

**Pickering Nuclear Generating Station
Community Advisory Council
Pickering Learning Centre
Meeting Minutes, February 20, 2018
Highlights**

Site Update

Randy Lockwood presented a site update. He talked about the productivity of the units, a recent inspection of the plant by a team of industry peers, success at reducing Pickering's backlog of tasks, and other matters.

Public Affairs

Analiene St. Aubin talked about OPG involvement in recent and forthcoming community activities. Involving school children in placing salmon eggs in a hatchery at the Pickering Nuclear Information Centre, the upcoming OPG March Break Madness program, and recent OPG stakeholder information sessions were among the activities mentioned.

PNGS Fitness for Service

Mike Ruffolo talked about Pickering Nuclear's Fitness for Service (FFS) and Periodic Safety Review (PSR). In discussing Fitness for Service assessment results, Mike noted that the reliability of Pickering Nuclear has never been better, and it's improving.

CAC to Intervene at PNGS Licence Hearing

The CNSC will hold a public hearing in June on the renewal of Pickering's licence to operate. The Council has decided to present an intervention at the hearing. They had an initial discussion as to what should go in their letter to the CNSC.

Pickering Nuclear Simulator Tour

Council members toured the PNGS control room simulator at the Pickering Learning Centre. The tour provided a hands-on observation of how a control room works to ensure safe operation of the nuclear reactor.

**Pickering Nuclear Generating Station
Community Advisory Council
Pickering Learning Centre
Meeting Minutes, February 20, 2018**

Pickering CAC:

John Earley
Kristin Hall
Bill Houston
Tim Kellar
Pat Mattson
Sean McCullough
John Stirrat
Ralph Sutton
Anna-lisa Tersigni
Deborah Wylie

Guest:

John Miseresky

OPG:

Lorne Cunliffe
Joe Ghinet
Kevin Lemkay
Randy Lockwood
Glenn Pringle
Mike Ruffolo
Analiese St. Aubin
Jim Whelan

Regrets:

Jim Dike
Donna Fabbro
Keith Falconer
Mary Gawen
Donald Hudson
Dinesh Kumar
Greg Lymer
Zachary Moshonas
Moe Perera
Helen Shamsipour
Kira Shan
Dan Shire

PDA:

Francis Gillis
John Vincett

Topic #1: Safety Briefing

Kevin Lemkay welcomed the Council to the Learning Centre and gave us a briefing on an exit strategy should there be any alarm that sounds from the site.

Topic #2: Review of Minutes

Two typos were noted in the penultimate bullet on page 6 of the January minutes. The correct version is: "There were also innovative communications activities as a part of this exercise. Is there a forum to include the sharing of communications aspects beyond the nuclear industry, and internationally?" With these changes, the CAC minutes for Jan. 16, 2018 were approved.

Topic #3: Site Update

Senior Vice President Randy Lockwood presented a site update:

- Units 4, 5, 7, and 8 are operating at essentially full power. Regarding the other units:
 - We have been experiencing some issues with a cooling pump at Unit 8, and we are monitoring the situation carefully. There are guidelines for tolerance that have not yet been reached. Ultimately, the unit will have to be shut down for a week or so to complete repairs.
 - Unit 1 has been offline since last weekend due to a problem with flow switches related to water cooling. This problem is now corrected and, today, we are in the process of reconnecting Unit 1 to the grid.
 - A planned outage of Unit 6 was started on Jan. 5. This will be a long outage, lasting over 100 days, which is typical of outages to confirm fitness for service.
 - A planned outage of Unit 4 will begin in March and end in July.
- A WANO (World Association of Nuclear Operators) inspection of the site took place during the last two weeks in December. These peer inspections focus on pointing out areas for improvement. The February 7 debriefing was a positive evaluation of the site and its operations – the best ever received by Pickering. There were a number of suggestions about fuel handling that were received and are under consideration, and Pickering received commendations for exceptional teamwork, use of technology in maintenance and for innovation.
- The Nuclear Safety Review Board (an independent body) spent a week at the site and offered some suggestions for improvement as well as being impressed with the work that has been done to catch up on backlog items (items that are non-critical from a safety perspective, but which need to be addressed in a timely fashion) which is the product of excellent teamwork.
- The plant has met the backlog target of 2017 and is now at zero.
- Pickering Nuclear will mark International Women's Day, which is officially dated March 8, though the plant activities will actually take place on March 7.

Glenn Pringle, Manager of the Pickering Waste Management Facility, noted that the CNSC recently renewed the PWMF operating licence for a 10-year period, which commences on March 21, the date when the previous licence expires. The licence for the Western Waste Management Facility (WWMF), also for 10 years, was granted last December. Glenn thanked the Council for their intervention letter supporting the PWMF.

Randy responded to Council questions:

- *Will a summary of the WANO report be publicly available?*
The report is to us; it is not a public evaluation. (Council Facilitator John Vincett noted, however, that the results of the CNSC Independent Environmental Monitoring Program

are available to the public on line: <http://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/pickering.cfm>.)

- *Are the planned outages long in order to address as many of the backlog of work orders as possible?*
We do address work orders, but they are not the driver of planned outages. The driver is ensuring fitness for service. The best way to think about the outages is as life extension. But the units are improving, and backlogs are going down.

Topic #4: Public Affairs

Analiene St. Aubin, Manager of Corporate Relations and Communications at Pickering Nuclear, talked about OPG involvement in recent and forthcoming community activities:

- OPG involved Grade 6 students from St. Elizabeth Catholic School in a salmon hatchery launch at the Pickering Nuclear Information Centre. One hundred fertilized eggs are now residing in the hatchery. These will evolve into salmon fry that can be released into local streams by the same students at a later date. This is a part of OPG's "Bring Back the Salmon" partnership with the Ontario Federation of Anglers and Hunters.
- March Break Madness runs from Monday, March 12 to Friday, March 16 with programs focused on conservation, STEM (Science, Technology, Engineering and Mathematics), art and wildlife. OPG's new program with the Robert McLaughlin Gallery in Oshawa is "Family Art Together," a drop-in style program where families can create art together.
- The Neighbours Newsletter will be distributed in the next couple of weeks and the CAC Report to the Community will be enclosed with the newsletter.
- On Feb. 13 and 15, OPG held Stakeholder Information Sessions with representatives from municipalities, industry organizations, NGOs and community organizations.
- Last week the Government of Ontario gave the go-ahead to the refurbishment of Darlington's Unit 3.

John thanked Council members for providing the topics and ideas, and for reviewing the various drafts, of the CAC Report to the Community 2018.

Topic #5: PNGS Fitness for Service

Mike Ruffolo, Manager, Performance Engineering, talked about Pickering Nuclear Fitness for Service (FFS) and Periodic Safety Review (PSR) (Appendix 1).

Mike noted that OPG is applying for a 10-year operating licence, which will cover Pickering Nuclear's extension of service as well as the transition to the post shutdown phase.

Fitness for Service

Mike stated that OPG will be investing approximately \$300 million in making improvements in the plant to ensure fitness for service. This is on top of significant FFS investments already made. OPG invests continually in maintaining and improving the plant.

In discussing Fitness for Service assessment results, Mike noted that the reliability of Pickering has never been better, and it's improving. The key plant components—major reactor components, steam turbines, and main output generators—have life cycle management plans (LCMPs).

All of the plant's important components that are not key components have also been assessed. These assessments are documented to ensure that maintenance plans are in place to support safe and reliable operation to 2024.

Periodic Safety Review

A PSR is a comprehensive and detailed evaluation of the design, condition and operation of a nuclear power plant conducted every 10 years to support licence applications. The review, which takes approximately two-and-a-half years to perform, is conducted to IAEA and to CNSC requirements. The PSR assesses: the extent to which the plant conforms to new plant requirements; the programs and condition of the plant; and the ability of the plant to operate safely into the future.

Mike noted that formal CNSC acceptance of the Pickering PSR is expected by the end of March.

Summary of PSR Overall Conclusions:

- Pickering is fit for service today and will be fit for service to 2024.
- Pickering's material condition is well managed.
- OPG is committed to continuous improvement in safety.
- OPG has comprehensive programs in place that are aligned with industry best practices.
- Pickering has no current safety issues.
- Pickering has no safety issues for operations to 2024.

Mike responded to Council questions:

- *What happened to Units 2 and 3?*
Units 1, 2, 3, and 4 were shut down during the 1990s. Units 1 and 4 underwent major maintenance projects and were returned to service. A business decision was made not to restart Units 2 and 3; those two units have been de-fueled and de-watered and are now in safe storage.

- *You mentioned that the International Atomic Energy Agency (IAEA) has a repository of known nuclear power plant degradations, that OPG inspects for these at Pickering and validates the safety of the units. You also mentioned that sometimes new degradations (not included in the IAEA repository) are found and addressed. Are all of these assessments posted on the OPG website?*

Yes, all of these assessments are posted; we are fully transparent. Also, over the past two years, we have not denied any requests for information.

A discussion ensued about the fact that a huge amount of data on the fitness for service project is publicly available, but it is still hard for the public to understand how a 40-year-old unit now works better than it ever did. It was suggested that a diagram showing how OPG is making the plant better could be a useful communications tool.

- *You have to explain that much of the original material in the plant has been replaced.*
- *Just because a house is 40 years old, you don't abandon it, especially if it has been properly maintained over the years.*

Mike responded to further Council questions and comments:

- *How do you address the differences in the design of a 40-year-old plant and a new plant?*

In the Periodic Safety Review we have to ensure that the old plant provides a level of protection equivalent to a new plant. Yes, there are design differences, but they do not threaten safety. The designers of the plant 40 years ago knew what they were doing.

- *Risk assessment is really what you're doing.*
Exactly.

Randy added: "And we are going to make any modifications necessary to the plant to ensure safety."

Mike noted that many upgrades were done at the plant since the events in Fukushima, following CNSC directives to upgrade facilities at all nuclear sites in Canada based upon the outcome of the Fukushima inquiry.

Topic #6: CAC Intervention in PNGS Licence Hearing

In June of 2018, the Canadian Nuclear Safety Commission (CNSC), the federal regulator of nuclear power plants, will hold a public hearing on OPG's application for renewal of Pickering Nuclear's licence.

All Council members were comfortable with the CAC making an intervention at this hearing.

For the benefit of new CAC members, John explained the CNSC hearing process. On Day 1

(in April) OPG will lay out its case for renewal of the PNGS operating licence for a period of 10 years. On Day 2 (in June) there will be public interventions, some in support of the OPG application and some calling for rejection of the application. The public hearing will take place in Courtice. (All hearings used to be held in Ottawa, but in response to a CAC suggestion, hearings affecting the Pickering or Darlington plants are held in Durham Region.)

Representatives of the CAC go before the CNSC during the public hearing and talk about how OPG has communicated effectively with this Council. The interaction between the Council and OPG takes about 100 hours a year.

Interventions at the CNSC can be written and tabled in advance of the hearing or they can be presented at the hearing. Generally, the CAC has opted to present its intervention at the hearing. Traditionally, three or four representatives of the Council read the CAC letter into the record, so that it is communicated in public. The Council representatives then try to answer questions from the Commissioners. The presentation and discussion takes about 10 minutes. The presentation and interaction with the Commissioners is available to the public on line for a month or two after the hearing.

The CAC also tables the CAC Report to the Community and the Council Terms of Reference.

For their initial discussion of the intervention letter, Council members suggested key points.

Public Dialogue Alternatives will develop a first draft of the letter based on these points and distribute it to the CAC for review. After several iterations of the letter, we will capture the consensus of the Council on the OPG application and also talk about the Council's satisfaction with how OPG answers its questions and addresses its concerns.

Topic #7: Pickering Nuclear Simulator Tour

Jim Whelan, an Authorized Nuclear Operator, along with colleagues Lorne Cunliffe, Joe Ghinet and Kevin Lemkay, hosted a Council tour of the Pickering Nuclear Simulator. Jim noted that the simulator (a model control room) covers every operation at the plant. The simulator plays a role in the training of nuclear operator candidates, which takes several years. As well, each nuclear operator at Pickering comes to the simulator every five weeks for retraining.

Jim provided an overview of how a nuclear plant works, talking about how splitting (or fission) of uranium atoms provides the heat to boil water, which creates the steam to run the turbines to make electricity. The naturally occurring uranium is contained in ceramic pellets, which are collected in fuel bundles put into a large tank called a calandria. There is enough energy in each fuel bundle to power 100 homes for a year.

A moderator surrounding the fuel bundles is needed to slow, or moderate, the speed of the neutrons resulting from the splitting of the atoms so they are more likely to collide with and split more atoms. This chain reaction provides a steady source of tremendous heat.

The moderator in the CANDU reactors at OPG nuclear plants is heavy water, which is 10 percent heavier than ordinary water, because it contains a higher proportion than normal of a heavy form of hydrogen called deuterium. Heavy water is very efficient at slowing down neutrons.

The heated heavy water is pumped through the reactor in a closed system to a set of boilers containing ordinary water. The boiling ordinary water produces the high pressure steam needed to work the turbines.

Safety

Jim then talked about the safety systems in the reactor.

There are five containment barriers to protect humans and the environment from radiation:

1. The hardened ceramic uranium pellets contain the radiation.
2. The pellets are contained in fuel rods.
3. The rods are loaded into heavy pressure tubes, which are part of the heat transfer system.
4. The reactor building houses and contains the reactor units.
5. In the case of an accident, pressure would be lowered by releasing steam and hot gases from the reactor building to the vacuum building.

There are 12 pressure release valves between the reactor building and the vacuum building. Three of these valves are manually controlled from the control room; nine valves are automatic.

Jim noted that it takes 25 megawatts of power to run the plant. In case of a power outage, there are six standby generators with jet engines. There are also backup diesel generators.

The simulator features an alarm system, with a different alarm for each type of incident in the reactor. All systems are automated in terms of reacting to alarms.

In response to a Council question, Jim said that it takes a crew of five or six to run the control room for each reactor at the plant.

Jim got five volunteers from the Council to perform such actions on the simulator as:

- Shutting down the reactor (when there are three or more alarms)
- Containment by boxing up part of the reactor building
- Initiating high pressure emergency core injection (a fast shutdown system drops heavy rods into the core of the reactor to absorb the neutrons to cool the fuel)
- Activating the pressure relief valve in the vacuum building

Jim said that each of the actions can be done manually, but automation is faster.

In summing up the discussion, Jim emphasized that the core value of the plant is the safe production of electricity.

In response to a Council question, he said the control rooms at Pickering are run in 12-hour shifts.

Council members found the simulator tour fascinating and reassuring.

Topic #8: CNSC News

For selected news items from the CNSC, please see Appendix 2.

**Next Meeting
Tuesday, March 20, 2018, 6 pm
Pickering Nuclear Information Centre
(supper available at 5:30 pm)**