August 8, 2012

Supplemental Submission from CCNB Action for Aug 15, 2012 meeting

Dear Commission Tribunal Members:

On June 19th 2012 the Canadian Nuclear Safety Commission Staff (the CNSC) presented its Integrated Safety Assessment of Canadian Nuclear Power Plants for 2011 (annual report) to the Commission Tribunal Members (the Commission).

Our community group, CCNB Action’s Saint John Fundy Chapter (CCNB Action) has found two very serious issues with this report which is signed by Dr. Greg Rzentkowski- Director General, Directorate of Power Reactor Regulation, on June 19th 2012. As well, we have found problems with other documents recently signed by Dr. Greg Rzentkowski who has signing authority in accordance with powers granted to him by the Commission.

Our concerns are detailed in the following paragraphs:

Please refer to part 1 of the annual report, where it informs the Commission that Point Lepreau had a satisfactory rating in the safety and control area (SCA) of Emergency Preparedness and Fire Protection for 2011. Part 1 of the annual report is for the calendar year of 2011 as described in the executive summary of the annual report. In 2010, when Point Lepreau got a below expectations rating in this SCA, a protocol to receive a satisfactory rating was signed between the CNSC and NB Power. In accordance with this protocol the satisfactory rating was to be given in a final acceptance letter by Dr. Rzentkowski to NB Power. Dr. Rzentkowski signed this final acceptance letter on May 18th 2012, but informed the Commission one month later in the annual report that a satisfactory rating was achieved in 2011 which was not the case.

Part 2 of the annual report informs the Commission that there have been no revisions to Point Lepreau’s License Condition Handbook (LCH) for this reporting period. The reporting period for part 2 covers from January 2011 to April 2012 as described in the executive summary. However, we note that there have been revisions to this document within this reporting period.

During the license renewal hearings for Point Lepreau in December 2011, the LCH was presented to the Commission for approval in CMD-11-H12, which was also signed by Dr. Rzentkowski. On February 16 2012, the Commission, in its reasons for decision, stated that they accepted the December 2011 version of the LCH. In accepting this LCH, the Commission granted Dr. Rzentkowski the authority to change the LCH as per the procedures detailed in the LCH’s Appendix A. Also in its reasons for decision, the Commission directed the CNSC staff to update the Commission on any changes made to the LCH in its annual report.

After the license was granted, CCNB Action asked for a copy of Point Lepreau’s license and LCH. In this version of the LCH, signed by Dr. Rzentkowski on February 20 2012, four days after he was granted the authority to make changes to it, CCNB Action found that a section of the LCH had been deleted. This deletion was not noted in the revision history of the LCH and no Document Change Requests or Change Review Forms where mentioned in this revision of the LCH as should have been done as per the procedures outlined in Appendix A of the LCH.
Not only have the document change procedures in Appendix A of the LCH not been followed, the 2011 annual report signed by Dr. Rzentkowski states to the Commission that no changes have been made to Point Lepreau’s LCH during this reporting period, which covers from January 2011 to April 2012.

After the annual report was issued, CCNB Action wrote to Dr. Rzentkowski asking him why this change was not done as per Appendix A of the LCH and why the Commission was not notified of this change in the annual report. He was absent from his position, so the email was forwarded to Philip Webster in his absence. Mr. Webster did not answer the questions, but wrote in his reply that Dr. Rzentkowski did make the change.

NB Power has also been asked if they were notified about this change to the LCH. They confirmed with us that they were notified about the change.

On July 31 2012 the CNSC staff submitted to the Commission, supplemental information for the annual meeting on August 15 2012. This document was also signed by Dr. Rzentkowski, but this opportunity to notify the Commission of this change to the LCH was again not taken.

The following explains the significance of the section deleted from the LCH:

Under the Compliance and Verification Criteria section for license condition 5.2 the following was deleted from the version signed by Dr. Rzentkowski on Feb 20 2012.

The results of the probabilistic safety analyses, level 1 and level 2, are used for the following purposes:
- To demonstrate compliance with safety goals
- To identify design features that may be vulnerable to common-cause failures
- To identify systems important to safety
- To identify defense-in-depth
- To identify, if any, potential areas of plant vulnerability for extreme accident scenarios.

From the glossary of terms from the LCH it states that the Compliance and Verification Criteria are measures of conformity to the regulatory requirements. CNSC staff use these criteria to confirm that the licensee is meeting the corresponding provisions from the Nuclear Safety and Control Act, the regulations and the license conditions.

We are very concerned that this section has been deleted. During and post licensing hearings, CCNB Action provided evidence that Point Lepreau is NOT compliant with these internationally accepted safety goals, due to the probability of seismic events. The technical assessment done by Point Lepreau to show that they are compliant with its safety goals has many problems that have been explained in detail to the CNSC by CCNB Action. This same problematic technical assessment is the subject of concern in a previous letter sent by Ecojustice on March 8 2012. In this regard, CCNB Action requested, under the rules of procedure during the licensing hearings, that this technical assessment be independently reviewed. Even though the Commission was required by law to answer our request, a direct answer was never given.
**International implications compounding our concerns:**

In July 2012, a Japanese Parliamentary report on the investigation into the ongoing crisis at the Fukushima Diachi plant determined that the disaster was “Man Made” and could have been prevented. This report cites that the main cause of the accident was from **collusion** between the government, the regulator and the operator. It states that the regulator didn’t even do the basics for nuclear safety such as properly assessing the probability of accidents and enforcing international standards\textsuperscript{xii}. These findings compound our concerns that our community group’s findings are real and valid.

As well, in this Japanese report, it states that it is likely that severe damage to Unit 1 occurred from the earthquake, and not just the resulting tsunami. Up until this point, Tepco, most of the international nuclear community and the CNSC have maintained that the earthquake did not cause damage to Unit 1. It was noted in the Japanese report that the ground shaking that occurred at Unit 1 was less than what its seismic margin analysis had shown it could withstand. Point Lepreau has done a similar seismic margin analysis. Natural Resources Canada has said that an earthquake of historical size is possible near Point Lepreau. An earthquake of that size would almost double what the possibly too liberal Point Lepreau’s seismic margin analysis shows the plant could withstand\textsuperscript{xiii}.

**Legal implications of our concerns:**

One of the objectives of the Nuclear Safety and Control Act (NSCA) is:

\[(b)\text{ to disseminate objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects, on the environment and on the health and safety of persons, of the development, production, possession and use referred to in paragraph (a).}\]

Section 48 of the NSCA states that every person commits an offence who:

\[(d)\text{ knowingly makes a false or misleading written or oral statement to the Commission, a designated officer or an inspector;}\]

\[(j)\text{ falsifies a record kept pursuant to this Act or the regulations or to a condition of a licence;}\]

**Our request:**

CCNB Action would respectfully request that due to the internally sensitive nature of our concerns, the Commission Members undertake an outside, independent inquiry to determine if CCNB Action’s concerns are valid. If this is proved to be the case, CCNB Action requests that action be taken immediately to reassess Point Lepreau’s operating license in the light of the lessons learned from the ongoing Fukushima accident. We appreciate in advance the Commission showing its independence from the CNSC staff by considering this a reasonable request.
Submitted August 8, 2012 by:

Sharon Murphy
Chapter Chair, CCNB Action SJ Fundy Chapter

Chris Rouse
Technical Advisor, CCNB Action SJ Fundy Chapter

References

i August-2011-CNSC-New-Brunswick-Power-Nuclear-Protocol
iv E-DOCS-#3792135-CMD 11-H12 CNSC Staff Submission on Point Lepreau with Documentation Combined
v E-DOCS-#3882425-Scan-Licence Conditions Handbook (LCH-PLNGS-R000 Point Lepreau Nuclear Generating Station
vi RE: Point Lepreau Licence Condition Handbook (LCH)

vii FW: July 05 2012 Request for information
viii CCNB Action SJ Fundy Chapter Submissions to Fukushima Lessons Learned and Action Plan Final
ix CCNB Action SJ Fundy Chapter Submissions to Fukushima Lessons Learned and Action Plan Final
x Point Lepreau Licence Renewal Letter March 8 2012 FINAL
xi CNSC Lepreau Response Letter March 13 2012
xii The official report of The Fukushima Nuclear Accident Independent Investigation Commission Executive summary
xiii Email Correspondence With NRCan
NEW BRUNSWICK POWER NUCLEAR – CANADIAN NUCLEAR SAFETY COMMISSION PROTOCOL FOR A SATISFACTORY RATING IN THE EMERGENCY MANAGEMENT AND FIRE PROTECTION SAFETY AND CONTROL AREA

August 2011
Revision 0
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This protocol is effective on the date of signature

BETWEEN

New Brunswick Power Nuclear Corporation
(referred to in the Protocol as “NBPN”)

AND

Canadian Nuclear Safety Commission
(referred to in the Protocol as “CNSC”)

1 Understanding

Compliance and safety performance in Emergency Management and Fire Protection Safety and Control Area (SCA) decreased to “Below Expectations” in the 2010 Nuclear Power Plant (NPP) industry report for Point Lepreau Nuclear Generating Station (PLNGS). The annual NPP report summarizes the Canadian Nuclear Safety Commission (CNSC) staff’s assessment of the Canadian nuclear power industry’s safety performance during 2010 and details the progress of compliance and regulatory issues up to April of 2011. Deficiencies noted to in-plant emergency response, primarily for fire, outweighed good performance in the implementation of planned fire protection design modifications for this SCA.

The 2010 NPP report states that CNSC staff consider a “Satisfactory” rating for Emergency Management and Fire Protection SCA a prerequisite of return to service of the reactor, which is considered to be prior to releasing the Guaranteed Shutdown State (GSS).

This protocol specifies the key activities to be undertaken for NBPN to demonstrate the acceptability of their fire protection program and to achieve a “Satisfactory” rating in Emergency Management and Fire Protection SCA.

The scope of work specified in this protocol has been agreed to with CNSC staff for return to service of the reactor as well as other licensing considerations. The schedule and scope of regulatory submissions is specified in Appendices B and C as well as the nature of CNSC review required. Regulatory acceptance is dependent on the deliverables meeting the established closure criteria. CNSC staff will review and accept the deliverables in accordance with the agreed upon
schedule subject to those deliverables meeting closure criteria. The schedule is subject to change based on operational considerations.

The following documents and any amendments relating thereto, which will be dealt with through formal correspondence between designated representatives, form the agreement between NBPN and the CNSC:

1. Article 1 to Article 5, inclusive;
2. Appendix A - Technical Scope & Regulatory Response;
3. Appendix B – Timelines;
4. Appendix C - Schedule of Key Deliverable Submissions, and

This protocol details the administrative process to be used between the CNSC and NBPN to manage regulatory interaction. It will follow existing regulatory requirements without compromising the CNSC’s independence and ability to enforce the Nuclear Safety and Control Act (NSCA) and the associated applicable regulations. It specifically applies to timely completion of the key work to allow licensing submissions and decisions as outlined in Appendices B and C. This protocol addresses five key items to facilitate schedule adherence for all participants as follows:

1. Progress of activities to a specific schedule;
2. Use of a defined process to resolve issues;
3. Identification of points of contact for communication;
4. Guiding principles for the regulatory review of work; and
5. Controlling changes to the agreed protocol.

2 Date of Completion of Activities and Description of Activities

2.1 Subject to this protocol, NBPN and CNSC staff shall perform and complete the activities that are described in Appendices A, B, and C within the timeframes indicated. The ability of CNSC staff to complete the reviews within the allocated time is dependent on the quality of the deliverables submitted by NBPN.

2.2 Changes to the schedule for key deliverables in Appendix C will be managed by formal correspondence in accordance with the CNSC Protocol Governing Correspondence between the CNSC Power Reactor Regulatory Program staff and Power Reactor licensees, Rev. 3.1.

2.3 Any disputes shall be resolved at the working level or by escalation per Appendix D.
3 Guiding Principles for Regulatory Review

The following guiding principles will be followed for NBPN to demonstrate the acceptability of their ERT performance and to achieve a “Satisfactory” rating in Emergency Management and Fire Protection.

3.1 This protocol applies from the date of signature and ends when CNSC staff has issued its final statement on the acceptability of the work. This is to establish regulatory scope and predictability to allow for planning and scheduling as per NBPN governance and CNSC requirements.

3.2 The key deliverables are to be completed and submitted by NBPN in time for CNSC staff to complete their reviews and issue a final statement on the acceptability of the work as per the schedule defined in Appendix C.

3.3 Written confirmation from CNSC staff on the acceptability of the work and indicating a “Satisfactory” rating in Emergency Management and Fire Protection has been achieved is a prerequisite to NBPN proceeding to lift the GSS.

3.4 The work will take into consideration any new requirements related to improvements in public, worker, and environmental safety.

3.5 All formal commitments made will be tracked to minimize the risk of being overlooked and to ensure timely completion.

4 Fees for Regulatory Effort

CNSC cost recovery for this regulatory effort shall be through licence fees that will accord with the CNSC Cost Recovery Fees Regulations. All efforts by CNSC staff in reviewing submitted material and any extra effort and priority assigned to the project necessary to maintain the schedule will be presented as extra costs assigned as a special project in the cost recovery fees collection process and will be identified separately.

5 Representatives

5.1 The representatives are responsible for all matters concerning the activities under this protocol. Any proposed changes to the scope of the activities are to be discussed and authorized by means of formal correspondence.

5.2 For the purposes of this protocol, the CNSC shall be represented by the following representatives:

(i) The Director General, Directorate of Power Reactor Regulation (position currently held by Dr. G. Rzentkowski), for general matters related to this Protocol
(ii) The Director, Point Lepreau Regulatory Division (position currently held by Ms. L. Love-Tedjoutomo), for matters related to the Technical Scope and Schedule
5.3 For the purposes of the Protocol, NBPN shall be represented by the following representatives:

(i) The Station Director, Point Lepreau Generating Station (position currently held by Mr. W. Parker), for general matters related to this Protocol

(ii) The Health, Safety and Environment Manager, Point Lepreau Generating Station (position currently held by Mr. W. Woodworth), for matters related to the Technical Scope and Schedule

Any participant hereto may, by formal correspondence, change any of its appointees mentioned above.
Canadian Nuclear Safety Commission
Protocol

This Protocol has been executed on behalf of New Brunswick Power Nuclear Corporation and the Canadian Nuclear Safety Commission by their duly authorized representatives:

For New Brunswick Power Nuclear Corporation

Signature: 

B. Kennedy
Vice President
Generation (Nuclear and Conventional)
New Brunswick Power Corporation

10 August 2011

Date:

For CNSC

Signature:

R. Jammal
Executive Vice-President and
Chief Regulatory Operations Officer
Canadian Nuclear Safety Commission

Date:

2011/08/10
Appendix A - Technical Scope and Regulatory Response

Technical Scope

NBPN will focus its improvement efforts on emergency response.

ERT Performance

NBPN will demonstrate the effectiveness of the ERT performance through additional training and drills, documented by self-assessments/evaluations, and audits by CNSC staff. A final report will be issued summarizing the training and drill results and confirming that ERT performance meets requirements.

Practice Drills

NBPN will be conducting practice fire drills for its ERT. The drills will be conducted on shift by the duty crew, inside the protected area. These drills will not be formally evaluated, as they are intended to enhance training to address proficiency, safety, and response times. Personnel from the Emergency Preparedness group will be providing feedback to the crews during the practice drills. Management observation of the practice drills will be performed. The drills will be performed in two phases, to allow for different scenarios to be used.

Regular Drills

NBPN will be conducting fall Emergency Response Team drills in three sessions. Each session will include classroom training, field refresher training, and evaluated drills. These drills will be evaluated by an Evaluation Team with the knowledge and experience required to conduct an effective evaluation. Session 1 will be Medical drills. Session 2 will include Fire and Radiation drills. Session 3 will include Chemical drills. The planned dates are included in Appendix B. The Session 2 fire training incorporates live fire drills at the PLGS fire training grounds, as well as in-plant drills.

Regulatory Response

CNSC staff will perform a technical assessment of NBPN deliverables (per Appendix C) and will provide its findings to NBPN for disposition or resolution. CNSC staff will identify any issues for clarification and where additional information is required.

CNSC staff will audit NBPN drills as noted in Appendix B. The scope of the audit will be communicated to NBPN at least 2 weeks prior to the drill.

Technical progress discussions will take place on a periodic basis between NBPN and CNSC staff, as well as review of documents formally submitted listed in Appendix C.

Resolution of issues will be in accordance with the process in Appendix D.
CNSC staff assessments may form the basis for necessary information that may be used in part, by the Commission, on making restart and licensing decisions.
### Appendix B - Timelines

<table>
<thead>
<tr>
<th>Actions: ERT Performance</th>
<th>Dates</th>
<th>CNSC Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• all 6 crews, response to fire&lt;br&gt;• feedback by NBPN Emergency Preparedness and Environment (EP&amp;E) group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete review of Phase 1 Results and prepare Phase 2 Self-Assessed Practice Drills</td>
<td>Aug 16, 2011</td>
<td>Review Phase 1 results</td>
</tr>
<tr>
<td>• internal review to determine focus areas for Phase 2&lt;br&gt;• OPG to support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• conduct ERT drills within protected area&lt;br&gt;• ensure ERT can respond to complications related to realistic scenarios performed within protected area</td>
<td>Session 1&lt;br&gt;Session 2&lt;br&gt;Session 3</td>
<td></td>
</tr>
<tr>
<td>Complete Self-Assessed Practice Drills in Protected Area (Phase 2)</td>
<td>Aug 21 to Oct 6, 2011</td>
<td>Review Phase 2 results</td>
</tr>
<tr>
<td>• all 6 crews, response to fire&lt;br&gt;• feedback by NBPN Emergency Preparedness and Environment (EP&amp;E) group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Regular Fall Drills Session 1 (Medical)</td>
<td>Aug 10 (D)&lt;br&gt;Aug 17 (F)&lt;br&gt;Aug 24 (A)&lt;br&gt;Aug 31 (E)&lt;br&gt;Sep 8 (C)&lt;br&gt;Sep 14 (B) 2011</td>
<td>Audit drills*</td>
</tr>
<tr>
<td>• all 6 crews&lt;br&gt;• evaluated medical drills</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> Significant performance issues identified during the drills will be brought to the attention of management.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Regular Fall Drills Session 2 (Fire, Radiation)</td>
<td>Sept 28,30 (F)&lt;br&gt;Oct 5, 7 (A)&lt;br&gt;Oct 13, 14 (E)&lt;br&gt;Oct 19, 21 (C)&lt;br&gt;Oct 26, 28 (B)&lt;br&gt;Nov 2, 4 (D) 2011</td>
<td>Audit drills*</td>
</tr>
<tr>
<td>• all 6 crews&lt;br&gt;• fire training, evaluated fire drills&lt;br&gt;• evaluated radiation drills</td>
<td></td>
<td></td>
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<tr>
<td><strong>Note:</strong> Significant performance issues identified during the drills will be brought to the attention of management.</td>
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<tr>
<td>Complete Regular Fall Drills Session 3 (Chemical)</td>
<td>Nov 16 (A)&lt;br&gt;Nov 23 (E)&lt;br&gt;Nov 30 (C)&lt;br&gt;Dec 7 (B)&lt;br&gt;Dec 14 (D)&lt;br&gt;Dec 21 (F) 2011</td>
<td>Audit drills*</td>
</tr>
<tr>
<td>• all 6 crews&lt;br&gt;• evaluated chemical drills</td>
<td></td>
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<tr>
<td><strong>Note:</strong> Significant performance issues identified during the drills will be brought to the attention of management.</td>
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</tbody>
</table>

*CNSC audits will be variable in scope. NBPN will be informed of the scope of the audit two weeks prior to the drill. Dates for CNSC staff observation of practice drills, and inspections / observations of evaluated drills, are tentative.*
### Appendix C - Schedule of Key Deliverable Submissions

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Submitted to CNSC</th>
<th>CNSC Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular drill evaluation reports (Information reports will be completed 2 months after completion of drill series):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>Nov 14, 2011</td>
<td>Jan 14, 2012</td>
</tr>
<tr>
<td>Fire</td>
<td>Jan 2, 2012</td>
<td>Mar 2, 2012</td>
</tr>
<tr>
<td>Chemical</td>
<td>Feb 21, 2012</td>
<td>Mar 31, 2012</td>
</tr>
<tr>
<td>Final Report on ERT Performance (may include above reports on practice drills, regular drills, and remedial training)</td>
<td>30 days prior to GSS Removal</td>
<td>30 days after receipt</td>
</tr>
</tbody>
</table>
Appendix D – Issue Resolution Process

CNSC staff will review the deliverables prepared by NBPN to determine whether there are fundamental issues to issuing a positive CNSC staff position. Disagreements may arise during the review. A review and issue resolution mechanism will be used to facilitate timely completion.

Nothing in this issue resolution process seeks to bind, or has the effect of binding, the Commission.

Step 1: Identification of the Issue and Resolution at the Working Level
1. Periodic NBPN and CNSC technical review meetings will be held to review progress on the key activities and highlight any potential major issues. Minimum attendance at these review meetings will be the CNSC technical lead and the corresponding point of contact for NBPN.
2. It is the intention of both parties to resolve issues at this level.
3. If an issue cannot be resolved at this level, it will be documented (typically, a brief factual summary of the issue and a paragraph representing the view of each organization) by the individuals in Paragraph 1 within two weeks of failure to resolve, and forwarded to the CNSC Director Level for resolution (Step 2).

Step 2: Resolution at the CNSC Director Level
1. A Step 1 issue, once documented, will be provided to the CNSC Director of the Point Lepreau Regulatory Program Division, and his/her counterparts at NBPN. A meeting will be called, normally within 30 days, to resolve the issue, and the resolution documented.
2. Issues which cannot be resolved at this level will be referred to the Senior Management Level (Step 3) within two weeks, supported by the original or revised documentation from Step 1.

Step 3: Resolution at the Senior Management Level
1. A Step 2 issue, once documented, will be provided to the CNSC Director General, Directorate of Power Reactor Regulation and his/her counterparts at NBPN. A meeting will be called, normally within 30 days, to resolve the issue, and the resolution documented.
2. Issues which cannot be resolved at this level will be referred to the Executive Level within two weeks, supported by the original or revised documentation from Step 2.

Step 4: Resolution at the Executive Level
A Step 3 issue, with documentation, will be sent to the Executive Vice-President and Chief Regulatory Operations Officer (CNSC) and his/her counterparts at NBPN. A meeting will be called, normally within 30 days, to resolve the issue, and the resolution documented.

In response to your letter of April 16, 2012 [1], this is to inform you that Canadian Nuclear Safety Commission (CNSC) staff have reviewed and accepted [2-7] all of the deliverables submitted by New Brunswick Power Nuclear (NBPN) [1, 8-15] to meet the requirements of the NBPN/CNSC Protocol [16], and concluded that all of the Protocol obligations have been met.

I would also like to inform you that CNSC staff audits [17, 18] of the drills conducted by NBPN in accordance with the Protocol identified an overall improvement in the emergency management and fire protection (EMFP) safety and control area (SCA) performance and verified regulatory compliance. These positive results have contributed to NBPN achieving a satisfactory rating in the EMFP SCA.

Yours sincerely,

Greg Rzentkowski
Director General
Directorate of Power Reactor Regulation
Regulatory Operations Branch

JR/ml
c.c.: R. Gauthier, B. Kennedy, A. MacDonald (NBPN)
A. Blahoianu, G. Cherkas, J. Ramsay, F. Rinfret, J. Sandles, L. Sigouin, R. Tennant
(CSNC Ottawa)
B. Valpy (CNSC Point Lepreau Site Office)

References:


Mr Rouse,

Thank you for giving me the opportunity to clarify this matter. The key requirement for a PSA is given in licence condition 5.2, namely that the licensee’s program must be implemented and maintained in accordance with CNSC Regulatory Document S-294 ‘Probabilistic Safety Assessment (PSA) for Nuclear Power Plants’.

The editorial changes that you note in the Licence Condition Handbook, that were approved by our Director General in accordance with an authority delegated to him by the Commission, in no way invalidate this requirement.

CNSC staff will continue to monitor NBPower's implementation of this requirement, as we do for all Safety and Control Areas.

Thank you,

Philip Webster for Greg Rzentkowski

---

From: Chris R [mailto:chris_r_31@hotmail.com]
Sent: Tuesday, June 26, 2012 8:08 PM
To: Webster, Philip
Cc: Rzentkowski, Greg
Subject: FW: Point Lepreau Licence Condition Handbook(LCH)

Dear Philip Webster

I just sent the below email to Dr. Rzentkowski, and received an automatic reply stating that he is away until July 6 2012 and that you are the acting Director General. Because of the seriousness of this issue, I am forwarding the email to you for your prompt attention.

Regards

Chris Rouse
CCNB Action SJ Fundy Chapter
Technical Advisor

---

From: chris_r_31@hotmail.com
To: greg.rzentkowski@cnsc-ccsn.gc.ca
Subject: Point Lepreau Licence Condition Handbook(LCH)
Date: Tue, 26 Jun 2012 22:31:45 +0000

Dear Dr. Rzentkowski

A serious issue has recently come to our attention that demands your immediate response if not action.
From the transcripts of the May 3 2012 Fukushima lessons learned meeting in Ottawa you stated that “In addition I would like to mentioned that the probabilistic safety assessment is not truly a licensing tool.” Prior to this, it was our understanding of the licensing requirements for PLGS that compliance with the probabilistic safety goals where in fact a licensing requirement or tool.

We compared section 5.2 under Compliance and Verification section from the LCH submitted for the hearings with the final copy signed by you on February 20th 2012. We saw that the following paragraph was deleted in the later version.

The results of the probabilistic safety analyses, level 1 and level 2, are used for the following purposes:
- To demonstrate compliance with safety goals
- To identify design features that may be vulnerable to common-cause failures
- To identify systems important to safety
- To identify defense-in-depth
- To identify, if any, potential areas of plant vulnerability for extreme accident scenarios.

We are seriously concerned that this highly important detail of the PLGS’s LCH has been deleted and not even recorded in the revision history. We respectfully ask why this has not been reported to the commission for the August 15 2012 public meeting, as the LCH is no longer the version that was accepted by the commission in the reasons for decision dated Feb 16 2012?

Many people rely on your honesty and rule enforcement to safeguard their health and environment. We look forward to your prompt reply on this most urgent matter.

Regards
Chris Rouse
Technical Advisor CCNB Action SJ Fundy Chapter

*** NOTE ***
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Hi Kathleen

In preparing for the August 15 CNSC Public meeting, I have some requests for information from NB Powers Public information program. Can you please acknowledge receipt of this email, and give a timeline of when I can have this information?

1. Previous to yesterdays conversation, was NB Power aware of the deletions made to the section 5.2 of the Licence Condition Handbook. If so how did you find out about the deletion and when did you find out about the deletion?

   It is a CNSC document and NB Power was made aware of the change made by the CNSC in the section 5.2.

2. Can I get a copy of "Letter P.D. Thompson to K. Kirkhope "PLR: PSA Meeting Minutes of March 23, 2004", May 2 2004, bits 1021319. We cannot locate a letter on the subject on that date. We are extending our search to see if there was a letter on that topic issued on a different date.

3. Why hasn't NB Power redone technical assessment 0087-03612-3001-001-TA-A-01 using the most up to date data from NRCan? It is our understanding that we have reviewed the most up to date data. We are in the process of conducting a site specific hazard assessment. At the present time, it is not the intent to further revise the technical assessment.

Regards

Chris Rouse

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March 8, 2012

Hon. Peter Kent
Minister of the Environment
Environment Canada
Les Terrasses de la Chaudière
10 Wellington Street, 28th Floor
Gatineau, Quebec K1A 0H3
kentp@parl.gc.ca

Hon. Joe Oliver
Minister of Natural Resources
Natural Resources Canada – Minister's Office
580 Booth Street, 21st Floor, Room C7-1
Ottawa, Ontario K1A 0E4
Joe.Oliver@parl.gc.ca

Dr. Michael Binder
President and Chief Executive Officer
Canadian Nuclear Safety Commission
280 Slater Street
P.O. Box 1046, Station B
Ottawa, ON K1P 5S9
Michael.Binder@cnsc-ccsn.gc.ca

Via Email and Mail

Dear Sirs:

Re: Deficient Licencing Renewal Decision for Point Lepreau Nuclear Generating Station

On February 17, 2012 the Canadian Nuclear Safety Commission (“CNSC”) announced its decision to renew the Power Reactor Operating Licence for the Point Lepreau Nuclear Generating Station and grant New Brunswick Power Nuclear (“NB Power”) permission to proceed with the fuel reload and restart of the reactor.

This coming weekend marks the one year anniversary of the Tōhoku earthquake and tsunami in Japan, which resulted in the Fukushima Daiichi nuclear disaster. This catastrophic event highlights the need for certainty and precaution in planning and approving nuclear facilities world-wide, given the devastating effects that can be caused by accidents at such facilities.

For the reasons described below, it is our collective view that the public hearing process, and the resulting Licencing Renewal Decision in regard to the Point Lepreau Nuclear Station, did not
comply with the requirements of the Canadian Nuclear Safety and Control Act (“NSCA”), the Canadian Nuclear Safety Commission Rules of Procedure (“the Rules”), and the Canadian Environmental Assessment Act (“CEAA”). Specifically, we believe the CNSC failed to:

(a) deliver a ruling as mandated by Rule 20(4) in response to a request for ruling under Rule 20(3) made by the representative of CCNB Action Saint John Fundy Chapter (“CCNB Action”) during the public hearing on December 2, 2012 in Saint John, New Brunswick, and

(b) apply the CEAA to the licence renewal and related refurbishment activities to ensure new and accurate seismic hazard information is used in assessing the Project’s potential for significant adverse environmental and human health effects.

Accordingly, it is our respectful submission that the CNSC is not in a position to make a lawful Licencing Renewal Decision about the Point Lepreau Nuclear Generating Station pursuant to 24(4) of the NSCA and the Commission’s statutory mandate to regulate so as to prevent unreasonable risk to the environment and human health and safety (NSCA ss. 9(a)(i)). As a matter of law, until the public hearing procedural requirements and relevant CEAA statutory requirements are met, the Commission has not acquired the necessary jurisdiction under the NSCA to grant the Licence Renewal.

Response Required on Request for Ruling on External Review of Technical Assessments

During the December 1-2, 2011 Point Lepreau licencing renewal hearing process, Christopher Rouse, technical advisor for CCNB Action, made three requests for rulings pursuant to Rule 20(3) of the CNSC Rules:

(a) a seismic assessment,

(b) an environmental assessment of the refurbishment activities taking place at the Point Lepreau Nuclear Generating Station, and

(c) an external review under the NSCA in regard to the two technical documents relied upon by NB Power as set out by CCNB Action through its intervention (0087-03612-3001-001-TA-A-01 Estimation of Seismic Risk for PLGS (“Estimation of Seismic Risk Technical Assessment”) and 0087-03612-3000-001-TA-A-01 Evaluation of Updated Seismic Hazard Information for Eastern Canada (“Evaluation of Updated Seismic Hazard Technical Assessment”)).

Pursuant to Rule 20(4), the Commission issued rulings in response to CCNB Action’s first two requests, ordering a seismic hazard analysis and denying the group’s request for a federal environmental assessment of the Project. However, in direct contravention of its Rules, no ruling was issued in response to CCNB Action’s third request – namely, that the CNSC order an external review of the two technical assessments (Estimation of Seismic Risk Technical Assessment and Evaluation of Updated Seismic Hazard Information Technical Assessment) that were done for the licence renewal.

This procedural error is of great importance, given the potential for any deficiencies in the two technical assessments to go unnoticed if the documents are not subject to external review.
Unless and until this procedural inadequacy has been fully addressed, it is premature for the Commission to issue a licence renewal for the Point Lepreau Nuclear Generating Station.

CCNB Action has suggested to the CNSC on several occasions that a peer review must be done during the licencing process. CCNB Action stated the need for peer review in Commission Member Document “CMD” 11-H12.33;ii CMD 11-H12.33B;iii during its oral presentation at the licencing hearings on Dec 1 2011;iv as one of its three requests under Rule 20(3) on Dec 2 2011;v in a letter sent to the CNSC on Jan 16 2012;vi and in a letter sent to the CNSC on Jan 30 2012.vii

We would also like to note that in a letter dated November 16, 2011, Dr. John Adams, a seismologist with Natural Resources Canada and CNSC’s expert witness during the licence renewal hearings, wrote to CNSC staff in response to their request for a review of both the Estimation of Seismic Risk Technical Assessment and the Evaluation of Updated Seismic Hazard Information Technical Assessment.

Dr. Adams did review and comment on the Evaluation of Updated Seismic Hazard Information Technical Assessment. During the licence renewal hearings, the CNSC agreed with Dr. Adams and CCNB Action that a site specific hazard assessment was needed, and ordered that this assessment be undertaken.

Dr. Adams stated that he did not feel he had the expertise to comment on the Estimation of Seismic Risk Technical Assessment. It is our position that it was incumbent upon the CNSC to find another individual with the expertise necessary to review this important document. This is one of the reasons that CCNB Action made the above-noted request for a ruling on this point pursuant to Rule 20(3) during the licence renewal hearings.

Because of its concerns regarding this issue and the CNSC’s lack of response to its request for a ruling, CCNB Action contacted Dr. Robert P. Kennedy, Consulting Engineer with RPK Structural Mechanics Consulting and author of the formula in the Estimation of Seismic Risk Technical Assessment, and asked if he would review NB Power’s work in regard to his calculation. Dr. Kennedy confirmed that his method appeared to be applied correctly but the hazard curve should have been plotted on what is known as a “log-log plot” that is used to extrapolate a seismic hazard curve. If a log-log plot is used, it would make a difference in that the numbers used in the calculation would point to a greater seismic risk.

In addition to the hazard curve needing to be plotted on a log-log plot, the curve used was a median curve which gives a median hazard. NB Power is required to use a mean seismic hazard curve and compare the mean seismic hazard against its safety goals. This is an important distinction as a mean hazard curve gives an increased seismic hazard. For these two reasons, we believe the actual seismic risks to the Point Lepreau Nuclear Generating Station may be significantly higher than the Technical Assessments relied upon by NB Power and accepted by the CNSC during the licence renewal hearings indicate.

Because of the importance of ensuring Technical Assessments in support of the Point Lepreau licence renewal were conducted properly, and the very real possibility that they may in fact
contain errors, we believe that in issuing a ruling on this request as required by Rule 20(4), the CNSC should in fact grant an external peer review of these two Technical Assessments. If the review conducted identifies problems with the Technical Assessments, we hereby request that the CNSC hold a public hearing in Saint John, New Brunswick to review and publicly analyze evidence regarding whether the Point Lepreau Nuclear Generating Station will meet the acceptance criteria for the methodology of its Probabilistic Safety Assessment (PSA)-based seismic margin as legally required by NB Power’s Power Reactor Operating Licence.

**2003 Environmental Assessment used out-of-date Seismic Hazard Data**

Finally, we are of the belief that the requirements of the CEAA have not been met in this instance because key aspects of the work conducted at the site have not previously been subject to assessment under the CEAA, despite the CNSC’s position that the *Exclusion List Regulations* apply to this undertaking. As you know, the refurbishment taking place involves a range of construction activities, repairs, replacement of structures, systems and components, as well as safety upgrades. The refurbished Nuclear Generating Station will be very different in its make-up as compared to the older versions of the Station which were previously assessed.

Furthermore, the seismic information relied upon during the 2003 environmental assessment conducted in regard to proposed modifications of the Point Lepreau Solid Radioactive Waste Management Facility dated back to the original design of the Facility. As noted above, because previous seismicity information is now out of date and may be inaccurate, the CNSC ordered a new site specific seismic hazard study as part of last month’s licence renewal decision. The assumptions relating to seismicity relied upon during the 2003 environmental assessment may very well prove to be inaccurate in light of this new site-specific seismic hazard study.

Because of the serious and potentially irreversible effects associated with a large release of radiation to the environment in the event of a large earthquake, we believe that consistent with the precautionary principle of international law enshrined in the CEAA, an assessment of the environmental risks posed by Point Lepreau Nuclear Generating Station must be done based on up-to-date, accurate seismic hazard information.

**Conclusions**

As noted above, it is our request that the CNSC issue a ruling in respect of the Rule 20(3) request for a ruling submitted by CCNB Action regarding the need for an external review of the two Technical Assessments noted above. Could you kindly advise us in writing, by **March 14, 2012** whether the CNSC agrees to provide such a ruling? Please also advise by this date whether the CNSC plans to proceed with an updated environmental assessment of the Point Lepreau refurbishment project, as well as the reasons for this decision.

Please direct your response to Kaitlyn Mitchell of Ecojustice via email (kmitchell@ecojustice.ca), fax (416-363-2746), or mail (Centre for Green Cities, 401-550 Bayview Avenue, Toronto ON, M4W 3X8).
We look forward to your timely reply to this urgent request. Please do not hesitate to contact us if you have any questions about the points contained in this letter.

Yours truly,

Kaitlyn Mitchell
Staff Lawyer, Ecojustice

Sharon Murphy
Chair, CCNB Action SJ Fundy Chapter

Chris Rouse
Technical Advisor, CCNB Action SJ Fundy Chapter

Sierra Club Atlantic Chapter

Canadian Coalition for Nuclear Responsibility

Chief Dan Ennis
Wulustukyeg Traditional Council of Tobic (WTCT)

Council of Canadians, Saint John chapter

Michel Duguay

Gordon Dalzell

Fundy Baykeeper

International Institute of Concern for Public Health

Wilhelmina Nolan

CC: Gaëtan Thomas - President and CEO, NB Power
Megan Leslie – NDP Environment Critic
Dr. Kirsty Duncan – Liberal Environment Critic
Elizabeth May – Party Leader, Green Party of Canada

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ii CMD 11-H12.33 CCNB Action Saint John Submission
iii CMD 11-H12.33B CCNB Action Saint John Supplemental submission to the CNSC
iv Transcripts of Day 2 hearings Dec 1 2011
v Transcripts of Day 2 hearings Dec 2 2011
vi Letter to CNSC from CCNB Action SJ Fundy Chapter Jan 16 2012
vii Letter to CNSC from CCNB Action SJ Fundy Chapter Jan 30 2012
viii 0087-03612-3001-001-TA-A-01-0000 Estimation of Seismic Risk For PLGS
RPK-111208.1 Comments on Estimation of Seismic Risk for PLGS Robert P. Kennedy December 8, 2011

0087-03612-3001-001-TA-A-01-0000 Estimation of Seismic Risk For PLGS

Dear Ms. Mitchell and co-signatories:

Your letter of March 8, 2012 regarding the licence renewal decision for the Point Lepreau Generating Station has been referred to me in my capacity as Commission Secretary by Mr. Michael Binder, President of the Canadian Nuclear Safety Commission (CNSC).

As you are aware, the Commission rendered its decision (enclosed) on February 16, 2012, based on all the information submitted by all participants and CNSC staff in the context of the hearing. The Commission issued a licence that would allow New Brunswick Power Nuclear (NBPN) to continue to carry out the activities authorized under its licence. Before rendering its decision, the Commission considered information presented in a public hearing held on October 6, 2011 in Ottawa, Ontario and on December 1 and 2, 2011 in Saint John, New Brunswick. During the public hearing, the Commission received and considered submissions from NBPN and 37 intervenors, as well as CNSC staff’s recommendations.

Your letter raises concerns regarding the decision of the Commission. Please note that the decision of the Commission is complete and final.

The Commission would never issue a licence unless it is satisfied that the proposed activity is safe for the health, safety and security of people and the environment.
Please communicate directly with me should you require additional information in this matter.

Yours sincerely,

Marc Léblanc
Commission Secretary
613-995-6506

Enclosure: (1)

c.c. (without enclosure):

The Honourable Joe Oliver, Minister of Natural Resources
The Honourable Peter Kent, Minister of the Environment
Mr. Michael Binder, President, Canadian Nuclear Safety Commission
Mr. Gaétan Thomas, President and CEO, NB Power
Ms. Megan Leslie, NDP Environment Critic
Dr. Kirsty Duncun, Liberal Environment Critic
Elizabeth May, Party Leader, Green Party of Canada
Sharon Murphy, Chair, CCNB Action SJ Fundy Chapter
Chris Rouse, Technical Advisor, CCNB Action SJ Fundy Chapter
Sierra Club Atlantic Chapter
Canadian Coalition for Nuclear Responsibility
Chief Dan Ennis, Wulustukyeg Traditional Council of Tobic (WTCT)
Council of Canadians, Saint John Chapter
Michel Duguay
Gordon Dalzell
Fundy Baykeeper
International Institute of Concern for Public Health
Wilhelmina Nolan
Chris

1. First to the shaking levels from various magnitude and distances. You should be able to read those off the table at the back of the AB95 paper I sent you last night. However I'm including our values from the Youngs approximation equation as a check.
   PGA 6.0 depth 11 km 0.69g
   PGA 7.5 depth 11 km 1.63g
   Sa(0.2) 6.0 depth 11 km 0.55g
   Sa(0.2) 7.5 depth 11 km 1.78g

Once you feel confident in using the tables you can look up spectral amplitudes for any of the other available periods/frequencies. Note that the AB look-up tables come from a model of ground motions that is essentially unconstrained by data for large and/or close earthquakes. These amplitudes are not much more than educated guesses as to the actual shaking levels, and if realistic shaking levels from earthquakes at these distances were required they would probably be estimated by a combination of motions recorded near large earthquakes in the rest of the world and of modelled motions from synthetic earthquake rupture models. The bottom line is that we really don't know what the motions will be from a Mw 7.5 at 11 km in eastern Canada as there is not data. Fortunately such an event is very rare and its contribution to the risk of building design (at the 2%/50 year probability level) is close to zero. That would not necessarily be the case for hazard estimated at very low probabilities (see item #2).

### Detailed outputs

#### PGA Youngs approximation FOR MAGNITUDES >= 5 for AB95 lookup table

<table>
<thead>
<tr>
<th>Hazard Values for Magnitude</th>
<th>6.0 depth 11.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicentral Hazard Value</td>
<td>676.749</td>
</tr>
<tr>
<td>Hypocentral Distance Value</td>
<td>11.0</td>
</tr>
</tbody>
</table>

#### PGA Youngs approximation FOR MAGNITUDES >= 5 for AB95 lookup table

<table>
<thead>
<tr>
<th>Hazard Values for Magnitude</th>
<th>7.5 depth 11.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicentral Hazard Value</td>
<td>1599.010</td>
</tr>
<tr>
<td>Hypocentral Distance Value</td>
<td>11.0</td>
</tr>
</tbody>
</table>

#### Sa(0.20)s Youngs approximation FOR MAGNITUDES >= 5 for AB95 lookup table BEST

<table>
<thead>
<tr>
<th>Hazard Values for Magnitude</th>
<th>6.0 depth 11.0</th>
</tr>
</thead>
<tbody>
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<td>Epicentral Hazard Value</td>
<td>543.235</td>
</tr>
<tr>
<td>Hypocentral Distance Value</td>
<td>11.0</td>
</tr>
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</table>
2. Mean and Median hazard for 0.0001 pa and 0.00006 pa. We're giving you the Spectral acceleration values below. They are subject to all of the provisos in our previous emails about the usage and the unknown reliability of the numbers. You will appreciate that as the probability level drops, the contribution from large, nearby earthquakes increases, and the shaking level from these is very uncertain (see item #1), adding to the level of uncertainty of the results.

Mean and median values for Pt Lepreau using 2010 models - hard rock values units = g

<table>
<thead>
<tr>
<th>prob</th>
<th>mean</th>
<th>median</th>
<th>prob</th>
<th>mean</th>
<th>median</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSA 0.1 sec</td>
<td>0.0001</td>
<td>0.652</td>
<td>0.496</td>
<td>0.00006</td>
<td>0.835</td>
</tr>
<tr>
<td>PSA 0.2 sec</td>
<td>0.0001</td>
<td>0.522</td>
<td>0.357</td>
<td>0.00006</td>
<td>0.661</td>
</tr>
<tr>
<td>PSA 0.3 sec</td>
<td>0.0001</td>
<td>0.390</td>
<td>0.267</td>
<td>0.00006</td>
<td>0.492</td>
</tr>
<tr>
<td>PSA 0.5 sec</td>
<td>0.0001</td>
<td>0.294</td>
<td>0.165</td>
<td>0.00006</td>
<td>0.369</td>
</tr>
<tr>
<td>PSA 1.0 sec</td>
<td>0.0001</td>
<td>0.150</td>
<td>0.069</td>
<td>0.00006</td>
<td>0.186</td>
</tr>
<tr>
<td>PSA 2.0 sec</td>
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<td>0.022</td>
<td>0.019</td>
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<td>PGA</td>
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<td>0.416</td>
<td>0.294</td>
<td>0.00006</td>
<td>0.805</td>
</tr>
</tbody>
</table>

John Adams

From: Chris R [mailto:chris_r_31@hotmail.com]
Sent: January 31, 2012 21:26
To: Adams, John
Cc: Halchuk, Stephen; Andrie Blahoianu
Subject: RE: More information regarding Point Lepreau - spectral velocities at probabilities of 0.0001 pa and 0.00006 pa

Thank you John

Yes please I would like the numbers as a sanity check, as I do not have a 2012 site specific hazard assesment.

A couple of more questions as well please.

What would the PGA and spectral velocities be for a 6.0 earthquake 11km away slant distance on hard rock?
What would the PGA and spectral velocities be for a 7.5 earthquake 11km away slant distance on hard rock?

Regards
Chris

Subject: RE: More information regarding Point Lepreau - spectral velocities at probabilities of 0.0001 pa and 0.00006 pa
Date: Tue, 31 Jan 2012 19:34:55 -0500
From: John.Adams@NRCan-RNCan.gc.ca
To: chris_r_31@hotmail.com
CC: Stephen.Halchuk@NRCan-RNCan.gc.ca; Andrei.Blahoi@ccsn.gc.ca

Chris,

This is the reply to your second thread of email questions. I'm copying CNSC.

1. Spectral velocity is related to spectral acceleration by

$$PSV(T_i) = \frac{SA(T_i)}{\omega_i} = \frac{SA(T_i)T_i}{2\pi}$$

This equation is taken from a convenient recent source [http://bssa.geoscienceworld.org/content/99/1/277.full “Ground-Motion Prediction Equation for SI Based on Spectral Acceleration Equations” by Brendon A. Bradley and others in Bulletin of the Seismological Society of America February 2009 v. 99 no. 1 p. 277-285]

Note the P in PSV, this is sometimes written as pseudo spectral velocity (and I admit I don't fully understand the practical difference from this to simple spectral velocity).

However I understand that you can re-express the spectral acceleration value we have given you as spectral velocities as above, if it helps you.

2. Regarding the frequencies you request: we normally only calculate for a few periods (to avoid confusion we try to talk only in period) - 1.0, 0.5, 0.2 and 0.1 sec. We can also compute 0.3 sec. It is usual to assume the UHS is smooth between adjacent periods and interpolate (say for the 3.85 Hz you want) between them (as scientists we would interpolate on log-log paper, but it's possible engineers might use different scales - say linear-linear).

We do not calculate periods shorter than 0.1 sec. this is because historically building design does not use values at these short periods. However the various GMPE authors often provide relations for Sa at shorter periods.

3. Regarding the seismic hazard at the low probabilities you requested. We have communicated the very low probability values from the NBCC national model to both you and the CNSC only as a screening/sanity check on low probability values from other sources, not as "true" or design values. In doing so we are providing precise values from the model (to avoid arguments over graphical extrapolation from higher probability values we routinely provide to the lower probabilities you requested). The values are precise, in that the mathematical model we have created can compute them extremely precisely, but their accuracy is unknown (because the model we are using was never intended for such low-probability estimation). Remember also that these calculations are from the NBCC national model, and site-specific model estimates might differ, and are often lower.

If given the above advice you still want mean and median estimates at probabilities of 0.0001 pa and 0.00006 pa. for periods of 1.0, 0.5, 0.3, 0.2, and 0.1 seconds, please reply to this email to request them.

John Adams
From: Chris R [mailto:chris_r_31@hotmail.com]
Sent: January 31, 2012 13:03
To: Adams, John; Halchuk, Stephen
Subject: RE: More information regarding Point Lepreau

Could I also get the velocity for 3.85 hz as well. I have found that is the natural frequency of a Candu 6 reactor.

Thank you

From: chris_r_31@hotmail.com
To: jadams@nrcan.gc.ca; shalchuk@nrcan.gc.ca
Subject: More information regarding Point Lepreau
Date: Tue, 31 Jan 2012 17:23:28 +0000

Hi John and Stephen

I was wondering if it would be possible to get spectral velocities from the NRCan Calculator? If so would it be possible to get them for a probability of .0001 pa and 0.00006 pa.

could I get them for the following frequencies. 1hz 2.5hz 5hz 10hz 25hz and 50hz. I am not sure if there are median velocities or mean velocities. If both are available I would like to have both if possible.

Thank you both very much

Regards

Chris