

**Canadian Nuclear  
Safety Commission**

**Commission canadienne de  
sûreté nucléaire**

**Public hearing**

**Audience publique**

**February 20<sup>th</sup>, 2013**

**Le 20 février 2013**

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

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14<sup>e</sup> étage  
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**Commission Members present**

**Commissaires présents**

Dr. Michael Binder  
Dr. Moyra McDill  
Mr. Dan Tolgyesi  
Ms. Rumina Velshi  
Dr. Ronald Barriault  
Mr. André Harvey

M. Michael Binder  
Mme Moyra McDill  
M. Dan Tolgyesi  
Mme Rumina Velshi  
M. Ronald Barriault  
M. André Harvey

**Secretary:**

**Secrétaire:**

Mr. Marc Leblanc

M. Marc Leblanc

**Senior General Counsel :**

**Avocat général principal:**

Mr. Jacques Lavoie

M. Jacques Lavoie

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Ottawa, Ontario

--- Upon commencing at 9:06 a.m./

--- L'audience débute à 9h06

**Opening Remarks**

**M. LEBLANC:** Bonjour, Mesdames et Messieurs. Bienvenue à cette audience publique de la Commission canadienne de sûreté nucléaire.

The Canadian Nuclear Safety Commission is about to start the public hearing on the application by Ontario Power Generation to renew for a 5-year term its operating licences and to merge, in fact, the operating licences for the Pickering Nuclear Generating Stations A and B.

The Commission meeting is scheduled to start at 2:00 p.m. today and resume tomorrow morning at 9:00 a.m.

During today's business, we have simultaneous translation.

Des appareils de traduction sont disponibles à la réception. La version française est au poste 2 and the English version is on channel 1.

I would ask that you keep the pace of

speech relatively slow so that the translators have a chance to keep up.

Les audiences sont enregistrées et transcrites textuellement.

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

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

And 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, présidera l'audience publique d'aujourd'hui.

Mr. President.

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

And good morning and welcome to the public hearing of the Canadian Nuclear Safety Commission.

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

Je souhaite la bienvenue aux gens ici

présents and welcome to all of you joining us via teleconference or watching the webcast.

I'd like to begin by introducing the Members of the Commission that are here with us today. On my right, Dr. Moyra McDill and Monsieur Dan Tolgyesi. On my left is Ms. Rumina Velshi, Dr. Ronald Barriault and Monsieur André Harvey.

We have heard from Marc Leblanc, the Secretary of the Commission, and we also have with us, Mr. Jacques Lavoie, Senior General Counsel to the Commission.

**MR. LEBLANC:** Before adopting the agenda, please note that three supplementary Commission Member Documents or CMDs were added to the Agenda after publication on January 22<sup>nd</sup>, and these are listed on the updated Agenda and the documentation is also available at the reception desk.

Mr. President?

**THE CHAIRMAN:** Okay, I think we're ready now to call for the adoption of the Agenda of the Commission Members, as outlined in CMD 13-H1.A.

Do I have concurrence?

For the record, the Agenda is adopted.

**13-H1.A**

**Adoption of Agenda**

**THE CHAIRMAN:** So let's proceed with OPG's application.

I want to note that there are a few representatives from other government or municipal departments joining us via teleconference, and they will be available to answer questions after the presentations.

So just -- here comes the fun part, I have to verify technology. Let me start with Mr. Tom Kontra from Emergency Management Ontario.

Mr. Kontra, can you hear us?

Is he on?

**MR. KONTRA:** Good morning, sir.

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

Mr. Ciuciura, from Durham Emergency Management Office, can you hear us?

**MR. CIUCIURA:** Yes, Dr. Binder, I am here.

**THE CHAIRMAN:** Thank you. Welcome.

Mr. Hoggarth, from Fisheries and Oceans?

**MR. HOGGARTH:** Yes, I'm online.

**THE CHAIRMAN:** Thank you.

And Ms. Ali and Mr. Kim from Environment Canada?

**MS. ALI:** I'm Nardia Ali, here from Environment Canada.

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

And Mr. Doehler, from Ontario Ministry of Labour?

**MR. DOEHLER:** Yes, Dr. Binder, I'm online.

**THE CHAIRMAN:** Great. We've got a pretty good set of people who can answer a lot of questions I'm sure, Commissioners will have.

So, Marc?

**MR. LEBLANC:** So this is Day One of the public hearing. The Notice of Public Hearing 2013-H-03 was published on December 19, 2012.

Submissions from OPG and CNSC staff were due on January 21<sup>st</sup>. 2013.

February 13, 2013 was the deadline for filing of supplementary information. I note that supplementary information has been filed by CNSC staff and OPG.

Day Two of the public hearing is scheduled for May 29<sup>th</sup> and 30<sup>th</sup> and will be held at the Pickering Recreation Complex in Pickering. The public is invited to participate either by oral presentation or written submission at the Day Two hearing. The deadline for the public to file a request to participate and a written submission is April 29<sup>th</sup>, 2013.

In a notice published on November 7<sup>th</sup>, the

CNSC announced that it is allotting funds under its Participant Funding Program to help Aboriginal groups, members of the public, and other stakeholders interested in reviewing and commenting on the licence application submitted by OPG, to prepare for and participate in Hearing Day Two.

December 7<sup>th</sup> was the deadline to file a request to receive participant funding. The Commission received several requests for funding.

A Funding Review Committee, which is independent of the Commission, as it is made-up of external members not related to the CNSC, rendered its decision on February 11, and provided funding to five applicants. The decision is available on the CNSC website.

Mr. President?

**THE CHAIRMAN:** Okay, I guess I would like to start the hearing by calling on the presentation from OPG, as outlined in Commission Member Documents 13-H2.1 and H2.1A.

And I understand that Mr. Jager will make the presentation.

Please proceed.

**Ontario Power Generation Inc.:**

**Application to renew the Power  
Reactor Operating licence for the  
Pickering Nuclear Generating Station**

**13-H2.1 / 13-H2.1A**

**Oral presentation by  
Ontario Power Generation Inc.**

**MR. JAGER:** Thank you, Mr. Chairman, and Members of the Commission. Good morning.

For the record, my name is Glenn Jager; I'm the Senior Vice-President for Ontario Power Generation's Pickering nuclear generating station.

I have with me today Martin Tulett, he's the Deputy Vice-President; Robin Manley, to my right, is the Manager of Regulatory Affairs and behind me, Shane Ryder, the Director of Operations and Maintenance; Carl Daniel, Director of Station Engineering; and Mark Elliott, who is the Chief Nuclear Engineer for OPG.

Other representatives of the OPG team are also here today to assist in responding to your questions.

The Pickering nuclear station has been safely providing electricity to the Ontario grid for over 40 years. Pickering nuclear has six operating reactors,

with a total output of 3,100 megawatts. That's enough to serve a city of about 1.5 million people, about the size of Ottawa.

Two units have been placed in the safe storage state and will not be restarted. The remaining units will operate safely and virtually greenhouse gas emissions free to year-end 2020.

The current power reactor operating licences for Pickering A and B expire on June 30<sup>th</sup>, 2013 and we are here today to request one licence for the combined Pickering station for a five-year period, to June 30<sup>th</sup>, 2018.

As site Vice-President of Pickering, I was here before you three ago for the Pickering A licence renewal and committed to improving our performance and striving for excellence. I'm here today not only to reaffirm that commitment for the Pickering site but to outline how Pickering's performance has improved and how we are positioned to sustain this improvement and keep striving for excellence.

During this licensing period Pickering has continued to demonstrate industry-leading safety performance and has steadily improved many areas important to safety and reliability of the plant.

Pickering has met or exceeded all of our

regulatory commitments to protect public safety.

In this presentation I will review our safety performance, our human performance, the performance of the plant, and our fitness-for-service and aging management programs.

I will also outline some of the major initiatives in investments in the plant that we are taking to support continuous improvement, our commitment to the community and the future plans for continued operation.

OPG remains committed to continuous improvement using a fleet approach for the establishment of our processes and programs to ensure that we achieve our safety objectives.

The information that we will be presenting demonstrates that we continue to be qualified to operate the nuclear -- Pickering nuclear generating station and we will continue to make adequate provision for protection of the environment, the health and safety of persons, and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Safety is a cornerstone of nuclear operations at OPG. We are proud of our safety record and work very hard to maintain it. Between May 2011 and January 2013, we have worked over eight million hours.

Our results in the industry standard measures of all injury rates and accident severity rates all show an improving trend throughout the licence period and have been well below the target.

This graph shows that our accident severity rate is zero demonstrating that Pickering has sustained no lost time injuries in 2012. In addition the all injury rate metric is improved by 60 percent which shows a continuing reduction in low-level injuries.

Pickering's conventional safety performance is excellent. We want to sustain and continuously improve this performance. Our target is zero injuries. We track and trend even minor issues and put pre-emptive actions in place to prevent events.

In terms of radiation safety, during the licensing period, there were no recordable doses at Pickering which exceeded the regulatory limits or OPG's lower administrative dose limits. The average worker dose per year is less than half our exposure control levels, which are more restrictive than our administrative limits. And those are lower than legal limits.

We have reduced the number of unplanned tritium uptakes by workers by more than 50 percent. We had zero unplanned external radiation exposures in 2012. This meets industry best performance. These are lower

level events which are seen as precursors to more significant events. We learn from these minor events and develop improvement plans to further reduce worker exposures in the future.

We continue to invest in improving safety and reliability of our Pickering station. This requires a large scope of outage work, which is sometimes dose intensive. As a result our total combined dose is higher than target and actually rose in 2012. Pickering has a detailed awareness strategy and will continue to drive reductions in personnel dose.

As well, based on industry experience, OPG implemented a world-class alpha program using new alpha protection equipment, training for workers and enhanced radiation protection procedures.

Environmental stewardship is key to the good operation of a nuclear power plant. Evidence of Pickering's environmental stewardship is shown by our emissions which have been well below regulatory limits for many years and have been reduced even further over the licence period.

Dose to the public has been only a fraction of one percent of regulatory limits for the entire licence period. We've achieved a 24 percent reduction in airborne tritium emissions over the licence period through

improvements and equipment performance and meet mitigation efforts and will continue working to further reduce these emissions.

There have been zero consequential spills during the licence period. Pickering tracks and trends all spills regardless of consequence to ensure -- in order to ensure that we address any precursor events through our corrective action program.

Pickering has met regulatory targets for fish infringement and entrainment through use of a fish diversion system and other offsets. OPG plans to continue and -- continue to monitor and demonstrate long-term compliance to these targets. And we are working closely with Environment Canada and the Department of Fisheries and Oceans.

In 2012, our station became the first Canadian organization to be recognized by the International Wildlife Habitat Council for our efforts to improve the habitat for butterflies and bees on our lands and in other community -- community locations and for our educational programs for youth and families.

The Pickering Board of Trade has certified us as an eco-business to their gold standard recognizing that our initiatives demonstrate leadership and environmental stewardship. We've also been recognized by

Durham Region Smart Commute program for encouraging and enabling alternate eco-friendly commuting practices.

The OPG team has been in front of the Commission many times to speak of our work in response to the Fukushima -- Fukushima Daiichi event. We have confirmed that the Pickering nuclear site is in an area of low seismic activity and plant structures and systems are seismically robust in relation to the assessed risk. Work is progressing on schedule for the Fukushima action items. And OPG has completed and requested closure on 77 of the 101 FAI's.

Emergency response capability has been expanded to include extreme events. As shown on the slide, equipment that can independently supply power and cooling during such an emergency is now onsite and available for service. Responders are practising drills for equipment deployment and to rehearse actions.

As stated before this Commission on several occasions, we will continue to monitor the follow-up and Fukushima Daiichi generating station and cooperate with other utilities to apply lessons learned and reinforce our response capability.

Safety is a part of everything we do at OPG and Pickering. This is our safety culture which we assess and evaluate routinely to ensure it remains strong.

As I continue on to describe our human performance, operating performance, and other programs, Mr. Chairman and Commissioners, I'll note that all those programs support and complement our safety programs.

OPG's ongoing focus on continuous improvement in human performance has reduced site event-free day recess, a universal measure of human performance within the industry. We have set targets at industry benchmark and -- and have improved by 29 percent.

In addition we use lower level indicators including measuring events at department and crew levels to engage staff to further improve. The steps we have taken in amalgamating our two stations have leveraged best practices across the plant and established clear accountability to continue to improve human performance in the future.

Some of the many steps we have taken to improve human performance include: setting high standards; observation and coaching in the field by supervisors; focussing on core event-free tools and fundamentals; obtaining fleet and industry peer assistance; and holding oral supervisory review boards with each supervisor every two years to assess standards and ensure consistency and expectations.

These measures have enabled reductions in

low-level events that are precursors to the more significant events as shown in the graph.

Human performance is a key element in improvements to operation. And OPG training programs are a key tool to improve human performance. OPG training programs have received industry recognition for their excellence. The initial qualification training program and the re-qualification training program are specific to each job function.

Training is owned by the line organizations and line managers are required to ensure that training drives performance in the station. Each training program uses the systematic approach to training which is task-based training. Training programs are structured, challenging, thorough and industry-proven to produce a highly knowledgeable and skilled work force.

We improve our programs through feedback from self-assessments and CNSC inspections and are currently working on action plans for Pickering B certification training and ERO training documentation.

All of our new station supervisors and managers receive initial training on leadership skills and supervisory techniques. And there are two refresher trainings each year for all supervisors on events that shape the nuclear industry and the lessons learned from

these events. Our staff are qualified and competent to safely and reliably operate our plant.

Before getting into a review of the performance of the station, I would like to briefly go over the organizational changes to improve performance that have taken place at Pickering during this licence period.

The previous Pickering A and B organizations have been amalgamated to become the Pickering site. Operations, maintenance, work management and other departments have been amalgamated to become site-wide organizations. We have seen significant improvements from the amalgamation such as improved resource utilization, improved teamwork and alignment of best work practices and standards.

Performance reporting has been standardized and benefits have been realized in the execution by the greater depth in the knowledge base and sharing of experience. Future benefits will be obtained from strategies such as days-based maintenance and specialty crew maintenance.

The expected opportunities are a greater sharing of equipment and system expertise, clearer accountability and improved human performance through a standardized work processes across the station. Keeping

an engaged workforce is important to us as we approach the end of the life of the plant.

Pickering has shown improving operational performance over the current licensing period. Our force loss rate has been improved by 59 percent over the period through plant investment and reducing challenges to operators, which also improve safety.

Corrective maintenance backlogs have been reduced to industry benchmark levels and we will continue to focus on backlog reduction to drive improvements and equipment reliability. We have reduced our fuel defects more than 90 percent to essentially zero defects. This performance is better than industry target and meets industry goals.

Our reactor trip rate has been on average better than the industry benchmark of 0.5 reactor trips per 7,000 hours of operation. But this rate can be reduced by continuing to focus on improvements and equipment reliability and reduction in human performance events and errors.

Pickering's objective for the 2013 to 2015 business plan is to continue to focus on safely achieving high performance and to support Ontario through reliable electricity production during the upcoming Darlington refurbishment.

To meet these objectives, Pickering and OPG continue to work closely and benchmark with industry peers to implement the best and most effective practices. We've implemented proactive performance measures and targets in a range of areas, including preventative maintenance, corrective and deficient maintenance backlogs, functional failures, system health indicators and many others. Performance measures and targets were developed consistent with industry best practices.

We have a longstanding and comprehensive periodic inspection program, regularly updated, that meets CSA and CNSC standards. Inspections of major components are being completed to confirm their on-going fitness for service.

We've implemented a cycle plan process for work management to improve the effectiveness of getting work done on schedule, and we're taking the time and investing the money to increase the scope of our outage work to fix the plant and improve safety and reliability.

OPG and Pickering management recognize the Commission will have questions about how we will continue to safely operate the Pickering station until the end of commercial operations in 2020.

We have an extensive aging management program to ensure that we know the condition of our

equipment and continue to demonstrate it is safe and fit for continued operation. This includes a comprehensive program compliant with CNSC regulatory document RD334 on aging management, predictive and preventative maintenance that addresses routine wear and provides an important defence on detection of unexpected equipment degradation. The condition of components is assessed and replacements are done as required. Major component inspections confirm our on-going fitness for service.

And initial indications from research and development has given us high confidence that our field channels will be reliable and safe to operate until 2020, which will be confirmed through the on-going assessments and material submitted to meet the requirements of CNSC staff and any hold points that are established.

Nuclear safety is an overriding priority across the fleet. At OPG we continue to update our safety analysis to new standards to demonstrate safe operation of the Pickering plant. For example, probabilistic risk assessment employs the industry's best practices. OPG has also adopted the new methodology for human reliability analysis.

The assessments demonstrate that the risk of the Pickering station to the population living and working in the vicinity is significantly lower than other

risks to which they are normally exposed. As well, the risk models have been used to ensure that the configuration of the plant due to operations, maintenance and proposed design changes will never result in an unacceptable level of risk to the public.

Nuclear safety is more than analysis. Pickering has executed a number of major projects to improve safety margins. For example, the passive autocatalytic recombiners, which are used for hydrogen mitigation in the event of a severe accident, have already been installed on three of the Pickering units. The remaining units will have installations completed by 2014.

The emergency coolant injection strainers have been enhanced to provide greater capability and therefore greater safety margins. Installation is complete on Unit 1 and installation on Unit 4 will take place later this year.

Equipment reliability is a key element to operational excellence. Continued investment in fleet driven programs have resulted in continued improvement. Two examples of projects that have been executed to improve equipment reliability are shown in the slide and they are the control upgrades for the Pickering emergency power generators and standby generators and proving reliability of emergency power, and the replacement of

fixed area gamma monitors adding additional remote monitoring which improves both equipment reliability and worker radiological safety.

Large investment in fuel handling equipment improvements is improving their reliability beyond the original design performance expectations.

In 2012 we initiated a three year program we call 3K3. It stands for 3,000 key work orders to be executed in three years specifically targeted to improve plant safety and reliability. We are currently on track for the execution of this key work.

We've also established a centre of excellence strategy. A centre of excellence was established for motors in 2012 and others are planned for other critical components such as pumps and valves.

A centre of excellence brings together the best component engineers from Pickering, Darlington and the fleet along with supply chain. The centres of excellence will establish industry benchmark best practices and engage in the resolution of complex component issues.

As previously submitted, OPG has decided not to refurbish the Pickering station and instead is extending the operation of the Pickering five to eight units approximately five years beyond the normal assumed

design life. This is being accomplished through our continued operations plan which follows the requirements as laid out by CNSC staff.

The Pickering Units 1 and 4 pressure tubes have been replaced and will remain fit for service until the Pickering five to eight units are shutdown.

Detailed analysis, followed up by thorough inspection campaigns has been and will continue to be performed to ensure the life limiting plant components fuel channels have plenty of margin through the licence period and through to 2020.

Investments in plant programs and people are documented in our sustainable operations plan provided to CNSC staff which demonstrates how we will safely operate the plant until the end of commercial operation.

OPG has already prepared initial decommissioning plans and plans for the long-term management of radioactive waste. During the next licence period OPG will be submitting more detailed plans describing the processes which will follow the end of electricity production in 2020.

At Ontario Power Generation we believe we not only have an operating licence granted by the CNSC, we also have a social licence which is earned and maintained through the trust and support of our host community. We

work hard to maintain our social licence by operating our facility transparently and accountable to the local community.

We have ensured our capability to share information with key stakeholders on a 24/7 basis through a wide range of vehicles such as stakeholder notification protocol and our community information line and website. Members of the public can also follow our Twitter feed which posts current news and facts and currently has nearly 2,000 followers.

Our neighbours' community newsletter is distributed to about 125,000 homes and businesses. Our Community Advisory Council membership represents a good cross-section of our community stakeholders. I and other senior staff have shared information on safety and station activities on a monthly basis for the past 14 years. Perhaps more importantly, we have listened to the council's perspectives and used them to shape our decision making.

We regularly meet and talk with our host community elected officials. We also meet regularly with First Nations and Métis groups.

OPG staff host and participate in community events to demonstrate our shared set of values and encourage dialogue with community residents. We partner

with dozens of important environmental, educational and community building groups.

OPG and its employees demonstrate our commitment to our host community by being active and giving back to the community. For example, in the photo you see there volunteers are assisting seniors with yard work that they can no longer complete themselves.

Pickering's performance remains strong and improving in the areas of nuclear and conventional safety, radiological protection and environmental protection meeting our international obligations and bettering industry and regulatory targets. Our operating performance has improved over the licensing period.

I am accountable and you have my personal commitment to safely and reliably operate the Pickering station. Our results demonstrate that commitment and improvement.

In conclusion, Mr. Chairman and Commissioners, OPG's Pickering team remains qualified and competent to safely manage and operate the Pickering nuclear generating station. We have robust programs in place to ensure nuclear safety and the safety of our workers, the public and the environment. We are committed to execute the plans we have in place to ensure the safe and reliable generation of electricity.

I now invite any questions the Commission might have.

**THE CHAIRMAN:** Thank you.

Before getting to a question period I'd like to hear from CNSC staff, and I understand they're going to make a presentation as outlined in CMD 13-H2 and H2.A, and I understand that Mr. Rzentkowski will make the presentation. Please proceed.

**13-H2 / 13-H2.A**

**Oral presentation by**

**CNSC staff**

**MR. RZENTKOWSKI:** Thank you very much.

Good morning, Mr. President and Members of the Commission. My name is Greg Rzentkowski and I am the Director General of the Directorate of Power Reactor Regulation at the CNSC. With me today is Mr. Miguel Santini, Director of the Pickering Regulatory Program Division. Regulatory and technical staff from the CNSC are also present and available to answer any questions the Commission may have.

This presentation provides an overview of information in relation to Ontario Power Generation, Pickering Nuclear Generation Station, more specifically the renewal of the Pickering power reactor operating

licence.

For simplicity, throughout the presentation, we will refer to the licensee as OPG and the Pickering Nuclear Generation Station as Pickering. Furthermore, we'll refer to the Pickering Power Reactor Operating Licence as operating licence.

I would like to begin by providing a brief outline of our presentation. As you can see on the slide, the presentation includes the following: an overview and background on the licensing matters, information on OPG's application for the renewal of operating licences, CNSC staff's assessment of OPG past performance, and other regulatory matters of interest including information requested by the Commission at previous licensing renewal hearings such as station agent management and end of life and decommissioning strategies.

The presentation will end with CNSC staff's overall conclusions and recommendations for the operating licence renewal. The current Pickering A and B operating licences expire June 30, 2013. OPG plans to operate Pickering until 2020 and has requested a five-year combined Pickering A and B licence as directed by the Commission in 2010 during the relicensing hearing.

Consequently, in addition to the licensee programs, CNSC staff review covered aspects of importance

to aging facilities and approach to end of commercial operations. In the proposed operating licence, CNSC staff have included a regulatory hold point for the reassessment of the safety case which is required to justify Pickering operation beyond the assumed design life of fuel channels.

The life of fuel channels, which are life-emitting components in all Candu reactors is currently estimated at 30 years of operation at 80 percent of capacity or 210,000 of effective full power operation.

Pickering, shown on this slide, is located along the north shore of Lake Ontario in the region of Durham, east of Toronto. It consists of eight Candu reactors which have the combined generating capacity of about 3,000 megawatts. Construction of Pickering A started in 1966 and Pickering B in 1974. It was the first reactor to reach criticality in 1971 and 1982 respectively.

Of the four reactors at Pickering A, Units 2 and 3 are defueled and placed in safe storage. Units 1 and 4 were shut down in 1997 for extensive upgrades and were subsequently returned to service in 2005 and 2003 respectively. Of the four reactors at Pickering B, all the units are operating.

I will now pass the presentation over to Mr. Santini who will discuss OPG's application for the

Pickering licence renewal and will also provide a summary of OPG's performance.

Miguel?

**MR. SANTINI:** Thank you, Dr. Rzentkowski. Mr. President and Members of the Commission, my name is Miguel Santini. I'm the Director of the Pickering Regulatory Program Division.

In assessing this licence application, CNSC staff considered OPG past performance, the completeness and adequacy of the licence application and provision for continued operation beyond the assumed design life of the pressure tubes in Pickering B.

As stated before, special considerations have been given to some aspects of the application that were of interest to the Commission members during the last licensing hearing. CNSC staff assessment indicates that OPG is qualified and has adequate provisions in place to safely operate Pickering.

These slides provide the overall plant rating for Pickering over the current licensing periods, three years for Pickering A and five years for Pickering B for the 14 safety and control areas.

It can be seen that most of the safety and control areas were rating satisfactory over the five years. In 2008, there were two below expectations and one

fully satisfactory. The changes of these below expectations to satisfactory are explained later in the -- later on in the presentation.

The change in the safety rating from 2008 to 2009 was due to a change in the CNSC's rating methodology and definitions. Performance by the licensee was consistent during this time and met all requirements. The ratings for 2012 are preliminary as the last of the findings are being tabulated in transit. CNSC staff will advise the Commission at the Day 2 Public Hearing should there be any change in the overall performance ratings for 2012.

CNSC staff has summarized OPG performance on the next slide. Overall performance has remained satisfactory during the current licensing period. No workers or members of the public have received a dose in excess of regulatory dose limits and all radiological releases were well below regulatory limits.

OPG programs were implemented and maintained effectively in accordance with regulatory requirements. OPG has established and implemented safety enhancements during the current licensing period. CNSC staff are satisfied with the significant progress made by OPG in implementing the Fukushima action items. All submissions, due by Quarter 4 in 2012, described in CMD

12-H2 Table D4, were received.

OPG requested closure of all short-term actions. The submissions are currently under review by CNSC staff. Detailed status of the FAIs for all MPPs will be presented in our committed annual update to the Commission in the summer, however an update for Pickering will be provided at the Day 2 hearing.

With respect to OPG's work and preparation for the end of commercial operation, CNSC staff is satisfied with the progress up to date. The following slides will focus on performance assessment of safety and control areas that require specific updates as shown in the last two bullets of the slide. The compliance verification activities by CNSC staff during the current licensing period comprised numerous desktop reviews and over 90 Type 1 and Type 2 inspections.

In addition, site office inspectors carry out daily work balance or field inspections following our risk-informed base line compliance program. In the course of compliance verification activities, CNSC staff raises action items on the licensee to track the resolution of those issues and return to full compliance.

Significant progress has been made on improving safety culture at Pickering since OPG received the below expectations rating in the area of management

system in 2008. As of 2009, the management system as CA has been consistently rated satisfactory. OPG is implementing three resource-intensive projects with the organization.

First is the amalgamation of Pickering A and B to put the site under one senior leadership team. Second is the base maintenance project which takes non-essential maintenance personnel and activities off shift work. In this case, CNSC staff looked at the impact on minimum shift compliment.

The third initiative is to move to a central level of organization in 2013, affecting both Pickering and Darlington. As the end of commercial operations approaches, a challenge for OPG is the retention and equipment of core operation staff. Staff expects to receive from OPG routine updates on the organizational changes and staffing levels.

Human Performance Management Safety and Control Area at Pickering was rated satisfactory during the current licensing period. OPG has a mature and well developed systematic approach to training. CNSC Staff have identified however some deficiencies in the implementation of the systematic approach to training to some job families.

As examples we can mention OPG's training

program for the Emergency Response Organization and the Shift Manager and Control Room Shift Supervisor training program for Pickering B.

In addition, deficiencies were also noted in the initial Simulator Base Certification Examination Program for Pickering B. The deficiencies are currently being addressed by OPG through their corrective action plan process. CNSC Staff has -- are closely monitoring and I will provide an update to the Commission for the Day 2 hearing. CNSC Staff are satisfied that OPG has a sufficient number of qualified workers at Pickering to ensure safe operations.

The physical design at Pickering was rated satisfactory during the current licensing period. However, CNSC Staff have concerns regarding recent developments related to black deposits observed on fuel bundles in Unit 1 when they are removed from the core.

The picture on the left of the slide shows the fuel bundle as normally comes out of the reactor. Typically the bundles feature small deposits. These deposits are mostly magnetite and presumed to be corrosion products eroded from the outlet feeder pipes. Since 2009, Unit 1 has shown an increasing trend in the number and size of these deposits.

CNSC Staff monitored the situation and

periodically confirmed that the deposits were not having an impact on fuel performance and the underlying safety case. The apparent root cause assessment has determined that the deposits are due to the sign limitations in Pickering end units which led to less than optimal outage temperature control.

In December last year, OPG reported that one fuel bundle from Unit 1 has significantly larger deposits than previously seen. This bundle is charged from a low power channel in June 2012 as shown in the picture on the right. As these deposits could potentially impact the heat transfer properties of the fuel, staff requested OPG to submit a safety case prior to restart at the end of the current planned outage for Unit 1.

OPG's safety case relies on that fuel failure rate at Unit 1 has been low and constant since 2008 and there is no sign of under deposit corrosion of fuel planning. Fuel failure rates from Unit 1 average at less than one bundle per year which is one of the lowest in the industry. Due to the uncertainties in OPG's safety case, staff imposed a three percent derate from full power to ensure that safety margins are maintained. CNSC Staff are confident that the interim measures imposed will ensure safe operations.

The corrective actions implemented by OPG

included provisions for heat transport system purification during outages, increasing filtration rate and maintaining the PH within a narrow range to really solve existing deposits and arrest the formation of new deposits. CNSC staff would closely -- will be closely monitoring the situation and take further actions if deemed necessary.

On February 11<sup>th</sup>, OPG submitted additional information requesting CNSC Staff to remove the three percent derate. CNSC Staff is currently reviewing the submission.

The Conventional Health and Safety -- Safety and Control Area was rated as satisfactory during the current licensing period. Pickering is one of the top performance NPP in Canada in all injury rates and accident severity rate for workers. These resulted from safe work practices and risk reduction to support an injury-free workplace.

Asbestos hazards are a legacy issue for Pickering A plant which was built in late -- late in the '60s. Elimination of those hazards is a lengthy process given the number and location and equipment involved. In past meetings, staff presented to the Commission issues related to this topic. This is an update on those issues.

In relation to various events reported during 2012, the ministry -- the Ontario Ministry of

Labour issued six orders in October 2012 related to staff training, removal of asbestos containing material and repairs in area of potential exposure of those materials.

In addition, at the Commission's November meeting, we reported an event that caused OPG to close various areas in the turbine hull due to asbestos airborne contamination. OPG root cause assessment on this event is not yet complete. The Ministry of Labour, with the collaboration of CNSC inspectors, continues to assess the event.

OPG is strengthening the asbestos program to reduce asbestos hazards to the workers but it is not there yet. A representative from that ministry -- from the Ministry of Labour is linked by telephone should the Commission Members have a question on that -- for that ministry.

OPG received the below expectation rate in this SCA in 2008 due to the fish mortality issue. Significant progress has been made and OPG received satisfactory since 2008 and 9. CNSC Staff updated the Commission on OPG's progress for mitigation of risk to fish in August 2012 and have committed to update the Commission at this hearing.

As you know OPG has installed a seasonable deployed barrier net at the water intake of Pickering to

reduce fish impingement. The barrier net has met the required annual target reduction rate for impingement of 80 percent. Continuous monitoring is being performed by OPG.

Mitigation of entrainment is being addressed to salmon restocking at the -- on the wetland habitat offset project. These combined efforts are deemed the satisfactory equivalent for meeting the 60 percent entrainment target. Additional wetland habitat is being proposed by OPG to offset entrainment of northern pike fish when the net is not deployed in the winter time.

For thermal effects, CNSC Staff and Environment Canada have accepted OPG's conclusion that there are no direct mitigation measures that are cost effective and feasible given the existing facility design, high costs and the short period of remaining operating life.

We continue to work with OPG on the inclusion of Pickering in the round white fish action plan for round white fish regional population monitoring at Darlington. Gas and liquid emissions were kept as low as reasonably achievable and well below the regulatory limit and action levels. OPG is also working on improvement initiatives to OPG's effluent monitoring program.

OPG Emergency Management Program at

Pickering was rated satisfactory during the current licensing period. New immersion equipment has been installed and facility upgrades are being implemented to address lessons learned from the Fukushima nuclear accident.

The Commission has been updated regularly on the public alerting system for the Pickering area in the last few years. The Durham Region is in the process of installing 11 additional sirens to meet the provincial requirements for outdoor public alerting in the three-kilometre area.

In relation to indoor public alerting for three kilometres, we can confirm that the region now meets the 15 minutes notification as per provincial requirements. For the three to 10 kilometres zone however, the public alerting system still does not meet the provincial requirements for 15 minutes certification. Emergency Measurement Ontario -- Management Ontario has developed an implementation work plan and is working with the all stakeholders to resolve this. Currently, the Durham Region has the ability to notify residents within 15 to 30 minutes using media broadcasting, TV and radio, online systems and social media.

For the review of the Pickering licence renewal, CNSC staff also considered other matters of

regulatory interest. First, CNSC staff concluded that under the *Canadian Environmental Assessment Act* of 2012, an environmental assessment was not required for this licensing decision. This was followed with a common law duty to consult with Aboriginal groups on licensing matters that may adversely affect established or potential city rights.

In October 2012, CNSC staff sent notification letters out to 14 identified groups in the area of Pickering, which included information on the licence application, the participant funding program and the public hearing process. This was followed up with telephone calls. OPG is in compliance with the CNSC cost recovery regulations and the financial guarantees were accepted by the Commission in 2012.

Finally, OPG has seen mature and robust public information program and is complying with the regulatory requirements outlining in RO/GD-99.3.

As the end of commercial operations approach, CNSC staff foresee the following key challenges for the next two licensing periods. OPG needs effective organizational and a set of provision to ensure continued nurturing of a strong safety culture.

OPG needs to maintain the validity of the safety case by their count -- by recounting of the effect

of aging systems and components.

OPG must upkeep the fitness for service of the plant. And OPG must continue to apply lessons learned from events such as the Fukushima Daiichi accident or/and improving initiatives.

After OPG public announcement in 2010 that Pickering B would not be refurbished and in anticipation of these challenges, CNSC staff developed and established regulatory expectation and requested OPG to prepare an end of life plan to ensure the safe transition from operations to safe storage. The end of life line -- end of life plan is discussed in the following slides.

This plan is divided into four plans as represented by the dashed line showing in the timeline above. They are: the continued operations plan is the integrated improvement plans related to the operations beyond design life of the pressure tubes of the units. This applies to Pickering B only as Units 1 and 4 in Pickering B were retubed and they are not approaching the end of design life.

The sustainable operations plan describes the arrangements and activities required to demonstrate safe and reliable operation to be maintained until all Pickering units are permanently shut down.

Destabilization activity plan describes the activities

required to transition to the safe storage state. And the safe storage plan describes the activities required to be in place for that phase. The radar on this life illustrated currently projected end of life -- end of commission operations.

CNSC staff developed a regulatory oversight plan to follow the continued operations of Pickering and its transition to end of life. OPG is expected to continue maintaining a strong safety case at Pickering during this period and to ensure adequate safety and control measures for all activities under the operating licence.

CNSC staff are satisfied that OPG's continued operation plan and sustainable operations plan provide assurance that regulatory requirements will be met during this period.

And the end of life consolidated is contained in the licence conditions handbook. In addition, by June 2013, an administrative protocol will be established between CNSC and OPG for clarity regarding CNSC staff expectations and requirements. CNSC staff proposed one specific condition for end of life as described in the supplemental CMD-13 page 28.

In May 2010, CNSC staff communicated clear regulatory criteria and expectations to OPG on the effects

of plan aging and validity of safety analysis assumptions. RV-334 which is what's issued in June 2011 is included in the proposed licence.

For Pickering B, specific aging issues related to the operation of the pressure tubes beyond the assumed life are being addressed via the fuel channel life management project. This project was initiated in 2009 between OPG, Bruce Power and AECL to provide a clinical basis to support safe operation of the pressure tubes beyond its originally assumed assigned life.

OPG's integrated aging management program meets the requirements specified in RV-334. OPG has also established life cycle management plan with a long-term perspective outlook for major components such as feeders, steam generators, reactor components and fuel channels.

As part of the Pickering B continued operations plan, OPG completed condition assessments to demonstrate feasibility of operating the units until 2020 and beyond.

OPG has completed most requirement of the fuel channel life management project but there is still some outstanding work. This is a subject of the proposed regulatory point we are referring to in the next light.

To begin, I'd like to draw your attention to the dashed lines of the figure. The blue dashed line

illustrates the point in time when the pressure tubes of the lead unit -- unit number 6 of Pickering -- will reach the assumed design life of 210,000 effective full power hours. Up until that time, the current licence and basis for the pressure tubes of that unit applies. The blue diamonds represent the time when each of the units will reach the same point.

To operate after that point, OPG needs to demonstrate through the results of the fuel channel life management project, fitness for service of the pressure tubes beyond its original assumed design life. The results of this project must first develop and propose improved models to predict fuel channel conditions beyond the next operating cycle. This needs to be supported by research and development currently in progress.

And second, provide an augmented periodic inspection program to confirm to actual material that data collected during outages the prediction of the models until the final shutdown dates of each unit.

OPG is targeting to demonstrate that they can operate the Pickering B fuel channels up to 247,000 effective power hours. The black diamond represents time by which -- by when each unit will reach that point. The black dashed line shows the time for the lead unit, Unit 6.

The improvements in the modeling and periodic inspection programs, if accepted by the CNSC staff, will perform the new licensing basis. The proposed four points is to ensure that before OPG operates beyond the current licensing basis, OPG meets the prerequisites listed in Section 16.3 of the LCH, i.e. comply with the new licensing basis.

And as we noted that OPG target may change to either a lower number or a higher number depending on the final results, an improved model is developed under the fuel channel life management project.

As part of the licence application, OPG was required to submit a comprehensive decommission strategy. CNSC requirements regarding decommission are set out in the CSA standard N294-09, entitled "The Commission of Facilities Containing Nuclear Substances". The standard covers all phases of the decommissioning.

Environmental assessments may be required, depending on the activities conducted in the various phases of the execution of the decommissioning.

OPG proposed to remove both the fuel and heavy water from all reactors when the units have reached the end of commercial operation, and then place the units in permanent safe storage by 2023, during the last operating licence.

OPG strategic plans defer decommissioning of Pickering. The strategy involves touch and monitoring of the reactor and station for 30 years following by dismantling, demolition and site restoration. The post shutdown activities would be carried out in the first stages shown on the slide, covering the period from 2020 to 2065.

The detailed plans for the first stages will need to be developed for CNSC staff review and acceptance well in advance of initiation of this stage.

When site restoration is completed, OPG could apply for a licence to abandon.

I will now pass the presentation over to Dr. Rzentkowski who will discuss the proposed licence, the conclusions and the recommendations.

**MR. RZENTKOWSKI:** Thank you, Mr. Santini.

The proposed operating licence follows the simplified format adopted for all nuclear power plants. It includes standard licence conditions that make reference to licensee programs and are aligned with the CNSC safety and control areas.

The standard operating licence has evolved over the past four years as a result of lessons learned. Specifically, references to licensee documents have been replaced with documented policies and programs and

specific CNSC regulatory documents and CSA standards, thereby, giving the Commission more control over the licensing basis of a licensed facility.

The operating licence include also site-specific licence conditions that cover the following activities: production of Cobalt-60, implementation of continued operation and sustainable operation plans, and a regulatory hold point.

The prerequisites for releasing the hold point are described in the Licence Condition Handbook.

It is important to note that the proposed operating licence and associated Licence Condition Handbook reflect the continuous nature of safety improvements for Canadian nuclear power plants as described in the next slide.

In the spirit of continuous improvement, 10 new CNSC regulatory documents and industry standards have been added to the proposed operating licence.

Full implementation of these new requirements is required of OPG upon the issuance of the licence by the Commission with the exception of CSA N288.4 and CSA N290.15. In these two cases, the implementation strategies are described in the Licence Condition Handbook.

In the case of regulatory documents RD-310

entitled "Safety Analysis for Nuclear Power Plants", OPG is required to gradually reanalyse the safety case using new requirements as part of the safety report updates.

The detailed implementation plan will be submitted in April 2013.

I would like to emphasize, however, that the Pickering's existing safety case was developed under strict rules to ensure safety of all operating reactors.

Based on the assessment of OPG's safety performance, CNSC staff concludes that OPG is qualified to operate the Pickering nuclear generating station and will make adequate provision for the protection of the environment, the health and safety of persons, the maintenance of national security and measures to implement international obligations to which Canada has agreed.

Furthermore, CNSC staff concludes that an environmental assessment is not required for the renewal of the Pickering nuclear power reactor operating licence.

I would now like to provide CNSC staff's overall recommendations before closing.

In regards to OPG's request for a licence renewal of Pickering, CNSC staff recommends that the Commission renew the operating licence with an expiry date of June 30<sup>th</sup>, 2018, and accept the delegation of authority as set out in CMD 13-H2.A.

CNSC staff also recommend that the Commission consider the Licence Condition Handbook in the decision to renew the operating licence.

In closing, I wish to reiterate that Pickering is operating safely and does not pose a significant risk to the health and safety of Canadians or to the environment.

OPG has also implemented adequate safety measures to continue operation of the Pickering nuclear generating station until its shutdown scheduled for 2020.

Thank you, Mr. President and Members of the Commission for your attention.

We are now ready to respond to any questions the Commission may have.

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

Thank you very much.

I'd like for us to do kind of one round then maybe get some of the -- some of the expert -- other ministries maybe engaged here and we'll go for as many rounds as we need to go to fulfill all the -- to get all the answers for questions we want.

So maybe kind of two questions for Commissioners for the first round.

Dr. McDill?

**MEMBER MCDILL:** Thank you. Two questions.

Okay.

I think a good place to start then would be with the experts or ministries who are online. Maybe we could start with asbestos and find out a little bit more about what's going on, when the root cause will be available and if that will be before Day 2?

**THE CHAIRMAN:** Okay, so I think this is a hint for Mr. Kontra to fill in. I understand you actually have a little presentation you can make.

Sorry, I'm talking about the wrong person here. Sorry about that.

This is the Ministry of Labour and it's Mr. Doehler.

**MR. DOEHLER:** Yes, thank you, Mr. President.

For the record, it's Lothar Doehler, I'm the Manager of the Ministry of Labour's Radiation Protection Service.

And if my slide presentation is up, we can start on the first page.

I want to thank the Commission for the opportunity for the Ministry of Labour to present their health and safety enforcement statistics and environmental radiation monitoring results for the Pickering nuclear power plant. And I'll be summarizing the last five years.

And I want to emphasize that the data is for the last five fiscal years, up to -- up to March 31<sup>st</sup>, 2012 and that's why the discrepancy exists between a number of orders issued on the asbestos issue.

In past hearings, I've described the Memorandum of Understanding that exists between the Ministry of Labour and the Canadian Nuclear Safety Commission which clarifies each of our roles and responsibilities as regulators to protect workers at Ontario's nuclear power plants.

Going to Slide 2, these are general health and safety statistics for the Pickering nuclear power generating station for the past five years. And as you can see, the totals -- there were 44 field visits, all but one of them being reactive and the fact that there's only one proactive inspection suggests that the Ministry of Labour considers the Pickering nuclear power plant to be a relatively safe workplace.

In total, there were 18 orders issued, no fatalities, and five critical injuries. And I do have the description of what we consider to be a critical injury, if anyone wants to know afterwards.

Going to the third slide, this is a map of our monitoring -- environmental monitoring sites. We've now switched from enforcement to environmental radiation

monitoring, which our laboratory does. We have 21 fixed monitoring sites around all the nuclear power plants, seven being around the Pickering site. And the various icons represent different types of samples that we pick, including air particulate, tritium in air, precipitation, drinking water, surface water, and we also analyse milk samples taken by the dairy farmers of Ontario.

So going to Slide 4, the results of all surveillance results over the past five years indicate that the prescribed limits have never been exceeded. In fact, all our measurements indicate that they are well below a concentration that would result in a committed, effective dose of 0.1 millisieverts to the public, either from inhalation or ingestion.

Now, the 0.1 millisievert is our actual reporting level. The actual levels are much below that. I've worked out the average to be 0.46 microsieverts per year mainly attributed to tritium and with a decreasing trend, as Mr. Santini has already mentioned.

So there's absolutely no attributable health and safety risk from any emissions from the Pickering generating stations. And in case there is a discrepancy between 0.46 microsieverts per year and other agencies results, you have to keep in mind that our sites are just outside of the site boundary. So these represent

a maximum level. Realistically, there would never be anyone living that close to the reactor site.

So in closing, Slide 5, the Ministry of Labour continues to work with the CNSC to ensure the safety of Ontario's nuclear power plants.

And I guess at this point, I should give you an update on the asbestos issue. As Mr. Santini mentioned, there were six orders issued in October of last year, and I just spoke with the regional manager yesterday, and he assures me that all but one of the orders has been complied with. The remaining order has to do with training, and OPG has proposed additional information to provide to their workers. And so the inspector involved with the case has examined the additional information and has ruled that current training will be sufficient to comply with the order once it is rolled out to all the appropriate workers.

Thank you. That's the end of my presentation.

**MEMBER McDILL:** Thank you. So maybe I could pass it then to OPG just to top up a little bit on when the training will be rolled out and whether this information will be available for Day Two.

**MR. JAGER:** Glen Jager, for the record.

In the case of asbestos, we did complete

all the initial awareness training. This was training provided to any employee, contractor or worker that has access to the Pickering Power Plant. That training was to provide general awareness, actions to be taken, and reporting on asbestos. And that has had good effect. We've seen a lot greater awareness out of our employees and identification of asbestos hazards. So we're seeing really good results from that.

There is additional training that is planned to provide more specific information to employees as to how they can identify and determine exact locations of asbestos, how to manage it properly, and we're setting up a very detailed system to enable employees to do that. So that is in progress. The system has actually been implemented, and the training will follow to allow employees even greater ability to safely manage the hazards.

In the case of the root cause, the root cause pertains to an event where employees were removing gasket material from a turbine generator surface during the outage, did not follow the accepted work practices for that, and created an asbestos hazard. The root cause is in progress as is the follow-up to that particular event, and it will be available for Day Two. We can discuss it more fully at that time if the Commission wishes.

**MEMBER McDILL:** Thank you. Does staff want to add anything to that?

**MR. SANTINI:** Miguel Santini, for the record. Just to reiterate what Mr. Doehler mentioned, we are working very closely with the Ministry and supporting them in their visits. Because as you know, protection of the workers is also -- is part of our mandate but we are trying to avoid as much overlapping as possible, as per the -- mandated by the Memorandum of Understanding between the two organizations.

**MEMBER McDILL:** Thank you. It's good to see collaboration like that.

My second question in this round relates to the black deposits, and my understanding is that OPG has requested the 3 percent be lifted and staff has not yet, I believe, lifted that.

So could we have a little bit more discussion on that please? What are the deposits? I understand where they're coming from. I think I understand some of the issues but in terms of this 3 percent and when it comes off and that kind of issue, I'd like a little more discussion please.

**MR. RZENTKOWSKI:** Thank you for this question. Greg Rzentkowski, for the record.

I would like to focus on the regulatory

aspect of your question first. We imposed the 3 percent penalty factor just before Christmas of the last year. The reason was that we were not absolutely sure that the underlying root cause is properly understood by OPG, and we were also not sure about the trends in the formation of those deposits on the fuel bundles in Unit 1.

From that point, we received additional information from OPG, which provides further clarification and a better understanding of the current situation. So this information is now under review from the technical standpoint. And it's possible that if it shows a clear understanding of that underlying root cause and also understanding of the trends in the heat transport system, this penalty factor will be removed, but we'll report on this during Day Two.

**MR. JAGER:** Glen Jager for the record.

Before I ask Carl Daniel to speak in more detail about the deposits on the bundle, I would say Unit 1 is currently shut down, still completing its plant outage and undergoing start-up activities. But when it does start up, we have controls in place to limit reactor power to 97 percent, as a licence condition.

The bundle deposits, we did see increased occurrence of deposits on Unit 1 last year. In response to that, we issued a technical operability evaluation to

evaluate the safety aspect and, as well, we initiated a team to examine the cause that was giving rise to these deposits to arrest and reverse the condition.

As mentioned in the CNSC presentation, we have done inspections of the bundles discharged from Unit 1 and have not found any effect on the fuel sheath or any condition that might affect the fuel sheath. In fact, Unit 1 has been operating defect-free and continues to operate defect-free. So it's performing very well from that standpoint.

The total analysis determined that there is not a concern for full power operation and we have submitted that to CNSC staff for their review, and we will continue to work to satisfy CNSC staff requirements in this area to restore full power operation.

And I'll ask Carl Daniel to speak about the specific condition arising from the bundle deposits and what we've determined from that.

**MR. DANIEL:** Carl Daniel, Director of Engineering, for the record.

We've examined in 2012 and 2013 36 bundles. On those bundles we have found that the deposit is spread around the bearing pads mostly to the rear of the bearing pads. The deposit is friable, as Mr. Jager has stated, which means it can be brushed off easily. When it is

removed we see no indication of corrosion under those bearing pads.

The plans for 2013 are to look at an additional 100 bundles or more from the unit and use that to confirm the trend.

**MEMBER McDILL:** If it should continue to happen what plans are in place? If it isn't controlled. I know you have plans to control it but is there a plan if it's not controlled?

**CARL DANIEL:** There's two pieces to it. The first is to do the control which is to a number of things. First of all, we've increased purification. We've taken a look at what we believe is causing the deposit, which is corrosion during shutdown, and have increased the purification flow to clean up the system.

The second piece is the monitoring. We will continue to discharge and monitor the bundles and from that we'll be able to tell if the problem is getting worse, staying the same or getting better.

And based on those examinations we'd have to look at the action that we'd have to take beyond that.

**MEMBER McDILL:** And, staff, from a regulatory perspective ---

**MR. RZENTKOWSKI:** We have to be absolutely sure that the problem is understood and the trends are at

least stable or decreasing in the heat transport system, because we have to ensure ourselves that adequate safety margins exist.

The recent evidence from the reactor from the inspections indicate that the problem is largely limited to the low powers channels where we have approximately 50 percent of margin to fuel dry out. If this will be confirmed, I think this would be sufficient for us for removal of the penalty imposed.

**MEMBER McDILL:** Thank you, Mr. Chair. I can come back next round.

**THE CHAIRMAN:** Will there be an update on Day 2 of all of this? Is that sufficient time to come a little bit more definitive on what the problem is?

**MR. RZENTKOWSKI:** Yes, we made a commitment in our CMD that the update will be provided in Day 2, because we need now time to evaluate the information received and maybe more measurements will be required to be conducted by OPG.

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

I'd like to move on to Ms. Velshi.

**MEMBER VELSHI:** Thank you, Mr. Chair.

I'll have some questions around organization and staffing and I'll start off with OPG; if you can turn in CMD 13-H2, page 16, the organization

chart, please.

What's the difference between the role of the Director of Op's and Maintenance and the Director of Maintenance when it comes to maintenance?

**MR. JAGER:** Glen Jager, for the record.

The Director of Op's and Maintenance holds the licence for the entire facility in terms of operating the facility set and standards and conduct of operations.

The Director of Maintenance specifically looks after the maintenance staff and the activities and organization necessary to perform all the maintenance including that performed by contractors within Pickering. He is accountable from a licence standpoint to the Director of Operations and Maintenance, Shane Ryder.

**MEMBER VELSHI:** Thank you.

And where does the nuclear oversight function fit in? I couldn't see it in a box.

**MR. JAGER:** Glen Jager, for the record.

Nuclear oversight is a centre led organization that reports across the company. They would not appear on the station organization as a result. However, they perform the auditing function for nuclear and for the Pickering site and provide results to the senior leadership team in accordance with the standards for nuclear oversight and oversight function.

**MEMBER VELSHI:** But aren't all the functions to the left, sort of the dotted line ones, your central organization functions?

**MR. JAGER:** Glen Jager, for the record.

That's correct. Those organizations to the left are centre led. They take work direction from the site. However, nuclear oversight is completely independent and therefore is not shown as part of the site organization.

It's very important that in performing the oversight function they are independent, report independently to the CEO and CNO as well as myself any findings that they may have and have an escalation process to ensure that the site and nuclear takes action in accordance with the findings through their oversight function.

**MEMBER VELSHI:** Thank you.

Again for OPG, you spoke about the amalgamation of Pickering A and B and all the benefits that you have seen from that. What have been some of the biggest challenges of the amalgamation?

**MR. JAGER:** Glen Jager, for the record.

I'd just say that, from my perspective, the amalgamation has been extremely beneficial. It has ensured automatic lesson transfer right across the site

and we've really seen an improvement in performance and depth of capability really of those -- of all the groups that have been amalgamated and that now is site-wide.

In terms of challenges, I would say that it is a bit of a challenge for supervision to cross-train, if you will, and ensure their staff are cross-trained. That's part of the process of ensuring we have that depth of capability. There is some effort required to get through that, but in the end we're much more effective, much more capable, safer in fact because of the lesson transfer that occurs between the sites.

So there is some work to do in order to effect that transfer but once it's done we really see a tremendous amount of benefit from the amalgamation.

**MEMBER VELSHI:** In the -- I think it was in the staff's presentation, one of the challenges that was mentioned was around retention and attracting employees at the Pickering site with end of life approaching. Have you started seeing that already?

**MR. TULETT:** Martin Tulett, for the record.

We have some lessons learned from shutdown with our thermal plants as they approach end of life and three really major lessons learned there. One is, is that you've got to keep staff engaged, and two is that you've got to keep them informed of their fate, and three is that

they need to know they're going to be treated fairly through collective agreements.

For Pickering being almost eight years away from shutdown all the staff know that the plant is shutting down in 2020. What's really important for us right now is to maintain the engagement levels. We do see extremely high engagement levels around fixing plant reliability problems, and people, through system health teams, we're seeing those people highly engaged in fixing problems that have been around for some time.

So we don't see a problem with engagement right now and in fact in those job families that we are replacing we have a very high applicant rate but obviously that situation may change over the years.

In the sustained operations plan there's a commitment to report out every year on how we're doing with staffing. We are changing our staffing plans this year to look 10 years out as opposed to five years out to start to develop plans for how we're going to transition to as we get closer to end of commercial service.

So, in short, right now we believe engagement levels high and that we do have lessons learned from our thermal plants, we will inform our employees as we get closer to end of life exactly what their fate is, and we believe with those two things right that there

won't be an issue for us.

**MEMBER VELSHI:** Thank you.

My last question on this is, is there a need for a new skill set as you approach end of life? And I'll ask OPG first and then staff. Are you hiring different capability and expertise or do you see a need for that down the road?

**MR. JAGER:** Glen Jager, for the record.

I would not say that we need a different skill set. Certainly the plans that we have set in place to take operation to 2020 would not identify any new specific skillsets. It does require a change in our work program to ensure that we -- we address any aging and I believe that we have a very robust program that manages aging; that entails some changes to the work program and inspections.

However, the skillsets are definitely within the skillsets of the plant staff that are here today and well qualified to perform that in the future, right up to 2020.

**MEMBER VEHSI:** Sorry, staff?

**MR. RZENTKOWSKI:** Yes, thank you very much. Greg Rzentkowski, for the record.

We agree with the response provided by the OPG.

As far as the skillset is concerned, I think it's exactly the same as during normal operation of the plant over the entire lifecycle.

However, the main focus of the sustainable operation plan is to maintain the adequate level of staffing and staff qualifications. So this is our focus.

**MEMBER VELSHI:** And what about capability within CNSC staff itself, do you see need for bringing in different expertise?

**MR. RZENTKOWSKI:** No, we don't see -- we don't see the need to bring new expertise. However, definitely some of our experts have to refocus on the issues which we'll be facing in the next five years; bringing the Pickering station to a safe shutdown in 2020.

**MEMBER VELSHI:** Thank you.

**THE CHAIRMAN:** Just to piggyback Ms. Velshi's question, do you not see the need to -- for some critical position, to -- as you go toward the end of life that you need to give more than just knowing what the fate will be but almost guarantee about -- that it will be looked after?

**MR. TULETT:** Martin Tulett, for the record.

Yes, absolutely. Staff need to understand exactly where they'll -- where they'll be going, what their fate will be. And in fact, that's what we did with

the thermal plants, was that they either knew that they were retiring and going through normal attrition or they knew exactly where they would be placed.

But that process is typically two years to 18 months out from actual shutdown.

**THE CHAIRMAN:** So it'll be part of your -- sort of final decommissioning plan?

**MR. TULETT:** Absolutely.

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

I'd like to move to Monsieur Harvey.

**MEMBRE HARVEY:** Merci, monsieur le président.

My first question is on page 11, top of the page, the third dot in there. Replacement of all Pickering five -- eight shutdown system, amplify or to address the obsolescence and reliability issues. Is this to say that it was not safe in the past and that the -- because when we're talking shutdown system over -- and what type of problem was it, and was the system 100 percent reliable, the shutdown system?

**MR. JAGER:** Glenn Jager, for the record.

The amplifiers that we're talking about there are in-core or flux detector amplifiers. The failure mode is safe. So when the amplifiers fail, they trip the channel.

So we were starting to see some early failures of those amplifiers commission a project to implement the replacement of those amplifiers before they start failing. And that project is well underway.

Perhaps I'll ask Mr. Carl Daniel to speak to the exact status of that project and what it entails.

**MR. DANIEL:** Carl Daniel, for the record.

As Mr. Jager stated, that project is well underway. All but one of the amplifiers have been replaced, the only remaining one is on Unit 8. That amplifier is scheduled for replacement -- actually in the week of February 11 to 17, so the week that's just going right now.

There are 92 amplifiers installed on Pickering B and the replacement frequency remains currently at five years. So we will replace them in five years which is within the obsolescence period. So they continue to remain safe and are replaced on a frequency that ensures that.

**MR. RZENTKOWSKI:** All safety systems have to meet established reliability targets and this is how we monitor the reliability of the equipment. And we have absolutely no concern; they are all meeting the established requirements.

**MEMBER HARVEY:** Thank you.

Page 12, in the middle of the page; "OPG continues to work with CNSC staff to confirm the licensing approach over this future period." What does it mean?

Reading that, it's like OPG has to -- to confirm or -- who is -- who leads the approach?

**MR. RZENTKOWSKI:** Thank you very much for that question.

This question pertains predominately to the transition from the operation to decommissioning and safe storage. It's a big part of the submission because safe storage, which can be compressed to two or three years, most likely it will be like 20 to 25 years long.

So we have to establish the regulatory strategy how this will be managed. And we already established some requirements which we communicated to OPG in a letter, and those requirements are further documented in the CSA standard and the proposed revision of RD-360 documents.

So from the regulatory standpoint, I believe it's absolutely clear and transparent what needs to be done by OPG.

**MEMBER HARVEY:** Your comment?

**MR. JAGER:** Glenn Jager, for the record.

I support CNSC staff on that. We -- generally -- the CNSC staff specified the requirements for

us to meet and we work to satisfy all those requirements, both for the current period that we're in and following into the safe storage phase.

**MEMBER HARVEY:** My point was, reading that it's like if the -- was a negotiation between the licensee and the Commission.

**MR. RZENTKOWSKI:** I think the intention here was to manifest the fact that some of those requirements were very recently developed.

They were communicated over past two years to OPG, but initially in the letters and they were finally codified in the revision of RD-360 documents. So that's probably the intent behind this paragraph.

**MEMBER HARVEY:** Thank you.

**THE CHAIRMAN:** Just a clarification. In the same page, there's reference to Figure 1. Figure 1 is a nice little picture of the site. What -- am I missing something here? If you look at -- sorry, this is page 12, right behind ---

**MR. JAGER:** Glenn Jager, for the record.

It looks to be an editorial error; it's not in reference to the picture of the site. It is referenced though -- it was initially referring to the -- a timeline that was presented by the CNSC staff; it was basically that.

**THE CHAIRMAN:** So -- okay. Because I couldn't find the timelines. I like that little chart with the timelines until the end. So it's the other one that CNSC staff produced?

**MR. JAGER:** Glenn Jager, for the record. It's consistent with that diagram, yes.

**THE CHAIRMAN:** Okay but it's not in the ---

**MR. JAGER:** No it is not. No it is not.

**THE CHAIRMAN:** I guess we'll keep watching that diagram for the next 60 years at least.

Thank you.

Monsieur Harvey?

**MEMBER HARVEY:** On page 15, about the centre-led structure. My understanding is we're grouping some employees that were dedicated to each unit in one place, is it a good understanding? And what is the main objective of that? And is this one of the objective being to reduce the resources?

**MR. TULETT:** Martin Tulett, for the record.

I think I'll start by describing OPG's business environment.

We were historically a utility of mixed thermal, hydraulic and nuclear generation. And as you all know, by the end of this year, the thermal generation will shut down.

But, you know, OPG had to respond to that with restructuring and organization. So that was a challenge for us but it's also an opportunity. When we look around the industry and while we're on nuclear utilities, we find that they are centre-led organizations, nuclear fleets are centre-led organizations.

And really what the centre of that organization allows you to do is to get critical mass around very specialized problems. So setting up centres of excellence that Glen mentioned around motors and other specialized components allows us to be more efficient at tackling problems.

**MEMBER HARVEY:** Staff, do you agree with that?

**MR. RZENTKOWSKI:** I will ask Mr. Miguel Santini to respond to this question.

**MR. SANTINI:** Yes, I would agree with that. Basically, it's what allows you to have more people working on the same problem as opposed to having them dispersed and running into problems of inconsistency or inefficiencies.

**THE CHAIRMAN:** I recall when we had the long discussion about the integration of Unit A and B and, in fact, we dared to suggest that you should have one licence for the site, you guys were not too keen about

that. I remember a lot of resistance and a lot of pushback.

So all of a sudden, you know, I'm glad to hear that you now consider it to have been a good move to have one licence.

So is the reorganization occurring because of the need to come up with one licence or was it because corporate-wide, you had to do some serious rearranging of the deck?

**MR. JAGER:** Glen Jager for the record.

The amalgamation of Pickering was not linked or related to the business transformation for OPG. I would acknowledge the prompting from the CNSC Commission and, yes, it has yielded significant benefit, the amalgamation of the site. It was a recognition that we could operate much better as a single site, for all the reasons that I mentioned earlier, but was not really related to business transformation.

Business transformation relates to a company-wide initiative. It's not specific to Pickering. Pickering is certainly influenced by business transformation, but business transformation targets the entire company.

So it's the consolidation of support functions within OPG as a whole across the fleet, which

would include support functions for nuclear.

So that is a different thing than the amalgamation of the Pickering site.

But yes, you know, by amalgamating the Pickering site, it certainly positioned us well to respond to a single licence and manage the facility much more effectively, much more safely, and much more efficiently, and we're seeing -- we are seeing, over the licence period and since amalgamation, performance improvements. So it's demonstrated in results as well.

**THE CHAIRMAN:** Monsieur Harvey.

**MEMBER HARVEY:** But at the end of the day, what is the effect, the impact on our resources? Would you have the same number of specialists working at Pickering or more or less? What is the impact?

**MR. TULETT:** Mark Tulett for the record.

I'll just give you some actual staffing numbers from all of OPG to give you an idea of where the deficiencies come from.

So since 2011, just over 1,000 staff have left OPG and 240 of those were in nuclear. So you can see most of the effect is in other business units. And of the 240 in nuclear, just over 50 of those have been replaced as we see as critical skill sets, operators and maintainers for the plant.

I would add that the business transformation process actually exempted the operations and maintenance staff from the exercise.

So yes, there's been some efficiency gained through reduction in staff, but primarily it's been non-nuclear work groups and it has not been in the direct operation of the plant.

**MEMBER HARVEY:** Thank you.

**THE CHAIRMAN:** Thank you.

Dr. Barriault.

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

President.

I guess my first question is to OPG, and it's your Slide 6. You built a new building to house your emergency equipment post-Fukushima.

I guess the question is, is this building storm-proof, hurricane-proof? It seems to be a plastic structure, a vinyl structure?

**MR. JAGER:** Glen Jager, for the record.

It is a -- that structure is specifically designed for that function. It's designed, in severe events, to not impact the equipment which it houses.

I'll ask Mark Elliott to speak in more detail about how we specified that building, its design function and its purpose.

**MR. ELLIOTT:** Good morning. Mark Elliott, for the record.

Deciding on the building and what type of building should be used for this was quite an interesting little issue because you want to make sure the equipment is available after an accident that you don't know the cause of, because this is the equipment that we have when we say we're ready for anything. It's the what-if type of equipment.

So what we decided to do is put it in a building that is located high on the site, so it's not subject to flooding, and it's in a light structure so that whatever happened in that area, the building itself would not come down and damage or disable the equipment that's inside.

Now, the structure would -- the canvas material would come down and have to be removed, but we have equipment with cranes to pull that material off and allow the emergency equipment to go to its intended purpose. So that's what we've decided in OPG.

**MEMBER BARRIAULT:** The strength of those structures, based on the fact that you've got the vinyl covering on top of it, if you take that away, does this structure have the capability to stand alone? The tubing, for example, will it fall on top of your equipment, damage

your generators, damage your emergency ---

**MR. ELLIOTT:** All the components are lightweight and would not damage the equipment.

**MEMBER BARRIAULT:** Thank you.

The next question deals with your lost-time injuries, which is commendable. But I looked at the Ministry of Labour's statistics, and they identify critical injuries times five over the licence period.

Can you describe the difference between a lost-time injury and critical injuries?

**MR. JAGER:** Glen Jager, for the record.

Critical injury is a specific set of criteria that describes the injury itself, but not necessarily the consequence or impact of that injury.

So, for example, a broken bone, if I break my finger or break my toe, that would be defined as a critical injury. However, it would not prevent me from coming in to work. I might have to have modified duties. However, it would not result in lost time.

So lost time speaks to the consequence of the injury and the impact on the ability of that individual to perform work at the station.

The critical injury really defines the injury itself.

**MEMBER BARRIAULT:** So you would have, I

guess, the work program for modified work that's ongoing at the plant, feedback from the union on the program.

Does it work well?

**MR. JAGER:** Glen Jager, for the record.

I didn't understand the first part of the question.

**MEMBER BARRIAULT:** You have a modified work program at the plant that you were just describing to us. This modified work program, have you had any problems at all in negative or positive feedback from unions?

**MR. JAGER:** Glen Jager, for the record.

Our unions are fully supportive of our modified work program and, in fact, you know, they support and want to see all employees remain healthy, return to work, be gainfully employed and add value to the company.

So it's in the union's interest as well. We're aligned on that, and they're very supportive of our return-to-work provisions and processes that we have in place to assist employees with modified work duties or return to work if we were to have a lost-time accident.

I would say our main goal is really around prevention and preventing those circumstances, environment, looking at behaviours. It's all towards prevention. That is the most effective thing that we can do and has proven to provide good results as opposed to

focus on return-to-work provisions which we have a very strong program and support for employees.

**MEMBER BARRIAULT:** Thank you.

**THE CHAIRMAN:** Before we leave, I'd like to ask Mr. Doehler from Labour, is that -- two questions really, for a large operation like Pickering here, is five critical injuries over five years kind of typical? And is that -- critical injury, is that the lingo that you use?

It sure as hell conveys more serious injuries that have just been described that don't result even in lost time of work. So am I right in all of this?

**MR. JAGER:** Yes, the five critical injuries based on my knowledge of work places of comparable size of -- of the number of workers is quite below the average. I don't have exact numbers but that's based on -- on my knowledge of general health and safety statistics.

With respect to your question about what defines a critical injury, it -- it, in some cases, is not as severe as it sounds. And I will list you the exact definition of -- we have an actual regulation that defines what a critical injury is:

- "A) Places life in jeopardy;
- B) Produces unconsciousness;
- C) Results in substantial loss of blood;

D) Involves the fracture of a leg or arm, but not a finger or toe;

E) Involves the amputation of a leg, arm, hand or foot, but not a finger or toe;

F) Consists of burns to a major portion of the body;

or

G) Causes the loss of sight in an eye."

Some of them do sound quite serious, but some of them, loss of unconsciousness, is -- is a minor matter and even though it has to be reported, does not as -- as the previous gentleman described, does not result in an actual lost time injury.

**THE CHAIRMAN:** So I guess they are -- the Pickering staff no matter what happens, they going back to work.

**MR. JAGER:** Well, I -- I don't know the details of each -- of each of the five critical injuries, but I assume that's the case. If they're -- if it didn't reflect in a higher number of lost time injuries.

**THE CHAIRMAN:** Dr. McDill?

**MEMBER McDILL:** Can I just clarify, when you say below average, you mean better than average?

**MR. JAGER:** Better than average, yes.

**MEMBER McDILL:** For the record.

**MR. JAGER:** Sorry, thank you.

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

Thank you very much.

Dr. Barriault?

**MEMBER BARRIAULT:** Thank you.

I guess my next slide is -- is your Slide 4 with reduction in unplanned Tritium uptakes to OPG.

Do you think that the new, I guess, target or benchmark is sustainable, that you've decreased the chronic Alara principle which is excellent, but do you think you can maintain?

That's Slide 4. It's on page 2 of your presentation -- your slide presentation.

**MR. JAGER:** Glen Jager for the record.

Yes, absolutely, we believe that's sustainable and we work to improve on that. So we -- we would expect to continue to focus on that, continue to work to reduce it and, absolutely, we believe that's sustainable.

**MEMBER BARRIAULT:** Thank you.

To CNSC, do you think that's applicable to all the other plants or are they similar?

**MR. RZENTKOWSKI:** I would like Caroline --

Caroline Purvis to respond to that question.

**MEMBER BARRIAULT:** Thank you.

**MS. PURVIS:** Caroline Purvis for the record, Director of Radiation Protection Division.

So all other nuclear power plants in Canada use similar indicators for performance; so it's -- it's something that certainly is tracked. We will review performance against their indicators during our inspections and certainly with the -- the Alara initiatives that Pickering is implementing, it is -- is something that is achievable, certainly.

**MEMBER BARRIAULT:** I'm sorry, does the same target applied to other nuclear plants or do they have their own targets and are they higher or lower, I guess, is what I'm asking?

**MS. PURVIS:** So each -- each plant would certainly identify their own performance targets based on their -- their performance operationally and their challenges, but there are industry benchmarks as well. So I think we're talking about, you know, measuring your own performance against the industry benchmarks; but each -- each facility would identify their own performance targets.

**MEMBER BARRIAULT:** And how does this compare to the industry benchmarks?

**MS. PURVIS:** With respect to the unplanned tritium uptakes?

**MEMBER BARRIAULT:** Yes, yes.

**MS. PURVIS:** Yes, certainly a downward trend of 50 percent is certainly an excellent indicator. Unplanned precursor tritium uptakes is certainly an indicator that -- that the licensee is able to -- to plan and to manage their doses in a manner which is -- is above average.

**MEMBER BARRIAULT:** Thank you.

Just one last question, Mr. Chairman ---

**THE CHAIRMAN:** I'm just going to ask when we do -- when we hear about the MPP performance, you know, the annual performance, that might be one area where we would like to do benchmarking, not only within the sector, but within the facility itself, if there are such comparables or maybe even internationally.

**MS. PURVIS:** Yes, certainly we're always -- we're always striving to -- to identify those benchmarks that are easily understood and that we can -- we can share and compare amongst facilities. Keeping in mind that -- that as I mentioned earlier, each -- each licensee is identifying their own performance targets, yeah.

**THE CHAIRMAN:** Go ahead.

**MEMBER BARRIAULT:** Just one last question;

on the issue of operating performance equipment, OPG, you're developing a centre of excellence, I understand, to look after pump, motors, valves and this. How far are you from achieving this centre of excellence or are you there now?

**MR. JAGER:** Glen Jager, for the record.

I'll ask Mark Elliott to speak to our efforts on centre-led reliability improvements.

**MR. ELLIOTT:** Mark Elliott, for the record.

The motors is the first one and that's up and running. So when there's a motor issue anywhere in OPG, we have -- we have a process staff experts to -- to rally and approach that. The next two we're going to do are pumps and valves. We're going to do those this year in 2013 and then go onward from there.

**MEMBER BARRIAULT:** So will you be finished in 2013 with this centre of excellence?

**MR. ELLIOTT:** We'll -- we'll have those next two done and we'll likely carry on. There's -- beyond that, there's other equipment that we feel we can make use of this -- this approach, but we want to do it in a way that is -- is sound and when we declare victory on a component, that we really can -- we can service it. So with two more this year and then, it'll carry on for a number of years.

**MEMBER BARRIAULT:** Thank you.

Thank you, Mr. Chairman.

That's all for now.

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

Mr. Tolgyesi?

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

On the page -- lots of pages, page 87 of 13-H2, the staff. There is a -- there is a Table 4 which is saying that when the Pickering 2 will shut down in 2020 and third quarter. The Unit 1 will reach 162,050 full power hours and unit 4, 134, which means that to reach 210,000, there will be effective life still potential six or 10 years.

Now on several occasions, you mentioned the continued to operation extended beyond 2020. It was on two or three occasions. To what extent to operate fewer units is option, which means that, you know, when you will reach 2020, you have still Unit 1 in 4 year of 6 to 10-year life, could you operate these units stand alone without user operating 4, 5 -- 5, 6, 7, 8?

**MR. TULETT:** Martin Tulett, for the record.

So the Pickering A units, units 1 to 4 that have the additional pressure table, they actually depend on the Pickering 5 to 8 units for safety system support.

And really, the answer to the question is yes, this time it would be possible, but it's not commercially viable to operate two units at Pickering. So the plan is to operate six units as long as we can and -- and then, shut down end of 2020.

**MEMBER TOLGYESI:** Okay, now I will have a question on decommissioning in the same CMD page 92, the staff is stating that no specific licence, conditions are required for this matter of decommissioning strategy. Why they are not required?

**MR. TULETT:** Could you please give us details where you are reading from?

**MEMBER TOLGYESI:** Page 92, 4.10.3 on your presentation.

**MR. TULETT:** It's only for the proposed re-licensing period. So that means until 2018, we are saying that a specific licence condition is not required.

This is for the proposed licence only.

**MEMBER TOLGYESI:** Okay. And I have a decommissioning. We hear more and more about accelerated decommissioning. You know, we -- you -- we hear that in France and lately Gentilly-2, there are discussions to do decommissioning within 10 years or so. And one of the reasons mentioned is a presence in availability of staff at least that's what they are saying at Gentilly-2, and

the manpower.

So what's the OPG's and staff thoughts on this strategy? Because what you are saying that the decommissioning of your facilities would take about up to 60 -- 2065, 2070. So how you compare to this move like in France to 10 years or what's proposed in Quebec?

**MR. JAGER:** Glenn Jager for the record.

Our current plan has the safe storage stabilization and safe storage period. That is correct.

The -- that plan is set in place, takes into consideration optimizing personnel dose so there's a lot of decay and reduction in dose. So there would be a dose penalty with accelerating that.

As well there's a substantial amount of work to remove the fuel from the fuel base and transfer that to dry storage. So that takes some time after the units have been de-fuelled and de-watered. So that takes a period of time as well.

It's a large facility. There's a number of fuel bases that have to be emptied in order to do that. Following that it really is a waiting period again to allow for -- for radiation fields and decay to really facilitate the ultimate decommissioning of the facility.

**THE CHAIRMAN:** Okay.

I -- I don't want to get out of scope of

this hearing. Decommissioning, we will deal with it at 2000 -- before 2018, I assume. But starting there, we're presumably -- this is five years from now. A lot of things can happen in five years. You guys may change your mind.

So right now if I'm seeing correctly this is the current projection. So I would like to also adjourn for about 10, 15 minutes I guess. Until 11:20. We'll reconvene at 11:20.

Thank you.

--- Upon recessing at 11:09 a.m./

L'audience est suspendue à 11h09

--- Upon resuming at 11:26 a.m./

L'audience est reprise à 11h26

**THE CHAIRMAN:** Okay. We're back.

And we continue with the questioning and maybe I'll go in reverse order this time. And maybe Commissioners if you agree, one question and we'll go as many rounds as we need to go.

And maybe I abruptly interrupted you Mr. Tolgyesi. So once you start with your next question.

**MEMBRE TOLGYESI:** Merci.

On page 13-H2 of staff, there's on the last, before last -- page 23, I'm sorry.

Page 23 of 13-H2, there is a statement that

CNSC staff observed during outage inspections that outage work was often different to future outages.

Why it's happened? Why it's different to the future outage? If it's seldom; it's unexpected. But if it's coming routine or on a regular basis, that's somewhere to a weakness in planning.

So to what extent is different plan of outage work could or would cause a forced or out-planned outage thereafter? Because you are delaying those.

**MR. RZENTKOWSKI:** Thank you for this comment. Mr. Miguel Santini will respond to it.

**MR. SANTINI:** Perhaps this question should be better directed to OPG. But what I can say about this is that there is a scope at different levels prepared and submitted to us. And we follow how this -- this code is followed through in the execution of the outage program.

Now there are tasks that are -- take longer than expected. There are reactive tasks that are created during the -- the execution of the outage that may bump activities that were in the original scope.

What we are concerned about -- actually what we are concerned when we look at that is, known activities that are work on safety related equipment are bumped to the next outage. So that's what we are looking at.

In this case, there are -- there are no instances as such. But again, I think that OPG will be better prepared to answer the -- how they decide the movement of activities to the next outage.

**MR. JAGER:** Glenn Jager for the record.

Before I ask Rob Powell to come up and just talk about our actual results in terms of scope execution over the -- the outages, I would say that we -- we go -- we have a set of outage milestones that are completed with a high degree of rigour in terms of preparing for an outage that sets employee scope, work package preparation, procurement of parts. And we're seeing good success for -- with that.

We complete a high percentage of our outage scope every outage. And every outage that we complete goes through a readiness for service criteria and that readiness for service review. And during that review, we carefully examine all the work that was completed in the outage, any discovery or inspection results. But we also critically examine any scope that could not have been completed.

And there's usually a variety of reasons why we were not able to complete scope. It could be because of system alignment difficulties; difficulties obtaining isolation or -- or provisioning of parts in time

for the work window in the outage.

So we go through a very rigorous process to ensure that the unit will be reliable and above all safe through its operating -- two-year operating cycle post-outage.

I would say that we're also working to improve scope completion and execution and outages and have taken a number of steps that Rob can speak to in that regard.

So I'll -- I'll ask Rob Powell to talk about our performance in outage scoping and execution.

**MR. POWELL:** Yes it's Rob Powell for the record.

In terms of outage scoping just as a -- a little background, we actually scope outages up to one year or more in advance of the actual outage execution. And outages are actually planned for many years in the future. So we are actually planning the next outage when we're actually planning the one we're planning to do -- to do next.

The actual outage execution consists of about 22,000 distinct discrete activities on a typical outage at Pickering. And we routinely complete in excess of 95 percent of that -- of that outage scope.

As Glenn has indicated, there are times

when work cannot be done either because we cannot get isolation or we've had other challenges such as we can't get parts for the -- for the equipment.

That work that cannot be done is compared to a rigid set of return to service criteria that defines whether or not that work can be postponed to in-future outage. Or whether or not we need to implement mitigating strategies prior to that unit being returned to service.

Those decisions are made continuously through the outage. And as Glenn has indicated at the conclusion of the outage, there is a formal RFS process where all of the work that did not get done including any discovery work during the outage is dispositioned at that point in time.

**MEMBER TOLGYESI:** And just to make sure I understand, you were saying that 95 percent is completed? And that these outages are planned ahead a year or so? Which means that if you complete 95 percent, five percent is not completed. And the next outage, this five percent becomes a planned or an addition?

**MR. POWELL:** The outage frequency at Pickering -- Rob Powell for the record.

The outage frequency at Pickering right now with a two-year outage frequency. So work that did not get executed in the current -- in the current outage goes

into the next planned outage. So it is actually planned work in the next outage evolution that we go through.

**THE CHAIRMAN:** Okay. Thank you.

Dr. Barriault?

**MEMBER BARRIAULT:** Just in a CNSC presentation, page 15, CMD 13-H2. "Minimum Shift Compliment" is the title but you come down two paragraphs from there. It's an editorial comment and what it says really:

"The analysis was completed and as demonstrated to the satisfaction of staff the qualification required and the number of staff required for a normal operation."

I guess I'm not clear what staff is which? I would suspect that the first one is CNSC staff and the second one is OPG staff but I'm not certain that's what you intended to say.

**MR. SANTINI:** Miguel Santini, for the record.

We meant OPG staff. It's part of the minimum shift compliment staff.

**MEMBER BARRIAULT:** So OPG staff on both? The first one "satisfaction of staff", that's OPG staff?

**MR. SANTINI:** No sorry, that's CNSC staff.

**MEMBER BARRIAULT:** Okay.

That's what I suspected but I wasn't sure.

The next one really is on page 16 and the second paragraph goes on to say: "Operating procedures and associated field handouts". What's a field handout?

**MR. JAGER:** Glen Jager, for the record.

Field handouts are -- relate to the emergency procedures that personnel follow. It's a part of the procedure that is ---

**MEMBER BARRIAULT:** Checklist?

**MR. JAGER:** Pardon me?

**MEMBER BARRIAULT:** A checklist sort of thing?

**MR. JAGER:** Checklists, exactly or there are actions taken by field staff so the control room and the shift supervision will hand out procedures to staff who are then deployed into the plant to execute those procedures in support of the emergency actions.

**MEMBER BARRIAULT:** Thank you.

I managed to get two questions in.

**THE CHAIRMAN:** I'm counting.

(LAUGHTER/RIRES)

**LE PRÉSIDENT:** Monsieur Harvey?

**MEMBRE HARVEY:** Merci monsieur le président.

In page 17 of your OPG's document, the middle of the page. With a focus on continuous improvement by the Nuclear Safety Review Board evaluation is planned in 2013 and industry review is planned in 2013.

And for that, in addition to these long standing oversight mechanisms, there's three new management oversight meetings that will be put in place. Two questions. The first -- well it's just one question Mr. President but A and B.

**(LAUGHTER/RIRES)**

**MEMBER HARVEY:** First question is that, is that Nuclear Safety Review Board specific to Pickering or it's normal or an exercise, normal exercise, for the industry?

**MR. JAGER:** Glen Jager, for the record.

The Nuclear Safety Review Board is not specific. It -- it's a feature within OPG Nuclear that examines all the nuclear facilities within OPG. But it's also a feature that's present in most nuclear utilities having a Nuclear Safety Review Board.

What it is, is an independent external panel of industry -- experienced industry leaders, that come in and assess the site. Specifically their primary mandate is to evaluate nuclear safety and safety culture. So, that occurs on a yearly basis at all the OPG sites.

Generally that's the same practice that is applied throughout the industry and it's part of the nuclear safety oversight framework that we have that provides that defense and depth if you will and safety for the site.

They report out to the Chief Nuclear Officer and the CEO of the company any findings and concerns that they might have with the operation of the site. They're completely independent of the site and part of that board we do also provide internal peers, within OPG, to assist the external panel.

**MEMBER HARVEY:** What about the -- what's the difference with the industry review?

**MR. JAGER:** The industry review relates to the World Association of Nuclear Operators. That is completely independent of OPG. It's not commissioned by OPG. It's an independent team associated with WANO.

It's formed of experienced evaluators in the World Association of Nuclear Operators and it's complimented with industry peers from around the industry. They come in and evaluate the plant against performance and objectives and criterias which are set towards excellence in nuclear operation. And they provide the site with a series of areas for improvement that define the gap between current performance and excellence.

So, very valuable, very independent and very thorough evaluation. And that's performed on about a two-year interval for a site. And again that's typical for the industry in North America.

**MEMBER HARVEY:** The part B of my question is -- the last one is this. Those three new mechanisms, reading that, my feeling was that it's so delicate to go beyond the expected life of a station that you need to put in place many committees and so am I right or it has nothing to do with that?

**MR. JAGER:** Glen Jager, for the record.

It's not directly related to that but I would agree with you that it offers a tremendous benefit for the Pickering site in that regard. What that's referring to is meeting an industry guideline for evaluating and monitoring nuclear safety culture within the site.

And the guideline sees the facility -- this is a facility run set of meetings and groups as opposed to the independent oversight bodies that we talked about earlier. You set in place some internal groups at the site to continually evaluate safety culture and progress and what is occurring within the site.

And it's -- there's a series of panels. One is the executive leadership for the site which I would

be a part. But there's also working groups right down to the shop floor in which they're asked to review what's going on the site, provide advice to the senior leadership, specifically target against nuclear safety and nuclear safety culture.

So I think this will be very beneficial to Pickering as we go through and manage towards end of commercial operations. So we're quite excited to see this being setup and looking forward to the results that we'll get out of these groups. They're very new for us and it's recently established within the industry. So, parts of the industry are starting to establish those similar groups.

**MEMBRE HARVEY:** Merci.

**THE CHAIRMAN:** Just to piggyback on this, you mentioned the safety culture studies that you're doing and on the same page you're committing to do some in 2015 and 2018.

What I want to know is all those studies and oversight, how much of it is available at least to CNSC staff to see or to the public? Any of this information ever gets out? I know that there's sensitivity about the WANO reports. I'm just trying to understand what is available to share common knowledge here.

**MR. JAGER:** Glen Jager, for the record.

The nuclear safety culture assessment that's done on a three-year interval, I believe that's what you're referring to, is done by OPG. That's an internal document. It's not attached to WANO or outside bodies. So that's an OPG proprietary document.

We do share the results with the OPG -- or CNSC site staff and have discussed the outcomes of those assessments and actions that were being taken. So they're briefed on the outcomes of our safety culture assessments and we'll share those results certainly.

**THE CHAIRMAN:** The safety culture itself is not done by a third party? Is that -- you know that the CNSC has issued a safety culture discussion paper? That's why I'm sort of interested in knowing what the future will be in this particular space.

**MR. JAGER:** Glen Jager, for the record.

We -- that safety culture assessment is fully compliant with the CNSC guidelines regarding safety culture assessments. It does involve external peers in that assessment but that external view is arranged by OPG and brought in by OPG as part of that assessment.

So, it's not done by the site staff per se. We assemble a team, by OPG, we assemble a team and we involve industry peers in that team so that we get that

external perspective but it is an OPG report that's prepared on that. And it does meet all of our own guidelines and as well as CNSC guidelines for safety culture assessment.

We developed those guidelines to meet CNSC requirements that we've received over the years.

**THE CHAIRMAN:** Thank you.

Ms. Velshi?

**MEMBER VELSHI:** Thank you.

I have a few questions around collective radiation exposure. So CMD 13-H2.1, page 49, Figure 16 shows a rather disturbing trend of increasing radiation dose. And the question is, so with an aging plant do you see this trend continuing?

**MR. JAGER:** Glen Jager, for the record.

As mentioned in our -- and I'll ask Laurie Swami to comment in more details. But as we mentioned in our opening presentation, the scope of work that we need to perform out to 2020 definitely involves additional work in the vaults and associated with fuel channels which does involve more dose. However, we want to maintain or even reduce the dose expenditure and offset what we know will be additional dose required.

And I'll ask Laurie to comment about the programs and processes that we follow that will enable us

to do that.

**MEMBER VELSHI:** So before she answers that, perhaps she can also address what the targets are for the next five years around radiation exposure then.

**MS. SWAMI:** Laurie Swami, for the record.

Obviously we would not be satisfied with the trend that you see here with an increase in collective radiation exposure so we've taken a number of steps to make sure that this trend is arrested. We have a very active ALARA committee at the site looking at various ways of making sure that the dose to our employees is reduced.

We look at dose control opportunities such as removing hotspots, making sure our work plan is adequately planned out so that there is a reduction in dose.

We're looking at improving the way we do work at the plant. So, for instance, we've implemented a teledosimetry program. That means that we don't have to have our radiation protection technicians inside at the same workface as our employees doing the work. This reduces the number of employees that are exposed. This helps with our collective radiation exposure. That's one of the examples of things that we're doing.

We're also implementing shielding -- new shielding techniques. We're looking at what the rest of

the industry is doing to make sure that we are actually implementing the best available technology.

So those are the things that we're looking at overall.

From a target perspective, we're driving the targets down over the business planning period, driving it towards industry benchmark, and so that's a clear focus for the plant.

**MEMBER VELSHI:** Thank you.

And a question; why is this shown as person rem and not person milliSievert?

**MS. SWAMI:** Laurie Swami, for the record.

As we work in the rem units or the millirem units, I understand publicly Sieverts is the unit that's preferred from the regulator and in future we'll make sure that we use those units.

**THE CHAIRMAN:** While you're doing this also please change queries into Becquerel's.

**MS. SWAMI:** Certainly.

**THE CHAIRMAN:** We like to see some consistency please.

**MS. SWAMI:** Thank you.

**MEMBER VELSHI:** Thank you.

**THE CHAIRMAN:** Dr. McDill?

**MEMBER McDILL:** Thank you.

My question is around fiber reinforced -- fiberglass reinforced plastics, which I assume are epoxy based. In order that you answer the entire question I'll give them to you in one list so that the discussion covers all of the things.

Some of these were original FRP components. Were all of them original FRPs? This is on page 42 of OPG's document.

Were the repairs on the up or down cumber split flanges -- I love those -- up or down cumber split flanges composite in nature or were there some other kind of repair done?

Where there have been replacements either to stainless or to new FRP components, what is the procedure for monitoring the joints either between old FRP to new FRP or FRP to stainless?

And is OPG satisfied that all of this -- and staff -- all of this will make it to the end of life?

Thank you.

**MR. JAGER:** Glen Jager, for the record.

All that work was performed during our vacuum building outage and assessed to remain fit for service right through the operating cycle and end of the operating period and beyond actually 2020.

I'll ask Carl Daniel to speak to the

specific issues associated or questions associated with fiberglass reinforced piping and the replacement of it.

**MR. DANIEL:** Carl Daniel, for the record.

A number of FRP -- fiberglass reinforced plastic areas were replaced during the outage and those were sent for condition assessment which was what makes the assessment going forward valid.

A number of areas were replaced with stainless steel. That was to strengthen the area. And those joints were ---

**THE CHAIRMAN:** Can you speak up?

**MR. DANIEL:** I'm sorry.

**THE CHAIRMAN:** We can barely hear you.

**MR. DANIEL:** I'm sorry.

So the FRP areas that were replaced were sent for analysis and the basis of that analysis forms the fitness for service going forward.

Also a number of areas were replaced with stainless steel. That was to ensure that the joints and the material remains rigid and solid throughout the remaining life.

**MEMBER McDILL:** Thank you.

I guess it's over to staff maybe to add a little bit more to that. I think, for example, the up or down cumber split flanges maybe someone could just touch

base on those as well and the repairs.

**MR. RZENTKOWSKI:** I will ask Dr. John Jin, Director of Operational Engineering Assessment to respond to this question.

**DR. JIN:** For the record, my name is John Jin. I am the Director of the Operational Engineering Assessment Division.

My division is conducting the regulatory oversight of the pressure boundary component, including the containment component which you are talking about.

Regarding the fitness for service of the FRP, we are conducting regulatory oversight under the CSA's handbook in 35.5, and we confirm that the licensee has proven to demonstrate the fitness for service over that component.

During the last vacuum outage the licensee removed some part of the FRP stored in the room to test the same condition as in the vacuum building, and they're going to periodically they inspect those parts to confirm the fitness for service of the component.

**MEMBER MCDILL:** The pieces that have been taken out and will be periodically inspected, are they loaded in the same way that the pipe is loaded? Because with composites it's not just environmental it's much more -- I don't know whether these are particular reinforced

composites or layered laminar composites. I don't know what kind of composites they are. So is the -- are the pieces that are being exposed are they also loaded in the same way as the pipes?

**DR. JIN:** For the record, Jon Jane.

To the staff's knowledge, they are being stored in the same environmental condition and rolled in condition as those in the vacuum ingredient.

**MEMBER MCDILL:** Maybe OPG can ---

**MR. JAGER:** Glen Jager, for the record.

There were no changes to the function, purpose or mission of the piping. They were replaced to manage aging and ensure the continued fitness for service of the piping in the structures.

**MEMBER MCDILL:** Sorry, I'm not explaining myself very well. Some pieces have been taken out and will be monitored periodically. Those pieces that have been taken out and are being exposed, are they also being loaded in some manner that simulates the loading they would have been under if they had been in use?

**MR. JAGER:** Glen Jager, for the record.

I'll ask Carl to speak to the aging of those components that were removed and how we're studying them.

**MR. DANIEL:** Carl Daniel, for the record.

I'll have to confirm whether they're stored loaded or not, and I will get that information later today.

**MEMBER McDILL:** Day 2 is great, thank you.

**MR. DANIEL:** Okay. Thank you.

**MEMBER McDILL:** No question?

**THE CHAIRMAN:** Do you want to start on the next cycle? You can have the question.

**MEMBER McDILL:** Thank you.

This may be a little bit more straightforward. There's a reference made by OPG to -- so I find the page -- high risk and -- high confidence and low risk, on page 41; referring to the Unit 6 guide two gap, et cetera.

Can somebody give me a bit better feeling for what high confidence and low risk mean?

It's in the second paragraph on that -- on page 41.

**MR. JAGER:** Glenn Jager, for the record.

I'll ask Carl Daniel to discuss the specifics. But generally those are the gap inspections between the lifts, nozzles and the calandria tubes. I believe that's in reference to.

So we have completed the inspection on Unit 7, one unit, other inspections are planned and based on

those inspections I believe that -- conclusion is drawn.

I'll ask Carl to speak in greater detail on that.

**MR. DANIEL:** Carl Daniel, for the record.

The way the document is written, it's assessed as a low risk now of a problem and high confidence that it will remain -- or remain not to be a problem through the rest of station life.

**MEMBER McDILL:** Can you quantify those qualifiers? Maybe -- you don't. What is high confidence; I mean is it 99 times out of 100, based on sampling of -- you know -- so much? What's the confidence level or is it intended to be merely a qualitative assessment?

**MR. JAGER:** Glenn Jager, for the record.

High confidence to us would mean that we're very confident that the -- the concern is that these nozzles would come in contact with calandria tubes.

We're confident -- high confidence means that we don't expect that to occur in the remaining life -- operating life of the station, which is -- we take that evaluation out beyond 2020 to provide adequate margin and conservatism in that estimate.

And high confidence means we would not necessarily develop actions to mitigate or deal with that as a result. That's not to say that for unforeseen

circumstances that it might not occur but that is remote enough that we would not have actions or contingencies in place to deal with that.

So that's -- that by definition for OPG is what I would interpret high to be.

**MEMBER McDILL:** Staff?

**MR. RZENTKOWSKI:** If I may add to this response. I will actually quantify the statement. This is a part of the fuel channel lifecycle management project. Sagging of the pressure tube is one of the aging mechanisms which we are looking at and by estimating the current sagging and projecting this to 2018, we'll be in a position to better quantify the statement.

**MEMBER McDILL:** Do you agree that the confidence is sufficiently high that no action plans need to be developed?

**MR. RZENTKOWSKI:** Sorry, Greg Rzentkowski, for the record. I should introduce myself before.

Yes, based on the current results from the inspections, we believe that there's a high confidence but nevertheless analytical models are being developed to project the current results until the end of 2018 to confirm that those statements are actually accurate.

**MEMBER McDILL:** Will there be any -- I guess Day Two is much too early to expect those analytical

models to be in?

**MR. RZENTKOWSKI:** That's why we propose a hold point in the licence. All those issues, all those aging mechanisms, affecting fitness-for-service of the fuel channels will be discussed when -- when we come to that point.

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

**THE CHAIRMAN:** Thank you.  
Ms. Velshi?

**MEMBER VELSHI:** I have a quick question for OPG around housekeeping.

On page 54 of your CMD you discuss the challenges that you are encountering and some of your improvement initiatives around this.

Housekeeping or good housekeeping is -- or housekeeping is a precursor to some bad things happening. Is there a single metric that you use to measure how well you're doing in this area and is there something available for us to monitor on are you meeting the improvements that you're hoping to?

**MR. JAGER:** Glenn Jager, for the record.

That's correct, housekeeping is a very important aspect to safety of personnel in the facility so we -- we put a very strong focus on that.

We've made a lot of improvements over the licensing period in regards to housekeeping and have a number of processes that we've put in place to drive those improvements up until this point, and well beyond, right out through 2020.

It's -- we have no plans to relax that in any way and we want to improve towards excellence.

There are a number of metrics that we look at to assess housekeeping performance. For example, a number of transient material permits, routine walk downs and so forth.

And I'll ask Shane Ryder to speak in more detail about our housekeeping program, what that entails and how we evaluate the health or improvement or if there's any degradation taking place in the facility.

**MR. RYDER:** Shane Ryder; Director of Office and Maintenance, for the record.

Employee safety and public safety is our -- still our number one priority at OPG and we recognize the importance of housekeeping in that -- in that concern.

So we have detailed housekeeping programs set up at Pickering. It relies on ownership of various areas throughout the plant. We have a large organization, a large number of managers and those areas are all assigned to management people, and they have a weekly and

monthly walk downs of those areas to make sure housekeeping issues are under control.

We also work with our staff to ensure they understand the job site conditions for work are clear, that housekeeping standards have to be maintained, not just at the end of work but during work. And we do frequent worksite observations to make sure that housekeeping standards are upheld during the work process. And those are input into our observation and coaching program, so we get a measurement of housekeeping issues as we look at the data in our programs associated with job observation. So we have several indicators of how we're doing there.

We're never 100 percent satisfied with our housekeeping and so it is -- it is also -- we recognize that we have to invest in the plant in terms of material condition upgrades, so we've done a lot in the -- in the last year in terms of painting, lighting improvements, areas where people work, worksites and offices to make sure that if we -- make sure those areas are in good condition; that reflects on the attitude towards housekeeping in the plant overall.

**MEMBER VELSHI:** Staff, is there a way that you can show the Commission how improvement is progressing in this area?

**MR. SANTINI:** Miguel Santini, for the record.

As OPG stated, housekeeping is a task for every worker in the plant; it's not only a management role but everybody has to take care of that.

Housekeeping was a -- is a significant issue for us over the last few years but we have seen a considerable improvement.

How do we measure that? Housekeeping is an item that is looked at in every single field or walk down, field inspection or walk down of the plant and the number of instances in which we see -- we see conditions are not kept -- upkeep or transit material is in the wrong spots and all that, both are taken care of and the action -- this is an issue to the licensee.

So basically we don't have a developed metrics, what we have seen is a reduction on the number of events in which we have brought this up to OPG to correct.

And having said that, we do have special consideration of housekeeping when it comes to two specific issues; one is if it is the risk, the temporary storage of components or material close to a seismic route and this we pay special attention because cleaning of a seismic route is very important for prevention of potential accidents.

And housekeeping, when -- that might affect the route of -- this is in the reactor building to the -- to the emergency cooling system. So to cleaning of that route is extremely relevant for us.

We also look at transit material when it comes to fire hazards. But again, although we don't have available metrics we have seen a considerable reduction of observation in our inspections which is an indication that things are improving.

**MEMBER McDILL:** Thank you.

**LE PRÉSIDENT:** Monsieur Harvey?

**MEMBRE HARVEY:** Merci monsieur le président.

On pages 15 and 16 of the staff document, about the minimum shift compliment. Can we -- the OPG has since conducted, through analysis and validation exercise to determine the requirement for minimum staff compliment for operation staff in accordance with the CNSC regulatory guide, J3-23.

My question is what are those requirements and why it takes such analysis to -- to respect those requirements? The staff and my questions address the staff. And how those requirements common to all the licensees?

**MR. SANTINI:** Miguel Santini, for the

record.

Before I go to the experts on the matter, those analyses basically look at -- at tasks and -- and different situations in normal operations and acts in analysis, and -- and require a rigorous analysis in terms of determining what -- how many people are required to perform those tasks.

Now I would like to -- to direct the question to Andre Bouchard, the Director of the Human Performance Division.

**MR. BOUCHARD:** My name is Andre Bouchard. I'm the Director for the Human and Organizational Performance Division.

We are the division pulling together the multi-facets team that needs to assess and evaluate minimum shift compliment staffing levels. These types of analysis require multi-disciplinary teams of people that are related to probabilistic safety assessments, designs of the plants, certifications of the plant operating performance.

Those analysis are complicated because emergency scenarios strongly -- are very specific to the -- the sites, the plants themselves. The analysis is a bit tedious because it needs to go to the safety analysis and pull from there what are the most plausible scenarios

of events.

The key point that we put in our analysis though is the -- the analysis must demonstrate the scenarios that would be the more demanding from a human perspective. Not necessarily from a technical design, but what would be more laborious to deal with.

That's a different thinking, but this is what is needed to make minimum shift compliment levels and the disciplines and the qualifications that are needed to answer such types of events.

We ask the licensee to perform this review and we review that analysis that they've done to make sure that we could challenge the basis on which it is done. Once this scenario and the scenarios of accidents are agreed upon, there starts a second part of the process which is the validation and verification of the procedures that supports answering these emergency scenarios.

This is -- the whole analysis requires determination of the scenarios, verification, validation of the procedures that goes with it and how the licensee has demonstrated to the CNSC that they could actually man these scenarios, procedures and do what they said they would do on paper.

This is what -- this -- it's fairly lengthy, but it is very thorough and it is -- and OPG can

answer that. It's been proven to be very beneficial as well.

**MEMBER TOLGYESI:** Just before to go to OPG, do you have anything in your requirement like, it's very simple, but say, in the control room you -- you have to have so many people at any time? Is not simple like that, so what I understand is we have figures and minimum employees ---

**MR. SANTINI:** Yes, we have -- we have the size of the minimum shift compliment defined for the licence and the licence condition handbook, and -- and there's absolutely no question that the minimum shift compliment is sufficient to ensure safe operation and a proper emergency response.

What is the objective behind this work which was described by Mr. Andre Bouchard is to complete the documentation required to justify certain operational modes or accident scenarios for each diminutive compliment has to take an appropriate action. So it was -- it's more documentation than really the actual problem we are trying to resolve.

**MEMBER TOLGYESI:** The fact that we're going -- extending the life of the station, will that have any impact on the shift -- on that compliment?

**MR. SANTINI:** No, they will have no impact

on the minimum shift compliment. Simply the operation of the site will be exactly the same until the end of the commercial operation.

The only -- the only concern from the regulatory standpoint is that the licensee will maintain appropriate staffing level and -- and they will also maintain appropriate qualification of staff.

**MEMBER TOLGYESI:** Want to add something, OPG?

**MR. JAGER:** Glen Jager, for the record.

I agree with all the points that have been made. This OPG and Pickering specifically has worked over the last two years to satisfy CNSC requirements as laid out in G3-23 and it's a very rigorous evaluation of design-basis events, all the design-basis events to determine which are the critical events for minimum compliment and then evaluate satisfying all the requirements of that event.

So it -- it's very rigorous. It's very thorough, very demanding. We have, as a result of that, also implemented a number of technological improvements such as offsite and implant survey, equipment which relieves, I guess, some of the requirement for minimum compliment and improves meeting all the requirements of -- of design basis events, and as well, we validate and

rehearse all those events.

We've always met minimum compliment. We safely demonstrate that we can respond to all events both through simulator exercises, implant drills and validation of -- of those procedures.

So we ensure that we're very safe and before implementing any change, go through the -- the process as laid out by CNSC staff to their and our own satisfaction to ensure that we have appropriate minimum compliment at all times.

**MEMBER TOLGYESI:** Is the current figure of that minimum shift compliment different from what it was, let's say, 5-10 years ago?

**MR. JAGER:** Glen Jager, for the record.

Yes, it is. We implemented -- we went through this process. We made those technology improvements, reassigned some activities, all in support of days base maintenance and days base maintenance specifically yielded a change in the minimum compliment and the assignment of activities associated with that.

**MEMBER TOLGYESI:** Thank you.

**THE CHAIRMAN:** I must tell you, if there's any area which we are pretty sensitive about, it's whatever happens in the control room. And anytime we read, if you read in your own documentation on page 22,

that "OPG has recognized that the control room shift supervisor program for our Pickering blah blah blah has not been successful," that catches our attention.

And I must tell you, I'm not too -- we cannot, I guess, staff cannot micro-manage the in and out of the control room. It's not only the minimum number. It's how long they work, are they fully trained, they fully -- they fully available?

So we are really concerned that if there's one area in which you must keep the right expertise is in the control room. So every time we see language that seems to be interpreted as less than satisfactory, we get concerned.

**MR. JAGER:** Glen Jager, for the record.

I would say that in the control room, there is no question as to the capability of control room staff to safely operate the plant, and there's been no question as to providing the minimum compliment to do so.

These -- this paragraph is referring to the initial authorization and initial certification, so that is trainees becoming certified to operate the control room.

And I'll ask Shane Ryder to talk about some of those issues that we're dealing with in that program. But of the certified staff that are standing watch or

working in the control room, there's been no question as to their capability or qualification or ability to safely operate the plant. That's routinely evaluated and tested through re-qual testing and refresher sessions with those staff and this refers to the initial certification.

So I'll ask Shane just to comment a little further on that.

**MR. RYDER:** Shane Ryder, for the record.

We did have an issue identified in the initial licensing examination process for control room shift supervisors at Pickering B in 2011.

CNSC were involved in that inspection and pointed out several issues which we are -- we've essentially resolved. There were -- there were three directives and two -- sorry, four action notices. We have addressed those -- those concerns.

We also did a formal root cause over that particular incident and have -- we're about 75 percent the way through completing that root cause and have taken action to address the issues identified in that.

Overall the program across OPG we have had -- in the last year we've had 74 out of 76 examinations successfully completed which is about a 97 percent success rate, which compares favourably with international benchmarks for the training program.

And we are committed to continuing to improve our training success rate for the candidates as they go through and also to make sure they're fully qualified before they take positions in our control rooms.

**THE CHAIRMAN:** I see some technical advisor here that want to say something from CNSC.

**MR. McDERMOTT:** Yes, it's Chuck McDermott; I'm the Director of Personnel Certification Division at the CNSC.

I would like to first of all state that all certified staff at Pickering, CNSC staff is confident that they are competent and qualified to do the tasks that they're asked to do.

So everyone who's operating in the control room, who's a certified staff member, is competent and we believe that.

And Mr. Ryder is correct, that it's the people undergoing training to become certified that staff continues to have the concern with.

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

Going back to Dr. Barriault.

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

On Slide 13 of the CNSC presentation; I'm looking at protection of the public really and offsite

public alerting system, and I guess I'm kind of surprised that that's not finished yet.

It says "work near completion", it's been a dance, it's been going on for a long time. And I guess could we have a timeline on that and get some feeling on where that's going.

Slide 13 of the presentation, CNSC.

**MR. SANTINI:** Miguel Santini, for the record.

We have connected through the telephone, representatives from Emergency Measures Ontario and the Durham Management -- Emergency Management organization that could -- are more suitable to answer this question.

**THE CHAIRMAN:** This is a good opportunity to bring Mr. Ciuciura, who is a frequent presenter here, maybe to explain to us what's going on and where are we.

**MR. CIUCIURA:** Yes, it's Ivan Ciuciura; I'm the Director of Emergency Management for Durham Region.

Can you hear me clearly?

**THE CHAIRMAN:** Yes. Please proceed.

**MR. CIUCIURA:** So where we're at with the sirens in Pickering. There -- just to summarize; there are nine sirens that are operational, that are in service and can be utilized today.

Eleven (11) additional sirens are being

installed. We currently have approval for all of the site locations. We have 9 of 11 bases installed, and starting tomorrow they'll be putting tops on those bases.

So by Tuesday the current plan is to have eight of the poles on the bases and then they'll continue in the week of March the 4<sup>th</sup>, we hope they will -- weather dependant -- be all done.

**THE CHAIRMAN:** So I assume that means that for Day Two we can say that this is all done?

**MR. CIUCIURA:** I'm certainly hoping, Dr. Binder, that I can say that.

**MEMBER BARRIAULT:** And is that for the three miles for the 10 miles also -- or 10 kilometres also?

**MR. CIUCIURA:** No, what we are -- It's Ivan Ciuciura.

What we are doing right now is the three kilometre zones around the -- both of the stations. The process with then move out to the 10-kilometre zones, the 3 to 10-kilometre zones.

**MEMBER BARRIAULT:** And do you have a date for the termination of 10-kilometre?

**MR. CIUCIURA:** I don't. And maybe the province would like to -- you know -- step in on this one. They -- we're just engaging a consultant to do some work

on that.

**THE CHAIRMAN:** And maybe we can also hear from Mr. Kontra from EMO about -- are you setting some target dates for compliance?

**MR. KONTRA:** Thank you, Dr. Binder.

For the record, it's Tom Kontra; Deputy Chief with Emergency Management Ontario.

We continue our preparations to do that. We have a request for a proposal in the works to determine exactly what is the best system to provide that alerting out to 10 kilometres, and currently I don't have a specific date to provide you.

**THE CHAIRMAN:** Will -- will there be -- it's reasonable to expect something more definitive for the Day Two hearing?

**MR. KONTRA:** I would hope that for Day Two I can tell you that the request for proposal has been let. I'm sorting out an internal hitch on that process on Monday next week. So by Day Two I'm hoping to have at least that step in the process.

**THE CHAIRMAN:** Thank you.

Dr. Barriault?

**MEMBER BARRIAULT:** No, that's fine. Thank you, Mr. Chairman.

**THE CHAIRMAN:** Well, we may want to ask OPG

then, then how -- I'm taking this opportunity to ask; I understand there's going to be a big test on 2014, led by Health Canada, by testing the whole emergency planning systems.

What I want to know is are you working on integrating all units, the local municipality, the province, and the federal in one kind of an emergency plan that -- integrated plan that everybody can understand?

**MS. SWAMI:** Laurie Swami, for the record.

I'm not sure I understand your question, Dr. Binder. Are you asking if OPG is planning to integrate all of the offsite emergency plans into one plan?

**THE CHAIRMAN:** Well, I thought last time we spoke about site-specific emergency plan where all the players will be identified and everybody's role is well understood, and there's lots of players here.

Beyond -- beyond your own internal zone into the municipality, into the province.

**MS. SWAMI:** Laurie Swami, for the record.

Yes, OPG continues to work with the various stakeholders in the emergency planning function. And in fact, the CSA is currently looking at developing a standard that would enable integration of all of those plans.

So OPG would continue to support those efforts and continue to work with the various stakeholders to ensure that that is implemented.

With respect to the 2014 exercise that I believe you referred to, Dr. Binder, yes, OPG is in the process of planning for an exercise with the -- again with the external stakeholders for an exercise next year and it will feature our Darlington facility.

**THE CHAIRMAN:** Staff, part of the Fukushima task force, was it not really clear what kind of expectation we have about site-specific emergency plan?

**MR. RZENTKOWSKI:** Yes, there are some general requirements outlining how this needs to be conducted.

But of course the authority of OPG ends pretty much at the site fence. So the role of OPG in preparing those site-specific plans should be more to facilitate the discussion and engage other players so that they can sit around the table and decide what is the best course of action.

So that's in general what we expect and we also expect both the province and the federal government to revise -- to revise those plans at the national level that this proper integration could be achieved. So that's in general.

I may ask Mr. Raoul Awad, Director General responsible for this technical area to respond in more detail.

**THE CHAIRMAN:** I think we have Luc Sigouin here to talk about that. Go ahead.

**MR. SIGOUIN:** Thank you. Luc Sigouin for the record, Director of Emergency Management Programs Division. So just to bring some clarification on that. Ontario does have site-specific emergency response -- nuclear emergency response plans for each of the facilities in Ontario. And Mr. Kontra can maybe comment on that later.

And with respect to the federal plans, there are provisions in the federal nuclear emergency plan to have a -- an Ontario specific annex. One exists; it hasn't been updated in recent years. However, Health Canada has undertaken activities to update the Ontario annex for response to an Ontario NPP accident and they are timing the completion of that so that it can be tested during the 2014 full-scale exercise that has been referred to already.

**THE CHAIRMAN:** Dr. Barriault.

**MEMBER BARRIAULT:** Mr. Chairman, thank you.

I -- I guess it begs the question: if something happened today or tomorrow, are we prepared?

And I'm not sure we are. And post-Fukushima, I'm wondering really if we shouldn't have minimum criterias for emergency response alerts before licensing nuclear power plants. Can you comment -- can CNSC comment on that?

**MR. RZENTKOWSKI:** The emergency plans are a part of the licence application. So they are being prepared by the proponent and evaluated by the CNSC for their adequacy.

Yes, this is a part. But again the integration at every level is not really addressed properly in the licence application. And that's what we are trying to achieve through the Fukushima action plan.

However, I would like to direct your attention to the exercise which was recently conducted at Bruce site or in -- in the Bruce Region. It has been demonstrated that actually all layers of government can work in a very cohesive and very integrated fashion because the Huron challenge exercise was really a success from our standpoint.

**MEMBER BARRIAULT:** You know, I -- I've been on the Commission for some time now and if I look back you know, we've raised this question pre-Fukushima. And it's been reinforced by Fukushima and -- and I'm not sure that it's being taken seriously. Maybe it is and enlighten me

if it is.

**MR. RZENTKOWSKI:** I would like to direct this question again to Luc Sigouin. It -- it's my understanding that it has been taken seriously by all layers of government. So that means federal, provincial and municipal, but at the same time as for example --

**MEMBER BARRIAULT:** Fukushima was ---

**MR. RZENTKOWSKI:** Pickering situation indicates that definitely those different layers of government have a problem to achieve a common understanding of what needs to be put in place.

**MEMBER BARRIAULT:** Fukushima was March 2011, wasn't it? That's two years ago.

**MR. RZENTKOWSKI:** That's correct. That's two years ago and in this particular case we are not talking about the major infrastructure. We are talking simply about the plans. It's disappointing.

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

**THE CHAIRMAN:** Mr. Sigouin, you want to add any final words on this?

**MR. SIGOUIN:** Yes. Thank you Mr. President. Luc Sigouin for the record. So Dr. Barriault, two -- two questions that you raised, are we prepared?

**MEMBER BARRIAULT:** That's correct.

**MR. SIGOUIN:** Yes.

So what -- what staff can say is that there are -- are detailed and adequate plans and provisions on site. OPG has appropriate plans and has demonstrated their capability to respond to an emergency and support off-site authorities in responding to an emergency. The Province of Ontario has -- has station-specific plans for each of the stations in Ontario. Those were reviewed during the Fukushima Task Force activities. And they were found to be adequate. There were opportunities for improvement. And certainly was highlighted that they needed to be tested again. And that work has now started. And we will see the outcome of that in -- with the 2014 exercises.

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

**MS. SWAMI:** Laurie Swami for the record. If I could just add to that that OPG is prepared. We have very good plans in place. We have a drill program where we test those plans on a regular basis. Some of those are inspected and some of those are done as self-assessments for our -- our program.

The discussion that we're having today is really about how we can make improvements to those plans because they already exist and are capable of responding.

And I think there's some lessons learned that we have implemented. And we have made improvements to our emergency response capability over the licence period.

We have talked about a gamma monitors that we have put in place around the facility to provide faster response in terms of the monitoring program. We've implemented SAMG testing within our emergency response capability. So our staff have been trained on severe accident management and how to do response to those types of accidents should they occur.

So we have a lot of things that have been put in place. And we have more things to be done surely, but we have good plans in place and we plan to test that next year at our Darlington facility.

**MEMBER BARRIAULT:** I'm sorry. Those are onsite plan if I understand correctly. What we're discussing here, offsite plan if -- and I know it's one of those grey areas, who's responsibility is it. Okay. Is it OPG, is it the Ontario government, is it CNSC? The bottom line really is that we're responsible for the licensing of these issue -- of these plants and we have to make sure that it's -- that's being done. That's all really.

**THE CHAIRMAN:** So just to echo, Dr. Barriault is right on and when -- we just heard from staff

that OPG responsibility or Pickering responsibility is up to the fence. Well we don't look at it that way because it's a licensed activity that could have repercussion way beyond the fence.

So the question is it cannot -- you cannot pass all out the responsibility, accountability so neatly. And it would be nice for day two if you could get a simple document that actually explains the relationship between the site-specific Pickering let's say, the local municipality, the province, Health Canada, and public safety if I really want to complicate. And not to mention how do we talk to the Americans across the lake. All of this in one integrated plan and hopefully it's not going to be 500 pages document which most of the emergency planning are.

So this is what the frustration level that we all know what happen particularly for the first 24 to 72 hours in an incident -- in a nuclear incident. This is the Fukushima angst that we are all sharing.

Anyhow, enough of my little outburst here. I think I'm -- I think we're moving onto -- Mr. Tolgyesi.

**MEMBER TOLGYESI:** Merci, Monsieur le Président. On 13-H2.A, page 7, first paragraph, there is a section on:

*"degradation mechanism specifically hydrogen uptake where*

*the recent research development work has prompted OPG to consider changes in the way it predicts pressure tube fracture toughness. Therefore, new compliance monitoring measures will be required."*

The question is two-fold. Are these compliance monitoring measures established or who will develop them? And eventually if they are developed, how they will be implemented?

**MR. RZENTKOWSKI:** Greg Rzentkowski for the record. Yes, those measures are currently established, but they are being revised as a part of the fuel channel life-cycle management project.

So coming back to your specific question, the hydrogen uptakes -- the measurements of hydrogen uptakes resulted in revision to the fractural toughness curve.

The curve right now is less conservative than the one which is currently in use. And because of that our supporting compliance tools will have to be revised accordingly so that the safety of the operation can be ensured. And this process is undergoing it will be concluded shortly. The current timeline is, if I could remember, the end of June. And again the data will be reassessed from the licensing standpoint when we get to the point of the hold point which is included in the

proposed licence.

**MEMBER TOLGYESI:** And it will apply to all industry?

**MR. RZENTKOWSKI:** That's correct, because the ultimate objective is to revise the industry standard to account for the new information stemming from this project.

**THE CHAIRMAN:** Okay. Back to Dr. McDill.

**MEMBER McDILL:** Thank you.

My next question is with respect to the conclusions, staff slide 25 and staff document page 75, referring to CEAA. If this request had come in, hypothetically let's say one month later, would it make a difference as to which CEAA regulation we were working under? And someone's coming up from the back.

**MR. RZENTKOWSKI:** Yes, I will probably ask Andrew McAllister to respond to the question. I believe it's him.

**MR. McALLISTER:** Andrew McAllister, Environmental Assessment Specialist for CNSC. From a site history perspective there are previous environmental assessments that have been done on the site since the Pickering B refurbishment and continued operations screening level assessment, all of which have concluded no significant adverse environmental effects.

From a legislative perspective, it comes down to -- under the Canadian Environmental Assessment Act of 2012, it's applied based on the date that the environmental assessment determination was made.

In this case application was received on July 4<sup>th</sup>. The new legislation came into effect July 6<sup>th</sup>, 2012. And our environmental assessment determination was done at a later date hence the applicability of CEAA 2012.

The conclusion of which was that what OPG proposed was not a project on the regulations designating physical activities, hence no environmental assessment was required.

Hypothetically speaking, had this application been considered under the Canadian Environmental Assessment Act of 1992, which has been repealed, no environmental assessment would have been required as a license renewal is not a trigger under this repealed legislation.

**MEMBER MCDILL:** So it really doesn't matter, in practical terms, when this document came forward?

**MR. McALLISTER:** That is correct.

**MEMBER MCDILL:** Thank you.

**THE CHAIRMAN:** However, I'm just trying to make sure that when we use an environmental assessment and

talk about legislation, we're talking about a legal term. It does not mean that our staff in OPG will not do an environmental protection assessment.

Let me use a new terminology to make sure that all the environmental concern, in fact we haven't spoken yet about fish and thermal plume et cetera, are going to be looked at. Please correct me if I'm wrong here.

**MS. THOMPSON:** Patsy Thompson for the record, if I may. I'm the Director General responsible for environmental assessments and environmental protection.

What I'd like to add to what Mr. McAllister has said, and to your question Mr. Binder about an environmental protection assessment that we'll be speaking about tomorrow, is that the Pickering A and B stations have been operating for several decades. We have extensive environmental monitoring information.

As you've mentioned a couple minutes ago, we've done a lot of work on impacts to fish from entrainment and impingement. We've done work on thermal impacts. We know what the radiological releases from this facility are, what the public doses are.

And so this work is part of the ongoing day-to-day work of the CNSC. We know what the impacts of

the stations are. We know what effectiveness the mitigation measures are and at this point the assessment is comprehensive.

**THE CHAIRMAN:** Thank you. Maybe it's a good time now, if they're still with us, to bring in Fishery & Ocean and Environment Canada and maybe ask for a quick update about the fish issue and the thermal issue and where -- what's their view about progress made to date and is there anything still remaining outstanding that will be presented in day two; so a little quick summary on that.

So maybe, maybe we start -- I don't know what's best to do it. I see that CNSC Staff is -- and OPG Staff are on the table, but I want to start with Fishery & Ocean.

**MR. HOGGARTH:** It's Tom Hoggarth here for the record from Fisheries and Oceans. I've been working with the CNSC Staff as well as OPG on the impingement and the entrainment issue. I think we've already mentioned this in front of the Commission before, but everybody is -- or Fisheries and Oceans, I'll speak for ourselves specifically, are satisfied with the impingement that the barrier net in that it has achieved the 80 percent reduction. And I think this year's study itself is showing that it's actually beyond the 80 percent, which is

good.

And then DFO's been providing expert support and technical advice to CNSC as it relates to the entrainment because we've all made the decision for understanding that there is no real mitigation measure that would reduce entrainment numbers at the site. So we've provided technical information on mortality rates on fish to understand what the impact is and the numbers really mean to the fisheries and the lake.

We've also been providing technical advice to CNSC and OPG on if you're not -- if you can't mitigate it but you're offsetting it by the creation of habitat, or offsetting it as OPG has done with the Atlantic salmon works, or what production rates would you get from coastal wetlands. So if you create a wetland, how much fish can you expect to get from it and the same as well as the impact of stocking fish or Atlantic salmon into the lake and what benefits do you get from that.

So based on the analysis that we've done on that, we feel that CNSC -- or OPG has met the 60 percent entrainment number set by CNSC.

**THE CHAIRMAN:** Thank you for that.

Environment Canada?

**MS. ALI:** Nardia Ali, Environment Canada, for the record. We have been working, I guess, with CNSC

and OPG on looking at mitigative options for thermal effects of the Pickering plant.

We're satisfied that OPG has extensively considered all the different mitigative options that would be possible for mitigating the minimal effects and -- or minimal thermal effects that have been observed there.

And in the light of the plan closure, Pickering, there was -- there were limitations in the type of mitigation options that could be done.

But after reviewing the mitigation options report that was provided by OPG, we -- we're satisfied that what we've agreed to was removing sampling around white fish from the realms, continuing to monitor the round white fish populations as part of the Round White Fish Action Plan.

We feel with these measures the thermal effects and the round white fish populations in the vicinity of the plant could be protected.

**THE CHAIRMAN:** Thank you. Staff want to add anything and then I'll ask OPG for the final word on this?

**MR. RINKER:** Mike Rinker, I'm the Director of the Environmental Risk Assessment Division. As you've heard, I won't give too much overall summary because I'll have some overlap, but we are satisfied with the net

performance.

The only outlying issue with regards to impingement is northern pike which are not mitigated in winter when the net's not deployed. However OPG has committed to do an offset to account for that and they're working with the Toronto Region Conservation Authority for that to move forward.

So should that move forward, impingement is resolved as DFO has indicated, the work done for entrainment, there's salmon restocking and an existing offset that OPG has created so that issue is now resolved.

And for thermal releases -- can't be mitigated but one way to -- the risk is very low and that risk would be eliminated should round white fish migrate from, say, the Darlington area over to Pickering; and so there's a monitoring program that we're hoping to have to validate that assumption.

**THE CHAIRMAN:** Okay. What, with the list of things yet to do, what will be available for day two, also?

**MR. RINKER:** Mike Rinker for the record. It's my understanding, and I'll ask OPG to follow up, but the discussions with the Toronto Regional Conservation Authority should be resolved by day two so we'll know that one.

There's a meeting in March for the Thermal Release Monitoring Program so we should have the answer for that. So those are the two unresolved issues and they should be resolved by day two.

**THE CHAIRMAN:** OPG?

**MS. IBER:** Barbara Iber for the record, and I agree with what the CNSC, Environment Canada and DFO have given as their characterization and also with the items that would be available for day two, that's the conclusion of the meeting where we assess the objectives associated with the round white fish action plan for the thermal effluents and in advancing the planning for the offsets to address the entrainment impact.

And I'd also add that the other item that hasn't been discussed is with respect to the barrier net, the fact that it is functioning now effectively, meeting the targets and we have a maintenance and monitoring program in place to ensure that we have continued high level of performance going forward.

**THE CHAIRMAN:** Thank you. Miss Velshi.

**MEMBER VELSHI:** Question for OPG around your investments in Pickering. In both your submission and your presentation you talk about continuing investments and ensuring continued operations and

reliability improvements but as you look at your long term business plan, can you comment on quantum of investments that are being made and is there a possibility that, you know, the bean counters may say there isn't a business case to make this investment because of the shorter life and that we're willing to take on a higher force loss great for instance?

**MR. TULETT:** Martin Tulett for the record.

So I want to go back to what I talked about this morning in the business environment, that with coal closure, nuclear has become a much bigger source of revenue for OPG and Pickering in particular as it transitions through Darlington refurbishment and up to two units were shut down for Darlington refurbishment. It's critical that Pickering's runs reliably.

So in terms of level of investment that you could actually characterize to Miss Velshi that we are investing now in improving equipment liability. There's project portfolios that invest up to \$300 million a year in OPG equipment, some of those examples were shown by Glenn this morning. We have set aside \$200 million for continued operation and investment in pro-active replacement and things like large motors.

But post to 2015, it's very critical that Pickering runs reliably and all the mechanisms we have in

place with plant health committee and monitoring plant performance will just be that much more critical.

I would close by saying that we don't let the bean counters decide what's the right thing to do for the plant. We are committed to safe, reliable operations and I do think that because it's such a large source of our revenue stream that they'll be an adequate attention paid and investments made in the plant to make sure it runs safe for the 2020.

**MEMBER VELSHI:** Thank you for that answer. So if you turn to page 24, the slide that's got the force loss rate, figure 4, what are the targets say for, you know, trees down the road and how does that compare with the industry standard?

**MR. JAGER:** Glen Jager for the record.

Our target is for 5.5 per cent forest loss rate through the business planning period. That is higher than industry standard, but recognizes the work that we need to do to improve further on our forest loss rate. It certainly feel that that is achievable with the program that we set out, we have units that are performing much better than that and the reliability plan that we set in place will get us there, I'm confident of that fact.

It's a three prong approach: one, looking at human performance contributors that could be to rework

or errors. The second one is looking at backlogs because we believe that backlogs are -- there is a correlation between backlogs on a per unit basis that does result in forest loss rate, so getting backlogs down to target will yield results. We've seen that on the units at Pickering and we've seen that at Darlington so that's a model that we're following that we know will yield results. And specifically, there's projects that we've targeted that address known contributors to forest lost or anticipated contributors to forest loss that historically or as a result of our aging management studies know could present a threat that we've positioned to ensure that we get to that 5.5 per cent forest loss rate. But that is greater than industry objectives. Our goal, obviously, is to reduce forest loss rate as low as possible and, as I said earlier, some of the units we are actually achieving very very good forest loss rates.

So we have units that are performing at their level; the objective is to get all the units performing to that level.

**MEMBER VELSHI:** Thank you. Thank you.

**THE CHAIRMAN:** Monsieur Harvey.

**MEMBER HARVEY:** Merci, Monsieur le Président.

My question is about the fuel handling machines in page 41 of this typed document. In general, the repeated breakdown of those fueling machines will not affect the nuclear safety. Staff would like to know that any failure that place the plant in abnormal state is undesirable from a safety perspective. My question is: in what circumstances could the unavailability of those machines lead to safety problems?

**MR. RZENTKOWSKI:** I think predominantly when the machine is stacked at the end fitting, because it becomes the part of the pressure boundary for the reactor.

**MEMBER HARVEY:** And ---

**MR. SANTINI:** If I could expand on that. And the failure of the fueling machine or unavailability of the fueling machine also causes that they re-issue depletion in the core and all of those states are unlike. However, the routine normal operations are analyzed more in depth and more in detail. So it's not really a concern, but when the machine are working properly, then safety is optimized. That would be the proper stand for that.

**MEMBER HARVEY:** And OPG -- merci pour votre réponse. OPG you mentioned that, I meant that it is mention that OPG to eliminate, reduce or eliminate those issues; you have developed a few handling equipment

reliability recovery. So you are confident that this will, if not eliminate, will quite reduce the issue?

**MR. JAGER:** Jager for the record.

Yes, that is part of our reliability initiative for the station that I just spoke to. It's one of the specific projects that we've targeting fuel handling and as the CNSC staff indicated when fuel handlings is unavailable, it results in potentially derates (sic) or in the worst case, shut down of the unit. So fuel handling equipment as a specific target is part of our reliability plan. We have done two things there, one significant investment first of all in the Pickering A or units 1 and 4 fueling machine; that is already well underway. It's a program that involves the replacement of a number of components, refit of cabling, substantial amount of work. We actually put in place mini-outages to allow those windows where we could execute that work, substantial work, on the fueling machine and accelerate the reliability improvement and the results that we've seen today are a dramatic improvement in the machine reliability and that's reflected in average zone level which is a reactivity management indicator for the Pickering A unit and substantially less derates. So we are already seeing benefits on units 1 and 4.

On units 5 to 8, we've implemented a very

similar program, started last year. Significant comparable investment that's being completed to units 1 and 4 is being applied to units 5 and 8. And again, we would expect to see the very same improvements and reliability on the units 5-8 machines as we have seen already on units 1 to 4 machines.

And finally, there is a people aspect to this as part of that overall reliability initiative on fueling machine. We've also looked at how operators manage the machine, the human performance associated with procedure use and ensuring that that is very robust and ensure high reliability.

**MEMBER HARVEY:** Is the problem unique to Pickering or other stations also encounter such a problem.

**MR. JAGER:** This problem is not unique to Pickering. There's other station that are affected, reliability issues in relation to the fueling machines. In the report, we actually now have a status report on nuclear power plant; we report quite frequently on those issues.

**THE CHAIRMAN:** Thank you. Monsieur Tolgyesi.

**MEMBER TOLGYESI:** Thank you Mister Chairman. OPG on your slide 15. I'm sure you've got a respiratory protection program at the plant, and I'm sure

you have fit testing. This gentleman seems to have facial hair. I don't know if that's allowed in your fit testing.

**MR. JAGER:** Glen Jager, for the record. That gentleman's working on a turbine component. If he were to require respiratory protection, for example, had to enter the boiler room, or a tritiated environment, he would not, that's correct, be qualified to wear a mask. He would have to wear a plastic suit, and air-supplied suit, which provides excellent protection ---

**MR. HARVEY:** Okay.

**MR. JAGER:** --- against a tritiated environment.

**MR. HARVEY:** I just wanted to make certain that you were covering these individual really -- normally at a plant you've have fit testing for everybody, wouldn't you, though?

**MR. JAGER:** There is a fit -- Glen Jager, for the record.

You're required to pass a fit test in order to use a respirator, so if we required this worker to use the -- a respirator, they would have to pass a fit test which would -- clearly, for the individual on the left, would require a shave and no facial hair, so ---

**MR. HARVEY:** Just an observation. Thank you. Thank you, Mr. Chairman.

**THE CHAIRMAN:** Mr. Tolgyesi?

**MR. TOLGYESI:** Merci.

On the page 16 of the staff presentation 13H2, in the second paragraph there is:

"OPG identified the seismic event as requiring the greatest number of qualified resources for event mitigation."

It's the second paragraph, through third line to the end.

So, could you remind us what's the potential of seismic risk there, and what type of qualified resources are required, and how they will mitigate these events?

**MR. JAGER:** Glen Jager, for the record.

The risk of a seismic event is very low. That was reviewed as part of the Fukushima actions for the area in which the Pickering plant is situated.

**MR. TOLGYESI:** So when you are saying, you are meaning greatest number of qualified resources -- what type of resources you need?

**MR. JAGER:** The paragraph refers to the minimum complement and the necessary number of staff to respond to a seismic event, and I'll ask Shane Ryder to discuss the types of resources and the nature of that response.

**MR. RYDER:** Shane Ryder, for the record.

The seismic event was -- when we did our analysis of the most labour-intensive -- or the most demands on our staff, that was the event that demanded the most field activity which requires resources.

So that -- most of the activities that are required in the field, in a seismic event, are to go and start our emergency power generators and to put people into positions in the field, to allow water to be introduced into the reactor buildings to -- for various cooling loads, and also to power up our unit emergency control centres.

So we'd have a detailed procedure. It requires a lot of field activity because we assume that we lose the control room, essentially, and the power supplies there so -- in the worst case. So we put people into all the seismic areas to fire up our seismic system, so that they would be available, as we need them, after a seismic event, in the worst-case situation.

**THE CHAIRMAN:** But just to piggyback on this question, you've recently done, if I understand correctly, a seismic probabilistic analysis, that was submitted to -- that's what it says on page 36.

I'm looking at page 36 of staff, and the second paragraph, the last sentence. So where is that study, and are we going to hear about this in day two?

**MR. RZENTKOWSKI:** Yes, we will. Seismic analysis is actually a part of the Fukushima action plan, and it just happened that we also reported it here under normal relicensing considerations.

So we will be reporting on the result of the analysis, and there is no direct link to the minimum shift's complement. The revision to the minimum shift's complement, stems really from new considerations which have to be taken into account in responding to the emergency.

Because as a result of Fukushima, additional equipment has been installed, and now operation of this additional equipment of course would require additional staff and additional skills, which are not reflected in the current operating procedures.

**THE CHAIRMAN:** So I'm totally confused. Why did you connect it to a minimum ---

**MR. RZENTKOWSKI:** I am saying that there's no connection between minimum shift complement ---

**THE CHAIRMAN:** This paragraph is ---

**MR. RZENTKOWSKI:** --- and the seismic assessment.

**THE CHAIRMAN:** This paragraph -- this paragraph is on seismic design.

**MR. RZENTKOWSKI:** Sorry, I misunderstood, I

thought that you, Mr. President, you made the connection between -- between seismic trigger for the revision of the minimum shift's complement, and this ---

**THE CHAIRMAN:** No, no, no, I didn't mention it.

**MR. RZENTKOWSKI:** --- this assertion. Sorry, my mistake.

**THE CHAIRMAN:** Okay. But, I mean, my understanding is that there will be the result of those -- this analysis will be available for day two, is it? Is that what I understand?

**MR. SANTINI:** Miguel Santini, for the record.

As mentioned during the presentation, we will provide an update on the status of all of the FAI at day two.

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

Back to you, Dr. McDill.

**DR. MCDILL:** My questions are on the license condition handbook question. It's more than one, but I think probably they can all be answered in one answer.

Sometimes "shall" is in bold and sometimes it's not. Sometimes, if there's a "not" at the "shall", it's not in bold. Does "shall" mean "must," and does

"shall" not mean "shouldn't?"

If there are typos, how do -- how do the two parties sort out what the real meaning of the typo ought to have been? Not what's there, but what was intended to be there?

And in terms of staff preparation, when there are things like orphan headings or missing possessives, and that sort of thing, how -- how will that all be dealt with in the licence? I know it's not a licence, it's a licence condition handbook, so I accept that it's a little bit more fluid perhaps, as a word, but what does "shall" mean, in bold, and does it differ from "shall" that's not in bold? That sort of thing.

**MR. RZENTKOWSKI:** It's a very good comment. And one of the lessons learned from implementation of the licence condition handbook was that we have to segregate between mandatory compliance verification criteria and recommendation and guidance.

So the idea also was to segregate those phrases, or those words, to make sure that "shall" will be only used in conjunction with mandatory verification criteria, and "should" only in conjunction with regulatory recommendation and guidance.

If this is not quite the case, there's some work which needs to be done by staff. But I would like to

stress the point that this is still a draft document which will be finalized once the proposed licence is approved, because we really need the final licence in order to finalize this document.

**DR. McDILL:** So an unbolded "should not" is a recommendation?

**MR. RZENTKOWSKI:** "Should ---?"

**DR. McDILL:** "--- not."

**MR. RZENTKOWSKI:** "--- not."

**THE CHAIRMAN:** Well, that raises another question. I guess my question; does OPG consider their licence condition handbook to be part of the licensing basis?

Because if that's -- I assume that's "Yes" -- I'm putting words in your mouth. But if it's so, it's the two parties who have to agree on the text in those licence condition handbooks, so there's no misunderstanding about the intentions.

**MR. JAGER:** Glen Jager, for the record.

The answer is yes, and what I would say further on that is there is quite a bit of dialogue between OPG and CNSC staff to ensure that we have complete understanding of the licensing basis, including all the material that's in the licence condition handbook.

I will also say that in meeting the

requirements of the licence condition handbook, and the licence, we don't do that in isolation. We communicate with CNSC staff to ensure that they are satisfied with our efforts to meet all the requirements of the licence, and make sure that we have 200 percent, if you will, assurance that we have met the requirements. And if there's any gaps, that we understand that as well, and proceed to close those gaps.

**THE CHAIRMAN:** Sorry? Yes, please.

**DR. McDILL:** Thank you. I always assume that the intention on both parties was that -- was this was an important document, so there was no suggestion that OPG wasn't planning to follow whatever it was that was required.

But there are words in there that -- since this is -- you know, it's what 129 pages -- there are words like "in general it is expected" and that really concerns me from a regulatory perspective. Maybe it doesn't matter, in which case why are we saying it; maybe it does matter, in which case should it be said that way? How are the mediations going to occur when something like this happens in future?

And there is some historical context here where we have had a problem with this sort of thing in the past with another licensee.

**MR. RZENTKOWSKI:** If I may respond to this question or to this observation. Clarity of the language is extremely important here because both the licence and LCH serve transparency in presentation of regulatory requirements and also clarity of our regulatory requirements. So we should avoid the sentences like "in general it is expected" or "in general it should be provided". We have to be very clear.

Unfortunately there's a little bit of legacy issue because this licence condition handbook has been constructed based on the existing one for Pickering, and this was the last one which didn't have a clear distinction between compliance verification criteria and recommendations. So there is a little bit of clean up and legacy issues which we have to take care of.

But at the same time I would like to point out that there is a very active dialogue between the CNSC and the OPG staff in establishing the final verification criteria here. Again this dialogue is very important not only to assure the proper understanding of the regulatory requirements but also to assure clarity of the language.

**MEMBER McDILL:** Thanks, Mr. Chair.

**THE CHAIRMAN:** Thank you.

Ms. Velshi?

**MEMBER VELSHI:** My question is almost a

follow-up to this past -- this recent discussion we've had, and I'll start off with OPG and then move to staff. OPG, in your CMD the format as you go through the different SCAs and you talk about future plans challenges, and then you've got a section called "requests", and in some of those the request is no modification required, but in some you -- I'm not sure what it is that you're requesting. So there were three that I've highlighted here and maybe you can help me understand exactly what the request is and then see what the staff's response is to that.

So the first one is Section 3.3.5 on page 31. So maybe you can tell me what exactly is it that OPG is requesting of staff there?

(SHORT PAUSE/COURTE PAUSE)

**THE CHAIRMAN:** Who is to answer; is it directly at staff or OPG?

**MEMBER VELSHI:** Oh, I'm sorry; it was with OPG. I'm sorry. I want OPG to answer what exactly is being requested and then staff to respond to the request. I'm sorry.

**MR. JAGER:** Glen Jager, for the record.

I think we'll have to bring this one back. Just reading through this section I think it's really noting some outstanding work that we still need to do in

this area on SOE implementation. So we'll have to bring you back an answer on that, a more detailed answer, either later today or Day 2.

**MEMBER VELSHI:** Okay. Then turn to page 33 -- maybe the same kind of thing -- on Request 3.4.4. Again what exactly is the request?

**MR. JAGER:** Glen Jager, for the record. Which section was that?

**MEMBER VELSHI:** Section 3.4.4 on page 33.

**MR. SANTINI:** Miguel Santini, for the record.

I think our interpretation of this is they are referring to what we're having as a new regulatory document and this is they take that request and they're trying to address. That's our interpretation of that.

**MEMBER VELSHI:** Okay. Can OPG confirm? So OPG's not really requesting anything of the CNSC in this, it's just an acknowledgement that this may be a change?

**THE CHAIRMAN:** Yeah, that's the way I read it.

**MEMBER VELSHI:** Yeah, I'm just wondering why you would title that section "request".

**MR. JAGER:** Glen Jager, for the record.

I believe this is in reference -- it's a requirement that we submitted a compliance plan and we

would be looking for acceptance of that.

**MEMBER VELSHI:** So let me just confirm. You're not making any requests of the CNSC around the licence condition handbook in this submission then?

**MR. JAGER:** Glen Jager, for the record.

No, we are not.

**THE CHAIRMAN:** I think you should title it probably, I'm guessing, new requests received.

**MEMBER VELSHI:** Thank you.

**THE CHAIRMAN:** Okay, Monsieur Harvey.

**MEMBER HARVEY:** Merci monsieur le président.

On page 44 of the staff document it's about the CSA standards 287.7. In 2010 OPG successfully completed a VBO which include the inspection testing and maintenance work in vacuum building and its internal, et cetera, et cetera, et cetera, and it continues. The next VBO is not expected to be performed in the next licensing period at the frequency of requirement standard is every 10 years.

So 10 years is quite a long period, then do you think -- my question is addressed to staff -- because we are dealing with aging equipment with extended life and that such standard could be modified? Not the standard itself but the requirements.

And the other part of the question is what else is done for all those -- these equipment outside the VBO?

**MR. RZENTKOWSKI:** Regarding vacuum building outage, the frequency of outages and testing is prescribed by the industry standard, and now the industry is considering to revise this standard taking into account performance based information. So this is coming back to the comment made that maybe, because of aging, we have to rethink how we perform the testing of vacuum buildings. So it will be more focussed on performance.

What would be the final outcome of this assessment I don't know, but it's possible that the frequency of vacuum building outages could be revised.

**MEMBER HARVEY:** So what is written here is ---

**MR. RZENTKOWSKI:** It's based on the current requirements.

**MEMBER HARVEY:** Yes, but would have appreciate that just what you said would have been written here saying that depending on the performance that that standard would be ---

**MR. RZENTKOWSKI:** Understood. We'll provide more information for the Day 2 Commission hearing on the subject.

**MEMBER HARVEY:** Thank you.

**THE CHAIRPERSON:** Okay, we have some time issues here. I'm now trying to gauge how much longer we're going to go in terms of many, many questions. Three more, okay.

So Dr. Barriault?

**MEMBER BARRIAULT:** Just a brief question. To OPG, you've gone to a day based maintenance program, if I understand correctly. What are disadvantages of this kind of a program when it comes to off shift, if you want to, problems?

**MR. JAGER:** Glen Jager, for the record.

Days based maintenance what it really involves is assembly of teams, if you will, that look after areas of the plant and can become very specialized, if you will, or certainly familiar with the areas of the plant that they maintain so they become very effective and very efficient.

So there's a lot of benefits to that, tremendous amount of benefits. That's been observed in the industry and elsewhere, and we've seen it ourselves on groups and teams that we've assembled in that manner. The disadvantage is potentially because their day is day's maintenance, an issue could arise on the units and the crew is not there. They are off. So that is a

disadvantage, but it's important to remember that these crews work very efficiently; there is an interruption to their work schedule. But overall what we have seen is when they undertake a job, they complete it in less time, they complete it with less rework, and the equipment is much more reliable. So if you stand back and look at the overall results, yes they are not in the plant 24 hours a day, but they actually return the equipment in shorter periods of time. And the equipment runs more reliably when they're done, so there is a net benefit that way.

If there is a circumstance that requires around the clock maintenance, we certainly have the flexibility and the depth in our organization to assemble that kind of effort. And we have done that in quite a few cases and to be able to perform the maintenance with the needed urgency. If something comes up again in off hours - and again we've seen this on days base crews - we will call in staff and they support the operations in performing the necessary repairs. And that frequently -- well I wouldn't say it frequently happens, but it does happen on occasion. For example, our control computers group is days based, has been so for many years. But when we have an issue on the weekend or overnight, members of that crew because they show high degree of ownership, high degree of expertise, respond very promptly to the issues

in the plant, come in and we'll perform that maintenance. So our experience has been very very good, so that is a potential draw back, but the compensation or the offsets definitely outweigh the potential disadvantages.

**UNKNOWN SPEAKER:** So they don't say take two aspirins and call me in the morning?

**MR. JAGER:** They do not.

**UNKNOWN SPEAKER:** Thank you.

**MR. JAGER:** Nuclear does not wait for that.

**THE CHAIRMAN:** Thank you, Mr. Tolgyesi?

**MEMBER TOLGYESI:** On page 34 of 13 H2, it's a staff submission; you are talking about providing reasonable assurance that age related degradation of the cables does not significantly affect the long term safe and reliable operations. What are the risks on a cable aging, what type of problems do you meet? It's rust, elongation, some others ones? And how they are monitored or inspected -- and inspected.

**MR. RZENTKOWSKI:** Thank you very much I can this question. It's an important one because the project you're looking at and especially the qualification of cables in the power plants is ongoing for a very long time. So I would ask Mr. Greg Lamar, Director of System Engineering division, to respond to this question.

**MR. LAMAR:** Thank you very much, Greg

Lamar, director of the Assistance Engineering Division.

So if I can refer back to the commission member's question, you're asking about the cable surveillance program that the license you said is expected to be fully implemented by July 2013. CNSC staff is following up on that program and drawing in some lessons that are being learned not only within the industry, but also internationally. As you may be aware, we are very tied in on the international scene to some cable aging, knowledge management activities at the NEA. We're drawing in some of those lessons and looking at what lessons are coming out of that that are going to provide us with some important information as those systems continue to age. We know that OPG is also very well aware of some of those cable aging management program initiatives as well and we're following up with them on an ongoing basis through inspections and other types of activities. So certainly it's a very important issue going forward on a plant of this age. And especially as we look at how those cables will continue to perform out to 2020 and those issues are being monitored by staff.

**MEMBER TOLGYESI:** That's a nice answer; I was asking what types of risks and what you meet with the cables.

**MR. LAMAR:** So in terms of the type of

risks, obviously you look at system performance impacts due to cable aging whether both availability and reliability of those cables and look at what the impact of that would be drawing in once again some of the lessons and the likes. So OPG is providing that within their aging management program, they're looking at okay, so what happens if these critical cables age. What's the impact on system availability and reliability on a system basis and then the specialist within an SCD are verifying that through their ongoing compliance oversight activities and ensuring that the necessary measures are being put in place to insure that the safety critical systems, structures, and equipment are available through the entire life span of this facility.

**MEMBER TOLGYESI:** This is steel ropes or cables or synthetic or something else?

**MR. LAMAR:** Greg Lamar for the record.

Perhaps we can ask OPG to answer more specifically, but I would think that it pulls in all of those different types of cables. And the aging mechanisms are obviously very cable structure specific so the measures in which you need to verify the continued functionality of those would depend on the type of cable as well. But perhaps OPG could provide a little bit more specific answer to that question.

**MR. DANIEL:** Carl Daniel for the record.

The Cable management program is covered under governance that we've issued and the compliance date for that is the end of July. To date what we've done is we've completed a risk ranking for the cables in unit 5 and the risk ranking is in progress for the other units to be complete by the compliance date. In addition, two control cables and one power cable were tested in our 1281 outage by both ACL and Connectrix. And the tests show the results that there is no indication of any significant degradation of the cables themselves. The additional inspections are planned as part of the compliance with that program and they are scheduled in 2013.

**THE CHAIRMAN:** Okay. Again for the last round I would really like to focus on question that you know will ever follow up for day two particularly. Okay? So Doctor McDill.

**MEMBER McDILL:** With respect of dredging of the intake channel which commenced in October, is it complete and where did the silt go? I understand there's no radiological risk at all because this is the intake channel, but are there any conventional risks that had to be dealt with, provincial permitting, et cetera.

**MR. JARER:** Glenn Jager for the record.

The dredging is complete so that of the

main intake channel and particularly the intake channel leading to units 5 to 8. So it was safely completed, it was a very large undertaking and a very large project. So what's remaining to be done is the destaging (sic) of the equipment and restoration of the dredging site. The material is basically clean fill, it was -- all the dredging took place on OPG controlled land and water ways. So we acquired all the necessary approvals to do that. And the fill has been placed again on OPG land, it's just been blended in to the existing lands that surround the station; a somewhat substantial hill near the parking lot, but it's clean fill, and it's just blended in to the background.

**MEMBER McDILL:** So there is nothing to bring forward for day two then, it's complete?

**MR. JAGER:** From OPG's standpoint the work is complete; the fill poses no environmental risk. The entire exercise was conducted in a very environmental manner to ensure that no settlement returned to any kind of effluent pathways or water pathways and just that the staging of the equipment is taking place right now. I think what I would just add is the dredging was done with a purpose and that was to prevent the intake of silt and material into the power plant per say by taking it out of the floor bay. And what remains is to evaluate the

effectiveness of that effort and the benefit of doing the dredging.

There is dredging planned in the future, certainly during the licencing period, this is something that will require a periodic maintenance to ensure that that effort remains effective.

So what all remains today is to gauge the effectiveness of that effort.

**THE CHAIRMAN:** Ms. Velshi?

**MEMBER VELSHI:** A quick question on fitness for duty. On page 17 of OPG's CMD. And this is an area that, as you know, the CNSC is thinking of introducing some new regulations on some elements of it.

And you do describe your various programs that you have in place to ensure that workers are fit for duty. But if you look at this current licensing period that's coming to an end, how often do you have to assign workers alternate duties or send them home because they're deemed unfit for work? I've got a sense of how big an issue is it?

**MR. JAGER:** Glen Jager, for the record.

I can't speak to the exact number; that is something I would have to get, I don't have that available right now.

But certainly the results are that our

fitness for duty has been very effective. Its performance is very good from our staff. Our safety record results certainly indicate that our staff of capable, fit, and competent to perform the jobs that they do. So it's a very -- very strong program and I would say the results back that up.

But in terms of the actual numbers that actions taken as a result of fitness for duty or things like that, I would have to bring that back.

**MEMBER VEHSI:** That'll be helpful.

Thank you.

**THE CHAIRMAN:** Just another -- somewhere in there, I can't remember where, you mentioned the dogs program, sniffing dogs. Has that been successful?

**MR. JAGER:** Glen Jager, for the record.

I'll perhaps ask Mr. Nadeau to comment more fully on that program.

But I would say that the introduction of the dogs has been successful from our standpoint; it's very visible; it's a good addition to the screening activities.

And I'll just ask Paul to comment more -- more directly on the program overall.

**MR. NADEAU:** Yes, Paul Nadeau, OPG Vice-President, Security and Emergency Services, for the

record.

The dogs have been with us now for about a period of about six months or so. It's been very successful. We've had some good interaction with the staff. I think it's a good method of prevention. We've had no seizures as a result of the dogs being there. I'm talking about contraband or anything like that. So it's been -- it's been very helpful to the staff in terms of screening personnel coming into the plant.

**THE CHAIRMAN:** But you didn't detect any?

**MR. NADEAU:** No.

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

Monsieur Harvey?

Dr. Barriault?

**MEMBER BARRIAULT:** Thank you.

For the Day 2, I'm wondering if we could have some feedback, and this will probably have to be done in camera, on security around cyber-attack.

**MR. JAGER:** Glen Jager, for the record.

And yes, we'll bring that information back.

**MEMBER BARRIAULT:** Thank you.

Thank you, Mr. Chair.

**THE CHAIRMAN:** Monsieur Tolgyesi?

Dr. McDill?

**MEMBER McDILL:** First, by the way,

congratulations on the SWAT round-up competition and the police games -- two points there.

My last question for today relates to the Fukushima response and the mutual aid agreement. There's nothing there except saying it's been signed. I'm not sure if something more should come back in Day 2.

The very least, is there a headquarters for this?

**MR. ELLIOTT:** Mark Elliott, for the record.

The aid agreement really is an agreement that is signed with all Canadian utilities to provide mutual aid should it be requested. So it outlines what kinds of things could be provided, equipment, personnel, qualified people, things like that.

So it outlines how we will help each other in an emergency. So it's really just a document and an agreement. There's not a headquarters for that -- for that mutual aid.

You could be talking about -- or thinking about our emergency centre that we're working on but -- where there will be a headquarters, but in this case it's really an agreement, a written agreement.

**MEMBER MCDILL:** So all utilities includes all power utilities and other utilities, gas companies; is it all utilities or just ---

**MR. ELLIOTT:** No, sorry. All the nuclear facilities.

**MEMBER McDILL:** Nuclear. Okay, that's what I thought it was.

Should it be part of the emergency centre?

**MR. ELLIOTT:** I'm not sure I understand the question.

**MEMBER McDILL:** Well, you have this mutual aid agreement, there's no headquarters but there's going to be a centre for emergency management; should it be part of that?

**MR. ELLIOTT:** Okay, the centre -- I understand now. Mark Elliott, for the record.

The centre that is being talked about, it's in the notes, is a -- is a regional equipment centre. It's a centre that will store emergency equipment that can be applied -- can be sent to any of the nuclear plants.

It will be -- the equipment will be there, it will be tested, it'll be maintained to make sure anything in that facility is fit for use on an ongoing basis.

We haven't thought about an office or something like that there. It's more of a warehouse.

**MEMBER McDILL:** Staff, do you have any comments?

**MR. RZENTKOWSKI:** No, we have no comments. This -- actually this agreement wasn't a part of our Fukushima action plan so this one example went beyond the requirements established by the CNSC.

**THE CHAIRMAN:** Ms. Velshi?

**MEMBER VELSHI:** So before I get to my last question on staff, there's just some clarification I wanted from OPG on your public information program, pages 78 and 79. And I think even in your presentation you had said that your quarterly newsletter goes to 125,000 residents and businesses.

That's what you see on page 78. But on page 79, the second-last bullet says it's distributed to more than 200,000 homes. I just want to make sure there was consistency in your reporting.

**MR. JAGER:** Glen Jager, for the record.

I can't explain the difference but we'll have to provide you that answer at a later date.

**MR. POWERS:** Kevin Powers, for the record.

I can explain the difference. The difference is the first number, the lower number, is for Pickering, the higher number is for Pickering and Darlington.

**MEMBER VELSHI:** Thank you.

So my last question to staff is as you

provide annual updates as part of the NPP update, will the section around Pickering focus on end of life and aging management and how the different issues that have been addressed in your presentation being addressed?

**MR. RZENTKOWSKI:** Yes, we created additional part to the NPP report last year where we -- where we discuss emerging issues of particular importance.

Of course end of life would be this issue which will be discussed in a little bit more detail in our NPP report.

**MEMBER VELSHI:** Thank you.

That's it.

**THE CHAIRMAN:** Anybody else?

Well, I got a couple of quickies here.

I understand that OPG is currently conducting a PSA for both A and B. So all I'm trying to figure out is will some of these results be available for Day 2 or is more long-term? But what can you say on PSA; I thought PSA was a long-standing requirement under S294?

**MR. RZENTKOWSKI:** That's correct. So this is a standing requirement and we have the results of PSA.

I think the part we are referring to here in the CMD applies to external hazard because the methodology for the assessment of external hazard, it means seismic, flooding or fire, had to be developed. OPG

already developed this methodology and is applying it to all operating facilities.

So the difference is internal events versus external events. This is the assessment of external events we are talking about.

**THE CHAIRMAN:** So will there be anything available?

**MR. RZENTKOWSKI:** I have to take this question back; I'm not quite sure what is the schedule for presenting this information to us.

We'll get an update in a moment.

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

For OPG a new presentation, on page 29 there's a -- I think it's the first time I focused, at least on chemistry.

**MR. RZENTKOWSKI:** We can give an update now.

**THE CHAIRMAN:** All right.

**MR. YALAOU:** Smain Yalaoui, from the PSA Division.

So regarding Pickering B, we have all the results because they have to comply as part of the licence by the end of 2012, which they did. So we have all the PSA results. I mean, internal events and external events, what we have for seismic PSA, we have flood PSA, and we

have the fire PSA, the internal fire PSA. But, for Pickering A, as per the license, we have to comply to the end of 2013, all methodologies were accepted, so we just wait for the reports.

**THE CHAIRMAN:** Okay. All I'm looking for - - I'm looking for an answer now, I'm looking for whatever you can provide for Day 2. It will be appreciated.

OPG, on your presentation, on page 29, there is an interesting index: "Chemistry Performance Index". I'm always fascinated when you set up a target and never to meet it. Somebody explain that to me.

**MR. JAGER:** Glenn Jager, for the record.

The targets are industry benchmarked targets for ---

**THE CHAIRMAN:** So, it's not your own internal performance?

**MR. JAGER:** No. These are the performance as shown on the graph certainly, but the targets are set to benchmark other utilities in the industry. So, it's very important that we understand our gap to industry performance; it could be excellence or it could be benchmarkable plants such as ours. So, we -- those targets represent benchmarked performance for the Pickering facility and our performance is clearly indicating a gap there. So, as a result of that gap, we set in place plans

and actions to close that gap and achieve that industry performance.

**THE CHAIRMAN:** Is any safety issue associated with this?

**MR. JAGER:** This particular metric relates primarily to secondary-site chemistry so it does not affect the reactor per se; it's more on a secondary system and, therefore, it really speaks to the longevity of components and life management of components. So, it's very important to maintain that chemistry and spectre from that standpoint.

So, there is no direct safety consequences that result in this metric. It is managing the unit in an optimal manner to ensure excellence.

**THE CHAIRMAN:** Staff, are you... are you monitoring this? I mean, if there is an index and somebody is monitoring, there also has to be some sort of importance to it.

**MR. RZENTKOWSKI:** Absolutely. Chemistry of the heat transport system, it's a very important element of safe operation of the plants and, actually, earlier today, we were talking about fuel deposits; this is caused by improper chemistry in the heat transport system.

So, how are we monitoring it and what information are we taking into account? I would like to

ask this information be provided by Ram Kameswaran, who is the specialist in the Systems Engineering Division.

**THE CHAIRMAN:** Quickly, please.

**MR. KAMESWARAN:** This is, for the record, Ram Kameswaran from Systems Engineering Division.

As OPG mentioned, the Chemistry Performance Index would -- what they report is about the asset management, but we, based on our estimates of '99, required them to submit a Chemistry, Index and a Chemistry Compliance Index and, specifically, the Chemistry Compliance Index is the safety-related systems; for example, the gadolinium and the metric system, annulus gas and the primary heat transport system. And those index -- those indexes have been training very well and, for the last five years, there has been consistently over 99 per cent compliant within the specification.

I hope that answers the question.

**THE CHAIRMAN:** Okay. Thank you.

My last question and the one that I'm always worried about because it deals with buried pipes. I always worry about the known/unknown. So, "unknown", on page 39 of OPG, you're talking about that that is now under control. I'm just curious to know what kind of inspection is being done by you and monitored by CNSC because these are the pipes that are most likely, if

something goes wrong, would end to -- leak, I assume, into the leak. I assume.

Why don't you start with OPG?

**MR. JAGER:** Glenn Jager, for the record.

Yes. We've introduced a Buried Piping Inspection Program and it meets and is in accordance with the industry standards. For that, I'll ask Carl Daniel to speak to the specifics of the program, some of the early results of that program and what really its objectives are.

**MR. DANIEL:** Carl Daniel, for the record.

The Buried Pipe Program was put into place in 2008 on Units 5 to 8, in 2009, on Units 1 to 4. The original mandatory scope of the program included both for Safe Operating Envelope Systems and the Fire Safety Systems.

To skip straight to the most recent results, on units 1 and 4, we've done a number of programmatic digs and examined eight systems in the South yard. The protective coating was found to be in good condition in those digs.

Units 5 to 8, a number of digs have been done to date. Eight systems in the South yard again, and in those cases, the protective coating were found to be in good condition, a little corrosion on the outer surfaces.

A number of failures that we've had recently have been around fire piping. The fire piping is cast. It failed on a number of different mechanisms, but is essentially prone to breaking. Those systems are also being dug and we're looking at a replacement program for them. When those pipes are replaced, they are replaced with a plastic. The prior turning 13.39.57 is blue group. That plastic is resistant to the kind of sheer breaking that we're seeing in the fire piping.

I hope that answers the question.

**THE CHAIRMAN:** Staff, you want again?

**MR. RZENTKOWSKI:** On our part, we inspected the implementation of this program and we are fully satisfied how OPG conducts the activity of inspecting their piping.

And it's a very important point which we didn't mention yet: CANDU reactors are designed in a way that only conventional piping is buried underground. So, there is no nuclear piping which is underground.

**THE CHAIRMAN:** So, there is no possibility of any ---

**MR. RZENTKOWSKI:** Radiological leaks, no, there is not. So, that's the difference between the CANDU design and the design of the pressurized water reactors.

**THE CHAIRMAN:** Thank you.

This concludes our formal hearing. Anybody want to say a final word here? Something we missed on the way to Day-2?

**MR. JAGER:** Glenn Jager, for the record.

We didn't have a response to Commissioner McDill's earlier question on the FRP loading and testing.

Mr. Daniel?

**MR. DANIEL:** Carl Daniel, for the record.

The specifics of the FRP testing are as follows: the FRP saddles themselves are stored under dead weight, approximately 15,000 pounds, which is what they would see under normal operation; the other components are stored under a depth of water which would simulate the hydrostatic load that they see under operation.

**MEMBER McDILL:** Thank you.

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

We'll reconvene at 2:30. Thank you.

--- Upon recessing at 1:41 p.m./

L'audience est suspendue à 13h41.