

1 identify what safety margins are there.

2 Guidance regarding the way that review-
3 level earthquake is chosen is also provided in 1407, the
4 American guide, which has followed the reason that NB
5 Power used -- followed this guide, another standard which
6 is now in place -- is because at the time they started
7 doing this it was no standard, Canadian standard, in
8 place. So they followed these rules from NUREG.

9 And what it say, it says that -- this NUREG
10 says that you have to -- the review-level earthquake for
11 the eastern North America should be 0.3G, an earthquake
12 which is anchored of 0.3G. And for what is west of the
13 Rocky Mountains, it has to be 0.5G.

14
15 What Point Lepreau did, did exactly this.
16 So the level of the review-level earthquake which was
17 chosen is 0.3G.

18 More than this, it happens that -- and the
19 new information provided by NRCAN in their -- in the NBC,
20 National Building Code 2010 edition, which is using 95
21 relations of Dr. Atkinson, in terms of attenuation, it
22 shows that this 0.3G, which is chosen, as I said, as a
23 review-level earthquake, coincides also with one in 10,000
24 years probability of exceedance.

25 The methodology itself, when it was

1 applied, identified other components which are weak or
2 should be enhanced. The outcome of the PSA-based
3 methodology is a statement like the plant exceeds the
4 review-level earthquake. That means it's more than the
5 high confidence of low-probability of failure; or it's
6 above the review-level earthquake; that means above 0.3G,
7 or the high confidence of low-probability of failure is a
8 number, and this number, it's a ratio which show, you when
9 applied to 0.3G, it shows you how it is.

10 The result of the methodology by the end,
11 which was done, showed that components important to safety
12 -- so all of them exceed 0.3G. More than this ---

13 **THE CHAIRMAN:** Look, please wind it up. We
14 don't want another presentation from CNSC now. We're
15 dealing with the intervention itself.

16 What I'd like to know the answer to the
17 bottom line -- forget about -- the issue was whether, in
18 the Fukushima report, we'd taken enough consideration
19 about earthquakes. I thought that was the essence of the
20 intervention. And so I'd like you to answer that, and
21 then I'd like the intervenor -- did you take the
22 opportunity to feed in into the public consultation of the
23 Fukushima report that's now going in.

24 I hope you submitted to CNSC your views on
25 the Fukushima task force report that's now in public

1 consultation.

2 So why don't you start us off?

3 **MR. RZENTKOWSKI:** Yes. Let me respond to
4 those questions one by one.

5 The objective of the Fukushima report was
6 to reassess the initial lessons learned from Fukushima
7 accidents. And those initial lessons learned indicated
8 that, following the seismic events, the reactor was shut
9 down safely and safety systems operated efficiently to
10 provide sufficient cooling to the reactor core.

11 Nevertheless, we decided to focus on the
12 more severe accidents because this was the indication from
13 the lessons learned, that if you have a combination of
14 very extreme events, no matter what the source, you may
15 eventually face the situation where there is loss of
16 offsite power, followed by loss of on-site power and loss
17 of all heat sinks.

18 So effectively, we subjected the CANDU
19 plants to very strong stress which is equivalent to
20 absence of all safety systems at the site and we
21 demonstrated that CANDU reactors are safe, even under
22 those extremely severe conditions.

23 **THE CHAIRMAN:** Did Sierra Club submit an
24 intervention or submission to the Fukushima task force
25 that's now in the public domain?

1 **MR. RZENTKOWSKI:** No. To my knowledge, we
2 haven't received any comments on the report.

3 **MR. LACK:** To my knowledge, we were never
4 invited to publicly comment on that report. Perhaps it's
5 open to us to comment now in advance of the December 18th
6 report, but the report was -- there were never, to my
7 knowledge, any -- no notice was given that CNSC wanted to
8 hear from the public about this. They took it unto
9 themselves, partially as a result of IEIA suggestion that
10 they produce a report, but as far as I know, neither
11 Sierra nor any other intervenor was asked to comment or
12 contribute in any way. I could be wrong, but that's my
13 understanding.

14 **THE CHAIRMAN:** Can you clarify that?

15 **DR. RZENTKOWSKI:** The report was posted on
16 our external website with a message, inviting public
17 comments. But that's correct, we didn't issue letters to
18 any groups which could be eventually interested in
19 providing comments on that report.

20 **MR. LACK:** But just to clarify what I mean,
21 the report came out before anyone was invited to comment
22 on it. After the report was -- this particular report was
23 finalized, of course I suppose it was possible for anyone
24 to comment on it, but no one was -- to my knowledge, Dr.
25 Rzentkowski, was invited to participate or comment during

1 the preparation of the report. It was all done internally
2 in CNSC.

3 **THE CHAIRMAN:** I think there's a
4 misunderstanding here. Mr. Jammal, please?

5 **MR. JAMMAL:** Thank you, Mr. President. For
6 the record, it's Ramzi Jammal.

7 Here, there are a couple of things. Let me
8 start from the beginning of the structure.

9 We issued the directive or the order to the
10 utilities in Canada under the 12-2 in order to address the
11 short-term lessons learned from Fukushima and long-term
12 aspects.

13 The CNSC established a task force group in
14 order to evaluate multiple things. One of them is the
15 response of the directive or -- what we call the Order 12-
16 2 and the lessons learned from Fukushima. The task force
17 has completed its report and it was put out on the website
18 and pushed to everyone who is subscribed to the CNSC
19 website and the information was sent out that the report
20 is available.

21 In addition to it, if you look at the
22 management response, we established multiple avenues for
23 the public to give an input. In the current period of the
24 public input, is everybody to comment on the Fukushima
25 report. Staff were going to take into consideration all

1 the comments that were received and properly
2 dispositioned, and put it together in what we call a
3 Commission Member Document, a CMD, which is the current
4 process.

5 And then we will post the comments that we
6 received, in addition to include the action plan proposed
7 by staff to go before the Commission, and the intervenors
8 will have time to comment on the full comments and that
9 will go before the Commission in mid-February in a public
10 meeting. Then, I presume, I will have to seek advice from
11 Mr. Marc Leblanc the Secretary or a recall from my
12 colleague from Secretariat, where the public will be given
13 another opportunity to submit a written intervention.

14 **MR. LACK:** Could I ask, what is the
15 deadline for comments on the initially issued report on
16 Fukushima? Is there a deadline?

17 **DR. RZENTKOWSKI:** Yes, there's a deadline,
18 and the deadline is the end of November.

19 **MR. LACK:** The deadline was the end of
20 November for commenting on that report? I'm not sure that
21 that was made clear to intervenors.

22 **THE CHAIRMAN:** At any rate, if I understand
23 the process, you will have another kick at the can once
24 the public hearing that's going to happen in February, I
25 believe. You will be invited. So I think the message

1 here is that the CNSC website is the place that I think
2 everybody can subscribe to, and you get the information
3 automatically sent to you -- to you guys.

4 **MR. LACK:** Any comments, Dr. Rzentkowski?

5 **DR. RZENTKOWSKI:** We received only
6 comments from the industry up to this point in time.
7 However, I would like to put on the record that the next
8 day after we issued the report, I provided a copy to
9 Professor Duguay, who is present in this room.

10 **MR. LACK:** I'll look forward to the
11 opportunity to comment and I think other intervenors will,
12 too, but this was not a very transparent process, in my
13 personal opinion.

14 **THE CHAIRMAN:** The process is not over, so
15 it's -- you're still in the middle of the process and no
16 action has been taken, no sanctions, so we're now, like
17 everybody else in the world, trying to figure out what
18 needs to be done post-Fukushima.

19 Dr. Barriault?

20 **MEMBER BARRIAULT:** My next question,
21 really, is that -- I guess it was on the question of
22 fitness for duty, if I understand correctly. You were
23 wondering if the employees are fit for duty, monitoring
24 the reactors; is that correct?

25 **MR. LACK:** No, sir, that's not what I'm

1 asking. I believe the operators are eminently fit for
2 duty. I'm talking about the possibility of human error,
3 which even the most fit for duty person can be involved in
4 a -- in sometimes a single human error, or a cascading
5 event of human errors, or human errors that compound an
6 external event.

7 None of these things are taken into account
8 as things for which you need to prepare.

9 Human error is essentially left out of,
10 from what I can tell, of CNSC consideration, and there
11 doesn't seem to be the kind of duplication or specific
12 attention to that problem, because it can affect the most
13 well-oiled and prepared team. They can still make
14 mistakes or get in trouble and cause problems that way.

15 **MEMBER BARRIAULT:** So does N.B. Power want
16 to comment on this?

17 **MR. PARKER:** Thank you. Wade Parker, for
18 the record.

19 There are a number of barriers that we put
20 in place to address the whole question of human error, and
21 it's more than just individual barriers. We have a whole
22 list of human-performance, error-prevention tools that we
23 use, like strict compliance to procedures, peer checks for
24 very specific critical tasks, safety checks, and
25 additional layers of checks. Our training drives that

1 home for -- you know, specifically for our licensed staff
2 in the control room.

3 As you are well aware, we have simulators
4 that mock up the entire interaction of events and how we
5 address those by following those procedures and that level
6 of things.

7 On top of that, we have what we call an
8 observation and coaching program at our station. To date,
9 we have nearly 7,000 observations where the supervision is
10 out there in the field, you know, verifying by the
11 supervision by the station leadership that what we demand
12 in our processes and our policies we are actually seeing
13 in the field, to make sure that it's not just words on a
14 page. And these are just a number of things that come to
15 my mind as I'm sitting here.

16 But there are a number of layers that are
17 part of our process to prevent these exact things from
18 happening, these human-performance, human error-type
19 issues, to do everything that we can to prevent the exact
20 concern on the table.

21 **MR. LACK:** If I may just respond to that,
22 Mr. Parker? I don't doubt that you have these in place,
23 but I don't see them being evaluated or I don't see
24 regulation from the CNSC side. Although this was not
25 during a time when the reactor was operating, certainly

1 the very expensive and time-consuming decision to continue
2 to install the Calandria tubes, when it was known that
3 they were defective, indicates that there was human error
4 on the part of your contractors, AECL, and that you guys
5 didn't catch it, and then you made a mistake that cost I
6 don't know how many hundreds of millions of taxpayer
7 dollars.

8 So maybe if you -- I don't doubt that you
9 have many good systems in place, bur perhaps they need
10 oversight from the CNSC, and I don't see that happening.

11 And I know that the same kind of thing
12 happened in Korea. They caught it right away, and people
13 say there's a big lesson to be learned here about the
14 question of human error. I think it just gets very
15 inadequate attention, not necessarily from just you, but
16 also perhaps from the CNSC.

17 **THE CHAIRMAN:** Okay, staff, can you talk
18 about -- first of all, is it true that in Korea it was
19 detected immediately? If memory serves right, Korea also
20 had to go through some pretty extensive -- they were
21 complaining about those errors also themselves, and it
22 took them a long time to reconcile. In fact, once Korea -
23 - please correct me if I'm wrong -- once Korea found out
24 what the problem was, then it was transported into N.B.
25 Power. Is that -- did I get it right?

1 **DR. RZENTKOWSKI:** That's generally correct.
2 The Korean project benefitted significantly from the
3 experience gained here at Point Lepreau, and this is the
4 main reason why the project was completed on time in
5 Korea; simply because Point Lepreau was leading the way,
6 generating experience for the entire nuclear industry, not
7 only here in Canada, but internationally as well.

8 **MR. LACK:** That's just like saying they
9 learned to be ---

10 **THE CHAIRMAN:** Excuse me -- excuse me.
11 Let's keep it in order here. Mr. Jammal?

12 **MR. JAMMAL:** Thank you, Mr. President.
13 It's Ramzi Jammal, for the record here.

14 I think everybody's focusing on errors
15 here. Experience is gained with respect to the
16 activities, but, I do not want to leave the Commission, or
17 the public, or anybody, with the fact that if even errors
18 do happen, there are multiple testing. And that is the
19 reason the errors were found, and whatever the methodology
20 what was being used was found through what we call a cold
21 commissioning. That means there is always testing with
22 respect to what's been installed through a very rigorous
23 process, according to codes, before any progress is being
24 made and that's why these testing do exist in place to
25 ensure the defence in depth before any work is being

1 completed.

2 **THE CHAIRMAN:** Okay, I think we've got to
3 move on. Dr. Barriault, we interrupted you.

4 Dr. McDill?

5 **MEMBER BARRIAULT:** No, that's fine, Mr.
6 Chairman.

7 Thank you.

8 **MR. RZENTKOWSKI:** Could I put something on
9 the record? Because I outlined to state that human errors
10 are being modeled as a part of the probabilistic safety
11 assessment and we have a regulatory requirement on the
12 conduct of probabilistic safety assessments by each
13 licensee.

14 **THE CHAIRMAN:** Dr. McDill?

15 **MEMBER MCDILL:** Thank you.

16 One thing that I think is clear is this
17 intervenor feels detached from the process and -- detached
18 from the process and is not familiar with everything that
19 has happened and therefore is frustrated.

20 **MR LACK:** I'm frustrated but I ---

21 **THE CHAIRMAN:** Excuse me; let the
22 Commissioner ask the question.

23 **MEMBER MCDILL:** No it's okay, no, no, it's
24 all right.

25 So maybe we can just address some very

1 specific questions that he has raised.

2 NB Power has never included the public in
3 Point Lepreau emergency drills or exercises and none have
4 occurred at night.

5 So let's try that one.

6 **MR. KENNEDY:** For the record, it's Blair
7 Kennedy.

8 I would refer that to Charles Hickman
9 because he's been involved in those issues directly.

10 **MR. HICKMAN:** For the record, Charles
11 Hickman.

12 We have a program of emergency drills that
13 have been ongoing for many years. The offsite activities,
14 as part of those drills, is planned and executed with the
15 involvement of the provincial emergency measures
16 organization; they take responsibility of activities
17 outside the fence line.

18 So with due respect I think I'm going to
19 pass that to the province to talk to the involvement of
20 the public and the drills in the past.

21 **MEMBER McDILL:** So we'll hop over to the...

22 **MR. MacGILLIVRAY:** For the record, Ernie
23 MacGillivray.

24 It is a good question; I'll try to pick it
25 apart a little bit.

1 We haven't done drills at night, with good
2 reasons for that; there's safety reasons. So we don't
3 want to be moving around -- well, we don't want to put
4 people at risk when we're undertaking training and
5 exercises.

6 So we would consider doing some kind of
7 controlled exercise at night if there was some training
8 value to be extracted from it but certainly moving members
9 of the public around at night would be of questionable
10 value.

11 In terms of not involving the public with
12 exercises, we do involve the public with exercises. We
13 haven't done mass evacuation exercises very often.

14 My memory goes back about 20 years, I've
15 been involved in six or seven exercises; we've only done,
16 to my recollection, an exercise where we evacuated numbers
17 of people and I think they were mostly people who actually
18 work at Lepreau as opposed to the public at large.

19 We did involve members of the public, if
20 you will, in exercises on that occasion and we evacuated
21 people through a decontamination process and into a
22 reception centre environment.

23 We haven't done any exercises of that
24 nature for the period that the plant is being shut down,
25 in fact, the last exercise was in 2006.

1 So it is -- these are legitimate questions
2 and we want to have a more robust exercise program and we
3 intend, as I've said in both our written and oral
4 presentation, to exercise all components.

5 We are looking at doing an evacuation and
6 decontamination and reception centre exercise in the
7 summer and we'll certainly consider involving the
8 community in that exercise, to the extent that there's
9 interest.

10 **MEMBER McDILL:** What is the purpose of an
11 exercise? I mean it has multi purposes so what's the
12 first one, what's the second one? Where does training of
13 the workers to prevent human error come in, at what level
14 does that come in?

15 Because certainly part of an exercise has
16 to be that people learn what they're supposed to do and
17 how to react in difficult situations.

18 I'll address that to the province.

19 **MR. MacGILLIVRAY:** We exercise at different
20 levels. So there's a tactical piece which is about
21 getting the word out to people and getting people who
22 might be at risk out of harms way in a safe manner.

23 So that's principally done by the police,
24 assisted by the Warden Service, assisted by staff from the
25 plant, staff from the station.

1 So that part of the exercise is the one
2 that would most directly involve the public. It's asking
3 people to leave an area, go through a process, eventually
4 end up at a reception centre where they would receive a
5 number of services.

6 There are other dimensions to exercising,
7 particularly the collation of information about the event,
8 the actual or potential consequences and then there's a
9 decision making process to decide what actions are
10 appropriate.

11 So that's a more technical dimension that
12 involves technical specialists, health physicists,
13 radiation monitoring and so forth. That has to be
14 exercised.

15 The whole process of collation of
16 information for all of the moving parts, providing advice
17 to government that has to be exercised.

18 So there's a number of functions in our
19 incident management system. I think the one that's
20 probably most relevant to the public though is how do I
21 find out if there's something bad happening and what am I
22 supposed to do, and that's the area where most of our
23 focus will be with our exercising in 2012.

24 **MEMBER McDILL:** Is there literature
25 available on the value of something like a night exercise

1 or an exercise at an usual time, twilight, when visibility
2 is down? Is there -- maybe I can address that to -- maybe
3 staff knows.

4 **MR. RZENTKOWSKI:** Let me direct this
5 question to Mr. Luc Sigouin who is the Director of
6 Emergency Management Response Division.

7 **MR. SIGOUIN:** Luc Sigouin, for the record.
8 So in answer to your question, very
9 briefly, I'm not aware of any information regarding the
10 value of exercising at different periods of the day.

11 I do know that the exercises or drills
12 within the stations are done at a variety of times and
13 maybe Point Lepreau, NB Power staff would comment on that
14 but it's not -- it's not uncommon for station staff to do
15 drills on all shifts at all hours of the day.

16 **MEMBER McDILL:** So I'll turn it then over
17 to NB Power.

18 How do you know that all the lights will go
19 on at night; how do you know that all of the things that
20 are supposed to happen at night happen if you test during
21 the day?

22 **MR. KENNEDY:** Yes, for the record, it's
23 Blair Kennedy.

24 I'll turn that back to Charles Hickman.
25 There's drills that are done within the

1 plant at various times to exercise on the other side of
2 the fence.

3 **MR. HICKMAN:** Charles Hickman, for the
4 record.

5 To your question as to how do we know
6 what's working and what's not working; we have a whole
7 series of regular basic preventative maintenance tests
8 that we do to ensure that there is different components of
9 the emergency plan operational.

10 So the operation staff might do a check
11 that the radio system is working on any particular shift.
12 They have contingency desks and radios in the main control
13 room.

14 We would have tests where we would check
15 different parts of the lighting system, alarm system and
16 so on.

17 So those tests are an ongoing part of day-
18 to-day life at the operating station where we do check
19 individual components of the system are operational in the
20 different scenarios.

21 Does that answer your question?

22 **MEMBER McDILL:** And how do you communicate
23 to the people who live around the plant that you have
24 tested all of those things?

25 **MR. HICKMAN:** Charles Hickman, for the

1 record.

2 Those tests and those drills become part of
3 our -- such as our annual reporting, if you can put it
4 that way, from the point of view that we do those tests,
5 we report as part of our S99 reportability requirements.
6 Many of the drills that we do -- a number of drills that
7 we do and that gets rolled up into the safety and control
8 area that the staff comment on as part of their annual
9 report.

10 We don't communicate directly with the
11 community that we have tested a particular component on a
12 particular shift. It's more of a roll-up as part of the
13 annual report from staff.

14 Now, we do work with provincial EMO and we
15 have a well integrated connection between our onsite and
16 offsite activities which the wardens are part of and the
17 wardens are part of the community, so there is a
18 communication channel back through the wardens so that
19 they are aware of what the emergency planning activities
20 are and some of the larger drills may or may not be aware
21 of them. In addition, from a purely tactical point of
22 view, the response team is often supposed by the fire
23 department. The fire department is very much part of our
24 response strategy, both for the on-site and potentially
25 for offsite issues.

1 So there's a good communication through the
2 local fire department and their involvement in our
3 response strategies.

4 **THE CHAIRMAN:** Can I jump on this one?

5 If memory serves right, you -- in your
6 Fukushima task force, you observed or you found or you
7 concluded that the emergency planning could benefit with
8 some little bit more rigour or some improvement.

9 I don't want to put words in your mouth,
10 but you found that there's some deficiencies and you
11 presumably recommended something be done.

12 My question is, is there a regulatory
13 requirement to hold drills with the public at all three
14 levels of government, local, provincial? Are there such
15 requirement and is there any prescribed way or suggested
16 way of how you're doing it; would you get involved?

17 I'm struck that I know in Ontario -- and,
18 again, I'm comparing in Ontario -- there's not too many
19 provinces, there's only three. But Ontario taking a
20 different approach, they are, I think, doing drills a lot
21 more aggressively with the community and more frequently.

22 And I just don't know, is it left to the
23 local -- provincial government, local government? What
24 should be done here?

25 **MR. RZENTKOWSKI:** Yes, it is left to

1 provincial governments to decide on the frequency of those
2 exercises because the CNSC regulates only on-site
3 activities.

4 So if we look at on-site plans ---

5 **THE CHAIRMAN:** Like being within the 22 --
6 the 2 kilometres or the 20 kilometres?

7 **MR. RZENTKOWSKI:** On-site being inside the
8 fence.

9 **THE CHAIRMAN:** Inside the fence. Okay.

10 **MR. RZENTKOWSKI:** Yes. And outside of the
11 fence is the responsibility of provincial authorities.

12 This is the main finding of the report,
13 that if you look inside the fence, the plans are there.
14 They are well tested and they seem to be very effective.

15 The same applies to outside of the fence
16 but, unfortunately, the roles and responsibilities in
17 harmonizing those plans -- on-site and offsite are not
18 really clearly defined, and because of that there's really
19 no seamless transition from on-site emergency to offsite
20 emergency.

21 This is definitely the focus of our future
22 improvement activities, and we have to decide what would
23 be the best mechanism to address those issues.

24 **THE CHAIRMAN:** And I must say for the
25 public safety of New Brunswick, when I looked at your

1 organizational charts, if they intended to simplify the
2 things, I'm not sure you're there.

3 Some of them are really complicated, and I
4 just wonder whether there's room for -- to put some
5 clarity as to who -- particularly in the nuclear business,
6 when you need to make quick decisions, as we learned from
7 Japan again, who in your organization is the authority to
8 actually say "evacuate", you know, do something dramatic?

9 Is it clear who has this authority?

10 **MR. BOURQUE:** I think there are two
11 questions there, if you'll permit me.

12 The first question, the one you asked about
13 who's in charge, there's no doubt, and I spoke to that,
14 the Minister has authority under the *Emergency Measures*
15 *Act* to do, and I'm quoting:

16 "Anything necessary for the health and
17 safety of the population and the
18 protection of the environment."

19 So he has all of the statutory authority
20 you could invest in a single person.

21 The Act also makes the New Brunswick
22 Emergency Measures Organization the coordinating agency
23 for emergencies in the province, whether it's for a
24 declared emergency or an undeclared emergency.

25 When a declaration is made, as would

1 probably be made for a radiological incident where we
2 envision evacuation, the Director EMO has all of the
3 authority needed to manage operations for the province.

4 The plans reflect this as well, so there's
5 a strong legal basis for those authorities and, in fact,
6 under our process, whoever's on duty, whoever gets the
7 call 7/24/365, the EMO officer on duty can actually make
8 that call, put the plan into effect and order an
9 evacuation.

10 So we don't need a committee, if you will,
11 to make these kinds of decisions if the evidence is clear
12 that urgent protective actions are warranted.

13 The question about the incident management
14 system itself and its complexity, that's a functional
15 diagram that's consistent with how emergencies at the
16 tactical and operational level are managed in Canada and
17 the U.S., and probably around the world. It's based on
18 ICS.

19 I think it's important for everyone to
20 understand that we don't just have one emergency
21 organization for a nuclear contingency should it happen
22 some day. We leverage all of the capabilities that the
23 province has, community level, provincial level, federal
24 partners, into a single synchronized intervening
25 organization, and we do this regularly. We may not be

1 exercising with the public in the Lepreau area regularly,
2 but we get exercised regularly.

3 We have a flood season every year. We had
4 three events in December 2010. We had a spring flood in
5 2010. We had the pandemic in 2009. We had a major flood
6 in 2008.

7 So we have lots of experience in managing
8 large complex events where people have to be evacuated,
9 looked after and so on.

10 But I do take the point that there probably
11 needs to be more visibility on that and because a lot of
12 time has elapsed since the last exercise down in the
13 peninsula that we need to engage the public better, and we
14 intend to do so.

15 **THE CHAIRMAN:** Dr. McDill?

16 **MEMBER McDILL:** Thank you.

17 My next question is for staff and, in
18 particular, I think Mr. Jammal would be appropriate.

19 The intervenor is concerned about a close
20 relationship between the proponents and staff, and I think
21 perhaps it would be appropriate for staff to address that,
22 perhaps to talk about how the Commission is funded, where
23 cost recovery fees go and that sort of thing.

24 **MR. JAMMAL:** For the record, Ramzi Jammal.

25 There are a couple of things that I would

1 like to make very, very clear. There is no one above the
2 law with respect to compliance activity because if we
3 exist, for one reason, it is to serve the public through
4 our regulatory oversight.

5 So, hence, the allegations of closeness of
6 staff and/or serving code of applicant, we don't do such
7 things because we have the ethics, if not -- all of our
8 staff is accredited professionals. They follow ethics
9 with respect to the Government of Canada code of conduct,
10 with respect to the ethics of our professional
11 associations, and every other aspect with respect to the
12 safety of Canadians and the environment.

13 So, we reject applications, we issue orders
14 when it is the time to issue orders, and we suspend the
15 operations when it's time to suspend the operations.

16 With respect to the independence of the
17 CNSC and the function of the staff, I mentioned in the
18 beginning that we underwent -- the CNSC underwent a review
19 by international experts and to mention the good practices
20 which --they are envy -- of our good practice with respect
21 to our independence for the cost recovery; and
22 independence with respect to the separation of staff from
23 the Commission where we provide the Commission our
24 recommendations.

25 And they assessed our assessment process.

1 They assessed our review. They assessed our regulatory
2 oversight. They've assessed our conduct of inspections.
3 They've assessed our independence of on-site staff.

4 All those assessments were taking place by
5 independent, international, expert for regulatory bodies
6 and, as a matter of fact, they did commend us on the
7 independence of staff, the capacity of our own cost
8 recovery without any influence from Parliament or any
9 government, and the proposed recommendation to the
10 Commission. They are based on our Act, which is the most
11 modern Act, and our Regulations.

12 That's where the staff stands with respect
13 to our independence, with respect to the allegations for
14 the licensees.

15 I'm pretty sure that any member of the
16 public will request under ATIP, and they will see the
17 exchange of letters and, as a matter of fact, Professor
18 Duguay, who always refers to the letters by Mr. Shobold to
19 Pickering rejecting their submissions on multiple issues,
20 and those are an indication that we have a place the
21 independence and the rigour in the review.

22 **MEMBER McDILL:** Just in the last, you know,
23 four or five weeks, how many orders have been issued
24 typically against small regulators? But I think it's
25 helpful for the community to know that there are orders

1 issued.

2 I know you can't give me an exact number
3 off the top of your head, but I see them in my email
4 almost daily, so maybe that would be helpful.

5 **MR. JAMMAL:** As a matter of fact, one of
6 the intervenor has made the -- I took very seriously the
7 intervenor's comments with respect to Fukushima and I
8 happen to be on the website of the CSNC thanks to the
9 technology here.

10 I will count -- within the last few weeks,
11 probably around five orders were issued to operators for
12 nuclear substances. That means they were not following
13 safe practices in accordance to our Act and regulations.

14 And from October 28th, the Commission has
15 issued the release with respect to the Fukushima report,
16 calling on the public to provide comments by December 1st,
17 which is the deadline, with respect to the input.

18 And in addition to it, we've issued an
19 order for two universities, the latest one is to Memorial
20 University, where they had to clean up their actions in
21 order to address the requirements for the -- in accordance
22 with regulations and the Act.

23 **MEMBER MCDILL:** And one more question. In
24 terms of the removal and reinstallation of calandria tubes
25 and the like, I trust that in terms of safety if you had

1 left them in, it would have been very unsafe. Is that
2 correct?

3 **MR. KENNEDY:** Yes. For the record, it's
4 Blair Kennedy.

5 But the Refurbishment Director, Rod Eagles,
6 will take that question.

7 **MR. EAGLES:** Rod Eagles, for the record.

8 I do think it's important to address the
9 question that you've asked, you know, very clearly. In
10 evaluating the leak tightness of calandria tubes that were
11 being installed in 2010, we identified a number of those
12 tubes which were not making the leak tightness criteria
13 that had been addressed in the technical specification.
14 And after evaluating extensively the cause for the failure
15 to make that leak tightness, we determined that, more
16 broadly, the reason for the failure to make that leak
17 tightness was affecting also those that had made the leak
18 tightness standard.

19 In our decision to re-evaluate whether or
20 not it was appropriate to keep those calandria tubes in
21 place, we came to conclude that it was not necessarily a
22 safety hazard in itself, that those tubes that were
23 meeting the leak tightness criteria at that time, the
24 issue was that over the life of the station could we
25 guarantee that those tubes would provide adequate

1 operational service to maintain the reliability of the
2 station.

3 Should they have been left in and caused
4 some minor leakage through the course of operation,
5 detection systems within the plant fully confined within
6 the systems that are intended to detect those kinds of
7 leaks would have identified that, would have contained any
8 leakage from those calandria tube roll joints and the
9 plant could have safely been shut down.

10 The issue, of course, that we were
11 addressing was the long-term viability of this station,
12 and so in that consequence and in that context we'd say it
13 was not a safety issue in itself but it would have led to
14 an unreliable station over the longer term.

15 **MEMBER MCDILL:** That's it for now, Mr.
16 Chair, thank you.

17 **THE CHAIRMAN:** Thank you.

18 Dr. Barriault?

19 **MEMBER BARRIAULT:** No, thank you.

20 **THE CHAIRMAN:** I just have one last
21 question, and it is in your H12-10B when you have those
22 questions on page 8 of 9. You pose the question about the
23 diesel backup generators -- all the generators.

24 I'd like some clarity about assuming a
25 doomsday scenario. I always asks the doomsday scenario.

1 that you are raising are not really within our ability to
2 deal with.

3 We are basically a very narrow kind of
4 regulator. We're trying to decide about the licensing
5 application in front of us.

6 Nevertheless, we do acknowledge the
7 responsibility of the duty to consult. We take that very,
8 very seriously and we believe that we always try to make
9 sure that we comply with this duty to consult. So, my first
10 question will be to our staff as to what have we done with
11 respect to that and then I'll turn it to NB Power.

12 So over to staff please.

13 **MR. RZENTKOWSKI:** Thank you. I will ask
14 Clare Cattrysse to summarize our consultation activity we
15 conducted prior to this re-licensing hearing.

16 **MS. CATTRYSSE:** For the record, this is
17 Clare Cattrysse from the Canadian Nuclear Safety
18 Commission. We do have a section in CMD section 4.2 from
19 October that does lay out the aboriginal consultation
20 efforts taken.

21 When the Crown -- in this case, we have a
22 decision for an application for the restart and the refuel
23 on an existing site -- it is a decision -- so we have
24 taken into consideration the need for consultation. We
25 discussed with our staff, Aboriginal Affairs, New

1 Brunswick Power and identified a number of groups that
2 might have potential or established rights and an interest
3 in the area. They were sent notification letters
4 explaining what the licensing activity at hand was and we
5 did this as early as possible, as soon as the project was
6 announced, which is our typical process.

7 We encouraged groups to participate in the
8 hearing process and to phone, and we also did follow-up
9 phone calls to establish if there were interests that we
10 were not aware of.

11 We also rely on the Proponent to play a big
12 role in terms of their information programs, and I would
13 defer to them a little later to explain some of the
14 activities that they've undertaken.

15 We also -- it is not part of the duty to
16 consult, but we do have a brand-new participant funding
17 program that the CNSC has that was launched this year
18 which was made available for stakeholders and Aboriginal
19 groups who were directly mailed information about this
20 program upon its announcement to consider if they needed
21 any funds to help support them in their interventions.

22 And we also made ourselves available for
23 meetings if there were questions and issues, and our staff
24 were also available to answer questions.

25 And I probably think at this point in time

1 when we defer over the Proponent would like to explain
2 further.

3 **MR. KENNEDY:** Yes, for the record, it's
4 Blair Kennedy.

5 From New Brunswick Power point of view,
6 there are a number of initiatives that we are doing from a
7 corporate point of view.

8 We've created a First Nations Affairs
9 Department to liaison and work with building rapport with
10 the First Nations throughout the province. There's been
11 activities -- meetings going on with the Aboriginal
12 Affairs Secretariat in New Brunswick.

13 We have initiatives along with other
14 divisions within NB Power, where we're looking at means of
15 employment for First Nations people that will -- that can
16 provide, you know, the necessary skills that we require in
17 various locations. We work very closely with them.

18 We have done a number of -- in the area of
19 our hydro -- with where we're looking at initiatives along
20 the St. John River. We make efforts to include them in
21 any opportunity there may be existing.

22 More specifically, with respect to Point
23 Lepreau, we have held a number of meetings -- liaison
24 meetings -- and for more detail with respect to the duty
25 to consult and the due diligence we do.

1 was incorporated in the extensive environmental assessment
2 that was done. And at this time we're not aware of any
3 new impacts associated with the decisions in front of us
4 today with regards to impacts on the environment.

5 So from the point of view of our
6 engagements, we continue to be heavily engaged and
7 committed both of our corporate involvement, and at the
8 site level with First Nations groups, and we're certainly
9 willing to continue that and intend to continue that,
10 going forward.

11 **THE CHAIRMAN:** Okay, thank you.

12 Grand Chief, Mr. Ennis, anything you want
13 to add?

14 **MR. ENNIS:** I'm curious in this Hickman guy
15 providing me with some of this information he said he's
16 been dealing with us Indians. I've never met the guy, and
17 I'm an Indian.

18 **(LAUGHTER/RIRES)**

19 **MR. ENNIS:** Hey, what are you gonna do,
20 man?

21 Maybe his problem is he's been dealing with
22 that one Indian -- Union of New Brunswick Indians.

23 **THE CHAIRMAN:** You want to clarify this, NB
24 Power?

25 **MR. HICKMAN:** Charles Hickman, for the

1 record.

2 We've met with many different groups over
3 the years. Yes, last week it was the Union of New
4 Brunswick Indians. The weeks before that is with
5 Passamaquoddy. Previously and through the corporate side
6 of life we've met with the Tobique Band as their Chief.

7 We've met with a number of other chiefs
8 over the years, both on specific issues in those areas and
9 more specifically in relation to Point Lepreau and the
10 projects that was being proposed at that time through the
11 environmental assessments.

12 So, I certainly don't claim to have any
13 firsthand knowledge of all the First Nations
14 representatives in the province, but I'm certainly willing
15 to make that acquaintance and to follow up with that.

16 **THE CHAIRMAN:** Okay. Thank you very much.
17 I mean, now you know who he is, you can go and talk to
18 him.

19 **MR. ENNIS:** I'll give it a shot.

20 **THE CHAIRMAN:** All right. Thanks a lot.

21 We'll do one more before the break. So the
22 next submission is an oral presentation by the Sustainable
23 Energy Group, Carleton Chapter, as outlined in CMD 12.16.

24 And I understand that Mr. Sam Arnold will
25 make the presentation. Please proceed, sir.

1

2

11-H12.16

3

Oral presentation by the

4

Sustainable Energy Group,

5

Carleton Chapter

6

MR. ARNOLD: My name is Sam Arnold, and I'm

7

speaking on behalf of the Sustainable Energy Group,

8

Carleton Chapter.

9

Due to the limited time, as you pointed out

10

earlier, I will speak out about -- speak only about the

11

highlights of the written intervention that we gave or

12

submitted earlier, and I will make a request followed by

13

the two questions that are in the full intervention.

14

In our written intervention we gave three

15

reasons why we believe Point Lepreau should not be re-

16

licensed to operate and should instead be commissioned.

17

They are as follows:

18

One, we argue for a rational risk-

19

assessment in relation to the need for Point Lepreau.

20

Experience with nuclear power has now given us the basis

21

on which to project the likely incidents of plant

22

failures.

23

Of the 450 nuclear power generation

24

facilities that have been constructed worldwide, three

25

have catastrophically failed, Three Mile Island,

1 Chernobyl, and Fukushima. The likelihood of a nuclear
2 plant failure is, therefore, about three in 450, or one in
3 150.

4 One failure in 150 multiplied by the
5 magnitude of the consequences is, by any rational
6 assessment, an unacceptable risk.

7 We understand that each nuclear power plant
8 in Canada is required to carry a token liability insurance
9 of \$75 million. Beyond that, governments -- or rather,
10 the taxpayers -- are on the hook for the cost of plant
11 failure catastrophe.

12 The full cost of Fukushima to Japan may
13 well exceed the trillion-dollar mark. It is highly
14 irresponsible for the Government of New Brunswick, and
15 Canada, to be exposed to an unknown level of liability on
16 this scale.

17 The risk must be compared with Lepreau's
18 benefit. Over the past two years, NB Power has met its
19 electricity requirements without Lepreau operating, even
20 showing a profit. NB Power can continue to continue
21 importing power at a lower cost than it will incur by
22 operating the plant.

23 The cost of imported power from Quebec and
24 Maine now is around five cents per kilowatt-hour, less
25 than half the cost of running Point Lepreau, which almost

1 cost 11 cents prior to the current shutdown.

2 There is no economic case for the continued
3 operation of Lepreau that can offset the risk it poses to
4 health, environment and the fiscal security of New
5 Brunswick.

6 Two, NASA scientists have recently
7 calculated the emergence of super-solar storms with
8 unprecedented levels of magnetic energy in 2012 or 2013,
9 right after Point Lepreau is scheduled to return to
10 service.

11 There is a risk that solar flares could
12 knock out the electrical grid for a prolonged period of --
13 in affected regions. This could be a catastrophic event
14 for a number of reasons, but the potential for nuclear
15 plant failure is the worst.

16 It is possible that a situation similar to
17 Fukushima could occur at Lepreau if electric power is lost
18 for a considerable period of time and the backup
19 generators fail or run out of reserve fuel. If the grid
20 goes down, oil refineries and the infrastructure of fuel
21 distribution will also be disabled. If the backup
22 generators cannot be refuelled, nuclear power cooling
23 systems will fail and nuclear meltdown will be the result.

24 This is a real risk to -- not one worth
25 taking, especially since Lepreau offers no economic

1 benefit to New Brunswick.

2 Three. There are safe, clean, and
3 affordable alternatives to nuclear power.

4 It has become urgent that both nuclear and
5 fossil fuel power plants be replaced as soon as possible.
6 This can be achieved by (a) developing locally generated,
7 decentralized and distributed renewable energy; (b) by
8 reducing electricity use through energy efficiency; and
9 (c) by eliminating wasteful use.

10 That is what the Sustainable Energy Group
11 argued for in our submission to the provincial
12 government's Energy Policy Commission early this year
13 concerning the future of NB Power.

14 Renewable energy technologies are the wave
15 of the future. They can replace Lepreau and create many
16 new jobs in the process.

17 The request from the Sustainable Energy
18 Group is that a complex screening environmental assessment
19 be conducted as part of the responsibility that the
20 Canadian Nuclear Safety Commission has with respect to NB
21 Power's re-licensing application for Point Lepreau.

22 We feel that a comprehensive environmental
23 assessment should have been done together with the
24 licensing hearings. The reasons are as follows.

25 One, the unfolding Fukushima disaster

1 proves that taking any cost-cutting measures with nuclear
2 power is highly irresponsible and will result in extreme
3 liability in the event of a nuclear meltdown.

4 The 20-kilometre radius evacuation zone for
5 Lepreau has been shown to be inadequate and we feel the
6 City of Saint John should certainly be included in the
7 evacuation zone.

8 Two, climate change and the increasing risk
9 of severe weather conditions in the coming decades is a
10 major threat for damage and nuclear crisis at Lepreau,
11 including flooding by the way.

12 Three, there is an increasing probability
13 of significant earthquake if the New Brunswick government
14 goes ahead with shale gas mining in the future.

15 A 5.8 magnitude earthquake occurred this
16 past summer near a nuclear plant in North Anna, Virginia,
17 that is considered to have been caused by the hydraulic
18 fracturing of shale gas about 10 miles away. If this
19 industry goes into operation in N.B., it will increase the
20 likelihood of earthquakes occurring near the Point Lepreau
21 Nuclear Generating Plant as well.

22 Four, an extended power and grid failure
23 may result in the inability to keep the reactor and the
24 spent fuel safely cooled at Point Lepreau.

25 Finally, most people accept the three-

1 strike rule used in baseball to be fair. Nuclear power,
2 which has been proven to be very risk -- at high risk in
3 causing environmental disaster, is in no position to be
4 allowed to be any more than three major accidents.

5 To date, there have been three catastrophic
6 nuclear accidents in the world, along with several other
7 serious accidents. Three Mile Island was clear strike one
8 and it caused the United States to suspend building
9 nuclear reactors to this day. Chernobyl was a much bigger
10 strike two. And Fukushima rates as a final strike three.

11 The following countries have accepted
12 reality and are now phasing out nuclear power generation:
13 Germany, Switzerland, Sweden, Italy, Denmark, Spain, and
14 Belgium, and a number of other countries are considering
15 doing the same, including Japan.

16 Now it is time for Japan(sic) to join those
17 countries and become a leader in responsible and
18 appropriate electricity generation. The time is right to
19 decommission Point Lepreau.

20 To conclude, I have two questions for which
21 we request answers.

22 One, what contingency plans are presently
23 in place should there be a major electrical power
24 interruption lasting weeks or months at any and all of the
25 nuclear power plants in Canada?

1 Two, what are the yearly premiums for the
2 \$75 million liability coverage at Point Lepreau, and who
3 are the insurers?

4 Thank you.

5 **THE CHAIRPERSON:** Thank you.

6 Dr. Barriault?

7 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.
8 I'll start with the last question first, I guess.

9 On page 3 of the intervention, the
10 intervenor asks if there's contingency plans in place for
11 long power interruption at nuclear plants, and can we ask
12 the CNSC staff to respond to this? So I understand, a
13 long-term interruption would be how long, roughly, weeks?

14 **MR. ARNOLD:** Months.

15 **MEMBER BARRIAULT:** Months.

16 **MR. RZENTKOWSKI:** Yes, this problem has
17 been assessed in the Fukushima task force report and it
18 has been demonstrated that in the case of prolonged loss
19 of power, the reactor will shut down safely, it will be
20 maintained in a safe state, pretty much indefinitely.

21 So there's definitely no safety concern.
22 Of course, there will be no production of power so this
23 may have an impact on other human activities in the region
24 affected, but definitely there's no safety concern related
25 to a prolonged loss of power.

1 **MEMBER BARRIAULT:** Thank you.

2 I guess the next question is to NB Power.
3 What effect does the solar flares or magnetic flares have
4 on the operation of nuclear power plants, if any?

5 **MR. PARKER:** For the record, Wade Parker.

6 As I mentioned earlier when I spoke about
7 our various diesel sets that we have, our standby
8 generators and our emergency power generators, we have
9 adequate fuel supplies for at least five days. Any flares
10 that we have had seen up to date, nothing of that nature.

11 So then the question you might want to ask
12 is about fuel supplies. We are confident that within a
13 five-day period we can get fuel to the station without an
14 issue.

15 **MEMBER BARRIAULT:** Does that answer your
16 question?

17 **MR. ARNOLD:** No, because I said it could be
18 extended and if it took the grid down, what then, because
19 well, I don't think that the oil refinery could operate
20 without electricity either.

21 **MR. THOMPSON:** For the record, Paul
22 Thompson. I'm the Manager of Nuclear Safety & Regulatory
23 Affairs at Point Lepreau.

24 I think it is worthwhile to mention that
25 the Province of New Brunswick has a critical

1 infrastructure program. It involves a number of key
2 sectors such as the energy sector which is -- to which
3 power generation falls into -- food, health, and
4 transportation.

5 And they meet on a regularly scheduled
6 basis and identify challenges and solutions to various
7 critical situations that could potentially arise, such
8 that to ensure that the necessary provision for these
9 facilities are made available, and obviously if they are
10 not available in the local area they will be brought in.

11 And so that is part of what we actually
12 work with cooperatively as the various industries with the
13 Department of Public Safety.

14 **MEMBER BARRIAULT:** Thank you.

15 And I guess your third question was on the
16 issue of nuclear liability. Can we ask CNSC staff to
17 comment on this?

18 **MR. RZENTKOWSKI:** This question was
19 actually related to the estimation of risk, which was also
20 presented in the intervention. And if you don't mind, I
21 would like to comment for a short moment on the assessment
22 of risk.

23 Risk is a product of likelihood and
24 consequences, and the likelihood was estimated here as 1
25 in 150, but in my opinion, I'm sorry to say that but this

1 calculation is not correct because we have approximately
2 450 reactors operating worldwide with an average operation
3 time exceeding 30 years. So that means we have
4 approximately 15,000 years of operation of power reactors.

5 And now if we divide this by 3, because we
6 had so many accidents to date, we have 5,000 operating
7 years of reactors per 1 accident, so it differs quite
8 significantly from the number which is given in the
9 intervention.

10 And I would like also to mention that in
11 Canada currently we have over 1,000 years of reactor
12 operation and we didn't have any accidents whatsoever. So
13 statistics is a very dangerous thing and has to be used
14 correctly.

15 And coming back to your question on nuclear
16 reliability assurance, I would like to direct this
17 question to Clare Cattrysse again.

18 Thank you.

19 **MS. CATTRYSSSE:** Clare Cattrysse, for the
20 record.

21 I'm probably not adding much here because I
22 think, Mr. Arnold, you do know about the *Nuclear Liability*
23 *Act* and, in this case, the Point Lepreau station is
24 designated as a nuclear installation under this Act. And
25 the operator is required to have nuclear liability

1 insurance up to -- and it goes up to \$75 million and the
2 insurance is provided by the Nuclear Insurance Association
3 of Canada, known as NIAC.

4 So that's really all I can say and we don't
5 really have -- are not privy to the amount of the premiums
6 that the operator is paying. That's all.

7 **MEMBER BARRIAULT:** Thank You. Thank you,
8 Chair.

9 **THE CHAIRPERSON:** Dr. McDill?

10 **MEMBER McDILL:** I am going to ask Point
11 Lepreau to do a series of hypotheticals.

12 The grid goes down, the reactor shuts down,
13 goes into safe shutdown mode; it can stay cool for quite a
14 while on its own.

15 So you do -- if you need to bring in water
16 for the fuel cooling or you need to bring in fuel, can it
17 come in through the Bay of Fundy? Can it -- what are the
18 alternatives so that the community has some sense of what
19 the backups are?

20 **MR. THOMPSON:** For the record, my name is
21 Paul Thompson from NB Power.

22 Yes, there's a variety of methods in which
23 necessary commodities could be brought into the station by
24 road, of course, which is the main one; by water or by air
25 and even by road, if necessary.

1 If, for example, in a natural event, for
2 example, part of what the emergency preparedness would be
3 doing is looking at bringing the necessary equipment to
4 clear roads, assess health of bridges, put up temporary
5 bridges as necessary.

6 The emergency measures organization has a
7 military liaison officer located at their facility in
8 Fredericton which allows us to tap into that as a
9 potential resource if we need to.

10 So there are lots of ways in which we can
11 ensure from the logistics side that necessary equipment or
12 supports or materials are brought into site.

13 **MEMBER McDILL:** How do you share these
14 potential backup plans with the community that is
15 expressing its concern?

16 **MR. THOMPSON:** Again, for the records, Paul
17 Thompson.

18 I think one of the -- one of the very
19 interesting things that we've had as we've gone through
20 dialogue with a number of intervenors is a need to even
21 get out even more information out into the public. And I
22 think that we've seen that we can do -- in the spirit of
23 continuous improvement and even better job, trying to put
24 some of that information out and available.

25 One of the observations that we make is

1 that the closer you live to a nuclear plant, generally,
2 the better informed that they are and the less concerns
3 that they generally have. Nonetheless, still there's
4 people that have legitimate concerns and want information
5 that don't live close to the plant and they are harder to
6 get at; and that's one of the things that we certainly
7 take very seriously.

8 I think we've learned a lot from every time
9 we engage the public in these kinds of hearings --
10 additional information that we could potentially make
11 available to us.

12 So I know we've certainly had the
13 discussions with our public affairs people about getting
14 additional information such as this out and Fukushima
15 certainly highlighted that.

16 **THE CHAIRMAN:** Still, on the supply of
17 water.

18 You never mentioned -- you know, as a last
19 resort in a real severe accident, what about sea water?
20 Do you have the provision to be able to pump, very close
21 by, a source of a huge amount of water? Is that part of
22 the defence in depth as almost a last resort? Is that
23 built in right now?

24 **MR. THOMPSON:** Again, for the record, it's
25 Paul Thompson.

1 A very good question, Dr. Binder. The
2 short answer is yes. That was -- I referred to earlier an
3 example of the calandria vault makeup line that has a
4 connection that is external to the reactor building to
5 which has the various adaptors for fire system
6 connections.

7 So that means that we could either connect
8 it through -- to provide the necessary flow from the fire
9 system, through the fire hydrants, through an external
10 truck or through a temporary pump that is, in fact, taking
11 water directly out of the Bay of Fundy. And that is in
12 place now.

13 **THE CHAIRMAN:** Thank you.

14 Dr. McDill?

15 **MEMBER McDILL:** I wanted to ask staff to
16 talk a little bit about the documentation that has come to
17 them in this area, emergency preparedness and planning.

18 **MR. RZENTKOWSKI:** I would direct this
19 question to Luc Sigouin.

20 **MR. SIGOUIN:** Dr. McDill, could I ask you
21 to clarify the question, please? Thank you.

22 **MEMBER McDILL:** In the preparation of the
23 material for the various hearings, Day One and Day Two,
24 what has staff seen with respect to emergency preparedness
25 and emergency plans for Lepreau? What documents have you

1 reviewed?

2 **MR. SIGOUIN:** For the safety and control
3 area, emergency preparedness, emergency management for our
4 controllers, two aspects on the fire aspects and then
5 another on emergency preparedness.

6 Documentation that was reviewed by staff
7 was a review of the existing plans, program documentation,
8 review of performance during exercises during the
9 licensing period, and any inspection results.

10 And that is synthesized into what you saw
11 in the CMD.

12 **MEMBER MCDILL:** And you are confident that
13 all documentation was complete and that there were no gaps
14 -- other than the fire that we know about -- that exist?

15 **MR. SIGOUIN:** Luc Sigouin, for the record.

16 New Brunswick Power may want to add to this
17 afterwards.

18 New Brunswick Power had -- going into the
19 refurb -- had an acceptable emergency preparedness
20 program. And they are in the process now of forming some
21 enhancements to it, converting to an incident command
22 system, making some changes to their structure and how
23 their plans are laid out.

24 They are in the process of developing that
25 revised documentation and have prepared a plan for the

1 implementation of the improvements to their emergency
2 plan, their emergency program.

3 There's an action item open with the CNSC
4 so that there is a good understanding between New
5 Brunswick Power and CNSC on how this will be managed going
6 forward.

7 And we have reviewed the plan and we are
8 planning to do the documentation review and inspections to
9 confirm the adequacy of the improvements that they are
10 making.

11 **MEMBER MCDILL:** Thank you.

12 I'll go back to Lepreau if they want to top
13 that up?

14 **MR. KENNEDY:** Yes, for the record, Blair
15 Kennedy.

16 I would have Charles Hickman, the point man
17 on this, to ensure that we are in an emergency
18 preparedness nature and respond properly.

19 **MR. HICKMAN:** Charles Hickman, for the
20 record.

21 If I may, I'll touch on a couple of areas
22 which I think would be of relevance to the question.

23 With regards to severe accidents, which I
24 think is where some of the intervenors mutual concerns
25 came from, we have recently completed -- just finalizing I

1 suppose -- the final implementation of what we describe as
2 the Severe Accident Management Guidelines.

3 So these are a series of guidelines that
4 did not exist previously. They are guidance documents for
5 use by, primarily, our operations staff, which would give
6 them additional tools from the point of view of procedures
7 and guidance into how they would respond to a severe
8 accident.

9 The Severe Accident Management Guidelines
10 were actually spawned out of the project has been ongoing
11 within the CANDU owners' group and actually is an
12 international exercise for several years now, and we have
13 just finished, completed, a little over 20 table-top
14 exercises where it demonstrated the capability of our
15 operations and planning staff to use those guidance
16 documents in the event of a simulated severe accident.

17 CNSC staff have been to the site and have
18 witnessed some of the table-top exercises that have been
19 run through our simulator, and that, I'm sure, will turn
20 into part their annual report going forward.

21 So with regards to the severe accident
22 management guidelines, we have a significantly enhanced
23 capability to respond to severe incidents, severe
24 accidents.

25 With regards to the overall emergency

1 planning procedures, tools and organization onsite, the
2 station has always had, in accordance with CNSC guidance
3 documents, an emergency management plan, emergency
4 management organization, a response organization. And as
5 alluded to earlier, it is closely linked with the
6 provincial offsite emergency response plans to ensure that
7 we have a comprehensive capability to respond to both
8 onsite and offsite issues.

9 During the refurbishment outage, we had
10 looked at our organizational structure with regards to the
11 model used to support the emergency response organization
12 onsite, and we have adopted what's referred to as the
13 incident command system as the model to use for organizing
14 for and responding to an emergency. This is a scalable
15 approach to managing emergencies. Actually, it's the same
16 one that the CNSC recently adopted, and is, as the
17 province indicated earlier, it's aligned with the
18 instrument management system.

19 So the organization charts that
20 Mr. MacGillivray placed earlier are essentially the same
21 types of organizations that N.B. Power has internally.

22 So we have as part of that upgrade, if you
23 like, or that improvement to our emergency plan, we have
24 trained, and are in the process of training, additional
25 members of the organization, and the better defined roles

1 that come with adopting the model.

2 So we have improved the definition of the
3 roles. And people are now going through table-top
4 exercises to demonstrate the capabilities.

5 Throughout this we have maintained a
6 response capability and an emergency management
7 organization onsite, and again, as indicated previously,
8 we will be exercising that capability in conjunction with
9 the province in the spring.

10 **MEMBER McDILL:** Thank you, Mr. Chair.

11 Thank you.

12 **THE CHAIRMAN:** Any other questions? Okay,
13 thank you very much.

14 You want to say a final word?

15 **MR. ARNOLD:** My final word is Fukushima was
16 strike three.

17 Thank you.

18 **THE CHAIRMAN:** Thank you.

19 I think it's a good time for us to break
20 for 15 minutes. So we will reconvene -- I have 3:47. I
21 don't want to do the math -- 4:02.

22

23 --- Upon recessing at 3:47 p.m.

24 --- Upon resuming at 4:09 p.m.

25

1 **MR. LEBLANC:** Thank you.

2 Just after we ended with Mr. Ennis'
3 presentation, you will recall that he had asked if some
4 questions could be asked, and one such question did not
5 come to our attention until we were finished with the
6 element, and I'll just paraphrase what the question was.
7 It was really about given that there's a lot of other
8 technologies than nuclear, particularly those available
9 from Mother Earth, whether we would consider, or why isn't
10 it being considered to use thermal energy or other energy
11 rather than nuclear?

12 As the President indicated earlier in his
13 opening remarks, the CNSC does not look at energy policy
14 questions. We just ensure that nuclear, if it is used in
15 part of the energy policy, is used in a safe manner.

16 So in that context, that question could not
17 be addressed by the Canadian Nuclear Safety Commission,
18 but one that we're putting on the record so that
19 government officials, should they wish, could address in
20 due time.

21 Thank you.

22 **THE CHAIRMAN:** Thank you, Marc.

23 Let's move on to the next submission, which
24 is an oral presentation by Fundy Baykeeper, as outlined in
25 CMD-H12.2, and I understand, Mr. Abbott, you will make the

1 presentation? Please proceed.

2

3 **11-H12.20**

4 **Oral Presentation by**

5 **Fundy Baykeeper**

6

7 **MR. ABBOTT:** Okay, thank you, Mr.

8 President, and Commissioners.

9 My name is Matthew Abbott, and I am the
10 Fundy Baykeeper with CCNB Action. We're the marine
11 project of CCNB Action, and we work on the Bay of Fundy to
12 identify threats to the bay and address these threats, and
13 we maintain an on-the-water watchdog presence in a small
14 patrol boat. So that's just a bit about our organization.

15 To give context to my comments, I'd just
16 like to point out that in a 2010 Fisheries & Oceans Canada
17 report on status and trends of marine ecosystems, we
18 learned that the Bay of Fundy is under extreme stress, and
19 this stress is causing the food chain to deteriorate. And
20 this is especially -- it especially notes deterioration at
21 the zooplankton level, so the very small organisms that
22 are often in the top of the water column that form the
23 base of the food chain.

24 And so when we're speaking specifically
25 about Point Lepreau and sort of on the Bay of Fundy, I

1 think it's very important that we take note of that.

2 Given this, it becomes perhaps more
3 critical than in the past to address all potential sources
4 of further stress on this food chain.

5 For this reason, we think it's critical to
6 consider the impact of entrainment or the water -- the
7 potential effects on the organisms in the water being
8 drawn into the plant from intake and the effects of this
9 on the marine ecosystem.

10 And with respect to CNSC staff who
11 responded to my written submission earlier today, I don't
12 feel that the comments made this morning fully address our
13 concerns. In our submission, we requested regular
14 sampling of intake water to determine what marine
15 organisms are being brought into the system, and from what
16 I heard earlier, the focus was on larger organisms,
17 organisms that can sort of resist and swim against even a
18 low flow of water.

19 And we're particularly concerned about the
20 many small organisms I mentioned earlier, including eggs,
21 fish larvae, zooplankton, and phytoplankton, that wouldn't
22 be immediately obvious and that wouldn't necessarily be
23 able to get themselves out of the intake system.

24 And so given the stress already facing the
25 Fundy ecosystem, we think it's critical to fully

1 understand the impact on the organisms being drawn into
2 the plant, and so I sort of -- I reassert the call we made
3 in our submission, especially in light of the comments
4 from CNSC staff that regular sampling be carried out of
5 the water being taken into the plant and that it be
6 assessed especially for the small organisms.

7 And this is, as I mentioned earlier,
8 especially pertinent now because we know that the Fundy
9 system is under extreme stress and so every potential
10 source of impact needs to be assessed fully.

11 And I'll make one other brief comment about
12 another issue just to sort of hear comment from staff and
13 potentially from NB Power on this.

14 As many of you may or may not be aware,
15 there's a salmon aquaculture site just off the discharge
16 pipe from the station, and I'd be curious to know what
17 assessment of those food fish are being done to ensure
18 that there is no contamination, especially in relation to
19 the running of a nuclear plant.

20 So those are just brief comments that I
21 think add to my submission. In the interest of not re-
22 reading my submission, I'll leave it to that.

23 **THE CHAIRMAN:** Okay. Thank you very much.

24 Want to start, Dr. McDill?

25 **MEMBER McDILL:** Thank you.

1 Have you made the request for monitoring of
2 the source from, let's say, municipal water supplies,
3 other places that are making -- taking water from the Bay,
4 and are they providing it to you?

5 **MR. ABBOTT:** At this moment I haven't sort
6 of made -- I don't have a request on all of those sources,
7 but it is an abiding concern and so when the opportunity
8 for this assessment came up, we made it in the context of
9 Point Lepreau, but we also are interested in that in terms
10 of other power generation facilities and as well as other
11 municipal sources and others.

12 So sort of in light, especially, of the
13 findings of the 2010 report, that is something we will be
14 following up on sort of across the board, though I don't
15 have any results to report to you in terms of other
16 sources.

17 **MEMBER MCDILL:** Mathematically speaking,
18 how would you make use of this information if you had it
19 to assess how much is being consumed or damaged or
20 rejected or given back or whatever?

21 **MR. ABBOTT:** Well, I mean, I would leave it
22 to sort of marine biologists to set the exact sampling
23 size and such that we would need, but we -- an appropriate
24 sampling size would be determined and at an appropriate
25 frequency that I think given the sort of quantity of

1 intake from the facility we would be able to assess the
2 potential scale of what's being drawn in.

3 And I recognize that one of the challenges
4 we have in trying to address some of the serious problems
5 that the Bay is facing is that we don't -- you know, we
6 don't have an exact number on sort of organisms that are
7 in the Bay and that sort of thing and we can't
8 necessarily, but it would give us a sense of what's being
9 drawn in and then it would help us sort of assess any
10 potential impacts and, from there, if there's any
11 possibility of mitigation measures, they could be
12 undertaken.

13 But I think the critical first step is to
14 get a sense of what's going through the system.

15 **MEMBER MCDILL:** Staff, does DFO do anything
16 like this?

17 **MR. RZENTKOWSKI:** I will ask Mike Rinker to
18 respond to that question.

19 **MR. RINKER:** Mike Rinker, for the record.

20 In general, yes, DFO does this sort of
21 work. They've done analysis and assessments of designs
22 for monitoring programs for other facilities in the Bay of
23 Fundy.

24 We've -- we're in contact with other
25 regulators as per usual for every plant, and DFO focused

1 more on the release of nuclear substances and -- however,
2 they have committed to work with the CNSC on the review of
3 designs for monitoring for both impingement and
4 entrainment now, should the Commission decide to relicense
5 the facility.

6 **MEMBER McDILL:** Right down to the level of
7 zoo plankton and phytoplankton?

8 **MR. RINKER:** Absolutely, yes.

9 In -- I guess maybe just for clarification,
10 if I could, impingement is when larger fish get impinged
11 up against the screens and die, and entrainment is for the
12 smaller things that can pass through the screens, whether
13 they be eggs or smaller types of fish and so on.

14 So there's two different types of effects,
15 and both would be -- both can potentially pose a risk and
16 both would be required for monitoring.

17 **MEMBER McDILL:** Do we monitor this kind of
18 thing at any of the other nuclear facilities?

19 **MR. RINKER:** Mike Rinker, for the record.

20 Yes, we do, so -- and we have worked with
21 Department of Fisheries and Oceans on those monitoring
22 plans for other nuclear facilities.

23 This monitoring has been done at Point
24 Lepreau. The mitigation measures are fairly robust and so
25 the monitoring was discontinued, but we certainly think

1 that fish populations evolve. Numbers and abundances
2 change over time, so to reconfirm the effectiveness, we
3 certainly support the request by this intervenor,
4 something that would be implemented through the design of
5 an appropriate large environmental monitoring program.

6 **MEMBER McDILL:** If I can, New Brunswick
7 Power, when was the mitigation -- or sorry, when was the
8 collection of this stopped?

9 **MR. KENNEDY:** For the record, it's Blair
10 Kennedy. I'll direct that question to Charles Hickman.

11 **MR. HICKMAN:** Charles Hickman, for the
12 record.

13 I'll just recap for a moment. The initial
14 studies that were done with regards to entrainment and
15 impingement which looked at the -- both the densities, the
16 number of fish and the types of species that would be
17 found in and around the Point Lepreau peninsula, they were
18 done between approximately 1976 and 1980s. So those were
19 the initial baseline studies that looked at, as I
20 indicate, population and species diversity in the area.

21 In the design process, the design took that
22 information into account in terms of the design of the
23 intake structures, the flows through the system, and then
24 subsequently, in the mid '80s is when Environment Canada
25 decided to develop its guidance with regards to the design

1 of cooling water systems and steam -- well, basically
2 power plants.

3 So the designers at that time actually used
4 Point Lepreau as a best practice and state of the art
5 practice in design at the time, and that reflected two
6 quite different scenarios.

7 When you're on a lake or river system
8 versus basically an open-based situation, you're in a very
9 different biological situation. So in Ontario they're on
10 lake systems and the concern there is that you have
11 effectively a static population and a static species mix,
12 and so any impacts you have are essentially become a
13 cumulative impact.

14 When you have the Bay of Fundy, which
15 flushes and changes, the water exchange is extremely high.
16 When you look at that from population impact from Point
17 Lepreau, it was deemed at the time to be an insignificant
18 impact, largely because of the population structure, the
19 diversity and the way the Bay of Fundy itself works.

20 In 1989, there was consideration of another
21 power plant being -- sorry. In 1985, there was
22 consideration of a Lepreau 2 being built. Those studies
23 were revisited. DFO was very much involved, along with
24 Environment Canada and the AECEB at the time and concluded
25 at that time that it was still a suitable site for power

1 plants, at that time for a second power plant.

2 We did additional studies in 1989,
3 published in 1990-91, which looked at more recent data
4 that was collected at Point Lepreau. We had people out
5 with basically fisheries gear collecting both zoo
6 plankton, phytoplankton as well as larger fish species.
7 That data was collected for a number of seasons.

8 The data -- the preliminary results from
9 the data indicated that population densities were so low
10 it did not warrant continuing the studies for additional
11 years, so at that time the studies were ceased because
12 there was no value in continuing them because the impacts
13 were so small based on the very low population numbers
14 they were getting.

15 So since 1990, we haven't done any
16 additional specific extensive studies. We have had,
17 periodically, checks on the cooling water forebay to check
18 for seals and larger mammals, and that was also deemed by
19 DFO at the time to be a non-issue.

20 And so basically, we have done no detailed
21 studies since 1989 when it was deemed that there was no
22 significant impact.

23 That information was all reviewed in the
24 2003 environmental assessment that came before the
25 Commission in 2003 where we did consider the future

1 impacts of the effects of continued operation of the
2 station on all the fisheries issues in the Bay of Fundy,
3 both zoo plankton, phytoplankton as well as the larger
4 fish populations.

5 So we haven't done any fieldwork since
6 1989, but the data has been updated and reviewed as
7 recently as 2000 with the environmental assessment.

8 With regards to work that is ongoing with
9 the Bedford Institute of Oceanography and DFO, they are
10 still actively involved in the Bay of Fundy. They have
11 primarily been looking at thermal impacts. The thermal
12 impacts are directly related to the effect on zooplankton
13 and phytoplankton as well as larger fish species.

14 So that work has been ongoing. DFO,
15 through the Bedford Institute, have had an active program
16 since the early 80's, looking at potential impacts from
17 the station, and their studies to date have indicated no
18 significant impacts. And those, like I said, are
19 published peer-review studies they've put out for many
20 years.

21 **MEMBER McDILL:** Thank you.

22 Does the intervenor have access to those
23 studies? Have you seen those studies?

24 **MR. ABBOTT:** I've seen a number of studies.
25 I'm not sure if -- I've been following, sort of, some of

1 the research coming out of DFO, but I may not have some of
2 the specific ones that was referenced.

3 **MEMBER MCDILL:** Thanks, Mr. Chair.

4 **THE CHAIRMAN:** Dr. Barriault?

5 **MEMBER BARRIAULT:** Just one brief question.

6 If I understand correctly, you mention that there's a
7 salmon aquaculture on the exhaust -- or discharge side of
8 the cooling.

9 Is it close to the system, or is it quite a
10 distance away?

11 **MR. ABBOTT:** As I understand it, it's quite
12 close to the system.

13 **MEMBER BARRIAULT:** To NB Power; has any
14 sampling been done to those fish really -- if there's any
15 problems? Are they growing faster than usual?

16 **THE CHAIRMAN:** Go ahead.

17 **MR. HICKMAN:** Charles Hickman, for the
18 record.

19 Yes, the aquaculture facility has been in
20 place on the east side of the peninsula now for several
21 years. When they were looking to establish that facility,
22 it is technically very close to our exclusion zone, so we
23 did meet with the developer at the time. They have to go
24 through a provincial licensing process to get that project
25 facility in place.

1 So we met with the developer, we had
2 several discussions about our presence, their presence,
3 potential interactions. We did at that time, and we have
4 since then, continued to sample a number of fish from the
5 aquaculture facility on an annual basis, as part of our
6 operational environmental radiation monitoring program,
7 the results of which are published every year, shared with
8 staff and available to the public.

9 To date there's been no issues at all with
10 any of the salmon in that aquaculture facility, so we have
11 a good working relationship with that operator.

12 **MEMBER BARRIAULT:** And any conclusion at
13 all from a difference in temperature?

14 Because obviously I would imagine the
15 temperature is warmed at the discharge side.

16 **MR. HICKMAN:** Charles Hickman for the
17 record.

18 The design of the cooling water system
19 leads to a difference in the surface temperature of
20 approximately three degrees, as a maximum temperature
21 difference between the intake and the discharge sides of
22 the facility.

23 The aquaculture facility is several hundred
24 meters away from the actual discharge ports. So I -- this
25 is an opinion -- I doubt you could measure the temperature

1 difference actually at the aquaculture facility.

2 **MEMBER BARRIAULT:** That's fine, thank you
3 very much.

4 **THE CHAIRMAN:** Dr. McDill?

5 I've just got one question. You started by
6 saying that there is a stress. First of all, I'd like to
7 know, how do you know there's a stress?

8 This morning we heard about the lobster
9 fishery setting records. It sounded like a healthy
10 environment.

11 And the second question is what else goes
12 into the Bay of Fundy, besides nuclear power plants? Is
13 there anything else, I mean, municipalities, farm runoffs,
14 the sewage system is all looked after?

15 The Bay of Fundy is a world-renowned kind
16 of a piece of real-estate. I assume a lot of people would
17 have sampled some of the water and tried to understand
18 what's in it.

19 **MR. ABBOTT:** Yeah, excellent question.

20 So there are -- I mean, this stress has
21 been identified in a 2010 DFO report on status and trends
22 of marine ecosystems around Canada.

23 And in relation to high-lobster landings,
24 I mean, this is a changing ecosystem and this is an
25 ecosystem with several indications of impact, and the best

1 sense we have right now is that those fairly significant
2 increases in lobster are due to a loss of predation,
3 primarily likely from the loss of cod, which often prey on
4 them especially as juveniles.

5 So abundance of lobster doesn't necessarily
6 mean the system is doing the -- the system at large isn't
7 necessarily doing great, because we're seeing changes in
8 the system and a lot of those changes are the result of
9 losses higher up the food chain.

10 And this DFO report does specifically
11 mention concerns with the food chain at the zooplankton
12 levels, so at the base of the chain level.

13 So that's how I know there's stress. And
14 there are another -- a number of other discharges into the
15 bay through river systems, through various industries,
16 through agriculture, through sewage.

17 There's still several areas with problems
18 with sewage treatment, some of them like St. John being in
19 the process of being fixed, you know, other areas that
20 still have quite a ways to go.

21 And so we certainly recognize that there's
22 a number of challenges on the bay and a number of sources
23 of pollution. And we certainly were -- our gaze isn't
24 only directed at Point Lepreau, per se, but it also
25 applies to Point Lepreau.

1 **THE CHAIRMAN:** Okay. Staff, you wanted to
2 add something?

3 **MR. RZENTKOWSKI:** Thank you very much.
4 Yes, I would like to add to the responses provided by both
5 CNSC staff and the industry.

6 Recently -- that is, in May 2010 -- a new
7 industry standard has been issued, entitled Environmental
8 Monitoring Program at Class 1 Nuclear Facilities and
9 Uranium Mines and Mills.

10 We performed a gap analysis between the
11 requirements in the standard and the concerns raised in
12 the interventions, and we concluded that once this
13 standard is fully implemented, those concerns would be
14 also fully addressed.

15 Currently, we are working with the industry
16 on implementation plans for this particular standard, and
17 we would like to recommend to the Commission that this new
18 standard will be implemented in the license condition
19 handbook as a recommendation and guidance first.

20 Once we establish the implementation plan,
21 we will amend the license to include this in the license
22 condition.

23 **THE CHAIRMAN:** And does this new standard
24 include monitoring requirements?

25 **MR. RZENTKOWSKI:** That precisely is for

1 monitoring programs requirements, yes.

2 **THE CHAIRMAN:** And how fast can it be
3 implemented?

4 **MR. RZENTKOWSKI:** The implementation plans
5 are being discussed with the industry. As a matter of
6 fact, we already decided on a workshop which will be held
7 in January.

8 The current indication is that the industry
9 could put all monitoring programs in place and be in
10 compliance with this standard by the end of 2013.

11 **THE CHAIRMAN:** Okay. Any follow-up?
12 Anything -- do you want to say a last word here?

13 **MR. ABBOTT:** I just have one ---

14 **THE CHAIRMAN:** Oh, sorry. We'll let you
15 sit.

16 **MR. JAMMAL:** There are a couple of things
17 though.

18 Staff has taken Day One and Day Two, and we
19 take the intervention seriously to the point that we've
20 amended the license condition handbook, as Dr. Rzentkowski
21 mentioned, with the implementation of the new CSA
22 standard.

23 However, we should not forget the fact that
24 environmental monitoring is ongoing, so we're not stopping
25 anything. This is an added enhancement in the

1 environmental monitoring program, in accordance with the
2 CSA 288.4 -- now I'm mixing the numbers here --- Section
3 10 of the LCH, that everybody has.

4 So the environmental monitoring is ongoing.
5 That's an improvement with respect to the future. And we
6 have -- as part of the implementation plan the licensee
7 will have to conduct a gap analysis and put the
8 implementation plan in place and we'll be monitoring
9 accordingly.

10 **THE CHAIRMAN:** Okay, Mr. Abbott.

11 **MR. ABBOTT:** Just one quick follow-up
12 question. I appreciate the answers so far.

13 I'm just curious whether there's actual
14 sampling occurring in the fore-bay around, sort of,
15 zooplankton community and stuff.

16 I know there's checks for mammals and
17 larger species, but is there sampling also for the smaller
18 organisms?

19 **MR. HICKMAN:** Charles Hickman, for the
20 record.

21 No, at the moment there is not. And
22 perhaps I can give some context as to why that decision is
23 where it is.

24 As staff have indicated, there's a series
25 of standards that have basically been promulgated through

1 the CSA program. Even without those CSA standards -- and
2 CSA standards is a suite of three that are really key to
3 this discussion.

4 One is the ecological risk assessment or
5 environmental risk assessment standard, one is with
6 regards to environmental monitoring, and one is with
7 regard to effluent monitoring.

8 Point Lepreau, NB Power -- we have already
9 put together, and have done, an ecological risk
10 assessment. We did that back in 2005. That has been
11 shared with staff at that time.

12 In addition, the risk assessment is used to
13 inform and guide the monitoring program. And so the risk
14 assessment we did in 2005 essentially confirmed the
15 monitoring program that we had in place was targeting
16 those issues that needed to be monitored. The operational
17 environmental radiation monitoring program that is in
18 place today covers that entire suite of issues as
19 identified at the time.

20 So the monitoring program that we have in
21 place today is consistent with the ecological risk
22 assessment in the CSA approach to defining what should be
23 covered in the -- both the effluent monitoring and the
24 environmental monitoring.

25 **THE CHAIRPERSON:** Okay.

1 **MR. BOURQUE:** I have no further comments.
2 Thank you.

3 **THE CHAIRPERSON:** Thank you.
4 Thank you very much.

5 We will move now to the next submission
6 which is an oral presentation by Ms. Anne Harding as
7 outlined in CMD H12.25.

8 Ms. Harding, the presentation is yours.

9

10 **11-H12.25**

11 **Oral Presentation by**

12 **Anne Harding**

13

14 **MS. HARDING:** Good afternoon, Mr. President
15 and Members of the Commission.

16 My name is Anne Harding and I have an
17 interest in the licence renewal. I have been a resident
18 of the immediate community of Point Lepreau Nuclear
19 Generating Station since 1968.

20 My family history in this area goes back to
21 the early 1800s. In fact, the reactor's structure is
22 built on my grandfather's homestead. The plant is located
23 less than 2 kilometres from my back door, and after 32
24 years in the education system I retired in 2005 from -- as
25 a position of school principal from the Fundy Shores

1 School; a kindergarten to grade 8 school, which is located
2 in Dipper Harbour, New Brunswick.

3 My presentation will focus on the role the
4 Point Lepreau Nuclear Generating Station as it pertains to
5 the following four points.

6 Number one, the enrichment of the science
7 program at Fundy Shores School.

8 Number two, the plant staff's sharing of
9 expertise and raising environmental awareness with the
10 students and the staff of Fundy Shores School.

11 Number three, the exchange of information
12 between the community relations liaison committee and the
13 community.

14 And, number 4, the provision of information
15 to the community by way of information sessions.

16 The first point I would like to discuss is
17 the enrichment of the science program at Fundy Shores
18 School. Although I am now retired, I still keep very
19 close contact with the school.

20 The staff at Point Lepreau is always
21 willing to assist in this curriculum as demonstrated by
22 their active involvement in the science club, which I
23 continue to volunteer and run.

24 During Point Lepreau staff's visits to the
25 school, they give lectures, notes and demonstrations to

1 enhance the students' awareness of the topic of
2 discussion.

3 They have encouraged the students to do
4 their best in any project that the students undertake for
5 science. The visual presence has allowed the students to
6 witness men and women actively engaged in the scientific
7 process.

8 Periodically, they have loaned the school
9 science equipment such as tripods, distilling equipment
10 and density apparatuses to enhance the science program.
11 For many years now, the Point Lepreau staff has offered
12 awards for academic excellence to the middle school
13 students.

14 Recently, they have added an award to
15 promote the science program even further by offering a
16 year-end reward to the grade 8 student who shows the most
17 promise in pursuing a scientific career.

18 The second point I'd like to discuss is the
19 plant's sharing of expertise and raising of environmental
20 awareness among the staff and the students of Fundy Shores
21 School. For several years, the generating station staff
22 have sponsored an Earth Day event at the school which
23 includes every student and every school staff member. In
24 the past, it has included contests in which the students
25 were assigned to multi-aged teams from kindergarten to

1 grade 8 and were given a project to work on.

2 In 2011, this past spring, Point Lepreau's
3 staff joined with the school staff and students for a
4 community clean-up and during this day the Point provided
5 garbage bags, gloves and other necessary materials to make
6 this a very successful operation.

7 According to the teachers, it was the most
8 rewarding Earth Day event held. Its impact on the
9 students was significant in that they realized just how
10 much damage littering can do to the environment.

11 In conjunction with the school, Point
12 Lepreau continues to be involved in the annual marigold
13 planting in the community.

14 The third point I will discuss is the
15 exchange of information between the community relations
16 liaison committee and the members of the community.

17 The purpose of these committee meetings is
18 to disseminate to the community accurate and pertinent
19 information regarding Point Lepreau Nuclear Generating
20 Station. Such information is presented in an orderly and
21 coherent manner with opportunities for questions and
22 feedback.

23 The staff at Point Lepreau are
24 knowledgeable, open and frank in the discussion of any
25 issue, giving full disclosure to the matter as it concerns

1 the community. Their willingness to take the time and
2 effort to explain the issues demonstrates to the community
3 -- sorry, the committee that they are fully aware of the
4 situations and desire that the community understands the
5 implications fully.

6 The liaison committee meets once a quarter
7 with special meetings being called if the need arises.
8 The committee has recently addressed topics such as the
9 refurbishment project, waste storage, emergency planning
10 and response teams, and community concerns.

11 Persons from the community are able to
12 contact committee members with any questions or concerns
13 they might have. These questions and concerns can then be
14 addressed at the next committee meeting. It is a general
15 belief of the members of the committee that the nuclear
16 generating station is a vital part of our community.

17 I am no longer an active member of this
18 committee, yet I continue to receive accurate and timely
19 information through the school representative on any
20 matter that is addressed at these meetings.

21 The fourth point I will discuss is the
22 information that is provided to the community at large
23 through the information sessions. Point Lepreau Nuclear
24 Generating Station has held information meetings in the
25 local fire halls in the community.

1 These sessions include visual presentations
2 in the form of large posters and videos. The staff is
3 well represented and professionally discusses the
4 information with the public. The data is presented in a
5 clear, informative manner which is easily understood by
6 the local population. The staff always appreciates
7 feedback and questions to clarify any point that is
8 raised.

9 For the aforementioned reasons, I opine
10 that the New Brunswick Nuclear Power operating licence for
11 the Point Lepreau Nuclear Generating Station should be
12 renewed.

13 As a retired educator and a member of the
14 community, I suggest it is beneficial to the school, the
15 environment, and the community that the plant continues to
16 operate.

17 Thank you.

18 **THE CHAIRPERSON:** Thank you.

19 Dr. Barriault?

20 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.

21 I would like to ask the intervenor here on
22 the question of the information sessions. How often are
23 these held; are they on a regular basis or recurrent?

24 **MS. HARDING:** The information sessions are
25 usually held on a needs -- as an occasion arises, but they

1 are well publicised in both the newspaper and locally.

2 **MEMBER BARRIAULT:** I guess the next
3 question really is that the community relations liaison
4 committee, can you give us an example, really, of some of
5 the -- of committee concerns that were addressed by NB
6 Power?

7 **MS. HARDING:** There have been several --
8 I'm trying to -- I'm racking my brains right now trying to
9 think what they would be -- but the refurbishment project
10 certainly has been a concern to the community at large,
11 and the staff fully explains that.

12 Oftentimes the rates that the power
13 commission charges are brought up too and that's addressed
14 fairly and openly and why we are paying the rates that we
15 are paying in New Brunswick.

16 **MEMBER BARRIAULT:** To NB Power, do you have
17 liaison with all the schools in the area or just this
18 school?

19 **MR. KENNEDY:** Yes, I'll ask Kathleen
20 Duguay, the public affairs manager, to field that
21 question.

22 **MS. DUGUAY:** Kathleen Duguay, for the
23 record.

24 We have -- having the Fundy Shores School
25 in our community, we certainly have a closer relationship

1 with the local community that is located there. However,
2 we have been in contact with several schools in the
3 province and offering information or presentations. We
4 also have received request from other schools in the
5 province to provide different types of information.

6 So, again, we have an open and transparent
7 process and we certainly welcome any invitation to schools
8 for any activities.

9 We also have a lot of members of our team
10 at Point Lepreau that lives in different communities, so
11 they have children in those schools where they participate
12 as parents to provide information to the school, so it's
13 basically all around the province.

14 Thank you.

15 **MEMBER BARRIAULT:** Do you have science
16 fairs for some of the schools or joint projects in science
17 at the plant?

18 **MS. DUGUAY:** Kathleen Duguay, for the
19 record.

20 We do participate to science fairs that are
21 held at schools. Again, we have had activities at the
22 station when we bring the students to the station as part
23 of career day and so on, but we're actively involved in
24 career fairs at schools through our employees at the
25 station and throughout the province.

1 **MEMBER BARRIAULT:** Thank you.

2 **MS. DUGUAY:** Thank you.

3 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.

4 **THE CHAIRMAN:** Dr. McDill?

5 **MEMBER McDILL:** I was just going to ask,
6 how many schools were directly visited as opposed to by
7 parents, for example? All of us who are parents know we
8 go to schools. But do you have any idea of directly how
9 many?

10 **MS. DUGUAY:** I don't have that information
11 with me but I can certainly provide that later.

12 **MEMBER McDILL:** Maybe you can -- you know,
13 five, 10, 15, 20; can you ballpark it; between 50 and 100,
14 25 and 50?

15 **MS. DUGUAY:** I would say it would be 30 or
16 so, because it's not only people that work at the station
17 it's people that work throughout NB Power as a company,
18 and we're located all throughout the province. So we
19 participate in school activities through different means.

20 **MEMBER McDILL:** Thank you, Mr. Chair.

21 **THE CHAIRMAN:** Anything else?

22 I've got one question. I guess you've been
23 living there for a long, long time. You heard this
24 morning a lot of people who have lots of concern with
25 nuclear power station. How come you don't share those

1 concerns?

2 **MS. DUGUAY:** I have no reason to. When I
3 was in university I was in contact with a gentleman who
4 became a doctor of nuclear science at, I think it was
5 Chalk River at the time, and we were friends, and he
6 assured me back then ---

7 **THE CHAIRMAN:** So you had an inside story?

8 **MS. DUGUAY:** I had the inside story back
9 then, and I have lived two kilometres from the station,
10 the school is located less than two kilometres from the
11 station, and I was more concerned about an oil truck
12 upsetting in front of the school than I was at Point
13 Lepreau when I was the principal at that school.

14 **THE CHAIRMAN:** So in these community
15 relations in the liaison community are there any people
16 who actually disagree? Are there any kind of debates that
17 occur with the presentation from the power station?

18 **MS. DUGUAY:** Definitely. We sometimes have
19 long discussions. But what I appreciate about it is the
20 frankness and the openness of the staff to answer those
21 questions and to come to an understanding.

22 It may not be -- you may have to agree to
23 disagree but we do have an understanding when we leave, a
24 clear viewpoint.

25 **THE CHAIRMAN:** Okay. Thank you, very much.

1 I'd like now to move to the next submission
2 which is an oral presentation by Ms. Charleen Sheehan as
3 outlined in CMD H12.31.

4 Ms. Sheehan, the floor is yours.

5
6 **11-H12.31**

7 **Oral presentation by**

8 **Charlene Sheehan**

9
10 **MS. SHEEHAN:** Mr. President and
11 Commissioners, my name is Charlene Sheehan. I'm an
12 employee at Point Lepreau.

13 I would like to talk about my experiences
14 during my career at Point Lepreau and more specifically in
15 the relation to safety and our people.

16 I began working at Point Lepreau in 1981 as
17 a cleaner and our first task was to clean the reactor and
18 the station to get ready for start-up -- for our first
19 initial start-up.

20 In 1986 I was hired by NB Power, and in
21 1987 I was a successful applicant as an administrative
22 assistant where I've been for the past 25 years, and
23 recently I'm in transition to become a human resources
24 officer.

25 Throughout my many years I've worked with a

1 lot of the different groups; I've worked with the computer
2 group. I've worked with -- I've had the responsibility of
3 being a fuel bundle accounting, which is -- which means
4 that I would track all the movements of nuclear fuel
5 through serial numbers in our accounting systems and
6 present reports at the end of every month to our
7 regulator, the CNSC, and as well, it was under the
8 watchful eye of the IAEA.

9 I worked very closely with our fuel
10 handling department, who are very impressive and quite
11 protective as they move the fuel around safely. It's very
12 interesting and nice to watch the pride that they take.

13 In that role, and seeing as our fuel is
14 stored in areas where that is -- there is radiation
15 hazards which require that I take the radiation protection
16 training so that I could go into those areas unescorted.

17 And what that means is I'm green badged
18 training, which is two months -- two months of training
19 that I had to take to give me that level of training and
20 also some in the field practice, and anyone that has a
21 green badge at our station has to re-qualify every three
22 years. So I've maintained that for many years.

23 I've also had the role of tracking heavy
24 water. I've worked with the engineers tracking heavy
25 water movements throughout the station.

1 I've worked in our plant -- I've been in a lot; I've been
2 in our boilers, I've been in our heat transport systems,
3 I've been everywhere and I've still managed to have two
4 babies safely.

5 It gave me great comfort knowing that if
6 anything happened to me -- and it also gave my husband
7 comfort know that if anything happened to me during my
8 pregnancies that our response teams were medically
9 qualified to look after me because the hospital was so far
10 away.

11 I've been involved with many pre-job briefs
12 that we're expected to do at our station before any jobs
13 that are done. We're required to use our human
14 performance tools, which is three-way communication. We
15 go over the jobs in detail that are going to be occurring.
16 We're asked to ask any questions. We're encouraged for
17 safety that we have -- if you don't feel safe you don't
18 proceed, you stop, you ask questions.

19 I like that we have the World Association
20 of Nuclear Operators, WANO, looking after not only us but
21 all the nuclear facilities around the world. Because of
22 Chernobyl they were created and I personally like having
23 that.

24 As a member of the Province of New
25 Brunswick, I believe that Point Lepreau getting their

1 licence is a good thing. I feel safe, if I didn't feel
2 safe I wouldn't work there. But I also like that we
3 contribute 33 percent of the electricity and I like to be
4 self-sufficient myself.

5 In conclusion, I have no problems with
6 safety. If I didn't feel safe there I wouldn't work
7 there. Our people are the best. And I get passionate
8 when I talk about our people. I know that I can go to
9 anybody anywhere in any department, whether it be
10 mechanical, electrical, facilities. The people are proud
11 -- proud of the work they do. They're dedicated.

12 We're really looking forward to restarting,
13 getting our reactor back and starting the plant, not only
14 for us, but for the Province of New Brunswick.

15 And that's about it.

16 **THE CHAIRMAN:** Thank you.

17 Dr. McDill?

18 **MEMBER McDILL:** No, thank you.

19 **THE CHAIRMAN:** Dr. Barriault?

20 **MEMBER BARRIAULT:** Thank you.

21 That's very positive, by the way, but I'm
22 looking for the other side of the coin. Are there any
23 areas that you can see that are problems between employee
24 and management?

25 I know it's a tough question. They're

1 going to close their ears and not going to listen.

2 (LAUGHTER/RIRES)

3 MS. SHEEHAN: What kind of problems?

4 MEMBER BARRIAULT: Any kind of labour
5 relation problems.

6 MS. SHEEHAN: Labour relations, I think --
7 I'm a member of IBEW also. I think that any labour
8 problems that we have we address them at the plant. This
9 is my understanding.

10 MEMBER BARRIAULT: M'hm.

11 MS. SHEEHAN: This is what I know.

12 MEMBER BARRIAULT: M'hm.

13 MS. SHEEHAN: That we try to address them
14 at the plant and issues are resolved.

15 I've talked to other people from different
16 places that have different union management relationships
17 and they don't sound to be as well as ours and I'm proud
18 of that.

19 MEMBER BARRIAULT: So you've got a
20 mechanism for working issues that you're happy with?

21 MS. SHEEHAN: Yes.

22 MEMBER BARRIAULT: Okay. My next question
23 really is that you're going to be transitioning to new
24 standards over the next licence period. Do you foresee
25 any difficulties with employee/employer relationships?

1 **MS. SHEEHAN:** Are you talking -- what kind
2 of standards? Like are you -- I know when you were
3 mentioning earlier about the fire standards ---

4 **MEMBER BARRIAULT:** Fire standards, safety
5 and other things.

6 **MS. SHEEHAN:** Coincidentally I eat lunch
7 with the engineer that is the project lead that's
8 implementing these new fire standards, and I know how hard
9 and diligently that team is working on getting those up to
10 the standards that our regulator says that we need to
11 have.

12 And I've also been in the plant and I've
13 seen new fire things popping up. Like I've been in the
14 plant for 30 years so when new red things pop up you
15 notice them and it's -- you know -- enclosed stairwells --
16 we have to do what we need to do to have our regulator
17 feel safe, that we are complying and I don't -- I don't
18 see anything wrong with that.

19 **MEMBER BARRIAULT:** Thank you.

20 Thank you, Mr. Chair.

21 **THE CHAIRMAN:** I have one -- just a
22 curiosity, in your submission, on page 2, you talk about
23 the human performance tools. What is phonetic alphabet
24 and star; what are those?

25 **MS. SHEEHAN:** The phonetic alphabet, it's

1 almost funny that you mention that because I also said in
2 my submission that I take some of this stuff home and my
3 children know the phonetic alphabet, like a is alpha, b
4 is bravo, c is Charlie, so when we're talking about
5 specific things like channel, alpha or -- that means
6 channel A or if we're talking -- anything that you refer
7 to with a letter you say the phonetic so that it's not
8 mistaken. Because you can mistake a C for a D but you
9 can't mistake Charlie for Delta, so we use that at the
10 station regularly.

11 I bet you everybody knows the phonetic
12 alphabet.

13 **THE CHAIRMAN:** Obviously I didn't.

14 ---

15 (Laughter/rire)

16 **MS. SHEEHAN:** Well, no, I mean at our
17 station. I don't mean you, I mean at our station. I
18 don't mean you.

19 Especially in our -- in our protected area
20 and the control room, they all know it.

21 I didn't mean you.

22 **THE CHAIRMAN:** So that's for communication
23 purposes?

24 **MS. SHEEHAN:** It's for communications to
25 make sure that the language is -- if you get the right

1 letter.

2 **THE CHAIRMAN:** And "star", what is star?

3 **MS. SHEEHAN:** Star is the Stop act -- Stop,
4 think, act and review. And what that is is that if you're
5 working on a job and you're not sure then we have to stop,
6 you have stop, you have to think, you have to act and
7 review.

8 Sometimes the acting is going to get more
9 input from your supervisor, review what you're doing, it
10 could be a co-worker but if you're not sure we have to
11 stop.

12 **THE CHAIRMAN:** Okay, thank you.

13 Thank you very much.

14 We will move now to the next submission
15 which is an oral presentation by CCNB Action, Saint John-
16 Fundy Chapter as outlined in CMD 12.33, 12.33A, B, and C.

17 And I understand that Ms. Sharon Murphy and
18 Mr. Chris Rouse will deliver the presentation.

19 Please proceed.

20

21 **11-H12.33 / 11-H12.33A / 11-H12.33B / 11-H12.33C**

22 **Oral presentation by**

23 **CCNB Action, Saint**

24 **John-Fundy Chapter**

25

1 **MS. MURPHY:** Mr. President and esteemed
2 Commission Members, my name is Sharon Murphy and I'm the
3 Chair of the CCNB Action, Saint John-Fundy Chapter.

4 We're a local community-based environmental
5 group and received some funding from the CNSC to produce
6 one part of our intervention.

7 I would like to start by pointing out our
8 concerns to you. As the regulator, you do not seem
9 objective to us. We were under the opinion that the CNSC
10 is supposed to provide objective scientific information to
11 the public, that was from the *Nuclear Safety and Control*
12 *Act*.

13 However, a few months ago when we attended
14 the CNSC 101 workshop, we were all given a report that
15 stated fact nuclear in Canada is safe -- fact, nuclear is
16 safe in Canada. Where is the objective scientific
17 information in this statement?

18 We wonder how the CNSC can protect people's
19 health and safety and the environment adequately when they
20 already believe that nuclear in Canada is safe.

21 As well, we'd like to point NB Power to a
22 ruling by Advertising Canada. NB Power said at the
23 beginning of Day One that Point Lepreau was a part of
24 their renewable portfolio with non-emitting generation and
25 that Point Lepreau was non-emitting energy.

1 Advertising Canada has stated in a decision
2 to counsel the general (inaudible) conveyed by the term
3 "emission free" was that CANDU reactors did not emit any
4 emissions of any kind, neither greenhouse gas emissions
5 nor any other type.

6 And according to the uncontroverted
7 information cited by the complainant, taken from Ontario
8 Power Generation's 2009 application to renew -- to the
9 renewal of its basic comprehensive certificate of approval
10 for the Darlington nuclear generating facility, numerous
11 different contaminants are emitted into the atmosphere
12 from the CANDU generating sites; and counsel, therefore,
13 concluded that the unqualified emission free claim in this
14 advertisement is inaccurate and unsupported.

15 Therefore, we can only conclude that NB
16 Power has honesty problems and has difficulty
17 understanding rules and may be misrepresenting other
18 issues.

19 Regardless, we agreed to participate in
20 these hearings and will soldier on.

21 The CCNB Action Saint John-Fundy Chapter
22 produced two documents and several supplementary documents
23 for these hearings. The first one is a scan and critique
24 of the application for re-licensing of Point Lepreau.

25 My partner, Chris Rouse, took the lead on

1 this work and will speak to this document in a minute.

2 The other document was a funded report that
3 I produced, drawing from the expertise of two seismic
4 experts, Ken Burke and Alan Ruffman, a professor of
5 nuclear physics, Dr. Michel Duguay and a climate change
6 expert, Raphael Shay.

7 I found several areas of concern during the
8 course of preparing this report; they include but are not
9 limited to, for Ken Burke. Mr. Burke points to a caution
10 that not all potentially active earthquake source
11 locations in New England may have been found yet by
12 present day seismic monitoring.

13 Mr. Burke points out that for larger events
14 it is difficult to make a reliable estimate of the full
15 extent of the felt area with so few reports from poorly
16 inhabited areas to the north and the lack of observers in
17 the seaward direction to the south.

18 Mr. Burke explains that neo-tectonic
19 investigations have continued in Passamaquoddy Bay, but
20 much of the work is still in progress or incomplete.

21 Mr. Burke notes that analysis of the data
22 is still in progress, but the initial results do suggest
23 that seismicity in the Passamaquoddy Bay region may be
24 explained by movements along northwest trending faults.

25 Mr. Burke notes that the origin of the

1 Passamaquoddy Bay pock marks continues to be a subject of
2 investigation by the ocean mapping group at the University
3 of New Brunswick.

4 In an email exchange. Mr. Burke noted
5 that there has been little work done, at least to his
6 knowledge, of the public domain on neo-tectonics in
7 southern New Brunswick. In an email exchange Mr. Bourque
8 says that:

9 "From experience, research has never
10 finished and there are always new
11 scientific ideas to test and validate.
12 I think NB Power has to demonstrate
13 they're at least up to date in what is
14 known."

15 In an email exchange, Mr. Bourque noted
16 that:

17 "NB Power have usually used outside
18 contractors to do a seismic
19 probability analysis. The only
20 exception of which I am aware is when
21 it was done in-house by Maritime
22 Nuclear for the proposed Lepreau-2
23 Reactor. It should state in the
24 Canadian Nuclear Regulations what is
25 required when a nuclear power plant is

1 refurbished. I do not have a copy of
2 the latest relations. It would be my
3 guess that an up to date seismic
4 hazard assessment would be required."

5 In the email exchange, Mr. Bourque says

6 that:

7 "It is surely the responsibility of NB
8 Power to prepare a full environmental
9 assessment report. And I assume this
10 has already been done by a consulting
11 company similar to Jacques Whitford."

12 In an email exchange, Mr. Bourque notes

13 that:

14 "I am a seismologist and not an
15 earthquake engineer. I do the front
16 end of the seismic hazard studies. In
17 other words, study the previous
18 earthquake history in regions of
19 interest and try to determine their
20 cause."

21 This is a personal note aside. I
22 personally would like to note that this is an important
23 distinction. An earthquake engineer would need to use
24 Bourque's data rather than simply taking it as a
25 standalone piece of science that they based their

1 earthquake ready confidence in.

2 Mr. Bourque explains that:

3 "This value, although conservative,
4 would indicate that NB Power should
5 have retained the services of
6 consulting engineers to make a site-
7 specific hazard assessment."

8 In his report, Mr. Bourque notes that:

9 "The continuing activity in the
10 Passamaquoddy Bay region is the most
11 likely source area for the next
12 significant earthquake in southern New
13 Brunswick."

14 I would like to add that this fact alone,
15 it seems to us, should warrant an on-the-ground, in real
16 life, peer-reviewed seismic engineer-led analysis and
17 seismic hazard study of the region.

18 For our expert, Alan Ruffman -- Mr. Ruffman
19 explains that he is concerned that he was unable to access
20 documents cited in the Lepreau environmental assessment
21 report to ascertain exactly the data used to set the
22 maximum magnitude earthquake for which the original
23 Lepreau plant was designed.

24 Mr. Ruffman expresses his concerns
25 regarding seismicity. He says:

1 "Can subsequent historical seismicity
2 work would have led to a larger
3 possible designer earthquake. And the
4 real question is, did this more
5 stringent requirement get applied and
6 built into the current Lepreau
7 refurbishment. I suspect it was not".

8 Mr. Ruffman expresses his concerns about
9 the CNSC re-licensing process. He says that:

10 "I cannot bring myself to call this
11 CNSC early December 2011 process a set
12 of hearings since they do not seem to
13 be -- so they do seem to be a farce as
14 far as hearing from very many people
15 and certainly there seems to be no
16 opportunity to allow intervenors to
17 challenge or to review the material
18 and opinions submitted by the Lepreau
19 authorities in support of their bid to
20 get re-licensed."

21 Mr. Ruffman expresses that:

22 "There is uncertainty when you are
23 limited to the last 100 years of data,
24 like when Point Lepreau was designed
25 using 1962 data."

1 Mr. Ruffman expresses his concerns
2 regarding the seismic standards that Lepreau was built to.

3 He says:

4 "One could reasonably argue with
5 hindsight by 1985 that the Canadian
6 plant as virtually on the U.S. border
7 5 to 6 years earlier was under-
8 designed with respect to seismic
9 risk."

10 In a letter, Mr. Ruffman exemplifies the
11 importance of action on new knowledge by including a
12 document that warned of a tsunami in Japan in 2001.

13 Mr. Ruffman reiterates his concerns that
14 the plant was possibly not re-designed after Bourque's
15 historic work had been done in the mid-80's as opposed to
16 the Smith's 1961 catalogue which was all that was
17 available in 1973-1974.

18 He suggests that there would have been a
19 more stringent engineering requirement put on its design
20 to withstand a somewhat higher seismic hazard. As well,
21 Mr. Ruffman repeats that he had difficulties finding the
22 documents used to justify the current design of the plant
23 and eventually gave up with his due diligence.

24 For Raphael Shea, our climate change
25 expert, Mr. Shea is concerned that the claim by certain

1 media and policy makers that climate science is highly
2 uncertain is not true. Mr. Shea is concerned that
3 society's inability to curb emissions globally also
4 indicates we are currently following the higher emission
5 scenarios that bring with them more significant impacts.

6 Mr. Shea is concerned that New Brunswick's
7 infrastructure will be put to the test and states that:

8 "We must be prepared to deal with an
9 increasing amount of severe storms,
10 including hurricanes."

11 Mr. Shea cited a national roundtable on the
12 environment and the economy which recently reported that
13 the estimated costs of climate change could escalate from
14 roughly 5 billion per year in 2020 to between 21 billion
15 and 43 billion per year by the 2050s.

16 The study also concluded that these costs
17 will have a highly uneven distribution on a per capita
18 basis. New Brunswick was amongst the worst fairing
19 provinces which will hinder its ability to adapt and
20 mitigate climate impacts.

21 **THE CHAIRMAN:** Sorry to interrupt you.

22 But, you know, we have read all this
23 documentation and you are now into a 15 minutes.

24 So please don't read verbatim everything
25 you have written to us.

1 **MS. MURPHY:** I have actually cut this into
2 very short points that I want on the record as my oral
3 presentation and I read it to myself and it took 8
4 minutes, 9 seconds. I will endeavor to go faster but with
5 all due respect, Mr. President, there are many, many
6 intervenors today that have gone far over their time and
7 I've been very careful.

8 **THE CHAIRMAN:** We will allow for question
9 period to allow us to deal with some of those issues
10 rather than you repeating what we have read.

11 **MS. MURPHY:** Of course. I beg for you to
12 allow me. Thank you.

13 Mr. Shea is concerned that the consequences
14 of a failure at Point Lepreau may be too great compared to
15 the lessons that we would have learned about climate
16 change adaptation after the Saint John and Bay of Fundy
17 are possibly destroyed forever.

18 Mr. Shea is concerned that recent cuts in
19 climate design and monitoring in Canada render structure
20 design of any kind, particularly vulnerable.

21 Mr. Shea pointed to Canada's Commissionaire
22 of the Environment and Sustainable Development who
23 underscore the concern that Canada has yet to take
24 appropriate action to adapt to climate change.

25 The fall 2010 report, which occurred prior

1 to the cuts at Environment Canada, point out that:

2 "Overall, the departments we examined
3 have not taken concrete actions to
4 adapt to the impacts of a changing
5 climate. With exceptions, they have
6 yet to adjust or develop policies and
7 practices to better respond to the
8 risk."

9 Finally, Mr. Shea noted that:

10 "Climate change is starting to
11 overwhelm our engineered expectations
12 using the recent example of the
13 Missouri River to highlight this
14 point."

15 My final expert, Dr. Dugue, discussed the
16 history and significance of earthquake hazards and that is
17 a very grave concern.

18 He told us that the probabilities over a
19 50-year interval of a serious seismic incident is the same
20 probability of getting three six's upon a single throw of
21 three dice.

22 He discussed the pressure tube aging and
23 the large break loss of coolant accidents and that they
24 are of a very large concern. He also discussed large
25 break loss of coolant accidents and the possibility of an

1 earthquake are not analyzed together.

2 He discussed that the dangerous buildup of
3 uranium oxide fuel damage is possible and that aging of
4 equipment and structures can lead to accumulated fuel
5 damage.

6 In conclusion, in the nuclear power
7 industry, the new and current knowledge that exists
8 regarding safety and concurrent accidents is rife with
9 uncertainties, unknowns and, recently, with the accident
10 in Fukushima, lessons possibly learned but not acted upon.

11 The CCNB Saint John Fundy Chapter is of the
12 opinion that the uncertainties, concerns and risks that
13 exist surrounding the refueling of the Point Lepreau
14 generating plant far outweigh the adaptation and
15 precaution that has been taken to mitigate such issues
16 from happening.

17 We respectively request that the CNSC order
18 a full environmental impact assessment and support the
19 creation of a Royal Commission of Inquiry into the future
20 of nuclear power in Canada.

21 I'd like to turn the mike over inquiry into
22 the future of nuclear power in Canada.

23 I would like to turn the mike over to Chris
24 Rouse. He is a technical adviser to our Chapter, who will
25 take a brief few minutes to go over what he found when

1 reviewing the N.B. Power licence application.

2 **MR. ROUSE:** For the record, Chris Rouse.
3 I'll keep mine a little bit shorter.

4 **THE CHAIRMAN:** Please, a lot shorter.

5 **MR. ROUSE:** Yes. Yes.

6 The first thing I'd like to do is, the
7 second submission supplemental, I wrote -- I was under a
8 lot of stress, working really hard, and I wrote it really
9 from my heart, very personal to me. I was very upset at
10 some things that I had learned the week before, and I
11 didn't let any of my other Chapter members read it before
12 it went out, and it really shows the importance of peer
13 review, I guess.

14 What I did was, really, just a critique of
15 the licence itself and the lessons learned document from
16 N.B. Power, and I've started down this road, trying to be
17 objective and whatnot, and as working in the engineering
18 environment, I started to become really concerned of all
19 the things I was finding. Anyways, it was very
20 disheartening.

21 I guess one of my biggest problems with the
22 licence and the lessons learned is the actual
23 probabilistic safety analysis.

24 **MEMBER McDILL:** I'm sorry, I don't mean to
25 interrupt. I'd like to know where your submission is.

1 I've got about 200 pages from you in front of me, and I'd
2 like to know where ---

3 **MS. MURPHY:** It's the very beginning of the
4 Chapter.

5 **MEMBER McDILL:** Is it H-12.33 ---

6 **MS. MURPHY:** Yes.

7 **MEMBER McDILL:** --- 33A), 33B ---

8 **MR. ROUSE:** Thirty-three (33) has two parts
9 to it. It's broken up in ---

10 **MS. MURPHY:** It looks like the licensing
11 application, but it's actually Chris going through each
12 aspect of the licensing application with his comments and
13 critique.

14 **MEMBER McDILL:** And so there's a table of
15 contents at the beginning, at page 33?

16 **MR. ROUSE:** Yes.

17 **MEMBER McDILL:** Thank you.

18 **MR. ROUSE:** Actually, I used it as a
19 template. Thank you very much; it was a nice way to
20 organize things, actually.

21 So anyways, the problem -- everybody talks
22 about the probabilities and risks, and how we include
23 things and don't include things, and my biggest problem
24 with the PSAs is, under a footnote in the regulations,
25 earthquakes have been excluded to them. So the numbers

1 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.

2 I guess I'll just go through a list of
3 questions, and the first one is around the operating
4 costs, and obviously that's beyond the scope of this
5 Commission.

6 But for the satisfaction of the group,
7 really, maybe we could ask N.B. Power to respond. They
8 raised a question regarding the energy policy of the
9 province with regards to Point Lepreau which is not part
10 of the CNSC mandate. Will N.B. Power address these
11 comments for the intervenors outside of the CNSC scope,
12 just to address the operating costs associated with Point
13 Lepreau on an ongoing basis, if I understand correctly?
14 Is that what you were asking?

15 **MR. ROUSE:** Yes. Yes, and not to mention
16 the operating costs, but the risks that go along with it,
17 especially the regulatory risks.

18 **MEMBER BARRIAULT:** So this has nothing to
19 do with the operating costs then? No?

20 **MR. ROUSE:** I thought you were talking
21 about our business plan in general.

22 **MEMBER BARRIAULT:** Yes, it is.

23 **MR. ROUSE:** Yes, I believe I mentioned
24 regulatory risks and the price of running the operator can
25 go up at any time, with putting new standards and stuff

1 in.

2 **MEMBER BARRIAULT:** That's item number two
3 on page five. You're talking about the Public Utilities
4 Board.

5 **MR. ROUSE:** Oh, yes. Yes, in 2002, the
6 Public Utilities Board deemed it not in New Brunswick's
7 best interest, and it was really quite clear -- it was a
8 unanimous decision, but the project went ahead anyways, so
9 yes.

10 **MEMBER BARRIAULT:** So did you want an
11 answer to that question, or...?

12 **MR. ROUSE:** Yes, please.

13 **MEMBER BARRIAULT:** Okay.

14 **MR. KENNEDY:** For the record, it's Blair
15 Kennedy.

16 I would be in agreement with the CNSC's
17 decision that this is not within the mandate of this
18 hearing to address economic issues with respect to Point
19 Lepreau.

20 **MEMBER BARRIAULT:** Thank you.

21 The next issue is the decommissioning cost.
22 Okay. You questioned how decommissioning costs were
23 affected by the waste generated by the refurbishment. So
24 could we ask what impact it's going to have on the
25 decommissioning costs to have done, I guess, the

1 refurbishment of the plant? Is that the question?

2 **MR. EAGLES:** This is Rod Eagles, for the
3 record.

4 Decommissioning cost estimates were updated
5 recently, and of course we understand the impact of the
6 refurbishment on that, and essentially concluded that it's
7 an insignificant difference in the overall costs of the
8 decommissioning of the plant on the basis of the work that
9 we've done during the refurbishment.

10 **THE CHAIRMAN:** Can we be a little bit more
11 precise? Let me -- I'm trying to understand. Right now
12 there is a \$500 million pot set aside for the
13 decommissioning. Somebody correct me if I'm wrong.

14 So the question is, in view of the
15 refurbishment, do you need -- is staff required to adjust
16 this \$500 million figure that existed for a while?

17 Who wants to start?

18 **MR. KENNEDY:** No, those numbers are --
19 that's sufficient, at this particular time, to meet our
20 decommissioning costs and also our unfunded -- the fuel
21 management point of view, we put aside and we adjust that
22 number on a periodic basis to ensure that we have enough
23 to decommission the plant as well as deal with the fuel
24 from the fuel management point of view.

25 **THE CHAIRMAN:** And you also have enough

1 space onsite to deal with all the additional waste, once
2 you're coming back for -- if you come back ---

3 **MR. KENNEDY:** Yes.

4 **THE CHAIRMAN:** --- in operation?

5 **MR. KENNEDY:** Yes. For the record, it's
6 Blair Kennedy.

7 Yes, we do.

8 **THE CHAIRMAN:** Staff, you agree with all of
9 this? When was the last time this \$500 million was
10 reviewed?

11 **DR. RZENTKOWSKI:** It was reviewed in
12 preparation for the relicensing hearing. And was a part
13 of our Day One submission.

14 So I will go back to Ron Stenson, from the
15 Waste and Decommissioning Division, who may provide a more
16 specific answer to that question. He's connected from the
17 Ottawa office.

18 **THE CHAIRMAN:** Ottawa? Ottawa? While we
19 find Ottawa ---

20 **DR. RZENTOWSKI:** Okay. If he's not there,
21 we can dig out the ---

22 **THE CHAIRMAN:** I think we got -- I think if
23 you updated, I think it's enough. I really would like to
24 deal with many of the other issues here.

25 Dr. Barriault?

1 **MEMBER BARROIAULT:** The next question is to
2 CNSC staff. The intervenor mentions, really, that given
3 RD-360, that there's a question of the gap between the
4 standards for a modern reactor and those of Point Lepreau.
5 In other words, Point Lepreau will not be up to modern
6 standards; is that correct? Do you want to comment on
7 this?

8 **DR. RZENTKOWSKI:** For some of the modern
9 standards, some requirements, of course it's next to
10 impossible to reconcile the old plant design with those
11 new requirements, but anything that what was practicable
12 was taken into consideration, and in most instances
13 resulted in safety upgrades or replacement of existing
14 components to really bring the standard of the plant to
15 that of modern plants.

16 So anything what was state of the art,
17 anything what was reasonable, has been included in the
18 scope of refurbishment activities.

19 Yes, this was for RD-360, because the first
20 step is to establish the set of modern standards, and I
21 would like to put on the record that more than 100
22 standards were considered to define the scope of
23 refurbishment activities. This was really a very
24 systematic and very comprehensive assessment.

25 **MEMBER BARRIAULT:** Thank you.

1 **MR. ROUSE:** Sorry, that really wasn't the
2 intent of my question. I guess, as New Brunswickers, it
3 would be really nice to know what we're not getting.

4 We hear lots of times, with everybody
5 talking, what we're getting and what's new and what's not,
6 but, I guess, the intent was to know what we're not
7 getting by not getting a new plant.

8 **MEMBER BARRIAULT:** So quoting RD-360 does
9 not apply, is what you're saying?

10 **MR. ROUSE:** I believe the only part of RD-
11 360 that applies to this license is the readiness to
12 restart, and which everyone is asking for you guys to
13 relinquish your powers to the CNSC staff, which we don't
14 really agree to.

15 **MEMBER BARRIAULT:** Thank you.

16 Yeah, I'll give Dr. McDill a chance.

17 **THE CHAIRMAN:** Dr. McDill, your turn.

18 **MEMBER McDILL:** Thank you.

19 I also have some questions. And I think
20 after Fukushima there's a natural sensitivity to the
21 effects of earthquakes, so it's worth doing it as many
22 times as is required, I think.

23 In H12.33, on page 13, there's a question
24 with respect to a document, and the question is did anyone
25 in this room for NB Power or the CNSC staff have prior

1 knowledge of this document?

2 And then there are several questions which
3 follow. These are posed several times, so I think it's
4 worth answering the question for the intervenors.

5 Maybe it will require both CNSC staff and
6 NRCan involvement.

7 **MR. RZENTKOWSKI:** I would like to direct
8 this question to Mr. Andrei Blahoianu, who is present in
9 the room.

10 **MR. BLAHOIANU:** For the record, my name is
11 Andrei Blahoianu.

12 So in the report it's referred -- this
13 report itself is referring to N40656, seismic hazard data,
14 reported by Western Geophysical Corporation. It is my
15 understanding that this an obsolete report, in the sense
16 that it was done many years ago, and more recent
17 information was already provided in the NRCan by the
18 Geological Survey of Canada in the NBCC edition 2010.

19 So this is information that has to be used.
20 So this is my first comment, the fact that it is referring
21 to a study which, as I said, it was good at that time but
22 we have to look into the current data.

23 The second thing, referring to the
24 reference with the containment failure probability, so
25 what I want to mention -- so the containment itself, it's

1 not designed or it's not reviewed using NBCC, which is for
2 existing civil structures, no. It's used -- so we have to
3 use the CANDU standards N-287, which are specific for
4 containment.

5 The second thing, and definitely the
6 review-level -- so it was -- the review-level earthquake
7 against which the containment was checked -- again, I
8 repeat, it was 0.3G and it was identified safety margin.

9 Talking about -- just about the containment
10 itself, as a result of the PSA study performed for the
11 Level 1 PSA, showed that the containment would not -- the
12 containment itself as systems, not as a building itself --
13 would not fail for something less than 0.42G for an
14 earthquake which has a PGA 0.42g.

15 This is far beyond the intent to -- so it
16 shows consistent safety margins against the original
17 design, which was 0.2g

18 And one more thing, if you talk just about
19 the containment itself, and I'm asking here NB Power to --
20 New Brunswick Power to confirm, because they did the
21 study. I just quote from memory.

22 The PSA indicated that the containment
23 itself has a confidence -- how we call it in an
24 engineering way -- high confidence or low failure
25 probability of failure -- 1.2G. So the containment will

1 not fail itself below this 1.2G.

2 And the 0.42g that you talk about when we
3 say that will have large release, due to the containment
4 failure, is not the containment itself. There are some
5 containment systems like ventilation. Or it's about
6 interaction between the service building during the
7 earthquake and the containment itself.

8 As I said, this information I quote it from
9 memory, and NRCan -- and I will invite NB Power to confirm
10 the data.

11 **MR. KENNEDY:** Yes, I would ask Paul
12 Thompson, the Manager of Nuclear Safety and Regulatory
13 Affairs, to address that question.

14 **MR. THOMPSON:** For the record, Paul
15 Thompson.

16 Yes, what the CNSC staff have said is
17 correct in terms of the seismic capacity of the building,
18 and in fact what results in the more limiting value, which
19 is in the service building and interaction with the
20 containment ventilation systems, which is what results in
21 the limit of 0.42G.

22 **MR. ROUSE:** In our submission I've got a
23 document from Science Direct, from Korea, which is a very
24 similar reactor, its CANDU 6 reactor, it's the
25 international one.

1 And they did a study, and it came up with a
2 similar result for failure mode, but for cracking mode to
3 actually let radioactive release out it said it was
4 0.28Gs, I believe.

5 **THE CHAIRMAN:** Okay, let me try something
6 here. We now heard from the intervenors about Dr. --
7 Professor Bourque. We heard Dr. Adams. We heard a plan,
8 etc.

9 I'm trying to understand the issue, and I'm
10 really not interested in who is the right expert, who is
11 not the right expert.

12 What I thought I heard this morning is from
13 Dr. Adams, saying that the largest magnitude -- let's
14 assume its magnitude six -- he said magnitude six,
15 magnitude seven -- what I'm trying to understand is assume
16 the worst earthquake ever, they'll break the machine down,
17 everything will -- what I'm trying to understand is -- I'm
18 not trying to save the machine, I'm not trying to save the
19 nuclear power plant, what I'm trying to save is the
20 population around.

21 So my question is even that kind of an
22 earthquake occurs, what is the safety -- will it shut down
23 safely?

24 That's really what I'm interested in.
25 There can be cracks; there can be all kind of things. Is

1 the defence, in depth, will work? Why don't I start with
2 you guys, NB Power?

3 **MR. KENNEDY:** I would ask, again, Paul
4 Thompson, the Manager of Nuclear Safety and Regulatory
5 Affairs, to address that question.

6 **MR. THOMPSON:** For the record, Paul
7 Thompson.

8 What the seismic margin assessments look at
9 is trying to quantify the additional seismic margin that
10 exists within the design -- that is, above and beyond what
11 it was originally designed for -- and also to identify any
12 particular vulnerabilities that could then be addressed in
13 order to try to achieve these values.

14 We talked about that the original design of
15 the station was between 0.15 to 0.2G. That, in fact, was
16 upgraded from the original concept of a .1 g when they
17 looked at some of the -- during the design process when
18 they looked at some of the earthquakes from the
19 Passamaquoddy fault, in fact.

20 The seismic margin assessment looked at the
21 ability for a much larger earthquake; one that would
22 result in a peak ground acceleration of 0.3 g and to
23 demonstrate with high confidence low probability of
24 failure that the reactor will shut down and that there
25 will not be severe core damage. That demonstrates good

1 margins, defence and depth.

2 Furthermore, the seismic margin assessment
3 shows that we could withstand up to a much larger
4 earthquake that would result in a peak ground acceleration
5 of 0.4 g in order to demonstrate with high confidence and
6 low probability of failure that we wouldn't have a large
7 release of radioactivity.

8 **THE CHAIRMAN:** Staff, do you agree with all
9 of this?

10 **MR. RZENTKOWSKI:** Yes, we generally agree
11 and I would like to direct everyone's attention, again, to
12 the Fukushima Task Force report the progression of events
13 for a doomsday scenario is discussed in Appendix B.

14 So even if we imagine an earthquake of an
15 enormous magnitude, the worst what will happen here at
16 Point Lepreau probably will be unfiltered venting that may
17 be necessary -- after about five days after accident.
18 That's the doomsday scenario.

19 But in the meantime of course there will be
20 sufficient time for the population to be relocated from
21 the vicinity of the reactor.

22 **THE CHAIRMAN:** Okay.

23 Dr. McDill?

24 **MEMBER McDILL:** Thank you.

25 My next question is on page 35 and it's

1 with respect to the change in material and the comment
2 from the intervenor is "This change in material for piping
3 hasn't been tested" and I think it's a fairly well-known
4 material so perhaps I could ask NB Power to discuss it.

5 **MR. KENNEDY:** I would ask Mr. Eagles to
6 take that question.

7 **MR. EAGLES:** Rod Eagles, for the record.

8 Within the submission, they reference
9 studies and reports done earlier in the life -- the first
10 life of the nuclear power plant at Point Lepreau where
11 there were some concerns with the feeder material and
12 mechanisms, causing challenges to the operation of the
13 plant, through either cracks or wall thinning.

14 Evaluation of those challenges led through
15 the work in the design of feeder piping for the
16 refurbishment of Point Lepreau to upgrade that material to
17 a higher chrome content to address really two issues;
18 higher resistance to stress, corrosion, and cracking and
19 also a higher resistance to flow accelerated corrosion.

20 That was one of the changes that was made
21 on those feeder pipes. Now, the material is very similar
22 to that which was used in the original design of the
23 marginally higher chromium content.

24 Additionally, in the design, we added
25 stress -- or sorry, stress relieving to the very tight

1 radius elbows of the feeder piping where some of this high
2 stress and stress corrosion cracking had been observed in
3 our earlier operation.

4 So to suggest that these factors have not
5 been tested, I don't think would be accurate. You know,
6 these are methods that are, you know, widely proven.

7 We work with the industry, the CANDU
8 Owners' Group, that's had a significant research and
9 development program on feeder-related issues over the past
10 number of years and some of that work was conducted here
11 in New Brunswick at the University of New Brunswick
12 through the research group there.

13 We are confident that the work that has
14 been done to identify opportunities to improve the service
15 of feeders will be successful for the remaining life of
16 the revised or the refurbished plant.

17 Thank you.

18 **MEMBER McDILL:** Are there journal papers or
19 university reports or accelerated corrosion tests that the
20 intervenor could have a look at so they can be more
21 confident that the material has been tested in some way
22 other -- beyond ---

23 **MR. EAGLES:** Ron Eagles, for the record.

24 Certainly. The reports that have been done
25 through the research and development program at COG over

1 the past number of years have been done with the support
2 of the balance of the industry.

3 And I would have to review the -- you know,
4 the commercial nature of those in order to determine
5 whether they would be free to be released to the
6 intervenor, but certainly we could have a dialogue
7 regarding that and perhaps bring an answer back tomorrow.

8 **MEMBER McDILL:** Thank you.

9 I see a hand at the back.

10 **MR. BLAHOIANU:** Okay.

11 **MEMBER McDILL:** Several hands just went up.

12 **MR. BLAHOIANU:** So I assume that talking
13 we're talking about primary heat transfer system and I
14 assume that it's about the feeders. So feeders are new
15 feeders and I want to say that the feeders itself --
16 themselves were replaced from 106B to 106 grade C which
17 content of chromium nickel when this were already
18 installed at Qinshan so there is already a proven
19 experience for almost 10 years since they operated there
20 successfully.

21 **MEMBER McDILL:** I missed that last
22 statement. Ten (10) years experience where?

23 **MR. BLAHOIANU:** Since they're already
24 installed at Qinshan.

25 **MEMBER McDILL:** Thank you.

1 **MR. BLAHOIANU:** In China, sorry. These are
2 the CANDU -- two CANDUs which were built in China.

3 **MEMBER McDILL:** Yes, so ---

4 **MR. BLAHOIANU:** Maybe I'm not right with
5 the 10 years, but definitely they are operating for
6 several years there.

7 **MEMBER McDILL:** Okay, thank you.

8 So maybe between the two sources we can get
9 something to the intervenor that would reassure them on
10 this matter.

11 My next question is for staff and it's with
12 respect to loss of coolant, large LOCA, and the
13 intervenor's concern that this was not coupled with
14 earthquake scenarios.

15 So could you discuss for the room the
16 setbacks involved while the action item is still being
17 closed for LOCA, large LOCA, and how it corresponds with
18 earthquake?

19 **MR. RZENTKOWSKI:** Actually, in the seismic
20 analysis LOCA is included, but only a small LOCA is
21 included as a part of the seismic analysis because there
22 is an implicit assumption that one of the feeder lines may
23 eventually break, but there's no assumption that large
24 diameter piping, which is extremely robust, will also
25 break instantly as a result of seismic activity.

1 So but if we look again into the report --
2 the Fukushima report -- when the sequence of events for
3 the doomsday scenarios I described is very clearly stated.
4 This scenario equally applies to loss of heat sinks and
5 large-break LOCA.

6 Simply, what happens in the beginning is
7 that overheating of the primary heat transport system --
8 will happen in a very short period of time because there
9 will be no circulation of coolant; and the remaining
10 sequence of events will be exactly the same as described
11 in the report.

12 So the final stage would be as I described
13 responding to the previous question; that means the worst
14 case scenario is, here in Point Lepreau, the limited
15 unfiltered venting from the containment to maintain
16 containment integrity and prevent its failure.

17 **MEMBER McDILL:** There's a hand at the back.

18 **UNIDENTIFIED SPEAKER:** Yes.

19 **MEMBER McDILL:** Andrei?

20 **MR. BLAHOIANU:** So definitely I can confirm
21 from the -- that New Brunswick Power addressed so-called
22 seismic-induced LOCA. This is part of the internal events
23 assessment so this was done. So it's about the large LOCA
24 and also small LOCA.

25 And also were assessed the internal floods,

1 internal fire, and also seismic, so this was part of the
2 Level 1 and Level 2 PSAs. So the statement that these
3 were not considered in the PSA is not accurate; they were
4 included.

5 The reason why the seismic PSA is not done
6 together with the others, like internal, is because this
7 is a common cause failure for the plant while LOCA it's
8 not the common cause at all -- common cause failure for
9 the plant. And the total number which is provided by the
10 licensee is that in fact all of them together the core
11 damage frequency, the target 10 minus 4 and also the large
12 release 10 minus 5 probabilities are met, even with all of
13 them (inaudible) together.

14 **MEMBER MCDILL:** Maybe Point Lepreau would
15 like to wrap that up or add a little more to it.

16 **MR. ROUSE:** I believe there's a technical
17 document in our second submission where they tried to
18 prove that, in which I do not believe was done correctly.

19 Maybe we could handle that technical
20 assessment.

21 **MEMBER MCDILL:** Can you point -- do you
22 have the page number?

23 **MR. ROUSE:** Yes.

24 **MEMBER MCDILL:** It makes it easier.

25 **MR. ROUSE:** Yeah. Okay, just a second.

1 It's actually on our slide show if I could
2 show everyone, so everyone can see what we're talking
3 about.

4 I believe it starts with this technical
5 assessment here that was done.

6 **MEMBER McDILL:** I have two bright lights in
7 my eyes, I can barely see most of you -- most of the time
8 so I head for the voice. When you hold a piece of paper
9 up I can't read it, I assume you.

10 So give me a number and a page.

11 **MR. ROUSE:** It's in the 33B document.

12 **THE CHAIRMAN:** We should never accept
13 documents like this unless somebody puts page numbers on
14 them.

15 **MR. ROUSE:** I apologize.

16 **THE CHAIRMAN:** So it's somewhere in the
17 middle of the document there is a technical assessment;
18 that's the document you are referring to?

19 **UNIDENTIFIED SPEAKER:** Ten (10) pages from
20 the end.

21 **THE CHAIRMAN:** Okay, what do you want to
22 say about it?

23 **MR. ROUSE:** I'm not a seismologist, I'm not
24 a seismic hazard engineer but I have taken quite a lot of
25 my own personal time to try and understand it and I

1 mentioned earlier that when I apologized for writing the
2 second supplemental in a very personal nature it was
3 actually because of this technical assessment.

4 What they did was -- I'd like to really
5 describe the high confidence that everyone talks about and
6 I think the public should really understand this.

7 This is not a regular seismically qualified
8 .3 Gs or .4 Gs; they've done a bunch of math on it and
9 figured out that they are 95 percent confident that it
10 will be able to handle this kind of earthquake.

11 And this technical assessment was used to
12 prove that they were still meeting the regulatory limits.
13 Because as I mentioned earlier, the .4 Gs is only about
14 one in 20,000 years which isn't doomsday, I think the CNSC
15 described doomsday as one in 100,000 years.

16 Anyways, this technical document, you'll
17 notice the curves, they curve down and they keep curving
18 and then this technical assessment that was done, I
19 believe, by an electrical engineer, his name is on the
20 document, drew straight lines then to figure out the
21 probabilities.

22 Then they took this number and did some
23 more math on it and it says in this document as well that
24 they had already tried to submit something and industry
25 did not approve it.

1 It says in this document that the
2 calculations that they're using are a hybrid method and a
3 proposed method which doesn't really sound very scientific
4 or proven engineering to me.

5 But anyways, what I have learned about
6 seismic hazards is that to draw a straight line on a
7 seismic hazard curve, you have to do it on a log to log
8 scale, log arrhythmic on both the x and y axis.

9 This document here is log arrhythmic on the
10 left-hand -- on the y axis but the x axis is just a normal
11 axis. And I believe our experts will ascertain that this
12 isn't the proper way to do this.

13 And by doing this straight line down like
14 that they get a much lower probability. And kind of
15 really boils down to even using -- we're questioning the
16 old 1984 data that's been used, I really question this
17 calculation. I would really like to see it industry
18 approved as well.

19 But even using the old data and the
20 questionable calculation, if they had extrapolated the
21 data properly it shows that they don't meet their limits
22 when they include seismic hazard in the PSAs.

23 **THE CHAIRMAN:** Okay. NB Power, you want to
24 -- anybody over there taking a look at this. Is there
25 improper analysis being done here?

1 **MR. KENNEDY:** For the record I'll ask Paul
2 Thompson, Manager of Nuclear Safety and Regulatory Affairs
3 to address that question.

4 **MR. THOMPSON:** Thank you. For the record,
5 Paul Thompson.

6 We stand by that technical assessment but
7 what I'd like to do is step back a little bit and put some
8 perspective on this to begin with.

9 First, we performed the -- as part of the
10 life extension activities for the refurbishment project, a
11 full-scope level two PSA, and that included at power and
12 shut-down conditions and it included internal events and
13 it included external events for station fires and station
14 floods.

15 Recognizing that there are uncertainties in
16 the seismic hazard data we adopted a - as in accordance
17 with international standards and practices, PSA-based
18 seismic margin assessment which has its own safety goals.

19 So in other words there were safety goals
20 for the internal events and for the fires and floods and
21 then separate safety goals for the seismic margin
22 assessment and those were to demonstrate that there was a
23 high confidence, low probability of failure of 0.3 G for
24 the prevention of severe core damage, as I've mentioned
25 before and a high confidence, low probability of failure

1 for an earthquake that will result in a peak ground
2 acceleration of 0.4 G for the prevention of large
3 releases.

4 So it was dealt with separately, so two
5 separate safety goals.

6 Now there are in fact three different ways
7 that the PSA can go about treating seismic; one is a full
8 PSA seismic -- sorry, seismic PSA, the other is a seismic
9 margin assessment and the third is a PSA-based seismic
10 margin assessment.

11 And we selected the third which many
12 jurisdictions have done so, because it gives the best of
13 both worlds and it avoids the discussion around the
14 precise probability of these very large, very low
15 probability earthquakes.

16 Avoid a lot of the discussion, in fact,
17 that isn't really at the core of the discussion that we're
18 having right now.

19 So this -- the PSA-based seismic margin
20 assessment was done in accordance with international
21 standards and practices. It was performed by qualified
22 professionals, including well recognized international
23 experts.

24 As I mentioned, it is -- it has the
25 advantage of addressing consequential events which was

1 also discussed earlier, without getting into the big
2 debate about the precision of the probability of the large
3 earthquakes. So it has its own safety goals.

4 Now, we also submitted in response to the
5 questions on Fukushima as the CNSC staff had asked us to
6 back and re-look at new data, there were two particular
7 assessments that we did, in addition to what was done for
8 the level 2 PSA and the PSA-based seismic margin
9 assessment.

10 The first was to look to see if there had
11 been new data on the seismic hazard for the site. And so
12 when doing that, we went and we utilized the latest
13 information from NRCan that was used in the 2010 National
14 Building Code and that -- we talked about that earlier,
15 that that sensitivity study demonstrated in fact that
16 there was even more margin than that was understood at the
17 time when we selected the design basis earthquake.

18 And what that gave us is confidence that
19 the design is good and that the results of the seismic
20 margin assessment remain valid for the specific site data
21 that we had, using the latest information from the
22 National Geographic.

23 The second thing we did was also a sanity
24 check, which we referred to as "Sanity Check," and this is
25 what this assessment that Mr. Rouse is referring to, is to

1 demonstrate that if we were to look and do a rough
2 calculation using the probabilities, would they fall in
3 line with the overall PSA goals?

4 So this is good practice, as recommended by
5 New Reg. 1407, to do -- and, in fact, they refer to it
6 explicitly as a "Sanity Check". So it wasn't the formal
7 part of the PSA; it was just another verification that
8 said if we were to look and do this assessment, does it
9 seem or fall in line?

10 So this was not meant to be a seismic PSA,
11 and I think that's where the misconception is there. It
12 was really a confirmatory check to say, if we were to look
13 and include those kinds of frequencies, would there be
14 anything that would be out of line with those fundamental
15 safety goals, and the conclusion was that there are not.

16 **THE CHAIRMAN:** Okay, thank you.

17 Dr. McDill?

18 **MEMBER McDILL:** Does staff want to add
19 anything to that, because I think there's a disconnect
20 here between the analysis that's been done and the
21 intervenor's understanding of the analysis that's been
22 done, and the intervenor's response to the analysis.

23 **MR. BLAHOIANU:** Okay, so just one comment.

24 So there is no requirement to qualify
25 against one in 100,000 years. It's about, as I said

1 earlier before the break, that the methodology itself
2 asked to choose and review level earthquake, which is
3 according to the standard, our Canadian standard are also
4 following the guidance from NUREG. 1407. For this
5 northeast -- the centre east of North America, is 0.3 g.
6 So this is what was done.

7 And after this it has to be demonstrated,
8 it has to be identified and demonstrated that components
9 important to safety have sufficient safety margins. So
10 doing projected calculation, other things like this,
11 you'll get by the end what's the real PGA for which the
12 component will fail; so this has to be done.

13 And the result of this tells that we have
14 high confidence that for a number which is like a -- a
15 report, it was this review level earthquake, no? It's
16 higher or less than a review level earthquake.

17 Calculations shown by PSA, PSA based SMA --
18 which was done -- demonstrates that the components
19 important to safety, all of them are above what was chosen
20 as a review level earthquake. A reviewable earthquake, it
21 also happens to coincide with one in 10,000 years. Zero
22 forty-two g (0.42g), it's a PGA for which -- for an
23 earthquake anchored at 33Hz, and which shows that actually
24 in order to have large release you have to have an
25 earthquake which will have a PGA 0.42g.

1 So it's above what was for the purpose, the
2 0.3 g, so it shows an additional safety margin for this.

3 It was never the intent to extrapolate or
4 to use one in 100,000 years, or even further than this, to
5 show that you meet these requirements. It's just -- as I
6 said, it's screening against which the owner demonstrates
7 there are enough safety margins, and this was done. I
8 don't know if it's clear.

9 **THE CHAIRMAN:** Dr. McDill?

10 I'm not sure we're going to get into -- you
11 know, into this resolution of this kind of a technical
12 issue right here, so I suggest that we'll just have to
13 review those documents internally and decide how to
14 resolve this, if resolution is required.

15 **MR. ROUSE:** Would it be possible to get the
16 IAEA have a look at our intervention?

17 **THE CHAIRMAN:** Staff, IAEA is now in place
18 and presumably they're looking into all our methodology
19 and our approach; is that correct?

20 **DR. RZENTKOWSKI:** That's correct. They
21 generally assess our assessment processes, and also our
22 regulatory framework which includes regulatory documents;
23 so, yes, from that standpoint, they can probably have a
24 look.

25 The question is; do they have on staff the

1 experts who can look into this seismic assessment.

2 But I think it's very important what Mr.
3 Blahoianu said, that this goes well beyond the regulatory
4 requirements, the regulatory requirement is in one in
5 10,000 years.

6 **MR. JAMMAL:** Thank you. For the record,
7 it's Ramzi Jammal.

8 As Dr. Rzentkowski mentioned, the IAEA is
9 here. But we have to be careful as on the graph that's
10 been shown here, if I'm going to use laymen's terms here,
11 we've gone to the fiction end of the graph with respect to
12 one -- the frequency of one in 100,000 years.

13 And that is the debate that is taking place
14 into the -- one might call into the fiction zone of what
15 is the calculation showing versus what is required to
16 maintain a safety margin.

17 As Mr. Blahoianu mentioned, that the safety
18 margin is adequate, .3 g, you can go to the infinity if
19 you want to, and that's what we're talking about here.

20 But by all means, the IAEA is here, and
21 then will have conducted the assessment with respect to
22 the Fukushima lessons learned, and that's where we can
23 request a special look at this.

24 **THE CHAIRMAN:** Andrei?

25 **MR. BLAHOIANU:** I want to clarify that the

1 interval which really matters, it's between one in 1,000
2 years and one in 10,000 years, because 0.3 g, which was a
3 review level earthquake, no, coincides to one in 10,000
4 years, and this is -- as you see, this is log (inaudible)
5 interpolation, and these numbers again, these were
6 confirmed by NRCan. There is no need for IAEA to confirm
7 what our Geological Survey of Canada says.

8 So these numbers in terms of probabilities
9 and PGAs are confirmed by NRCan. This extrapolation which
10 is leading it outside, we shouldn't even discuss about
11 this because it is irrelevant.

12 The second thing, talking about bringing
13 experts from IAEA, these experts -- IAEA doesn't have its
14 own experts, they hire consultants all over the world, and
15 probably it will be an interesting situation to bring --
16 to see the experts who New Brunswick Power hired, for me
17 to say coming and checking this.

18 **THE CHAIRMAN:** Dr. McDill?

19 **MEMBER McDILL:** Thank you.

20 I think the 0.3 is the important number
21 here.

22 **MR. BLAHOIANU:** That's correct, because we
23 stopped there at one in 10,000 years because this was the
24 review level earthquake which was chosen.

25 **MEMBER McDILL:** Then you have -- I think

1 the concern is that ---

2 **MR. ROUSE:** The second level.

3 **MEMBER McDILL:** So, let's go back.

4 **MR. ROUSE:** Sorry -- the second level is
5 what we're really calling into question.

6 **MEMBER McDILL:** I'll go back to Point
7 Lepreau.

8 **MR. THOMPSON:** For the record, it's Paul
9 Thompson.

10 I just want to reiterate that we followed
11 international practice and guidance in performing the PSA
12 and the PSA-based seismic margin assessment, and that we,
13 in performing that seismic margin assessment, included
14 international experts who are well-recognized in seismic
15 hazard and fragility assessments, and they were part of
16 doing both the plant walk-downs, and the fragility
17 analysis.

18 So all the way along we've followed
19 practices, international practices, using well-recognized
20 experts, and we're very confident and had the
21 methodologies appropriately reviewed and approved along --
22 several years ago, with the PSA, and then -- and then we
23 followed and performed those methodology -- the analysis,
24 in accordance with the methodologies.

25 **THE CHAIRMAN:** Okay. Look, I know this is

1 a fascinating subject, of probability and safety analyses,
2 et cetera, but again, I am not concerned with that, I'm
3 concerned with the consequences of having somebody exceed
4 those parameters.

5 And all I heard you -- both sides, saying,
6 that the machine will shut down. And that's all I want to
7 hear, from my perspective, and that's really all that
8 matters.

9 We're not here to -- as a Commission, to
10 protect the building and the machine, we are here to
11 protect the environment and the people. And as long as
12 there are assurances that the shut-down system and the
13 defence in-depth will kick in -- I don't care if it's one
14 in 1,000 or one in 100,000 or one in a million, and that's
15 really what I take away from this.

16 Anybody wants to argue with me on that?
17 You have a last round before we move on.

18 **UNIDENTIFIED SPEAKER:** I'll argue with
19 that.

20 **THE CHAIRMAN:** I didn't ask for somebody
21 from outside to argue with me on this. You'll have your
22 turn.

23 Go ahead. Mr. Rouse, go ahead.

24 **UNIDENTIFIED SPEAKER:** --reactor shut down
25 immediately--

1 **THE CHAIRMAN:** You'll have your turn to
2 raise this when you come in front of us.

3 **UNIDENTIFIED SPEAKER:** I thought you said
4 go ahead. That's what I thought I heard.

5 **THE CHAIRMAN:** Sorry.

6 **MR. ROUSE:** My biggest concern in these two
7 technical assessments that I received afterwards and that
8 really, really concern me, Commissioners, is that this one
9 up here -- if I could just -- it takes two seconds to
10 explain what they were supposed to do and there was an
11 example of what they were supposed to do and then just why
12 it was wrong.

13 They were supposed to check three levels,
14 the design base and the two other levels. In this graph
15 here they only checked one against the NRCan data and they
16 had the ability to verify the other two. It shows exactly
17 how to do it on their website and it was an electrical
18 engineer that did it, I believe anyways.

19 It was very clear how to do it and if you
20 had of checked it way, the increase seismic risk would
21 have actually been 20 percent higher, but they didn't
22 extend that curve like they did wrongly on the other
23 technical assessments. They just left the graph shorts.
24 You can see over here on the thing, it's -- it doesn't
25 even go down, they were supposed to check down here and

1 down here. And it says that it was just bound.

2 This curve here is getting closer and
3 closer and closer to these other two. There was no way
4 objectively or scientifically that you could have
5 guaranteed that that curve stayed on that other side.

6 So we have two technical assessments that
7 we're trying to disprove our intervention that we spent a
8 whole, whole lot of time on and trying to learn the facts
9 and I believe feel misinformed -- you know, there's lots
10 of emails going back and forth but my concern is, is that
11 I've reviewed six documents, I've found lots and lots of
12 lots of problems.

13 I got these two technical assessments that
14 were done, I believe, incorrectly and accepted by the CNSC
15 staff. The CNSC NRCAN has since verified that is true but
16 it only happened after I started asking NRCAN some
17 questions after this had already been approved.

18 And what makes nuclear power really, really
19 dangerous is stuff going out unchecked and unreviewed and
20 this kind of stuff, like it's funny these ---

21 **THE CHAIRMAN:** Okay, listen -- please ---

22 **MR. ROUSE:** I know, I know, I know, I know.

23 **THE CHAIRMAN:** We've got to move on, we've
24 got some other questions to go.

25 Anybody wants to specifically to close on

1 this particular graph or this particular issue?

2 **MEMBER McDILL:** Maybe I could ask that the
3 staff and the intervenor spend some time offline on this
4 and come back at some point.

5 **THE CHAIRMAN:** Andrei?

6 **MR. BLAHOIANU:** Just one last
7 clarification; the title is incorrect, there is no New
8 Brunswick report on Increased Seismic Risk.

9 This situation is true for United States
10 and in their document, CNRC presentation, status of
11 Genetic Issue '99 they show that actual years there is
12 indeed an increase of seismic risk and this is why they
13 proceed now through additional verification.

14 This is not true for Canada and as Dr. John
15 Adams said, in fact the -- talking -- referring to the
16 original design numbers and also what we have in 2010 NBCC
17 and also it will be in 2015, wouldn't you know that we see
18 a reduction on the seismic hazard, not because the seismic
19 hazard changed, because it doesn't change, it's about the
20 fact that information that NRCan has today allowed them to
21 conclude that the real numbers will be lower.

22 So I ask Dr. Adams to confirm this.

23 **THE CHAIRMAN:** Okay, Dr. McDill, any other
24 subjects?

25 **MEMBER McDILL:** Yes. The intervenor made

1 some reference to one of their experts having trouble
2 getting documents and I wanted to ask the question, did he
3 call staff?

4 **MR. RUFFMAN:** I'm the person.

5 **MEMBER MCDILL:** Did you call staff?

6 **MR. RUFFMAN:** I have a file folder of many

7 ---

8 **MEMBER MCDILL:** I'm going to ask you, maybe
9 just -- maybe you could just step forward and swap places
10 with someone so we can hear you and it goes on the record.

11 Thank you.

12 **MR. RUFFMAN:** Yes, my name is Alan Ruffman.
13 I was the one who was invited to Memphis to give a
14 historic seismicity study. I did a look at the pro area
15 and specifically looked at south-western New Brunswick and
16 the work that Dr. Burke had done with his students.

17 And when I came back to Canada I decided I
18 would try to find the original documents that were put
19 into the 1971-'72 environmental assessment. I ultimately
20 failed.

21 I wrote letters, initially, to the logical
22 people, some of the names had changed, I have a file
23 folder of letters and ultimately there were two documents
24 that just could not be produced and I was at a loss and I
25 didn't know Paul Thompson at that time, I don't yet know

1 him but I know his name, and I suspect had I contacted him
2 I would have found the right documents but I failed at
3 that point.

4 So when I wrote that comment to Ms. Murphy
5 it was because I had not been successful in finding the
6 documents.

7 I don't think I was being stonewalled, I
8 think I just ran into a lack of corporate knowledge that
9 has stretched back now for almost 30 years.

10 **MEMBER McDILL:** Okay, thank you. That was
11 my question. So presumably you can continue your hunt
12 now, maybe with -- but 1971-'72 was a while ago.

13 Could I ask NB Power to see what it can do
14 with that.

15 **MR. THOMPSON:** Yes. For the record, Paul
16 Thompson.

17 We've tried our best working -- interacting
18 with the intervenors to provide and make available
19 information, that which can't be available in the open
20 source we've made available for them to read in closed --
21 in closed sessions. So we certainly can follow-up and try
22 to understand what information they would like to see and
23 provide, to the best of our ability.

24 **MEMBER McDILL:** Thank you.

25 Thank you, Mr. Chair.

1 **THE CHAIRMAN:** Dr. Barriault?

2 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.

3 Just a few brief questions this time. The
4 first one deals on page 38 of the intervention and it's
5 the issue of intake and outtake water -- cooling water
6 pipes. And I guess what the intervenor says is because of
7 the amount of mussels in the pipe that you cannot inspect
8 those with a diver.

9 So maybe you would like to comment on that
10 if that's possible.

11 **MR. KENNEDY:** If I may, I would direct that
12 question to Charles Hickman, he's our fish guy.

13 **MR. HICKMAN:** Charles Hickman, for the
14 record.

15 **MEMBER BARRIAULT:** First paragraph.

16 **MR. HICKMAN:** Yes. As mentioned in the Day
17 One hearing we did do inspections on portions of the
18 tunnels, the tunnels are designed and constructed to allow
19 a troth of mussels. The inspections were done in 2006 and
20 2009 and we focused on the -- the first -- I'll say --
21 100-odd feet of the tunnels where they go vertically from
22 the seafloor down towards essentially an elbow before they
23 come in towards the land.

24 And at that time the divers were able to do
25 the inspection, they were to find enough of the -- I'll

1 say -- visible concrete that they could do the inspection
2 on the tunnels, on those sections.

3 **MEMBER BARRIAULT:** So what I'm hearing is
4 that they can do the inspections?

5 **MR. HICKMAN:** They were able to do the
6 inspections at that time in 2006 and 2009, yes.

7 **MEMBER BARRIAULT:** Okay ---

8 **MR. HICKMAN:** And no issues were
9 identified.

10 **MEMBER BARRIAULT:** Will they be done before
11 the restart or?

12 **MR. HICKMAN:** There's no intention to do an
13 additional inspection before restart ---

14 **MEMBER BARRIAULT:** Because there was no
15 issues?

16 **MR. HICKMAN:** Because there were no issues
17 and realistically, 2009 is not that long ago either.

18 **MEMBER BARRIAULT:** Okay, thank you.

19 Next question is -- go ahead.

20 **MR. THOMPSON:** Could ---

21 **MEMBER BARRIAULT:** You sure can.

22 **MR. THOMPSON:** Thank you.

23 These tunnels ---

24 **THE CHAIRMAN:** Can you identify yourself,
25 please?

1 **MR. THOMPSON:** David Thompson with the
2 Saint John Chapter.

3 I was very concerned about this
4 particularly because the age of those tunnels and the
5 tunnels are made through soft stone, stone that could be
6 damaged in an earthquake. And this lining of these
7 tunnels, this concrete lining, is very old now, it was put
8 in place before the plant was commissioned.

9 And we were told, in our meeting with NB
10 Power in this particular matter, that the only inspection
11 was a visual inspection with divers swimming through the
12 intake and outfall tunnels. There was no draining of the
13 tunnels or no physical examination, only just a visual
14 examination.

15 There was no sampling measuring of any kind
16 that we're aware of other than a visual examination, and
17 we feel that that's a very weak point in the future
18 operation of the plant.

19 I think it's a concern whether there were
20 mussels there or whether there were not mussels there --
21 it's just the condition of those intakes and outfalls,
22 they're very long and very large.

23 **MR. ROUSE:** Can I point out one more thing
24 too? The tunnels weren't included in the seismic margin
25 analysis, I don't believe.

1 **MEMBER BARRIAULT:** Could I ask CNSC staff
2 to comment on the tunnels -- the cooling system?

3 **MR. RZENTKOWSKI:** I would ask Andrei
4 Blahoianu to respond to this question.

5 **MR. BLAHOIANU:** So I think that this was
6 taken into account, but again I'm not a PSA specialist, so
7 I just read the report PSA and I think that was taken into
8 account, but I ask the licensee to -- I would ask New
9 Brunswick to confirm.

10 **MR. HICKMAN:** We'll address that question.
11 We'll have Mr. Thompson address that question.

12 **MEMBER BARRIAULT:** Thank you.

13 **MR. THOMPSON:** For the record, Paul
14 Thompson.

15 Yes, the fragility of the seismic -- of the
16 intake tunnels were considered, but its not a significant
17 aspect of the seismic story, because what you rely on is
18 what we refer to as our Group 2 systems, which does not
19 credit the raw service water and condensing cooling water
20 intakes and discharges.

21 So it's a separate seismically qualified
22 system that is in fact what we are using for the heat sink
23 purposes, for those seismic events.

24 In addition -- so that I think that's as it
25 relates to seismic. In addition the PSA as well looks at,

1 as an initiating event, the loss of cooling water system
2 as an event in itself as well, and that's why that's
3 explicitly included in the periodic safety -- or, sorry,
4 in the probabilistic safety analysis.

5 **MEMBER BARRIAULT:** Thank you.

6 I guess the next -- it's on the next page,
7 page 39, and it's concerning the electrical wiring I guess
8 of the cooling -- control room and the storage for the
9 spent fuel.

10 Maybe somebody would like to comment on
11 some of these issues. Actually, there are three issues.
12 One of them is the control room knobs, the lights and
13 whatever.

14 The next one deals with the trays being I
15 guess at full capacity and it's felt that the -- they
16 should be de-rated in terms of power capacity.

17 And the other one, really, is the secondary
18 control room, the emergency vent system.

19 So what they're saying is that the controls
20 and electrical wiring are -- at least they feel, don't
21 meet the codes.

22 **MR. EAGLES:** Rod Eagles, for the record.

23 **MEMBER BARRIAULT:** Page 39.

24 **MR. EAGLES:** As you mentioned, there are a
25 number of issues or questions here, and so I'll address

1 them and hopefully we'll get all of the items.

2 First off, just around age of machines and
3 human-machine interfaces, the plant -- as all nuclear
4 plants have -- and you know, we're quite proud of the
5 program that we have to ensure that all equipment remains
6 in good operating order.

7 The review of that equipment on a regular
8 basis by system engineers, called our system health
9 monitoring program, reviews maintenance data, reviews
10 orders that come in through defects and those kinds of
11 things, give us information about where, perhaps in
12 future, we may need to look at additional upgrades and
13 those kinds of things.

14 It is those kinds of reports and
15 information from system health monitoring that help lead
16 us to -- through a more comprehensive condition assessment
17 to decide on what the scope of the refurbishment project
18 would be.

19 So, in this case, evaluations of plant
20 equipment and control panels gave us confidence that those
21 were in good order and that they would continue to operate
22 successfully.

23 There is a note here on human performance,
24 and, you know, some discussion of that happened earlier,
25 and I think it's good here to identify that a change for

1 change sake is not necessarily beneficial to the plant.

2 Our operations teams undergo extensive
3 training in their workforce -- in their work areas, and to
4 make a change would introduce the opportunity for human
5 error because of that chance and because of the new
6 systems they would have to become familiar with.

7 In the course of the work that we did, we
8 focused very hard on making all of the new control systems
9 look and feel very similar to the control systems that
10 they were very used in order to minimize the human error
11 potential. And that has been incorporated in all of the
12 training that has been done for those new systems.

13 To address the issue of cable trays and an
14 observation that's been made by the intervenor, is in fact
15 correct. We do need to take into account the loading of
16 cable trays and the de-rating of cables to compensate for
17 heating of those cables when they're in service, and in
18 fact that is exactly the design standard that's used when
19 we make designs and when we designed the plant initially.

20 In the case of the environmental closure on
21 panels, these particular panels that were being discussed
22 were not required to be environmentally qualified, and so
23 they operated in an area that didn't have the kinds of
24 risks that would normally be associated with an area that
25 required environmental qualification.

1 So I think that addresses the three
2 questions that you had.

3 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.

4 **THE CHAIRMAN:** Dr. McDill?

5 **MEMBER MCDILL:** One more question with
6 respect to page 41, which is just a couple pages over.

7 I think we talked about this in Day One, or
8 maybe a previous hearing, the tritium releases. I wonder
9 if I could just get New Brunswick Power to go over that
10 again.

11 **MR. KENNEDY:** Yes, I would direct that
12 question to Charles Hickman.

13 **MR. HICKMAN:** Charles Hickman, for the
14 record.

15 The item on page 41 covers two different
16 aspects of tritium releases.

17 The first section of that paragraph is in
18 relation to the emissions to receiving environment from
19 our liquid and gaseous effluent monitoring systems.

20 The higher number that appear in 2007 and
21 2008 -- they are reported in the annual report as well --
22 they reflect the preparatory work that was being done for
23 the outage.

24 So when we were planning for the outage, we
25 took one of our prime heat transport resin tanks, we

1 cleaned it, essentially made it ready to receive part of
2 our prime heat transport system. So when we did that work
3 on the resin tank that would have led to some increases at
4 that time.

5 Subsequently, when we actually started the
6 outage, we drained down the moderator into a series of
7 tanks. We flushed that moderator system. That indeed
8 would have caused those increases in both carbon-14
9 emissions and tritium emissions from the liquid streams.

10 The second half of the paragraph the
11 interventions has in it is in relation to the waste-
12 management facility. And, yes indeed, we did discuss
13 those in the Day One and at previous meetings as well,
14 where the presence of the heat transport system filters
15 from the early days of operation, which were not correctly
16 dried or adequately dried in the early days, would have
17 been off-gassing over time, and we picked up those
18 resultant emissions, if you would like, or the resultant
19 tritium numbers in the partial flume, which is a
20 completely separate monitoring system associated with the
21 waste management facility and stand-alone systems that we
22 monitor on a regular basis. And those numbers -- none of
23 those numbers either for the professional work, for the
24 outage or from the waste management facility, none of
25 those numbers are close to any actual limits or any

1 registered limits and no cause for concern.

2 **MEMBER McDILL:** Thank you. Perhaps I could
3 ask if the intervenor is a little more comfortable now
4 with those numbers.

5 **MR. RZENTKOWSKI:** (Off microphone).

6 **MEMBER McDILL:** You'll have to use the
7 microphone.

8 **MR. ROUSE:** I wasn't the sole author of
9 that part.

10 **MEMBER McDILL:** Okay. Thank you.

11 **THE CHAIRMAN:** Dr. Barriault, go ahead.

12 **MEMBER BARRIAULT:** Just one more brief
13 question. Again, on page 41, the intervenor comments
14 about the number of non-lost time injuries. Could we ask
15 the CNSC staff to comment on this? They're wondering if
16 it's a concern to the CNSC staff and what is being done to
17 correct the number of non-lost time injuries.

18 Top of the page, page 41.

19 **MR. RZENTKOWSKI:** Before I answer this
20 question, I would like to provide an answer to the
21 previous question posed for the CNSC staff, the question
22 which we didn't answer properly. This was on the raw
23 service water tunnels. And the question was if those
24 tunnels are included in probabilistic safety analysis.

25 **MEMBER BARRIAULT:** Yes.

1 **MR. RZENTKOWSKI:** The question is yes --
2 the answer is yes, the analysis considers the raw service
3 water.

4 **MR. ROUSE:** The seismic margin analysis --
5 sorry, not the PSAs.

6 **MR. RZENTKOWSKI:** Yes, this was my
7 question. It's actually, strictly speaking, is the PSA
8 based seismic margin assessment because seismic assessment
9 is done based on probabilistic considerations.

10 **MEMBER BARRIAULT:** Thank you. And now for
11 the other question.

12 **MR. RZENTKOWSKI:** Now, coming back to your
13 last question, I would like Kathleen Heppell-Masys to
14 answer this question. She is present in the room.

15 **MEMBER BARRIAULT:** Thank you.

16 Do you want me to repeat the question?

17 **MR. RZENTKOWSKI:** It appears that we cannot
18 find the owner for this question. If the Commission
19 doesn't mind, we will respond to this question tomorrow
20 morning.

21 **MEMBER BARRIAULT:** Okay. Thank you.

22 Could I ask NB power to comment?

23 **MR. KENNEDY:** Yes, I would ask the Station
24 Director, Wade Parker to answer that question.

25 **MEMBER BARRIAULT:** Thank you.

1 **MR. PARKER:** For the record, Wade Parker.

2 Just a very brief set of numbers on our
3 safety record because I believe it's relevant to the
4 conversation. If we look at our numbers when we were going
5 through our refurbishment project, which is a significant
6 sized project for the Province of New Brunswick.

7 We have 15.7 million person/hours in on
8 this project to date. Our lost-time injury frequency,
9 national average is 1.8, the province is 1.3, and for the
10 project, we are at 0.14, which is extremely low compared
11 to the averages.

12 So what does that mean? If I understand
13 your question correctly, the question is in regard to the
14 high number of near misses. Is that correct?

15 **MEMBER BARRIAULT:** Yes, that's correct but
16 (off microphone) the use of the -- metric industrial
17 safety accident rate as a performance indicator. So they
18 want you to compare it to the ---

19 **MR. PARKER:** So if I speak directly to the
20 high number of near misses, we, at the station, take pride
21 in the level of reporting that we have for very, very low
22 level events. So those numbers are significant. I'm not
23 certain if you are aware of the safety triangle. You have
24 low level reporting, which works its way up to the more
25 significant events.

1 So these numbers -- we take these numbers
2 seriously. Through our corrective action program, we trim
3 them, we look for trends that are developing and we work
4 these down and knock these down.

5 Now, the WANO numbers that are in question,
6 if we look at our WANO numbers over the years of -- the
7 last few years of operation, if we look at Lepreau versus
8 the CANDU versus the WANO averages, the numbers are not
9 significantly higher. They're in the range.

10 The CANDU mean for -- if I'm looking at my
11 numbers here correctly, the three-year average is a 0.28;
12 that's restricted work frequency. Sorry -- yes, that's
13 the CANDU mean. Our number is 0.34. So it's not
14 magnitudes of difference. So they're in the range.

15 **MR. ROUSE:** What three years are those?

16 **MR. PARKER:** My understanding is those are
17 the last three years.

18 **MEMBER BARRIAULT:** Does that answer your
19 question?

20 **THE CHAIRMAN:** Dr. Barriault?

21 **MEMBER BARRIAULT:** Good.

22 **THE CHAIRMAN:** Okay. Any other questions
23 because I want to give them the last word. We want to go
24 through our own.

25 **MEMBER BARRIAULT:** That's it, Mr. Chairman.

1 Thank you.

2 **THE CHAIRMAN:** Anything else?

3 Okay, I've got two quickies here. On page
4 37, can somebody explain to me the containment? There's a
5 reliability of containment in safety-related structure and
6 right under the box, the red box, it says:

7 "The containment does not pass a leak
8 test."

9 **(UNIDENTIFIED SPEAKER):** What page, sir?

10 **THE CHAIRMAN:** On page 37, on Intervenor
11 33. And while you're thinking about this, think about
12 something else here. On Raphael Shay, shay? He's
13 forecasting -- I don't know if forecasting or -- "a worst-
14 case scenario of 100 centimetres sea level rise by 2100."

15 One hundred (100) centimetres is one metre.
16 I want to know what would be the implication if sea level
17 went up by a metre and then hurricanes and storms and all
18 the rest of this stuff.

19 So who wants to go first? NB Power, go
20 ahead.

21 **MR. KENNEDY:** Yes, Mr. Eagles will address
22 that question.

23 **MR. EAGLES:** Rod Eagles, for the record.

24 In reading the intervention, it suggests
25 that if the containment leakage is not passing the leak-

1 rate test that there may be some structural problems. We
2 have conducted our structural assessment of the reactor
3 building and are confident in the reactor building and the
4 containment structure's integrity. There is to be
5 performed at the end of our refurbishment and on a routine
6 basis a reactor building leak-rate test, which you know
7 confirms that the containment itself is adequate to meet
8 the technical specifications and standards that are
9 necessary.

10 That test not only tests the containment
11 structure itself, it also tests the liner on the inside of
12 the containment building. It tests the equipment that
13 passes through the containment boundary and all the
14 associated equipment there.

15 And so I don't think it would be fair to
16 characterize it to say that if the containment leak test
17 did not pass it, there was a problem with the containment
18 structure. I don't think that would be an accurate
19 description.

20 There are many factors that go into summing
21 to the total leak rate from containment and there is a
22 defined value for that, and so when we conduct the test we
23 evaluate all aspects of the test to determine where
24 there's maybe opportunities to improve performance.

25 **THE CHAIRMAN:** Is there -- parameters, are

1 there regulatory requirements that specify how tight this
2 thing is and how do you pass the test or not?

3 **MR. EAGLES:** Yes, there is. This
4 containment vessel, the reactor building containment
5 vessel is a pressure boundary registered in the Province
6 of New Brunswick and there is regulatory criteria as to
7 the leak rate -- the maximum possible leak rate in that
8 vessel.

9 **THE CHAIRMAN:** So you obviously would
10 expect to pass that if you ---

11 **MR. EAGLES:** We would expect to pass that
12 test.

13 **MR. ROUSE:** Do you have to pass it to put
14 fuel back in?

15 **MR. EAGLES:** That may be a -- Rod Eagles,
16 for the record. That may be a question for CNSC staff.

17 **THE CHAIRMAN:** Staff?

18 **MR. RZENTKOWSKI:** Yes, for the time being,
19 we are relying on the test which was conducted in 2004 and
20 confirmed a leak rate of .5 percent which is the
21 operational target.

22 However, in the safety analysis, five
23 percent is being credited so there is a very significant
24 safety margin imbedded in that.

25 But, in any event, this leak rate test will

1 have to be repeated shortly. And this time we have our
2 specialist online in Ottawa, who is James Mok, and he will
3 say more about the schedule of upcoming tests.

4 **THE CHAIRMAN:** Ottawa, go ---

5 **MR. MOK:** Yes, James Mok, for the record.

6 The leak rate we measure from the 2004 with
7 the building pressure test was 0.497 percent volume per
8 day, which is within and slightly below the operational
9 acceptance criteria of five percent volume day. Hence the
10 leakage rate test result from 2004 was acceptable.

11 However, in line with the defence in depth
12 concept and a conservative approach, the operational
13 accepted criteria of 0.5 percent volume per day chosen by
14 the licensee has a very significant effect on safety in
15 building. The design limit in the safety analysis was
16 five percent volume day. Hence there's a special safety
17 in the leakage rate measured in the 2004 test.

18 And all the tests performed by the licensee
19 has to be submitted to CNSC for review and acceptance and
20 staff have reviewed the result and found them acceptable.

21 Thank you.

22 **THE CHAIRMAN:** So I'm not sure I got the
23 answer so will they have to retest this again before
24 restart?

25 **MR. MOK:** Yes, there's a condition in the

1 licensee's condition handbook. The licensees have to
2 perform the leakage rate test before they remove TSS.

3 **THE CHAIRMAN:** Okay, thank you.

4 I'd like to move to the ---

5 **MR. ROUSE:** They have to do the test
6 though. It doesn't say that they have to pass.

7 **THE CHAIRMAN:** I assume there may be a
8 little loophole you just discovered. I assume if you do
9 the test, there's some ---

10 **MR. ROUSE:** There seems to be lots of other
11 loopholes so I just -- I'd like to have it nice and
12 clearly in the licence condition.

13 **THE CHAIRMAN:** Is the intervenor right?
14 Just do the test ---

15 **DR. RZENTKOWSKI:** No, the intervenor is not
16 right in this particular case because they have to meet
17 the standards and leak criteria are provided in the
18 standards so those criteria have to be met in order to
19 progress with refurbishment activities and restart.

20 **MR. ROUSE:** Thank you.

21 **THE CHAIRMAN:** Thank you.

22 **MR. ROUSE:** Could I make just one more
23 comment about the structural integrity and the pressure
24 and what Mr. Eagles said?

25 I didn't just come up with that out of my

1 head. That's a CNSC document that I got that from -- some
2 studies that were done -- it wasn't just something I came
3 up with; seems to be kind of thrown out there.

4 **THE CHAIRMAN:** Oh, no, no. We got it from
5 your red thing. It's a quote from CNSC staff. I got
6 that.

7 **MR. ROUSE:** It wasn't very well addressed.

8 **THE CHAIRMAN:** Okay, we've got to move on.
9 On just the last question is seawater going
10 up 100 centimetres. The depth -- what does that do to the
11 safety case for doomsday scenario?

12 **DR. RZENTKOWSKI:** The seawater going into
13 the reactor core?

14 **THE CHAIRMAN:** The whole seawater are
15 raised by 100 centimetre -- by a metre.

16 **DR. RZENTKOWSKI:** Karina Lange will respond
17 to this question.

18 Thank you.

19 **MS. LANGE:** Regarding the comments on
20 climate change, CNSC staff do recognize that an increase
21 in global temperature will cause sea levels to rise and
22 will also change the amount and pattern of precipitation,
23 other events, including changes in frequency and intensity
24 of extreme weather events, although the nature of these
25 regional changes is uncertain.

1 Specifically talking about the 100
2 centimetre increase, I'd like to just remind the
3 Commission in Day One we discussed the original flood
4 assessment that considered a combination of rare frequency
5 but severe events and that combination of events caused
6 the water level to rise up to 10 metres above mean sea
7 level and we compared that 10 metres to the average grade
8 of the station which was at 15 metres so we have that
9 five-metre buffer.

10 So the impacts of climate change are still
11 within the conservativeness and the margin of safety
12 associated with the original flood assessment and,
13 furthermore, in 2008 PL staff and CNSC reviewed more
14 recent storm data which would be associated with changes
15 in climate and measured tides and they were still within
16 those predicted maximum values.

17 Although there is no imminent risk to the
18 plant though from climate change, at this time, it is
19 prudent that we do re-assess the flood risk of Point
20 Lepreau and other sites under the new lessons learned from
21 Japan and, currently, CNSC staff are sharing knowledge and
22 best practices with leading technical authorities
23 including the IEA and very recently the U.S. NRC to
24 consider the latest studies on climate changes and how
25 these studies and research can be used in the

1 determination of design values for external events.

2 **THE CHAIRMAN:** Thank you.

3 Anything else? Last word, both of you
4 guys?

5 **MR. ROUSE:** I just want to speak from my
6 heart to everyone. I really think this is being pushed
7 through. The proper checks and balances are not in place.
8 These two technical assessments that were accepted by the
9 CNSC staff is unacceptable to New Brunswickers and there's
10 no reason to believe that there's not a bigger case of
11 this. I really believe that the *Nuclear Safety and*
12 *Control Act* has been broken in regards to our intervention
13 and this hasn't been a very pleasant experience.

14 **MS. MURPHY:** And thank you very much. I
15 would just like to say yet again that a full environmental
16 assessment would have cleared up an awful lot of this and
17 the fact that this plant has been a maintenance shutdown
18 when really even your staff has said it's practically a
19 fun, new plant, it's been rebuilt, and without these
20 assessments that would have really answered so many
21 questions and so many concerns. Without that being done,
22 it leaves us to really do assume that there's another
23 agenda.

24 Thank you.

25 **THE CHAIRMAN:** Thank you. Thank you very

1 much.

2 This is the end of today's agenda plan. I
3 am thinking since we are still awake maybe we should
4 continue with some written material from ---

5 **MR. LEBLANC:** Do you have your binder?

6 **THE CHAIRMAN:** No, I don't so do we want to
7 take a break and then ---

8 **MR. LEBLANC:** We said we'd finish around
9 six thirty.

10 **THE CHAIRMAN:** Yes.

11 **MR. LEBLANC:** It's already seven. We have
12 time tomorrow.

13 **THE CHAIRMAN:** Do you want to reconvene and
14 do -- yes, why don't you take a ---

15 **MR. LEBLANC:** Start at six tomorrow
16 morning?

17 **THE CHAIRMAN:** No, no, no. Why don't you
18 take 15 minutes and then we'll go through the written
19 material; okay? So we'll reconvene in -- at 7:00 o'clock.

20 Thank you.

21

22 --- Upon recessing at 6:45 p.m./

23 L'audience est suspendue à 18h45

24 --- Upon resuming at 7:08 p.m./

25 L'audience est reprise à 19h08

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MR. LEBLANC: Okay, please take your seats.
We're ready to resume.

THE CHAIRMAN: Okay, I understand that
staff has an update.

DR. RZENTKOWSKI: Yes, we would like to
provide an answer to the previous question on near misses.
In terms of occupational health and safety. Mr. Burton
Valpy, who is the site supervisor of the CNSC site office
here at Point Lepreau site will provide this answer.

MR. VALPY: Burton Valpy, Inspector.

I think to begin with we should put this in
context. Occupational health and safety is part of the
inspection program we execute at Point Lepreau. Most, if
not all, of our inspections have an occupational health
and safety component.

We've also been performing, for the
duration of the refurbishment joint inspections with Work
Safe New Brunswick and have seen very few problems of any
significance.

Bear in mind, for the duration of
refurbishment, Point Lepreau has been a construction site.
From a normal complement of 500, 600 people on-site during
the course of a week, we've been up to 2,500. As a
result, we've expected an increase in the rate of

1 injuries, as consistent with what you'd expect from an
2 increased workload and the nature of the work, which is
3 large amounts of welding, cutting, chopping.

4 We have been aware of these numbers as
5 they've passed through and have seen no reason to be
6 concerned. NB Power for the more serious accidents or
7 incidents has been very diligent about finding out what
8 happened and why, including having stand-downs with the
9 station, some of which we've attended to witness, to
10 review safety procedures with staff.

11 With respect to the large number of near
12 misses, be careful. New Brunswick Power is very diligent
13 about reporting things. In many cases they're overly
14 conservative in reporting things and that tends to inflate
15 numbers to levels that appear shocking at first glance but
16 are not that significant from an individual point of view
17 or even as a collective.

18 The important thing is if you look at the
19 way these numbers are structured, with a very small number
20 of lost time accidents, slightly larger work restricted --
21 restricted work injuries, and so on, down to near misses,
22 you get a pyramid that flows the way you would expect it
23 to.

24 And, finally, with respect to WANO
25 performance indicators, CNSC staff do not use the WANO

1 performance indicators for occupational health and safety.
2 We have our own, more sensitive for our purposes, that we
3 track, and the Commission Members may remember the
4 discussions for the annual report this year in August,
5 about the nature of that performance indicator and why we
6 use it.

7 **MEMBER BARRIAULT:** Thank you. Thank you so
8 much.

9 **THE CHAIRMAN:** Okay. Are you happy with
10 that answer, Dr. Barriault?

11 **MEMBER BARRIAULT:** Yes.

12 **THE CHAIRMAN:** Okay.

13 **MEMBER BARRIAULT:** It was for the record,
14 really, thank you.

15 **THE CHAIRMAN:** So we will now move to the
16 written submissions and we have a process here that the
17 Secretary of the Commission will identify the intervenors
18 and the CMD number, and the Commission Members will have
19 the opportunity to ask questions.

20 Marc?

21 **MR. LEBLANC:** The first submission is from
22 Mr. Timothy Curry, as outlined in CMD 11-H12.2.

23
24 **11-H12.2**

25 **Written submission from**

1 **Timothy L. Curry**

2

3 **MR. LEBLANC:** Are there any questions from
4 the Commission Members with regard to this submission?

5 **MEMBER MCDILL:** What is the current
6 projected number of employees at Lepreau after restart?

7 Maybe you could divide them into the
8 various skilled trades, engineers, that sort of thing.

9 **MR. KENNEDY:** For the record, my name is
10 Blair Kennedy.

11 After the refurbishment, we're looking in
12 the neighbourhood of -- the total, from somewhere between
13 -- around 700 -- between 720 and 750 employees at the
14 Point Lepreau generating station.

15 As far as the breakdown, I don't -- I
16 wouldn't have that right at this time, but I could provide
17 it.

18 **MEMBER MCDILL:** That's fine. It can come
19 tomorrow maybe. I think our youngest ever intervenor just
20 left.

21 **(LAUGHTER/RIRES)**

22 **THE CHAIRMAN:** Okay. Just a quick question
23 on this, it says here on the second page -- second
24 paragraph -- that you actually get broadly-based respect
25 and support from citizens of New Brunswick.

26 I have a question; did you have -- did you

1 do a survey of New Brunswick population with respect to
2 the power plant?

3 **MR. KENNEDY:** I would like to direct that
4 question to Kathleen Duguay, our Manager of Public
5 Affairs. She could answer that, if there is -- if they
6 have.

7 **MS. DUGUAY:** Kathleen Duguay, for the
8 record.

9 Thank you for your question. Actually, I
10 just received the results of the survey last night. It
11 does indicate that there's an increase of support from a
12 community interactions perspective, and that they see NB
13 Power as being more involved in communities and supporting
14 communication in open and transparent dialogue.

15 So that's the ---

16 **THE CHAIRMAN:** That's a recent survey?

17 **MS. DUGUAY:** I got my -- yes, it was done
18 on 600 participants in the Province of New Brunswick, from
19 the various age groups, and I just received the survey
20 results last night.

21 **THE CHAIRMAN:** And that's post-Fukushima it
22 was done?

23 **MS. DUGUAY:** That is correct. It was done
24 in the first two weeks of November.

25 **THE CHAIRMAN:** Are you planning to share it
26 with the public, post them? What do you plan to do with

1 it?

2 **MS. DUGUAY:** We usually share some of that
3 information.

4 **THE CHAIRMAN:** It will be very interesting,
5 interesting to see them.

6 **MS. DIGUAY:** Thank you.

7 **THE CHAIRMAN:** Okay, thank you.
8 Marc?

9 **MR. LEBLANC:** The next written submission
10 is from Saint John Energy, as outlined in CMD 11-H12.3.

11

12 **11-H12.3**

13 **Written submission from**

14 **Saint John Energy**

15

16 **MR. LEBLANC:** Any questions from the
17 Members with regard to this written submission?

18 **MEMBER BARRIAULT:** Just one brief question
19 to Point Lepreau.

20 Following the refurbishment, your
21 electrical output will be how much higher than what it was
22 previously?

23 This intervenor feels that you're a
24 sustainable and efficient provider.

25 **MR. EAGLES:** Rod Eagles, for the record.

26 There's two points to be made on that. The

1 station prior to the shutdown was slightly de-rated from
2 its maximum performance as a result of ageing issues,
3 which, you know, are addressed as part of the
4 refurbishment activity, so we'll be returning to 100
5 percent full power.

6 And in addition to that, the upgrade of the
7 low-pressure steam turbines will offer the opportunity for
8 us to generate an additional 25 megawatts of electricity.

9 Of course, without any additional steam
10 flow, no additional reactor power increase and reducing
11 greenhouse gas emissions from some other plant somewhere
12 else in the province.

13 So 705 megawatts gross, about 45 megawatts
14 of station service load.

15 **MEMBER BARRIAULT:** Thank you.

16 **THE CHAIRMAN:** Just to follow up on this,
17 how crucial is having a nuclear power plant to support the
18 alternative energy?

19 Because this is a base power, whereas the
20 other ones are intermittent kind of power supplies, so a
21 lot of people argue that you need nuclear to support wind
22 and solar. Is that correct?

23 I mean it's ---

24 **MR. KENNEDY:** Yes. Yes, for the record.

25 Point Lepreau, when it comes back on the
26 grid, as has been mentioned several times, will produce a

1 base load energy which is very important to the ratepayers
2 in the Province of New Brunswick.

3 We'll have from that in excess of 35
4 percent. I shall say CO₂ the emission-free energy coming
5 off the unit. That, combined with the output of our hydro
6 system, will put us in a stead where we'll have -- if you
7 put the hydro and the nuclear together, would give us some
8 kind of -- a 65 percent output, as we move forward. So
9 the nuclear unit does provide a base.

10 It is a bit difficult to follow the wind
11 around with the nuclear, but we have some other resources,
12 resources that we can follow the wind. We also have some
13 wind in New Brunswick.

14 So on a move-forward basis, Point Lepreau
15 will provide a lot of advantages from the point of view of
16 voiding other types of fuels that are more CO₂ emitting,
17 for example, oil, and a certain amount of coal will be
18 displaced, but that will provide some opportunities
19 perhaps to export some of the other resources that we
20 have.

21 **THE CHAIRMAN:** So even though you
22 refurbished this plant, it doesn't have the capability to
23 follow and fluctuate load, it's still a steady load. Is
24 that right?

25 **MR. KENNEDY:** It doesn't do it easily, but
26 it -- you know, when we're refueling there are some drop-

1 downs, but it's a pretty -- once we get it set, we like to
2 leave it really -- we like to leave it base load and keep
3 it pegged and we'll move other units that we have on the
4 system around.

5 We can follow -- we're following wind in
6 this province with some of our hydro even though it is
7 around a river.

8 **THE CHAIRMAN:** Okay, thank you.

9 Marc?

10 **MR. LEBLANC:** The next written submission
11 is from the Saint John Board of Trade, as outlined in
12 CMD 11-H12.4.

13
14 **11-H12.4**

15 **Written submission from**

16 **The Saint John Board of Trade**

17
18 **MR. LEBLANC:** Any questions from the
19 Commission Members with regard to this submission?

20 **THE CHAIRMAN:** Dr. Barriault?

21 **MEMBER BARRIAULT:** Just one brief question.

22 They raised three issues, and we've dealt
23 with some of them already. They feel it's good from an
24 economic perspective, and I'm wondering if you've done, I
25 guess, an impact analysis from an economic point of view

1 as to what it provides for the area and the community.

2 They also go on to say that it's good from
3 an environmental and energy supply perspective, but we
4 dealt with those already, so...

5 **MR. KENNEDY:** I don't know whether we ---

6 **MEMBER BARRIAULT:** Economic fallout, I
7 guess, is what they're asking.

8 **MR. KENNEDY:** Yes, okay. For the record,
9 I'll pass that to Charles Hickman. He may have some
10 results as we went into this refurbishment, then, with
11 respect to what that would do from an EIA point of view
12 when it was done.

13 **MR. HICKMAN:** Charles Hickman, for the
14 record.

15 Between 2000 and 2003 as part of the
16 environmental assessment that was conducted, which
17 included the future operations of the plant, we did look
18 at what the both immediate and indirect benefits to the
19 community and to the province were.

20 I can't pretend to remember the numbers,
21 but there was significant local benefits through direct
22 employment, significant indirect benefits, both through
23 taxation, through jobs, through maintenance work, outage
24 work as well.

25 There was also -- the study was interesting

1 in that it pointed out that the employees here at the
2 station are extremely active in their local communities,
3 in support groups and, as mentioned earlier, in supporting
4 schools as well.

5 And the study indicated that, you know, the
6 loss of those opportunities would be a significant impact
7 to New Brunswick.

8 So there was a study done. I can't quote
9 the numbers. We do actually have an information sheet on
10 socio-economic benefits in the plant that is part of our
11 website and is available through the information centre.

12 So a study was done as part of the
13 environmental assessment, was reviewed at that time.

14 **MEMBER BARRIAULT:** Thank you. Thank you,
15 Mr. Chairman.

16 **MR. LEBLANC:** The next written submission
17 is from the Centre for Nuclear Energy Research as outlined
18 in CMD 11-H12.5

19 Any questions from the Members with regard
20 to this submission?

21
22 **11-H12.5**

23 **Written submission from**

24 **The Centre for Nuclear Energy Research**

25

1 **THE CHAIRMAN:** Dr. McDill.

2 **MEMBER McDILL:** Thank you.

3 Perhaps New Brunswick Power can tell me a
4 little bit of what they have done, just a few examples.
5 They say they've been involved.

6 **MR. EAGLES:** This is Ron Eagles, for the
7 record.

8 It actually leads me back to a question
9 which I took an undertaking from earlier on, so it's good
10 timing.

11 The Centre for Nuclear Energy Research is
12 stationed at the University of New Brunswick and takes
13 advantage of a number of the skills of the university
14 staff and students that are there to undertake to do
15 research.

16 One of the areas that they have done a lot
17 of research in is in the area of feeder degradation and
18 feeder life management.

19 So as we were speaking earlier about that
20 particular area and whether research papers were
21 available, most of that work is funded in part by us, but
22 through the CANDU owners group and, as a result of that,
23 we don't have the ability to release that material, so I
24 did take an undertaking to find that because we don't
25 commercially own it.

1 Certainly, if an intervenor wanted to
2 review some of that material, we could make it available
3 to observe, you know, at our site.

4 Secondly, and more recently, the CNER has
5 been working with our human resources group to look at how
6 they could assist us in the training and development of a
7 new generation of nuclear employees and nuclear workers
8 and so a dialogue has been going on as to how the Centre
9 for Nuclear Energy Research, you know, at its location at
10 the University of New Brunswick could assist us in
11 staffing in the future.

12 So those are two areas, in particular, that
13 they've been working.

14 **MEMBER McDILL:** Is the Enterprise UNB
15 building a commercial, sort of, incubator facility? It's
16 sort of a little -- do you know?

17 It's odd to have contractors in a
18 university in that way; that's why I'm asking. It's just
19 a matter of curiosity. If you don't know, we'll leave it.
20 We'll let it go.

21 **MR. EAGLES:** Rod Eagles, for the record.

22 I'm not entirely sure what else is in the
23 Enterprise UNB building. It is on the campus of the
24 University of New Brunswick and the CNER has a leadership
25 team that's not employed directly by the university but by

1 the centre itself, which gets funding from many different
2 sources.

3 I'm sure that the university is part of
4 that funding source, as is the CANDU owners group. And a
5 number of the researchers that they have there are part of
6 research teams in the fields of study at the university.

7 **MR. LEBLANC:** The next submission is from
8 the Environmental Coalition of Prince Edward Island as
9 outlined in CMD 11-H12.9.

10 Any questions from the Members with respect
11 to the written submission?

12

13 **11-H12.9**

14 **Written submission from**

15 **The Environmental Coalition**

16 **Of Prince Edward Island**

17

18 **MEMBER BARRIAULT:** Thank you, Mr. Chairman.

19 I guess the first question, really, is to
20 CNSC staff. The intervenor comments on the amount of
21 tritium produced by the reactors and -- so the intervenor
22 comments on the release of tritium and their effect on
23 human health.

24 So can we have some comments from CNSC
25 staff on this issue?

1 **MR. RZENTKOWSKI:** I will direct this
2 question to Mike Rinker.

3 **MR. RINKER:** Mike Rinker, for the record.

4 I guess I'll provide some comments on
5 tritium levels in the environment and their releases and
6 some general context on tritium and health, and if you
7 need more information, we can refer to our staff in
8 Ottawa.

9 But tritium is important for the CANDU
10 nuclear fleet. I think exposures to members of the public
11 from nuclear substances, tritium probably represents about
12 80-plus percent of the dose they receive, so it's an
13 important consideration.

14 But there are no observed health effects
15 below 100 millisieverts per annum so we set in regulation
16 a level of one millisievert per annum, so, you know, a
17 factor of 100 safety.

18 And so tritium levels are well monitored
19 around the Point Lepreau facility. They're in the range
20 of 10 to 20 becquerels per litre close to the surface,
21 higher in groundwater at site, but still below the
22 drinking water objectives set by Health Canada.

23 So the consequence of people being exposed
24 to tritium through breathing air, eating food, drinking
25 water, results in about 0.001 millisieverts per annum, so

1 again, another factor of 1,000 below what's in regulation.

2 So the dose consequences of what is
3 released are extremely low and the effects on the
4 environment are non-existent.

5 **MEMBER BARRIAULT:** And do we have a program
6 to reduce the emissions in the nuclear plants?

7 **MR. RINKER:** Let me think of exactly what a
8 program is.

9 There certainly is for the protection of
10 people within the facility -- there's an ALARA program.
11 That's to keep doses to workers as low as reasonably
12 achievable.

13 In terms of releases to the environment, I
14 guess the thing about tritium is when you manage your
15 facility very well, you optimize your facility like you
16 would do under an ALARA program, you would -- you
17 subsequently reduce much less tritium.

18 So the releases to the environment are
19 controlled to that manner. There's action levels and
20 limits that are important, and Point Lepreau is very much
21 below those levels.

22 **MEMBER BARRIAULT:** Thank you.

23 Thank you Mr. Chairman.

24 **MR. LEBLANC:** The next written submission
25 is from J.D. Irving Limited as outlined in CMD 11-H12.11

1 Any questions from the Members with regard
2 to this submission?

3 **11-H12.11**

4 **Written submission from**

5 **J.D. Irving Limited**

6

7 **MEMBER BARRIAULT:** Just one brief question.

8 J.D. Irving comments that the Point Lepreau
9 generating station produces 25 to 30 percent of New
10 Brunswick electricity need.

11 And I guess the next question really is
12 that, during the shutdown period, how was this provided?
13 How did we make up the difference between what Point
14 Lepreau produces and what we need?

15 **MR. KENNEDY:** For the record, it's Blair
16 Kennedy.

17 During the shutdown, we have been providing
18 other energies from neighbouring utilities based on market
19 prices around us.

20 So we've been purchasing some energy from
21 our neighbours to fill in the void for Point Lepreau, some
22 four and a half terawatt hours.

23 So we've been enjoying the situation where
24 the market around us has been depressed, so it's gone to
25 contribute towards that, but also, we've been running our

1 units harder ourself. Like we're running Belledune full
2 out for in-province needs.

3 When Lepreau comes back that'll provide an
4 opportunity for us to perhaps export some Belledune if it
5 can go into the market because they'll have a base load of
6 700 to 660 megawatts.

7 So we've been fortunate enough to purchase
8 from our neighbours, either through New England or -- but
9 predominantly it's based on the market price around this,
10 so -- and running our units that we would -- some units
11 that we'd be exporting if the market allowed but we're
12 using to serve in-province load.

13 **MEMBER BARRIAULT:** Thank you.

14 Thank you, Mr. Chairman.

15 **THE CHAIRMAN:** On the third paragraph, it
16 claimed that since commercial operation began NB Power has
17 been able to displace the equivalent of approximately 162
18 million biofoils, averting the emission, on and on and on.

19 Maybe I'll open a parenthesis. I think
20 it's time for staff to do a little bit of research. Is
21 this thing net of -- I mean, is it a green technology or
22 is it not a green technology?

23 You heard the people making observation and
24 it's not. If you calculate all the emission that goes
25 into uranium production, fuel production, running the

1 operation and decommissioning, those are carbon emission
2 activities, so what is the net?

3 So I think it's time for staff to come up
4 with some sort of a position on this because I don't know
5 if this is true or not, and it's something that probably
6 requires you to have a proposed position on that.

7 And I think I've seen all kind of papers to
8 -- for and against. Some people arguing that it is green;
9 some people arguing that it's definitely not. Both cannot
10 be right; right?

11 So you guys want to shed some light on
12 this, it'll be great.

13 **MR. HICKMAN:** Charles Hickman, for the
14 record.

15 I won't make any judgments as to whether
16 it's green or otherwise. I feel that's an opinion that
17 most people will develop on their own.

18 I can tell you what the basis of these
19 numbers are, though. These are numbers I generated back
20 over number of years ago.

21 We look at the total number of gigawatt
22 hours generated from Point Lepreau and we assume that if
23 Point Lepreau was not available to the grid then we would
24 be producing it from other available plants. So we would
25 look at what the next plant would be that would be

1 dispatched to provide those giagawatt hours of energy.

2 And on that basis, these numbers are
3 basically run against our next available unit, which in
4 this case would have been the Coleson Cove generating
5 station. And so these are the savings on a year by year
6 basis, so it's just on a net basis. It's not on a gross
7 life cycle analysis, saying if it wasn't produced at Point
8 Lepreau it would have been produced at the Coleson Cove
9 generating station and these are the -- this is the delta
10 between those two numbers.

11 **THE CHAIRMAN:** But you heard today some
12 argue that if you bought it from Quebec, you would be just
13 the reverse because most of their electricity is hydro
14 generated, which is labelled as clean, green, even though,
15 even there, there's some -- in the building of a dam
16 there's some CO2 expenditure.

17 So people don't look at a full cycle of
18 those things, and so it depends on some the assumption
19 that one makes in this to try to get a feel for what is
20 the real number.

21 **MR. HICKMAN:** I agree entirely -- go ahead,
22 boss.

23 **MR. KENNEDY:** Those are all good points,
24 Mr. Chairman, and Mr. Hickman explained this very
25 accurately in the past, that's the way it's done and today

1 there was some other -- we read -- we heard some other
2 people so, you know, is it cradle to the grave and all
3 that stuff, so there are -- so I try to position myself
4 that it's CO2 emission free, anyway, from that point of
5 view, but there are some -- that's not net. But from
6 what's -- that's the issue, is it from cradle to the
7 grave.

8 **THE CHAIRMAN:** Thank you.

9 Marc?

10 **MR. LEBLANC:** The next written submission
11 is from Atlantic Nuclear Services Inc. as outlined in CMD
12 11-H12.13.

13
14 **11-H13.13**

15 **Written submission from**
16 **Atlantic Nuclear**
17 **Services Inc.**

18
19 **MR. LEBLANC:** Any questions from the
20 Commission Members on this submission?

21 **THE CHAIRMAN:** Dr. McDill?

22 **MEMBER McDILL:** Could I ask what this
23 intervenor contributed to the severe accident management
24 guidance program, in general terms?

25 **MR. KENNEDY:** I would direct that to the --

1 Paul Thompson, Manager of Nuclear Safety and Regulatory
2 Affairs.

3 **MR. THOMPSON:** Yes. For the record, Paul
4 Thompson.

5 There are a number of staff from Atlantic
6 Nuclear who have been involved in the development of the
7 application of the severe accident management guidelines.

8 For further details I'm going to pass that
9 to Mr. Charles Hickman.

10 **MR. HICKMAN:** Charles Hickman, for the
11 record.

12 The severe accident management guideline
13 project as I mentioned earlier has been an ongoing project
14 for several years. It was run through the COG, Canada
15 Owners' Group research activities.

16 So ANSL has provided both direct and
17 indirect support as we've been working through that
18 project.

19 Initially, we had staff in-house. They
20 actually then started working with ANSL and have continued
21 to provide the focus and the technical support to us as
22 they've developed the guidance documents that I referred
23 to earlier.

24 So they have been extremely instrumental
25 and key in terms of proceduralizing and providing

1 technical documentation for use by our planning staff and
2 operations staff in anticipation of or enabling us to
3 mitigate the effects of the severe accident.

4 So they've been very, very strong
5 supporters on a technical basis for that project.

6 **MEMBER McDILL:** And that includes training
7 of personnel, according to this.

8 How would this fit into the intervenor's
9 comments earlier today about human error?

10 **MR. HICKMAN:** If I can answer the first
11 part, yes, they've been -- sorry. Charles Hickman, for
12 the record.

13 They've been very instrumental in training
14 our personnel, our staff, and in that respect, the
15 expertise they bring to the table, part of the expertise
16 is they include previous operations staff, nuclear safety
17 staff, so people who are very familiar with, basically,
18 the behaviours required in an accident scenario and
19 accident response situation.

20 So they have been very much instrumental in
21 working with our training staff, with our simulator staff
22 to ensure that the people using the guidance documents
23 have the right behaviours, the right attitudes to work
24 forward through the guidance documents.

25 I don't know if Mr. Thompson wants to add

1 some details to that.

2 **MR. THOMPSON:** For the record, Paul
3 Thompson.

4 I agree with what Mr. Hickman said. There
5 was another point, though, that I did want to make with
6 regards to human error that we discussed earlier, and that
7 is the probabilistic safety assessment that we discussed
8 does, in fact, allow for a model for human error.

9 There's human reliability assessments that
10 are a part of that, and it looks at both errors of
11 omission and errors of commission.

12 So we recognize the potential for human
13 error. We have particular programs in place in terms of
14 human performance and human performance tools, recognizing
15 error likely situations, put necessary training on people,
16 both under normal operating conditions, but also under
17 accident conditions.

18 The uses of the simulators for training,
19 under high stress conditions, such as a response to severe
20 accidents was why in fact we have a very systematic
21 approach for severe accident management guidelines, but on
22 top of that, in terms of the probability and how it can
23 affect an accident, they've been modelled explicitly as
24 part of the detailed methodologies for that probabilistic
25 safety assessment.

1 **MEMBER McDILL:** Thank you, Mr. Chair.

2 **THE CHAIRMAN:** Thank you.

3 Marc?

4 **MR. LEBLANC:** The next written submission
5 is from the Atlantica Centre for Energy as outlined in CMD
6 11-H12.15.

7

8 **11-H12.15**

9 **Written submission from**
10 **Atlantica Centre for Energy**

11

12 **MR. LEBLANC:** Any questions from Members
13 with regard to this submission?

14 **THE CHAIRMAN:** Dr. Barriault?

15 **MEMBER BARRIAULT:** Just one brief question.
16 The intervenor goes on to -- just to
17 mention really, that we have a non-CO2 generating facility
18 such as hydro, wind and nuclear.

19 I guess it begs the question really, what
20 percentage of our power is produced by non-CO2 producing
21 as opposed to those, I guess, fossil fuel plants that we
22 have?

23 **MR. KENNEDY:** With Point Lepreau back in
24 service and the wind that we have and the run-of-river
25 that we have, it would be in the neighbourhood -- if

1 you're taking all those gigawatt hours, it would be 65
2 percent.

3 **MEMBER BARRIAULT:** Thank you.

4 That's sixty-five (65) percent ---

5 **MR. KENNEDY:** Sixty-five (65) percent of
6 the in-province requirements, to serve the in-province
7 load in New Brunswick. That meets the in-province load
8 and that would be requirements. It does not include
9 export ---

10 **MEMBER BARRIAULT:** No.

11 **MR. KENNEDY:** --- because there could be
12 opportunities for export on top of that.

13 **MEMBER BARRIAULT:** Okay, thank you.

14 **THE CHAIRMAN:** Just an observation to the
15 previous -- notice that are here, in this organization
16 consider nuclear to be also in the same category of non-
17 carbon emitting generating asset.

18 So again, we keep hearing two opposing
19 views about where it fits into the scheme of emitting or
20 non-emitting.

21 Okay, Marc?

22 **MR. LEBLANC:** The next submission is from
23 Candu Energy Inc., as outlined in CMD 11-H12.17.

24
25 **11-H12.17**

1 **Written submission from**
2 **Candu Energy Inc.**

3

4 **MR. LEBLANC:** Any questions from the
5 Members on this submission?

6 **THE CHAIRMAN:** Just an observation; given
7 the kind of observation about AECL, I think that Candu
8 here should -- probably should appear in person in front
9 of us and introduce themselves to us. But I'm sure they
10 will come in the future.

11 Thank you.

12 **MR. LEBLANC:** The next written submission
13 is from Ms. Marion Pack, as outlined in CMD 11-H12.19.

14

15 **11-H12.19**

16 **Written submission from**
17 **Ms. Marion Pack**

18

19 **MR. LEBLANC:** Any questions from the
20 Members?

21 **MEMBER MCDILL:** Thank you.

22 I realize I'm asking for a summary of a
23 huge thing in a very few words, but for this intervenor,
24 how much of the plant is new and how much of the plant is
25 old, as in antiquated?

1 I mean I don't mean antiquated but new and
2 old. The intervenor's word is "antiquated" but in this
3 redevelopment, position the plant for this intervenor so
4 that...

5 **MR. EAGLES:** Rod Eagles, for the record.

6 So I will also say not antiquated, and I
7 think I addressed part of that earlier in one of my
8 comments regarding, you know, equipment which has been in
9 the plant for some time, which does undergo the age
10 management program and systems health monitoring to ensure
11 that it is all operating as it should be to safely and
12 reliably operate the station.

13 What I would say is that the most critical
14 parts of the station have been refurbished. You know, the
15 key to that is the reactor core obviously and many of the
16 other related systems, including shutdown system computers
17 and additional trip coverage instrumentation.

18 Our turbines, we did undertake to do some
19 replacements, obviously, on the low pressure turbines and
20 rewound the generator, both stator and rotor, but other
21 portions of the turbine in fact have not been replaced.

22 And so difficult to put a number on that
23 but, you know, we've added a substantial amount to the
24 asset value and probably doubled the -- you know -- what
25 was sort of the asset value of the plant as it was before

1 we went into the refurbishment.

2 So to give some idea, probably half.

3 **MR. THOMPSON:** Paul Thompson, for the
4 record.

5 Perhaps I could just add to that as well,
6 that part of the process for life extension as is now
7 documented in Regulatory Document 360, is we performed a
8 detailed plant condition assessment of the entire station
9 to -- for those systems required for safety and production
10 to ensure that we had excellent confidence in terms of the
11 longevity of those systems, structures and components.

12 And it was out of that, that we determined
13 what needed to be either replaced or refurbished. That's
14 on top of the ongoing systems health monitoring that is in
15 place at a nuclear power plant to manage the aspects of
16 plant aging.

17 In addition, there were detailed -- as we
18 talked about before -- safety studies that were done
19 explicitly on the safety side to look at what additional
20 provisions would be made.

21 So I think that plus what was done, I
22 think, gives a pretty good picture about the fact that
23 it's got a pretty clean bill of health and a good ongoing
24 program to monitor health and aging going forward.

25 **MEMBER McDILL:** This is a very far away

1 intervenor, from Arizona, a long way away.

2 **THE CHAIRMAN:** Go ahead, Marc.

3 **MR. LEBLANC:** The next written submission
4 is from the Honourable Craig Leonard, Minister of Energy
5 and Minister responsible for NB Energy Efficiency and
6 Conservation Agency, as outlined in CMD 11-H12.21.

7

8 **11-H12.21**

9 **Written submission from**
10 **Hon. Craig Leonard, Minister of**
11 **Energy and Minister responsible**
12 **for NB Energy Efficiency and**
13 **Conservation Agency**

14

15 **MR. LEBLANC:** Any questions from the
16 Members?

17 **THE CHAIRMAN:** Dr. Barriault?

18 **MEMBER BARRIAULT:** Not so much a question
19 as a comment really.

20 We've heard discussion today about whether
21 New Brunswick should move away from nuclear and this
22 confirms the fact that the government, I guess, supports
23 the issue of revamping and starting up the plant again.

24 So just to clarify that point, I thought it
25 was interesting.

1 **THE CHAIRMAN:** As a supplement to this
2 observation, when they came up with their energy
3 blueprint, this is a -- this is a brand new government,
4 presumably they look at all options all the way from
5 stopping the refurbishment and going elsewhere. So that's
6 a new government that probably could have taken a fresh
7 look and make a decision, and they've decided to proceed.

8 Is that the way it -- did they address that
9 in the new energy policy that they issue? I didn't get a
10 chance to read it.

11 **MR. KENNEDY:** Yes. Yes, and for the
12 record, it's Blair Kennedy.

13 The energy blueprint has identified the
14 Point Lepreau Generating Station as being a key mix into
15 the future for the Province of New Brunswick.

16 **THE CHAIRMAN:** Thank you.

17 **MR. LEBLANC:** The next written submission
18 is from Ms. Edna Hoddinott, as outlined in CMD 11-H12.23.

19
20 **11-H12.23**

21 **Written submission from**

22 **Ms. Edna Hoddinott**

23
24 **MR. LEBLANC:** Any questions from the
25 Members?

1 **THE CHAIRMAN:** It's another supporting --
2 go ahead, Dr. Barriault.

3 **MEMBER BARRIAULT:** It's just a brief
4 comment really.

5 She goes on to mention -- we had a lot of
6 discussion about fire prevention today, and she goes on to
7 mention really how she -- or has appreciated the input of
8 Point Lepreau into their firefighting department.

9 So maybe NB Power would like to comment on
10 the relationship with the local fire departments?

11 **MR. PARKER:** For the record, Wade Parker.

12 The local fire department, the Musquash
13 Fire Department is only a few kilometres away from the
14 station. As a part of their response strategy that we
15 have for any fires that take place at the station, we have
16 an emergency response team that obviously is at the
17 station 24/7 to support all immediate concerns, issues;
18 fire, radiation, chemical, and first aid.

19 The first thing we do when the alarm goes
20 off for any of these events, you know, especially in
21 regards to fire is we start rolling fire trucks. Musquash
22 Fire Department being just outside the station gate for
23 all intents and purposes is the first station that
24 responds.

25 We have also -- the Saint John Fire

1 Department rolls at the same time.

2 So the interaction with our local fire hall
3 is -- also being a volunteer organization, we interact
4 with them regularly through our training, through having
5 them there at the site and working with us to make sure
6 that we have this area secured and addressed.

7 This is a real positive for that
8 interaction with the community and especially those on
9 that volunteer fire department.

10 **MEMBER BARRIAULT:** Thank you.

11 Thank you, Mr. Chairman.

12 **MR. LEBLANC:** The next written submission
13 is from Ms. Elva Waycott, as outlined in CMD 11-H12.24.

14

15 **11-H12.24**

16 **Written submission from**

17 **Ms. Elva Waycott**

18

19 **MR. LEBLANC:** Any questions from Members on
20 this submission?

21 **(NO RESPONSE/AUCUNE RÉPONSE)**

22 **MR. LEBLANC:** The next written submission
23 is from Mr. Gordon Dalzell, as outlined in CMD 11-H12.29.

24

25 **11-H12.29**

1 **Written submission from**

2 **Mr. Gordon Dalzell**

3

4 **MR. LEBLANC:** Any questions from the
5 Members on this written submission?

6 Dr. McDill?

7 **MEMBER McDILL:** First, to express sympathy
8 for him having lost everything after two hours of typing.

9 But I think the objection number one,
10 there's a comment about the one on 1,000 years earthquake,
11 which I think we addressed today with the one in 10,000.

12 I would like to ask about the hurricane
13 values that are dealt with and also the objection number
14 five on the positive void co-efficient. I think it needs
15 to be addressed. Thank you.

16 I think staff would be a good place to
17 start.

18 **MR. RZENTKOWSKI:** So I understand the first
19 question, it's about the hurricane winds, yes.

20 The station is qualified to hurricane winds
21 of category five, but beyond that is also an operating
22 procedure in place which requires the station to be
23 shutdown four hours before the predicted time of arrival
24 of a hurricane at the site.

25 So there is really like a double provision

1 built in into the safety of the plant, one's at the design
2 level, second in the operating level.

3 **MEMBER McDILL:** So if there's a predicted
4 hurricane it's shutdown -- the station is shutdown?

5 **MR. RZENTKOWSKI:** Four hours prior ---

6 **MEMBER McDILL:** Four hours prior.

7 **MR. RZENTKOWSKI:** --- to the anticipated
8 time, yes.

9 **MEMBER McDILL:** Thank you.

10 **THE CHAIRMAN:** Can I get a clarification?
11 It says the intervenor says Point Lepreau is only designed
12 for 108 kilometres per hour. I thought category five is
13 the highest -- the most -- what's the word I'm looking
14 for? The strongest hurricane you can get. And I thought
15 its way above 108.

16 **MR. RZENTKOWSKI:** I think it's about 175
17 kilometres per hour, if I am not mistaken. And this kind
18 of the assessment has been conducted here at the Point
19 Lepreau site, and ---

20 **THE CHAIRMAN:** So where does this 108 come
21 from?

22 **MR. RZENTKOWSKI:** I'm not quite sure.
23 Probably you would have to refer this question to Point
24 Lepreau staff.

25 **MR. KENNEDY:** Yes, if I may, I'll pass that

1 to Paul Thompson.

2 **MR. THOMPSON:** For the record, Paul
3 Thompson.

4 There's a number of aspects for severe
5 weather that have been taken account into the design and
6 then subsequent analysis. Not all of them are self-
7 consistent.

8 So the aspects of hurricanes have potential
9 for immediate wind damage. They have the potential for
10 precipitation over a period of time which could cause
11 localized surface flooding. And then there's the issue
12 related to the potential for storm surges, which I talked
13 about on Day One.

14 As far as the actual design -- original
15 design of the structures, they were built to the
16 appropriate codes, which is a relatively low level of the
17 108 which is where that number was coming from.

18 Dr. Rzentkowski is correct, though, in the
19 statement that we do have the emergency preparedness
20 procedure that looks at the potential for the approaching
21 storms. It takes a number of precautionary measures such
22 as securing -- doing the surveys of the station yard,
23 securing any loose material that may happen, et cetera,
24 and continuing to watch.

25 And depending upon the predicted wind

1 speeds and the probability, could lead in the extreme to
2 shutting down the station if those conditions are in fact
3 met and then the safety story is well versed.

4 In terms of the actual 108 in design, we
5 know that we've had winds locally that have exceeded that.
6 Those structures are significantly more robust in terms of
7 what is in fact the built in safety margins on those
8 structures.

9 The number of external pipes are limited
10 and relatively short length and well secured.

11 As I mentioned, there is the yard cleanup,
12 there is planned shutdown under the necessary conditions
13 if we believe that there's a high probability of
14 significant enough winds, and inspections would be done
15 before the plant would start up to verify that there
16 wouldn't be any external damage on those lines.

17 **THE CHAIRMAN:** Dr. McDill?

18 **MEMBER McDILL:** Maybe the simple thing to
19 do is just to go through these four, five, six -- start
20 there -- for tritium. Is there tritium in the fish, in
21 the fog? Maybe that should go to NB Power.

22 **MR. KENNEDY:** Yes, I will pass that to
23 Charles Hickman.

24 **MR. HICKMAN:** Charles Hickman, for the
25 record.

1 No, we do not have tritium in the fish or
2 the fog. I think the intervenor's comment comes from the
3 Day One discussion where we did discuss the tritium that
4 we're finding in the partial flume coming out of our waste
5 management facility, but the operation radiation
6 monitoring program, which monitors both fish, surface
7 waters and so on, is not showing any increased elevations
8 offsite, as staff indicated a few moments ago.

9 **MEMBER MCDILL:** And then the -- I think to
10 staff, the comment about positive void coefficient needs
11 to be addressed, unless you want to add something to fish
12 and fog.

13 **MR. RZENTKOWSKI:** Yeah, the positive void
14 coefficient is like a design CANDU feature and there is an
15 engineered safety system in place to prevent and mitigate
16 the consequences of a very fast void transient and
17 consequently a power transient.

18 Currently this issue is well researched by
19 the industry and I think, from the safety standpoint, we
20 have a good understanding on the path forward. But those
21 are only the enhancements to the existing design because
22 the margins are there and generally they are sufficient
23 margins in every single reactor to assure the safe
24 operation in the context of large LOCA and consequential
25 void activity transient.

1 Also this particular safety issue, how we
2 call it, has been addressed from the international
3 standpoint and during the last convention on nuclear
4 safety in Vienna has been internationally accepted as
5 closed, based on the commitment made. We currently
6 explore two paths towards resolution of the large LOCA
7 issue and void reactivity.

8 The first one is reclassification of this
9 event to beyond design basis accidents based on the
10 opening time for the large LOCA. By opening time I mean
11 the time, for the fracture of the piping.

12 And the second one is some stronger design
13 improvements like, for example, fuel redesign which is
14 being considered as well.

15 The resolution of this issue is expected to
16 be fully completed by the end of 2013.

17 That's the short update. The longer update
18 can be provided by Michel Couture if he's here in the
19 room.

20 **MR. COUTURE:** Well, I think Greg answered
21 most of the question. I would simply add that yes, it is
22 positive for the CANDU.

23 One thing that is often overlooked, the
24 fact that it is positive has been really the result of a
25 design decision by the earlier designers to go ahead with

1 an actual fuel -- actual uranium fuel -- combined with the
2 concept of separation of the coolant and the moderator.

3 As a result of that design decision the
4 cool and void reactivity coefficient is positive. And as
5 Greg mentioned, this has been known for a long time by the
6 designers and by the CNSC staff and various measures --
7 mitigation measures have been taken, including the two
8 effective -- two independent very fast acting shutdown
9 systems and some operational restrictions that have been
10 imposed.

11 For instance, following Chernobyl there has
12 been a restriction on the type of distortion and flux that
13 you can tolerate on a reactor -- in a CANDU reactor.

14 **THE CHAIRMAN:** But this intervention is
15 typical of what we continue to hear about the (a) it's a
16 design flaw, (b) it hasn't been fixed, and you keep
17 hearing this and (c) it's the same thing that happened in
18 Chernobyl.

19 So that's -- you know, listening to you I
20 hear a different story. So has it been -- okay, so you're
21 saying it wasn't a design flaw, it was designed at the
22 beginning to the combination of fuel and the parameters
23 here, everybody knew what they were doing. Is that what
24 you're saying?

25 **MR. COUTURE:** Well, yeah, that -- you're

1 right. I mean, that was the result of a decision, a
2 design decision. The difficulty would be a fact that it's
3 positive over the last 30 years it has been to determine
4 exactly its value, and with R&D there were more precise
5 numbers coming out and it tended to increase.

6 So what happens is that the net effect or
7 the fact that you coefficient was increasing in value it
8 ends up having a larger power increase when you do have a
9 large LOCA accident. But the -- all the analysis and the
10 supporting R&D tells us that the shutdown systems are
11 efficient at terminating the accident and meeting the
12 requirements -- the safety requirements.

13 **THE CHAIRMAN:** But isn't it true that
14 because it was designed to be positive, that's why you put
15 in two shutdown systems, which nobody ---

16 **MR. COUTURE:** Yes, and eventually that came
17 -- they come over the evolution, yes. The two independent
18 effective shutdown systems were a result of that as they -
19 --

20 **THE CHAIRMAN:** (Off microphone) ...so it was
21 fixed. I don't understand why people keep saying it's not
22 fixed.

23 **MR. COUTURE:** The thing that is not, like I
24 said is the value of the coefficient itself that has been
25 a subject of R&D.

1 One thing that compounds the difficulty, in
2 fact, its part of the analysis, is that originally, we
3 assumed and the industry assumed instantaneous break of a
4 large pipe. Why did they do that? It's because it was
5 simple to analyze.

6 So currently, the analysis framework
7 assumes instantaneous break of a large pipe. Of course,
8 what happens is that you have a certain power surge. If
9 your numbers and the coefficient increases, your surge
10 will be greater. So part of the problem was generated by
11 the method of analysis.

12 Currently, there is examination of looking
13 at more realistic breaks based on fracture mechanic
14 analysis and so on. And immediately, if you don't assume
15 instantaneous break, the margins increase significantly.

16 So right now, there is a lot of work being
17 done along those lines.

18 **THE CHAIRMAN:** Dr. McDill, you were on a
19 roll here.

20 **MEMBER McDILL:** Sorry, I think we need to
21 address the issue of U.S. plants having more stringent
22 limits on emissions.

23 (Off microphone)December 6th(off
24 microphone).

25 **MR. RINKER:** Mike Rinker for the record.

1 I'm not entirely certain about the context
2 of the statement. The CNSC does work on the concept of
3 having a regulatory limit of -- that would result in a
4 dose of 1 millisievert per annum. That's in regulation.

5 Through the regulatory framework, we also
6 use action levels, which are much lower to represent
7 operation of the facility and admin levels that the
8 Proponent would use to check to see if the facility is
9 operating appropriately.

10 In addition, there's a CSA standard that
11 has been revised in around 2008 for the calculations
12 behind derived release limits. The implementation of that
13 standard is based on new science, better models and more
14 realistic scenarios. The result for some facilities that
15 I've seen has meant that the derived release limit creeps
16 up a little bit and so that may be the context that
17 they're talking about that raising levels, whereas others
18 are not, but it's ---

19 **MEMBER McDILL:** My last point for this
20 intervenor is -- and he is not the only one who's made the
21 comment today about not feeling informed. I'm not sure
22 whether CNSC should have a "You Tube" channel or not, but
23 that may be helpful. Obviously, the newspaper is not
24 cutting it totally anymore.

25 Thank you, Mr. Chair.

1 **THE CHAIRMAN:** Anything else? Okay, Marc.

2 **MR. LEBLANC:** The next written submission
3 is from Ms. Ruth Stewart-Verger, as outlined in CMD 11-
4 H12.30. Any questions from the Members on this written
5 submission?

6

7 **11-H12.30**

8 **Written submission from**

9 **Ruth Stewart-Verger**

10

11 **MEMBER BARRIAULT:** Just a brief comment
12 really. The issues that she raises are some of the issues
13 we've raised, we've discussed just recently; severe
14 weather conditions, and how the facility is designed to
15 respond to severe weather conditions, and I think we've
16 hit that one.

17 And the next issue is the concern with the
18 emergency response -- preparedness. So just briefly, if
19 we can just address that and lessons learned from
20 Fukushima for emergency response. Those are the issues
21 she's raised, so just the last one, I guess, we could
22 briefly just touch on.

23 So can we ask NB Power to describe the
24 lessons learned from Fukushima for emergency response?

25 **MR. KENNEDY:** I would ask that Paul

1 Thompson address that issue from the point of view that
2 he's the Manager of Nuclear Safety and Regulatory Affairs.

3 **MR. THOMPSON:** Thank you. It's Paul
4 Thompson for the record.

5 We talked about -- there was a number of
6 reviews that were done as a result of the lessons in
7 Fukushima. One recognition of the importance of having a
8 systematic approach for addressing severe accidents and
9 that's what -- we were in the process of implementing the
10 Severe Accident Management Guides. So it was recognized
11 that it was important to complete that work and we're very
12 pleased, I think we noted earlier this morning, that we're
13 in the -- we've done a large number of drills and we are
14 in the final segment of those drills and both, we've had
15 CNSC staff observe them as well as our industry peers
16 observe the exercise that happened last week as well. So
17 that was a major piece.

18 Another one was looked at some of the
19 issues as to whether or not, in Japan, there were some
20 approvals that were required relating to onsite decisions
21 that required offsite authorities to make. And I want to
22 be very clear that all decisions that need to be done in
23 terms of managing the event at the site, onsite, are made
24 onsite. They do not require offsite approvals to make.

25 So we looked at what some of those

1 weaknesses are, made sure that we had those adequate
2 things in place.

3 We talked about looking at some of the
4 advancements and interactions with the Emergency Measures
5 Organization, looking at some of the upgrades that we
6 could be making in the communications and infrastructures
7 to better link up with the types of software that Mr.
8 MacGillivray was talking about this morning. And so we've
9 been doing some work to upgrade our IT structure to make
10 sure that we can link in very well with that and we talked
11 about this morning improving and moving over to an
12 improved incident command system, which we've done and
13 we're doing.

14 We had a number of discussions with
15 Emergency Measures Organization on logistics and ability
16 to get the necessary equipment in. Again, we probed that
17 this morning with regards to how fast can you get things
18 like oil in, et cetera, and how do you do that if the
19 roads are damaged, et cetera. So those types of
20 discussions happened as well.

21 We have been having some discussions with
22 our Canadian nuclear counterparts about whether or not
23 there are some additional merits in having a regional
24 emergency response centre that might house some of the
25 materials that are not so commonplace.

1 Obviously, commonplace materials, et
2 cetera, they are readily available within New Brunswick
3 and we get them here very fast. But looking at additional
4 very specific equipment, there might be some advantage for
5 all the Canadian CANDU industries having a regional
6 centre. And so we are exploring that.

7 So I think there have been a number of
8 important things that we've looked at from emergency
9 preparedness from Fukushima. We've identified those to
10 the CNSC. The CNSC Task Force also looks at some other
11 potential things that might be done and we're in the
12 process of looking at that task force to see what
13 additional things we might add on top of what we've
14 already looked at for emergency preparedness.

15 I hope that answers the question.

16 **MEMBER BARRIAULT:** Thank you. Thank you
17 very much, Mr. Chairman.

18 **MR. MacGILLIVRAY:** For the record, Ernest
19 MacGillivray.

20 I would just like to add a little bit that
21 maybe speaks more directly to the question that the
22 intervenor has.

23 You know, in terms of populated areas, in
24 the case of Lepreau, the nearest significant population
25 centre -- not that our smaller communities are not

1 significant, but the major population centre is St. John.
2 Greater St. John area is about 100,000. That's well
3 outside our planning basis.

4 So our planning basis traditionally has
5 been 20K and we just reviewed the criteria that that was
6 based on to familiarize ourselves for this hearing.

7 Twelve (12) K would be plenty based on all
8 of the planning assumptions that we have, including beyond
9 design-based radiation release. Nevertheless, decisions
10 were made 30 years ago to use a 20-kilometre zone for
11 reasons that weren't necessarily about the engineering but
12 about the practicality of how events might intersect with
13 local population and local communities.

14 So if we had an event that exceeded 20
15 kilometres, what would we do? Well, we've been
16 considering that in the post-Fukushima environment. We've
17 done a comprehensive risk assessment for Charlotte County
18 and we looked at not only the radiation threat, something
19 bigger than 20 kilometres, but we looked at a conjoined
20 threat and we looked at not only the radiation threat,
21 something bigger than 20 kilometres, but we looked at a
22 conjoined threat with a major hurricane, a Cat 3
23 hurricane. And we had one miss us by maybe 100
24 kilometres, so it's not an unreasonable planning basis.
25 And we've done a lot of work in that regard.

1 Another adjunct of that project is looking
2 at best practices for evacuation planning, including
3 software tools for that. We're evaluating a couple of
4 those tools now, and that's to give us the ability to,
5 very quickly, look at evacuation scenarios well beyond 20
6 kilometres, indeed, all of Charlotte County, at least in
7 those areas that would be at risk from a significant storm
8 surge.

9 So we're already sort of in that space
10 where I think the post-Fukushima recommendations would
11 like us to go, and I do think that we would be able to
12 have viable plans for dealing with larger evacuation areas
13 should they ever become necessary.

14 And if I may, just to add one more point,
15 we have good methods for contacting people in our planning
16 zone of 20 kilometres. If you have an event outside of
17 that, then you have to be able to find ways of connecting
18 and alerting those people, which is why we acquired the
19 Sentinel software suite, which has been deployed to all of
20 the municipalities in southern New Brunswick now, and it
21 includes a public warning system. This is the backup
22 system that I mentioned earlier for our primary system.

23 Municipalities with this system can even
24 offer self-subscription to their citizens to receive
25 alerts. So we are deploying the tools that would enable

1 us to deal with scenarios beyond 20 kilometres should they
2 occur.

3 **THE CHAIRMAN:** Just to add a question to
4 this, do you have an arrangement with the U.S.? You're
5 very close, obviously, to the U.S. -- to Maine and the
6 whole U.S. east coast.

7 So is there an arrangement for supporting
8 each other, cooperating with each other?

9 **MR. MacGILLIVRAY:** For the record, Ernest
10 MacGillivray.

11 Yes, sir, we do. In fact, we have an
12 international agreement, a federal agreement that enables
13 state-to-state, province-to-province mutual aid
14 arrangements. And we have such an arrangement, called the
15 International Emergency Management Group, which includes
16 all five New England -- sorry, all six New England states
17 and the five eastern Canadian provinces. And there's
18 actual business process around mutual aid across
19 jurisdictional boundaries.

20 And the Directors of that group meet twice
21 a year, face to face, and there's a lot of information
22 sharing. We learn from each other, and then, when we have
23 bad days, we help each other out.

24 So we do have the relationships and the
25 arrangements to do that.

1 **THE CHAIRMAN:** Thank you.

2 Anybody else? Okay. Marc?

3 **MR. LEBLANC:** So this concludes the list of
4 written submissions. It also concludes the proceedings
5 for today.

6 We will resume tomorrow morning at 8:30,
7 and with the eight remaining oral interventions. That
8 will be followed by rounds of questions, if any, from the
9 Commission Members towards completing the hearing tomorrow
10 afternoon.

11 Thank you very much.

12

13 --- Upon adjourning at 8:13 p.m.

14 L'audience est ajournée à 20h13

15

16