage intermediate level waste in interim storage until a long-term disposal solution for this category of radioactive waste has been developed and approved [14].

The proposal in the Draft EIS [1], however, is noncompliant with Canadian and international guidance concerning the disposal of radioactive waste [7 – 12].

The proposed entombment of the NPD reactor is located in the accessible biosphere, and the long-lived intermediate level waste will become accessible at the end of the institutional control period (stated to be 100 years [1]).

Canada has extant regulations concerning the release of radioactive materials from regulatory control and their entry into the accessible biosphere. These *clearance level* criteria are given in the *Nuclear Substances and Radiation Devices Regulations* [15]. At the end of the 100-year institutional control period, the radiological inventory of NPD, and the associated hazard, greatly exceed these clearance criteria. Hence, this proposal [1] is noncompliant with the Canadian Nuclear Safety Commission's Regulatory Policy P-290, *Managing Radioactive Waste* [16], which states that the predicted impacts from the management of radioactive waste must be no greater than the impacts that are permissible in Canada today.

2.4 Summary

The proposal in the Draft EIS [1] fails to meet AECL's objectives and aims (Section 2.1 of these comments), and, hence, fails to satisfy the Government of Canada's needs, since it neither safely disposes of the radiological hazard represented by the NPD reactor nor does it "get the liability off the books".

3.0 Failure to Address Canada's International Obligations

Following Canada's ratification, the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* [17] entered into force with respect to Canada in 2001. Canada has been an active participant since that time.

With respect to the safety of radioactive waste management, the Joint Convention [17] has *General Safety Requirements* and requirements for *Siting, Design and Construction, Assessment, Operation,* and *Institutional Measures after Closure* in articles 11, 13, 14, 15, 16, and 17, respectively. For example, the Joint Convention [17] requires Canada (as a Contracting Party) to take appropriate steps to:

- provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;
- strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;
- aim to avoid imposing undue burdens on future generations.

The proposal described in the Draft EIS [1] would cause Canada to be in violation of its obligations under the Joint Convention [17], since:

- Internationally endorsed criteria and standards have been ignored, e.g., *General Safety Requirements Part 6: Decommissioning of Facilities* [4] and *Specific Safety Requirements: Disposal of Radioactive Waste* [7];
- Reasonably predictable impacts on future generations are greater than those permitted for the current generation; and
- Undue burdens are imposed on future generations.

4.0 Lack of Credibility of the Proposal and its Assessment

4.1 Use of Cementitious Materials

The proposal includes the grouting-up of below-grade structures using Portland Cement and water (Section 4.3.1.6 of the Draft EIS [1]), the covering of the footprint above the reactor vessel with a reinforced concrete cap, and the covering of the NPD footprint with an engineered barrier.

The Draft EIS [1] states:

- Concrete/grout/cement: It is assumed that the grout will gradually degrade as the cement constituents are slowly leached out upon contact with groundwater. The cement being considered for radioactive disposal systems is similar to early cements used by the Romans in the 3rd century or those used in Tiryns and Mycenae approximately 1,000 years earlier. These cements demonstrate little degradation over approximately 2,000 years.
- The cap: It is assumed that the cap starts to degrade 100 years after its emplacement and is assumed to have fully degraded (in terms of hydraulic performance) by 1,000 years after decommissioning is complete. Ancient tombs with wooden coffins have stayed dry when covered by such layers for approximately 1300 to 1500 years and are generally well preserved.

While the historical anecdotes are interesting, their relevance is unclear since both Portland Cement and reinforced concrete were invented in the 19th century.

Cement and concrete are susceptible to deterioration from numerous internal and external factors, including freeze/thaw cycles, aggregate expansion, decalcification, exposure to air and precipitation (e.g., calcium leaching, carbonation, sulphates from acid rain), fire, corrosion of the reinforcing material, physical damage, improper manufacture and installation, etc.

The civil engineering literature is replete with examples of early failure in concrete structures. Recent local examples include a shopping mall in Elliot Lake, Ontario, and bridge failures in both Ontario and Québec.

The Draft EIS [1] contains no evidence or reasoned arguments as to why the proposed grout and reinforced concrete would be long-lived. The reader is expected to have faith in the authors' assumptions. Since the cement, the climate, and the environmental conditions are different from the Mediterranean examples provided, such faith is likely misplaced.

4.2 Engineered Barrier

The Draft EIS [1] states that the “footprint above the reactor vessel will be capped with reinforced concrete”. The balance of the NPD footprint (Spent Fuel Storage Bay, Boiler Room, Condenser Room, etc.), and the concrete cap over the reactor vessel, would be covered by an engineered barrier “to reduce infiltration” [1].

The proposed engineered barrier would consist of a mound of fill material over the footprint of NPD, which would be covered by a geotextile. The geotextile would then be covered with soil and seeded [1, 18].

The material contained in the proposed facility will remain hazardous for tens of thousands of years. The authors need to explain how this engineered barrier of fill, geomembrane, soil, and vegetation will protect people and non-human biota over that period of time.

4.3 Inadequate Assessment of the Normal Evolution Scenario

Canadian and international guidance provides for a dose constraint of 0.3 mSv/year for radioactive waste disposal [7, 8, 10, 11, 19].

As noted in Canadian and international guidance [8, 10], the normal evolution scenario should be based on reasonable extrapolation of present day site features and receptor lifestyles. It should include expected evolution of the site and degradation of the waste disposal system (gradual or total loss of barrier function) as it ages.

The authors classify certain reasonably foreseeable events as “disruptive event scenarios” or “what if cases”.

The “disruptive event scenarios” are:

- Site investigation (human intrusion);
- Engineering degradation;
- Surface erosion; and
- Early glaciation.

The “what if cases” are:

- Mass excavation;
- River level fall; and
- Well in contaminated plume.

The authors do not compare “disruptive event scenarios” and “what if cases” to the dose constraint of 0.3 mSv/year [7, 8, 10, 11, 19].

For “disruptive event scenarios”, the authors use a dose criterion of 1.0 mSv/year. The authors’ justification for the use of a criterion larger than the established 0.3 mSv/year dose constraint [7, 8, 10, 11, 19] is that these scenarios are “of low likelihood” [20].

For “what if cases”, the authors decline to compare the assessed dose to any radiological criteria. The authors’ justification for not using any radiological criteria is that these scenarios are “extremely unlikely, and in some cases implausible” [20].

The failure to compare “disruptive event scenarios” and “what if cases” to the established Canadian criteria calls into question the credibility of the assessment and its conclusions.

NPD will remain a radiological hazard for tens of thousands of years. All of the items listed as “disruptive event scenarios” and “what if cases” may be quite likely over that period of time and, hence, should be included in the normal evolution scenario and should be compared to the Canadian unconditional clearance level (10 µSv/year) [15] and dose constraint (0.3 mSv/year) [8].

The authors claim that, over a period of tens of thousands of years, it is “extremely unlikely” and “not considered to be plausible” that the NPD site would be excavated [20]. This is in marked contrast to international guidance. In Specific Safety Guide SSG-23, *The Safety Case and the Safety Assessment for the Disposal of Radioactive Waste* [10], the IAEA states:

> 6.52. Future human actions may disrupt a waste disposal system. Human action affecting the integrity of a disposal facility and potentially giving rise to radiological consequences is known as human intrusion. Human intrusion is particularly relevant for disposal facilities at or near the surface. Most human activities (e.g. construction operations, farming, etc.) that could lead to inadvertent human intrusion into a waste disposal facility take place at limited depths of tens of metres (typically down to 30 to 50 m below the surface). Over long time frames, human intrusion into such a facility may be quite likely. Human activities that reach depths greater than 30 m are much less likely, but include drilling (e.g. for water, oil or gas), exploration and mining activities, geothermal heat extraction or the storage of oil, gas or carbon dioxide. ...

Further, the IAEA notes that probabilistic measures of human intrusion should not be employed in the assessment of near surface disposal facilities [10]:

> 6.57. If human intrusion cannot be excluded for a certain disposal facility, the consequences of one or more plausible intrusion scenarios should be assessed. However, estimates of the probability of intrusion are uncertain and it is recommended in Ref. [21][3] that safety assessment should seek to evaluate the doses associated with human intrusion that may occur, but should not attempt to use a risk based concept that uses as a basis for assessment the product of the probability of intrusion and the dose arising from the intrusion.

The authors should refrain from using a risk-based concept and, instead, should follow appropriate Canadian and international guidance. The “disruptive event scenarios” and “what if cases” should be included in the normal evolution scenario and should be compared to the Canadian unconditional clearance level (10 µSv/year) [15] and dose constraint (0.3 mSv/year) [8].

3 The references and footnotes conform to the numbering scheme in these comments, and not those of the original text.

A single exploration borehole (site investigation scenario) gives rise to a public dose of 0.6 mSv (Section 9.8.3.3 of the Draft EIS [1]), which exceeds both the Canadian unconditional clearance level (10 µSv/year) [15] and dose constraint (0.3 mSv/year) [8].

Excavation at the NPD site (mass excavation scenario) gives rise to a public dose of 3 mSv/year (Section 9.8.3.3 of the Draft EIS [1]; Figure G-75 of [20]), which exceeds the Canadian unconditional clearance level (10 µSv/year) [15], dose constraint (0.3 mSv/year) [8], and public dose limit (1.0 mSv/year) [22].

4.4 Noncompliance with Canadian Environmental Assessment Act, 2012 [23]

In responding to comments on the Project Description [24], CNSC Staff state [25]:

> As outlined in subsection 4.2 (Alternative means of carrying out the project) of the Guidelines [26],[3] CNSC staff require that the proponent's EIS assess all potential environmental effects of the proposed *in situ* decommissioning approach and of each alternative mean of carrying out the project.

The Draft EIS [1] provides only a subjective, qualitative evaluation of each of the proposed alternative means. For example, no dose estimates to workers, public, or non-human biota are provided for each of the alternative means. Similarly, no quantitative evaluation is provided on the non-radiological impact to humans or non-human biota for each of the alternative means. Hence, the authors have failed to adequately address the requirements of CNSC Staff with respect to the Canadian Environmental Assessment Act, 2012.

To give credibility to their choice of preferred means (entombment), the authors should provide a quantitative assessment of the impact of each alternative means on valued components [23, 26], including human health.

4.5 Radiological Exposures in Excess of Canadian Criteria

The Draft EIS [1] shows that, after the institutional control period, realistically characterized anticipated normal human behaviour (construction, farming, etc.) would result in doses in excess of the Canadian unconditional clearance level (10 µSv/year) [15], dose constraint (0.3 mSv/year) [8], and public dose limit (1.0 mSv/year) [22]. Hence, this proposal is noncompliant with the Canadian Nuclear Safety Commission's Regulatory Policy P-290, *Managing Radioactive Waste* [16], which states that the predicted impacts from the management of radioactive waste must be no greater than the impacts that are permissible in Canada today.

4.6 Summary

NPD will remain a radiological hazard for tens of thousands of years (see, for example, Figure G-75 of [20]). It is absurd to conclude that cement grout, a reinforced concrete cap above the reactor vessel, and an engineered barrier (fill, geomembrane, soil, and vegetation) over the building footprint will protect the public for that period of time.

The Draft EIS [1] fails to adequately assess the normal evolution scenario, and is noncompliant with the Canadian Environmental Assessment Act, 2012 [23].

The proposal would result in radiological doses to members of the public in excess of the Canadian unconditional clearance level (10 μSv/year) [15], dose constraint (0.3 mSv/year) [8], and public dose limit (1.0 mSv/year) [22].

5.0 Concluding Remarks

The Draft EIS [1] and the associated project proposal contain numerous deficiencies.

These deficiencies include:

a) The proposal does not discharge Canada’s liabilities concerning the NPD Reactor, since it neither safely disposes of the radiological hazard nor does it get the liability off the books;
b) The proposal fails to address Canada’s international obligations, since it fails to meet the requirements of the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* [17]; and
c) The proposal and its assessment lack credibility, since it employs inadequate technology that would result in radiological doses to future residents that exceed those that are permissible in Canada today.

The extent and gravity of these deficiencies preclude a conclusion that the project is unlikely to cause significant adverse environmental effects, taking into consideration the implementation of mitigation measures.

Intermediate level waste has no place in a near surface disposal facility. As noted previously, rather than placing the intermediate level wastes at the nearby Chalk River Laboratories into a near surface facility, Canadian Nuclear Laboratories plans to manage intermediate level waste in interim storage until a long-term disposal solution for this category of radioactive waste has been developed and approved [14]. Presumably, the transfer of the intermediate level waste from NPD into this interim storage at the nearby Chalk River Laboratories is an option.

6.0 References

[1] Canadian Nuclear Laboratories, *Environmental Impact Statement: Nuclear Power Demonstration Closure Project*, 64-509200-ENA-004, Revision 0, 2017 September 28.[4]
[2] Atomic Energy of Canada Limited, *Corporate Plan Summary 2017/18 to 2021/22*, 2017.
[3] Atomic Energy of Canada Limited, *NEA Steering Committee Canada Update 2017*, Presentation to NEA Steering Committee Dec 2017, provided to the Eleventh Annual Meeting of the International Decommissioning Network (IDN), 2017 December 5 – 7.
[4] International Atomic Energy Agency, *Decommissioning of Facilities*, General Safety Requirements Part 6, GSR Part 6, 2014.

4 Please note that the cover page of the Draft EIS [1] uses the CNL number 64-508760-ENA-004, whereas the CNL signature page uses the CNL number 64-509200-ENA-004.

[5] International Atomic Energy Agency, *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities,* Specific Safety Guide SSG-47, (In Publication) 2018.

[6] US Nuclear Regulatory Commission, *Regulatory Improvements for Power Reactors Transitioning to Decommissioning*, Regulatory Basis Document, NRC-2015-0070, 3150-AJ59, 2017 November.

[7] International Atomic Energy Agency, *Disposal of Radioactive Waste*, Specific Safety Requirements SSR-5, 2011.

[8] Canadian Nuclear Safety Commission, *Assessing the Long Term Safety of Radioactive Waste Management*, G-320, 2006.

[9] International Atomic Energy Agency, *Classification of Radioactive Waste,* General Safety Guide GSG-1, 2009.

[10] International Atomic Energy Agency, *The Safety Case and Safety Assessment for the Disposal of Radioactive Waste*, Specific Safety Guide SSG-23, 2012.

[11] International Atomic Energy Agency, *Near Surface Disposal Facilities for Radioactive Waste*, Specific Safety Guide SSG-29, 2014.

[12] Canadian Standards Association, *General Principles for the Management of Radioactive Waste and Irradiated Fuel*, N292.0-14, 2014.

[13] Ontario Power Generation, *OPG's Deep Geologic Repository Project for Low and Intermediate Level Waste,* Environmental Impact Statement, Main Report, 00216-REP-07701-00001 R000, 2011 March.

[14] Canadian Nuclear Laboratories, *CNL updates NSDF Waste Inventory,* Community Information Bulletin, 2017 October 27.

[15] Canada, *Nuclear Substances and Radiation Devices Regulations,* SOR/2000-207.

[16] Canadian Nuclear Safety Commission, *Managing Radioactive Waste*, Regulatory Policy P-290, 2004.

[17] International Atomic Energy Agency, *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, International Law Series No. 1, 2006.

[18] Canadian Nuclear Laboratories, *Decommissioning Safety Assessment Report – NPD Closure Project*, 64-508760-ASD-002, Revision 0, 2017 September 15.

[19] International Commission on Radiological Protection, *ICRP Publication 81: Radiation Protection Recommendations as Applied to the Disposal of Long-lived Solid Radioactive Waste*, 2000.

[20] Canadian Nuclear Laboratories, *Post Closure Safety Assessment Report – NPD Closure Project*, 64-508760-ASD-003, Revision 0, 2017 September 28.

[21] International Commission on Radiological Protection, *ICRP Publication 60: The 1990 Recommendations of the International Commission on Radiological Protection*, 1991.

[22] Canada, *Radiation Protection Regulations,* SOR/2000-203.

[23] Canadian Environmental Assessment Act, 2012, (S.C. 2012, c. 19, s. 52, 2012.)

[24] Canadian Nuclear Laboratories, Project Description – *NPD Closure Project*, 64-509200-ENA-003, Revision 1, 2016 March 31.

[25] Canadian Nuclear Safety Commission, *Disposition Table of Public and Aboriginal Groups' Comments on Project Description – Nuclear Power Demonstration Closure Project,* Canadian Environmental Assessment Registry, Project 80121, 2017 March 08.

[26] Canadian Nuclear Safety Commission, *Generic Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012*, 2016.