

Canadian Nuclear  
Safety Commission

Commission canadienne de  
sûreté nucléaire

Public hearing

Audience publique

January 26<sup>th</sup>, 2017

Le 26 janvier 2017

Public Hearing Room  
14<sup>th</sup> floor  
280 Slater Street  
Ottawa, Ontario

Salle des audiences publiques  
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Mr. Marc Leblanc

M. Marc Leblanc

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Ottawa, Ontario / Ottawa (Ontario)

--- Upon commencing on Thursday, January 26, 2017  
at 9:06 a.m. / L'audience débute le jeudi  
26 janvier 2017 à 9 h 06

### **Opening Remarks**

**M. LEBLANC** : Bonjour, Mesdames et Messieurs. Good morning. Welcome to the public hearing of the Canadian Nuclear Safety Commission.

During today's business, we have simultaneous interpretation.

Des appareils pour l'interprétation sont disponibles à la réception. La version française est au poste 2 and the English version is on channel 1.

We would ask that you please keep the pace of your speech relatively slow so that the interpreters have a chance to keep up.

I would also like to note that this proceeding is being video webcast live and that the proceeding is also archived on our website for a three-month period after the close of the hearing.

Les transcriptions seront disponibles sur le site Web de la Commission dès la semaine prochaine.

To make the transcripts as meaningful as

possible, we would ask everyone to identify themselves before speaking.

As a courtesy to others in the room, please silence your cell phones and other electronic devices.

Monsieur Binder, président et premier dirigeant de la CCSN, va présider cette audience publique.

Mr. President.

**LE PRÉSIDENT** : Merci, Marc.

Good morning and welcome. It says good afternoon here.

--- Laughter / Rires

**LE PRÉSIDENT** : Mon nom est Michael Binder, je suis le président de la Commission canadienne de sûreté nucléaire.

Je souhaite la bienvenue aux gens ici présents. Welcome to all of you who are joining us through the webcast or participating by teleconference.

I would like to begin by introducing the Members of the Commission.

On my right, Monsieur Dan Tolgyesi; on my left, Dr. Sandy McEwan and Ms Rumina Velshi.

We have heard from our Secretary, Marc Leblanc, and we also have with us here Ms Lisa Thiele, Senior General Counsel to the Commission.

**CMD 17-H1.A**

**Adoption of Agenda**

**THE PRESIDENT:** I would now like to call for the adoption of the agenda by the Commission Members, as outlined in Commission Member Document 17-H1.A.

For the record, the agenda is adopted.

The hearing today is to consider the application by New Brunswick Power Corporation for a five-year renewal of its Nuclear Power Reactor Operating Licence for the Point Lepreau Nuclear Generating Station.

**MR. LEBLANC:** This is Part 1 of the public hearing. The Notice of Public Hearing and Participant Funding 2017-H-02 was published on September 9, 2016.

The submission from NB Power and the recommendations from CNSC staff were filed on December 28, 2016. I note that presentations have been filed by CNSC staff and NB Power.

Part 2 of the public hearing is scheduled for May 10 and 11, 2017, and will be held in Saint John, New Brunswick. The public is invited to participate either by oral presentation or written submission at the Part 2 hearing. March 27, 2017 is the deadline set for filing by intervenors.

Participant funding was available to intervenors to prepare for and participate in Part 2 of the hearing. The Funding Review Committee, independent of the Commission, reviewed the applications. Funding was provided to the 6 applicants. The PFP decision is available on the CNSC website.

All the documents presented today are available at the reception, either on CDs or in paper format.

Mr. President.

**THE PRESIDENT:** Thank you, Marc.

Before proceeding with the presentations, I would like to point out that we have some representatives here from Environment and Climate Change Canada and Natural Resources Canada and I will introduce them a bit later on during the question period.

So let me start with the presentations.

As I understand it, New Brunswick Power has 2 presentations to be presented sequentially. I would like to start by calling on the first presentation, as outlined in CMD 17-H2.1B, on the Probabilistic Safety Assessment.

I understand that Mr. Plummer will make the presentation. Over to you, sir.

**CMD 17-H2.1B**

**Oral presentation by NB Power**

**MR. PLUMMER:** Good morning. For the record, Brett Plummer, Chief Nuclear Officer and Vice President, Nuclear.

Mr. Chair, Members of the Commission, we do have two presentations. The first presentation is on our Probabilistic Safety Assessment and Seismic Evaluation and that will be presented by Derek Mullin.

**MR. MULLIN:** Good morning, Mr. Chair and Members of the Commission.

For the record, my name is Derek Mullin and I am the Superintendent of Safety Analysis at the Point Lepreau Nuclear Generating Station.

The purpose of my presentation is to provide information to the Commission regarding the updated Probabilistic Safety Assessment, our approach and results, including seismic evaluations.

Throughout this presentation you will hear the words "earthquake" and "seismic" used interchangeably.

Overall, the general steps to define the scope of a PSA is to perform the assessment in this slide, following these steps in general.

Ultimately, a PSA is about determining the

potential consequences of hazards to the plant, whether an internal hazard or an external hazard. As a result, the very first step is to systematically identify the internal hazards such as potential pressure boundary failure or loss of reactivity control that could occur and lead to adverse consequences.

At Point Lepreau this was done using a technique called a master logic diagram. That work is also supplemented by consideration of the potential for internal fires and internal flooding.

Next, it is necessary to identify all of the external hazards to which the plant may be susceptible or those that occur externally to the plant.

In following international guidelines, standards and Canadian regulatory requirements, a broad range of hazards were considered including, but not limited to, extreme precipitation, lightening, extreme temperatures, external flooding from a variety of sources, meteor strikes, and many others.

Armed with this information, we then applied screening criteria to disposition each potential external hazard to determine if any work warranted detailed consequence analysis using probabilistic safety assessment techniques.

The next step in a probabilistic safety

assessment is to identify the frequency of how often the internal and external hazards are likely to occur. We refer to these as initiating events, and can be related to specific systems rooms where combustibles might exist, postulated piping failures that could result in flooding or a loss of coolant, loss of reactor control, or the hazard curves defined for an earthquake.

Once the initiating events and the frequencies are determined, the behaviour of the plant is assessed through modelling to identify possible success and failure paths that may lead to a variety of plant damage states or external releases. Then those models are quantified to generate an outcome that is often referred to as a risk metric.

Finally, it is through the act of developing a PSA, through examining the sequence of events, performing important analysis and sensitivity analysis, and through examining potential combinations of failures that we gain insights into the areas that could benefit from safety enhancements.

If we then compare the risk metrics against quantitative safety objectives, more commonly referred to as safety goals, we can then judge how large the safety enhancement should be.

The first version of the Point Lepreau

probabilistic safety assessment was prepared in support of plant refurbishment and was scoped and started as part of the early engineering activities well before the plant start of the refurbishment outage in 2008. The probabilistic safety assessment was developed in accordance with accepted methodologies and met the requirements of Regulatory Standard S-294.

When it comes to assessing the potential for hazards that could affect Point Lepreau Generating Station and the potential consequences of those events, NB Power plies an all-hazard approach in the consideration of natural hazards and non-malevolent human-induced hazards. That is, we consider and examine all potential hazards to which a site may be susceptible following international standards and guidelines.

Consistent with our approach, seismic events were always included within the scope of the Point Lepreau probabilistic safety assessment. However, we also looked at all other potential hazards as I had mentioned, such as severe weather and external flooding, and subjected them to screening criteria. Once complete, the only events that required further detailed evaluation using PSA included internal events, internal fires, internal flooding, and seismic events.

The accepted methodology for assessing

seismic events was called a PSA-based seismic margin assessment, which provided the estimate of the seismic strength or capacity of the plant to withstand a very rare or very large earthquake.

The next three slides provide a high-level chronology of the major items completed during the PSA update. The current power reactor operating licence for Point Lepreau requires compliance with Regulatory Standard S-294, which requires a PSA update for Point Lepreau on a tri-annual basis. However, during plant refurbishment, the reactor contained no fuel and therefore NB Power did not consider the PSA to be in force and effect until the reactor was refuelled and the plant returned to full-power operation.

The subsequent PSA update was initiated in 2010, about two years before refurbishment was completed. In March 2011 the accident at Fukushima Daiichi occurred which prompted rapid industry response to review the safety of our plants.

The CNSC integrated Fukushima Action Plan also identified a need to re-evaluate external hazards, some using up-to-date experience/knowledge and state-of-the-art modelling and simulation techniques to ensure that we fully understand the hazards and take appropriate corrective action. Some of that corrective

action could involve additional detailed consequence analysis using probabilistic safety assessment.

In July of 2011 NB Power submitted the update to our internal events PSA in accordance with accepted methodology. The updated internal events PSA resulted in outcomes that were improved from that previously reported, which is good as it results in increased margins to safety objectives.

In October 2011 NB Power submitted the update to our internal flooding PSA in accordance with accepted methodology, and this update resulted in an increase to the internal flooding PSA outcomes, but they are still well within safety objectives.

In its decision for 2012 licence renewal the Commission directed NB Power to perform a seismic hazard assessment and to make the results public. NB Power had already begun this process in December of 2011.

Following consultation with experts, NB Power defined the scope of work to include a Paleoseismology Investigation. A Paleoseismology Investigation is fieldwork that looks for evidence of large earthquakes that may have occurred within the last 10,000 to 12,000 years. It cannot detect evidence of earthquakes prior to that time, because glaciers scoured the earth during the ice age and erased any evidence.

In addition, NB Power established an independent expert panel to review the methodology and the results of the seismic hazard assessment. To ensure that the public and CNSC staff were kept well informed of the progress of the work, the preliminary seismic assessment was submitted to the CNSC in December of 2012. A summary of the results were posted on the NB Power corporate website.

The assessment work was highly complex and took time to perform. However, in December 2014, and although not yet complete, the latest seismic hazard assessment was submitted and again the summary of the current results was posted to the NB Power corporate website.

During review of that work and in consideration of the latest evolution of seismic methodology since Fukushima, it was determined that the size of the earthquake for events rarer than the plant design basis were larger than we expected and could have downstream effects on safety assessments.

Therefore, NB Power decided to perform a full seismic probabilistic safety assessment, which differs from the PSA seismic margin assessment that we performed in support of refurbishment.

With a seismic PSA NB Power would be in a better position to fully understand all the implications of

a very rare, very large earthquake. Given the importance of this work, NB Power decided to delay the update to the PSA-based seismic margin assessment until the seismic PSA was completed. CNSC staff were notified of the change and approach with justification.

The final seismic hazard assessment was submitted to the CNSC in June 2015 along with state-of-the-art tsunami and high-wind hazard assessments.

In November of 2015 NB Power submitted the final internal fire PSA in accordance with accepted methodology. It was later than originally scheduled, primarily as a result of reducing the screening threshold for something called fire initiating events by an order of magnitude, which significantly increased the scope of work. In each instance that there was a delay in the committed schedule NB Power provided notice and justification for regulatory acceptance.

In December of 2015 NB Power submitted its formalized PSA program for regulatory acceptance. In addition, the gap assessment against regulatory document REGDOC-2.4.2 was also submitted to identify any future work that may be necessary to ensure full compliance with REGDOC-2.4.2 for the 2017 licence.

In June of 2016 the final portion of the seismic PSA was submitted for regulatory review and

acceptance, it is still undergoing such.

In July of 2016 an integrated PSA summary report was submitted for regulatory review and acceptance as well. As per accepted methodology, the integrated report examines the aggregated effect of all hazards and also performs the technical elements of importance analysis, uncertainty analysis, and sensitivity analysis as required by *S-294* and its successor *REGDOC-2.4.2*. This submitted version of the integrated report did not include consideration of the PSA-based seismic margin assessment as it was still in progress; however, the final submission of the margin assessment occurred in August of 2016, following which the integrated report was revised and resubmitted.

Although not a current licence requirement, in accordance with the guideline for public disclosure in *REGDOC-2.4.2*, a public PSA summary was posted in November of 2016 on the NB Power website to permit meaningful public engagement in the Point Lepreau licence renewal process.

To summarize at a high level, what has changed in our approach to PSA: updated state-of-the-art external hazard assessments have been performed to meet the requirement of the CNSC Integrated Fukushima Action Plan -- the magnitudes and likelihoods of these events have been assessed in the context of whether or not further detailed

probabilistic safety assessment is warranted for those events -- a more holistic and comprehensive review of potential combinations of external hazards has been performed -- this includes combinations that could be classified as coincidental, correlated, or consequential -- the frequencies of initiating events were recalculated using up-to-date experience data, and the methodologies for fire and flood PSA were refined to include additional scenarios for detailed analysis.

In terms of plant response analysis, the models were enhanced for some systems to include additional details, recommendations from the refurbishment PSA were implemented, models were adjusted to reflect details of modifications implemented during plan refurbishment, and the most recent experience data was included.

As I mentioned earlier, the overall scope of the PSA has also been enhanced through the addition of a seismic PSA that more fully analyses the potential consequences of a very rare, very large earthquake. The seismic PSA is not a requirement of the current power reactor operating licence in meeting regulatory standard S-294; however, it does position NB Power well for being in full compliance with regulatory document *REGDOC-2.4.2* for the upcoming 2017 licence.

The major steps for performing a seismic

PSA are shown on this slide. The key aspects include first performing a paleoseismic investigation to detect evidence of large earthquakes in the region. This work was performed by Dr. Martitia Tuttle, from Maine, who is one of the foremost experts in the world in this type of work.

The paleoseismic investigation did find evidence of large earthquakes having occurred in the past about 500 to 1,200 years ago, another event about 3,000 to 5,000 years ago, and an earthquake occurring about 11,000 to 13,000 years ago.

The preferred interpretation is that this evidence could have been caused by earthquakes with magnitudes in the range of 5.5 to 6.5 if produced by a local earthquake, magnitude 6.0 to 6.75 if produced by the Oak Bay Fault by Passamaquoddy Bay, or magnitude 6.5 to 7.0 if it was produced further away, such as an earthquake near the 1904 earthquake in Eastport, Maine.

The results of the paleoseismic investigation provides an input to the seismic hazard assessment which produces uniform hazard response spectra, which is an engineering representation of ground motions in the hard rock at some distance below the plant. That work underwent third-party review by our expert panel, which included Dr. Gail Atkinson, a Canada Research Chair on ground motions; ARES Corporation, for the preliminary work;

and Candu Energy, due to their seismic expertise and in-depth knowledge of plant design.

The next step in the process is to use the information from the seismic hazard assessment to determine if a site seismic response analysis is justified. Such an analysis would propagate the seismic vibrations upwards from the hard rock well below the plant and determine what the foundations of key safety-related structures would feel. Rizzo Associates, from the United States, was hired to perform this work due to their extensive experience and expertise in this area.

As a result of the type of hard rock well below the plant, the thickness of that rock, and the geophysical properties of the rock and soil layers up to the foundations of the plant, it was determined that a site seismic analysis was justified -- a site seismic response analysis, rather.

The site seismic response analysis has two main outputs. The first is a 10,000-year response spectra at the foundations of buildings, and we refer to that as a "foundation input response spectra." The second output is hazard curves at the foundation of buildings that can be used in the quantification process of the seismic PSA.

The seismic site response analysis work again underwent third-party expert review. This time it was

performed by Dr. Wei-Chau Xie, of the University of Waterloo.

In terms of seismic strength, given the large beyond-design-basis seismic demand from the hazard assessment, we decided that it would be beneficial to better understand how safety-related buildings would physically respond to a 10,000-year seismic event; therefore, we performed three-dimensional finite element analysis of each structure.

The results showed a general increase in the estimated seismic strength of our safety-related structures, the most notable being our service building, whose 5 per cent probability-of-failure value increased from 0.42 g to 0.98 g, which is a very robust building and represents roughly a 10,000 year earthquake magnitude -- sorry, pardon me, that would be a 100,000-year earthquake magnitude.

The next steps require estimating the seismic strength of equipment. This is done by, first, calculating the seismic response at each floor elevation where key equipment is located, and then performing fragility analysis. We require floor response spectra because as the seismic vibrations move upwards through a building, the response changes and they become amplified. This needs to be taken into account. The fragility analysis

tells us the likelihood of the equipment failing at various earthquake magnitudes.

Armed with this information, the seismic models are developed and quantified to estimate the frequencies of potential severe core damage and large radiological release from the plant. As mentioned earlier, we can then identify potential safety enhancements, and through comparison to safety goals determine how big those enhancements should be.

These latter pieces of work are currently undergoing an expert third-party review by Simpson Gumpertz & Heger Incorporated, a company with its office located in Newport Beach, California. This company has extensive knowledge in the areas of seismic walkdowns, systems engineering, seismic capability engineering, and seismic PSAs.

The third-party expert reviews performed to date for the hazard assessment and seismic response analysis provides us with a high degree of confidence in the work. We are also confident that the ongoing third-party review will demonstrate a high degree of quality in the rest of the seismic probabilistic safety assessment scope of work.

One of the key design features in a CANDU 6 nuclear power plant is the availability of water, either

light water or heavy water, that can act as a heat sink to cool the reactor and lower pressure in the reactor building if an unlikely accident were to occur following a seismic event. The systems and piping for cooling defuelled in a CANDU 6 reactor are seismically qualified to withstand earthquakes up to a certain magnitude.

From our site seismic response analysis we know that the peak ground acceleration for a beyond-design-basis earthquake, with a return period of 10,000 years, is 0.344 g, at the foundations of our safety-related buildings. Based on our seismic work, we know that each of these heat sinks are more robust than that earthquake level, even when considering amplification at higher elevations. This means that a 10,000-year earthquake is highly unlikely to affect our capability to mitigate an accident.

The key to protection of the public following any event, including a seismic event, is to ensure that these sources of water are maintained. To provide a flexible response in the event that normal power supplies or normal makeup water supplies are lost for any reason, Point Lepreau has procured portable diesel generators, portable diesel water pumps, and have installed connection points to ensure that we can successfully respond to a broad range of scenarios and events.

The seismic monitoring system at Point Lepreau Nuclear Generating Station is comprised of six tri-axial force-balance accelerometers that have been located in various areas of the plant to meet the requirements of Canadian Standard CSA N289.5.

One accelerometer is located outside, close to the condenser cooling water outfall, on a rock base similar to that on which the reactor building is located. It is 300 feet away from the reactor building to eliminate any possible soil structure interference and to ensure a free field measurement.

The remaining accelerometers are located at different elevations in different buildings, from the basement of the reactor building to a higher elevation in the boiler room, in the cable tray room, in the turbine hall, at a high elevation where vibrations would be amplified, and finally in the basement of the secondary control area.

All of the accelerometers are connected to a control and monitoring panel that is also located in the basement of the secondary control area.

The graphic on the left shows what the panel for the seismic monitoring system looks like. There are indicators for alarms, six recorders for each of the six accelerometers, and a computer. If an earthquake of

sufficient magnitude has occurred, the monitoring systems trigger alarms in the control rooms to alert operators. The information from the monitoring system is evaluated to determine if the design basis of the plant has been exceeded.

From a very high-level perspective, if the design basis for the plant was not exceeded, operational decision-making is necessary to determine if the plant operated as expected during and after the earthquake. If so, we will continue operating. However, based on the earthquake magnitude and the potential for limited damage, we will consider performing some limited walk-downs and inspections.

If the plant is not operating normally but has not tripped, operational decisions would need to be made to determine if a manual shutdown is warranted based on the severity of the abnormality.

If the design basis earthquake was exceeded, then the plant is shut down and cooled, with walk-downs and inspections being initiated to confirm that the plant is undamaged and safe to restart.

The quantitative values of probabilistic safety assessment safety goals are defined in terms of severe core damage frequency and large radiological release frequency and are represented here as one occurrence in so

many reactor years. These safety goals are aligned with international guidance at one occurrence in 10,000 years for severe core damage and one occurrence in 100,000 years for large release.

Safety goals are treated as targets at Point Lepreau and not limits, also in accordance with international guidelines and practice in other regulator jurisdictions.

The target column shown in the table is an administrative value to strive toward as a part of continuous improvement. These are defined at one order of magnitude less frequent than the safety goal, or the interval between them is one order of magnitude larger.

NB Power notes that the safety goal framework presented here differs somewhat from the CNSC staff's CMD, where the safety goals are represented as a safety limit. The overview PSA methodology referenced in the Point Lepreau Licence Condition Handbook is clear that the safety goals are defined as targets.

However, since we had the opportunity to make significant changes to the plant during the refurbishment outage based on first PSA results, in practice we had represented the safety goals as limits. However, with refurbishment well behind us, and as we move toward full compliance with REGDOC-2.4.2, NB Power is

aligning with international guidelines to treat safety goals as targets and not limits. This is now reflected as such in our procedures at Point Lepreau, and is the way it will be reflected in the future.

A separate target related to seismic capacity is provided for margin-type assessments that determine the strength of a nuclear power plant to withstand a 10,000-year earthquake. As a result, the target of 0.344g peak ground acceleration is determined directly from the seismic work that shows what the buildings will feel at their foundations as a result of a 10,000-year earthquake.

The term "HCLPF" on this slide stands for "high confidence, low probability of failure", and means that we have 95 percent confidence that at the stated peak ground acceleration the probability of failure is 5 percent or less. This is a very important point. HCLPF values do not mean that the structure or equipment will fail at that earthquake magnitude but rather the likelihood is 5 percent or less.

The actual failure threshold is somewhere higher but is not calculated since in analysis space we are more concerned about maintaining margins, so we use 5 percent.

No safety goal is applied for seismic

capacity going forward because the seismic PSA meets the requirements of REGDOC-2.4.2, and the margin-type assessment for Point Lepreau Generating Station is now considered an alternative approach.

This slide provides a comparison of the seismic PSA results and results of the updated PSA-based seismic margin assessment against the stated safety goals and targets respectively. In all cases, the safety goals and seismic capacity targets have been met.

In addition to the seismic PSA, and although an alternative approach, NB Power also updated its PSA-based seismic margin assessment to determine if there would be any change between the original 2008 version and now. The plant seismic capacity for earthquakes up to 10,000 years to prevent severe core damage increased slightly, while the plant's seismic capacity to prevent a large release decreased from 0.42g HCLPF to 0.35g HCLPF. This was due to a specific vulnerability that is limiting the overall plant seismic capacity value. Although the target has been met, as a part of continuous improvement to resolve low margin issues, all recommendations for enhancement from PSA have been entered into the station risk register to be tracked and followed up.

The exact path forward for safety enhancements will be determined through our engineering

decision-making process to ensure station alignment, and will be held soon. If the path forward can improve seismic capacity of the vulnerability subject to cost benefit, then the seismic capacity for a large release will increase to about 0.41g HCLPF.

The seismic PSA also meets the safety goals but does not limit the overall earthquake size during convolution to a 10,000-year earthquake magnitude. In accordance with accepted methodology, convolution was performed to a lower frequency range of the hazard curve where the seismic event leads directly to severe core damage. Using this approach, the seismic PSA for severe core damage meets not only the safety goal but also the target and constitutes a significant margin. The seismic PSA results of a large release meets the safety goal.

If we were to apply reasonable assumptions, take a best estimate approach in accordance with newly developed Canadian Standard CSA N290.16, and chose to limit the magnitude of earthquakes considered in the seismic PSA convolution to a return period of about 10,000 years, the predicted interval between severe core damage events and large release events increases by about an order of magnitude into the million year range; in other words, the frequency is reduced by an order of magnitude and significant margins to safety goals exist.

NB Power is actively engaged with the CANDU Owners Group in evaluating risk aggregation methods that take into consideration widely varying uncertainty distributions between hazard types and to take into account other concerns.

Although industry work has shown that aggregating risk through simple summation across all hazards is not necessarily appropriate, as an interim measure, until the industry work is complete, NB Power has produced an aggregate of all hazards through simple summation. In our opinion, this provides a very conservative aggregate. Even when presenting the conservative aggregated results in this manner, safety goals are met. However, it is noted that the seismic PSA for a large release contributes 90 percent to the overall plant PSA estimate. This is the result of considering earthquakes so extreme and improbable that they lead directly to severe consequences, that is, severe core damage with no mitigation and a subsequent release.

My apologies for this slide being so busy. It is not important what each individual bullet on the slide says but rather this information is provided in the context of a larger viewpoint. That viewpoint is that overall plant safety is determined by far more than a safety analysis such as probabilistic safety assessment.

In our opinion, the 14 safety and control areas that are represented by each box on the slide and have been established to evaluate overall nuclear power plant performance forms a solid basis for determining overall plant safety.

These 14 safety and control areas can be further broken down into a total of 73 specific areas for assessment, which are listed here.

The PSA, circled in green, is only one of those 73 areas and we must always remember the limitations in its capability, the objectives of PSA in supporting plant safety and how the PSA is intended to be used.

When considering all aspects pertaining to nuclear power plant design, operations, maintenance, safety assessments and other programs, Point Lepreau Nuclear Generating Station is a safe plant and is operated daily to the high standards.

For the record, the cost of performing the comprehensive Point Lepreau PSA is in the range of about \$25 million, not including enhancements to the plant stemming from the PSA.

NB Power maintains an active public information program regarding the operation of the Point Lepreau Nuclear Generating Station, including activities that could affect the environment or health and safety of

persons in its vicinity.

We also provide the opportunity for interested stakeholders to meet with NB Power and its subject matter experts to ask questions regarding the seismic file and our analyses.

In November, and in compliance with the guidance provided in regulatory document REGDOC-2.4.2, NB Power posted on its corporate website a summary of the PSA.

It is our opinion that the PSA summary provides sufficient detail to enable informed and meaningful public participation in the licence renewal process.

In carrying out its public disclosure protocols, NB Power has responded to requests for further detailed information and has met and continues to meet with various stakeholders regarding PSA, subject to consideration of the security sensitivity of that information.

In conclusion, Point Lepreau Nuclear Generating Station has completed a detailed and comprehensive Probabilistic Safety Assessment in accordance with accepted methodologies that examined all potential natural and human-induced non-malevolent hazards.

Considering that the seismic PSA is a dominant contributor to aggregated PSA outcomes, key

aspects of the seismic PSA have been or are being subjected to third party expert review by various individuals or companies, depending on their area of expertise.

Our analysis shows that the plant is strong and can be safely shut down and cooled if an earthquake occurs that is greater than our design basis.

Even when considering extreme earthquake scenarios that lead directly to severe core damage, safety goals for the plant are met.

Under our public disclosure protocols we have remained engaged with the public on the seismic file and PSA, and we feel that our work meets not only the requirements of Regulatory Standard S-294 but also meets the upcoming requirement of REGDOC-2.4.2 for the 2017 power reactor operating licence.

Overall, we are confident that the design of the Point Lepreau Nuclear Generating Station is strong and robust. When we consider the range of credible earthquake scenarios for which Point Lepreau can be subjected, there is little to no consequence to the public and the environment since we have confidence in our ability to maintain heat sinks to keep the public safe.

We are now planning for our next PSA update, as per REGDOC-2.4.2.

I would like to thank the Commission

Tribunal for providing the opportunity to provide additional information on the Point Lepreau Nuclear Generating Station PSA and more specifically our work to understand the hazards and consequences related to large and rare earthquakes that might occur in the region.

Thank you.

**THE PRESIDENT:** Thank you.

I'd like now to proceed to the second presentation from NB Power Corporation, as outlined in CMD 17-H2.1A, on the request for a five-year licence renewal.

I understand, Mr. Plummer, the floor is still yours.

**CMD 17-H2.1A**

**Oral presentation by NB Power**

**MR. PLUMMER:** Thank you, Mr. Chair. Brett Plummer, for the record.

Good morning, Mr. Chair and Members of the Commission.

For the record, my name is Brett Plummer. I am again the Chief Nuclear Officer and Vice President, Nuclear, at the Point Lepreau Nuclear Power Generating Station.

I am very pleased to be here today

supporting our application for renewal of the power reactor operating licence for our facility.

A little bit about myself. I have over 35 years in the nuclear commercial industry. I also have six years in the military nuclear operations. I've been certified on two different reactor designs. I have experience instituting nuclear power operation and I have diverse management experience in the nuclear industry.

I've been at Point Lepreau Nuclear Generating Station for just over one year.

I would like to take this opportunity to introduce the team with me here today.

This is Michael Hare, Station Director; Jason Nouwens, Director of Regulatory and Community Affairs and Performance Improvement; Kathleen Duguay, Manager of Community Affairs and Regulatory Disclosure Protocol; Rick Gauthier, who is the Manager of Regulatory Affairs; Charles Hickman, who is the Director of Environment and Emergency Planning; Glenn Round, Director of Engineering and Chief, Nuclear Engineer; as well as other members of our senior management team in the community.

We also have a telephone link to a support team on site.

The presentation will consist of an overview presented by myself. Michael Hare will present

the station operations slides, including navigating for excellence and safety. And Kathleen Duguay will then present the public and community engagement, followed by a summary and conclusion by myself.

We have more than 800 highly skilled and trained employees committed to public, employee and environmental safety. Safety is our number one priority.

Point Lepreau is a robust, single unit CANDU-6 built with redundancy and defence and depth. We've made improvements post-Fukushima. We've installed emergency mitigating equipment such as diesel driven water pumps and generators, the addition of electrical and water connections for critical equipment and systems, back-up water connections to the primary heat transport and moderating systems, and the installation of a watertight door at the personnel airlock to better manage water level in the reactor building post-accident.

Currently we have over 5.5 million person hours without a lost time accident.

NB Power was recently presented with the 2016 Canada's Best Health and Safety Culture Award, winning the top prize as Canada's safest employers.

Point Lepreau Nuclear Generating Station is operating at high power, providing approximately 660 megawatts of electricity to the New Brunswick grid,

approximately 30 per cent of the electricity needs of all of New Brunswick Power customers, in addition to providing significant socio-economic benefits to our province.

Point Lepreau has made significant improvements in our facility during this past licence period, such as: hiring a dedicated and trained emergency response team; fire protection upgrades; upgrades to our digital control computers which monitor and control plant parameters.

We also have plans and funding to continue investing in our plant to ensure we operate safely, predictably and reliably in this coming licence period.

A few examples of investments in our station are: equipment reliability improvement plan, which optimizes system health and ensures that we're working with the right equipment at the right intervals; a periodic safety review which will be performed this licence period in support of the 2022 licence renewal.

The 2017 and 2018 planned maintenance outage is scheduled to continue to improve the station's safety and reliability.

We have improved equipment reliability, as measured by Equipment Reliability Index, which is an internationally recognized performance measure.

We continue to meet regulatory

requirements and are committed to continuous performance improvement.

Our Corrective Action Program improvement illustrates that we are committed to continually analyse our performance and implement any corrective actions in a timely manner.

In the past 24 months we have accomplished the following.

We have significantly reduced the age of our open corrective actions and we have improved the Corrective Action Program Health Index.

We are requesting a five-year operating licence. We have submitted written material, as well as this oral presentation, and collectively this demonstrates how NB Power meets the requirements of the *Nuclear Safety and Control Act* and associated Regulations.

I will now turn to Michael Hare, our Station Director, to begin his portion of the presentation.

Michael...?

**MR. HARE:** Thank you, Brett.

Good morning, Mr. Chair and Members of the Commission.

For the record, my name is Michael Hare. I am the Station Director at the Point Lepreau Nuclear Generating Station.

I have worked at Point Lepreau for the last 26 years. I was initially certified in 2004 as a control room operator and then continued on to be certified as a shift supervisor in 2005.

I have a Bachelor of Science Degree in Mechanical Engineering and the above operations background that I just spoke to.

I spent the year 2013 in Atlanta to gain WANO, World Association of Nuclear Operators experience, and broaden my industry background by visiting many nuclear power plants in the U.S. as well as Canada and Eastern Europe.

I have been Station Director since July of 2015.

I would now like to speak to our station improvement plan called Navigating for Excellence.

This slide captures an overview of our mission, vision and goals for Point Lepreau.

It is a multi-year plan that visually depicts our commitment to performance continuing to be on a positive trajectory.

This organizational compass allows us to be one team, one plan, navigate towards our goal of becoming a top quartile plant. We have improved in the past two missions and industry has recognized our positive

performance. To maintain our progress, we continue to focus on fundamental improvements such as human performance and equipment reliability.

Nuclear safety is paramount to all of us at Point Lepreau. Central to this is the defence-in-depth concept where multiple, overlapping engineered, administrative and people-based barriers are in place to protect the public, environment, and our plant personnel.

Our engineered barriers have a robust design and our process and safety systems are highly reliable and well-maintained. What we learned from Fukushima is that even the strongest defence-in-depth systems can be enhanced. We took the key lessons learned from the event and incorporated changes to further enhance our nuclear safety at our station.

Of particular note, we have implemented emergency mitigating equipment, which is a mobile and flexible means of providing electrical power and cooling water to the reactor support systems as well as cooling water to the reactor core following a beyond-design-basis event or severe accident.

I am pleased to report that all items in the CNSC's Fukushima Action Plan have now been closed.

As you heard in the earlier presentation, the work we have done in probabilistic safety assessments

and seismic assessment has demonstrated that our plant is safe.

On the topic of radiation safety throughout the licence period NB Power is committed to radiation safety and keeping radiation doses as low as reasonably achievable, ALARA. The radiation protection and ALARA programs are supported by a dedicated team of professionals who through review of radiation work permits, field presence, and challenge meetings ensure that the work is planned and executed safely.

We have reduced the overall station dose and at the same time recognize that we will continue to make further enhancements to the program.

The picture on this slide illustrates that for the life of the station, over 30 years of operation, Point Lepreau has not exceeded the limits allowed to the public for one single year of operation. The total radiation dose to the public over that 30 years of operation is less than half of a single chest x-ray, as can be seen in a slide. Our public radiation dose, each year, continues to be less than 1 per cent of the regulatory limits.

The station has a comprehensive environmental management system certified to the ISO 14001 Standard. The environmental management system is linked

with other station processes to ensure all requirements are met. During this licence period studies were carried out by NB Power between 2014 and 2016 to assess the actual effects of impingement and entrainment on marine organisms in the Bay of Fundy. The studies validated previous predictions of negligible impact on the environment.

We've also completed an update to our environmental risk assessment and we also submitted the self-assessment required by the *Fisheries Act* to the CNSC staff for review.

Point Lepreau has a bird observatory on the shore of the Bay of Fundy under the Important Bird Areas Program. This is part of the Natural Legacy 2000 program which was a nation-wide initiative to conserve wildlife and habitats. NB Power has also been active in supporting the Monarch Butterfly Study.

We are proud of our safety record and work hard to maintain a safe work environment at Lepreau. Our conventional safety performance remains strong. As mentioned earlier, we recently achieved 5.5 million hours without a lost time accident. Although I'm pleased with that achievement, we will continue to focus on improving safety and demonstrate that nuclear safety, personal safety, and environmental safety are priorities that supersede all others.

Our shared commitment to safety is validated by the fact that we have full union and management support to safety, as outlined on the graphic on this slide. Our all-injury frequency rate has been steadily improving over the past several years and is currently at industry top quartile.

Our Joint Health and Safety Committee, which is comprised of management and unionized members are working together for a common goal of a safe workplace for all of our employees.

I am proud to say that in 2016 NB Power is the recipient of both Canada's Best Health and Safety Culture Award and Canada's Best Psychological Safety Award by the Canadian Occupational Safety Magazine.

NB Power was also named the 2016 Corporate Champion by the New Brunswick Mentor Apprenticeship Program. This award recognizes NB Power's effort at building strong workplace learning cultures, and becoming champions of mentorship in the construction trades.

NB Power is recognized for its dedication and on-the-job learning of its employees. Our training programs are used to develop and maintain competent personnel to safely operate, maintain, and improve plant and human performance. We have initiatives underway to address the nuclear industry's demographic challenges,

especially in the areas of recruitment and knowledge management.

To ensure our continuing supply of leaders a company-wide succession planning process is in place to identify and develop leadership talent. We have been continuing to improve training at Point Lepreau by using dynamic learning activities. This means that an activity or task being taught tries to replicate actual conditions encountered and tools required in the plant, and is also enhanced with role playing by other participants.

One example of that would be NB Power has developed a full-scale fuel-handling simulator to assist with fuelling training for all necessary staff. This is a first of the kind for CANDU-6 operations. The simulator provides real-time simulation of any at-power fuelling operations and provides a solid understanding of plant design and system interrelationships.

Our nuclear management system is our quality program and provides a framework that establishes the processes and programs required to ensure NB Power achieves its safety, objectives, continuously monitors its performance against those objectives and fosters a healthy safety culture. This system allows us to continually maintain and improve our operations by incorporating the following.

Internal review and oversight by our management review meetings and our nuclear oversight staff. External oversight is brought in through the Nuclear Safety Review Board and our corporate nuclear oversight team, and we participate in external benchmarking and industry peer reviews. We are compliant with CSA Standard N-286, management system requirements for nuclear facilities, and will be transitioning to the new version this licence period.

Internally, we have a well-established corrective action program that includes self-assessments, benchmarking, and independent audits. The Nuclear Management Manual is our top-tier document, as can be seen on the slide. The management system tier documentation approach allows us to logically arrange the documents in each process and the interconnections of each process are easily obtained to ensure quality in everything that we do. We continue to focus on process adherence as we strive for excellence.

Industry peer reviews are also regularly performed at our station and NB Power staff participate in peer reviews all over the world. We periodically evaluate our own safety culture to recognize positive attributes and to identify areas for further improvement. A station-wide assessment conducted at NB Power this year concluded that

there was a healthy nuclear safety culture and that nuclear safety is not compromised by production.

One of our roles is to continue this high level of industry-recognized performance while taking the opportunity to learn from others' best practices.

NB Power is committed to continually improving station performance. Adjustments have been made to NB Power's multi-year maintenance strategy at Point Lepreau with a concentrated focus on preventative maintenance and equipment reliability to ensure safe and reliable performance of the station in years ahead. This approach is consistent with the broader industry practice. The strategy includes the addition of a planned outage in 2017 and increasing the scope to the planned outage in 2018.

Point Lepreau currently meets regulatory requirements. Studies by the Geological Survey of Canada conclude that Point Lepreau is located in a region of low seismic activity, and the station is designed and constructed to withstand a severe seismic event.

Seismic events were considered in the original design, and we have dedicated equipment, systems and procedures for ensuring safe reactor shutdown and continued fuel cooling, as Derek has just gone over.

Whether it's an earthquake, high winds, or

a flood, our analysis shows Point Lepreau is safe. We've conducted a comprehensive safety analysis and it has shown the likelihood of a serious accident remains extremely low. Nonetheless, we will continue to invest to further improve the safety of the station through the implementation of emergency mitigating equipment and safety improvement opportunities.

These physical improvements to the plant have been incorporated into the probabilistic safety assessment. This assessment concludes that we meet international safety goals and, therefore, represent a very low public risk.

Point Lepreau has made significant investments in fire protection, over \$100 million of physical plant upgrades in this licence period alone, and currently meet all regulatory requirements. We have a dedicated 24/7 response team that supports the fire protection program, we also have mutual-aid agreements in place with the fire departments, Musquash and Saint John, to augment or on-site response.

The local volunteer firefighters are very familiar with our plant layout, plant fire hazards, and firefighting equipment locations. Station personnel facilitate this by partnering with the local fire department, building those relationships, and by

encouraging volunteers to become qualified as nuclear energy workers. The volunteer firefighters have site access privileges, act as drill evaluators, and participate in mutual-aid drills.

As mentioned in the previous slide, during this licence period NB Power has hired and trained a dedicated response team who provide 24/7 coverage for the station in all aspects of our operation. Station and corporate personnel have improved infrastructure, emergency procedures, and procured equipment to enhance the ability to respond to design and beyond-design-basis events.

The New Brunswick Emergency Measures Organization continues its practice to distribute potassium iodide pills to the community. This distribution has been a success in confirming that all residents have been visited.

Our biggest test to the emergency preparedness took place in November of 2015. We led the execution of Exercise Intrepid where more than 1,500 participants from over 30 federal, provincial, municipal government agencies and non-government agencies participated over the course of two days. This incorporated the evacuation of a number of volunteers from the local community, including their pets. This provided an opportunity for feedback from the volunteers as well as hands-on learning for them.

The results demonstrate that there are robust emergency plans in place at all levels to deal with a nuclear emergency. Further enhancements to these plans are being implemented as part of a lessons learned. The 2015 Exercise Intrepid video was shown at the Commission meeting in August of 2016, it is on the NB Power website for further viewing if required.

It's very important to us that we meet regulatory requirements. We continue to look for opportunities to improve our security at Point Lepreau Nuclear Generating Station. Some of the examples that we have done: the addition of a new non-employee centre for processing visitors that can also be used as a security emergency response centre; the ongoing continuous training with the Canadian Forces on site and at Base Gagetown in New Brunswick; the development of an incident command training course and partnership with the Royal Canadian Mounted Police and Canadian Nuclear Utilities.

Under safeguards and nuclear waste NB Power meets all international obligations for safeguards and is committed to the safe use of fissile material. All nuclear waste and used fuel from Point Lepreau is transported to the on-site solid radioactive waste management facility for storage.

NB Power is continually striving to

minimize the environmental impact. As an example, we are continuing to reduce the amount of nuclear waste that we produce by reducing our environmental footprint.

Thank you for your attention, this concludes my presentation. I will now turn it back over to Mr. Plummer.

**MR. PLUMMER:** Brett Plummer, for the record.

We support the community activities that improve lives, protect the environment, celebrate culture, encourage education, and build healthy communities in areas adjacent to the station. We recognize the importance of well-established relationships with all audiences and place special emphasis on our relationship with the Aboriginal peoples in the local community.

Safety is ingrained in our culture, part of the culture is to ensure strong engagement, partnership, and transparency with the community.

Now I'll turn the presentation over to Kathleen Duguay, Manager of Community Affairs, Regulatory Protocol, to elaborate on the extensive public engagement.

**MS DUGUAY:** Good morning. For the record, my name is Kathleen Duguay. I am the Manager of Community Affairs and Nuclear Regulatory Protocol.

Today my presentation will be done in

French and in English.

Aboriginal people in communities are very important to us at Point Lepreau. We're committed to maintaining and growing our relationship with them. We're placing a focus on those who have indicated an interest in our nuclear operations.

This is in alignment with our strategic approach to First Nation affairs. NB Power's First Nation Affairs team meets regularly with Aboriginal communities and organizations to engage on issues and interests and concerns, and to work towards mutual benefit. These relationships continue to mature and we are committed to further building trust and understanding with Aboriginal peoples. Corporately, we also work closely with organizations dedicated to identifying job opportunities for Aboriginals and then preparing and facilitating the translation to them.

Community involvement is also an important priority for NB Power. We continue to keep the public apprised of our station activities. the Community Relation Liaison Committee has continued to provide a forum for the local region to engage with the station. These meetings are important for discussing issues and concerns from the public as well as providing them with an opportunity for more detailed updates which can be shared with their

friends and neighbours.

We host public sessions, stakeholders' updates and major events. As well, we conduct one-on-one interviews and press conferences. NB Power continues to have very positive and supportive community support. We are seen as a good neighbour, we are champions of public safety, and there's an active outreach and engagement program in place. We have shown support through direct investment and sponsorship, and we are well-regarded in the community.

In addition, we continue to keep our local federal, provincial and municipal government representatives informed regarding our station operation activities.

NB Power maintains an active public information program regarding the operation of Lepreau. This program is designated to ensure that timely information about the operation and activities of the station is communicated in an open and transparent way.

Information that is available for public release is prepared and presented to address the need of our target audiences in the most effective manner possible.

I will now deliver the last part of my presentation in French.

Voici quelques exemples de nos outils

d'engagement.

Nous avons rétabli notre bulletin trimestriel, qui est la « Nouvelles de Point Lepreau », que j'ai ici aujourd'hui avec moi.

Nous préparons une brochure d'informations générales au sujet de la centrale qui va être distribuée aux membres de notre communauté, et cette brochure d'informations sera aussi disponible sur notre site Web.

Nous avons aussi distribué une copie de notre Guide d'urgence, qui fait partie d'un calendrier communautaire, à nos membres des collectivités des zones situées dans un rayon de 20 kilomètres, ce qui est aussi disponible sur notre site Web.

En réalité, notre protocole de divulgation est inclus dans notre programme d'information publique de la centrale. Ce programme est conforme avec le Guide de réglementation 99.3 qui est affiché sur notre site Web.

I will now return the presentation to Mr. Brett Plummer. Thank you.

**MR. PLUMMER:** Brett Plummer, for the record. Thank you, Kathleen.

We have several means of communicating and engaging with the station staff because our goal is one team, one plan. The following are examples of communication methods.

We have an open-door policy, several people take advantage of that, they can come talk to us anytime; all-hand sessions, frequently; leadership forums, bi-weekly; town hall meetings; Vice-President blog; good-to-know union open questions and answer process; station daily bulletin; and, navigating for excellence.

We continually strive to communicate and engage our staff. Senior management team, full support of station staff, take full responsibility and accountability for ensuring the station is operated safely.

Every employee plays their part to ensure our station operates safely and to the highest standards. We have amazing people, they take great pride in their work, which is evident in the operating results we have shared with you. They also understand the enormous responsibility they have to ensure we operate safely. To them, it's a very personal responsibility. They don't just work at the station, they and their families live and engage in the community that surrounds us.

Thanks to them, Point Lepreau has an excellent safety record. I thank you for letting me discuss it with you today. We are asking the CNSC to grant a five-year operating licence for our station.

This concludes our presentation. We welcome the opportunity to address any questions.

**THE PRESIDENT:** Thank you. We're going to take a 10-minute break here and come back for staff presentation. Thank you.

--- Upon recessing at 10:22 a.m. /

Suspension à 10 h 22

--- Upon resuming at 10:39 a.m. /

Reprise à 10 h 39

**THE PRESIDENT:** I'd like now to move to the presentation from CNSC staff as outlined in CMD 17H2.A.

I understand, Mr. Frappier, you'll make the presentation. Please proceed.

**CMD 76-H2.A**

**Oral presentation by CNSC Staff**

**MR. FRAPPIER:** Thank you.

Good morning, Mr. President, and Members of the Commission.

For the record, my name is Gerry Frappier, and I'm the Director General of the Directorate of Power Reactor Regulation at the CNSC.

With me today are Mr. Ben Poulet, the Director of Gentilly-2/Point Lepreau Regulatory Program

Division, and Mr. Lee Casterton, Senior Regulatory Program Officer in the same division. We also have the site office supervisor, Mr. Burton Valpy, as well as other CNSC inspectors and technical staff, available to answer any questions the Commission may have.

This CNSC staff presentation will discuss New Brunswick Power's application to renew its power reactor operating licence for the Point Lepreau Nuclear Generating Station to authorize continued operation.

The presentation today will highlight information found in CMD 17-H2 and will consist of the following areas: the purpose of the hearing; an overview of the Point Lepreau facility; the regulatory oversight conducted by CNSC staff; the performance assessment completed by the CNSC staff; and, other matters of regulatory interest.

We'll discuss the proposed licence and Licence Condition Handbook, which throughout this presentation we'll refer to as the LCH, and the CNSC staff conclusion and recommendations to the Commission.

First, I'd like to begin with a review of the purpose of this hearing. It's a two-part commission hearing, as mentioned by Mr. Marc Leblanc earlier.

The purpose of the commission hearing is to consider the licence renewal application for the Point

Lepreau power reactor operating licence submitted by New Brunswick Power in June of 2016. New Brunswick Power is requesting a five-year licence period to support the completion of a periodic safety review in accordance with recently published regulatory documents.

I will now pass the presentation over to Mr. Ben Poulet, who will provide an overview of the Point Lepreau station and the New Brunswick Power licence application.

**MR. POULET:** Thank you, Mr. Frappier.

Monsieur le président, Members of the Commission, my name is Ben Poulet and I am the Director of the Gentilly-2 in the Point Lepreau Regulatory Program Division.

I'll begin this part of the staff presentation with an overview of the Point Lepreau site.

The Point Lepreau site is owned and operated by the New Brunswick Power Corporation, a Canadian corporation whose head office is located in Fredericton, New Brunswick.

The Point Lepreau nuclear facilities are located on the Lepreau Peninsula, approximately 40 kilometres southwest of the city of Saint John.

The site is home to a nuclear electrical-generating station and a solid radioactive waste

management facility, which is designed to store the radioactive waste produced from the operation of the generating station.

The generating station consists of a single 705 megawatt CANDU reactor unit, which came into service in 1983.

The Point Lepreau reactor underwent a major refurbishment starting in 2008, and returned to commercial operation in November of 2012.

The current Point Lepreau power reactor operating licence expires on June 30, 2017.

CNSC staff notes the current licence covered the activities required to return the station to commercial operation following completion of the refurbishment in 2012. The current licence also covers the operation of the solid radioactive waste management facility and the activities associated with nuclear substances and prescribed equipment.

CNSC staff received the NB Power licence application on June 20, 2016. CNSC staff performed a technical assessment of the application and concluded it met CNSC licensing requirements.

In addition to the review of the licence application and supporting documents, CNSC staff also reviewed the NB Power safety performance over the current

licensing period, the applicability of new and updated CSA standards and CNSC regulatory documents, and the updated assessments, such as the ones pertaining to internal and external hazards that were completed during this licensing period.

Annex A of this presentation includes the CNSC regulatory documents and CSA standards NB Power had to either fully implement or provide dates for full implementation by July 1, 2017.

Annex B includes the CNSC regulatory documents and CSA standards for which NB Power had to conduct gap analyses in order to develop implementation plans. This process for implementation is reflective of modernization and improvement efforts being applied by all Canadian nuclear power plant licensees and considers the fact regulatory documents and standards are published on an ongoing basis and periodically updated.

We will now focus on the CNSC staff regulatory oversight of the current operations at Point Lepreau.

The CNSC has a clear and robust regulatory framework in place to ensure the continued safe operation of nuclear facilities.

Regulatory oversight is maintained to ensure licensees operate in a safe manner in compliance

with the requirements of the *Nuclear Safety and Control Act*, its regulations, as well as licence conditions.

Regular inspections and evaluations are conducted to verify licensees are complying with the laws, the regulations, and the licence conditions.

The CNSC compliance verification approach includes activities to promote compliance, to assess compliance, as well as graduated enforcement actions to address instances of non-compliance. As such, action items raised by CNSC staff may require licensees to implement corrective actions to address items of non-compliance.

Licensees are also required to notify the CNSC of situations or events defined in CNSC regulatory document REGDOC-3.1.1, and to submit routine performance reports on a quarterly or annual basis.

Compliance verification activities conducted by CNSC staff include inspections, event reviews, as well as other compliance activities such as station walk-downs and desktop reviews of NB Power reports and documentation. From 2012 to 2015, these activities amounted to over 10,000 person days of effort by CNSC staff. On the basis of these compliance verification activities, CNSC staff concludes NB Power continues to implement and maintain programs that meet CNSC regulatory requirements.

Overall, the CNSC staff compliance verification activities conducted from 2012 to 2016 did not identify any findings that pose a risk to human health and safety or the environment.

Inspections conducted by CNSC staff did however identify some areas for improvement in the NB Power programs. To address these findings, NB Power developed detailed corrective action plans with clear actions and timelines.

CNSC staff tracks the implementation of these corrective action plans through the CNSC regulatory information bank tool and conducts compliance verification activities to monitor and verify the completion of corrective actions undertaken by NB Power.

This presentation will discuss some of the CNSC staff inspection findings and corrective actions being implemented by NB Power.

NB Power notified the CNSC of all reportable events and submitted all performance reports in accordance with the CNSC reporting requirements.

CNSC staff reviews all event reports, as well as all compliance and safety performance reports, and keeps the Commission informed through a regular status of power reactor update reports and the annual regulatory oversight report for Canadian nuclear power plants. The

2016 regulatory oversight report will be presented to the Commission in August of this year.

We will now focus on the CNSC staff performance assessment of the current operations at Point Lepreau.

This slide presents the CNSC plant safety performance ratings for the Point Lepreau generating station.

As shown, Point Lepreau has received a satisfactory integrated plant rating each year from 2012 to 2015.

The performance ratings for 2016 will be available for part two of the Commission hearing currently scheduled to take place in May of this year.

During the current licensing period from 2012 to 2016, CNSC staff verified the following: no worker or member of the public received a dose in excess of the regulatory dose limits; and, all radiological releases were well below regulatory limits.

The NB Power programs are implemented and maintained in accordance with regulatory requirements, and NB Power continues to make safety enhancements and improvements to the station.

Overall, CNSC staff concludes NB Power has made adequate provisions for the protection of workers, the

public, and the environment.

The following slides will provide a summary as well as highlights from CNSC staff CMD 17-H2 of the 14 safety and control areas, called SCAs for short, as well as other matters of regulatory interest.

The information presented was determined by CNSC staff to be of particular interest to stakeholders, the public, and the Commission in regard to the NB Power licence application.

The management system covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives. The management system continuously monitors the performance of the organization against these established safety objectives while fostering a healthy safety culture.

NB Power had implemented a management system in accordance with CSA Standard N286-05. CNSC staff monitors the NB Power implementation of this program through the conduct of compliance verification activities.

Areas for improvement in the Nuclear Management Manual were addressed by NB Power in a timely manner, and regular updates are completed to reflect organizational priorities when appropriate.

NB Power also completed corrective actions related to contractor oversight that includes the overall

program. CNSC staff have confirmed, through ongoing compliance verification activities, the NB Power self-assessment and independent assessment processes continue to be implemented and maintained effectively.

To enhance its existing management system program, NB Power has committed to transitioning from the 2005 version of CSA Standard N286 to the 2012 version of the standard by December 29, 2017.

Human performance management covers activities that enable effective human performance through the development and implementation of processes that ensure a sufficient number of licensee personnel are available for all relevant shop areas and that they have the necessary knowledge, skills and abilities to safely carry out their duties.

Following refurbishment, there was an increase in the number of new employees at Point Lepreau. Training of this new staff became more important to ensure the continued safe operation of the facility.

During the current licensing period, NB Power instituted a training improvement plan, which included the following elements: the implementation of new processes for reviewing training effectiveness; revisions to and development of detailed work instructions in some areas; the implementation of new training processes; and,

the strengthening of already existing oversight committees and the establishment of new training oversight committees to improve the overall training program effectiveness.

NB Power has developed, implemented, and continually improved its systematic approach to a training-based program, simply called the SAT-based program, for all of its workers. The NB Power SAT-based training program meets the regulatory requirements specified in REGDOC-2.2.2.

A safety culture committee, comprised of managers and workers, was established in 2013 to review and assess the Point Lepreau safety culture. This committee positively impacted the safety culture at Point Lepreau.

CNSC staff notes NB Power was awarded two gold medals by the Canadian Occupational Safety magazine for the best health and safety culture in Canada for the year 2016.

The minimum shift complement is the minimum number of qualified workers who must be present at all times to ensure safe operation and maintain an adequate emergency response capability.

The minimum shift complement includes a shift supervisor and control room operator who are both certified by the CNSC, as well as power plant operators, maintainers, and an emergency response team or ERT for

short.

The addition of a dedicated ERT into the minimum shift complement was a significant positive improvement during the current licensing period. The ERT consists of a leader and eight members and provides Point Lepreau with additional emergency response capacity.

Operating performance includes programs that ensure the safety of workers, plant equipment, the public and the environment under both normal and abnormal conditions.

During the current licensing period, CNSC staff verified the Point Lepreau generating station and the solid radioactive waste management facility continued to be operated safely and in compliance with CNSC regulatory requirements.

NB Power maintains an effective operating experience program which gathers and disseminates operational experience collected from within Point Lepreau, as well as from other nuclear facilities. This operational experience information helps with the prevention of operational events and improves the overall safety performance.

NB Power also maintains a corrective action program which ensures any areas for improvement identified through either CNSC compliance verification

activities or other assessments are adequately addressed.

The safe operating envelope, or SOE, is a set of limits and conditions that can be monitored and controlled by the operator. The operation of the nuclear power plant must remain within these limits in order to ensure safety. The NB Power SOE program meets the requirement of CSA Standard N290.15.

A severe accident management program provides an additional layer of defence against the consequences of beyond design basis accidents, including severe accidents. NB Power also has severe accident management guidelines to ensure personnel involved in managing severe accidents have the information, instructions and strategies required to implement effective onsite actions.

During refurbishment, NB Power implemented a number of safety improvements, such as the installation of passive autocatalytic hydrogen recombiners, a dedicated emergency containment venting system, and post-accident sampling and monitoring equipment.

Following the Fukushima event, NB Power purchased additional emergency mitigating equipment, such as portable diesel generators, a portable diesel-driven pump, and a debris-removal vehicle, to improve its severe accident response capabilities.

REGDOC-2.3.2, version 2, concerning accident management, was published in 2015 in replacement of RD-310.

NB Power currently complies with RD-310, however it has committed to submitting an implementation plan for REGDOC-2.3.2 by September 30, 2017.

CNSC compliance verification activities conducted in several safety and control areas identified areas for improvement related to procedural adequacy and procedural adherence.

CNSC staff increased regulatory oversight in this area and issued two directives to NB Power to ensure every person at the Point Lepreau site complies with approved station instruction and departmental procedures at all times.

NB Power has made progress in addressing these directives through the completion of a root cause analysis and extent of condition assessment.

NB Power is currently updating its corrective action plans to reflect the results of the analysis and assessment. The corrective actions are captured in the proposed Licence Condition Handbook.

NB Power has put emphasis and measures in place to ensure safety is maintained while corrective actions are being implemented.

CNSC staff has reviewed these measures and concludes there is no immediate risk to the health and safety of persons or to the environment.

CNSC staff will continue to verify compensatory measures are effective and will continue to monitor the implementation of corrective actions by NB Power through ongoing compliance verification activities.

CNSC staff will provide the Commission with a progress update for this specific area in May 2017 during part two of this hearing.

Safety analysis covers the maintenance of the safety analysis, which supports the overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the operation of Point Lepreau, and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

During the current licensing period, NB Power completed a major project to demonstrate that the fire hazard assessment and fire safe shutdown analysis met the requirements of the CSA Fire Protection Standard N293-07.

Furthermore, CNSC staff verified that all improvements identified from the fire hazard assessment and

the fire safe shutdown analysis have been completed by NB Power.

NB power currently meets regulatory requirements for deterministic safety analysis and is enhancing its programs to the implementation of CNSC *REGDOC-2.4.1*. Full implementation is expected by July 1<sup>st</sup>, 2017. CNSC staff has also verified NB Power has a probabilistic safety assessment or PSA program, and the methodology used by NB Power in its updated PSA meets the requirements of *REGDOC-2.4.2*. CNSC staff concludes the NB Power safety analysis program meets regulatory requirements.

Probabilistic safety analysis is one of the methods used to assess the safety of a nuclear power plant. A PSA applies data to models to help identify potential vulnerabilities where improvements may be made to improve the overall safety of the plant. PSA can also provide decision-making support in areas relating to design and operation. In 2008, NB Power submitted a detailed and comprehensive PSA using CNSC *Regulatory Document S-294*, in accordance with its operating licence. NB Power submitted PSA updates in 2011 in accordance with the three-year update requirement of *Regulatory Document S-294*.

Although *REGDOC-2.4.2* superseded *S-294* in 2014, NB Power submitted further PSA updates after 2012 to

reflect the post-refurbishment status of Point Lepreau. These PSA updates considered the requirements of *REGDOC-2.4.2*, which was still in draft status at the time.

In accordance with the five-year update requirement of *REGDOC-2.4.2*, NB Power submitted updated PSA studies between 2015 and 2016, as outlined in CMD 17-H2. The results of the updated PSA studies are provided in the next slide. This table shows the level 1 and 2 PSA results from both 2008 and 2016, and confirms they both meet the safety goal limits. CNSC staff CMD 17-H2 provides detailed information about the values presented in this table, and their safety significance.

In accordance with international best practices, there are two acceptable ways to evaluate the plant response to seismic events: seismic PSA and PSA-based seismic margin assessment. NB Power completed both of these evaluations during the current licence period. In August of 2015, NB Power submitted its seismic PSA methodology. CNSC staff reviewed the methodology and concluded it was acceptable and met regulatory requirements.

NB Power completed a seismic PSA using this accepted methodology and submitted the level 1 and level 2 assessments in May and June of 2016 respectively. These assessments demonstrate safety limits are met.

NB Power also completed a PSA-based seismic margin assessment to evaluate the impact of seismic events on structures, systems and components. NB Power submitted its methodology in June 2016, and CNSC staff concluded it was acceptable and met regulatory requirements. NB Power completed its PSA-based seismic margin assessment using the accepted methodology and submitted the level 1 and level 2 assessments in June to September of 2016, respectively.

The results are compared to review-level earthquake, which is defined as "an earthquake with an equivalent return period of 10,000 years." The results indicate the Point Lepreau Generating Station meets the safety goal limits associated with a review-level earthquake.

Physical design relates to activities that impact on the abilities of structures, systems, and components to meet and maintain their design basis given new information arising over time and taking into account changes in the external environment. NB Power continues to implement and maintain design programs that meet CNSC regulatory requirements. NB Power also maintains an environmental qualification or EQ program that meets the requirement of *CSA Standard N290.13*.

Compliance verification activities

conducted by CNSC staff did, however, identify areas for improvements within the program. To address these areas for improvement, NB Power initiated the plant life extension project, and has demonstrated the plant EQ status can be maintained for the life of the plant. NB Power is also developing an EQ program health plan and report to reflect the overall health of the EQ program.

During the current licence period, NB Power implemented *CSA Standard N290.12-14, Human Factors and Design*, to ensure human factors are integrated into the design process.

The current NB Power safety report was submitted in December of 2012. CNSC staff reviewed and accepted the report in early 2014. In accordance with the current licence, NB Power is required to submit an updated safety report by the end of 2017. NB Power submitted and updated the safety report prior to that date, in June of 2016. This updated safety report is currently undergoing review by CNSC staff and takes into consideration the significant work and improvements completed in support of refurbishment, as well as improvements completed post-refurbishment.

The updated safety report indicates NB Power meets all CNSC requirements.

In its decision to renew the Point Lepreau

licence in 2012, the Commission required NB Power to complete a site-specific seismic hazard assessment. Additionally, NB Power is required to complete tsunami and high-wind assessment as part of the Fukushima action items. Other external hazards not covered by existing assessments related to intense rain and wind were also completed. These assessments were all submitted to the CNSC in 2015.

CNSC and Natural Resources Canada staff reviewed the seismic hazard assessment. In addition to CNSC and NRCan staff, Environment and Climate Change Canada staff also reviewed the tsunami and high-wind assessments. Based on the results of the reviews, CNSC staff is satisfied with the conclusions of the assessment. The hazard assessments confirmed Point Lepreau meets all requirements and safety can be maintained for these external hazards.

In June 2016, CNSC staff performed a follow-up compliance verification activity at Point Lepreau and determined that only two of the five 250-volt DC battery banks had been load-tested for the required duration of 40 minutes. CNSC staff amended an existing action item requiring NB Power to test all three remaining battery banks for the required load period during the next planned outage in 2018.

In response, NB Power indicated these

three banks would be tested for the full required duration during the 2018 planned outage. NB Power also indicated these three remaining original battery banks would be replaced in 2018 and in 2019.

CNSC staff is satisfied with the NB Power proposed actions as the 250-volt DC system has separate channelized buses capable of being supplied by more than one battery bank, thus providing redundancy.

The upgrade of control computers has continued since 2004 through the digital control computer life extension program. Currently, the main activity is the replacement of display generators. CNSC staff continues to monitor the replacement of display generator subsystems through the normal compliance program. Major component replacements of the control computers were completed in 2015.

CNSC staff determined both of these areas for improvement to be of low safety significance and not an impediment to licence renewal. CNSC staff will continue to monitor the implementation of the NB Power corrective actions through ongoing compliance verification activities.

Fitness for service covers activities that impact the physical condition of structures, systems and components to ensure they remain effective over time. During refurbishment from 2008 to 2012, NB Power replaced a

number of structures, systems and components, including new pressure tubes. NB Power continues to implement and maintain reliability, maintenance and periodic inspection programs that meet regulatory requirements.

As a result of ongoing CNSC compliance verification activities, areas for improvement have been identified, and are being addressed by NB Power, as discussed in the next slides.

The NB Power preventative maintenance completion ratio of 86 per cent was slightly above the average, however consistent with this average of 85 per cent. NB Power continues to improve in these areas and performance will continue to be reported annually to the Commission through the *Regulatory Oversight Report for Canadian Nuclear Power Plants*.

NB Power is also improving its cable aging program by expanding the scope of the program to not only include environmentally qualified cables, but also non-environmentally qualified cables. NB Power is also transitioning to the new CNSC aging management *REGDOC-2.6.3* and implementing an integrated aging management program and life cycle management plans to support this transition. Full implementation of *REGDOC-2.6.3* is expected by July 31<sup>st</sup>, 2017, in accordance with the milestones captured in the current *Licence Conditions Handbook*.

During the current licence period, CNSC staff conducted an inspection and desktop review of the power system health monitoring program. Areas for improvement were identified and CNSC staff requested NB Power develop a corrective action plan to integrate system health monitoring into other applicable processes.

CNSC and NB Power staff met in October of 2016 to ensure the closure criteria associated with these areas for improvement were sufficiently clear and fully understood. NB Power developed a corrective action plan and all required corrective actions will be completed through the implementation of the equipment reliability improvement plan. Completion of these improvements is expected by June of 2018.

CNSC staff has verified the proposed corrective actions and associated timelines are acceptable, and received a program update from NB Power earlier this month which confirms the corrective action plan is on track. Key activities, and the associated schedule for completion, will be reflected in the proposed *Licence Conditions Handbook*.

CNSC staff determined the areas for improvement to be of low safety significance and not an impediment to licence renewal as appropriate corrective actions have been identified and are being implemented.

CNSC staff will continue to monitor and verify the NB Power progress on completion of the necessary corrective actions through ongoing compliance verification activities.

During the current licensing period, NB Power had the following equipment problems that were resolved and area being monitored through ongoing regulatory oversight activities:

In April 2013, the emergency core cooling heat exchangers developed a leak from the non-radioactive recirculating cooling water side. NB Power performed maintenance on this plate-type heat exchanger and resolved the issue to the satisfaction of CNSC staff.

A declared level 1 impairment of containment required NB Power to shut down Point Lepreau. The impairment was declared following a routine test which could not confirm the leak tightness of a reactor building containment isolation valve. NB Power determined foreign material was interfering with the valve seal. The material was removed, the valve was tested successfully and the unit was returned to service. NB Power determined the foreign material was inadvertently left inside the valve following a previous maintenance activity.

Finally, NB Power deferred the inspection of shutdown cooling heat exchanger number two, which was originally planned for the refurbishment. CNSC staff

reviewed the basis for this deferral and concluded it did not have an adverse impact on safety. CNSC staff is maintaining regulatory oversight and tracking implementation of the NB Power integrated aging management program and life cycle management plans.

The equipment issues described above did not present a risk to the health and safety of persons or the environment as the safe operation of Point Lepreau was maintained at all times. CNSC staff informed the Commission of these issues through the regular status reports on power reactors presented during the appropriate Commission proceedings.

As part of continuous improvement, NB Power is transitioning to new versions of CSA standards related to periodic inspection programs. NB Power will conduct the necessary gap analyses and submit implementation plans in accordance with the dates presented in this table. The proposed *Licence Conditions Handbook* captures these dates and will be amended as appropriate to reflect CNSC expectations with regards to implementation.

CNSC staff notes the version dates shown on this table reflect the latest update or publication dates of these standards.

Radiation protection covers the implementation of a radiation protection program in

accordance with the *Radiation Protection Regulations*. Radiation exposures are monitored by NB Power to ensure compliance with the CNSC regulatory dose limits and with keeping radiation doses as low as reasonably achievable, or simply ALARA, for short. NB Power continues to implement and maintain an ALARA program which identifies strategies and processes to control dose and minimize exposure.

The NB Power program includes an ALARA committee and five-year ALARA plan. The ALARA committee provides oversight of the program by reviewing performance and approving proposed station dose targets and dose reduction plans. The five-year ALARA plan includes current and long-range dose reduction initiatives, and is reviewed by NB Power on an ongoing basis.

During the current licence period, CNSC staff observed improvements in the use of performance indicators. This included the expansion of performance indicators used by NB Power to monitor safety performance and standardization of these performance indicators with other Canadian nuclear power plants.

The NB Power radiation protection program monitors, controls and maintains radiation doses as low as reasonably achievable. As shown in this chart, radiation doses to nuclear energy workers are all well below regulatory limits, indicated by the red line at the top of

the chart. This chart also shows the average and maximum doses were slightly higher in 2011 during refurbishment due to the nature of the work activities at that time.

Radiation dose to the public is estimated from the ongoing monitoring conducted by NB Power and is verified by CNSC staff through the conduct of on-site compliance verification activities and the review of the annual report submitted by NB Power. As shown on this table, Point Lepreau environmental releases over the licence period have resulted in doses well below the regulatory limit of 1 millisievert per year to members of the public.

CNSC staff is satisfied NB Power continues to implement and maintain an effective radiation protection program at Point Lepreau. Radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable.

Conventional health and safety covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment. The NB Power program complies with the New Brunswick *Occupational Health and Safety Act*, and any associated provincial statutes, to minimize risk to health and safety of workers posed by conventional or non-radiological hazards in the workplace.

WorkSafe New Brunswick is the provincial authority mandated to oversee the Act within the province of New Brunswick. CNSC staff is in regular contact with WorkSafe New Brunswick staff and observes the inspections conducted in this area.

The accident severity rate, accident frequency and industrial safety accident rate are parameters reported by the Canadian Nuclear Power Plant licensees to measure the effectiveness of the conventional health and safety program with respect to worker safety. NB Power continues to perform well in comparison to the rest of the electrical sector and work practices and conditions continue to achieve a high degree of personal safety.

The NB Power conventional health and safety program meets all CNSC regulatory requirements and achieved "Fully Satisfactory" performance ratings for each year of the current licensing period.

I will now turn the presentation over to Mr. Lee Casterton, who will continue the performance assessment portion of this presentation, starting with environmental protection.

Thank you.

**MR. CASTERTON:** Thank you, Mr. Poulet.

Mr. President, members of the Commission,

my name is Lee Casterton. I am senior regulatory program officer with the Gentilly-2 and Point Lepreau Regulatory Program Division.

I will now continue with the remaining safety and control areas, beginning with environmental protection.

Environmental protection covers programs and processes that identify, control and monitor all releases of nuclear and hazardous substances and the effects on the environment in the Point Lepreau site. NB Power's environmental protection programs include effluent and emissions control monitoring, environmental monitoring, environmental risk assessment and an overarching environmental management system.

NB Power meets all regulatory requirements, including *REGDOC-2.9.1*, and the environmental management system is also certified as compliant with the ISO Standard 14001.

Derived release limits, known as DRLs, are required for the purpose of protecting members of the public from radionuclides released into the environment during the normal operation of Point Lepreau. DRLs have been developed by NB Power in accordance with *CSA Standard N288.1*. CNSC staff reviewed and accepted the DRLs, which are included in the proposed *LCH*.

NB Power has also proposed new environmental action levels for radionuclides released via airborne and waterborne pathways. Environmental action levels are precautionary levels set far below the actual DRLs. The proposed environmental action levels for Point Lepreau are based on 1 per cent of the DRL, and are included in the proposed *LCH*.

An environmental action level, if reached, requires NB Power to report to the CNSC and initiate an investigation to determine whether a potential loss of control in the environmental protection program has occurred.

CNSC staff carried out an EA under the *NCSA*, and prepared an EA report, which is appended to CMD 17-H2. The EA focused on the NB Power licence application, existing operations, including environmental protection measures and programs, and the results of annual compliance reporting. Although not a requirement for licence renewal, the EA report also considered the updated environmental risk assessment submitted by NB Power and the results of the CNSC independent environmental monitoring program.

CNSC staff has verified that all environmental releases remain below federal and provincial limits. Furthermore, CNSC staff concludes that the health of persons and the environment remains protected around the

Point Lepreau site.

Similar to other Canadian nuclear power plants, NB Power has committed to the implementation of the *CSA N288* series standards identified here. NB Power's existing environmental protection program meets all regulatory requirements, and implementation of these standards represents an enhancement to the existing programs and is reflective of continuous improvement and modernization.

The implementation of these standards is also consistent with the revised *REGDOC-2.9.1* published in December of 2016. It should be noted that NB Power completed an environmental risk assessment in accordance with *CSA N288.6*. This is a key milestone as the ERA directly informs the implementation of the remaining *N288* series standards.

NB Power maintained its commitment to nuclear emergency preparedness and response, and implemented enhancements to its emergency drill program. NB Power continues to conduct drills, exercises and simulations on a regular basis. In accordance with Commission direction to all Canadian nuclear power plants, NB Power continued to distribute and stockpile potassium iodide pills, commonly referred to as KI pills, within a 20-kilometre area around the Point Lepreau site.

The New Brunswick Emergency Measures Organization and NB Power also distributed emergency preparedness pamphlets and guides to local residents around the site to enhance public awareness of potential nuclear emergencies.

CNSC staff have evaluated the NB Power emergency response capabilities and conclude they meet CNSC regulatory requirements.

The NB Power Emergency Response Plan meets CNSC regulatory requirements specified in RD353. Two full-scale emergency exercises with the province of New Brunswick, both entitled Exercise Intrepid, were successfully completed in March of 2012 and November of 2015.

Point Lepreau activated both the on-site and off-site response organizations during these exercises.

Public alerting was tested and interoperability with the province was demonstrated. An overview of the November 2015 exercise was presented by NB Power to the Commission in August of 2016.

NB Power has also undertaken a number of initiatives during the current licensing period. These include the following: procurement of emergency mitigating equipment, also known as EME, that is stored outside the protected area for use in case of severe accidents;

installation of an automated near-boundary radiation monitoring system around the site boundary to provide real time radiation measurements and reduce the need for manual radiation surveys in the event of an emergency.

Implementation of WebEOC continues, which is a web-based tool for information sharing and capturing data during emergencies and other events.

And finally, construction of a new off-site emergency operations centre in St. George, New Brunswick, is also in progress. The detailed design of the new off-site centre is anticipated to be completed in June of 2017 with full operation by NB Power's 2018 planned exercise.

CNSC staff continued to conduct regulatory oversight activities at Point Lepreau in 2015, including inspections that verified the effectiveness of equipment and performance enhancements to the industrial fire brigade.

CNSC staff concludes that Point Lepreau continues to implement a comprehensive fire response capability that includes effective procedures, training and maintenance of proficiency.

During the current licence period NB Power enhanced the emergency response team training program and procured new fire-fighting equipment, including two new

fire-fighting pumper trucks.

One of the new trucks is shown here.

According to licence condition 16.4, NB Power is required to obtain approval from the Commission, or consent of a person authorized by the Commission, prior to the removal of established regulatory hold points.

The Point Lepreau operating licence issued in 2012 and supporting LCH included a regulatory hold point for compliance with the requirements of CSA N293-07 by December 31<sup>st</sup>, 2014. Removal of this hold point was contingent on NB Power reaching compliance with CSA N293 through confirmation that all eight milestones listed here, and previously captured in the LCH, had been met.

The hold point also required the removal of compensatory measures that were established prior to removal of the first guaranteed shutdown state for return to service, as well as the resolution of all directives and the resolution of, or acceptable plans in place for, all fire-related action items.

Based on the regulatory compliance verification activities conducted, CNSC staff concluded NB Power had met all the milestones established by the Commission in the LCH for the release of the continued operation hold point.

NB Power achieved compliance with CSA N293

and the hold point was released in December of 2014.

NB Power holds a single licence which includes the operation of a solid radioactive waste management facility located on the Point Lepreau site. The waste management facility is located within the exclusion area of the Point Lepreau Nuclear Generating Station and is comprised of three sites, called Phase 1, 2 and 3.

These sites provide storage of solid radioactive waste produced as by-products of the operation of Point Lepreau. Low and intermediate operational waste is stored in Phase 1 of the facility. Phase 2 is a dry storage facility for spent fuel and Phase 3 of the facility stores waste generated during refurbishment activities.

NB Power has implemented and maintained an effective program that promotes the minimization, segregation and proper handling and storage of waste.

CNSC staff concludes that the NB Power waste management program meets regulatory requirements.

NB Power waste management program currently meets CNSC requirements, including CSA N292.3-08.

To enhance its existing program NB Power is conducting gap analyses to support the implementation of the revised version of CSA N292.3 and the new CSA N292.0.

NB Power has committed to complete implementation plans for both standards by September 30<sup>th</sup> of

2017.

NB Power submitted a revised preliminary decommissioning plan and decommissioning cost study in June of 2015. CNSC staff reviewed these submissions and concluded they meet CNSC regulatory requirements.

To enhance its existing program NB Power has committed to submitting an implementation plan in support of transition to the 2014 version of N-294 by September 30<sup>th</sup> of 2017.

In accordance with the five-year update requirement, NB Power is expected to submit the next revision of the preliminary plan in 2020.

NB Power is responsible for the costs of the future decommissioning of the Point Lepreau site and waste storage facilities and must maintain a financial guarantee which is acceptable to the Commission.

The NB Power financial guarantee currently stands at \$673.1 million, meeting CNSC regulatory requirements.

NB Power security programs are compliant with CNSC regulatory requirements, including the *Nuclear Security Regulations*. During the current licence period NB Power completed a number of physical improvements, including the Phase 2 fence upgrade and replacement of the intrusion detection system and the construction and

commissioning of a new security emergency response centre for on and off site emergency response.

NB Power has also improved its new security training and drill program, including annual training at Canadian Forces Base Gagetown, and securing an off-site facility to conduct weekly immediate rapid deployment drills.

During the current licence period NB Power implemented a systematic site cyber security program with a phased approach to protect cyber essential assets, including systems important to safety, from cyber attacks.

To enhance its existing programs NB Power completed a gap analysis and implementation plan for CSA N290.7 concerning cyber security issued in October of 2015.

Full implementation of this standard is expected by December of 2019 and is captured in the LCH.

NB Power continues to implement and maintain a safeguards program that meets CNSC regulatory requirements. The program ensures the effective implementation of safeguards measures and nuclear non-proliferation commitments.

Since 2012 there were four minor safeguards and non-proliferation events at the Point Lepreau site.

Two of the events involved delays in

providing reports that are required by the CNSC and the International Atomic Energy Agency, known as the IAEA, within the specified timeframe.

The CNSC followed up with NB Power and all subsequent reports have been submitted within the required timeframe.

One event involved the discovery of a broken IAEA seal that had been attached to a transfer mechanism for spent fuel. Since no nuclear material was involved, and this area is covered by IAEA surveillance, there was no impact on safeguards.

NB Power modified its internal procedure to ensure the possibility of reoccurrence is minimized.

The last event involved the inadvertent blocking of one of the IAEA cameras in the spent fuel bay by scaffolding. Since there are additional cameras in the area, there were no concerns with the integrity of the spent fuel inventory being compromised.

In all cases CNSC staff verified that NB Power took the necessary corrective actions and continues to meet all regulatory requirements.

Packaging and transport covers programs for the safe packaging and transport of nuclear substances on and off the Point Lepreau site.

*The Packaging and Transport of Nuclear*

*Substances Regulations, 2015* apply to the packaging and transport of nuclear substances, including the design, use, inspection and maintenance of packages and the preparation, handling, loading and unloading of these packages.

CNSC staff concludes that NB Power's packaging and transport programs meet regulatory requirements.

We will now turn your attention to other matters of regulatory interest relating to the NB Power licence application for Point Lepreau.

CNSC staff identified 18 First Nations and associated organizations based on potential interest in the licence renewal for Point Lepreau as it is within their treaty lands and/or asserted traditional territories.

Appendix F of the CMD shows a map of the Atlantic Region of Aboriginal communities.

In October of 2016 CNSC staff sent letters of notification to all identified First Nations and associated organizations and completed follow-up phone calls.

In December of 2016 four First Nations and associated organizations were awarded funding to participate in Part 2 of the Commission hearing.

It should be noted that two of these recipients are representing a total of 13 First Nations in

New Brunswick.

Follow-up information, including CMD 17-H2, was sent to identified First Nations and associated organizations in January of 2017.

Based on the information received and reviewed to date, including no changes proposed to the operation of Point Lepreau, CNSC staff is of the opinion that this licence decision will not cause adverse impacts to any potential or established Aboriginal or treaty rights.

Notice of Public Hearing was posted on the CNSC website, distributed to the CNSC subscription list and advertised in local print and online digital media.

To correct an error in the CMD and this slide, the CNSC participant funding program awarded a total of \$110,462 for participation in the licence renewal process. The Independent Funding Review Committee awarded this funding to six recipients, including a member of the public, a non-government organization and the four First Nations and associated organizations mentioned in the previous slide.

Furthermore, the CNSC will be conducting an information session, entitled CNSC 101, in Saint John, New Brunswick, on February 2<sup>nd</sup>, 2017.

The NB Power operating licence includes an

appendix that lists all nuclear substances and prescribed equipment on the Point Lepreau site. Radioactive sources are used by NB Power for the maintenance and calibration of radiation detection and measurement equipment. Prescribed equipment and radiation devices are also used for calibration, as well as to ensure the proper functioning of monitoring equipment.

All prescribed equipment and radiation devices have been certified by the CNSC.

In accordance with the regulatory requirements, NB Power must report annually to the CNSC on activities, purchases and disposals and closing inventory of all nuclear substances and prescribed equipment.

To monitor closure of remaining actions associated with the Fukushima Action items, CNSC staff raised station-specific action items in 2016.

Overall CNSC staff are satisfied that NB Power has strengthened reactor defence in depth and enhanced its emergency response capabilities in response to the Fukushima event.

CMD 17-H2 describes five remaining station-specific action items that are being addressed by NB Power. Since the time of writing the CMD, NB Power closed one of the remaining items related to the evaluation of compensatory measures to minimize consequences from

malevolent aircraft impact.

I will now provide a brief update on the remaining action items and their current status.

NB Power completed the installation of a real-time boundary monitoring system around the Point Lepreau site. In order for this action item to be closed, NB Power must update its training programs and provide them to CNSC staff for verification.

NB Power has also completed the implementation of additional coolant make-up provisions. CNSC staff are awaiting a final submission from NB Power confirming all necessary actions have been completed and requesting closure of this action item.

CNSC staff reviewed NB Power's recent request for closure of the action item related to the evaluation of emergency response to malevolent aircraft impact.

CNSC staff have requested one minor procedural change prior to closure and is awaiting NB Power's submission.

NB Power submitted its habitability assessment in 2016 which underwent review by CNSC staff. NB Power is currently addressing the additional information required by CNSC staff and the latest schedule from NB Power indicates all remaining activities associated with

this action item are to be addressed by September of 2017.

CNSC staff continues to monitor remaining actions through ongoing compliance verification activities.

Reporting to the Commission on the remaining action items is completed annually through the Regulatory Oversight Report for Canadian Nuclear Power Plants.

The CNSC's Independent Environmental Monitoring Program verifies that public health and the environment are not adversely affected by releases to the environment around CNSC regulated facilities.

CNSC staff develop site-specific sampling plans to identify the types of samples and the locations where they are to be taken in publicly accessible areas.

CNSC staff conducted sampling campaigns around the Point Lepreau site in 2014, 2015 and 2016. Detailed results for the 2014 and 2015 campaigns are available on the CNSC website and are discussed in the EA report.

The results for the 2016 campaign will be updated on the CNSC's website prior to Part 2 of the Commission hearing.

Samples were analysed for a number of radiological contaminants. All results were well below available guidelines or, where guidelines did not exist,

CNSC reference levels based on reviews conducted by CNSC staff.

The Independent Environmental Monitoring Program results confirmed that the public and the environment around the Point Lepreau site are protected and there are no health or environmental impacts.

In April 2016 NB Power submitted a preliminary self-assessment to determine the requirement for a *Fisheries Act* authorization. CNSC staff reviewed the self-assessment and requested NB Power submit additional information.

The revised self-assessment was submitted in January of this year and is currently undergoing review by CNSC staff.

CNSC staff review will determine whether a *Fisheries Act* authorization is required and will advise NB Power on the completion of a draft *Fisheries Act* application.

Renewing the Point Lepreau operating licence will not limit the ability of Fisheries and Oceans Canada to fulfil its mandate under the *Fisheries Act*.

NB Power remains in compliance with the CNSC *Cost Recovery Fees Regulations*. Based on NB Power's previous performance, there are no concerns over payment of future cost recovery fees.

On January 1<sup>st</sup>, 2017 the *Nuclear Liability and Compensation Act* came into force replacing the *Nuclear Liability Act*. Whereas the administration of the *Nuclear Liability Act* was a shared responsibility between the CNSC and Natural Resources Canada, the role of administering the new Act resides solely with NRCan.

Natural Resources Canada has confirmed that NB Power has the necessary nuclear liability insurance.

CNSC staff have assessed that NB Power has a well-established Public Information and Disclosure Program that meets the requirements of RD/GD-99.3.

The program ensures information about the health, safety and security of persons and the environment and other issues associated with the lifecycle of its facilities are effectively communicated to the public.

I will now discuss the proposed licence and licence conditions handbook.

Part 2 of CMD 17-H2 contains CNSC staff's proposed power reactor operating licence and licence conditions handbook.

CNSC staff are recommending the licence be renewed for a period of five years.

As part of licence reform and in order to align the Point Lepreau licence with other Canadian nuclear

power plants, the proposed licence contains standardized licence conditions.

A major change in standardizing the licence conditions is that CNSC regulatory documents and CNSC standards have been removed from the licence conditions of the operating licence to the licence conditions handbook.

The licence conditions handbook contains the detailed compliance verification criteria used by CNSC staff to ensure compliance with each licence condition of the proposed operating licence. The licence conditions handbook also includes guidance for NB Power, such as standards and guidelines, that are not regulatory requirements but may include best practices that should be considered by NB Power.

I will now pass the presentation over to Mr. Gerry Frappier for CNSC staff's overall conclusions and recommendations.

**MR. FRAPPIER:** Thank you, Mr. Casterton.

Based on the assessment of the New Brunswick Power's safety performance at Point Lepreau, CNSC staff conclude that as per Section 24(4) of the *Nuclear Safety and Control Act*, New Brunswick Power is qualified to carry out the activities authorized by the licence and in carrying out the licensed activities New Brunswick Power

has made and will continue to make adequate provisions for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement national obligations to which Canada has agreed.

The CNSC staff recommend that the Commission accept CNSC staff's conclusions presented in CMD 17-H2 and exercise its authority under the *Nuclear Safety and Control Act* to renew the licence to authorize New Brunswick Power to continue to operate the Point Lepreau Nuclear Generating Station from July 1<sup>st</sup>, 2017 to June 30<sup>th</sup>, 2022.

CNSC staff also recommend that the Commission authorize the delegation of authority as indicated in two proposed licence conditions.

Thank you, Mr. President and Members of the Commission. We are prepared to answer any questions you may have.

**THE PRESIDENT:** Thank you.

I would like to open the floor for questions now.

But before doing that I would like to recognize some departmental people who are here to assist us here.

The first is Nardia Ali, Manager from

Environment Canada. I don't know if she is here or not.

And also we have another representative from Environment Canada, Mr. Duck Kim, who is joining us via teleconference.

Can you hear us, Mr. Kim?

**MR. KIM:** Yes, I can; thank you, Mr. President.

**THE PRESIDENT:** Okay.

We also have two representatives from NRCan: Mr. Jacques Hénault, who is Advisor on Nuclear Liability; and Dr. John Adams, who is a Seismologist expert.

Can NRCan people hear us?

**DR. ADAMS:** This is Dr. John Adams here.

**THE PRESIDENT:** Thank you.

So what I will suggest is that we will go in a little bit of an order, but maybe dealing first with the PSA study. But it is not limited to that as it's all interconnected.

And then we will move on to the actual licence.

So let me start with Dr. McEwan.

**MEMBER MCEWAN:** Thank you, Mr. President.

The presentation on the PSA, it brought some clarity I think to a very difficult subject.

I have a number of questions but maybe let me just ask a couple of very mechanistic ones.

Peak ground acceleration, this was a term that you used a number of times in the presentation in the two CMDs.

If you had to convert that to layman's terms of an understanding of what is happening to the building, going from .3 to .344, what does that actually mean in practical terms of risk and effect?

**MR. PLUMMER:** Brett Plummer, for the record.

Derek Mullin will answer that question.

**MR. MULLIN:** Derek Mullin, for the record.

In practical terms, when we talk about the seismic capacity of structures, we relate them to, as mentioned in the presentation, to a HCLPF value or 95 per cent probability that -- or 95 per cent confidence that, you know, at the stage of peak ground acceleration the likelihood of failure is 5 per cent or less.

Now, peak ground acceleration basically represents what is the ground motion that 100 Hz? Typically, when we represent ground motions for a nuclear power plant it's expressed from say 1 Hz or 0 Hz up to 100 Hz, and it looks like a curve. The peak ground acceleration is defined at 100 Hz for that. So that's how fast that --

you know, 100 cycles per second that the building's vibrating at that g level.

**MEMBER MCEWAN:** So if you go from -- I mean, I think I saw -- there's a value here of .42 and I think there's another value of .6 somewhere. Again, what does that increase mean and what does that vibration mean to the building? I'm sorry, one more I guess just clarification, 95 per cent failure, what is failure defined as?

**MR. MULLIN:** Derek Mullin, for the record.

Failure, I'll start with the first -- or with the last part of your question. The failure can be a variety of different things depending on the kind of failure mode and effects analysis. So when we look at a building and how the building will move, we did three 3D finite element analysis. Part of that work is defined how will the building potentially fail?

So you're looking for things like structural members, you're looking for connection points, you're looking at lateral bracing, and a number of different things. So there's not one failure mode for any particular -- for different structures. It could be different for different places, and different failure modes for equipment as well.

In terms of going from 0.42 g to a

different value, if it goes up it means that the equipment is stronger, if it goes down it means that we've found that the equipment is weaker. The actual seismic demand for a 10,000-year earthquake that we use as an input helps to dictate whether that goes up or goes down. So we apply international guidelines, we do the calculations, and then we come up with what those values look like.

As a part of the scope of this work from the PSA-based seismic margin assessment we refine seismic capacity assessments to use the latest methodology from the Electric Power Research Institute and we also use the 10,000-year earthquake as a direct input. So then we adjusted things as we needed to. Then we calculated all that right into the seismic PSA to see if there was any kind of significant adverse consequences. In this case, we happened to meet all safety goals.

**MEMBER MCEWAN:** So, again, forgive me because I know what I know about earthquakes from watching the news and, in particular, the Christchurch earthquake. So they talk in those descriptions that I see, and there was a very good one in the Economist, describing it as in some earthquakes, depending on where it happens, there is ground liquefaction, in others there isn't.

Does that have an impact on this analysis, sort of the geological structures under and around the

power plant?

**MR. MULLIN:** Derek Mullin, for the record.

A part of the scope of this work, as I mentioned, was a paleoseismology investigation, which involved fieldwork. We hired Dr. Martitia Tuttle out of Maine who's the foremost world expert, one of the foremost world experts in doing this type of work, and that's exactly what she did. It took quite a bit of time to do that study, because she had to wait until there was low water levels.

So after the spring frechette, once the water levels go low, she -- not to try to oversimplify this, but she would float around in her canoe, going up and down rivers, looking at different things, looking for liquefaction features that would give an indication that a large earthquake in the past might have occurred.

When she found those, there's a number of things that she would do from borehole logs to potential analysis through a number of different things to identify what was the likely source for that kind of liquefaction feature, and how long ago did it occur?

Now, based on her results, all of that input was fed into the seismic hazard assessment and affected, for the most part, the reoccurrence relationships is what it's called in that work. The third-party expert

panel, the third-party review that we had performed, looked very hard at how that was being introduced or reflected in the seismic hazard assessment to make sure they were comfortable with it and to make sure that they thought that was appropriate to do.

So, yes, liquefaction features is definitely something that we had looked at.

**THE PRESIDENT:** Ms Velshi?

**MEMBER VELSHI:** Thank you, Mr. President. So I'll continue with your risk assessment for earthquakes, and maybe give you an opportunity on why you felt it necessary to present your PSA part first before the general presentation, because probably there was a reason for that, and the fact that we're asking you questions on PSA first also reflects that. Because I think I'd be interested to hear your perspective on that before I ask you questions specifically more from a general perspective around the assessment itself and your results from that.

**MR. PLUMMER:** Brett Plummer, for the record.

We decided to do the initial presentation on PSA because it's a very technical, obviously, area, and there's been requests for a presentation to try to understand it.

So in order to get the clarity around it

and allow people to ask questions associated with it, we thought we would do that first before we get to the actual licence renewal. That was the methodology there.

**MEMBER VELSHI:** Thank you. I think for Day 2 we may want to think about how do we want to sequence and parse those different presentations, because I suspect this part will get a lot of questions and there's probably a lot of interest in there.

So I'll start with just the terms that we used, and it seemed to indicate that even among staff and the licensee there may not have been agreement. You know, we heard safety goals, limits, targets, objectives, and I know in other hearings there's been a fair bit of discussion around that. I think the information has been very well presented.

But I know we've had discussions before that it's really not a goal, it really is a limit, you can't exceed that. What happens if one of your results had indicated that you were actually higher than the goal/limit?

But the greater discussion was around, and you do have that here, where you're between your -- you've exceeded the target, but you lessened the goal/limit, that there is an expectation, and I'm not quite sure whether it was a regulatory expectation or whether it's just a best

practice expectation, that you actually have enhancements in place and you have indicated that you've got some plans around that.

But I wanted to hear more about what the regulatory expectation is, make sure that there is congruence and common understanding between targets and limits, and I think I even heard objectives and goals, and what is the regulatory role as far as these enhancements and what is the expected outcome at the end of compliance with those?

**MR. FRAPPIER:** Gerry Frappier, for the record.

Thank you for the question. You are correct, there's a lot of different words that are used that have very simple English meanings, but are not necessarily obvious as to how they fit into the regulatory framework as to requirements versus expectations, versus things we try to achieve. So to bring some of that clarity, I'd ask Yolande Akl please to provide an answer.

**MS AKL:** Yolande Akl, Director of Probabilistic Safety Assessment and Reliability Division.

Before I talk about the limit and the target, I just want to reiterate something that we said maybe several times during hearings. That the main purpose of the PSA is not that number that we get at the end. The

main purpose of the PSA is learning about vulnerabilities in the plant; what improvements can be applied?

Now, I go back to your question. So the licensees submit to us a methodology. In this methodology they have proposed the safety goals which are safety limits, which are, for core damage frequency, not exceeding  $10^{-4}$ , and, for large releases, less than  $10^{-5}$ . These limits are in line with IAEA document INSAG-12. This is the regulatory requirement. Since we accepted this methodology, it becomes part of the licensing basis.

As for the targets, these are targets for continuous improvements. As the regulator, we expect them to continue improving their plant and applying some modifications or some preventative procedures to the training to their staff so that they can strive in meeting these targets.

Did I answer your question?

**MEMBER VELSHI:** Maybe partly. So when it comes to the goals/limits, and if I heard it correctly, you said it's actually the licensee that proposes that as part of the methodology that they submit, you said that that's what the IAEA's standard is. So why is that not the regulatory requirement, you shall not exceed that, and show us how you're going to demonstrate that?

**MS AKL:** So the PSA goals are indicators

of safety. So PSA is not the only indicator. There is deterministic analysis, there is defence-in-depth, there is safety margins, there is a whole bunch of other requirements that the licensee has to show to explain to us that they are meeting -- they are producing that safety or meeting the safety.

So PSA is just one. I think today the licensee showed in the presentation about PSA that PSA is one of the indicators, it's not the only indicator.

**MEMBER VELSHI:** I know that, and I've heard that numerous times. My question was, why is that not a regulatory requirement, it's an IAEA standard? All the facilities that I have seen have the same number as their safety goals/limits. It doesn't seem to be plant-specific either.

I know there is reluctance to -- because you feel we're giving a lot more importance to PSAs than they probably really deserve, because it is just one part of the whole scheme of things, it's just that when it gives a specific number people [indiscernible] that.

**MS AKL:** I just want to say that there is no one in the world that are required. No regulator in the world requires from the licensee to meet -- like, it is not a fail -- you know, either you fail or you pass. It's not a limit that either you fail or you pass. It's something to

strive to.

It's something to show that you are meeting this number, and it shows that you are -- it's one of the indicators of safety. So no one, neither U.S., NRC, or any other country they ask their regulator -- the regulator asks their licensee to meet a specific number.

**MEMBER VELSHI:** So maybe that will help me ask the second question then.

If the analysis had shown that the risk was actually higher than the goal or the limit that had been set, then the regulatory expectation would have been so what are you going to do to try to reduce that? Is that what that would have been or is it, you know, what's possible?

**MS AKL:** Definitely the regulator will expect from the licensee to improve, you know, the operation or to make modifications for the design, if this is possible, to improve that number. But I keep saying the same thing, because what we learn from the PSA it's much more important than this number.

**MEMBER VELSHI:** I totally hear you on that and accept that. What I'm trying to say, is this a cyclical thing? They submit something because they believe that that methodology will help them demonstrate that? But maybe it doesn't, in which case they may have to change that, is

that even a possibility?

**THE PRESIDENT:** So let me try to jump in a little bit differently. I always thought that all the nuclear power plants, existing nuclear plants, will meet  $10^{-4}$  and  $10^{-5}$  as limits. If they don't then we're going to ask a lot of questions.

The goals -- and, by the way, the goal, I equate the goal with targets. So I don't ever put the goal with limits. Somebody correct me if I'm wrong. I look at a goal and target, almost the same thing. This is where the whole industry is moving towards; going from 1 in 100,000 to 1 in a million, and making equipment seismically robust and reinforcing, et cetera. So this is an attempt to continue to improve their safety analysis.

So I differentiate between the limit as something that we expect them now to meet, and the goal is to see some of the improvements, the results of the improvements. Is that correct?

**MR. PLUMMER:** Brett Plummer, for the record.

Just from a licensee's standpoint, it is one tool for us to assess where our vulnerabilities are when it comes to handling a seismic event. So it's good that we meet certain targets and goals, but we're still going to use the information to make a determination based

on risk on whether or not from a cost to risk standpoint on whether or not we can improve the plant.

In a case in this report there are areas that we're looking at to make improvements to the plant, even though we've met those goals.

**MR. FRAPPIER:** Gerry Frappier, for the record.

Maybe just to answer specifically. So as Madam Akl explained, the licensees will submit a methodology both for analysis, but also their policies associated with it. Right now, while we do not have a regulatory document that makes meeting the limits mandatory, if you like that word, and we could have a long discussion as to why not sort of thing, but at this point in time it's not.

There is a requirement for the licensees to propose in their methodology, once that is done we will hold them accountable to it. If they do not meet the limits, the expectation is that they will make changes so that they would become within those limits. If they're between the limits and the targets, the expectations are that they are going to look to see what they can do with sort of cost benefit thinking in mind.

But in all the cases the idea with the number is to drive you to continuous improvement as opposed

to what some people think of it as, is a red line, and if you've crossed it, you're now in dangerous territory or something. So that's why we're a little bit hesitant to say "requirement" because there are other requirements that we have that we really do view as if you're going to cross that line you must shutdown the plant until you no longer cross that line. These are not those kind of requirements.

**MEMBER VELSHI:** Thank you. I come back to what the President said, I think I rest my case, his interpretation of goals is not my interpretation of goals as it was presented, and I can totally understand that because that's what standard English definition would be for a goal.

But goal, as a term, is probably more appropriate because, as you've just explained, it's not a red line, you know, but it's more than what you're just striving for.

But I think certainly for Day 2, maybe some slides to explain that, putting PRA in proper perspective, and I know you folks do that, but put that in.

So then the second part was when you're between limits and targets, and I think we can all know what zone that is, so you've exceeded the targets, but you're less than the limits, and you've got some enhancements. I wondered how the regulatory role would be

different in monitoring the implementation of those to what you are doing with all these CSA standards?

For instance, where you've concluded that even today there is no safety risk and they're in compliance, it's just this is part of continuous improvement they need to do a lot of this, and are these enhancements the same way and should those be in the LCH and saying, you know, here's what we expect you to do, you've made a commitment, and we're going to be monitoring you for doing that? Maybe it is in the LCH, I just didn't see that.

**MR. FRAPPIER:** Gerry Frappier, for the record.

Certainly any commitment that the licensee is making, that they're going to be improving things, we would be monitoring. If it's something that we believe is required to meet the licence conditions, it would be documented in the licence condition handbook as a compliance verification.

With respect to the broader view, perhaps Madam Akl will have something to add to that.

**MS AKL:** Yolande Akl, for the record.

So what we know is in the procedures, internal procedures of the licensees, they have a plan on how to address this when they fall between a target and

limit, limit and target. They evaluate, and I think they can speak to this a little bit more than us, than me, but they evaluate the situation, they do the cost benefit analysis, and they see where are the areas where they can make the changes. We of course, as Mr. Frappier said, our role is to follow-up and make sure that they are following on their commitment and following the procedures, which is part of their submissions to us.

**MEMBER VELSHI:** Right. I was really getting to that. I drew the parallel between that and what you have in the licence condition handbook around CSA standard implementation where you very specifically said, either an implementation plan by this date or compliance by this date.

Does the same apply for these enhancements or improvement plans when it comes to areas where they're above targets, but less than limits and, if not, should it?

**MS AKL:** Yolande Akl, for the record.

I think in this case there would be some action items on the licensees, and on these action items there will be some dates where they have to meet.

But I don't know if Mr. Frappier can add some more?

**MR. FRAPPIER:** Yes, thank you. Gerry Frappier, for the record.

So a little bit different than the CSA standard, but the same effect. So if there's work that we are unsatisfied with in something like the PSA or other major safety analyses, we would of course let the licensee know of their results of our review and we would expect them to propose a plan by which they are going to fix that.

Once we have agreement between us as to here is the plan that is going to fix that, then we would monitor that either through station-specific action items or, if it's big enough, perhaps make a modification to the licence condition handbook.

But there would be some mechanism that would be put in place that we would follow to ensure that that is properly implemented, and there would be initially some mechanism -- some agreed upon plan as to how they're going to recover the margin that they need. So the analysis that needs to be redone, whatever, or equipment that needs to be improved upon.

**MEMBER VELSHI:** You're presenting this as in the future, but isn't that in front of us right now? They have done their analysis, they have submitted their plan. Should that not be part of the LCH then or part of the corrective action plan that you're going to be monitoring?

**MR. FRAPPIER:** Gerry Frappier, for the

record.

So if we're talking still about the PSA and whatnot, they have a requirement to be submitting to us the PSA. That's already in the licence. They've responded to that. The results are acceptable, if you like, so there's not a need for a corrective action plan. If there had been, there would be something in here, and either in the Licence Condition Handbook or an agreed upon corrective action.

**MEMBER VELSHI:** I'm talking about specifically on the seismic PSA where they were above the target, and they've talked about enhancements that they have come up with and are working on. What's the regulatory oversight on those?

**MS AKL:** Yolande Akl for the record.

As part of the LCH, the licensee should come to us on a regular basis for updates on the progress.

They also have a PSA program, so there is an oversight on this, and they have an obligation to come and update us within this five years on what's the progress and how are they doing, for example, the example that you are selecting, if they fall between a target and limit, what will be the action from their side and what progress, and we are monitoring this.

**MR. FRAPPIER:** Gerry Frappier for the

record.

Now that I think I've got your actual -- I can make that a specific thing.

In their seismic assessment, as you know, they had one aspect that had a PGA number that was still within the acceptable level for us but quite a bit higher than the rest of the station, and so what they've informed us on, and perhaps they'll give us more detail, they've informed us that they're going to be looking at how they can improve the station response to seismic to reduce that outlier.

We've had some preliminary discussions with them. When they come to the conclusion of what they're going to do we'll review that, and then we would track that as they commit to making the equipment, I think it's inside the fresh water pumphouse

**THE PRESIDENT:** But to be really precise, what I'm driving at is are they now compliant with the regulatory requirement as we paint it? Whether it's expectation limits. My understanding was that they were compliant, as I read in both the presentations from NB Power and from staff, so all the things that we're talking about is how to improve it further, which I assume will be reflected in the next PSA when they'll update that.

**MR. FRAPPIER:** Gerry Frappier for the

record.

You're correct, sir, they meet all the requirements, and that's what we're saying, but we do push for continuous improvement. In this case, there's two pieces to that improvement that we would expect to see. One will be, as you said, an updated PSA down the road when they've made these improvements, and the configuration of the plant is a little bit different, and between now and then they're going to be putting together a plan with respect to some of the things they could do, the safety improvement opportunities, if you like, that they see, that they will be implementing, which will improve the situation. But, the plant today does meet all the requirements.

**MEMBER VELSHI:** Before I leave that, just so that we make sure that the information is presented very clearly on these slides, and it isn't, it's in bits and pieces, when you show the seismic assessment results or the PSA seismic results or the consolidated aggregate ones, don't just show the goals/limits, show the targets as well, and then it's very evident where they are actually above the targets. It's fine to say limits are met, but here is where there are opportunities to improve, and a cost-benefit analysis may show that it's worthwhile pursuing some of these.

**MR. PLUMMER:** Brett Plummer for the record.

We will do that. We'll update the slide to make sure we include targets going forward.

**MEMBER VELSHI:** Thank you.

**MR. PLUMMER:** Just to reiterate, we are within process, we are compliant, and we will use our process to continuously improve the station and look for vulnerabilities and make those improvements.

Thank you.

**THE PRESIDENT:** Just in terms of presentation, if I piggyback the table that staff presented and the table that you presented, they are of the same subject but different presentations, different numbers, et cetera, so sometimes when I'm trying to do the crosswalk between the two tables it's not obvious to me, so I don't know if you can actually at least explain one to another what's going on here.

I think we need to move on. M. Tolgyesi.

**MEMBER TOLGYESI:** Merci, monsieur le président.

Before I ask my question, just a complementary to Mr. McEwan's question.

You are talking about soil liquefaction. My understanding is that Point Lepreau is sitting on a solid bedrock outcrop, so where is liquefaction presenting

a risk for Point Lepreau?

**MR. MULLIN:** Derek Mullin for the record.

If I understand your question, was it about where were the liquefaction features found?

**MEMBER TOLGYESI:** Yes, so where it presents and how much risk it presents for Point Lepreau.

**MR. MULLIN:** Derek Mullin for the record.

The sites where the liquefaction features were found were around various rivers, the Magaguadavic River, Beau, Quebec, and Nashwaak River, which is quite far north, up on the other side of Fredericton. There was another one close by, and I can't for the life of me pronounce it so I won't try.

There was no evidence of liquefaction features close to the plant. As you mentioned, Point Lepreau is located on a hard rock outcrop, very thick sediment rock far under the plant where the seismic hazard assessment looked at it. Then we did the seismic site response analysis that looked at, as I mentioned, the rock and soil layers and the bedrock upon which the plant is founded, and looked at what that would be. All that information was input into the seismic PSA, but there were no liquefaction features that were found that close to the plant.

**MEMBER TOLGYESI:** Okay. That's what I

wanted to know, that when you are looking at that I expected that it was somewhere close to, which will have a potential risk for Point Lepreau.

**MR. MULLIN:** Derek Mullin for the record.

As I mentioned, the information from the liquefaction features was fed into the seismic hazard assessment. What the paleoseismology study basically did was increase the hazard, especially for very large earthquakes, even those greater than 10,000 years, and our understanding of how big those could be. So, all of that information, as I mentioned, was input into the seismic hazard assessment, and then we looked at that within the context of our accepted methodology for calculating the overall plant risk.

**MEMBER TOLGYESI:** Okay. Merci.

On your slide 9, you are talking about major steps of seismic PSA, and one of those steps is a fragility analysis.

When you're going back to your summary report, you are mentioning that there are two methods to evaluate seismic capacity, one is a fragility analysis, another one is a conservative deterministic failure margin.

Why did you select fragility, on what basis?

**MR. MULLIN:** Derek Mullin for the record.

That stems back to the original methodology when we performed the PSA-based seismic margin assessment. I can't tell you the full details behind why one was selected or the other. There's different ways you could do it, as you mentioned, the conservative deterministic failure margins method, which is an 84th percentile method. Another way, which is also aligned with international guidelines, is what they refer to as a fragility method with full description. It was a choice that we made back then to go down that path and use that methodology.

Generally, from my understanding, to my best knowledge, the fragility calculations that we did with full description tend to be more resource-intensive but also give you additional information, so more insights, in our books, is a good thing.

**MEMBER TOLGYESI:** Staff, do you have anything to add?

**MR. FRAPPIER:** Gerry Frappier for the record.

I'd ask Mr. Chris Cole to respond to that, please.

**MR. COLE:** For the record, Christopher Cole. I'm the Director of Engineering and Design Assessment Division.

I'm in concurrence with what Point Lepreau has said here. Using the fragility technique is very conservative. It provides us with a better answer, and it gives us a very good indication of individual components within the reactor.

A fragility analysis takes the natural frequencies of particular components and assesses them against the frequencies to which they're being subjected and provides us with a very good indication of whether it will survive that earthquake. Based on what Point Lepreau has done, CNSC staff has accepted that approach as it is accepted in international standards and within CSA standards.

**MEMBER TOLGYESI:** Okay.

This is concerning this fragility analysis in the staff report, page 43.

You are saying that the fragility analysis indicates a high confidence and a low probability of failure except with two minor exceptions where there is a 0.2g, which is quite low.

Could you tell me which are these two components and what are the potential consequences of that? Because, you know, I think the chain is as solid as the weakest link, if you have two links where the risk is 0.2g, it's quite low. As you said, the higher the g, the more

solid is the site. Now, with this we go down to 0.2g.

**MR. COLE:** Christopher Cole for the record.

Yes, that's been identified by us and by Point Lepreau as two outliers to reading the review level earthquake.

I think we need to step back for just a moment and look at what the seismic margin assessment does. It looks at and identifies areas for improvement within the reactor with respect to seismic safety. It uses a review level earthquake, which is much higher than the design basis earthquake.

The design basis earthquake at Point Lepreau is 0.2g, so therefore all the equipment which is important to safety at Point Lepreau is meeting the design basis.

These two components, which are outside the reactor building, in fact are in the freshwater pump house, are considered of low safety significance. When they're incorporated into the PSA, and remember that the PSA provides an overall safety assessment of the plant, they have insignificant impact. The PSA results do not change because they're outliers to the safety of the plant. They are considered low in terms of overall safety.

We've identified that with Point Lepreau,

we've had discussions with them, and they have agreed to look at those two outliers and to incorporate them into their plans in the future if they warrant improved safety to the overall plant.

**MEMBER TOLGYESI:** You said design was 0.2g. I thought it was 0.3g somewhere I was reading in there.

**MR. COLE:** No. You're confusing the review level earthquake with the design basis earthquake. A design basis earthquake is what the plant is regulatory required to meet, which is 0.2g. The review level earthquake is used as a stress test on the plant to see what is the margin between the design basis earthquake and its overall capacity for seismic capability, so that review level earthquake is substantially higher than the design basis for the plant. In the conclusion of the CNSC staff, the plant is very robust.

**THE PRESIDENT:** I think it's time now to ask Dr. Adams about -- have you taken a look at all of this study and are you satisfied with the approach and the methodology?

**DR. ADAMS:** Dr. John Adams, Natural Resources Canada, for the record.

Yes, President Binder, I have reviewed New Brunswick Power's submittal for a seismic hazard

assessment. This seismic hazard assessment, it's not seismic risk or probabilistic risk.

I was quite happy with the report. I picked up on a few things. In general, the sizes and rates of earthquakes that are used in that are higher than we're using in the National Building Code. I think that represents a rigorous estimate of the seismic hazard, and I was quite happy with the thoroughness of the work.

**THE PRESIDENT:** Thank you.

Dr. McEwan?

**MEMBER MCEWAN:** Thank you, Mr. President.

I think, Mr. Mullin, in your presentation, quite early on, you were talking about looking at the external hazards and you used a term I think which was the disposition of the external hazards. What does that mean and how do you do it?

**MR. MULLIN:** Derek Mullin for the record.

I believe the words I used was screening criteria, how we screen those hazards.

To do that, we looked at a number of international guidelines and standards for the kinds of hazards that a nuclear power plant should focus on, that they should take a look at. We used things like the American Society of Mechanical Engineers' standard, which provided information. We used an older consultative

document, C6 rev1, from the CNSC staff. We used other things as well, other international guidelines, that were out there for citing of nuclear power plants to come up with a comprehensive list of what were all the potential external hazards that we should at least disposition, take a look at, and consider within screening criteria?

The screening criteria looks at it in two ways. From a high level, there's first a qualitative assessment that is done; in other words, is it a hazard that could affect the plant in any way, for example, a dam failure? The only real dam failure that could affect Point Lepreau -- well, there isn't any. There's Mactaquac Dam along the Saint John River. That would have no impact. For a human-induced, maybe there's a chemical factory that might be close to a plant that if there was a release could incapacitate the plant. We have none of that around Point Lepreau. So, qualitatively, those get screened out because there's no direct connection.

When you start looking at other types, when you get into quantitative screening, we apply a cut-off probability criteria, so you'll look at things like a potential random aircraft crash into the plant, and you look at things like: where are the routes for these, how many aircraft are flying by, and how big are they? You'll look at meteorites and what's the experience for those

impacting Earth? You look at all of these types of things, you start looking and you say if the probability of that is extremely low there's no point in doing additional detailed analysis."

There were five types of events that we decided that we needed to do something else with, and that's called "bounding analysis". Those are things like, I don't have the exhaustive list with me, transportation accidents, for example, because of shipping traffic in the Bay of Fundy, extreme winds, external flooding, and there were a couple of others in there. I think the aircraft crash was one of them as well.

So, you look at it closer and you look at it and if you postulate that it happens at some frequency, then you go through what would the plant -- how would it behave, how would it respond, and we set criteria around what's called a "conditional core damage probability". If it met that criteria, then it got screened out.

When we looked at all of it, including a comprehensive look at the combinations of hazards, at the end of the day only the seismic was left, in addition to, you know, internal fires, internal flooding, and internal events, such as pipe failures or something that happens inside the plant to a system.

That's basically the approach. It's

pretty much an industry standard approach that we follow looking at these types of things, and we followed international guidelines on how to approach it.

**THE PRESIDENT:** Ms Velshi?

**MEMBER VELSHI:** Thank you. That was extremely helpful, because in your submission I read that you did do these assessments for the high winds and the flooding and the tsunamis, but nowhere then did you close the loop and say, you know, that those got screened out, and I think it would be good to just say that's why they didn't make it on that final list.

Dr. Adams, I don't know if you can provide further reassurance. I mean from what I see, this seems to have been an extremely elaborate, comprehensive way of looking at this particular hazard or risk.

If you look at other potentially vulnerable or risk facilities, and we talk about international standards that have been used here, but are those unique to the nuclear industry or is this fairly common practice to see things in three or four different ways and get third-party reviews and make all these highly conservative assumptions? Can you comment on that?

**DR. ADAMS:** Dr. John Adams, Natural Resources Canada, for the record.

I can't comment widely on the

international practice, but the practice in Canada is generally rather parallel to what happens in the United States. The procedures are typically asking a competent group to do a seismic hazard assessment, having it reviewed by a third party, as New Brunswick Power did, submitting it to the regulator, I was the person that reviewed the report, if you like, for the regulator, and that way you can come to a sense of whether there is a consensus on what the seismic hazard would be.

In this case, I was quite happy with the thoroughness of the report, and I felt that the level of seismic hazard was probably appropriate if not just a little high.

Thank you.

**THE PRESIDENT:** Did Environment Canada also review these reports or they stuck to the environmental, wind and things of that nature?

**MR. COLE:** Christopher Cole for the record.

Environment Canada did the assessment on high winds.

**THE PRESIDENT:** So, they did not into the seismic per se, the seismic hazard.

Okay. Thank you.

Mr. Tolgyesi.

**MEMBER TOLGYESI:** On slide 26 of the staff, when you are analyzing Point Lepreau PSA results, generally, when you are comparing 2008 to 2016, the g is decreasing, except the internal flood. Internal flood is growing from  $1.15 \times 10^{-6}$  to  $3.3 \times 10^{-6}$ , which is a threefold increase. This risk of internal flood is due to what? Because there's so much water included, you had in your presentation 520 tons and 240 tons of water, it is due to that source or it's due to some other sources?

**MR. FRAPPIER:** Gerry Frappier for the record.

I would ask Ms Akl if she wants to add to that, and perhaps New Brunswick Power would like to give some details as well.

**MS AKL:** Yolande Akl for the record.

The question is why it increased? You're asking why there was an increase?

New Brunswick Power recalculated all the frequencies of the floods. Flood case files were generated based on an updated cable routing database. They have a database that had new information based on industry experience.

The flood volume for the different flood states were recalculated also based on more exact dimensions, and a better systematic process was used to

compile the different operator errors as well which are needed to be considered for the different flood scenarios that were included in the PSA.

**MR. PLUMMER:** Brett Plummer for the record.

Derek Mullin will add some additional information.

**MR. MULLIN:** Derek Mullin for the record.

By and large, the sources of internal flooding come from the potential for the fire water system pipe breaks. For example, you may have a pipe break in a recirculating cooling water system or an expansion joint failure from the condenser cooling water that would allow bay water into the turbine hall, for example. All of those were examined.

As part of the methodology changes, and Ms Akl is absolutely correct, we did update our initiating event frequencies and the flooding frequencies, and things like that, but we also modified the methodology to reduce what's referred to as the event screening threshold, and we reduced that by an order of magnitude.

When we went to look at international guidelines, and we looked at ASME standards, we determined that we would benefit and gain more insight from adding that number, so we did that which added a lot more cases to

look at. When you add more cases, you're adding more into the number, the number will increase.

So that's basically what happened, but it's still well below the safety goal. It's a more comprehensive assessment now.

Thank you.

**THE PRESIDENT:** So I always save my doomsday question. It's all very nice to have all those studies, they are good analysis, they are insight into vulnerability, it gives you a clue as to where you want to improve, but notwithstanding all of this, doomsday scenario comes in and the plant is wiped out, just tell me with all the post-Fukushima EMEs that you put in place, all the improvements, will you have enough water? The sea, I will assume the ocean is still there to shut down the core.

**MR. PLUMMER:** Brett Plummer for the record.

Yes, we do have large bodies of water around the plant and including a lot of storage capacity on the plant. The EME equipment we have for Fukushima is onsite, folks are trained, procedures are in place.

Also, as indicated by the presentations, we only have a few outstanding actions to close out all the site-specific action items, but we have essentially all our pumps, generators, connections available onsite with the

appropriate training in procedures to implement any kind of decay removal for the worst case accident.

**THE PRESIDENT:** It seems to be that all that back-up equipment, the diesel, the pumps, they should be seismically qualified to way, way, way beyond design. I mean you have to make sure those things will be functional no matter what.

Is that correct?

**MR. PLUMMER:** That is correct. They are available during a seismic event, post-seismic event to sit there and mitigate the accident.

**THE PRESIDENT:** Okay. Go ahead, Mr. Tolgyesi.

**MEMBER TOLGYESI:** Just to this, when you're talking about your emergency mitigating equipment you have two diesel generators, 545 kw, and two smaller ones, which is about 1.6 meg capacity.

So what is the minimum required power to maintain safe conditions in case of forced outage? Do you have enough and for how long could you sustain that?

**MR. PLUMMER:** Brett Plummer for the record. Derek Mullin will answer that.

**MR. MULLIN:** Derek Mullin for the record. When we were examining the number of diesel generators for example that we would need, we looked

at following a total station blackout and we were on batteries alone what would be the load requirement for the station in order to make sure that we can maintain effective heat syncs and keep the plant cool and keep the public safe. That was a certain amount. I can't tell you what the exact number is, however, when the design was progressed -- and we progressed the procurement of all of these diesel generators and water pumps through design process we made sure there was ample margin to make sure that we could supply whatever loads we needed.

For example, from a water perspective we also did hydraulic analysis to ensure that under the maximum kind of pressure we would see in a severe accident and where we needed to put the water, would we be able to do so successfully. Do we have enough capacity? And we have confirmed that we do and that's not really an issue at the end of the day for the plant.

We have no problem at all with maintaining capacity, cooling and water supply because we have designed the equipment to be able to deliver under the worst postulated conditions.

Thank you.

**THE PRESIDENT:** Okay. I think we're going to break now for lunch and reconvene at 1:40.

Thank you.

--- Upon recessing at 12:40 p.m. /

Suspension à 12 h 40

--- Upon resuming at 1:44 p.m. /

Reprise à 13 h 44

**THE PRESIDENT:** Okay, we are back. We're continuing with questions.

Let's get back to Dr. McEwan.

**MEMBER MCEWAN:** Thank you, Mr. President.

I'm going to move onto the main document. I must confess I found the New Brunswick document a little thin on data and detail. Certainly for both documents it would have been helpful to have had more diagrams and maps and visual data to help.

I think I would like to start by talking about many, many, many comments that I see throughout the staff CMD. I think it goes back to a question of the management system SCA. I think that at our last meeting you provided a very, very nice summary overview of the management SCA, that it's the sort of overarching SCA that integrates all of the other SCAs, and the effectiveness of the company or the industry in building satisfactory operations.

So throughout the staff CMD, I see

comments such as "areas of improvement are needed," "procedures were not followed," "procedures were not satisfactorily written," "procedures were not understood." And this wasn't only in one of the SCAs, this was in pretty much every single one of the SCAs I saw that. Can you explain to me how so many different areas of improvement are required, why have they not been fixed in the last five years, and at what level does that systematic failure to complete procedures, to do procedures properly, to understand procedures, lead to below expectations in the management SCA?

**MR. FRAPPIER:** Thank you for the question. Gerry Frappier, for the record.

As you noted, management system, of course, has a pervasive effect on all the safety control areas because it has so much influence on how people operate, the culture, and, the case that you're case talking about, things like procedural adherence and that. We are, of course, watching for that. That's one of the areas that the CNSC has inspections for, and in all inspections is looking for procedural completeness, and adherence to those procedural directions.

I think that what you have seen and what you have picked up on is something that we are a bit concerned of: that we are seeing a bit of degradation on

that. That's why it's showing up in lots of different places, and, in fact, has resulted in us having to take some actions.

For a bit more on that, I would ask Mr. Ben Poulet.

**MR. POULET:** Thank you. Ben Poulet, for the record.

Just at the outset, as we stated in our presentation, the NB Power management system meets regulatory requirement overall. It does. In the area of procedures, as you know, our compliance verification activities do spot checks of different areas. We look at many areas, and procedures are included in those areas we look at. It's something that we do through surveillance and monitoring, it's something we do through inspections as well.

In this particular instance, as described in the CMD, following refurbishment there was a lot of new equipment, a lot of new procedures and a lot of new processes implemented post-refurbishment. There's also a lot of new staff. So we started picking up evidence that some of the procedures may not be fully developed yet or that some of the procedures were being not adhered to properly.

We picked that up in our surveillance and

monitoring, that's done by our site inspectors, and then we added additional focus in terms of regulatory oversight. We asked every single inspection that we'd do through the regular compliance verification activities to look specifically at procedures to see if in different areas it was spread throughout or if it was just an isolated case.

What we found is sufficient evidence to ask NB Power to do a root cause analysis and an extent-of-cost condition analysis, which they did. And they also put in the compensatory measures. We're tracking the implementation, and we're satisfied with the progress and with the corrective actions being taken.

At this point we have no concern in terms of the overall management system performance, but we were getting evidence that improvement was required in this area.

Thank you.

**MEMBER MCEWAN:** So would it be fair to say that multiple small failures like this are an indicator of risk of larger failures throughout a system where the minor things are missed?

**MR. FRAPPIER:** Gerry Frappier, for the record.

Certainly procedural adherence is an important aspect of ensuring that you have a safe

operation. When we see some of these very let's call them low-level facts that we're finding in that, it is our normal process to sort of say, "We're not going to wait till it becomes a serious safety matter, we're going to bring it the attention of New Brunswick Power, in a forceful way if we have to," and, as Mr. Poulet said -- and then we create a need for them to be doing root cause analysis, find out if there is something really significant here that then would require perhaps more action.

Perhaps New Brunswick Power would like to comment on what they found with their root cause analysis. But just to reconfirm what Mr. Poulet said, at this point in time we don't believe it's a reason that we would recommend against giving a licence.

**MR. PLUMMER:** Brett Plummer, for the record.

As has been mentioned, we did do a root cause. There originally was a root case done in 2011, and there was a lot of focus around procedure adherence coming out of that root cause. The recent root cause we did this year with a third-party expert we determined that most of our issues are around process adherence, not so much procedure adherence.

We did have a campaign for "You don't touch the plant without a procedure," and, in fact, that

seems to be somewhat effective, although there are some minor issues that we're still addressing. But the root cause associated with the process and procedure adherence, again mostly process, again was done with an expert third-party individual. It pointed towards some weaknesses in the leadership development aspect: the reinforcing expectations with process adherence.

We've had a leadership boot camp that's been ongoing reinforcing those expectations for process adherence.

We also initiated a special team with dedicated individuals to sit there and benchmark the industry, take the root cause, put a comprehensive corrective action plan together to sit there and resolve the issue.

We also put together metrics to sit there and monitor the process in each area to determine whether or not they're improving or we need additional actions associated with those processes.

We also put together and established a cross-functional oversight team to sit there and monitor the progress of this improvement.

So we recognize that we need to continue to improve in process and procedures. In this case the root cause points mostly towards process and, we do have

those corrective actions in place.

**THE PRESIDENT:** Can I ask? In the nuclear industry I think we heard that quite often how people are actually proud of the management system that the nuclear operators actually have. Is there an indicator, an SPI-like, that actually can capture, I don't know, the frequency of observation or non-complying? Is there anything that gives you a high level -- at the senior management level that maybe it's time to go in, dive in, and find out what's going on?

**MR. PLUMMER:** Brett Plummer, for the record.

A corrective action system. We've made significant improvement in our corrective action system over the years, and we've seen -- we have metrics that sit there and measure that, but one of the areas that we've significantly improve in the last two years is low-level trending.

Our site has a very low threshold for writing what we call PCAs, or corrective action reports. Now the behaviour is to take those very, very low-level corrective actions, roll them up into an analysis to look at some kind of trend. And we can look at procedure adherence, process adherence, and we're also putting metrics together to look at the specific individual

processes.

So, yes, we do have that in place, and we are using that to improve.

**THE PRESIDENT:** So in the safety and control area that CNSC put together is the compliance kind of a thing. Do we have an SPI for that particular area from your regulatory side?

**MR. FRAPPIER:** I will ask Pierre Lahaie to come up and talk about the overall management system indicators that we have, but just to follow on with what was said just now, of course, as Monsieur Poulet has said, we're now -- because it's got our attention, if you like, in all of our inspections we're putting additional attention on was the procedure correct, and is it being followed right, as being one of the things that we're going to look with some intensity.

But I don't know if Monsieur Lahaie might want to add to that.

--- Pause

**MR. DESGAGNÉ:** Eric Desgagné, for the record.

During our inspections at Management System Division we do have different criteria, and procedure adherence is something that we look at all the time in all of our inspections. So, indeed, there was a

trend that we have noticed, and from that trend an action item was raised, and this is something that we follow up.

The last letter that we have received from NB Power, on January 17, says that there's going to be a follow-up in April 14<sup>th</sup> of this year on that specific subject.

**THE PRESIDENT:** Okay, thank you.

Ms Velshi.

**MEMBER VELSHI:** Thank you.

I'll start off with staff, and then to New Brunswick Power.

So, staff, first, thank you for Annexes A and B, where you show all the regulatory documents and CSA standards and so on that New Brunswick Power needs to come into compliance with. It seems like a whole lot that they still need to implement, and I'm wondering what that says about the maturity of the programs.

Now I know you've qualified and said, well, they are in compliance, and this is part of continuous improvement, and it's very typical of all nuclear power plants, but is that really the case? When I look at some of these standards, they've been here since 2014, if not earlier. Implementations plans are due till 2017, so who knows when implementation is going to be done. There may be a new standard out by then. So is this kind

of churn, flux fairly typical, and what does that really say about the maturity of their program?

I'll start with you first, and then I'll turn to New Brunswick Power.

**MR. FRAPPIER:** Gerry Frappier, for the record.

To remind the Commission, we were asked to bring this kind of information because in the past we've had different times where there was a bit of confusion as to what CSA standard was actually in place in the licence of whatever. I think it's helpful that we brought it all together to be clear.

I think it also indicates that -- like, I would say this is not unusual. I think when we go to Pickering, when we go to Bruce, when we go to Darlington, we'll put something like this together and you'll see a similar trend.

We think of standards as being sort of a document that just go updated, but it often has very significant repercussions into the way the licensee might be managed. It can have significant repercussions into equipment design, changes in procedures. There's quite follow-on that can take a long time to do in a safe way.

The implementation of these is always an area of discussion, and why we always need to have an

agreed-upon implementation plan. We sometimes might not even realize the impact that this change is going to really have. We know that it's going to be there.

But we do have ways to ensure that if there's a significant safety improvement that this standard might bring, then we can concentrate on that piece. You'll find that certain pieces of it will get done real quickly because we all agree that's going to be an important improvement in safety, but perhaps some of the administrative part, that requires computer databases to be changed, and who knows what else, might take a little bit longer because it's not seen as safety significant.

So I would not say this is an unusual list, but it is the first time I think we've presented this way to the Commission, so it might seem that way.

But I'd also like Mr. Casterton maybe to take a minute and just give us a little bit of how we go about doing this implementation of new REGDOCs or standards.

**MR. CASTERTON:** Lee Casterton, for the record.

Just to build off of what Gerry provided, so we have to consider a number of factors when we look at implementation, and Gerry mentioned a few of those. Really what we're looking at is: is it a new requirement? Is it

building off an existing requirement? Is it a small change or a fundamental change that in some cases may even require a design change, a physical modification, or is it a process change?

There's lots of different factors that we have to consider in that, and risk and safety significance has to be at the forefront of that. So in terms of this licence application, back at the end of December -- or back at the end of 2015, we sat down and we start looking at all the modern codes and standards, which is why you would see some of the 2014 and '15 standards in there. We look at those and we assess the safety significance, and decide on the implementation path forward.

Annex A of the presentation provides those standards that we decided they have to implement by the date of the issuance of the new licence, as well as a few of the standards that actually we said that they could have an effective date for implementation, meaning they had to have done the gap analysis and have the implementation plan completed.

Now Annex B of the presentation looks at those that we said were not as safety significant, either because they're existing programs that already meet current regulatory requirements or they are minor changes or in some cases maybe a bigger change, and those are ones that

we decided would be looked at for implementation during this next licensing period. That's why you'll see a number of them. We've requested commitments for gap analysis and implementation plans.

Just to add to that, recognizing there has been an increase in regulatory documents since the CSA standards being published, we provided an annual regulatory framework update in September to the Commission and it was reported that 22 documents were published from 2013 to 2016, and it's anticipated another 22 in 2017. That's in addition to the CSA standards that are constantly being published as well.

So recognizing this increase in publication, the CNSC has actually formed a dedicated implementation working group, and that working group is going to ensure that implementation of regulatory documents and CSA standards is given the appropriate priority. We're also looking at how we can do this holistically across the organization, so...

**MEMBER VELSHI:** Thank you.

Maybe New Brunswick Power, you can comment on it. And being a single-unit plant, I suspect this is pretty onerous on you, you know, trying to stay abreast with all these new requirements coming on. Any comments on that?

**MR. PLUMMER:** Brett Plummer, for the record.

We are a single-unit plant, but we are continuously trying to improve. So we look at these standards -- and, as you heard, we're consistent with the rest of the industry. But when you look at these standards, you have evaluate what kind of change is required to meet these standards, what is the risk associated with making that change, and making a very deliberate change, because you could end up creating confusion and chaos in the organization.

So we have to do it in a very deliberate manner, and I believe that's what we're doing as we go through and we prioritize these and we set the dates with the staff.

**MEMBER VELSHI:** When I look at the *Licence Condition Handbook*, and you've got dates in there, and then there are new requirements coming, and maybe based on the risk assessment or safety assessments you've go, "This is higher priority," is there a negotiation, then, that that takes place if those dates need to change? Walk me through that process.

**MR. FRAPPIER:** Gerry Frappier, for the record.

So the *Licence Condition Handbook* has two

important areas when it comes to the REGDOCs and CSA standards. One is in the compliance verification criteria. When it's in there, then it will be used for determination of compliance in that. At that point we either have to be very clear that there's going to be compliance, or we know there's not going to be compliance and we're going to be taking enforcement action on that account.

The other area for guidance in the *Licence Condition Handbook* is we often use the saying, "Hey, we're very serious that this is coming. You should start looking at it." Perhaps even there's certain sections of it that we're saying are going to be mandatory, and they might be in the CVC. But we do have to be realistic about two things: one is that we don't understand necessarily the implementation of it right down at the plant level; and, two, we may not know about the unintended consequences of making some of those changes.

So we have to hear that from the licensee. That's why our path is that we want the licensee to do the gap analysis, to have a detailed implementation plan. And although I wouldn't call it negotiation, we will certainly challenge that as to why it's taking so long. But we do have to give them a chance to explain why they think it's going to take long.

**MEMBER VELSHI:** So having this picture,

this consolidated picture, for the first time, really, is extremely helpful. I don't know what your plans are for the annual report and, you know, how do you present this, but anyway something to think about, and how the work-down curve is coming along and how the licensees are saying abreast of that. But thank you for that information.

**THE PRESIDENT:** My observation is for somebody who is a cynic, which is obviously not me, July 1<sup>st</sup>, all the list of July 1<sup>st</sup>, I would have suspected some of them would have been nice if they were in April, before Part Two. It's just the fact that they're right after Part Two, all of them. You know, you can actually forgive me for saying this is a bit too cute. And all of them coming into compliance in the same date, beside July 1<sup>st</sup> being Canada Day --

--- Laughter / Rires

**THE PRESIDENT:** -- what's so important about this particular date that all of a sudden everybody is complying to that date? And I would hope that, since you put those now in place, in the ROR there will be updates as to how those commitments are being implemented.

**MR. FRAPPIER:** Gerry Frappier, for the record.

So, yeah, the annual report is being modified so that we have a bit more clarity

around standards. It's clear that the Commission would like to talk a bit more about this, so we're going to make that part of the annual report.

With respect to the dates, I'm going to ask Mr. Casterton to respond to that.

**MR. CASTERTON:** Lee Casterton, for the record.

In terms of the date, the reason why July 1<sup>st</sup> is in there is because that's when the *LCH* -- we have the new proposed *LCH*. So during the period of licence renewal, to provide regulatory stability, we don't change the *LCH* on a continuous basis. They have the current existing requirements in there, and a lot of those standards they have likely already implemented. And NB Power could talk to that if you'd like, but what it is that it'll actually show up in the *LCH* on July 1<sup>st</sup>.

So in terms of the implementation, the effective date for implementation in the *LCH*, that is July 1<sup>st</sup>. But in terms of practice, likely NB Power has already implemented a number of these documents, as they have confirmed in their application that some have already been implemented in advance of that date.

**MR. GAUTHIER:** Rick Gauthier, for the record, New Brunswick Power Regulatory Affairs Manager.

That date of July the 1<sup>st</sup> is just as Lee

explained it: we will have those documents in our compliance verification criteria on the first day of the new licence. But we meet -- these REGDOC this close to licence renewal, we do meet these regulatory requirements now. It's just currently our licence condition still points to the RGDG, rather than the new REGDOC.

**THE PRESIDENT:** Okay. I'm not sure I'm processing this. I'm not sure that's a smart way of demonstrating compliance just because of a date of a *LCH*. The *LCH* itself date is irrelevant. The point is when are they in compliance, and on that particular -- that you're going to start verifying on that particular thing because they are compliant already with it.

**MR. FRAPPIER:** Gerry Frappier, for the record.

I guess this table -- and maybe we should add a column to the table or something -- this is really about when they are legally required to. We're within a window right now where although throughout the licensing period we can update the *Licence Condition Handbook* and that, we're on a period right now when we are getting prepared for relicensing and that. There's a point where you say, "We're not going to make any more changes."

And then the next time you're going to see it, there's going to be all these new things, but it's

going to be, effectively, now when we release the new *Licence Condition Handbook*. That's why these dates all sort of line up with that new *LCH*.

**THE PRESIDENT:** I still don't get it, because the licence ends, terminates, in June?

**UNIDENTIFIED MALE:** June 30<sup>th</sup>.

**THE PRESIDENT:** June 30<sup>th</sup>. Is that why it is? As of June 30<sup>th</sup>, those are going to be implemented, is that what you're saying?

**MR. FRAPPIER:** At that point --

**THE PRESIDENT:** As of June 1<sup>st</sup>, they will be compliant with -- July 1<sup>st</sup>.

**MR. FRAPPIER:** I would say not that they're going to be compliant. They're already compliant with them. At that point in time, we will be able to say, "They're mandatory. And when we're doing inspections, if you don't meet it, you're out of compliance of your licence."

**THE PRESIDENT:** Okay. Thank you. I got it.

Mr. Tolgyesi.

**MEMBER TOLGYESI:** Merci, Monsieur President.

I have two questions for Point Lepreau. On your -- what is that? -- page 6, "Figure 3:

Organizational Chart," I'm looking at the health and safety manager responding to the station director. Now is he responding -- he's responsible for health and safety for everybody on the site? Because when you are looking, maintenance is under somebody else, not the station director. What are his responsibilities?

**MR. PLUMMER:** Brett Plummer, for the record.

The health and safety manager at Point Lepreau is responsible for the health and safety across the organization to make sure that we're in compliance -- and, again, we're continuously improving, changing a program, so forth. We also coordinate with the corporate safety group to make sure that we're in alignment with corporate safety and safety in New Brunswick.

But line ownership owns safety. Every individual at the station owns safety. And I believe, based on the fact that we've been 5.5 million hours without a lost-time accident demonstrates that people take it personally.

So, yes, we have somebody designated across the site that's responsible for programs, procedures, safety meetings, so forth, the accountability associated with that, but everybody owns safety.

**MEMBER TOLGYESI:** Is a person who is

responsible for radiation protection, where he is in this organizational charge, is he belonging to the manager of health and safety or is another place?

**MR. PLUMMER:** Brett Plummer, for the record,

Yes, the radiation protection manager was part of the health and safety group. And under that we're going to make a change, where the radiation protection manager is going to be broken off for some of the improvements that we want to focus in on radiation protection.

**MEMBER TOLGYESI:** Merci.

I have one more, it is on page 9. You are talking about "External Nuclear Oversight," and you are saying that the nuclear oversight, external nuclear oversight, is provided through two bodies. One is the Nuclear Safety Review Board, another one is the Corporate Nuclear Oversight Team. Now my understanding is the Corporate Nuclear Oversight Team is within the corporation, as New Brunswick, I suppose, Power, but who is the Nuclear Safety Review Board?

**UNIDENTIFIED MALE:** What page are you on?

**MEMBER TOLGYESI:** Page 9 of CMD -- Point Lepreau, H2.1.

**MR. PLUMMER:** Brett Plummer, for the

record.

The Corporate Nuclear Oversight Team is the corporate oversight group, but it still includes two external nuclear experts that are external to the organization. So they also consult with the CNOT, Corporate Nuclear Oversight Team. So that's one form of oversight.

Typically, they're involved with us on a monthly basis where they come down and review all our metrics, they meet with the line managers responsible for areas that we're focusing on, and they're also there to give advice, but they are oversight.

The next one is the Nuclear Safety Review Board. Fairly common in the nuclear industry that there is a group of external, again, experts. Typically, it is one lead, but then you may have individual from -- an expert from operations, maintenance and engineering. They come in twice a year and they'll do a review looking specifically at nuclear safety.

So they're focusing on, you know, behavioural process, procedures, your events, they'll go around and do interviews, they'll do observations in the field, and they'll come up with their own independent assessment from a nuclear safety perspective on are we safe, do they have any nuclear safety concerns, and where do we need to focus and even make recommendations that

we'll incorporate in our corrective actions system.

It's not mentioned here, you know, we also have our internal nuclear oversight group which continuously does audits on all our programs and processes. We also have the World Association of Nuclear Operators. They come in every two years with an annual review as well, but a more intensive one every two years, and they do a complete review of the facility, again interviews, watch work being done, behaviours, process, procedures. They're there to drive us to excellence. So some are looking for compliance, some are looking for nuclear safety concerns.

The WANO group, World Association of Nuclear Operators is there to drive us to excellence. So they compare us to the best of the best in the nuclear industry, they do the gap analysis and they give us recommendations, areas for improvement and/or strengths. So if we've got a strength that they want to share with the rest of the industry, they'll take that away as well and they'll share that with the industry.

So there's a tremendous amount of oversight at the station.

**THE PRESIDENT:** Does CNSC staff have access to all those studies, reports, et cetera?

**MR. PLUMMER:** CNSC has access to the internal CNOT report. The WANO report is a confidential

report.

**THE PRESIDENT:** Thank you.

**MEMBER TOLGYESI:** So this Nuclear Safety Review Board, you said there is three or four support staff from your organization, but mainly they are from outside?

**MR. PLUMMER:** Brett Plummer, for the record.

The Nuclear Safety Review Board -- I'm sorry if I confused you -- the Nuclear Safety Review Board is external members and they're nuclear experts. We partner them up with individuals on site within the same disciplines for experience as well as being an interface, and we take an individual typically from corporate, one of the corporate executives, and put them on the Nuclear Safety Review Board as well to sit there and round out also our corporate executive team on nuclear.

**MEMBER TOLGYESI:** My last question. In one of the bullets you're saying that NSRB members could communicate directly with NB Power personnel on matters of NSRB interest.

So they could call anybody or there is a level of responsibility where they should communicate to?

**MR. PLUMMER:** We're a very open and transparent organization. The Nuclear Safety Review Board is well-known across the site. When they're coming in to do

an inspection or they need information, even if they're off site, they can contact individuals at the site directly.

**THE PRESIDENT:** Dr. McEwan?

**MEMBER MCEWAN:** Thank you, Mr. President. I'd like to compare a couple of paragraphs; one on page 74 of the New Brunswick Power CMD, and page 71 of the Staff CMD.

As I was reading the two documents, these two really struck me as perhaps being linked. So, again, it comes back to when are too many small misdemeanours too many? You say in the second paragraph in the Fire Protection Program, "The Fire Protection Program substantially meets regulatory requirements." Then at the bottom you list three what seem to be major items of deficiency, which again I wonder at what stage this moves from being a worry to being unacceptable?

Then the curious phrasing on page 74 of the New Brunswick CMD, "Local volunteer firefighters have developed a basic understanding of the plant layout and plant fire hazards." Again, that implies to me that there has not been a particular attention paid to ensuring that there is the fullest possible capacity to ensuring that this is...

If I tie the two together, again it points to me as a systemic weakness in management systems around

this.

**MR. PLUMMER:** Brett Plummer, for the record.

I don't have your paragraph, so I'd have to take a look at that to compare it. Excuse me, which paragraph are you pointing to on the Staff's...?

**MEMBER MCEWAN:** On the Staff's it is the second paragraph under the section Fire Protection Program on page 71. "...substantially meets regulatory requirements," not particularly encouraging.

**MR. PLUMMER:** Okay, I understand. Brett Plummer, for the record.

We put a tremendous amount of effort in improving our fire protection capability; one was the implementation of the emergency response team, and all the improvements, the modifications we made across the site, including the equipment that we purchased.

We have a very good Fire Protection Program, it does meet all the requirements. Recently, we came in and we took a look at -- the Staff came in and looked and said, we can make some improvements in our pyramids(ph) when we take some equipment out of service what compensatory measures do we put in place? There were some suggestions that we could improve in that regard.

The control of combustibile materials. So

when we sit there and we have combustible materials, transient combustible materials in the field, how do we manage that? We took that to heart and made some corrective actions. For the last several months, we've been in complete compliance, green, across the board there. Then also our process for controlling hot work when we actually do welding.

So we took all three of those, we benchmarked the industry, and we put the corrective actions in place. But it's not a significant safety issue.

With regard to your comment on local volunteer firefighters that have developed a basic understanding. These are volunteer firefighters from the local community. These are not our firefighters. But the fact that the local firefighters actually come to site, have access, radiological training and train with our firefighters every Monday night so that they're familiar with the site was recognized by the World Association of Nuclear Operators as a best practice globally. It's one of the best they've ever seen.

Typically, you don't train volunteer firefighters in the community to that level and have mutual training on site. So it was recognized as a best practice.

**MEMBER MCEWAN:** So you may want to choose your use of English a little more carefully --

**MR. PLUMMER:** I appreciate that.

**MEMBER MCEWAN:** -- because what you're describing is not what I'm reading.

**MR. PLUMMER:** Thank you for that, we will.

**MR. FRAPPIER:** Gerry Frappier, for the record.

If you'd like, we can give our view on certainly our document and I would ask Zaq Bounagui to give some details around our comments here.

**THE PRESIDENT:** Well, let me piggyback on that so you have a fulsome answer. What I recall, the management of the fire in NB Power as being a subject for a long discussion. In fact, there was a hold point put on NB Power, that they were supposed to do things to fulfil it. On page 72, still about fire protection, you talk about the fact that CNSC staff concluded that they met the requirement to lift the hold point. Yet, a paragraph later, it reads, "But there remains some challenges with respect to the full implementation."

So, you know, something doesn't compute here in terms of what expectations were. So it was good enough to lift up the hold point, but it's not enough, we're not satisfied enough. Am I understanding what the comment is?

**MR. FRAPPIER:** Gerry Frappier.

So perhaps I'll ask Mr. Ben Poulet to talk a little bit about that piece you just threw in there, and then have Zaq add to it as a fire specialist.

**MR. POULET:** Thank you, Mr. Frappier.

The program, the fire program at NB Power, Point Lepreau, has been an awful lot of effort. You're quite right, Dr. Binder, there was a hold point requirement to comply with the new Standard N293-07 by December 31<sup>st</sup>, 2014. During that time, NB Power worked very hard on the program, invested a large sum of money, and they also came to present their scope of the program sometime in 2014 to the Commission here.

In terms of implementation, what they have done to meet the standard is in place. But how you meet a standard may not be the best way. Sometimes you have to meet the standard using compensatory measures. So there are some things that need to be completed in terms of -- to remove these compensatory measures. So the compensatory measures meet the standard, but it doesn't mean it's finished.

Additionally, as I mentioned, as it's mentioned in the presentation, they have everything in place, but following the design changes they have to have design close outs and administrative work that has to be done within the plant to make sure the documentation is all

up-to-date. This work can take place anytime and it's in progress now and we're tracking it on a regular basis, follow-up meetings on a quarterly basis so far.

So they meet the standard and essentially they're just doing the design close-outs, which is administrative in nature.

I'll let Mr. Zak Bounagui complete my answer.

**MR. BOUNAGUI:** Zak Bounagui, for the record.

My name is Zak Bounagui, I'm Technical Specialist with Engineering Design Assessment Division at CNSC.

Let me just first highlight one important aspect. CNSC regulatory model for fire protection is based on the implementation of the principle of defence-in-depth, principle.

So I will just now explain why like we say like the fire protection program at Point Lepreau is satisfactory. NB Power has conducted fire safety assessment, which combines all three complimentary analyses.

The first one was the code compliance review which confirms and documents that applicable code and standard requirements are addressed in the design and

operation of the plant. The second assessment is the fire hazard analysis which is a comprehensive assessment of potential fire hazard and the appropriate fire protection system and features used to mitigate the effect of fire in any plant location. The third assessment is the fire safe shutdown analysis which is a comprehensive analysis to demonstrate that at least one means of achieving nuclear safety objectives is available in the event of fire.

All those three combined assessments are aimed to achieve compliance with the requirements of CSA N293 and demonstrate that there are sufficient mitigation systems in place to address potential fire and the fire protection objectives will be achieved.

All these three assessments also demonstrate that the fire protection strategy at Point Lepreau apply the difference defence-in-depth concept by incorporating adequate design features to prevent, detect, suppress, and minimize the consequence of fire.

The CNSC Staff has reviewed NB Power's fire safety assessment and found it meets regulatory requirements as said in the CSA N293.

So I would like to conclude that the fire safety assessment performed for Point Lepreau Generation Station, along with the fire protection program, provides assurance that the risk from fire in Point Lepreau remains

low and the performance is satisfactory.

Those actions that were mentioned in -- another point before I conclude -- is that all the recommendations that have been identified from those assessments have been resolved, and the remaining action is from the latest fire inspection that was performed, and they are low safety significance and NB Power has taken appropriate action, and we reviewed those actions and the are appropriate.

**THE PRESIDENT:** Thank you. Ms Velshi.

**MEMBER VELSHI:** Thank you, Mr. President.

If you can, New Brunswick Power, turn to your Slide No. 7, your navigating for excellence. First of all, we couldn't really read the slide at all. But you did say that your objective over the next licensing period was to be in the top quartile.

So where are you at right now? Well, we'll start off with that, I'll have a number of supplementary questions then.

**MR. PLUMMER:** (off microphone) quartile across the board in all the metrics. One of the things we did do is when we changed our metrics our goals were all changed to make sure the goals were set to best quartile.

For some of the areas that we needed improvement in, like equipment reliability which you can

see on here, which is an equipment reliability index. That's what we use for a goal and a metric for that improvement initiative. Best quartile in the industry is on the order of 80 to the old revision for equipment reliability index. We just reached a high of 78 last month, so we're well on our way. We started at 62 at the beginning of the year, and we're 78 now, so we're making significant improvements.

On corrective action average age, which the corrective action system is our engine of change, it is our improvement method. We went ahead and -- the industry, adjusted for the best industry practice, top quartile, average age of a corrective action was in the order of 105 days. As of last week, we're at 108 days. So we've decreased our average age of corrective action significantly by closing out several legacy corrective actions and so we have significant improvement in that regard.

There's also even on dose, which when you look at our internal dose and external dose, if you look at the combined dose, the collective radiation exposure, it's just above best quartile in the industry.

So there's many metrics that we're just to or better than best quartile. We'd have to have the whole MRM package to go through to tell you about some of the

additional areas that I'm working on. But those are the significant areas that we wanted to get the best quartile.

**THE PRESIDENT:** You must have some pretty good eyes because I can't read any of that in this chart.

--- Laughter / Rires

You know, there's a lot of material here, which I actually would have liked to have read, and the fine print here I can't read it.

**MR. PLUMMER:** Brett Plummer, for the record.

I think we had the navigating for excellence books, copies of it, that we asked to be distributed to the Commission.

**THE PRESIDENT:** Thank you.

**MEMBER VELSHI:** So will those books give the different indices; where you started out, where you're at now, and where you're hoping to get at for each of these, you know, different areas that I identified here?

**MR. PLUMMER:** Brett Plummer, for the record.

Yes. Those books are a collection of our goals, also it has some very important information in there as far as what are our core values and what are our core behaviours to achieve excellence?

Now, every year at the end of the year we

go through and we look at some of our top five areas in leadership, process and so forth, and we make a determination whether we've met that goal, we're going to change the goal to something -- raise the bar to something else.

So we're not sitting stagnant once we meet something, we determine whether or not it's ingrained in our culture and in organization and whether or not we're going to continue to strive to be better in that regard, in that metric, or whether we're going to change it to something else.

**MEMBER VELSHI:** Thank you. Then when it comes to how the CNSC assesses your performance in, you know, the 14 safety and control areas, for instance, do you set any specific objectives around those? So highly commendable conventional safety performance, the others you're satisfactory. Do you say, well, if we do all these things, you know, we really should be in the fully satisfactory range, and do you set those as specific goals?

**MR. PLUMMER:** CNSC satisfactory, fully satisfactory is a specific goal. We take the best in the industry, excellence in the industry, so we're not looking for just compliance, we're looking for excellence. So that's what we benchmark to and that's what we're striving for. When we reach best quartile and then best decile, the

fully satisfactory will come.

**MEMBER VELSHI:** Yes, one should follow, right, and that's what fully satisfactory is. Then, based on your earlier comments on all this oversight and these different bodies, your messaging it's generally consistent. I'm just -- you know, you get your Nuclear Safety Review Board, you get your -- all your oversight, you've got the CNSC, you've got your, you know, trend analysis from your own internal -- from your CAP programs and so on, do you run into conflicting stuff that comes through often, ever?

**MR. PLUMMER:** The answer to that is the general consensus of the different oversight groups is fairly consistent when you look at the major areas that we're focused to improve. There is always some -- just based on experience of the different individuals you're bringing from different plants, that they may say, hey, you know, there's an area over here you should look at as well.

But the consistent areas of improving equipment, reliability, issue management, risk management, reinforcing expectations, those are some of the areas you'll see in the navigating for excellence, is fairly consistent across all the external bodies that come in and review us.

**MEMBER VELSHI:** Thank you. My last question on this excellence was there was no information in

either of the submissions around the operating performances measured by reactor power or percentage, reactor power or outage days planned versus unplanned. I think that will be useful information to have for Day 2 on certainly post-refurbishment, what the expectations were, how were you measuring up on those.

**MR. PLUMMER:** Brett Plummer, for the record.

We understand your comment and we'll make sure we have some additional information on our operational performance, but I will leave you with this. Last year our forced loss rate was 19.86 per cent. This year, this calendar year, that was the calendar year 2015 -- this calendar year, 2016, it's 2.48 per cent.

So we've seen a significant improvement in performance at the station. We're not satisfied, we still have a ways to go, and again we'll continue to strive for excellence. But we are seeing a result of our effort.

**THE PRESIDENT:** So I'm just going through some pretty nice slick documents here, lots of material in here. Didn't get a chance to actually read it, but it looks like there's a lot of good stuff in here. So my question is now, is that now on the public record since you gave it to us? Is it now in the public domain and it'll be available for anybody who wants to see it?

**MR. PLUMMER:** Brett Plummer, for the record.

Yes, we are more than willing to share that with the public. We share it across the industry.

**THE PRESIDENT:** Okay. Thank you. Monsieur Tolgyesi.

**MEMBER TOLGYESI:** Merci, Monsieur le Président.

You said somebody's there from Natural Resources Canada? Yes?

**THE PRESIDENT:** I assume -- Monsieur Hénault?

**MR. HÉNAULT:** Oui, c'est Jacques Hénault, Nuclear Liability Advisor.

**THE PRESIDENT:** Okay, merci. Bienvenue.

**MEMBER TOLGYESI:** Bonjours, Monsieur Hénault. This is a question. It was on the Staff CMD page. When you are talking about nuclear liability insurance, that up to last December 31<sup>st</sup> the administration of *Nuclear Liability Act* was shared between CNSC and Natural Resources Canada. Whereas, beginning January 1<sup>st</sup>, 2017 Natural Resources will be the sole administrator of *Nuclear Liability Compensation Act*.

My question is that, up to now, when CNSC was involved and in case of non-compliance, considering the

financial insurances, there were ways of intervening by CNSC. CNSC has authority up to, I don't know, say up to limit of suspend licence if it was not an appropriate financial insurance.

So, how will NRCan cooperate and coordinate activities in case of -- I'm not saying necessarily Point Lepreau -- but any nuclear facility will not have sufficient financial insurance?

**MR. HÉNAULT:** Okay. You're quite correct on that. The *Nuclear Liability and Compensation Act*, which enters into force on January the 1st, we're the administrator under that new legislation; whereas CNSC was before.

The new *Act* has a provision in it for -- that the failure to carry the required financial security by an operator is subject to a \$300,000 a day fine.

We ensure -- in terms of the *Nuclear Liability and Compensation Act* entering into force on January the 1st, we sent a notice to all operators subject to the *Act* to confirm to us that they had the required financial security in place and all operators, including New Brunswick Power, confirmed that to us.

**MEMBER TOLGYESI:** But do you have any provisions that how you will communicate with CNSC? Was nice you will send a fine of \$300,000 to the site, but CNSC

should be advised or informed that it's happened.

**MR. HÉNAULT:** Oh yes, that's for sure. You know, we will advise the CNSC. We have a good mechanism in place between NRCan and the CNSC on the Act with respect to the legislation, so we will certainly advise them. There's no issue with that.

**THE PRESIDENT:** So, just to be clear, in a public hearing like this for licence renewal is it okay for the Commission to ask Point Lepreau here and staff, have you confirmed that Point Lepreau is fully compliant with the new liability provision?

**MR. FRAPPIER:** So, Gerry Frappier for the record.

So, yes, we have confirmed with NRCan. So, we've asked them if New Brunswick Power is fully compliant with the Act and they've indicated to us that they are and that's why we put it into the CMD to yourselves so that you'd also be informed that, according to our information, they're fully compliant.

**THE PRESIDENT:** Thank you. M. Tolgyesi?

**MEMBER TOLGYESI:** My question really is that, what's happened if there's a hearing and there is not an appropriate financial insurance, which means that it will jeopardize the potential accident if something happens, who will become responsible, you know, how far --

who will be involved?

**THE PRESIDENT:** Does Commissioner know -- that's a good question. If they are non-compliant are we -- is the Commission then supposed to not award the licence?

**MR. HÉNAULT:** No. I think, you know, in a situation like that, essentially, we would advise the Commission and, I mean, essentially, even though the Commission would perhaps shut the nuclear power plant down because they're in lack of compliance, still, I mean, there has to be continued financial security in place and, you know, at the end of the day, with our indemnity agreement, that would cover any lack of insurance.

**THE PRESIDENT:** I think we will have to have some lawyers look at this. I'm not sure I know exactly what does it mean if they're non-compliant and they appear in front of us for a licence renewal.

**MEMBER TOLGYESI:** And in front of the public, the CNSC is the [indiscernible]

**THE PRESIDENT:** Well, one solution is that staff will have to advise us. We may have to delay a particular hearing of some sort until something gets resolved.

I don't know. I don't want to do any pronouncement here on the fly, but I think there's been an

issue raised which I don't hear an answer to.

**MR. FRAPPIER:** So, Gerry Frappier for the record.

And at some point you're right, I would like to have some advice from lawyers, but I can tell you what we would be doing right now.

So, as we stated, we believe we have a duty to inform the Commission and we will seek out the information from NRCan to say that they are fully compliant with the *Liability Act*.

Similarly, we would have informed you that they are not compliant with the *Liability Act*, if that had been the case, or if any time that we would find that out from NRCan who, as was mentioned, has communication channels with us and we would find that out and let you know.

**THE PRESIDENT:** Okay. Thank you. We'll leave it at that for now.

Dr. McEwan?

**MEMBER MCEWAN:** Thank you, Mr. President.

So, on page 22 of the New Brunswick submission, the Fitness for Duty. I really like this section, I thought it was very well written and I'd be interested to know how big your medical staff is to support it, because this is clearly a significant initiative.

But I would like to know, it's a slightly Orwellian sound, the Continuous Behaviour Observation Program; what is that and how does it work and what are the benefits that you see as a company?

**MR. PLUMMER:** Brett Plummer for the record.

I want to make sure I understand your question. You're asking, what is the benefit of the Continuous Behaviour Observation Program?

**MEMBER MCEWAN:** How do you measure the benefit?

**MR. PLUMMER:** Brett Plummer for the record.

The way it works is, it's a program that we train individuals on -- to look for aberrant behaviour across individuals. So, if somebody sees somebody whether it be, you know, signs of drug abuse, alcohol abuse, depression, family problems, in some way we don't feel that they're capable of doing their job or it's self-identified, then there is a program where we can get them help and evaluated and make sure that their behaviour and actions don't negatively impact upon the station.

**MEMBER MCEWAN:** So, would that be an offer of the help as it's available or a demand that they take the help?

**MR. PLUMMER:** It could be that they need to take the help, depending upon the situation and the evaluation, but in most cases it's offered and accepted.

**MEMBER MCEWAN:** And how do you measure the effectiveness?

**MR. PLUMMER:** Brett Plummer for the record.

We measure it through our corrective action system. When we have anomalies we record it and we trend it and we look for trends such as if there's any kind of, you know, alcohol abuse or fatigue-related issues or so forth.

So, we're always watching for it through our corrective action system and we don't see any significant issue in this regard.

**MEMBER MCEWAN:** No, I mean, it looks an impressive program. And am I right in reading that your sort of prevention programs and your self-help programs are available to staff and families, as well as...?

**MR. PLUMMER:** Brett Plummer for the record.

That's correct.

**THE PRESIDENT:** So, you told us you come from the States, lots of experience. Well, you know, in the States they do have random tests for drug and alcohol.

Why won't you think about bringing in that practice over here?

**MR. PLUMMER:** I think, as we've mentioned before even in Commission hearings I believe, that the actual drug and alcohol testing, as long as it was done in a deliberate, focused manner for individuals that are critical to the safety of the plant, then we think that's probably a good thing.

I think -- obviously, we'd have to see the details of what's recommended, but yes, we do do it in the States.

**THE PRESIDENT:** Thank you. Ms Velshi?

**MEMBER VELSHI:** Thank you.

Some questions around staffing. You've got 800 or so folks at Point Lepreau. How many are there for New Brunswick Power, I just wondered what percentage of the overall organization you were?

**MR. PLUMMER:** Presently New Brunswick Power employees run around 835 employees, which includes emergency response team and also the security contract -- security force, they're not contract here at Point Lepreau.

**MEMBER VELSHI:** Sorry. So, for Point Lepreau the 800 is not your regular employees, it's regular --

**MR. PLUMMER:** We put approximately 800.

There's about 835 employees on-site.

**MEMBER VELSHI:** Sorry. So, I was asking for New Brunswick Power, your sort of -- how many employees are there in that?

**MR. PLUMMER:** Brett Plummer for the record.

NB Power employs 2,300 people approximately.

**MEMBER VELSHI:** Thank you. And then, so you've got approximately 800; and contractor, FTEs, how many would that be?

**MR. PLUMMER:** Brett Plummer for the record.

I don't have the exact number, but it's approximately 150 to 200 depending upon the initiatives, outage and so forth.

**MEMBER VELSHI:** Okay. And are there any kind of demographic or talent challenges right now, because I think somewhere in here you say you've done some fairly significant hiring in the last little while?

**MR. PLUMMER:** Brett Plummer for the record.

When we put out a bid for a specific job we've had no issues getting qualified resumes to fill the positions.

The challenge is that we have approximately 299 people retiring over the next five years.

So, we have put a project plan together. We've actually developed a schedule for the next two years to understand exactly what departments are going to potentially have those retirees, how much knowledge transfer is required in each one of those positions which is incorporated also in a cessation planning and, obviously, at some point some leadership training as well.

So, we know we have a big challenge ahead of us from a staffing perspective. The people are there, the training's there. We're putting the tools in place to make sure that we can effectively hire the individuals and get them up to speed with the appropriate skills to do the job.

**MEMBER VELSHI:** Thank you. And is there a fairly high level of mobility from one nuclear facility to another? Where do most -- where's the pipeline for your folks?

**MR. PLUMMER:** Brett Plummer for the record.

The pipeline is predominantly in New Brunswick and the power engineering courses in schools. There's not a lot of individuals coming from other nuclear power stations to New Brunswick. Occasionally that

happens, but it's not the norm.

We are somewhat concerned, obviously, with losing some folks with some work in Ontario, but we're taking the measures to try to retain those folks.

**THE PRESIDENT:** M. Tolgyesi?

**MEMBER TOLGYESI:** Merci, monsieur le président.

The staff CMD on page 74, this question of waste management. What is stated that:

"The New Brunswick Power has...a Likely Clean Program which screens all waste generated in Zone 3 to separate likely clean waste from radioactive waste..."

What's the likely clean waste; it's clean or not clean, or how far is clean or how far is not clean?

**MR. PLUMMER:** Brett Plummer for the record.

We have a very, very low tolerance for measuring radioactivity at the station and, essentially, if there's any, any counts above background it's considered radioactive which is actually very conservative compared to some of the other facilities I've been at.

So, basically it goes through a scanner to detect any kind of, you know, radiation above background;

if it is, then it's treated accordingly and, if it's not, then again, it's our way of reducing total waste -- radioactive waste.

**MEMBER TOLGYESI:** So, it's not just likely clean, it's clean?

**MR. PLUMMER:** That's right, it's clean.

**MEMBER TOLGYESI:** Okay. So, maybe you should say clean, not likely clean. That's in the staff -- Sorry, I am looking again at cyber security. And cyber security -- page 80 of staff CMD, one, two, third paragraph which is saying that:

"In June, 2016 CNSC staff reviewed the NB Power submission and concluded it met CNSC requirements. NB Power committed to full implementation...by December 31st, 2019."

What I am looking is that, you know the computer science and the data processing is evolving very fast. When you're looking these computer bugs, you know, they penetrate the systems, they are progressing very fast.

Now, here you are talking about 42 months. Forty-two months -- in 42 months, you know, when you look back 42 months ago how many -- we had Smart phones or something like that. So, there have been lots of changes.

So, if it takes so long to implement

what's there, from now on maybe there will be changes also on CSA standards. So, do you think it's an appropriate timeframe or it's not little bit too long?

**MR. PLUMMER:** Brett Plummer for the record.

The CSA standard cyber, we've done some preliminary evaluations to determine our susceptibility to cyber and there's two aspects to it.

One is cyber as far as the overall network for the station, which is really coordinated with the corporate NB Power group, and there's an oversight committee there to look at and make sure we have the appropriate behaviours and practices in place to try to prevent any infiltration into the corporate network. For example, if somebody brings in, you know, a virus with a stick or so forth, and we have detection systems trying to find out if we have any kind of virus.

The actual -- then there's the other aspect of inside the nuclear island, so to speak, which is our critical digital assets, our control systems that actually control the reactor, our regulating systems, our plant monitoring systems and so forth. We've done preliminary evaluation in turn and there's no interface with the outside world with those systems.

So, the aspect of actually going through

and then re-evaluating the critical digital assets to the new CSA standards, making sure we have the appropriate protection in place and so forth, we feel we have the time to do that.

**MR. FRAPPIER:** Gerry Frappier for the record.

If I could just add a little bit to that because, again, it comes back a little bit to our earlier conversation on implementing standards.

So, the CSA standard on cyber security is a brand new standard, so we're talking about from nothing, but the program at New Brunswick Power is not absent. So, they have a program, they've had a program for several years now, we've audited against it.

We have, with the CSA standard, a very top notch you know, a very modern, state-of-the-art approach to a program to ensure, as you said, as the threat evolves, as things change, we're going to have a program that can actually follow suit with that with a real emphasis on critical areas like instrumentation and control and that.

The major part of making sure we have good cyber security around things that are of interest to us, which is anything that might impact nuclear safety or nuclear security, we have already inspected against, we

already have things in place they've already done stuff.

Getting the overall program right up to the CSA standard, though, will take a few more years and -- sorry, inspection is scheduled for June, I've just been corrected, so...

But we have inspection programs in place, if you like. The standard itself, 2019 seems a long time away, but that's five years away from 2014 when it first came out and it's only two years away from now, if you like.

So, I'm not surprised that for a new program area like this it would take a while to become fully compliant with all the administrative aspects and that of the standard, but as far as ensuring there's some kind of cyber security that's protecting the nuclear island and anything that we think might affect nuclear security or safety, we already know that's in place.

If you want a bit more detail on that, we can certainly get one of our specialists to talk about that.

Sorry. So, maybe I'd ask Désiré Ndomba if he could add to this, please.

**MR. NDOMBA:** For the record, my name is Désiré Ndomba. I'm technical specialist at CNSC.

I concur with what Mr. Gerry Frappier say

about the cyber security. What I can say is, we already have an existing program in place and the existing program has been accepted by CNSC a while ago.

When we issued -- the new standard was put in place, it was published in October, 2015. So, with us, [indiscernible] do a gap analysis to see if there is any improvement it can do and to comply with the standard.

So, based on what they have done, that's why they come up with an implementation plan that we review and we accept it, specifically for the cyber security already -- is already the program in place. What they need now to see if they need to improve, to update what they have already as a cyber security asset and see if the cyber security asset have a chance for the cyber security to be update on the current program and also additional measure in place.

We don't think it's going to be a big issue for that and, as the plan is already in place, and the Phase I and Phase II will be complete next year, the remaining phase will be done in 2018 and 2019.

So, for us, we think that the current program in place is acceptable. And as Mr. Gerry Frappier mentioned, that we're going for inspection next June, 2017, where we try to make sure that the implementation phase is in order and everything is set up.

That's what I can add.

**THE PRESIDENT:** Thank you. Dr. McEwan?

**MEMBER MCEWAN:** Thank you. So, the New Brunswick CMD, page 92, around the Aboriginal consultation.

You talk in very, very general terms of leveraging partnerships wherever possible. So, do you have any -- I guess a number of questions arise out of this.

What percentage of your workforce is Aboriginal? Do you have any formal training programs or outreach programs into the schools, do you run scholarships in colleges, for example, things like that? And what percentage of your contractors will be First Nations?

**MR. PLUMMER:** Brett Plummer for the record.

I'll ask Kathleen Duguay to talk to that.

**MS DUGUAY:** Kathleen Duguay for the record.

I have our First Nation Director on the line with me today, which is Andrea Allen, and I will also ask Andrea to comment in addition to my comment to you.

We work very closely with the First Nation team in head office overall. We are engaged in several programs and we engage with the 15 communities of First Nations that we have in New Brunswick, [indiscernible]

And in terms of the specific on what is

their workforce percentage, the way it works is we would self-identify if we have First Nation or not and that's the privacy of the individual.

So, there are visible evidence that we would have First Nation in our workforce, but I will let Andrea comment some more on that comment.

Are you there, Andrea?

**MS ALLEN:** I am.

Yes, good afternoon. Andrea Allen, Director of First Nation Affairs and Ombudsman for the record.

As Kath -- can you hear me?

**THE PRESIDENT:** Yes, go ahead.

**MS ALLEN:** As Kathleen described, our employees voluntarily self-identify corporately. At the last report run we had approximately a hundred employees that self-identified as having Aboriginal ancestry.

**MEMBER MCEWAN:** So, to go to my other questions, do you have any scholarship programs, any formal training programs, any specific opportunities for local companies to work with you?

**MS ALLEN:** Andrea Allen for the record.

With respect to partnerships, NB Power has worked with the New Brunswick Community College to host information sessions for Aboriginals at campuses with power

line technician programs.

NB Power has also hosted an Aboriginal communities information sessions with the Maritime College of Forest Technology for Aboriginal utility arborist programs.

We also engage regularly with the Joint Economic Development Initiative, which is an organization devoted to advancing Aboriginal inclusion in industry.

We help inform their steering committees on various training programs and help support work exposures for their apprentices.

**MEMBER MCEWAN:** And working with local Aboriginal companies, is that sort of an active policy? Are there significant numbers of contracting companies of whatever disciplines involved who would be Aboriginal?

**MS ALLEN:** Andrea Allen, for the record.

With respect to any of our activities that are occurring on or near First Nation communities -- specifically hydro operations comes to mind -- we actively engage with the local band offices to actively employ their community members wherever practical and possible.

Two recent projects indicated over 40 per cent Aboriginal [indiscernible]

**The PRESIDENT:** Are you still with us?

**MS ALLEN:** Yes, I am.

**THE PRESIDENT:** You are breaking up. We are getting half sentences here.

Would you mind repeating the last?

**MS ALLEN:** Certainly.

With respect to any of our projects, construction projects or maintenance projects -- in particular hydro operations comes to mind as they neighbour our Aboriginal communities -- our management staff actively works with the band leadership to identify, train and employ their members wherever practical and possible.

Two recent projects this summer resulted in over 40 per cent Aboriginal participation.

**MEMBER MCEWAN:** Thank you.

**MS ALLEN:** You're welcome

**THE PRESIDENT:** Ms Velshi...?

**MEMBER VELSHI:** Thank you. A question or more so a comment for staff.

There are a number of documents or submissions that are still under review or you have just got them or you haven't had a chance to include your findings in here.

And I wondered if as you were getting ready for Day 1 and Day 2, whether you thought about scheduling of these, and also for Point Lepreau. That would have been helpful to have tried to have got those

earlier and have that information available.

Now having said that, some of these things just take their own time and you have to wait till it's done.

I think it would have been helpful if there was a summary of: And here's additional stuff that's going to be available for Day 2, because it was kind of spread out.

I don't know if it would be possible to get that over the next few weeks, but I think there seemed to be some fairly key pieces, whether it was a safety report, whether it was a PSA, or whether it was a Fisheries authorization, whatever it was. A lot of things were still in the works.

**MR. FRAPPIER:** Gerry Frappier, for the record.

I think there's two kinds of things that come late and were still under review.

One is information that is required for us to be able to get a recommendation to you because it's a requirement as part of the licence application, as part of the evaluation.

None of the information we're talking about here is of that nature.

The second kind of information we have is

we have an ongoing requirement for analysis to be done and for it to be brought in to us.

You mentioned the PSA. The PSA has to be updated every five years. So that's independent of the licensing process, it's independent of any proceedings of the Commission. It is a requirement within the Standards.

The same thing with the safety report and some of the other areas.

So those, sometimes the timing is such that it becomes awkward, like you suggest. We just received it this fall, which in some cases they were even early compared to what they had to do under the Standards.

We often take a year or so to really go through those and review them as part of our Compliance Verification Program.

What we've done to support the relicensing here is to make sure that we went through it very quickly as far as if we believe the results that they came up with, it would indicate that things are safe and okay to be recommending for a licence.

If anything in the new analysis had been identified that is significantly different or that indicated a margin wasn't met or there was some safety issue, New Brunswick Power is required under REGDOC-3.1.1 to report that separately to us as a major finding.

So we would have been told by New Brunswick Power their new analysis shows that what they thought was okay in fact is no longer okay. We would have that separately.

So there isn't information that we are digesting right now that we believe is key for this decision.

Now some of them we will be able to do before Day 2, or Part 2, so of course we should bring that to your attention.

We can get a list of that for you, if you like.

And then the other kind of information you mentioned, the *Fisheries Act* -- and we can talk a bit more about that. But that's a bit of an independent process to the licensing process. So it has a schedule of going forward with respect to determining if there's even a need for anything under the *Fisheries Act*.

But that process we're going to ensure is done properly and we can speak to that.

It's not a necessary prerequisite to coming to the decision that's before you right now, which is whether we should be authorizing them to continue operating or not.

**MEMBER VELSHI:** I hear you on that.

I think what I'm struggling with is the big things that would prevent you from recommending a licence for five years, exactly the same things that would make you shut them down today.

You know, it's not as though -- it would be something big that would say, you know, your margins are too small, or whatever it is, something fairly fundamental.

I see this licensing process as an opportunity for further engagement with different stakeholders. And yes, they can come in the course of time but then that opportunity doesn't exist for us to hear from the stakeholders or for the stakeholders to review and have a contribution to make.

So I think it's just being more cognizant of this is a special opportunity to allow some of that to happen.

**MR. FRAPPIER:** Agreed. And believe it or not, we did push a lot of things so it would be ready in time; otherwise, it might have been more.

But I would also point out that we will be in front of you, of course, every year at the annual report and that's where we often do say we've now completed a review of the latest safety report, for instance, or safety analysis and here's what we found.

But I take your point. There's nowhere

near the same engagement from especially the public.

**LE PRÉSIDENT:** Monsieur Tolgyesi.

**MEMBRE TOLGYESI:** Merci, monsieur le Président.

I will go to page 51 of the Staff. This is periodic inspection and testing and specifically for pressure boundary components.

What you are saying there is that the inspection program has demonstrated that the likelihood of failure has not increased significantly since the plant was put into service, which means it was high but technically it was low; it remains low.

What is an acceptable limit of likelihood of failure?

**MR. FRAPPIER:** Gerry Frappier, for the record.

I will begin this but then I'll ask Dr. John Jin to support me here.

So certainly the idea here is that it's good. It's good like it was when it started not that it's as bad as it was when it started.

But perhaps John Jin could add to that, please.

**DR. JIN:** John Jin, for the record. I'm the Director of the Operational Engineering Assessment

Division.

The statement in the CMD is very generic. If I can provide a more specific answer, so staff reviewed the periodic inspection program submitted by New Brunswick and we found that the program provided assurance for maintaining fitness service of the pressure boundary component for all susceptible degradation mechanisms.

So from the perspective, the CSA provides all the acceptance criteria for the inspection, for the potential degradation mechanism.

So we confirm that the programs provided by New Brunswick are sufficient to meet the criteria provided by CSA standards.

**MEMBER TOLGYESI:** So it means that it was low since it was put in service and it remains very low.

That's what you say.

**DR. JIN:** Right.

**MEMBER TOLGYESI:** Because when you say it's not increasing significantly, you could interpret that to say that it is not increasing significantly but it was 50 per cent before and it's now 60.

**DR. JIN:** The sentence in the CMD is written in the risk informed manner. So the risk informed manner is that by maintaining the periodic inspection program, the risk at the site due to any potential

degradation has not increased to the unacceptable level.

So "increasing significantly" is maybe too much a qualitative term, but there is very clear guidelines how much risk increase is not acceptable in the CSA.

**MEMBER TOLGYESI:** Do you have any limit of failure as such, a number, or it is not?

**DR. JIN:** So the periodic inspection program has to be conducted in a very deterministic way. The licensee has to inspect all the important major components. If they find any degradation, they have to assess not to affect any of the safety of the component.

Right now there is some element containing the risk concept and for some cases the licensee has to assess the probability of failure due to certain type of inspection finding. And there is criteria by the licensee.

**THE PRESIDENT:** Thank you.

I would like a question on page 92, Staff 92, where you talk about the PDP.

And by the way, there's a really good description of the PDP in the environmental assessment part. It describes all the stages of decommissioning as anticipated by NB Power.

The only thing that's missing is the date.

Can you share with us is it going to be 25 years or 30 years? Right now we should have a pretty good

answer to the life of the plant.

And if not that, what's the projected end date for the facility site to get back to nature?

You know, you can revise it as you update your PDP every time. But why are we afraid to actually put a number that's going to be, I don't know, 100 years from now, 200 years from now? What's your best guess that led you to the number that required for funding?

I'm trying to understand the difference between the existing \$673 million that's available against a funding requirement of \$555.6 million.

So somebody explain all this to me, please.

**MR. PLUMMER:** Brett Plummer for NB Power.

We've been asked this question several times. The reason we don't put an exact date on it because you need to assess the health of the pressure tubes as the plant ages and technology changes.

So to your point, whether it's 100 years or whether we refurbish again, a second go-around, or whether we retire the plant after 25 years or 30 years is yet to be determined.

So there is an inspection program. We look at the health of the pressure tubes and we make a determination on when we believe the end life will be.

But right now we don't have enough information to say it will be on this date.

**THE PRESIDENT:** But you must have some information because you have to derive how much money you need to put in the pot for all eventualities. Right?

**MR. PLUMMER:** Right.

**THE PRESIDENT:** So somebody is making an assumption here.

**MR. PLUMMER:** They are making an assumption and that's exactly what it is: an assumption.

**THE PRESIDENT:** Right. So I have no problem. What's the assumption?

**MR. PLUMMER:** Brett Plummer, for the record.

We'll get back to you on that assumption.

**THE PRESIDENT:** And again, you know, we understand the difference between a plan and reality and it can be updated as you get more and more information. But somewhere I think it would be useful to know, if you like, whether we end this century or two centuries from now, something along that line.

Okay, I'm back to the top of the line.

Dr. McEwan...?

**MEMBER MCEWAN:** The promissory note of the off-site emergency operations that's currently being built,

when do you anticipate it will be open? When do you anticipate it will be fully operational?

And for staff, how do we test that it is fit for purpose?

**MR. PLUMMER:** Brett Plummer for NB Power. I'm going to ask Charles Hickman to speak to that.

**MR. HICKMAN:** Good afternoon. Charles Hickman, Director Environment and Emergency Planning for NB Power.

So the new off-site centre is actually an existing building that we purchased from a third party. We actually purchased it just before we started our Intrepid exercise in 2015. So we've been doing work at that building for almost a year now.

We intend to have it fully operational in time for our Intrepid 2018 exercise. But it is already in use for various parts of our off-site activities today.

Just for clarity, although we are obviously a keen supporter in making this happen, effectively it is the New Brunswick Department of Emergency Measures Organization that directs the traffic, if I can put it that way, with regards to that building. It becomes their base of operation.

**THE PRESIDENT:** Thank you.

Ms Velshi.

**MEMBER VELSHI:** I have a number of fairly short questions. I'll just walk through my list.

So the first one -- and it's New Brunswick Power's written submission, page 17.

2015 was designated as the Year of Station Leadership; 2016 -- I'm sorry, your Year of Human Performance.

This is all under Station Leadership.

And 2016 as Improving Behaviours.

What's 2017 designated as?

**MR. PLUMMER:** Brett Plummer, for the record.

It's going to be equipment liability.

**MEMBER VELSHI:** Thank you.

And I'll sneak in a second question.

Page 71 on Emergency Preparedness.

You start off with the four cornerstones and recovery is the fourth one besides prevention, mitigation preparedness and response.

And yet as I look at the major components below that, I saw little around recovery.

Is that a major part of emergency preparedness as to what happens after?

**MR. PLUMMER:** Brett Plummer for NB Power.

There is efforts ongoing under recovery.

I'll ask Charles Hickman to talk about it more, how we're coordinating with the New Brunswick Emergency Measures Organization.

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

There's probably two parts to the answer for this one.

Firstly there is a CSA standard on nuclear emergency management I participate in. That standard is to both staff and the utilities.

The recovery aspect of emergency management is mainly what the CSA team has identified as requiring some attention. So it's an active file with the CSA file.

Locally we've started talking with the New Brunswick EMO folks in terms of exactly what recovery looks like and how we would progress with that and actually start putting together a plan.

The existing CSA standard does talk to having a recovery plan in place, but it's an area that I would say is an opportunity for the whole industry, both north and south of the border.

We are looking in the coming year and a half here to actually start doing some tabletop and

exercises around recovery. We did actually a tabletop exercise with the offsite resources last year, looking at the first steps of a recovery plan.

And we are in 2018 looking to do an exercise that touches on recovery [indiscernible] pathway monitoring program. So that is essentially beyond the first few days of an event, what would you do subsequently to that.

So we are starting to work our way through the development of a comprehensive recovery plan. It will take some time. We are working with industry both north and south of the border.

**MEMBER VELSHI:** Thank you.

Staff, do you have anything to add from a regulator perspective around recovery?

**MR. FRAPPIER:** I'll ask Luc Seguin to come and add a little bit.

I would point out, though, that this whole area is something that's been quite discussed at the international level as well. There's lots of work going on as to how we can improve recovery plans. And coming up in the spring we'll have our convention on nuclear safety and it's one of the focus topic areas to see.

So we'll be able to come back from that with what the rest of the world is doing as far as

recovery.

If Luc is here...

**MR. SEGUIN:** Good afternoon. Luc Seguin, Director of Emergency Management Programs at CNSC.

So as Mr. Hickman said, recovery is addressed in the CSA Standard on emergency management 1600.

In addition, with the new CNSC framework, regulatory framework, REGDOC-2.10.1 does have specific language about requiring licensees to give consideration to recovery and how they will transition into recovery.

The specific details of how the recovery will be done will be dependent on the actual incident. But as REGDOC-2.10.1 becomes implemented with the licensees, we'll be expecting them to be able to demonstrate how they would transition into recovery and what that recovery management organization would look like.

We recognize that New Brunswick Power has already undertaken some steps towards that. And Mr. Hickman talked about a tabletop exercise that is done with the provincial authorities, which I think may be a first in the country and one of the few types of activities like that that has been undertaken in North America.

So the focus up to now has been on prevention and then post-Fukushima response and now as REGDOT-2.10.1 gets implemented and then 1600 gets

implemented, they'll be more focused on how that retransition to recovery and manage that part of the emergency.

**LE PRÉSIDENT:** Monsieur Tolgyesi.

**MEMBER TOLGYESI:** Two short ones.

On page 16 of the Point Lepreau submission there is NB Power Pandemic Influenza Contingency Plan to mitigate the impact of a pandemic outbreak.

It is something special to New Brunswick or we have that across other nuclear reactors also?

**MR. PLUMMER:** Brett Plummer, for the record.

I'll pass that off to Charles Hickman in a minute.

Mr. President, in answer to your previous question, the end date for decommissioning, the assumption is 2037, which is based on 25 years, which makes sense, potentially the shortest period.

So it's based on 25 years.

Charles Hickman...?

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

I apologize. Could you repeat the question with regards to business continuity plans?

**MEMBER TOLGYESI:** You are saying that you

have a pandemic influenza contingency plan.

Is this something special to Point Lepreau?

Or staff, it is something which is across other power reactors?

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

So our pandemic emergency plan, continuity plan, is actually a holdover from [indiscernible] and from previous situations which had a potential to impact on availability of staff for our facilities.

So this is actually a corporate plan that applied across the entire corporation. It was put together and exercised with a lot of support from the province, health departments and so on.

It focused on if we had a situation. There could be a number of different kinds of pandemic type situations that would limit staff availability and how would we manage that in terms of personnel and the practicalities of operating, for the corporation, an entire grid for the supply of electricity to the public?

So this was a corporate-wide plan. We still have it in existence. It's one of the plans that actually is getting looked at for revision and update as we speak. We are doing some work on our business continuity

plans.

But it was a corporate-wide exercise.

**MR. FRAPPIER:** Gerry Frappier for the record.

Yes, all licensees would be expected to have a business continuity plan certainly to ensure their safe operation.

It's actually a bigger issue for them because they want to make sure, as was just mentioned, that the grid is actually continuing to be operated, which is less of our concern, and pandemic influenzas would be one of the potential triggers for needing a business continuity.

**MEMBER TOLGYESI:** Okay.

On page 20 of the staff's submission, you are saying that this is about the emergency response team, that a significant positive change was made with the addition of the emergency response team, which includes a leader plus eight members, and apparently they're supposed to be on the site 24-hours a day, seven days a week, which means about 35 persons, because it's a continuous basis.

You are saying that this emergency response team deals with various contingencies including medical, fire, and hazardous material, but not any operating responsibilities.

**MR. PLUMMER:** Brett Plummer for the record.

No, they do not have any operating responsibilities for operating the facility. They do help out in many regards, but their primary mission is medical, fire and hazardous material events.

You know, occasionally the operating crew may need additional help when there's no emergency going on with moving material and/or watching something, or something to that regard. They may help out, but they're there for those emergencies.

**MEMBER TOLGYESI:** My question is that's because they are included in the minimum shift complement, that's why I thought could they have any responsibilities in operations, because there you should have licensees who are either a shift operator or a shift supervisor.

**MR. PLUMMER:** Brett Plummer for the record.

The fact that we take credit for them for fire response means that they have to be there, so they are part of the minimum complement. They did replace that responsibility that operations previously had, but they're not certified operators, and they don't directly operate the plant.

**MR. FRAPPIER:** Gerry Frappier for the

record.

To be clear, the minimum shift complement is the minimum number of people that might be on both for operating the plant but also for handling emergencies, and so in the past the emergencies -- being able to respond to an emergency is part of what the minimum shift complement must be able to do, so now New Brunswick Power has taken steps so that part that has to do with fire, medical or hazardous materials, there's a special team dedicated to that, but they are not the team that would be operating the plant.

**THE PRESIDENT:** I'd like to bring Environment Canada if -- they are particularly helpful in assessing the environmental assessment that was done. Do we have Environment Canada still with us?

**MR. KIM:** Duck Kim for the record. I am available

**THE PRESIDENT:** Okay.

My question is, first of all, did you look at all of the environmental assessment study that was done?

Also, are you the people looking at the application for DFO?

**MR. KIM:** We have looked at not all of the -- we are continuing to look at the remaining aspects of the environmental assessment.

We have looked at the components that are of interest to our mandate, so on that point we are also waiting to -- actually, we have begun to review also the environmental risk assessment that we have recently received, and we are working toward the day two hearings, along with the CSNC staff.

As for the DFO authorization, that is a CNSC and DFO matter. That is not our mandate to look at the entrainment and impingement.

**THE PRESIDENT:** What could we expect for part two with respect to the DFO authorization? I mean we've been working on this. It's not new. It's been around for a long time. When can we bring this to a conclusion?

**MR. FRAPPIER:** Gerry Frappier for the record.

I'll ask Caroline Ducros to respond to that, please.

**MS DUCROS:** Dr. Caroline Ducros. I'm the Director of the Environmental Assessment Division.

The stage we're at now is we've received a second complete self-assessment. We have been working collaboratively with New Brunswick Power since February 2015 really to talk about the updates to the *Fisheries Act*, the MOU, the new definition of serious harm to fish, and

they submitted a preliminary self-assessment to us last April. We commented on that.

Now we have received -- I think DERPA, the subject matter experts, actually received that complete self-assessment January 18. In that self-assessment, New Brunswick Power may want to speak to that more, but they have concluded that, in accordance with the definition of serious harm to fish under the *Fisheries Act*, they will likely require a *Fisheries Act* authorization. Putting in place a *Fisheries Act* authorization itself is a process that takes some time, and one of the elements that takes more time is determining appropriate offsets to offset the impacts. That requires consultation with aboriginal groups and with the public.

Having said that, the design of the facility itself did take into consideration mitigating impacts to fish. There's an offshore intake with a velocity cap, so what we're talking about is residual impacts through impingement and entrainment to fish, and under the NSCA that's licensable because there are no population level effects.

In answer to your question, we can update you at part two about our analysis of their complete self-assessment, and we'll take it from there, we'll work collaboratively with DFO too.

If there's a *Fisheries Act* authorization required for that residual harm, the length of time that it takes is really dependent on outreach, engagement and developing the offsets.

**THE PRESIDENT:** So, DFO is not going to be able to give us a preliminary assessment of the situation?

**MS DUCROS:** We do the review of the self-assessment, and then we recommend to DFO if a *Fisheries Act* authorization is needed or not. New Brunswick Power have concluded that it's likely needed and they'll likely be applying for a *Fisheries Act* authorization. We'll know that by part two. We'll know that before part two in fact, but we will be able to report on it in part two. We can give updates at the regulatory oversight report annually too on where it is, but I mean it shouldn't take long once you get the whole process going.

**THE PRESIDENT:** NB Power, do you want to comment on this?

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

Staff gave a good summary in terms of where we are. I think the only thing that might be useful for folks is to understand a little bit of the background.

As was pointed out, we have a design and facility that is considered to be the best available

control technology today. The work that we've done over the past couple of years has demonstrated I think, certainly to my mind, clearly that the mitigation that that best available control technology achieves is effective.

Clearly, the number of fish entrained or impinged is very small. We do obviously entrain some, but the numbers are very small. There's no population level impacts indicated by the data. The data we have submitted is considered to be very conservative, so I'd describe it as being worst case. It's very conservative data, so at the end of the day I think technicality would drive us toward an application for an authorization under the *Fisheries Act*.

The level of offset, as indicated, is one of the items that gets a lot of discussion, so we'll be going through further discussions both with staff, and I certainly look forward to getting DFO's involvement as well, before day two so we have some sense as to what it might look like going forward.

It was a carryover from the previous licensing hearings in 2012. We're happy to get that work completed and be happy to move this to a conclusion.

**THE PRESIDENT:** Thank you.

Dr. McEwan?

**MEMBER MCEWAN:** I think my next questions

are really going to have to wait for that second review, because it was related to the tritium and organically-bound tritium, and I think it probably wouldn't be helpful to ask it now. I'll ask it at part two.

**THE PRESIDENT:** Okay.

Ms Velshi?

**MEMBER VELSHI:** Some fairly quick clarification points on the draft Licence Condition Handbook.

Staff, on page 15, for the compliance verification criteria for public information and disclosure, I don't know why you have the qualifier, "Where the public has indicated an interest to know". This is on the PIDP.

**MR. FRAPPIER:** Gerry Frappier for the record.

I would ask Isabelle to respond to that question.

**MS ROY:** Isabelle Roy for the record.

I'm sorry. Could you please repeat the question again?

**MEMBER VELSHI:** The page that I'm on is page 15 of the draft Licence Condition Handbook. Under "Compliance Verification Criteria", the third paragraph starts off with, "Where the public has indicated an

interest to know, the PIDP shall include a commitment to and disclosure protocol", and so on. I'm just saying why do you need to qualify where the public has indicated an interest to know? I mean shouldn't the information disclosure program require that in any case?

**MS ROY:** The way the PIDP works is that the licensee is asked to get the public's input prior to developing their protocol on their PIDP. Point Lepreau has done this over the past years. They have done this through their liaison committee. This is why it is formulated that way. The public has to tell the licensee what topics of interest they have, and then the protocol is developed based on that input.

**MEMBER VELSHI:** Okay. That's not how I read that. You probably want to revisit that.

**THE PRESIDENT:** While we are still talking about this, I know that there's a whole public information process. I've always asked this question. Does NB Power, in addition to all your consultations with the public, do surveys about what your local community thinks about you?

**MR. PLUMMER:** Brett Plummer for the record.

Yes, we do. I'll ask Kathleen Duguay to talk to that.

**MS DUGUAY:** Kathleen Duguay for the

record.

Absolutely. We do surveys on a yearly basis. Our next survey is scheduled to be done in the last two weeks of February.

Overall, our survey indicates really good support. The community is really interested to hear more about the station.

What we do when we do the survey, we readjust and relook at our program to see what are we going to do different next year as part of our public disclosure protocol.

**THE PRESIDENT:** Do they include the 18 indigenous aboriginal communities, and are the results posted?

**MS DUGUAY:** The results are submitted to the CNSC. They are not posted on our website, but whoever wants the information can ask for them.

**THE PRESIDENT:** Why wouldn't you post it? I mean I'm just curious. If you want the public to know about the local view, why wouldn't you post it?

Do they include the 18 communities that were outreached?

**MS DUGUAY:** I will check with the folks -- we hire an external firm that does our survey and they survey 600 people within the whole province of New

Brunswick, which I suspect would include the first nation communities, but I will get back to you and confirm that.

**THE PRESIDENT:** Thank you.

Ms Velshi?

**MEMBER VELSHI:** Again, in the draft LCH, pages 20 and 21, the last column that says, "Prior notification", just help me understand, prior notification to whom and of what?

**MR. POULET:** Ben Poulet for the record.

The last column that you point out regarding prior notification, it has to do with the licensee, or in this case NB Power, updating its documentation that is referenced here. When NB Power updates their documents, if there are some documents that are marked "yes", we have to see the document a period of time before its implemented in the station so we have a chance to have a look at it. We don't necessarily have to approve it, but we certainly can intervene if we need to.

The other ones, they just inform us that they're implementing a new document and there's no need to tell us ahead of time. We will do a follow up and inspections as required through the normal course of compliance verification.

**MEMBER VELSHI:** Thank you.

**MR. POULET:** Thank you.

**THE PRESIDENT:** Mr. Tolgyesi?

**MEMBER TOLGYESI:** No.

**THE PRESIDENT:** Ms Velshi?

**MEMBER VELSHI:** My last one is what do you anticipate for part two based on the feedback you get from your community, the requests for information, you know, what staff has heard? Any big things that you need to do or we need to anticipate between now and part two?

**MR. FRAPPIER:** Gerry Frappier for the record.

Of course, the main input to that will come from interventions that we will get over the next few weeks, but, as always, we would expect that there's going to be some interest in PSA and emergency preparedness always seems to be an item I think in this case, and that's part of the reason we wanted to have sort of a spotlight on seismic PSA. The last time we were in the community, seismic and concern over preparedness for earthquakes was quite an item, so I think we could expect that again to be coming.

PSA, everywhere we go, is a tool. I like to think that it's communicating well to the people, so that's why there's an awful lot of interest from intervenors, and they do ask a lot of questions, so that's good, we'll be ready to answer them.

**MEMBER VELSHI:** Point Lepreau?

**MR. PLUMMER:** Brett Plummer for the record.

I agree with that. Seismic PSA I think will be the issue that probably will get the most attention. I think, even amongst us, we need to get an alignment around whether it be targets, goals and limits. Emergency preparedness. I do think fish impingement, that will get some attention as well. I think equipment reliability on the station as a whole will get some attention.

**THE PRESIDENT:** I have a couple of quickies.

This is the environmental assessment, page 19. I spent a lot of time looking for Table 3.1. There's no table? Okay. I just want to make sure there is no such table. I was wondering what was hidden in this particular table. It sounds good, but you may want to correct this if there is no -- or add the table. I think somebody is coming up and explaining this.

**MR. FRAPPIER:** I'm sure we can explain that.

**THE PRESIDENT:** Go ahead.

**MS DUCROS:** I was just going to say, yes, we'll correct it for part two. We will make an amendment

to the --

**THE PRESIDENT:** Do you mean you're going to put the table in or you'll take out the reference? Don't answer it now.

**MS DUCROS:** I`m not answering that yet.

**THE PRESIDENT:** On page 26, I am still on the environmental assessment, there is what seems to me a lot of good work that was done on radionuclides in air, rain, water, soil, ground. You know, all the work, I expected a lot of it to have been summarized in your CMD, in NB Power, and a lot of it is in the EA, and it talks about some reports. My question is, and the question always is, have those reports ever been posted and made available to the public? Do we know?

Staff, I assume you've written this on page 26, the first paragraph.

**MR. FRAPPIER:** Gerry Frappier for the record.

I am not sure if is Andrew McAllister or Kiza who can answer that.

**MS SAUVÉ:** Kiza Sauvé for the record.

The annual report for the environmental monitoring program is not a requirement for them to post it online. I haven't seen it online. NB Power may know if it is online, but it's not a requirement from our end.

**MS DUGUAY:** Kathleen Duguay for the record.

We do have the environmental monitoring report posted on our website. We also have a high-level summary of our radiation emissions to the environment since the beginning of its operation, so we have a factsheet plus our environmental monitoring report posted in both languages.

**THE PRESIDENT:** But would that include food, you know, and milk? Most of the indigenous people keep talking about traditional food, et cetera. That's the thing they're interested in. Why wouldn't you put it on?

**MS DUGUAY:** It is on our website.

Kathleen Duguay for the record.

I've also been involved in some discussions with some of the aboriginal groups who have expressed interest in that report, which I will be providing them a copy.

Also, I've offered to them to do a presentation and discuss the report. Some parts of the report are a bit technical, some other parts could be -- they would be interested in certain areas, so I'm going to bring some of my subject matter experts with me and discuss the report.

**THE PRESIDENT:** I think you can anticipate

in part two we're going to have some of the indigenous people who got funding to talk about some of those issues. It would be nice to have some actual data as to what was measured and what can be shared with them.

My last question is I was intrigued -- actually, there's really two questions -- I'm still intrigued about your monarch study. Everybody is saying the monarch is the best indicator that something is wrong, so what's the population of the monarch around the plant?

**MR. PLUMMER:** Brett Plummer for the record.

I honestly don't know what the population is. We can find out if you'd really like to know the population.

**THE PRESIDENT:** But you are studying it and you are monitoring the --

**MR. PLUMMER:** I'll pass it on to Charles Hickman in a minute, but the reason we put that in there was we support, obviously, the study of the monarch on our facility. It's a large industrial power plant, but it represents the fact that we're a custodian to the environment, and the fact that you can have a butterfly population on the property next to a large industrial facility like that shows that we really do care for the environment.

Charles Hickman.

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

This is actually a nice story. Brett is absolutely right, we are a large industrial facility, but nonetheless we have a number of unique features on the facility. We have a bird observatory at the site of an old lighthouse, and in that area they've also been doing studies on the monarch butterfly. It's basically a migration route, a small migration route for the monarch, they go through that. We've actually had discussions and met with the people who are doing that study, so we're just making our property available to them to do the study, we're not doing anything direct to it.

The nature observancy, as I said, there's a -- I'm having a mental blank on the name -- anyway, there's a group that is actively involved in working around the points. Kathleen I think can probably speak to it more than I can. In fact, she has met with them and we've actually covered their activities as part of a newsletter, so perhaps Kathleen could complete the story for me.

Thank you.

**MS DUGUAY:** Kathleen Duguay for the record.

We're fully engaged with the naturalist

club that is at the point where the station is, where the lighthouse is, so they have access to the station to go do their study. We support them.

There is an international organization that studies the migration. I don't have the details of how many birds or how many butterflies, but what I will say is that they will be participating on day two to tell their story about their engagement with NB Power.

**THE PRESIDENT:** I'm not an expert in the field, but I thought you put the Monarchs here as a good indicator of the health of the environment around the power plant. If not, then I don't know what I'm talking about. But that's what I thought you guys were trying to do here.

So I'll leave that with you.

Then my last question, absolute last question, is on the EA, page 29. At the logical and surface water there's an issue with iron contaminating some aquatic receptors and there's a promise to take some studies. So somebody explain to me who is going to do the studies, and when, and will there be some information about this for Part Two?

**MR. HICKMAN:** Charles Hickman, for the record, at least from NB Power's point of view.

As part of our ecological risk assessment, which we have done over the past couple of years, we looked

at a whole series of both radiological and non-radiological elements and compounds to see if we are having an impact on the environment, and what the risk from that might be.

As part of that, you essentially look at a whole series of monitoring data, and you look to see if any of the compounds are above reference levels or certain criteria. New Brunswick is renowned for its high iron and high manganese content in its groundwater. When we looked at these samples, we identified that both manganese and iron were high. Manganese, though, is recognized in that area as being high anyway. The iron appears still to be higher than we might have expected relative to the background.

So between now, and I hadn't planned it by day two, but we might be able to do something, we were going to look at more data around the area to see if iron is a naturally high-occurring metal in the area, and see if we are sort of within the natural variation or whether we have a separate issue that we need to look at.

So it's known to be high across the majority of the province on the manganese. It's still an anomaly we need to get some more information on. So we will try and have some information for day two.

**THE PRESIDENT:** Thank you.

That's the last question. So thank you

very much. This concludes part one of the hearing. I guess we will reconvene on May 10<sup>th</sup>, I believe.

**MR. LEBLANC:** May 10 and 11. They're correct, in Saint John.

**THE PRESIDENT:** Go ahead.

**MR. LEBLANC:** We just remind the public that it is invited to participate either by oral presentation or written submission on hearing part two. Persons who wish to intervene in part two of the hearing must file their submissions by March 27<sup>th</sup>.

If you borrowed interpretation devices, remember to return them to the reception and claim your ID card.

We will proceed with the Commission meeting at 4:15, Mr. President, as opposed to 4:45, as originally planned?

**THE PRESIDENT:** Sure.

**MR. LEBLANC:** We'll do that.

So thank you very much, and safe travels.

--- Whereupon the hearing concluded at 3:51 p.m. /

L'audience s'est terminée à 15 h 51