



CNSC Regulatory Oversight Report for Darlington and Pickering Nuclear Generating Stations: 2021 Update to Durham Nuclear Health Committee



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Indigenous Consultation and Engagement

Pickering and Darlington Sites

- Alderville First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation
- Beausoleil First Nation
- Georgina Island First Nation
- Rama First Nation
- Mohawks of the Bay of Quinte
- Métis Nation of Ontario



General Safety Performance and Observations (all NPPs and all WMFs)

- Radiological releases to environment were below regulatory limits
- Radiological doses to the public and workers were below regulatory limits
- All nuclear material in Canada remained in peaceful activities and Canada's international obligations were fulfilled
- All reportable events were of low safety significance
 - OPG took appropriate follow-up actions
- Unplanned reactor transients were managed safely
- Lost-time injuries and accidents below World Association of Nuclear Operators (WANO) industry targets

The public and the environment were protected



CNSC Compliance Verification Program

The safety performance of NPPs and WMFs is assessed by CNSC staff using the results of activities conducted through the compliance verification program.



- **Verification activities** include surveillance by onsite inspectors at NPPs, inspections and compliance assessments
- CNSC staff track actions until closure and verify compliance via follow-up activities
- Over 600 findings derived from Darlington and Pickering compliance verification activities in 2021
- OPG Darlington and Pickering reported 105 events and over 90 scheduled reports in 2021, and these were reviewed by CNSC staff

Risk-informed and performance-based approach



Security Performance and Observations

All SCAs were rated “Satisfactory” (SA) for all NPPs and WMFs, with the exception of Security SCA at Darlington and Pickering NPPs, which were rated “Below Expectations” (BE).

- The BE ratings have been discussed in an in-camera session with the Commission
- Details provided to the Commission in CMD 22-M34.B



NUCLEAR POWER PLANTS



Commission Meeting, November 3, 2022

CMD 22-M34.A

Darlington Nuclear Generating Station

Power reactor operating licence: January 2016 – November 2025

- Units 1, 2 and 4 operational in 2021
- Units 2 and 4 currently operational
- Unit 3 entered refurbishment activities in September 2020
- Unit 1 entered refurbishment activities in February 2022
- Licence Conditions Handbook (LCH) revisions in June 2021 and August 2022



Darlington Nuclear Generating Station
Source: OPG



Darlington Nuclear Generating Station

- Satisfactory IIP progress - as of October 31, 2022, 70% of IIP are complete
- The Periodic Safety Review (PSR) Basis Document was submitted by OPG in Sept. 2020, and accepted by CNSC staff in Jan. 2021
 - OPG submitted 15 Safety Factor Reports, which will form the basis for development of the 2025-2035 IIP
 - This IIP will be used to support the next licence renewal application, expected in 2024
- The Commission amended the Darlington PROL to include authorization for a new activity and licence condition related to the production of Mo-99
 - The Commission established 2 Regulatory Hold Points and provided the CNSC EVP-CROO with the authority to remove them



Darlington Nuclear Generating Station

Molybdenum-99 IIS

- OPG's Mo-99 IIS installation outage planned for mid Q3 FY 2022/23 (CNSC authorized removal of Regulatory Hold Point #2 in October 2022)

Cobalt-60 IIS

- Cobalt-60 IIS: OPG is targeting to submit its application for a licence amendment in November 2022



Pickering Nuclear Generating Station

Power reactor operating licence:

September 2018 – August 2028

- Authorization from the Commission is required to operate beyond 2024
- Units 1, 4, 5, 6, 7 and 8 operational in 2021
- Units 2 and 3 defueled in 2008
- CNSC staff revised LCH in April 2021



Pickering Nuclear Generating Station
Source: OPG



Pickering Nuclear Generating Station

- PNGS experienced no reactor trips and the reactor trips performance against the target for 2021 was better than industry performance target
- CNSC staff confirmed that all special safety systems for PNGS met their unavailability targets in 2021
- CNSC staff confirmed that PNGS critical corrective maintenance backlogs continued to remain very low
- All IIP commitments are now completed by OPG and closed by the CNSC



PNGS Licensing

- PNGS Power Reactor Operating Licence expires Aug. 31, 2028
- OPG requires approval to operate beyond December 31, 2024
- End of Commercial Operation (ECO) licence conditions
- September 29, 2022 Ontario Government announcement
OPG seeking to extend operation of Units 5-8 to 2026
- Units 1-4 to operate until 2024 (as previously planned)
- OPG feasibility assessment for refurbishing Units 5-8

Operation beyond 2024 constitutes a change to the licensing basis and will require a decision from the Commission via a public hearing whereby Indigenous Nations, members of the public and other stakeholders will be able to intervene.



Potassium Iodide (KI) Pill Working Group

- Working group formed in 2019 to provide clarity on the roles and responsibilities for KI Pill distribution
- Phase I report presented to Commission January 2022
- Discussions ongoing with the WG on path forward for Phase II
- WG Chair (from CNSC) is scheduled to present to DNHC January 2023



WASTE MANAGEMENT FACILITIES

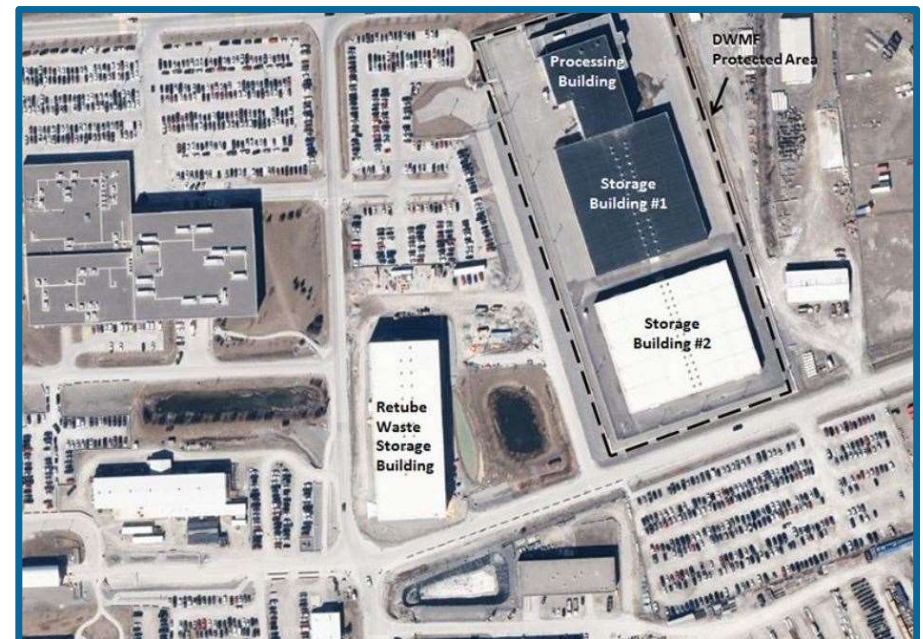


Darlington Waste Management Facility

Waste Facility Operating Licence:

March 2013 to April 2023

- OPG processes and stores used nuclear fuel generated at DNGS
- OPG manages intermediate level waste from refurbishment activities at DNGS
- No LCH revisions in 2021
- OPG submitted application for renewal of DWMF Waste Facility Operating Licence, for a 10-year period (May 1, 2023 - April 30, 2033)



Aerial view of Darlington Waste Management Facility
Source: OPG



Pickering Waste Management Facility

Waste Facility Operating Licence: April 2018 – August 2028

- OPG processes and stores used nuclear fuel generated at PNGS
- OPG manages intermediate level waste from refurbishment activities at PNGS
- Following CNSC staff acceptance of commissioning report, delegated authority authorized OPG to operate storage building 4
- No LCH revisions in 2021



Aerial view of Pickering Waste Management Facility

Source: OPG



Waste Management Facilities Highlights

In 2021, CNSC staff confirmed that:

- OPG operated DWMF, PWMF in accordance with the operating policies, principles and operational safety requirements
- Maximum reported worker doses at WMFs were below regulatory limits
- There were no lost-time injuries at WMFs in 2021
- Releases to environment from WMFs were below regulatory limits and action levels



Interventions on 2021 NPGS ROR

CNSC staff observed the following issues raised through interventions:

- Safe Operating Envelope
- Collective Dose to workers
- Radionuclides/Derived Release Limits/Open Government website
- Indigenous engagement and consultation/ representation in the ROR
- Content and scope of ROR



Final Conclusions

- Indigenous Nations and communities, the public and the environment were protected
- Reported doses to workers and public were below regulatory limits
- All nuclear material in Canada remained in peaceful activities and Canada's international obligations were fulfilled
- Issues identified during compliance verification activities and events were either addressed or are being addressed by licensees
- SCAs rated Satisfactory for all NPPs and WMFs with the exception of the Security SCA for Darlington and Pickering

Operations at
NPPs and
WMFs were
conducted
safely



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