

July 28, 2016

Hon. Jim Carr
Minister of Natural Resources

Re: Concerns regarding the behaviour of the Canadian Nuclear Safety Commission (CNSC)

Dear Minister Carr

I write to express Nuclear Clear Free Solutions' concerns regarding the independence and reliability of the Canadian Nuclear Safety Commission (CNSC).

New Clear Free Solutions regularly intervenes in CNSC proceedings as well as intervenes in hearings carried out by the New Brunswick Energy and Utilities Board. We have become increasingly concerned by the institutional culture of the CNSC staff, which seems more focused on promoting the nuclear industry than giving objective scientific information to the commissioners so they can properly regulate the nuclear industry.

The widely reported concerns recently raised in a letter written by unnamed specialists at the CNSC were all too familiar to us. That letter, along with a subsequent letter from Thomas Mulcair, called for an independent investigation into allegations regarding CNSC staff withholding important safety-related information from commission members. The examples mentioned in the letter affected Bruce Power and OPG facilities, and were related to the Probabilistic Safety Assessments (PSA) that are required by the CNSC.

As it happens, similar incidents of withholding important safety information regarding the Point Lepreau Nuclear Generating Station, owned and operated by NB Power, have also occurred. We strongly suggest that these additional incidents be included as part of any independent investigation.

Based on our experience, we would like to highlight 5 cases where CNSC staff appear to have withheld important safety-related information about Point Lepreau from Commission members and the public. Those cases are as follows:

- Case 1. Probabilistic Safety Analysis (PSA) Non Compliance**
- Case 2. Inappropriate Fukushima Action Item (FAI) Closure**
- Case 3. Not Disclosing Seismic Hazard Assessment Results to the Commissioners**
- Case 4. Failure to report safety goal limit that is or may be inadequate to assure safety**
- Case 5. Unacknowledged PSA safety goal change to the Point Lepreau Licence Condition Handbook**

Attached to this letter is an appendix with a summary of the above cases, and 4 solutions we request you to consider. If you or a member of your staff would like to have more details than what is provided, we would be happy to speak on the matter or provide additional information.

Regards

Chris Rouse

New Clear Free Solutions

Cc Dr. Michael Binder (CNSC President)
Marc LeBlanc (CNSC Secretariat)
Hon Thomas Mulcair (Leader of NDP party)
Hon Catherine McKenna (Minister of Environment and Climate Change)

Appendix

Case 1. Probabilistic Safety Assessment (PSA) Non Compliance

According to regulatory guide S-294, New Brunswick Power (NB Power) is required to update its PSA every 3 years, and the last one was in 2008-2009. NB Power is late providing these updates and is therefore non compliant with regulatory standard S-294 and in turn licence condition 5.2. The PSA was originally due in June 2012, and has still not been updated. CNSC staff have not informed the Commission members in their annual reports of this non compliance. The annual report states “*NB Power is in compliance with S-294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*”. This is in flat contradiction to what NB Power’s current Licence Condition Handbook (LCH) states:

Requirement: “The licensee shall implement and maintain a probabilistic safety assessment program in accordance with CNSC regulatory document S-294: PROBABILISTIC SAFETY ASSESSMENT (PSA) FOR NUCLEAR POWER PLANTS.”

Comment: “The PSA program has not been reviewed and accepted by CNSC staff (e-Doc 4806063). It is expected that NBP will finalize and submit its PSA program for acceptance by CNSC staff by August 1st, 2016 (e-Doc 4847092).”

CNSC staff informed commission members in the last several annual reports that NB Power is compliant with S-294 when the LCH and S-294 PSA Requirement 5.6 show otherwise. Missing a required deadline is a non compliance and NB Power is required to submit an official event report, which has never been done.

Event reporting is extremely important in regards to transparency. Each licensee must disclose a list of event reports on their website on a quarterly basis. This is the only way for the public to be aware of any problems or non compliances. They also play a very significant roll in safety and accountability. Event reports make sure the appropriate people are aware of the problems which ensures accountability. They also trigger other processes within the safety management system such tracking of the problem, assessing the risk, and developing corrective actions. Poor reporting is a sure sign of a problematic safety culture.

Case 2. Inappropriate Fukushima Action Item (FAI) Closure

The 2015 NPP annual report submitted by staff to the commission members states the following:

“CNSC staff concluded that the NB Power submissions related to FAI 2.1.1 and FAI 2.1.2 met the established closure criteria. As a result, FAI 2.1.1 and FAI 2.1.2 have been closed for Point Lepreau.”

These two Fukushima action items, listed below, relate to external events such as seismic events:

- 2.1.1 Re-evaluation, using modern calculations and state-of-the-art methods, of the site specific magnitudes of each external event to which the plant may be susceptible. December 2013
- 2.1.2 Evaluate if the current, site specific design protection of each external event assessed in 2.1.1, above, is sufficient. If gaps are identified, a corrective plan should be proposed. December 2013

These two Action Items were originally closed by CNSC staff in the first version of the Fukushima Action Plan in 2012. They were later reopened when New Clear Free Solutions complained that it was

inappropriate to close them before the results of a seismic hazard assessment ordered by the commissioners was complete.

The first action item (2.1.1) is related to “hazards” such as the size of credible earthquakes or tsunamis the plant may be subjected to. We agree that this action item can be closed because the final seismic hazard assessment was completed in May 2015. However, we do not feel that the CNSC staff have properly disclosed the outcome of the completed seismic hazard assessment to the commission members, and how it relates to the second action item. This is discussed in more detail below (Case 3).

The second action item (2.1.2) is different. It is related to evaluating whether the plant design is adequate to be able to handle credible external events identified in the first action item. In order to do this evaluation an up-to-date PSA using the new seismic hazard data is required. As noted above (Case 1), NB Power is non-compliant with its licence requirement because the PSA is currently late and is not due until August 1 2016. The closure of this Fukushima Action item without the required safety assessments being completed beforehand should be included in any independent investigation of CNSC staff performance.

Closing this action item gives the impression to the commission members that everything is fine regarding the outcome of the seismic hazard assessment. The closure was based on an “interim” assessment that does not follow any official methodology or standards and is not S-294 compliant. The interim report had a variety of results based on different upgrades and assumptions. It showed many ways that risk could be significantly reduced with upgrades to seismic capacities of critical safety equipment. One set of results in which nothing was upgraded demonstrated that a large release frequency safety goal limit was exceeded. The commission members have not been given enough information to accept the closure of these Action Items in the 2015 annual report.

Case 3. Not Disclosing Seismic Hazard Assessment Results

During the 2011 Point Lepreau licensing hearings, I demonstrated to the commissioners that some of the seismic risk assessments had been incorrectly done. I also demonstrated that the seismic hazard data NB Power was using was old and out of date, and that newer data indicated that the seismic safety goal limits may be insufficient. At the end of the hearings I made a request to the commissioners that NB Power undergo a site specific seismic hazard assessment. In their reasons for decision the commissioners agreed with that request and ordered NB Power to undergo a seismic hazard assessment, and to publicly share the results of this assessment as part of its public information program.

There have been three versions of the assessment, and CNSC staff have yet to table any of them or discuss the results of them with the commissioners. The final seismic assessment was completed by the contractor, AMEC, and submitted by NB Power to the CNSC staff on May 11, 2015. Using applicable CSA standards all three of the assessment revisions suggest that the safety goal limits used in the 2009 PSA are inadequate and need to be revised.

The assessment also included a Peleoseismology investigation that looked for historical earthquakes in the geological record. The investigation found evidence of 3 previously unknown earthquakes in the vicinity of Point Lepreau. The preferred interpretation of this evidence suggests they were created in the Passamaquoddy Bay by M 6.5 to M 7.0 earthquakes. The previously largest know earthquake at the time of licensing was the 1904 Passamaquoddy Bay which was a magnitude 5.7. A magnitude 7.0 earthquake

is over 20 times larger than what was presented to the Commission members during the last licensing hearings.

It is now over one year since the final assessment was completed and three years since the preliminary assessment was first released and CNSC staff have still not communicated to the commission members the results of the assessment that they, the Commissioners, ordered NB Power to do.

On June 30 2015, NB Power submitted a report to CNSC staff requesting the closure of the two Fukushima Action Items mentioned in Case 2. This is an excerpt from that report about the results of the seismic hazard at Point Lepreau. The acronym SMA stands for Seismic Margin Analysis, which measures the plants capacity to withstand earthquakes.

Seismic Hazard

In response to NB Power's plans to perform a site-specific PSHA, CNSC staff requested ([1] and again in [2]) clarification to;

"...understand the impact of the site-specific seismic hazard upon the existing PSA-based SMA. Ultimately, NBPN should demonstrate that the new seismic hazard does not change the outcome/conclusions of the existing PSA based SMA report."

Having examined the applicable hazard curves from the PSHA, it has been determined that a modification to the screening criteria in the PSA-based SMA methodology is expected to be required. In addition, fragility calculations for individual structures, systems and components are expected to be revised in light of updated response characteristics at various plant elevations. Given the complexities of the work and interaction of these elements, it is not possible to state with certainty that the new seismic hazard does not change the outcome/conclusions of the existing PSA-based SMA report until further Seismic PSA work is completed. At the current time we believe that the screening criteria may need to be revised to reflect the new seismic hazard curves and possibly the SMA-related safety goals as well. Therefore, the overall plan and schedule to evaluate seismic hazards includes a revision to the PSA-based SMA as set out below, which could include revision to its methodology.

The phrase "outcome/conclusions of the existing PSA-based SMA" is industry jargon for determining if the plant is safe enough, or not, in light of the larger seismic hazard. Over one year ago, when this document was written, NB Power informed CNSC staff that it cannot state with certainty that Point Lepreau is safe enough from seismic hazards – and CNSC staff have yet to inform commission members of this information.

The NB Power document quoted above paints a very different picture than the information presented by the CNSC staff to the commission members in their 2015 NPP annual report:

"The draft site-specific seismic hazard assessment was completed at the end of 2014. The licensee posted the executive summary of the assessment on its website. In May 2015, CNSC staff received the final seismic hazard assessment from NB Power. The CNSC, Natural Resources Canada, and Environment and Climate Change Canada (ECCC) staff completed their respective

reviews of these assessments in mid-January 2016 and were satisfied with their results and related follow-up.”

In this paragraph CNSC staff is misinforming the **commissioners** by stating that the executive summary of the assessment is posted on NB Power’s website. In fact, NB Power has never released any of the assessments on its website, and the first draft of the assessment we had to use Access To Information to get the full report and results. What was posted on the website for each of the three revisions was not the executive summary of the AMEC report, but rather a “summary of evaluations of seismic hazards” written by an unidentified person at NB Power with only a few of the tables and graphs from the actual assessments. To date NB Power has not yet publicly released, on their website, the full seismic hazard assessments as part of its public information program like the commission intended them to do.

The rest of the paragraph in question gives the misleading impression that everything is satisfactory from a safety perspective, which is far from clear. It is another case of failing to communicate vital safety information to commission members, which in turn diminishes the commission’s authority.

Case 4. Failure to report safety goal limit that is or may be inadequate to assure safety

In March 2016 I met with NB Power personnel and they gave me an update regarding the final versions of the seismic hazard assessment. We discussed the new information: the increased probability of a large earthquake, the larger magnitude of historic earthquakes, and the greater high frequency content of earthquakes compared with what has previously been reported. I asked at this meeting if an event report had been submitted to the CNSC regarding these increases. NB Power indicated to me that they had not yet done so, but that they would look into it. I pointed out that they were required to submit the event report within 21 days of discovering the issue.

On April 13 2016 NB Power indicated to me by email that they would be reporting this under REGDOC 3.1.1 Reporting Requirements for NPPS, Table A1, 14bii. This section of REGDOC 3.1.1 states:

Table A1

14) Specific reporting provisions

The licensee shall report on any of the following situations or events arising from operating experience, research, new or revised safety analysis, that reveals a hazard to the health and safety of persons, security or the environment that may be (or is determined to be) different in nature, greater in probability or magnitude than was previously represented to the CNSC:

b) discovery of a problem or potential problem from operating experience, research, new or revised safety analysis, that represents a hazard or potential hazard to the health and safety of persons, security or the environment, or that may be different, greater in probability or magnitude than previously represented to the CNSC in the licensing basis including:

ii) a limit, defined in the NPP version-controlled documents or licensee documents requiring notification of change (or in appendices to these documents) that is or may be inadequate to assure safety

On June 28th 2016, 88 days after that e-mail, NB Power finally submitted the event report. That report indicated that NB Power had been aware of the event since Dec 31 2014. This report was over a year and half late and NB Power acknowledged that fact in the event report. They did mention however that they had previously sent the CNSC staff all of the new seismic information, so staff were aware of the results. For over a year and half, both CNSC staff and NB Power have refrained from disclosing, to commission members or to the public, that a safety limit at Point Lepreau may be inadequate to assure safety due to the increased seismic hazard.

In the recent letter from a group of unnamed CNSC specialists, they mention that the seismic hazard at Darlington was found to be underestimated by a factor of two. This should have similarly been reported. I have reviewed OPG's website and it appears that they have not reported this event either.

These events regarding non compliant reporting need to be independently investigated. Reporting is critical to nuclear safety. When everyone knows there is a problem but nobody is reporting it, speaks loudly of the safety culture of the Canadian nuclear industry.

Case 5 Unacknowledged PSA safety goal change to the Point Lepreau Licence Condition Handbook

In the 2012 "Reasons for Decision", the Commission members approved NB Power's Licence Condition Handbook (LCH). But when the licence was issued the LCH had undergone a very serious change that was not noted in the revision history. The annual report, for that reporting period, from CNSC staff to the commission members stated clearly that "No revisions were made to the Point Lepreau LCH during the reporting period.", even though there had clearly been a change.

The change was as follows. The LCH that the commission members approved states that one of the purposes of the PSA was to "demonstrate *compliance* with safety goals" [*my emphasis*]. This was in the compliance and verification section of the LCH, which is the requirements section. But in the version of the LCH issued with the licence, CNSC staff had removed this phrase completely from the compliance and verification section of the LCH and instead added this phrase to the preamble section: "Assess the frequency of occurrence of core damage and radioactive releases to the environment *for comparison* with the safety goals".

There is a significant difference between having to be "compliant" with the safety goals and only having to "compare" the results to the safety goals. There is also a big difference between the Preamble section of the LCH and the Compliance and Verification section. At a minimum, CNSC staff should have informed the commission members of this change as they are required to do. It is unclear if CNSC staff were even authorized to make that change as it may have changed the licensing basis which only the commissioners can do. If it did change the licensing basis it would be a much more serious offence.

We request that this unacknowledged change to the LCH, and the appropriateness of the change be included in the investigation of CNSC staff behaviour. We have intervened in every nuclear licensing hearing since the 2011 Fukushima accident, and probabilistic safety goals have been a very hot topic at every hearing. An examination of the public record regarding CNSC staffs evolving positions on safety goals would paint a very troubling picture.

Solutions

These 5 cases, similar to the concerns raised by the CNSC specialist, show that their concerns are not limited to OPG and Bruce. There is a pattern of improper behaviour that also includes Point Lepreau. These 5 cases are only a few of the many concerns we have. New Clear Free Solutions has very serious doubts regarding the CNSC staff's ability or willingness to properly inform the Commission members in an objective way at NB Powers upcoming licensing hearings. In the name of public safety, we offer you four solutions that will significantly increase the safety at all Canadians nuclear reactors:

1. New Clear Free Solutions request that these 5 cases also be independently investigated in addition to the 5 alleged by the CNSC specialists. We request that the results and any recommendations from the investigation be made public.
2. New Clear Free Solutions would also like to recommend that the government, in filling the two vacant commission member spots, appoint someone who is an experienced intervenor in nuclear hearings as a full time commission member. We would like this to be done in time for the upcoming NB Power licencing hearings. To have one commission member who is experienced in the regulatory system from an intervenor's perspective, will help to ensure a healthy safety culture from CNSC staff, the licensees and intervenors. One commission member alone cannot change the outcome of a licencing hearing, but he or she can help to ensure that the right questions get asked and that CNSC staff are held accountable for the answers they provide.
3. New Clear Free Solutions would also like to suggest that the government ask for Dr. Binder's resignation. The issues at the CNSC are deep and have been festering since the firing of Linda Keen. All of the red flags that, in hindsight were found to be the cause of the Fukushima accident, are waving in plain sight in the Canadian nuclear industry. The best and most effective way to assure the safety of Canadian reactors would be to assign new management at the very top. A new president will set the tone for the type of regulatory system Canadians deserve and expect from our new science based government.
4. New Clear Free Solutions reiterates the March 2016 request we made along with 14 other civil groups for a public review of the Nuclear Safety and Control Act (NSCA). Such a review is urgently needed in light of the CNSC's weak institutional independence as exemplified by the firing of Linda Keen, lessons learned from the Fukushima disaster, and lax safety culture observed by the CNSC whistleblowers and by New Clear Free Solutions in this letter. An open and public review of the NSCA is necessary to address these concerns and to restore the necessary independence and public trust in the institution.