

Regulatory Operations Branch
Directorate of Power Reactor Regulation

Durham Nuclear Health Committee Meeting

November 19, 2021

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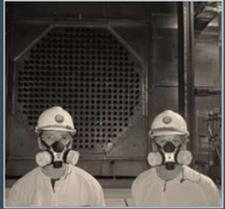
Canadian Nuclear
Safety Commission

Commission canadienne
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Regulatory Oversight during COVID-19 (2021)

- Continued to verify that measures to protect health, safety, security and the environment are in place
- Continued to provide oversight of Unit 3 Darlington Refurbishment Activities, including defueling and draining, and now major component removals
- Ongoing communications with licensees of major nuclear facilities and activities to ensure that Licensees' COVID plans continue to be implemented
- Responded to requests for regulatory flexibility
 - Darlington full-scale emergency exercise planned for February 2021 was deferred to March 2022



Inspections at DNGS and PNGS (2021)

- CNSC resident Inspectors resumed regular on-site inspection activities in May 2020, returning to the Darlington and Pickering stations to conduct in-field verification activities
- Support from Headquarters staff (specialists, program officers) continues to be provided remotely from Ottawa
- Resource challenges have led to a number of inspections being cancelled, but the CNSC remains on track to complete the plan for this fiscal year.
- **FY2021-2022 (to date)**

	Darlington NGS	Darlington Refurbishment	Pickering NGS
Planned	86 (Baseline) 10 (Reactive)	32 (Baseline) 1 (Reactive)	86 (Baseline) 3 (Supplemental)
Completed	23	3	24
Cancelled / Deferred	4 (Cancelled) 1 (Deferred)	5 (Cancelled)	2 (Cancelled) 0 (Deferred)



Darlington Nuclear Generating Station

Power reactor operating licence:

January 2016 – November 2025

- Units 1 - 4 operational in 2020
 - Unit 2 returned to service in June 2020, and Unit 3 entered refurbishment activities in September 2020
 - Units 1, 2, and 4 operational in 2021
- CNSC accepted the Basis Document for the next Periodic Safety Review in January 2021
- No LCH revision in 2020, but a substantial revision was issued in 2021



Darlington NGS Highlights (1/4)

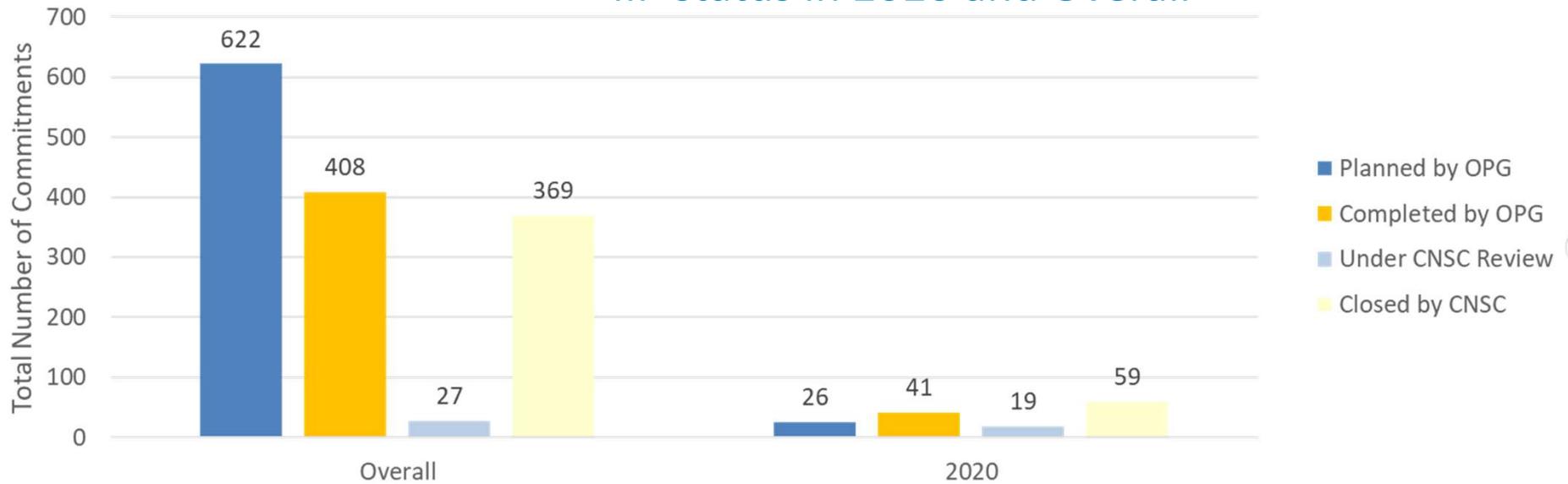
- CNSC staff continued with its oversight on the Darlington Unit 3 Refurbishment Activities, following Unit shutdown in September 2020
 - CNSC staff completed oversight with focused inspections as OPG removed the fuel and moderator from the Unit between September and December 2020
 - In this current FY, 32 focused refurbishment inspections are scheduled, covering areas ranging from worker radiation protection to contractor oversight as OPG removes and refurbishes critical reactor components
 - Ottawa HQ staff work closely with Site staff and CNSC experts to conduct these inspections, technical reviews, and other compliance monitoring activities
- CNSC staff oversight of Unit 2 refurbishment activities confirmed that
 - IIP was being implemented, as required
 - Regulatory requirements were met and Unit 2 was returned to service in June 2020

Overall, CNSC staff are satisfied that the refurbishment activities conducted on Unit 3 are performed safely and in compliance with regulatory requirements.



Darlington NGS Highlights (2/4)

IIP status in 2020 and Overall



Satisfactory progress on IIP actions



Darlington NGS Highlights (3/4)

- CNSC staff noted some areas to highlight at DNGS in 2020:
 - OPG made considerable effort to improve its performance in the area of radiological hazard control. CNSC staff noted a clear improvement in this area compared to its assessment in 2019
 - Chemistry Control was strong and compared favourably with industry averages
 - Preventive maintenance deferrals and backlogs for corrective and deficient maintenance remained low and were better than industry averages
- CNSC staff approved a request for regulatory flexibility to defer OPG's planned full-scale emergency preparedness exercise to February 2022
 - DNGS has sufficient provisions for preparedness and response capability to mitigate effects of accidental releases of nuclear or hazardous substances on the environment, and to maintain health and safety of persons



Darlington NGS Highlights (4/4)

- Environmental releases from DNGS site were below the Derived Release Limits in the LCH. No radiological or hazardous substance releases from DNGS approached or exceeded Action Levels or regulatory limits.
- CNSC staff reviewed OPG's annual environmental protection reports and determined that the dose to members of the public from DNGS was $0.4 \mu Sv$ in 2020, well below the maximum allowable dose of $1.0 mSv$ under the *Radiation Protection Regulations*
- Radiation doses to workers at DNGS were below regulatory dose limits from the *Radiation Protection Regulations*, as well as below OPG's Action Levels from their radiation protection program.

Overall, CNSC staff are satisfied that radiological doses to workers at DNGS are monitored and maintained ALARA, and that members of the public are protected from radiological and hazardous substances released from DNGS.



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 2020
- Units 2 and 3 defueled in 2008
- CNSC staff revised LCH in April 2020



Pickering NGS Highlights (1/4)

- **Integrated Implementation Plan**

- Overall there were 98 IIP commitments planned in the IIP, and 20 were planned to be completed in 2021
- OPG completed 17 IIP commitments in 2020, and all 17 were under CNSC review for closure
- In 2021, only 7 commitments remain; 5 of these were completed and 2 were removed from the scope.
- As of June 2021 CNSC staff have closed all Pickering IIP commitments, and the IIP is now closed



Pickering NGS Highlights (2/4)

Fish impingement monitoring and Fisheries Act authorization (FAA)

- No observed impingement in 2020 of Schedule 1 (Species at Risk Act) fish species
- 3,525.72 kg biomass of fish impinged in 2020 (lowest value since 2016)
- Fisheries & Oceans Canada are reviewing OPG request to amend the FAA

Thermal Plume Monitoring

- OPG submitted "Potential Effects of PNGS Thermal Plume on the Survival of Round Whitefish Embryos, 2018-2020" thermal plume monitoring report
- CNSC staff and ECCC are currently reviewing OPG's submission



Pickering NGS Highlights (3/4)

- Environmental releases from PNGS site were below the Derived Release Limits in the LCH. There was one hazardous substance limit exceedance in 2020, but review of OPG's actions taken concluded that the public remained protected.
- CNSC staff reviewed OPG's annual environmental protection reports and determined that the dose to members of the public from PNGS was $1.2 \mu Sv$ in 2020, well below the maximum allowable dose of $1.0 mSv$ under the *Radiation Protection Regulations*
- Radiation doses to workers at PNGS were below regulatory dose limits from the *Radiation Protection Regulations*, as well as below OPG's Action Levels from their radiation protection program.
 - OPG self-identified a trend of unplanned tritium exposures to workers
 - Unit 1 had a minor heat transport leak resulting in localised spread of contamination

Overall, CNSC staff are satisfied that radiological doses to workers at PNGS are monitored and maintained ALARA, and that members of the public are protected from radiological and hazardous substances released from PNGS.



Pickering NGS Highlights (4/4)

- PNGS has sufficient provisions for the preparedness and response capability to mitigate effects of accidental releases of nuclear and hazardous substances on the environment, and maintain health and safety of persons
- CNSC conducted an on-site inspection during a PNGS full-scale emergency exercise
 - During the inspection, CNSC staff identified numerous compliant findings & several non-compliant findings
 - Non-compliant findings were of negligible or low safety significance
 - OPG addressed the low and negligible findings to CNSC staff satisfaction



2020 Annual Report

The annual report on NPP safety oversight to be presented on December 15, 2021

- No “Fully Satisfactory” ratings at SCA level in 2020 ROR, as CNSC staff work to remove this rating from the ROR
- Public consultation closed on November 1, 2021; however, the report is available on CNSC web-site

<https://www.nuclearsafety.gc.ca/eng/the-commission/meetings/cmd/pdf/CMD21/CMD21-M36.pdf>

NPP operations in 2020 met regulatory requirements. There were no negative trends in safety performance.



Conclusion

- CNSC continues to maintain oversight and successfully carried out its modified compliance program, ensuring both on-site verification and remote methods of oversight are adequate
- Incorporating lessons learned from the pandemic to allow the CNSC to remain a flexible and agile regulator for the future
- CNSC staff determined that NPP operations in 2020 and 2021 met regulatory requirements and there were no negative trends in safety performance.





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