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**Written submission from
Gordon W. Dalzell**

**Mémoire de
Gordon W. Dalzell**

**Regulatory Oversight Report for
Canadian Nuclear Power Generating
Sites in Canada: 2020**

**Rapport de surveillance
réglementaire des sites de centrales
nucléaires au Canada : 2020**

Commission Meeting

Réunion de la Commission

December 15, 2021

Le 15 décembre 2021

Gordon W. Dalzell

November 1, 2021

Canadian Nuclear Safety Commission
P.O. 1046, Station B
280 Slater Street
Ottawa, Ontario, K1P 5S9
Canada

To Whom It May Concern:

**SUBJECT: Regulatory Oversight Report for Canadian Nuclear Power
Generating Sites: 2020**

This letter is to provide my comments and recommendations on the review of the Regulatory Oversight Report Canadian Nuclear Power Generating Sites 2020.

Please keep in mind

that these comments and reactions to the many topic areas are prepared from a community member's perspective and in this case an interested party involved in the environmental movement.

The points raised in my submission of a critical nature, are raised to assist the regulator to continue its oversight vigilance and transparency. This ROR does raise questions where answers are not always complete for the public to understand. I continue to have the outmost confidence in the oversight work of the Canadian Nuclear Safety Commission members and staff. Even with all the issues raised in my submission, it does not preclude my fundamental conclusion that all these nuclear power plants in Canada are safe and the public is not at risk from them.

I trust that the points raised in my submission will be discussed with both CNSC staff and Commission Board members. I would also appreciate a written response to the point raised in my submission.

The nuclear technology is a very complex science, and as a community member do stand to be corrected if my interpretation of the information highlighted in submission needs clarification to assist the public in this review.

Background information of commentator:

This writer has been following the local nuclear industry over the years specifically the Point Lepreau Nuclear Generating Station (PLNGS). My past involvement has included formal intervenor status at the licensing renewal for this facility (PLNGS).

Additionally, I have participated in the public review of Oversight Report of Nuclear Facilities in Canada by making a written submission to the general meeting of the CNSC for several years. As

well, this writer is co-founder of the Saint John Citizens Coalition for Clean Air an environmental public interest group advocating for clean air in our local and regional area of Saint John, NB.

I appreciate the opportunity to participate, and I thank you for taking my comments under review.

Respectfully submitted,

Gordon W. Dalzell B.A.,B.S.W.
Community Member
Saint John, New Brunswick

Canadian Nuclear Safety Commission

Regulatory Oversight Report for Canadian Nuclear Power Generating Sites for 2020

November 1, 2021

**Submitted by: Gordon W. Dalzell
 Community Member
 Saint John, New Brunswick**

Methodology and Objectives

This intervener welcomes the opportunity to participate in the CNSC proceedings for this project that is the Commission meeting related to the Regulatory Oversight Report for Canadian Nuclear Power Generating Sites 2020 and to complete the following objectives:

- First, this intervener has carefully and thoroughly reviewed the regulatory oversight report for Canadian Nuclear Power Generating Sites 2020 and identified issues and areas of concern.
- Secondly, this submission will summarize my findings with recommendations included in the written report submitted to the CNSC as part of the December 14-15 public meeting.

Background Context of the Submitter for this Submission

This writer is making this submission as a member of the public and interested party, having followed the nuclear industry and its associated regulatory oversight over many years.

I have followed both the regulatory activities for the nuclear power generating stations in the industry with a special interest in the Point Lepreau Nuclear Generating Station (PLNGS).

More recently, over the last 2 to 3 years, this writer has taken a more current interest in the research and development for small modular reactors taking place in Saint John New Brunswick.

Specifically, this writer participated at some past CNSC public meetings and hearings, as a former intervener for the PLNGS license renewal as well as in the EIA for PLNGS Solid Radioactive Waste Management Facility (SRWMF) expansion in 2005.

Additionally, over the last few years, I have made to past written submissions on the regulatory oversight report as well this writer plans to participate in the current licence renewal for the Point Lepreau Nuclear Generating Station. The purpose of those interventions is to ensure that the safety parameters covered in the ROR have been adequately addressed.

Over the years, I have had and continue to have a direct local interest in the operations of the PLNGS and other Canadian nuclear facilities. I reside 60 km from PLNGS and I participated as a former intervenor for its 2017 license renewal as well as in the EIA for PLNGS SRWMF in 2005.

In my intervention, I identified and raised issues of concern including nuclear emergency management, fitness for service, safe radiological emissions, human performance management and climate change impacts on PLNGS and other facilities in Canada.

I have made several written submissions over the past several years on the Regulatory Oversight Reports (ROR). This writer has carefully reviewed the 2020 ROR to verify and reassured myself that the safety parameters covered in the report have or will be addressed in the 2020 ROR.

I want to make sure my issues of concerns further identified in my past submissions have been adequately addressed.

Considering I live in the regional area of one of those sites, this applicant and many others would potentially be affected from a nuclear event resulting in an unplanned radiological emission to the environment. This applicant has also many family members living in the region of other nuclear facilities in Ontario which heighten this applicant's interest in the area of safety covered in the report.

My area of direct interest focus is on an internal or external possible accident or emergency including cyber terrorism, security threat, climate change impact and human factors that have the potential to compromise the safe operation of these nuclear facilities; therefore, putting me and other community members at risk. I want to be informed and reassured that my concerns are being reviewed and considered. My participation in this review process will go a long way helping me better understand and feel confident that my issues are being addressed. Another rational for this writer participation in the public review process for the regulatory oversight report for Canadian nuclear generating sites is related to the need to be properly and accurately inform as a well-established recognized environmentalist in this community. I have often been contacted in the past by the media on the topic of nuclear energy (Globe and Mail, CBC Maritime noon).

Within this backdrop, it is important for this submitter to be properly informed both within the regulatory and licensees' perspectives to ensure that my issues of concern as well as others identified are based on facts and objective science as well as technically accurate.

This is important as this intervenor has been called upon to comment on nuclear energy safety issues in this community. In preparing the submission with its focus on issue and areas of concern identified by this writer, a number of specific issues and areas of concern have caught my attention.

The regulatory oversight report 2020 covering for each facility is organized by safety and control areas (SCA) which serves as a background for the assessment for such site in Section 3.

This submission will be organized under the various safety headings that reflect this writer's issue of concerns majority of which are covered in Section 2 titled General and Supporting Information and under Section 3 - Nuclear Power Plants and Waste Management Facility Safety Performance and Regulatory Development page 67 to 190.

Aging Management

This intervener has identified some specific issues and areas of concern including Aging infrastructures (considering the age of those facilities such as potential problems related to state of concrete, electrical cables, and other equipment replacement).

This applicant has completed some research in this areas, well consulted with PLNGS subject matter expert as well as independent research on such potential issue associated with this specific area of concern is the entire area of aging management such as problem experience at PLNGS this winter with regard to the unplanned outage related to a mechanical issued to the pressure release disk supporting the turbine system on the non-nuclear side of the operations which turned out to be a much longer outage than expected due to difficulty replacing an obsolete mechanical part. This writer was contacted by a community member about this with far more details information that was initially released in the media report.

The writer followed up and the licensee subject matter expert met with me and provided a detailed explanation on the aging management program at the Station which is part of PLNGS commitment to safety. The Station maintains an Integrated Aging Management Program that is aligned with the requirements of CNSC REGDOC 2.6.3, Aging Management. This program ensures that structures and components that are nuclear safety-related meet their nuclear safety function by ensuring that potential aging degradation mechanisms are understood that inspection and maintenance activities are properly planned and executed, and that structures and systems are operated within their design limits with respect to aging considerations. I was also informed that PLNGS continue to develop comprehensive long-term asset management strategies which will help with the replacements of components as components and structures age, and planning for long-term obsolescence.

Although there is an obsolesce program in place, the general public, in my view, is not that familiar with it causing unnecessary worry that could have a bearing on the safe operations of those plants considering their age, one seems to be decommissioned and other unites identified for refurbishment.

There was another specific concern at the Bruce Nuclear Generating Station regarding the pressure tubes. There were recent publicly reported inspections of its reactors #3 and 6 that had to be shutdown indicating higher measurements of hydrogen equivalent (Heq) than prescribed, exceeding the limits set out in the power reactor of operating licence condition. The question was whether the pressure tubes were thinning. Another event at Point Lepreau earlier this year where a part was obsolete causing a longer than expected shutdown until that part could be replaced. Some of the concerns are:

1. The whole area of aging management and obsolescence is an area of concern as well as structural integrity considering the 40 years of age of these facilities.
2. Cyber security under general topic of security
3. Impact of COVID-19 on the safe operation of these nuclear power plants

Obsolescence Programs

Aging and obsolescence issues for components including for the non-nuclear side of these nuclear power plants has been a long-held concern of this writer. More specifically the problems experienced at PLNGS this winter with regards to the unplanned outage related to the mechanical issues to which the pressure relief disc supporting the turbine system on the non-nuclear side of the operation, turned out to be much longer outage than then expected due to the difficulty replacing an obsolete mechanical part.

SECTION 2 - GENERAL AND SUPPORTING INFORMATION

This writer has carefully reviewed the ROR for 2020 section by section as organized in the table of contents. Within this review, I will identify issues and areas of concern. This section is critically important as it provides information organized by safety and control area which seems as a background for the assessment in Section 3 that covers the licensed nuclear power plants.

This overview is most helpful to allow the public to understand the important safety parameters.

One of the reasons why this writer has had confidence in the Canadian Nuclear Safety Commission is based on the extensive and rigorous regulatory foundation parameters that cover the areas of safety.

As noted in section 2.1 Safety Culture, I was surprised to learn in this ROR that it was only in April 2018, CNSC published REG DOC 2.1.2 Safety Culture which contains requirements applicable to nuclear power plants and other nuclear facilities. This is not to imply that these nuclear facilities have not prioritized such and engrained safety culture over the last 40 years mandated by federal legislation and the Guidance REGDOC 2.2.2. This section needed to stress this fact so as to clarify any public misperceptions that it was only in 2018 that a regulation REG DOC 2.1.2 Safety Culture was approved.

This ROR serves the public interest as a teaching informational tool that is generally fulfilled well in this writer's review. This Regulation has a requirement for "assessing safety culture" applicable only to nuclear power plants. It needs to be noted that some of these nuclear power plants have been taking their time to implement requirements for RREG DOC 2.1.2 with one, NB Power committed to updating its governance to meet requirements of REG DOC 2.1.2 by August 31, 2021.

As part of their implementation work, OPG, Bruce Power and NB Power committed to conduct their next self-assessment in accordance with REG DOC 2.1.2. Additionally, it is noted that OPG and Bruce Power have implemented safety culture monitoring panels following the guidance provided by the Nuclear Energy Institute.

This raises two questions: These panels, who are they and to what degree are these self-assessments are independent with some technical expertise apart from the licensee and or nuclear industry.

Independent nuclear scientist/expertise from the university nuclear engineer sectors would add more strength to the self- assessments. A peer review approach would add confidence to these "safety assessments". A peer review approach would add confidence to these self-assessments.

One area of significant concern of this writer centers on the impact of COVID-19 has and will continue to have on the safe operations of these nuclear power plants. The current 4th wave illustrates that COVID-19 has not been irradiated.

Despite the fact that all nuclear power plants licensees took measures listed on their business continuity page 26, that the minimum shift complement is not compromised by COVID-19 pandemic; this writer is still concerned over the impact this pandemic will have on personnel, contractors especially now that this 4th wave is still present in Canada. Here in New Brunswick, we are currently

seeing a sharp increase in cases, hospitalization, and indication of non-compliance to vaccinations. Currently the Saint John area is in a “circuit breaker status (lock-down)”.

One measure not included on the list of mitigation actions is limited recognition or actions identified to assist and help personnel cope and deal with the associated psycho-social health effects and stress from the impact of COVID-19. What are the on-site mental health programs and services available to the staff at these nuclear plants?

At this writing school age children / 12 and under are at risk as they cannot be vaccinated. Thousands of employees who operate these nuclear plants, many of which have children in schools are very stressed worrying where their children will be safe. With this and other Covid impact on their mind, they could be distracted and preoccupied then taking their attention away from their safety related duties.

There needs to be a dedicated strategy or action plan to identify those personal with associated interventions and support. It is reassuring to read that all rescheduled activities have maintained adequate safety margins and were able to demonstrate the acceptable level of fitness for service. Question is for how long as this COVID-19 wave is currently taking heavy stress toll on society.

Issue of COVID-19

This submission identifies this issue of importance as well as the steps taken by licensees to cope with a pandemic event the worst in a hundred years. This writer does not share all the reassuring measures steps and adjustments implemented to ensure pre pandemic CNSC and licensee’s oversight efforts at the same level of safety compared to non-pandemic conditions. My comments on COVID-19 are incorporated into each licensee section of the 2020 ROR above.

Recommendations

1. It is recommended that a separate dedicated detailed report be prepared for next year ROR General Meeting.
2. It is recommended that the licensee should be providing regular updates on their websites that will also be filed under a separate report to CNSC to assure the public that these nuclear power plants safety are not being compromised as a result of COVID and this latest 4th wave.

Section 2.2 Human Performance Management

One area of concern of this writer is Table 3 under Personal Certification for an off nuclear power plants specifically Point Lepreau.

Table 3 shows the minimum required number of personnel for each position, which is the minimum number of certified personal that must be present at all times multiplied by the total number of crews.

At Point Lepreau, the actual number of available certifications and certified positions for 2020 for reactor operation is 10 with 6 minimums required. Shift supervisor's actual is 10, minimum is 6.

There is not a lot of additional capacity. What happens if even some of the actual needed reactor operators got sick or had to leave for other reasons that could even be more problematic to maintain the minimum capacity of 6. Concern as well that there will not be sufficient number of power operators graduating from Community Colleges here in New Brunswick. There's not a lot of leverage here which causes this reviewer concerns. Efforts need to be made to get more reactor operators certified in case any of the 10 current ones become unavailable for any reason. This writer is interested in the successful rate for the candidate at PLNGS that enters the licensed operator program.

- Are the community colleges and universities preparing the students for these nuclear programs?
- What is the success rate for candidates at the Station for these entering the licensed operator program?

Other nuclear power plant site listed in Table 3 have a higher number of Certified reactor operators shift supervisors in reserve-ready to go if necessary. This does not seem to be the case for Point Lepreau. I would recommend that the Commission addresses this during upcoming renewal of Point Lepreau licence. Assuming that these are adequately trained and certified individuals at PLNGS is a critically important area of concern.

Fitness for Duty

Fitness for duty this is one of the most critically important factors to ensure safe operations of any of these nuclear power plants in this writer view because of human conditions, vulnerabilities and

outside conditions and circumstances. Such as managing worker's fatigue, alcohol and drug use including prescription medication use needs and other factors, CNSC's oversight of fitness for duty is so critically important. From what is presented in the 2020 ROR that level of importance is recognized in the many checks and balances and policies found in the regulatory requirements overseen by CNSC. Reassuring to know that CNSC REG DOC 2.2.4 Fitness for Duty, Managing Workers Fatigue is in place and is being followed. This is so important especially at all high security sites with the aim of minimizing the potential for errors that could affect nuclear safety and security.

Question is why didn't OPG, Bruce and Hydro Quebec not implement this regulatory document sooner than 2019?

A good example of this writer concern over the impact of Covid-19 on a nuclear power plant is found on page 29 of the ROR – "NB Power planned to implement REG DOC 2.2.4 by 2020 for normal operation and 2022 for outages."

However, as a result of "challenges related to Covid 19 pandemic, NB Power requested an extension to their implementation for normal operations to March 2021 which was accepted by the CNSC staff."

Despite this delay it is reassuring to further read that CNSC staff compliance verification activities took place in 2020 to confirm that NB Power complied with their procedures for managing workers' fatigue. It is noted they were in compliance with their procedures for managing workers fatigue but were they actually in compliance with REG DOC 2.2.4 to ensure that worker fatigue was effectively managed as per regulatory requirements.

This ROR 2020 identifies various issues that can be raised during various licensing renewals which is helpful.

Managing alcohol and drug use is another very important area under fitness for duty.

This writer in past ROR commentaries supported random testing to ensure no one in these high security sites is even slightly adversely impacted by alcohol and drug use or even prescription drug use. This is a more important now than marijuana has been legalized. This substance can stay in the body for at least 30 days so even if employee uses it on their time off, it has the potential to still be in their body although at a much-reduced level.

It appears from reading the section on page 29, several licensees appear to have resisted this enhanced regulatory requirement with Bruce requesting a change to their implementation dates. This writer was pleased to learn that this new version 3 was published on January 22, 2021.

I suspect one of the challenges here will be the handling of non-prescription and prescription medication often required by employees some of which could impact the performance of their duties. It will be interesting to see how many will be affected. CNSC needs to require a written report on the numbers of personnel who fails to pass the random testing standards. This level of information needs to be made public in CNSC reporting requirement.

Equally as important is the regulatory requirements that licensees are required to ensure that all nuclear security officers have maintain physical and psychological certificates that meet CNSC requirement (REG DOC 2.2.4) with all licensees committed to implement the document by December 3 one 2020. These licensees need to have their own registered psychologist on their staff complements not just outsourced such on an individual consulting basis.

Question for this commentator is what took so long for such a regulatory requirement considering most of these nuclear power plants have been operating for 40 years or more.

2.4 Safety Analysis

One of the writer's predominant concern is the fact that most of these nuclear power plants are aging. As Section 2.4 on their safety analysis page 33 notes "Aging if a reactor affects certain characteristics of the heat transport system which can result in a gradual reduction of safety margins." We see in the ROR 2020 compensatory measures are implemented to mitigate the impacts of aging when needed.

Thankfully, CNSC is there with regulatory mandate and continuing oversight to assess the existing safety of these plants by monitoring various aging management programs in place by licensees. There was a recent event publicly reported earlier this year –at Bruce power facility.

2021-07-26 Bruce Power inspection update - *As part of our ongoing planned inspection, testing, analysis and maintenance activities, we recently observed some higher-than-anticipated readings in one of the ways we analyze the condition of our pressure tubes in two units, both of which are not currently operating. Unit 3 is presently in a routine inspection and maintenance outage, while Unit 6 is undergoing its Major Component Replacement, where all pressure tubes are being replaced.*

Section 2.5 Physical Design

Another area of concern of this writer is the effect of aging on the concrete of these 40-year-old plus nuclear power plants.

Design feature standards even for nuclear power plants were not of the same level compared to more newer facilities that have been built in the last 10 years are currently under construction. My concern centers on concrete walls, bottom basement floors of the reactor with potential cracking and resulting in possible water seepage or small leak in the nuclear fuel bays where spent nuclear fuel rods are stored in these waters filled swimming pools like holding units.

Even though the concrete is very thick and as a surrounding stainless-steel tank under it, this writer still has a concern understanding how concrete, steel rebar can deteriorate over a long period of time resulting in deterioration of these various concrete infrastructure.

All one has to observe is how concrete steel reinforced deck of the Saint John Harbour bridge has to be completely replaced over 15 years if not sooner. There are many examples of concrete deterioration in Canada. Although, these nuclear power plants were built to a much higher standard compared to normal concrete buildings, concrete can still deteriorate.

Same deterioration at the water dam NB Power's Mactaquac Hydro Electric power plant. It is true that both these examples, how far concrete in water and weather condition and concrete that is reinforced with steel rods can and does deteriorate over time especially when dampness sets in or water table levels press against concrete walls or floors such as at Point Lepreau.

Point Lepreau is adjacent to the saltwater Bay of Fundy with high tides water levels that could press against the foundation and reactor floor even at current depth. The picture of PLNGS illustrates the possibility of this site to the Bay of Fundy.

Under section 2.3.8 of PLNGS, 2016 page 30 to 152 states: “The spent fuel bay is a reinforced concrete tank. The inner surface of the fuel storage bay walls is lined with a white fiberglass reinforced epoxy coating except for the floor and 0.5 m up the walls which are covered with a stainless-steel liner.

There is underdrainage provided for the bay between there is no mention of what protection there is below the bottom of the concrete basement of the main reactor part of the PLNGS building.

This writer may be unnecessarily concerned on the aging of the concrete of these nuclear power plants but considering the age and how concrete deteriorates, CNSC needs to request an up-to-date analysis with input from experts in concrete to determine if there is a breakdown that could result in radiated water seeking out.

Another associated area of concern on the aging management is obsolescence issues. The problem facing PLNGS earlier this winter by trying to replace those obsolete parts is a good case in point more needs to be done to identify all these obsolete parts and take steps now to rebuild or locate them in the world and stockpile them in a central warehouse so that they can be readily available

Again, under aging management, (page 40) is the area of pressure tubes and fuel channels and then overall performance is another major area of concern of this writer. The fact that CNSC staff has enhanced regulatory oversight for licensees’ activities to assess and manage the aging fuel channels for units entering periods of extended operation, reinforces this writer overall worry and concern over the aging and thinning of these pressure tubes. This action by CNSC to enhance regulatory oversight for licensees in this area is timely and needed.

There was a publicly reported inspection at Bruce Power unit #3 and #6 that had to be shut down after indicating higher measurements for hydrogen equivalent (HEq) than prescribed. Exceeding the limit set point in the power reactor of that operating license condition. This writer has high expectation that this issue will raise considerable attention and questions by the Commissioners to the CNSC staff and licensee at the December 21 public meeting on the ROR.

Several of these nuclear power plants are reaching the equivalent full power hour-operating targets for the extended operations of pressure tubes of several plants. This is another area of concerns. The exception is for those NPPs that have been refurbished such as PLNGS and some other facilities that have completed refurbishment. These units have new pressure tubes and fuel channels.

May I suggest that the Commission review the metallurgical analysis report from the replaced pressure tube removed from Point Lepreau to see what the experts say about the state of such aged pressure tubes. If such studies have been completed, the results need to be made available to the public. This may be another way to predict how much longer these pressure tubes be permitted to function and be in service.

Perhaps the thinning of such tubes these yet non-refurbished nuclear power plants is worse than one calculated. Quite frankly, I worried that allowing some of these units beyond their life expectancy is too risky of a chance to take from a safe operating perspective.

Re: Section titled: Recent developments and research in aging management: This writer was shocked to read the following on page 41: “On 2020, CNSC staff actively monitored the industry progress in research activities to ensure that licensees have sufficient understanding of degradation issues to safely operate pressure tubes especially doors unplanned for extended operation.” For this writer, it is getting late in the game for research progress activities, this kind of research should have been carried out much earlier to ensure licensees have sufficient understanding of degradation issues to safely operate pressure tubes. The licensees and regulatory agency are taking risks with public safety perceptions considering millions of people live in the regions of these nuclear power plants. For this writer this kind of research activities on fuel channels life confirmation projects should have been carried out five years ago at least.

This writer worries that extending operating basis, limits is not justified especially after higher-than-expected Heq relating to Bruce Power on Unit 3 and Unit 6. This writer was reassured to see an order by CNSC was made to address this issue.

Bruce Power Press Release

Bruce Power inspection update
2021-09-16/2021-07-26

At Bruce Power our [Safety First](#) value drives every decision we make and every activity we do.

As part of our ongoing planned inspection, testing, [analysis](#) and maintenance activities, we recently observed some higher-than-anticipated readings in one of the ways we analyze the condition of our pressure tubes in two units, both of which are not currently operating. Unit 3 is presently in a routine inspection and maintenance outage, while Unit 6 is undergoing its Major Component Replacement, where all pressure tubes are being replaced.

We completed an immediate review of this following our rigorous processes and concluded there was no impact on the safety of the units. All six units that are currently operating have recently undergone similar inspections and demonstrated fitness for service.

We proactively shared this information with the Canadian Nuclear Safety Commission and with other CANDU operators to ensure we continue to contribute to the collective understanding from these inspection activities, which we collaborate on through the CANDU Owners Group.

Inspection activities undertaken, including recent inspection and maintenance outage campaigns, have demonstrated the ongoing safe operation of the pressure tubes, which will continue to be thoroughly inspected in future [planned](#) outages.

These inspection activities form the basis of common tools that we continue to strengthen and evolve that have a proven track record of ensuring safety. These inspection results will be used alongside a large set of information collected over many years, to continue to build on the activities we routinely perform to demonstrate the continued safe, reliable operation of our units.

On July 26, CNSC issued [an order](#), consistent with the principles demonstrated by Bruce Power, to maintain safety through inspections and inspection data as a proven method to demonstrate the fitness for service of pressure tubes.

As has clearly been expressed, safety is not [impacted](#) and Bruce Power will use its robust inspection tools and results to continue to demonstrate safety and fitness for service of these components and will provide this information to the CNSC.

Another area of concern is under workers dose control on page 44. The following statement is alarming and of significant concern: “The annual average effective dose in 2020 for all operating Canadian nuclear power plants was 2.83 millisieverts an increase of 36.7% from 2019 releases of 2.07 mSv.”

- What do these increases signify?
- Could COVID19 pandemic be a factor for such increases?
- What are in fact the contributing factors to account for this increase cited above from the 2020 ROR?

With more outages and refurbishment activities over the next several years, my concern is that the annual average effective dose will increase similar to what occurred in the operating NPPs in 2020. Perceived enhanced efforts need to be implemented by both the licensees and CNSC to reverse this 2020 trend despite the fact that all doses reported over the year in Figure 9 (2016-2020) were below the annual regulatory dose limit of 50 mSv for nuclear energy workers.

Section 2.9 Environmental Protection

This writer took careful note of the following statement under Effluent and Emission Controlled Releases. “Derived release limits (DRLs) are quantities of radionuclide releases as an airborne emission or waterborne effluent that are calculated based on the regulatory dose limit for the public of 1 mSv per year.”

This writer was pleased to see that CNSC carries out its Independent Environmental Monitoring Program in addition to the licensees carrying out required monitoring of their operations. CNSC Staff had planned to conduct an IEMP campaign around Point Lepreau Nuclear Generating Station in 2020 but due to constraints related to COVID-19, only soil, water, plant samples were taken in 2020.

This incomplete monitoring is just another example of how COVID 19 has impacted the CNSC’s ability to fully carry out all past required independent monitoring activities. There is a regulatory requirement for monitoring airborne and water emissions.

One area of concern picked up in Table 9 – Page 50, titled : Trend of estimated dose to the public from Canadian nuclear power sites (mSv/y) from 2016-2020.

From 2018 to 2020 , there has been in increase for airborne emissions and liquid release as the Point Lepreau Nuclear Generating Station.

YEAR	AMOUNT
2018	0.0007 mSv
2019	0.0012 mSv
2020	0.0013 mSv

This is a trend this writer does not want to see despite the fact that these doses were well below the annual regulatory dose limit of 1 mSv for members of the public. This will be raised to upcoming licensing renewal for this facility. There is no explanation provided for these increases. This should have been provided.

2.10 Emergency Management and Fire Protection

Over the last two ROR submissions this writer has raised the importance of this area noting some licensees were for more advanced in their nuclear emergency plans aligned with those provincial ones. Pleased to see that Ontario's Provincial Nuclear Emergency Plan is currently being reviewed with stakeholders as well as public consultation will be launched on the updated draft master plan followed by review and dispositions of the public comments. The question is why such nuclear emergency plans weren't reviewed with public consultation earlier.

The plan will then be finalized and submitted to the Ontario Cabinet for approval in 2022. To put it mildly, provincial officials have been foot dragging on this critically important aspect of public safety related to the nuclear emergency response covering a large population area near those nuclear reactors. These examples show that expected action in this area are noted by the public. Thankfully there were no nuclear emergencies nothing happened prior to these current actions on nuclear emergency response action plans.

New Brunswick EMO and PLNGS have been much more proactive over the last several years to these official credits. The update is noted as June 30, 2021, a statement has been to the Emergency Management of Ontario (EMO) website alerting the public that the Technical Study Report on the provincial Nuclear Emergency Response Plan is available and to contact them for a copy of the report. Another example of a licensee undertaking a study on the critically important are when such studies needed to completed well before this especially when it comes to the nuclear emergency response plan.

The other example was on the pressure tube thinning analysis. To illustrate the above issues, one only has to read the paragraph on page 52 titled: Nuclear Emergency Management Coordinating Committee (NEMCC) Transportation management Sub Committee. The ROR states in the last sentence the following “This committee is an integral forum to guide and coordinate the development and transportation plant to facilitate the evacuation of Ontario’s nuclear planning zones.”

These nuclear facilities have been operating for years within heavily populated areas. This kind of planning work should have been completed years ago – heaven forbid there had been a nuclear emergency where EMO actions required – the question is how well-prepared Ontario was to handle a large evacuation situation if one was to occur today. The Commissioners need a comprehensive update at the December ROR meeting.

Good to see that New Brunswick past efforts and expertise recognized with its involvement on the rewrite of the CSA-N1600 General requirements for Nuclear Emergency Management programs. Additionally, please to learn in the update under Province of New Brunswick that PLNGS Technical Planning Basis was finalized in April 2021 which allowed the review and issuance of the Point Lepreau Nuclear Off-Site Emergency Plan in June of 2021.

When it comes to the Province of Ontario efforts several colloquialisms come to mind including “foot dragging” it is “about time” and “catch-up efforts”. These delays fall below community expectations especially for the millions of people living near these nuclear power plants.

Section 2.12 Security

A one sentence statement on cyber security, on this fastest growing threat worldwide, is totally insufficient to provide the pubic with appropriate information on one of the most significant evolving

threats in the area of security. In my view of the current regulatory rules are not strong enough to protect us from threats from cyber-attacks on nuclear power facilities. In fact, nuclear security regulations are just currently protective enough. This conclusion appears to be the basis of CNSC current nuclear security regulatory modernization currently in multiple stakeholders' consultation process prior to more formal regulatory public consultations expected in later this year.

This writer had the opportunity to participate in an information session on April 13, 2021, (Edoc#6498526) which reinforced my view that more has to be done to protect these nuclear power plant facilities from cyber attacks which are a growing threat where United State government sites, energy infrastructures such as a gas pipelines as well as City of Saint John all been victims of cyber security attacks and ramson ware incidents.

Cyber-security program and or cyber security measure need to be greatly strengthened to prevent. It is reassuring to learn of expected regulatory changes to deal with these cyber-security threats. Some of these threats include:

1. Thefts of nuclear material help by licensees.
2. Sabotage or safety and/or associated systems that if compromised would result in unplanned doses to workers or member of the public, and releases to the environment.

The 2020 ROR under 2.13, P. 54 should have included a statement to the effect that cyber security is a real threat to nuclear sites and CNSC takes it seriously by taking steps to update and modernize its nuclear security regulatory framework including cyber security. Nothing to the effect was included in Section 2-13. The public want to know of plans and actions that will be taken to protect sites on this important area of security. They certainly do not need the details but need to know that CNSC takes this area very seriously and Section 2.13 P. 54 was an opportunity to do this but failed to advise of the recent public consultation process on-going.

Section 2.13 Safeguards and Proliferation

The CNSC published REGDOC 2.13.1 Safeguards and Nuclear Material Accountancy, in February 2018. REGDOC 2.13.1 sets out requirements and guidance for safeguards program for applicants and licensees who possess nuclear material, carry out specified types of R & D work related of the nuclear fuel cycle, or carry out specified types of nuclear – related manufacturing activities.

The regulatory document aims to establish a common understanding of the information, access and support that licensees are to provide to the CNSC and to the IAEA in order to facilitate Canada's compliance with its safeguard's agreements.

The CNSC requested that the affected licensees provide an implementation plan by August 31, 2018 for meeting the requirements of REGDOC 2.13.1. Although all Nuclear Power Plants and Waste Management Facilities Licensees made commitments to comply the timelines for implementation have taken too long.

NB Power and Bruce Power implemented the new regulatory document by end of 2019. One licensee stands out as slow to comply specifically Bruce Power planned to fully implement the REG DOC by 2021, although it was already in the making, significant progress towards implementation in 2020. That is still 3 to 4 years from the time REGDOC 2.13.1 was being published.

Section 2.15 Other Matters of Regulatory Interest

As noted in this section CNSC REGDOC 3.2.1 Public Information and Disclosure sets out the requirement for public information and disclosure programs.

These programs' primary goal is to ensure that information related to health, safety and security of the person and environment and other issues associated with the lifecycle of nuclear facilities is shared with the public in a format relevant to the audience. This regulatory requirement is an important one that is so essential for public information and disclosure. This section reports on some highlights among licensees in 2020. This writer is of the view that communication with their communities in Pickering and Clarington includes regular newsletter updates printed and delivered to approximately 50,000 residents. Out of that target group, there are thousands of community member who are not solely comfortable with social media and on-line digital formats. This newsletter and hand copy delivered format meets the need of those citizens who are not technical savvy. By contrast, Bruce Powe uses social media as its main source of communication according to the information in this section. Although on-line formats may be the sole source of communication in the community this format should not be at the expense of those community members who do not use social media format or if online many not use it as frequently such as the Bruce Power websites to review their updates.

Bruce Power needs to follow OPG practice of including printed newsletter format to accommodate those who are not using social media or on-line platforms. I suspect there are thousands of people in these communities, that would welcome receiving a hard copy newsletter communication.

Having said that, it was positive to read that Bruce Power continued to increase and evolve its online presence. OPG moved to a virtual classroom rather than the traditional visit centre and had 80,000 students and teachers across the province participate in their online program. Very impressive and OPG should be commended. The question is whether students are receiving information on the downside of nuclear energy.

Methodologies utilized in their public information sessions. The topics were all timely including the Station Operations to health, safety and environmental activities, emergency preparedness waste management, licensing activities also with small modular reactor initiatives. NB Power made every effort to reach all community members through regular newsletters, virtual meetings, on-going presence on social media and regular, local traditional media coverage. I would like to see Bruce Power re-introduced printed delivered newsletter mailed out to the community to ensure all community members are included in their communications.

Recommendation: Communication formats should not be exclusively digital but need to include some selective targeted printed formats such as printed newsletters at least quarterly. Communications by the licensees need to use mixed communication formats.

SECTION 3 - NUCLEAR POWER PLANT AND WASTE MANAGEMENT FACILITY SAFEYT PERFORMANCE AND REGULATORY DEVELOPMENTS

This part of my submission will cover commentary on issues of concern and interest on each of the Nuclear Power Plants (NPP) and Waste Management Facilities (WMF).

Section 3.1 DARLINGTON NUCLEAR GENERATING STATION

The fact that OPG continues to execute its plan to refurbish the 4 reactors at DNGS acknowledges this writer's long held belief that this and other identified NPPs are aging and as such refurbishments are required as was the case years ago at the Point Lepreau Nuclear Generating Station. Without such refurbishments, some of these plants would have to be decommissioned thus losing a carbon-free

source of energy that millions of people depend on to ensure carbon-free emission of CO2 resulting in much cleaner air free of smog causing emissions.

Fisheries Act Authorization

The fact that it took OPG five years in 2020 to submit a report to the staff at Fisheries and Oceans Canada and its regulatory CNSC on the offset plan (compensation) for residual harm to fish and fish habitats is unacceptably long. There is no explanation provided. Perhaps one of the Commissioners at the public general meeting in December 2020 can obtain an explanation for this very long delay to submit a requested report to DFO.

Section 3.1.1 Management System Management

One area that has been a past and current concern to this reviewer centers on the management and oversight of contractors including training and monitoring. In my view this whole area of use of essential contractors working within these highly complex and highly regulated nuclear power plants have the potential to create safety issues simply because many of those contract workers may not work in these facilities on a permanent full-time on-going basis. There could be circumstances that they may not be fully aware of the potential safety issues that they could create as they carry out their work activities especially with these on-going refurbishments. Below are my comments from last to illustrate by examples the kind of problems that can occur with refurbishment activities:

Hopefully, lessons learned are incorporated into the refurbishment work planned for Canada 2020 (Unit 3-8) with so many units from various sites - it is always a worry that something might go wrong despite the best planning and workmanship. Unexpected problems and other events impacted Point Lepreau causing substantial delays and over runs for the project in the past. The report does not highlight any specific anticipated problems expected with refurbishment. There must be some challenges and there should have been some reference to what they are. There needs to be a more comprehensive explanation of the refurbishment projects ahead.

Table 25 describes an incident where 5 drums of heavy water leaked out of containment into the dikes are of the powerhouse causing tritium and loose contamination hazards in the area. At Bruce Power Unit 8 there was a service transformer fire and another event. The report further states there was a good outcome in that there was no impact on nuclear systems, no radiological releases and no impact on the public as a result of this event. These events illustrate to this writer that there are going to be events, accidents, and I suspect there will be more once the refurbishment commences. There should

have been more information provided on the safety issues associated with refurbishments of these reactors.

Management of Contractors Page 163 -

This is an area of concern this writer had raised in my 2018 submission. I predict that with so many contractors, and their workers from the community working on the refurbishment projects, there are going to be incidents, including dose exposures.

Section 3.1.2 Human Performance

Personnel Certification

This section illustrates another of many other cited above impacts COVID-19 has had on safety factor for a nuclear power plant – in the example Darlington Nuclear Generating Station. This section notes that in 2020, OPG informed CNSC staff that due to COVID-19 pandemic, OPG would have to postpone their requalification training and testing, thus potentially affecting a number of certified personnel whose certifications might expire by year end. From reading the rest of this section under Personnel Certification, it is clear that there were changes to the usual qualification training and testing to include implementing a pilot multiple choice questions general certification examination in August 2020 in place of essay style examination. The question and concern this writer has, is whether such changes outlined in this section are as rigorous and thorough enough from past testing formats.

A pilot program at DNGS indicates to this writer the jury is still out on whether this new testing method is as effective as it used to be prior to COVID-19 changes, outlined in this Personnel Certification Section on page 74.

Further this section states “A technical assessment on the design development and grading of the two multiple choice question Based General Certification examinations is currently underway with the report to be released in 2021.

My issue of concern is whether this COVID-19 driven change of certification testing will weaken the effectiveness of such evaluation thus weakening a critically important safety parameters so important for the safe operation of this and other nuclear power plants. Let’s hope not.

Design Governance - Page 78

There should have been more explanation on this non-compliance related to environmental qualification identified during an inspection reference to a “steam barrier requirement” but this section leaves more questions than answers.

More information needed to be included. This kind of limited or left out information is problematic leaving the public wondering how important this non-compliance was, minor or potentially more serious from a safety point of view.

Structure Design P. 78

Considering age of this nuclear plant – 40 years – that was structurally designed many years ago with different standards, codes, my worry is that the concrete used in the construction may not be able to resist earthquake damage due to both structure design as well as composition, integrity of concrete that may also be showing signs of deterioration. If this nuclear plant was built today, I would suspect there would be improvements in concrete / reinforcement and high even more stringent standards of construction.

It is note that “CNSC staff note that design deficiencies were identified in the original design of the Heavy Water Management Building West Annex (HWMB-WA) at the Darlington Nuclear Generating Station.” Although CNSC staff reviewed this and determined it was sufficient to demonstrate that HWMB-WA meets the applicable design requirements. That maybe the case but I suspect there are many other potential problems in this area as well as changing deteriorating states of these building structure that make up aging nuclear power plants facilities.

This whole area needs top attention by CNSC with enhanced inspections and if required and additional mitigation action plans.

Aging Management

As noted throughout this submission, this writing considers aging management as a top priority whether it is cables, structural integrity including on the non-nuclear side of these facilities.

This reviewer was pleased to see that OPG has a mature surveillance program at DNGS that includes cable condition monitoring and aging management programs. This is reassuring but the fact remains these cables are getting very old. This is exactly what the public would expect including this writer.

Section 3.2 Darlington Waste Management Facility

In all the sections on these waste management facilities, there is not any reference on two very important developments.

Natural Resources Canada is holding public consultation with key stakeholders on a planned policy for radioactive nuclear waste expected to undergo a formal regulatory process in the near future.

NWMO information update on plans to approve a permanent deep geological repository for this high-level radioactive waste.

All that was required was an update with notification of what is transpiring on these two areas of nuclear waste. It would be helpful if the Commissioners could request to provide and update which could assist the public in understanding what is going on behind the scenes on the regulating of the nuclear waste storage.

Aging Management

My comments throughout this submission in this area can be applied to Darlington Waste Management Facility. Please refer to the issues of concern in aging management.

Fire Emergency Preparedness and Response

This section identifies a couple of incidents regarding training issues that needed to be updated. Those incidents one of which was describes as a “finding of medium safety significance “serve as a reminder of how important fire protection procedures and capabilities really are especially when main fire response is done by the local fire service provided whether at this site at Clarington or at PLNGS service in Dipper Harbour and Musquash. This writer was surprised to learn that OPG’s facility emergency program for DWMF includes basic fire response for facility staff to respond to small fire with fire extinguishers. One could see such an application used in the kitchen with a small cooking fire

but in a nuclear waste management facility, I must admit it came as somewhat as a surprise. In my view, a small fire can quickly develop to a large fire. One wonder how effective a fire extinguisher would be on a motor or electrical type of machinery fire. I assume they are of high-quality industrial use technology.

What is the response time for the Clarington Fire Department to the DWMF is one question I have?

How many small fires has there been at that facility?

Does Darlington have their own emergency response team on site? The ROR does not elaborate on the extend and capacity of emergency response services on site with regards to staff and equipment.

Section 3.2.13 Safeguard and Non-Proliferation

This entire area is becoming more of a public interest in New Brunswick where there are public discussions on the research and development of small modular reactors especially with one vendor, Moltex, whose technology would reuse the “used/spent fuel” from the CANDU reactor at PLNGS presently stored on their site and eventually at this and other sites well into the future.

Concerns raised around the potential of proliferation risks.

Page 94 provides one sentence on this topic. The public, I believe could benefit with some information on what are these applicable regulatory requirements and CNSC staff expectations for safeguarding and preventing any such proliferation role of IAEA would be of interest to know.

Certainly, the ROR may not be the forum to drill down into this topic of interest – but perhaps CNSC can provide a public document/discussion paper on this topic similar to one CNSC recently issued on cyber security.

SECTION 3.3 PICKERING NUCLEAR GENERATING STATION

This writer is particularly concerned about this particular nuclear power plant for a number of reasons:

1. Many of the CANDU reactors Unit 5-8 are reaching the end of licensing period (expiring August 31, 2028). It is noted that OPG requires CNSC approval to operate beyond December 2021 following end of their commercial operations and permanent shutdown.

2. The units 5,6,7 & 8 were brought into service over 40 years ago (1983)– aging management issues will need extra scrutiny considering the age of this facility infrastructure associated with these older operating units.
3. Despite best industry practices and CNSC Oversight efforts, anything could go wrong that potentially result in a total shutdown well before that expected date of partial shutdown situations.
4. Any nuclear event accident or breakdown in a high-density population area could put surrounding populations at risk. (see public health risk assessment for Irving Oil Refinery Expiry 1999). The psychosocial health effects to the public would also be of serious concern and are generally not adequately assessed or even acknowledged.

These kinds of concerns are not as evident with the Point Lepreau Nuclear Generating Station as that facility has been refurbished with new pressure tubes. PLNGS came into service in 1983.

If Pickering would be shutdown tomorrow, and that Ontario would have no access to energy replacement could there be a potential of rolling black out throughout Ontario?

- What is the back up to supply replacement energy to Ontario in the event that Pickering would be shutdown prematurely?
- What are the steps that are taken when plants are extended beyond their expectations?
- What is missing in Section 3.30 is the lack of information on any contingency plan to replace 2168 MWe of electrical power should it become necessary to permanently have to shutdown this facility potentially at any time; if and when, circumstances warrant. This writer has learned that there are electricity power replacement steps, but the public may not be aware of them.
- What are the possibilities of this happening?

I would like to hear such question raised at the upcoming ROR meeting in December and hear the response from both CNSC staff and licensee.

The fact that the Commission renewed its Power Reactor Operating Licence for a 10-year period covering September 1, 2018 to August 31, 2028 with three phases of operational activities, a key phase being continued commercial operation until December 2024 that is only 38 months away.

This tells the writer that there must be issues of concern to include this careful phase in periods. The public needs to be made aware of these issues and rational for these operational phases.

For all these above reasons this reviewer paid additional attention to the ROR for Pickering Nuclear Generating Station. Many of the issues of concern are relevant to the other facilities but for this nuclear power plant that they are more acute than timely.

As this Station is reaching the end of life for commercial operations, how much additional risks are there to operate this facility until end of its commercial operation?

Fisheries Act Authorization

It is noted that OPG attributed the elevated fish impingement primarily to weather and environmental influences which is outside of PNGS operational control. Mitigation actions; however, are within the control of OPG at this site.

This writer would suggest that weather and environmental influences are climate change related and since OPG has climate change mitigation plans and actions under their operational responsibilities and CNSC oversight, the licensee has responsibility to approach this elevated impingement issue with more than quick dismissive like responses as noted in the ROR statement on this subject below:

“OPG attributed the elevated fish impingement primarily to weather and environmental influences, which is outside the PNGS operational control.”

In my view, this problem and solution needs to be tied into the climate change adaptation action plans in their environmental protection section.

Business Continuity

The ROR states that OPG has an adequate contingency plan to maintain and restore critical safety and business functions in the event of disabling circumstances such as a pandemic, severe weather, or labor actions.

One of the most growing threats to this and other nuclear power plants was omitted specifically cyber attacks (security).

There is one sentence on cyber security for this NPP as well as all the others. The 2020 ROR should have at least stated PNGS has at least a contingency plan to maintain and restore critical safety functions. As well, a statement of how important this security is to PNGS would offer reassurance to the public in light of all these cyber attacks.

Perhaps there are none which I find hard to believe. The in-camera session of the hearing needs to focus on what appears to be limited information contained in the 2020 ROR on this critically important area of cyber security.

Re: P.102 – There needs to be an update for the public record on status requirement of all staff being fully vaccinated. Many protective actions listed and no reference on mandated vaccinations. It is assumed that such a mandated requirement is now in place. Same for all other nuclear power plants. How many staff refused to be vaccinated? What are the consequences and impacts to these nuclear power plants?

Personnel Certification

As noted above with this aging facility that where licence will allow continued commercial operation until December 31, 2024, reading the section on personnel certification is a noteworthy concern for this reviewer of the 2020 ROR. Anytime certification standards/testing had to be postponed, extended, altered, even for a valid reason, such as COVID-19, it is always a concern.

It is reassuring to read that 3 certified individuals affected by the exemption passed their postponed requalification test within 6 months following the Commission's decision to grant the exemption and was recertified in 2021.

Question is during this delay period, could those personnel have missed, forgot about critical information required as a certified employee that potentially could have impacted their decision-making skill level? Hopefully, invoking subsection 9. (4) of Class I Nuclear Facilities Regulations will be the rare exception for the future.

Section 3.3.4 Safety Analysis Deterministic Safety Analysis

Considering this nuclear power plant is reaching the end of its commercial operation until December 2024, it is recommended by this writer CNSC's staff recommendations related to the aging analysis results be made more substantially transparent such as providing a link to this analysis.

I would like to see the Commission delve into this area with the CNSC staff and licensee as it is an important piece of information for the public to be made aware of.

Pressure Boundary Design P. 107

Considering the higher-than-expected Heq readings, at the Bruce Power units, as well as in 2020, there was an event related to the primary heat transport system leak that occurred due to a pressure boundary failure of the fueling machine supply system piping. This reinforces the need for CNSC to be extra vigilant in ensuring these pressure tubes re not thinning to point of failure.

Cables

Reassuring to read that there were not findings related to the cable systems. Considering the age of this nuclear power plant, it is reassuring information.

It is reassuring as well to read on page 110 last paragraph: "The results of the technical assessments performed on final outage inspections reports and components dispositions show that the pressure tube at PNG units remain fit for service."

As noted above for the other facilities this writer has identified aging management as one of the most important areas to ensure these reactors at this site and the other plant are operated safely until these units are either refurbished or decommissioned the latter pertaining to PNGS.

Paragraph 2, page 111 is particularly worrisome, and the Commissioners need to drill down into this section on those 5 complaint findings and the one finding of low safety significance for aging management.

The low findings relate to the performance of pressure tube to calandria tube contact where CNSC staff have identified challenges with the assessment methodology along with a number of inputs models that have the potential to erode the safety margin.

In my view, the alarm bells should be ringing at CNSC on this information in the ROR for this older plant.

As a member of the public, this writer worries some of these pressure tubes will fail due to the thinning of the tube walls causing a safety related event. They have had a lot of use over the last 40 years. It is important to recognize this fact.

Section 3.3.7 Radiation Protection: Radiological Hazard Control

Last paragraph on page 112 of the 2020 ROR, OPG reported a heat transport leak and a firewater line break in Unit 1 which resulted in the spread of contamination and an increase in personnel contamination events.

The contamination is not identified. Can it be assumed such contamination was radioactive in nature? It is reassuring to read that radiation doses to workers at PNGS were below the regulatory dose limits. Further it is expected positive to read as well as the estimated dose to the public at PNGS remained low 1.2 $\mu\text{Sv}/\text{y}$ well below the regulatory dose limit of 1 mSv/y . Even with this reassuring statement, one does not want to learn of waterline breaks resulting in the spread of contamination.

Cyber Security

There is no mention that cyber attacks / terrorism is one of the growing threats to this facility and the other facilities. No mention that CNSC is in a public consultation process preparing for formal regulatory change to tightened up the current guidance and rules governing cyber security. This would have been helpful to read in this ROR.

Considering all those cyber attacks in the world, such regulatory changes are needed.

Section 3.3. 14 Transport and Packaging

A community member reading this section could easily be alarmed reading “radioactive materials to be transported”.

This section needed more of an explanation on what is meant by “radioactive materials” such as how dangerous, safety risk involved in transporting such material. It is assumed this material is of low level if not what is the breakdown of the levels of this radioactive material.

SECTION 3.4. PICKERING WASTE MANAGEMENT FACILITY

Section 3.4.0 Introduction

In Section 3.4.0, it is noted that OPG is authorized to construct 3 additional dry storage container storage buildings in Phase II (storage building 4, 5 & 6) and 1 processing building to replace the current dry storage container processing building.

This writer assumes that current standards, codes and technical material advances with concrete composition and construction are much further advanced now than when concrete was used 40 years ago. One could conclude if this assumption is correct that these new dry storage processing structure will be built at a higher level compared to the current ones and further these older structures could be subject to deterioration at a faster pace. This assumption may be wrong and it so, clarification needs to be provided as part of this ROR public review.

Therefore, throughout my comments, this topic of current state of the concrete in many of these older plants is an area of concern. It will require CNSC enhanced monitoring attention under aging management reference made by OPG submitted the aging management report for the OPG Pickering Waste Management Facility.

There is no information on what this report revealed. CNSC reviewed the submission and determined that it complied with OPG aging management program. This ROR for 2020 needed to provide some information on the content findings of this report. In regard to the access and assistance to the IAEA section, details of the IAEA inspection activities are provided in Section 2.13.

This reference approach should have been more widely covered in the ROR where references made to the studies completed but without the results of the findings provided.

With reference to periodic inspections, monitoring, and maintenance of the dry storage containers – periodic in term of frequency is not acceptable time schedule. In fact, all three CNSC responsibilities

appear to be potentially problematic considering what is inside these (highly radioactive nuclear waste material). Periodic is too much of a casual like schedule for this writer's comfort level. There are not indications of what kind of maintenance is required or even completed. Considering the age of these above ground waste storage units, possible deterioration of the concrete, protective liners, outdoor weather conditions on the exterior of the structure, a much more rigorous schedule is required. I am interested in finding out what is the state of concrete for these above ground storage units. There is no reference to the Government of Canada – NRCan launching a public consultation process on the radioactive nuclear waste policy. Another missed opportunity to alert the public of upcoming or current regulatory policy change. Although this is not part of CNSC responsibility centre, an update on proposed public review of this nuclear waste policy would have been helpful and welcomed.

3.4.6 Aging Management

OPG submitted the aging management report for the OPG Pickering Waste Management Facility. Again, considering we are dealing with aging structure made of concrete and steel this section needed to provide a summary of findings in these Regulatory Oversight Report

No information about the current or emerging deterioration condition of these dry storage containers containing used nuclear fuel high level radioactive waste generated at these was provided.

It may comply with the OPG's aging management program but what is of the public interest is the report findings for this and these other older/aging nuclear power plants. A link or reference to this report is recommended.

Reference to OPG submitting the aging management report for the PWMF. It may have been completed with OPGs aging management program, but the key question is what was in this report? This writer throughout this submission has identified aging and obsolesce issues as a key concern. There should have been some information on the state of this Pickering Waste Management Facilities. I would like to see the Commissioners make an inquiry on this to both the CNSC staff as well as from OPG representatives. This will help the public contain a status report on the stat of these above ground structure that contain so much radioactive nuclear water material.

SECTION 3.5 BRUCE NUCLEAR GENERATING STATION

Fisheries Act Authorization

This section fails to identify the amount of fish held (numbers) or whether any were under species at risk status. This important information was included in the Pickering section and should have been included for the Bruce Nuclear Generating Station. This information needs to be made available to the commissioners at the upcoming General Meeting on this Regulatory Oversight Report – why was such information left out?

Refurbishment

Point Lepreau Nuclear Generating was the first CANDU reactor to undergo refurbishment in 2008, unfortunately that project faced delays and additional costs but at the end of the day, the project was successfully completed. Hopefully other licensees benefited from lessons learned from PLNGS refurbishment. With any complex undertaking with so many contractors on the Bruce refurbishment site there is always the possibility of an accidental event as simple as a piece of scaffolding material falling into a critical part of the infrastructure.

This point seems like an example to illustrate paragraph 2 on page 128 “CNSC staff observed a declining trend in contractor performance in the fire protection conventional health and safety and foreign material exclusion. This latter one was an event that PLNGS had a when the worker accidentally left a piece of wood in the heat transport pump in 1995. This operating experience was shared throughout the nuclear industry.

Bruce Power has implemented a corrective action plan to improve contractor performance which will help reduce events of this nature. CNSC will have to accelerate and prioritize its monitoring of these contractor work activities. With so many units to be refurbished with thousands of workers, this whole area of management of contractors will have to be very carefully monitored. The ROR provided a much welcome update on the refurbishment work to date.

Business Continuity

According to the ROR for Bruce Power, it has adequate contingency plans to maintain or restore critical safety and business functions in the event of disabling circumstances. Several are listed but cyber attack was not listed considering cyber attacks is the fast-growing threat to this and the other NPPs according to a CNSC information session of April 2021.

Personal Training

Again, another issue related to contractor management and licensee training of such identified in this section on page 134 (last paragraph). The ROR states “non-compliances of negligible safety significance for training programs at Bruce Nuclear Generating Stations A and B were identified. These non-compliances are related to the improvement of qualification assessments regarding some contractors, trainers, training programs ...”

One could argue that such non-compliances are not that serious but where it comes down to training of contractors’ unfamiliarity with working in a nuclear power plant, all aspects of proper training is critically important especially during refurbishment activities.

Personnel Certification

As hoped and expected, CNSC staff determined that Bruce Power’s personnel certification met the applicable regulatory requirements in 2020. Additionally, “CNSC staff confirmed that Bruce Power has a sufficient number of personnel at Bruce Power Nuclear Generating Station A and B for all certified positions.”

The most important of all statements in this section reads “all certified workers at BNGS A and B possessed the knowledge and skills required to perform their duties safely and competently. The question this writer has is how many problematic or unsuccessful candidates were identified in the testing referenced in this section?”

Fitness for Duty

Despite CNSC determining the BNGS A and B met requirement for managing fitness for duty in 2020, there were reports of non-compliances with hours of work limits by certified staff during this period covering ROR.

Worker’s fatigue is always a concern when work shifts are in excess of 16 hours and recovery period less than 8 hours for safety sensitive positions. It is under those work conditions when mistakes can occur even by the most qualified personnel. There were no stats on how many non-compliances recorded in this area which needed to be included in this oversight report. Such statistics need to be included in this section.

Probabilistic Safety Analysis

In various sections of this ROR including this one, there is often references to CNSC staff determined that the licensee performance met CNSC staff expectations. It is unclear what is met by staff expectations in term of the degree of being compliant with the regulatory requirements. These words need to be defined. This question was raised last year in my submission, but it is still unclear as to what is specifically met by “CNSC staff met expectation” for specific areas covered in the ROR.

Component Design

Reference to both stations met the minimum expectations for fuel bundles inspection. Minimum expectations for fuel bundle inspection does to invoke a high level of public confidence for the inspections of these fuel bundles.

Cables

It is encouraging to read that “CNSC staff had no concerns associated with the cable system and the cable aging management program met CNSC performance expectations at BNGS A and B in 2020”. Considering the age of these cables, this is a positive conclusion. As noted above this writer is concerned about aging / obsolesces issues with this and other nuclear power plants considering these stations are built in early nineties.

Another example of a real and potential issue of concern, centers around aging impact found on page 141 top paragraph where several procedural non compliances related to a number of areas, including pressure component leaks were observed. Even though, Bruce Power took immediate corrective actions which CNSC staff found to be acceptable. The one on pressure component leaks are indications of potential problems under the heading fitness for service where this non-compliance information is contained (P. 141) top page.

Aging Management

Despite reading that Bruce Power aging management program met regulatory requirements as well as Bruce Power being compliant with REGDOC 2.6.3, Fitness for Service Aging Management – there were remaining issues referenced in this section which cause this writer to be concerned about future aging of pressure tubes and calandria tubes. The recent public notice / media release on these higher-than-expected reading of hydrogen designed to identify possible problems with these tubes, is a real concern due to the aging of these nuclear reactors and associated mechanical piping systems.

With reference to staff concerns, more information needs to be made public – an update at the December Commission meeting would be in the public interest.

Estimated Dose to the Public

The key piece of information found in this section was that monitoring process in 2020 indicated that the dose to the public was (< 1.8 uSv/y) representing 0.18 of the regulatory limits of 1 mSv/y.

The only way this can be sustained year by year is by CNSC continued oversight armed with tough regulations and the industry continued vigilance on the safety aspects of this and other plants. With those older units currently in the process for refurbishment things potentially could go wrong. This is why this reviewer identified many issues of concerns that if not managed well under the Aging Management Programs, these very low doses to the public could have the potential to increase. It is all the small non-compliances, impact of COVID-19 and other factors that could have a cumulative impact and over time could result in a serious nuclear event or accident where the public exposure to radioactive nuclear substances could adversely affect members of the public.

This is why this writer identified these issues to illustrate the basis of these concerns.

Section 3.5.10 Emergency Management and Fire Protection

Nuclear Generating Preparedness and Responses

Based on the last two ROR report, it seems clear that Bruce Power has made improvements in this area. Very reassuring to see the following two statements:

“CNSC staff concluded that Bruce Power has sufficient provisions for preparedness and response capability to mitigate to effects of accidental releases of nuclear and hazardous substances on the environment and maintain the health and safety of persons and the national security.”

Second, reassuring statement needs to be acknowledged: “CNSC staff concluded that Bruce Power met the applicable regulatory requirements for nuclear preparedness and response at Bruce Power A and B in 2020.”

Cyber Security

My above comments on this section made on the other nuclear power plants also applies to Bruce Power’s section on this topic. There is simply insufficient information in this section to help the public understand what are the issues and actions planned to prevent such cyber attacks?

I also recognize that PLNGS included cyber security as part of their recent large scale emergency exercise in October 2021.

SECTION 3.7 POINT LEPREAU NUCLEAR GENERATING STATION

In reviewing this section of the Regulatory Oversight Report 2020, a number of issues of concern are identified. It should be noted that these issues are common to the other nuclear power plants that have been noted in this submission.

Licensing

In 2017, the Commission renewed the Power Reactor Operating Licence for a five-year period authorizing NB Power to operate the PLNGS and the SRWMF until June 2022.

There is no explanation in this section as to why only a five-year licence was granted. This should have been included to avoid any incorrect speculation as to why the licensing period is much shorter than the norm of 10 years plus for those other facilities. NB Power is currently requesting a 25-year licensing renewal period.

The issues to this writer and others are a legitimate question raised in this and other submissions. They should be answered and made available as a document tabled during the Commission Hearing for this and future Regulatory Oversight Reports.

After last year ROR Commission meeting, this writer requested a written response to my many issues and questions raised in last year's review after several requests, over several months, I was able to obtain CNSC staff report responding to the many issues from 2019 ROR. I appreciate that this can take some time to research and review the material in order to provide answers but the response time could have been related to COVID-19 related.

The CNSC response document was most informative and would have been in the public interest to have had that CNSC response report available as part of the Record of Proceedings. As it stands now only one person has seen that report this writer. The CNSC responses was very informative and helpful.

This is of several recommendations this writer will be identifying in his submission.

Fisheries Act Authorization

The following information was taken from the ROR 2019, page 138 under the Fisheries Act Authorizations section :

From reading this section, NB Power submitted a preliminary self-assessment of serious harm to fish due to cooling water intake in April 2016. CNSC staff reviewed the assessment. Then NB Power revised the Fisheries Act self-assessment to CNSC in January 2017, then an extension with a new completion date of December 31, 2018. This section describes additional delays with a decision Fisheries and Ocean Canada will take the lead as primary regulatory agency (June 2019). Back to square one again where it is noted that NB Power was planning to submit a revised application for a Fisheries Act Authorization to Fisheries and Ocean Canada. Considering that NB Power a preliminary self-assessment of serious harm to fish in 2016 and reviewed by CNSC in April 2016; it was disappointing to learn that protective mitigation to protect fish from serious harm is still on –going. The long period of time to problem solve this issue is unacceptable. This issue needs to be expedited. The final question is when will NB Power planning to submit a revised application for Fisheries Act Authorization.

Despite NB Power, submitting an application to the Department of Fisheries and Ocean Canada in December 2019, a further delay has occurred at the DFO level related to the need for further important consultations.

Based on the information from last year report 2019, as well as this year ROR 2020, there has been further delay period both the application and decision-making perspective. It is hoped the meeting with CNSC DFO and NB Power this Fall, will result in the resolution of the outstanding progress with a final decision from DFO to follow in an expected manner. These process delays are unacceptable as noted in this and past RORs.

An update progress report needs to be pursued and presented at the upcoming Commission meeting on the status of these delays and what can be done to expediate them. See my recommendation at the end of this submission.

Periodic Safety Review

This writer is of the view that this and all PSRs are of utmost interest for the public as to identifying potential safety issues as well as risk analysis with preventative mitigation steps.

The public has a need to know what these risks are, as well as how relevant these risks are there along with what steps are taken to reduce or eliminate them. Therefore, this and the other PSRs need to be more readily available. Additionally, the Commission Hearings on ROR need to focus more attention with questions from the Commissioners and CNSC staff responses to capture the information in the Record of Proceeding Minutes.

The actual current PSR needs to be attached in an appendix to the Record of Proceedings. It is understood that the PLNGS recently submitted PSR 2021 and will be subject to overall scrutiny during their licensing renewal process hearing next year. These reports should be included in the ROR appendix for each nuclear plant. They are of public interest.

Record Management

Any complaint findings need to be paid attention to in this area especially the one under Worker Dose Control as such records having direct or indirect impact to workers who are potentially more exposed and a risk of radiation exposure. Good to see that NB Power currently working to address these findings of CNSC who will continue to monitor NB Power's response to those non-compliance notes in this section of (Record Management).

One of the reasons this writer values the oversight role of the CNSC is because very little if anything slips their thorough monitoring capacity as they carry out the many regulatory oversight responsibilities. Some people may argue these are only minor infractions with negligible safety significance, but not to this writer and the public who depend on CNSC on ensuring all these nuclear power plants are completely operated safely all the time.

Such comprehensive oversight is important, especially those of us who live in the surrounding locations of these nuclear facilities.

This writer is very please to see how well PLNGS has met its applicable regulatory requirements for Management of Contractors and Supply Chain in 2020. This had been a source of concern for the other licensees as noted in my past two ROR submissions.

Section 3.7.2 Human Performance Management

Again, very pleased to read CNSC staff determined that NB Power has implemented and maintained a human performance program that met the applicable regulatory requirements as well as its performance met CSNC staff expectations in this area.

“CNSC staff noted that NB Power established a “Succession plan” spanning from 2018 to 2025 that will see the staffing levels for Control Room Operators (CRO) and Shift Supervisors (SS) exceed more than double the minimum staffing compliment by 2025.” Why I worry about this, is over the next 3 years when this minimum staffing could be under pressure, if those current operators / shift supervisors could end up not being available to perform due to stress leave or other reasons - Succession planning is important to ensure adequate certified staff are in place to carry out their licence responsibilities - this is important to this writer. Having enough certified operators, successfully complete the training is another area of concern.

This commentator recommends that there be an update on the current state-of-affairs from now 2021 to that 2025 period when staffing levels for control room operators and shift supervisors exceed more than double the minimum staffing complement by 2025.

As noted above, this writer is concerned that the staffing levels are getting close to their regulatory requirements. May I suggest the Commissioners at the upcoming hearing pursue this area further.

Section 3.7.3 Operating Performance

Of all the information contained in Section 3.0 (PLNGS) the most important and key one is found under Conduct of Licensed Activity. It is important for this writer to cite the key information that provides reassurance to the public in this region.

“NB Power continued to operate the station in a safe manner within licensing basis. NB Power continued to operate its reactor unit within the conditions prescribed by the Power Reactor Operating Licence and within the power limits identified in the Licence Conditions Handbook.” In order to maintain this level of safety, CNSC needs to explore why more candidates for certification are not successfully completing the training required for such certification.

The findings indicated compliances with the relevant requirements over this specified area. No unusual trends were identified and no regulatory follow up was required based on CNSC staff reviews of NB Power Quarterly Reports on Safety Performance Indicators.

Obviously, this is what people in the vicinity and regions of this nuclear power plant want to read.

As part of this public review, it is still important for this writer to raise questions and issues of concern.

Section 3.7.5 System Design

The entire area of obsolescence is an area of concern not just for PLNGS but for all the other nuclear power plants. This section illustrates how this obsolescence problem especially on the non-nuclear side of these plants. As noted, there was a mechanical issue that occurred which was related to a pressure release disc supporting the turbine system which is on the conventional (non-nuclear) side of the Station.

It is important for CNSC to have added more information as well as an update noting how significant this problem was that caused PLNGS to be offline in the cold period this winter that cost NB Power approximately 10 million dollars to purchase replacement energy. The main issue of concern for this writer is in aging management and obsolescence with the inherent impacts on safety and power generation dependability.

My recommendation is for CNSC and licensees to develop a more effective obsolescence management action plan. I would like the commissioners to follow up and pursue this area in more details. Another reassuring statement found on page 172 was "CNSC staff determined that the reliability program at PLNGS met the requirement described in REG DOC 2.6.1 Reliability Programs for Nuclear Power Plants."

Structural Integrity

There was no mention on the state of concrete integrity considering 40-year initial construction with changing conditions as noted above. This writer is concerned that plant deterioration of the concrete especially below ground such as the basement floor where the nuclear reactors is contained.

If such concerns are considered to be irrelevant, this writer stands to be corrected. The Commission needs to provide clarifying information in response to this issue raised in this reviewer.

Section 3. 7.7 Radiation Protection

This commentator was very happy to read this “CNSC staff concluded that NB Power met the applicable regulatory requirements and CNSC staff expectations, for the Safety and Control Area Radiation Protection at the PLNGS in 2020.” Same for worker dose control noted.

Section 3.7.9 Environmental Protection

It is important to acknowledge that for PLNGS in 2020 releases were well below the Derived Release Limits. No radiological releases to the environment from PLNGS exceeded the regulatory limits and no action levels were approached or exceeded. Equally important was that the estimated dose to the public was very low (1.32 uSv/y) representing 0.13 % of the regulatory dose limit of 1 mSv/y. This is what the public expect to learn from this 2020 Regulatory Oversight Report.

Section 3.7.10 Emergency Management and Fire Protection

This reviewer continues to be very satisfied with NB Power capacity with sufficient processes for preparedness and response capability to mitigate the effects of accidental release of nuclear and hazardous substances to the environment as well as maintaining the health and safety of persons.

One area that is not clarified under the Fire Emergency Preparedness and Response has to do with how NB Power maintain comprehensive fire response capability and fire protection program that met regulatory requirements.

Does this mean that the licensee has a fire service agreement with Saint John Fire Department? At the last licence renewal hearing, the Chief of that Department made a submission addressing their involvement and relationship with PLNGS and local Musquash Fire Department located in both Dipper Harbour and Musquash that is closest to PLNGS. More information on the interrelationship of these fire protection services needed to be referred in this ROR for all these nuclear power plants and the local fire projection seniors.

Details of that agreement needs to be made known publicly. Other fire services in the areas of these nuclear facilities may also have such formal contractual agreements but the public is generally unaware of them or what they contain and who pays for them.

Section 3.7.11 Waste Management

This section raises the question - What is the capacity for Solid Radioactive Waste Management Facility at PLNGS? This writer has learned from PLNGS that there is extensive storage capacity available this site. Such information could have easily been included in this section.

Section 3.7.14 Transport and Packaging

In this writer's view, the general public, for the most part, may not be as familiar with the transport of nuclear substance that is taking place to and from the facility. This writer would like to see more information in this section as well as for the other nuclear power plants – what are these nuclear substances that they are referring to? Are they radioactive material and if so low level or high level of nuclear waste material?

Much clarity is needed for this section to provide adequate information as to the safety risk. This is an important section but the lack of information in the ROR in this area raises more questions and answers.

SUMMARY OF FINDINGS, HIGHLIGHTS AND RECOMMENDATIONS AND CONCLUDING COMMENTS

This section of my submission will summarize my findings with recommendations. This commentator carefully read the Regulatory Oversight Report for Canadian Nuclear Power Generating Station for 2020 in order to identify issues and areas of concern one of two objectives in preparing this submission, it was necessary to carefully read the entire report.

In doing so, this reviewer made notations above identifying issues and concerns that are documented in the first section of this submission following table of contents section by section.

The organization and lay out of the material in this ROR are excellent. This writer found the material well organized in the four sections.

- Section 1 provided introductory material that explained this report, the licensed facilities that were covered as well as the CNSC regulatory framework and practices.
- Section 2 provided background information that served as a context for the assessments.
- Section 3 included the highlights from the individuals' assessment for each facility.
- Section 2 and 3 are well organized according to the CNSC safety and control area framework as existed within the time-period for the ROR and of 2020.
- Section 4 contained CNSC staff conclusions based on the assessments presented in this report. This commentator started his review by reviewing the summary on page 2, with the view to determine whether he would agree and come to the same conclusions found in the summary as well as Section 4 conclusions for this 2020 ROR.

It is important to keep in mind this submission is prepared by a community member without any technical nuclear background other than being an observer and interested party in nuclear energy over the years. This writer reviewed this report with a critical eye. In doing so, I was able to highlight the issues and areas of concern found above in the first part of my submission.

Despite the CNSC conclusions in the Executive Summary that the nuclear power plant and waste management facilities operated safely in 2020, this does not necessarily mean that there are many

potential safety related areas that are of concern to a community member such as this writer who lives 60 km from one of these nuclear plants (Point Lepreau Nuclear Generating Station). Certainly, the conclusions listed in the Executive Summary are reassuring but even with these conclusions, there is a great deal of safety control areas that could change very quickly in an accident or unplanned event(s) causing such conclusions at one of these nuclear power plants to create unsafe conditions where shutdowns are required. There are always the possibilities that unplanned / accidental events could occur despite the best efforts by the licensee and regulator to prevent such from occurring. A number of these safety related topics were identified in my submission.

Some examples are aging facilities, obsolescence management of these older facilities, human performance issues, cyber security threats and impact of COVID-19 pandemic. Operating nuclear power plants take so much expertise and stable conditions, all it takes is for any one or others of those listed among other safety control area in Section 2 to go seriously wrong for those positive safety conclusions to be reversed than more severe process failures that could result in radiation doses to the public reaching above the regulatory limits or any radiation doses to worker over regulatory limits. The above pages raise issues of concern and raises legitimate questions and questions whether the conclusions reached are consistent with community expectations if they were to drill down into the details of this oversight report as this community member spent the time doing.

This writer does not question whether there is sufficient regulatory oversight, in fact, if it was not so rigorous there could be safety related issues that could be missed despite the licensee's best efforts to prevent and deal with such safety related matters.

There are a number of issues of concern that this writer identified covered in Section 2. This section provided information organized by Safety and Control Area (SCA). This section was helpful as it served as a background for the assessment of all the nuclear power plants and their waste management facilities. The areas of concern identified issues consistent with this writer. These sub sections are well organized according to the specific areas for each of the Safety Control areas. My submission highlights those safety related issues with specific focus on each of the nuclear power plants.

Comments on Section 4 titled: "Conclusion for the Regulatory Oversight of Nuclear Power Generating Sites in 2020." CNSC staff concluded that the Nuclear Power Plants and associated Waste Management Facilities on their sites operated safely in 2020. This conclusion was based on detailed

CNSC staff assessment of findings from compliance verification activities for each facility in the 14 CNSC safety control areas. Even though, this maybe the case, there is no guarantee that such conclusions will be sustained.

In my view, there are many small but potential serious indicators in these operations of safety nature that could end being problematic where the public near these facilities could be at risk.

This report should have had a section on PSAs where these safety risks and vulnerable areas spelled out in much more detail especially on how such risks are managed and prevented.

It is acknowledged that such potential probabilistic risks are found in specialized Probabilistic Safety Assessment (PSA). Most members of the public are unfamiliar with these key reports. There should have been a section within the main ROR for each facility, a summary of these risk factors and the analysis as to the actual probability of such ever occurring. This information is generally not that easily available. A number of years ago, when such a document was presented at Energy Utility Board hearing, this writer had to agree to sign confidentiality agreement in order to review it overnight until hearing next day. PLNGS just recently registered its new PSA with the CNSC and will be included as part of its licence renewal process. In the section on PLNGS, there is little substantive information included outlying the various potential / risk and how they are assessed. It is recommended that the future ROR include more than an acknowledgement that the licensee met applicable regulatory requirements and were in conclusion along with various processes methodologies in this area. Reference P. 107, There is no specific risk factors identified. These sections under Probabilistic Safety Analysis need to provide a summary of such risks and how probable they are in occurring. More substantive information required in the public interest.

COVID-19 Impact

Both in the Executive Summary and the Conclusion sections of this ROR, there is no reference to COVID-19 pandemic impact on the operations of these nuclear power plants. This is surprising considering that the pandemic impact procedures and mitigating actions were included in the assessments of the specific nuclear power plants. Considering this had been devastating and the worse public health crisis in a hundred years, these two key sections that many people would read should have included some summary conclusions on this subject. It was surprising not to see this specific subject covered in these two sections considering COVID – 19 was covered in the various individual nuclear plant assessment sections. Specific references to COVID-19 are found in this 2020 ROR including on page 39 where concern whether preventative maintenance work could be delayed.

Under Business Continuity sections, CNSC confirmed that OPG had sufficient business continuity plans in the event of a wide scale outbreak across Canada. Another reference to COVID-19 found on page 50 where CNSC staff had planned to conduct an independent environmental monitoring program around PLNGS in 2020 but due to restraints related to COVID-19, only soil, water and plant samples were taken in 2020. Now that Canada is in the mist of a 4th wave of an even more highly contagious problematic Delta virus that is hitting New Brunswick very hard. PLNGS is located in southwestern part of this province and consequently there is a concern that this more highly contagious disease could affect the workforce and contractors at the PLNGS facility.

It is recommended that next year, the Executive Summary and Conclusion Section provides an acknowledgement of COVID-19, its impact and mitigation steps taken.

Cyber Security

Please refer to my commentary on this area found in this submission on each of these nuclear power plants. No reference to how serious such cyber security/threat are, is covered in those sections under Security. At the very minimum, an acknowledgement of this kind of evolving growing threat to nuclear power plant facilities should have been noted by CNSC. Further CNSC has launched a public information / consultation period in preparing for planned regulatory changes to strengthen regulations pertaining to cyber security. This was a missed opportunity to alert the public that CNSC takes this area very seriously and further invite public input to a discussion paper issued on this subject. An update on this cyber-security regulatory change is recommended. Please refer to the CNSC April 2021 Consultation sessions for background on this issue.

On a broader perspective, CNSC needs to include in future RORs of these upcoming regulatory proposed changes. Another example is lack of any reference to extensive Government of Canada proposed policy changes on radioactive nuclear waste policy. Even a brief reference to the upcoming regulatory and policy changes would have been welcomed in the public interest. Even though such policy development is not under the mandate of the CNSC, it is regulatory agency that identified need for public consultation issuing a discussion paper this Spring.

Regarding what the ROR describes as licensee challenges the following is recommended.

Under licensing, CNSC staff develop a licence condition handbook to identify the specific requirement that apply to that licensee. Throughout the ROR, there is a reporting on effectively the licensee was compliant with these specifics' requirements in the LHB. This writer would have like to have seen a

section of this area to show how well or not such requirements were carried out. This is important as the ROR refers to “licensee challenges” but does not specifically identify them for each licensee. There is a lack of sufficient information for the public to know or understand these site-specific matters as well as licensee challenges. The ROR needed to provide more information on these.

The ROR; however, did a thorough job as one would expect reporting on the many REG Doc compliances not as much attention is given to what degrees these licensees are meeting their specific conditions and commitment within their own licensees.

Indigenous Consultations and Engagement

The overview included from page 58-61 is an excellent overview outlining CNSC staff continues to work with indigenous communities and organizations to identify opportunities for formalized and regular engagement including meetings, facilitated workshops aiming to discuss and address topics of interest and concern to interested indigenous communities. This writer noted these efforts are for interested indigenous communities.

What about these communities who have not expressed a direct interest but if they were reached out more proactively could result in an expanded interest? There could be some communities who may not be interested. What CNSC strategies are in place to inform, engage those communities including those who are fundamentally opposed to nuclear energy being generated?

This section does not describe any such efforts. CNSC staff engagement activities with Pickering and Darlington sites were excellent especially in 2019, the CNSC and the Metis Nation of Ontario signed a Terms of Reference to provide forum through to which to collaborate and address areas of interest or concern regarding CNSC- regulated facilities and activities. This writer was very pleased to see this development especially after the outstanding – intervention made at the 2020 Commission Hearing from the Metis community representatives who were very open to such a formal engagement opportunity. In this section on Bruce and specific Indigenous engagement activities are very comprehensive and noteworthy as described with Historic Saugeen Metis (HSM) and Saugeen Ojibway Nation (SON).

As a non-Indigenous community member, these engagement activities are positive to read and consistent with public expectations especially in context of Truth and Reconciliation Report and Recommendations as well as the legal obligations of our nation. They need to be expanded and enhanced in future years.

Licensee Engagement Activities

Re: reference to the proposed Deep Geological Repository (DGR) this intervenor offers the following comment considering all the years of research studies consultation, cost why wasn't the position of Saugeen Ojibway Nation of non-support more fully known as a much earlier stage. A vote at the much earlier stage of the DGR development project with their non-support outcomes would have saved all the extensive work that went into that proposed site. Some of the ROR included this DGR topic and reported on the decision not to pursue the proposed DGR project at the Bruce site, there needed to be more information reference on this issue. At the very minimum a reference link identified with NWMO site to allow the public to learn more on this important nuclear waste management storage issue that had direct link to OPG in that this licensee and stated that it will no longer be pursuing the proposed DGR project at the Bruce site. It is not fair to the public reviewing this ROR to leave so many unanswered questions on such an important matter of public interest. I would recommend that an NWMO appendix reference be included in this section of the 2020 ROR

Recommendation

In covering the issue of waste management facilities., there needs to be a reference link so the public can be better advised of important developments in the radioactive waste storage topic. Incomplete information causes the public to misunderstand such decisions and impacts.

Point Lepreau Site/ CNSC Staff Engagement Activities

This writer was really pleased to read this in 2020 that a major focus of CNSC engagement activities was to formalize and continue to strengthen the relationship between the interested First Nations and CNSC staff. It is noted that CNSC are committed to continue meeting with each First Nations and their representatives' organizations to provide updates on nuclear activities and projects in their territory of interest on a regular basis. This is all very positive. This writer understands that CNSC are only committed to continuing meeting with the elected representatives of the First Nations. What about the many other non-elected indigenous leaders who often raise issues in the media but are not formally elected? CNSC needs to expand its engagement activities requirements to include these non-elected opinion leaders within the Indigenous communities.

Recommendation

CNSC needs to expand its requirements on public engagement to ensure the non-elected members of the indigenous communities are heard as many are actively interested but their voices may not be heard with formal engagement activities.

This expanded engagement will be very important as one of the topics is the public engagement on potential for small modular reactors in Canada – one of the key topics here in New Brunswick with PLNGS as a potential key player with the ARC Clean Energy Canada as an active vendor.

Licensee engagement activities described in this section outlines a very strong effort working with several First Nation's communities and organizations. Very positive to read that NB Power maintains on-going dialogue with First Nations consultative bodies and representatives through scheduled meetings on many issues of interest to First Nations. One that is worthy to note is cultural awareness – so important these days in understanding and appreciating cultural understanding and respect for indigenous people history and their culture. Specifically, NB Power was engaged in a variety of activities to help increase the awareness of First Nation's history and culture amongst NB Power staff and local communities. It is clear that NB Power, as a licensee is implementing these engagement efforts stand above expectations – These efforts are very impressive one just has to read the efforts identified on page 62-69 to come to this conclusion.

Gentilly – 2 Site

It is noted there is no English translation provided this is problematic for some of this province that is an officially bilingual province. I trust that the English version may be available upon request. A notation to its translated availability would have been helpful.

Financial guarantees

Reassuring to read in this section that CNSC staff were able to confirm that all the NPP and WMF licensees maintained sufficient funding to meet their financial guarantees.

RE: Prohibition of asbestos and asbestos containing products regulations.

Regarding the appropriate asbestos management plans in accordance with Schedule 1 of the Regulations: There should have been information provided on the status of such reports for each licensee. How many have completed their plan by the deadlines next year 2022. Next year, ROR needs to report this information as well as a link with outcomes of these Asbestos Management Plans.

Recommendation

Updates in these RORs are important. They need to be expanded to cover those issues and commitments identified in the reporting periods. Many updates are inhibited in this 2020 ROR. They are important and of public interest.

Period Safety Review Page 16

This is, from a community perspective, a very important area of public interest. In the 2020 ROR on page 138, it is noted that NB Power submitted a safety factor reports all identified by number CNSC staff completed the review of all 15 Safety Factor Reports in October 2019. Further, NB Power submitted the Global Assessment Report in February 2020 which was under review by CNSC staff as of June 2020. In the 2020 ROR currently under this public review, there should have been at least a list of what are these “specific safety factors” as noted in the 2019 ROR.

As well, the current ROR should be summarized outstanding important information from the Global Assessment Report as well as the PSR. There is insufficient information on the findings and conclusions of these safety reports. The PLNGS PSR was filed with CNSC in June 2021.

There needs to be an update on the findings of this PSA report at the upcoming Commission Meeting in December 2021. It is understood that such a report was submitted and required for PLNGS support of a 25-year licensing period currently in process. This ROR needs to have provided a link reference to these important safety related reports since they are part of the regulatory oversight review process.

Recommendation

CNSC needs to provide more information on the results of these PSRs in the section under Periodic Safety Review to either alert the public to these risks or reassure the public that there were no safety issues of concern.

At a bare minimum, there needs to be a list of the safety factors (as described in 2019 ROR but not in the 2020 report.) It needs to be noted this writer inquired about what are these safety factors on page 6 of 29 of my submission last year.

It is recommended that a summary findings report be part of the Commission Hearing in December during a review of the Regulatory Oversight Report. Although, this PSA report will receive due attention at the licensing renewal review not everyone will be participating resulting in many community members not being able to learn what is in this important report.

Additional Recommendations to CNSC

In respect to references to enforcement in areas of con compliance of regulatory requirements, this writer is recommending that there should be a section in these RORs, just under that topic for each licensee. Rarely has this submitter read of CNSC enforcement penalties such as one sees for large emitters under NB Clean Air Act such as warning letters, administration penalties or even fines. CNSC issues order but there needs to be a public record of penalties issued of in fact are any issued?

This writer couldn't find any such reference in this PSR. They should be covered in future Regulatory Oversight Reports.

Issue of COVID-19

This submission identifies this issue of importance despite the steps taken by licensees to cope with a pandemic event worst in a hundred years. This winter does not share all the reassuring measures, steps and adjustment implemented to ensure those pre pandemic CNSC and licensee's oversight efforts were carried out to ensure the same level of safety compared to non-pandemic conditions. My comments on COVID-19 are imported into each licensee section of the 2020 ROR above.

Recommendations

It is recommended that a separate dedicated detailed report be prepared for next year ROR General Meeting.

It is recommended that the licensee should be providing regular updates on their websites that will also be filed under a separate report to CNSC to assure the public that these nuclear power plants safety are not being compromised as a result of COVID and this latest fourth wave.

Other Matters of Regulatory Interest

This is as noted above in my submission a topic of public interest based on past practice prior to 2019, this writer would prefer to see this section at the end of each chapter for the individual licensed

facilities. Incorporating this important public engagement information within each licensee allows the reader to understand the engagement activities as not everyone may read.

Section 2.15 where such information is currently located, many people could skip this section and may prefer to focus on the NPP and WMFs in their geographic area where millions of people reside.

Recommendation

Important matter of Regulatory interest into each chapter for the specific NPPs and WMFs.

Certification of Employee's issue is a concern for this writer.

Recommendation

As noted in my above comments for PLNGS, this issue of having sufficient certified employees available for the future is potentially problematic. There is a high failure rate for these interested students enrolled in the operator certification in the licensed program or at the NB program at PLNGS.

CNSC needs to explore why more students are not successfully completing this certification program. What steps are being taken to get more certified reactor operators available at PLNGS?

Obviously, this program is hard and not everyone who enrolls will be successful. The problem of failure rates in it may only get worse in the next few years with the impact on educational achievement outcomes in NB high school population.

One recent opinion piece in the Telegraph Journal of June 20, 2021 headlines "Pandemic learning loss will have lasting effects". By Alison Balcom provides an analysis as to why students including ones in this province will suffer from lost learning from this pandemic. CNSC needs to review this published commentary to understand why failure rate is higher for those students studying in a program that would train them to be eventual certified employees at PLNGS. This problem could have similar impacts in other higher education programs that train nuclear reactor operators and other certified staff.

CNSC needs to study this issue to address the question of what steps are being taken with this licensee to ensure more certified reactor operators are certified at PLNGS.

Waste Management

Section 2.11 and the other sections that cover the other Waste Management Facilities Issues of Concern and Recommendations

For many Canadians who are not in favor of nuclear energy generation, the issue of storage of radioactive nuclear waste is often cited as an important area of concern. In reviewing the section covering those nuclear waste management facilities, this writer was surprised with the lack of thorough information on the management facilities. The information provides on them in sections 3.40 is basic tombstone information without much on how these above ground storage structures are holding up. One point is clear in Section 3.40, some of these nuclear power plants are running out of storage space with plans to construct these additional DSC storage buildings. The section in this ROR that cover WMFs is sparse in respect to any issues problem or events related to them especially in the act of transporting the radioactive nuclear fuel from the nuclear power plants to the storage units.

Overall, this writer was disappointed with the information provided in these sections. This is particularly concerning, considering nuclear waste management storage is a top area of concern and public discourse whenever the topic of nuclear energy generation comes up in the media. This was observed here in New Brunswick with the development of Small Modular Reactors which is subject to more public debate.

In November 2020, the Minister of Natural Resources launched an inclusive engagement process to review and modernize Canada's radioactive waste policy. Canadians are getting more engaged in this subject of radioactive nuclear waste both from a proactive / operations and public policy perspective. Within this context this Regulatory Oversight Report for 2020 could have at least acknowledged this current public review/engagement process in Section 2.11 with a link to the NRCan's discussion and comment section. All that was needed is a one sentences acknowledgment of this on-going radioactive waste policy review process.

Recommendations:

1. CNSC needs to provide more information on these nuclear waste management facilities within the Regulatory Oversight Report in response to a growing interest in nuclear waste management.

2. Next years, ROR needs to have a section on the status of any new radioactive nuclear waste regulatory policy changes that could impact these licensed facilities.

CNSC Rating Language Use Recommendations

Issue re: CNSC rating language with the use of “met expectations”. This raised the bigger question as to what is actually met by the word “expectations”. So often seen in this report after one reads “met expectations”, or “exceeded expectations”. But rarely does and one read is “below expectations” in the areas being reviewed.

Therefore, it is recommended that CNSC define these qualitative words to make it more clear from an outcome performance perspective. Such a definition will help the public better understand the effectiveness of the safety measure outcomes for the nuclear power plants.

Fisheries Act Authorizations Issued Recommendations

CNSC needs to be more proactive with the licensee to crack down on all these delays and expedite the process by licensee in meeting their regulatory responsibilities under the Department of Fisheries Act Authorization. CNSC needs to set up top level meetings with officials to ensure these authorizations are complied with in a more timely manner. Over the years, these reports have identified unacceptable compliance delays in responding to the legally mandated authorizations. Additionally, DFO may need to equally be more proactive in their own processes and timeline requirements.

Issue of Contractors During Refurbishments

Recommendation:

One area that has been a concern to this reviewer centers on the management and oversight of contractors. In my view this area of using contractors within these complex highly regulated facilities especially now with all these refurbishment workloads they have the potential to create safety-related problems simply because many of these contractor / workers are now working in these facilities on a permanent full-time basis. Despite the training they received they may not be always fully aware all the time of potential safety issues that could occur as they carry out their contractor’s work duties.

Despite the high standards they must follow and positive oversight and effort by the licensee, this writer is recommending CNSC pay very close attention and monitoring of training and supervision by licensees of these contractors' workforce activities within any workforce accidents can and do occur despite best efforts to prevent them from occurring.

Commentary and Recommendations regarding the format of the Regulatory Oversight Report of 2020

First, the current 2020 report as well as past RORs have seen very little changes in terms of format structure and subject areas covered in the Table of Contents. This commentator supports the way this report is presented with the level of information provided.

This commentator recognizes and values the important role these RORs play in publicly reporting evaluations of licensee's activities based on the critically important criteria of safety performance and adherence to the CNSC regulatory mandate.

Consultation on the CNSC Regulatory Oversight Report Review discussion paper took place from April 8 to June 7, 2021. This writer prepared a submission which outlines my position on the current report format content and pertinent safety related information. See APPENDIX A.

Here are some recommendations for CNSC to consider. This writer recommends that CNSC staff who prepare a response document to the issues and questions from this submission on this 2020 ROR, incorporate that response document into the Hearing Documents attaching to the individual written submission to enhance more public transparency. This is not the current practice – last year this writer had to make several requests over a period of months before I received the information from CNSC staff responses document of my 2019 submission. This document was very helpful in the responses provided. The only one to see it was this intervenor. If it had been available during the hearing meeting on the ROR, it would have been helpful for the public to read these CNSC responses to issues this intervenor raised.

AS part of the ROR, this writer is not recommending any changes from the current format. It is recommended; however, that more elaboration on the updates be provided. Also, a section titled follow from issues, commitments from the previous year's ROR. The public can see how the licensee fulfilled any outstanding commitments.

The ROR need to respond to any misinformation myths that are identified in the media, both identified in the media, both mainstream and several media specifically if it pertains to one of the nuclear power plant or nuclear waste facility covered in the Regulatory Oversight Report. This could be incorporated into the Other Matters of Regulatory Interest.

This kind of factual science based versus misinformation needs to be highlighted. The ROR can serve as a public evaluation tool when misinformation on the facts around safety facts on the facilities are found in the public domain.

Under this section other matters of regulatory interest, this writer recommends more emphasis and CNSC staff working at these nuclear power plants no more outreach staff engagement activities themselves. There is a need for CNSC staff to get out into the public with more public engagement work. This is important for those sites undergoing refurbishments or decommissioning. It was noted this year that there was no representative from CNSC present at the open house in August and September in Saint John contrary to past practice.

The role of CNSC as Canada's nuclear safety regulator needs more public presence to explain its role to build public engagement.

Finally, throughout this submission, there are additional recommendations made for CNSC's consideration. The ones identified above are the highlighted ones, please take note of the other recommendations located withing the submission.

Concluding Comments

In conclusion, this community member is please to be able to offer commendatory on my review of the regulatory Oversight Report for Canadian Nuclear Power generating sites for 2020. This written report identified many issues of concern and also recognizes the positive oversight efforts along with the efforts followed by the specific licensees covered in this report.

This writer continues to have the outmost in the Canadian Nuclear Safety Commission in its efforts to carry out its legislative regulatory responsibility to keep all Canadians safety in the generation of nuclear energy. this regulatory report provides the kind of safety analysis information to demonstrate that these nuclear sites are operating safely in the best interest of the public and the environment. It is important to take this moment to thank the many CNSC staff who carry out their

regulatory duties for a job well done. This conclusion is made after carefully reviewing the 2020 Regulatory Oversight Reports and several others over the years.

Respectfully submitted,

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Community Member

Saint John, NB