

DURHAM NUCLEAR HEALTH COMMITTEE (DNHC) MINUTES

Location

Durham Regional Headquarters
605 Rossland Road East, Whitby
Meeting Room – Regional Council Chambers

Date

June 14, 2019

Time

1:00 PM

Host

Durham Region Health Department (DRHD)

Members

Ms. Mary-Anne Pietrusiak, DRHD (Acting Chair)
Ms. Lisa Fortuna, DRHD
Mr. Raphael McCalla, Ontario Power Generation (OPG) (Presenter)
Mr. Loc Nguyen, OPG
Mr. Phil Dunn, Ontario Ministry of the Environment, Conservation & Parks
Dr. John Hicks, Public Member
Ms. Janice Dusek, Public Member
Ms. Susan Ebata, Public Member
Ms. Jane Snyder, Public Member
Mr. Hardev Bains, Public Member
Ms. Veena Lalman, Public Member
Mr. Marc Landry, Public Member
Dr. Barry Neil, Public Member
Mr. Alan Shaddick, Alternate Public Member

Presenters/Observers

Mr. Brian Devitt (Secretary)
Ms. Analiese St. Aubin, OPG (Presenter)
Ms. Margo Curtis, OPG (Presenter)
Ms. Tiasi Ghosh, OPG (Presenter)
Mr. Frank Guglielmi, OPG (Presenter)
Ms. Kristina Bamma, OPG
Mr. Ali Esmaeily, OPG
Mr. James Kilgore, Durham Emergency Management Office
Ms. Renee Cotton, Durham Nuclear Awareness (DNA)
Ms. Lynn Jacklin, DNA
Mr. A.J. Kehoe, Durham Region Resident

Regrets

Dr. Robert Kyle, DRHD (Chair)
Dr. David Gorman, Public Member
Dr. Lubna Nazneen, Alternate Public Member
Mr. Matthew Cochrane, Alternate Public Member

Mary-Anne Pietrusiak explained that she was asked by Robert Kyle to chair the meeting for him today due to his other office related commitments.

Mary-Anne opened the meeting and welcomed everyone.

1. Approval of Agenda

The Revised Agenda was adopted as written.

2. Approval of Minutes

The Minutes of April 5, 2019 were adopted as written.

3. Correspondence

3.1 Robert Kyle's office received Minutes of the Pickering Nuclear Generating Station (NGS) Community Advisory Council meeting held on February 19, 2019.

3.2 Robert Kyle's office received the OPG newsletter concerning the Darlington Refurbishment Project, *Happening Now*, dated May 22, 2019.

3.3 Robert Kyle received a resignation from Marc Landry, Public Member for Clarington, effective June 14 after the meeting today. Marc explained he recently retired, plans to move from Durham Region and has enjoyed serving on the DNHC for the past 12 years. Marc's resignation letter was dated May 25, 2019.

3.4 Robert Kyle's office sent an email to Jennifer Knox, Director, Corporate Relations and Communications, thanking her and the Darlington staff for arranging two tours of the Darlington Waste Management Facilities held on April 5 and May 27 and attended by 16 Public Members and Observers and the email was dated May 28, 2019.

Referring to 3.3, Mary-Anne thanked Marc Landry on behalf of the DNHC for his very committed service as a Public Member for Clarington over the past 12 years. Mary-Anne mentioned Marc seldom missed a meeting and always contributed positively. The DNHC Members all wished Marc well with his retirement plans.

Referring to 3.4, Brian Devitt thanked Jennifer Knox and the Darlington staff for arranging tours on April 5 and May 27 of its Waste Management Facility attended by 16 DNHC Members and Observers.

4. Presentations

4.1 Progress report by OPG concerning the Results of the 2018 Environmental Monitoring Program (EMP)

Margo Curtis, Environmental Advisor, OPG, provided a detailed presentation of OPG's 2018 EMP results.

Margo explained the Key Objectives of EMP are intended to:

- Demonstrate, independent of effluent monitoring, the effectiveness of containment and effluent control.
- Demonstrate compliance with limits on the concentration/intensity of contaminants/physical stressors in the environment.
- Provide data to assess the level of risk on human health and the environment and/or to confirm predictions made by environmental risk assessments.

The highlights of Margo's 2018 EMP presentation included:

- The results of 6 Non-Radiological Emissions to air and 2 Non-Radiological Emissions to water for both Darlington and Pickering were in compliance and met all Environmental Compliance Approval limits.
- The results of the 6 Radiological Site Emissions to air and 3 Radiological Emissions to water for both Darlington and Pickering were below approximately 1% of the Derived Release Limits (DRLs) or less.
- The main contributors to the 2018 public dose were carbon-14, tritium and noble gases for Darlington NGS and tritium and noble gases for Pickering NGS.
- The 2018 public dose for Darlington NGS was 0.8 μ Sv, ~0.1% of the annual Canadian Nuclear Safety Commission (CNSC) legal limit.
- The 2018 public dose for Pickering NGS was 2.1 μ Sv, ~0.2% of the CNSC legal limit.
- Laboratory analyses of 985 environmental samples were performed for the 2018 dose calculations.
- The estimated annual background radiation for both Darlington and Pickering NGSs is approximately 1,400 μ Sv.
- The tritium concentrations monitored at Water Supply Plants (WSP) near the NGSs remained at a small fraction of the Ontario Drinking Water Quality Standard of 7,000 Bq/L and well below OPG's voluntary commitment of 100 Bq/L.
 - o Bowmanville WSP – 5.0 Bq/L
 - o Oshawa WSP – 7.0 Bq/L
 - o Ajax WSP – 5.5 Bq/L

Margo explained that in 2018, OPG conducted several other environmental monitoring studies that were referenced in the 2018 EMP report submitted to the CNSC. The highlights of the studies included:

Thermal Monitoring Study

- The discharge of warm water through the condenser cooling water (CCW) system has potential to impact spawning success and larvae development of fish species.
- OPG performed a study of the Thermal and Ambient Lake Water Temperature to monitor and to understand the potential impacts from the Pickering and Darlington NGSs discharge of warm water to Lake Ontario.
- In conclusion, there is no indication of a warming trend that would impact spawning success and larvae development at this time.

Impingement and Entrainment Monitoring Study

- Pickering Nuclear received an Authorization under the Fisheries Act in January 2018 for the impingement and entrainment of fish resulting from the water-taking for the operation of its reactors.
- The Authorization requires OPG to offset all fish impacted by the intake station water cooling system.
- A single impingement event occurred on November 16-18, 2017 during which 24,000 kg of Alewife were impinged after the impingement device was removed for the winter as per design requirements and followed an natural upwelling event in Lake Ontario that caused a rapid change in water temperature.
- The Alewife species are known to be adversely affected by such temperature change events.
- As a result, the 2018 impinged biomass statistic will be reported in the 2019 EMP report to determine the trend in fish impingement and entrainment.

Margo mentioned that OPG also recently completed site specific survey reviews and EMP design reviews.

The Site-Specific Survey Review:

- A site-specific survey review was completed for both Pickering and Darlington NGSs to identify changes that may impact the design of the EMP and public dose calculations.
- The review included population distribution and agricultural production data from Statistics Canada, updated lake current and meteorological data, local building permit data and a web-based search to identify new potential critical groups or changes in characteristics of potential critical groups.
- Conclusion: the review indicated that potential critical group characteristics were representative of the current populations in the vicinity of Pickering

and Darlington NGSs and that no additional potential critical groups were identified.

The EMP Design Reviews:

- EMP design reviews were conducted to ensure that the program is meeting its design objectives and regulatory requirements.
- Conclusion: no additional routine monitoring is required to meet program objectives although the need for two supplementary studies was identified.

Margo mentioned she is 'looking ahead' to other studies in 2019:

- A supplementary study will be conducted to sample lake water at the outlet of the Darlington diffuser and to analyze samples using a lower detection limit for hydrazine to reduce uncertainty surrounding human exposure to hydrazine through drinking water and fish ingestion.
- A supplementary study will be conducted to collect filtered and unfiltered effluent samples for analysis of aluminum in the Darlington CCW to clarify the risks to ecological receptors in Lake Ontario.
- An independent audit of the EMPs will be conducted in 2019 in accordance with CSA N288.4-10 and this audit will be conducted by OPG's Nuclear Oversight Department.

In Summary, Margo provided the following highlights:

- The 2018 public dose calculations and EMP report was reviewed and verified by an independent third party.
- Darlington and Pickering NGSs radiological emissions were all approximately 1% of their DRLs or less.
- Annual public doses resulting from Darlington and Pickering were 0.1% and 0.2% of the CNSC annual regulatory limit respectively.
- The 2018 EMP report was submitted to the CNSC on April 25, 2019 and will be available on opg.com in June 2019.

Margo Curtis or her associates will update the DNHC next year with the 2019 EMP report results. For more information on EMP, Margo can be contacted at margo.curtis@opg.com.

4.2 Progress report by OPG concerning the Results of the 2018 Groundwater Monitoring Program (GWMP) at Pickering and Darlington NGSs

Tiasi Ghosh, Environmental Advisor, OPG, provided a detailed presentation of the results of the 2018 GWMP at Pickering and Darlington NGSs.

Tiasi explained the key objectives of the 2018 GWMP were to:

- Verify groundwater flow direction.
- Monitor changes to on-site groundwater quality to identify new issues in a timely manner and assess historical issues.

- Monitor groundwater quality at the site boundary to confirm there are no adverse off-site impacts.

Tiasi provided the highlights of the 2018 GWMP results at the Pickering NGS that included:

- 334 samples were collected from 146 sampling locations to analyse groundwater to characterize groundwater conditions and trends. The key locations/areas monitored were:
 - o Upgrading Plant Pickering
 - o Units 1 and 2 and the Vacuum Building
 - o Units 3 and 4
 - o Units 5 and 6
 - o Units 7 and 8
 - o Two Irradiated Fuel Bay areas
 - o Site Boundary
- The groundwater flow direction remained consistent from the previous interpretations.
- A new groundwater matter was identified in 2018 at the Pickering Unit 1 area and corrective actions were taken to address the source that proved to be effective with on-going monitoring.
- Monitoring the site boundary groundwater quality showed no indication of adverse off-site migration of tritium from the Pickering NGS.

Tiasi provided the highlights of the 2018 GWMP at the Darlington NGS that included:

- 191 samples were collected from 81 sampling locations to analyse groundwater samples to characterize groundwater conditions and trends. The key locations/areas monitored were:
 - o Near the Reactor Buildings
 - o Site Boundary
- The groundwater flow was consistent with previous interpretations.
- Monitoring the site boundary groundwater quality indicated that there was no adverse off-site migration of tritium from the Darlington NGS.

Tiasi's summary of the 2018 GWMP included:

- At Pickering and Darlington, the groundwater flow pattern remained consistent with original interpretations.
- At Pickering and Darlington, groundwater data collected from key areas indicated that tritium concentrations remained constant or decreased which indicated stable or improved environmental performance.
- At Pickering, the emerging groundwater matter was identified in 2018 at Unit 1. Corrective actions were undertaken to address the source and the on-going monitoring has proven that the corrective actions were effective.
- At Darlington and Pickering, there was no indication of adverse, off-site migration of tritium from the NGSs in groundwater.

- The 2018 GWMP results for Pickering and Darlington were/will be submitted to the CNSC for its review.

Tiasi Ghosh or her associates will update the DNHC next year with the 2019 results of the GWMP for the Pickering and Darlington NGSS. For additional information, Tiasi can be contacted at tiasi.ghosh@opg.com.

4.3 Progress Report by OPG concerning its Activities for Continued Operation of the Pickering Nuclear Power Plant (NPP) as a result of the CNSC Relicensing Hearings in June 2018

Frank Guglielmi, Deputy Site Vice-President (VP), Pickering Nuclear, provided a progress report concerning the activities by OPG for the continued operation of the Pickering NPP to 2024 as a result of the CNSC relicensing Hearings in June 2018.

Frank mentioned the three key OPG initiatives that support the Pickering NPP continued operation to 2024.

1. Fitness for Service (FFS) is an assessment and validation that the material condition of the plant will support operation into the future.
2. Periodic Safety Review (PSR) is a comprehensive assessment that the plant is safe and will operate safely into the future.
3. Equipment Reliability Enhancements (ER) identifies both investments in plant safety performance needed as well as generational performance improvements.

Frank provided additional detailed information on each of the three key OPG initiatives.

1. Fitness for Service

- It is consistent with the nuclear industry's practice that a nuclear plant's assumed end of life could be changed when the required assessments were completed.
- A systemic assessment review of all of Pickering's components and programs was completed to determine the health of the plant for continued operation and to identify if changes and new investments were required.

Fitness for Service - Assessment Results

- The current material condition of the plant ensures the plant is safe today.
- The reliability of the plant has never been better and is improving.
- Comprehensive maintenance programs and continuous investments assures that the plant condition will be maintained.

Fitness for Service - Activities for Life Extension Investments

- Supplementary inspections to manage major reactor components including boilers, fuel channels, reactor structures and feeders.
- Planned feeder replacements.

- Planned fuel channel replacements for select channels/units.
 - Investing in hardware to manage fuel channel shifting.
2. Periodic Safety Review
- Comprehensive and detailed evaluation of the design, condition and operation of a NPP is to be conducted every 10 years.
 - A PSR is comprised of:
 - o PSR Basis Document
 - o Safety Factor Reviews
 - o Global Assessment Report
 - o Integrated Implementation Plan (IIP)
 - Assesses the extent to which the existing plant conforms to new NPP requirements, programs and condition of the plant and the ability to operated safely into the future.
3. Plant Safety Enhancements/Modifications in the IIP included:
- Upgrade the fire protection water supplies.
 - Add the water connections to further back-up existing emergency cooling systems.
 - Upgrade the containment venting capabilities.
 - OPG is investing more than \$290 million on continued operations at Pickering and the enhancements/modifications are on track to be completed by 2020.
 - The impact of the IIP enhancements/modifications risk assessment concluded the enhancements/modifications will make the Pickering plant as safe as a new NPP.

Frank provided a list of ER that included:

- o Replacement of HP Turbine spindle
- o Mitigation of algae debris predictions
- o Improvements to condenser system
- o Modifications to the fueling machine reliability
- o Reduction in tritium emissions
- o Upgrades to the reactor inspection tooling
- o Replacement of the Electro-Hydraulic Governor Module
- o Upgrades to the Emergency Power Generator
- o Incremental IIP inspection scope

Frank's summary of overall conclusions included:

- Pickering is fit for service today and there are key programs in place to monitor component health to 2024.
- In comparison to modern codes and standards, Pickering continues to be safe to operate and with the several strategic enhancements/modifications, the Pickering NPP will improve its safety risk rating to that of a new NPP.

- Along with normal maintenance and the additional equipment enhancements Pickering's safety reliability and overall performance will continue to improve.

Frank Guglielmi or his associates will continue to provide the DNHC with regular updates concerning the Pickering NPP Continued Operation to 2024.

5. Communications

5.1 Community Issues at Pickering Nuclear

Analiese St. Aubin, Manager, Corporate Relations and Communications, Pickering Nuclear, OPG, provided an update on Community Issues at Pickering Nuclear and the highlights were:

- Pickering Units 1, 4, 5, 6, 7 and 8 are operating at or close to full power.
- In May, Pickering Nuclear received the Local Business Award at the City of Pickering's Civic Award Ceremony. The award recognizes Pickering's support and participation with community activities including corporate citizenship, employee volunteerism and environmental partnerships.
- Pickering will be hosting the annual *Tuesdays on the Trail Program* in July and August for families by providing free educational and environmental programs in cooperation with their community partners and will be featured in the Spring issue of the OPG Neighbour newsletter.

Analiese St. Aubin, Manager, Corporate Relations and Communications, Pickering Nuclear, OPG, can be reached at (905) 839-1151 extension 7919 or by email at analiese.staubin@opg.com for more information.

5.2 Community Issues at Darlington Nuclear

Analiese St. Aubin, Manager, Corporate Relations and Communications, Pickering Nuclear, OPG, provided an update on the Community Issues at Darlington Nuclear and the highlights were:

- Darlington Units 1, 3 and 4 are operating at close to full power.
- Darlington Unit 2 is undergoing refurbishment.
- In May, Darlington provided a station tour for Assistant Deputy Minister Tupper and staff, Clarington Council and staff, and a newspaper reporter.
- Darlington also provided station tours for the Nuclear Waste Management Organization's council and staff.
- Darlington provided tours for 16 DNHC Members and Observers of its Waste Management Facilities on April 5 and May 27.
- Darlington will be hosting the annual *Tuesdays on the Trail Program* in July and August for families by providing free educational and environmental programs in cooperation with their community partners and will be featured in the Spring edition of the OPG Neighbours newsletter.

Cheryl Johnston, Manager, Corporate Relations and Communications, Darlington Nuclear, OPG, can be reached at 905-623-6670 extension 7038853 or by email at cheryl.johnston@opg.com for more information.

5.3 Corporate Community Issues at OPG

Analiese St. Aubin, Manager, Corporate Relations and Communications, Pickering Nuclear, OPG, provided an update on corporate community issues and the highlights were:

- Robin Manley has moved into a new role as the VP of New Nuclear from his previous position as the VP of Nuclear Regulatory Affairs.
- Jack Vecchiarelli has moved into the role VP of Nuclear Regulatory Affairs from his previous position of Senior Manager, Regulatory Oversight.
- OPG partnered with the Durham Emergency Management Office staff to host an information booth at Durham Regional Headquarters during Emergency Preparedness Week from May 6 to 10th and provided information about how to prepare for a nuclear emergency, information about KI pills and general information about the Pickering and Darlington NGSs.
- The International Atomic Energy Agency (IAEA) conducted an Emergency Preparedness Review across Canada from June 2 to 14th and visited Darlington NGS on June 6th where key Emergency Response Organization roles were reviewed. The IAEA provided an independent peer review of arrangements for preparedness in case of a nuclear or radiological emergency. The IAEA will issue a report that will provide best practices, recommendations and suggestions.
- The Spring edition of the *Neighbours Newsletter* will be delivered to homes in mid-June to coincide with Pickering and Darlington's *Tuesdays on the Trail Program* scheduled for July and August.

6. Other Business

6.1 Topics Inventory Update

Mary-Anne Pietrusiak indicated the Topics Inventory will be revised to include the presentations made today.

6.2 Future Topics for the DNHC to Consider

Brian Devitt indicated the next DNHC meeting scheduled for September 13, 2019 will likely include:

- Progress report by Ontario Tech University concerning its Faculty of Energy Systems and Nuclear Science.
- Progress report by CNL/PHAI concerning the Port Granby Project.

7. Next Meeting

Location

Ontario Tech University
2000 Simcoe Street North, City of Oshawa
Meeting Room 1058 in the Energy Research Building

Date

September 13, 2019

Time

12:00 PM Lunch served, 1:00 PM Meeting begins

Host

Ontario Tech University

8. Adjournment 3:45 PM