



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada



Darlington Unit 2 CNSC Process for Return-to-Service

Public Meeting
February 20, 2019
CMD 19-M6



CNSC Staff Presentation

e-Doc 5723630 (PPTX)
e-Doc 5783914 (PDF)





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Introduction

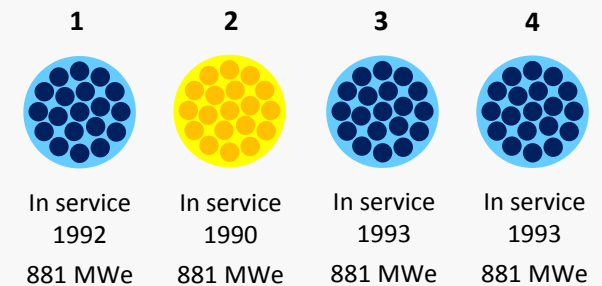
Darlington Nuclear Generating Station Status

- Units 1, 3, 4 – Operational
- Unit 2 shutdown in October 2016 for refurbishment
- Unit 2 return to service projected for December 2019

Scope:

- Overview of the CNSC regulatory oversight activities for the refurbishment and return to service of Darlington Unit 2
- Overview of the CNSC process for removal of Regulatory Hold Points (RHPs)

-  In service within design life
-  Refurbished and returned to service
-  In refurbishment





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Objectives of the CNSC Regulatory Oversight for the Refurbishment Project

- Confirm that the refurbishment and return to service activities are being performed safely and in compliance with regulatory requirements.
- Confirm that improvements identified in the OPG's Integrated Implementation Plan have been completed.
- Confirm that the systems, equipment, procedures, and qualified staff are available and ready for the unit return to service.



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Background

Operating licence:

- Licence renewal hearing held in 2015
- Licence was renewed in 2016
- Licence period: January 2016 to November 2025

The licensing basis for the CNSC regulatory oversight includes:

- *Nuclear Safety Control Act, Regulations*
- Operating Licence
- Codes, Standards and CNSC Regulatory Documents
- OPG's Integrated Implementation Plan (IIP) commitments





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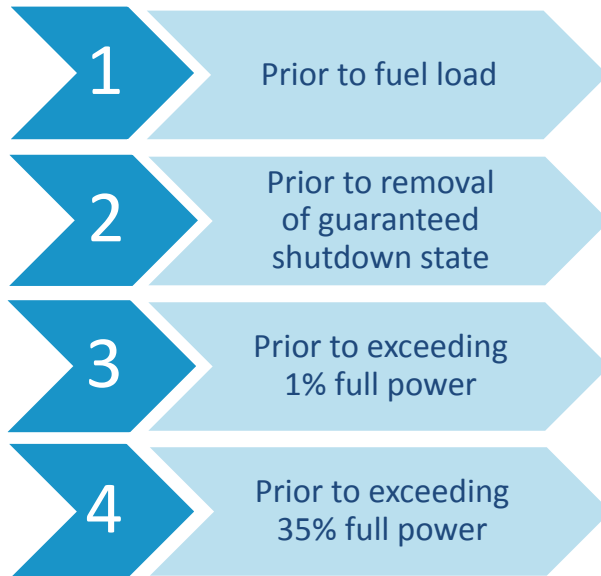
Licence Conditions for the Refurbishment Project

- LC 15.2 states: *“The licensee shall implement a return to service plan for refurbishment.”*
- LC 15.3 states: *“The licensee shall implement the Integrated Implementation Plan.”*
- LC 15.4 states: *“The licensee shall obtain the approval of the Commission, or of a person authorized by the Commission [Executive Vice President (EVP)], prior to the removal of established regulatory hold points.”*



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Regulatory Hold Points



- The process of returning to service includes a phased approach for the removal of regulatory hold points, aligned with commissioning activities.
- Delegation of consent to remove regulatory hold points granted by the Commission to the Executive Vice-President and Chief Regulatory Operations Officer (EVP-CROO).
- The same approach was followed for previous refurbishment projects.

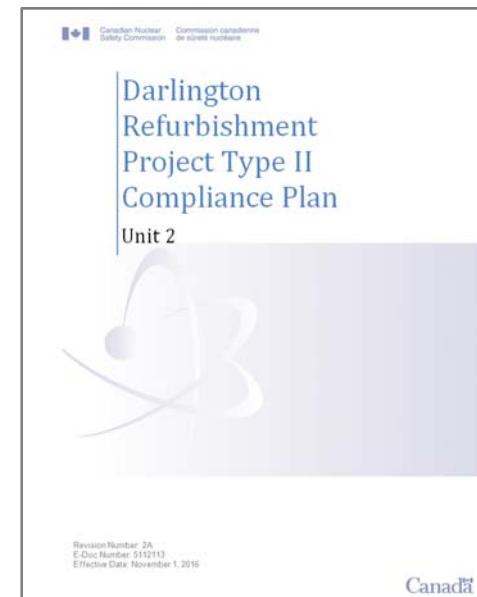


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CNSC Compliance Plan for the Refurbishment of Darlington Unit 2

The CNSC compliance plan for the Darlington Refurbishment Project:

- Is planned and risk informed
- Incorporates lessons learned from previous projects
- Takes into account licensee's return to service program
- Is adjusted to align with licensee's refurbishment activities





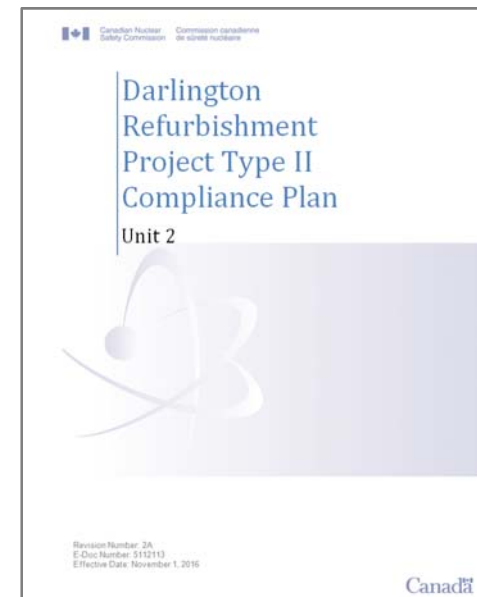
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CNSC Compliance Plan for the Refurbishment of Darlington Unit 2

The CNSC compliance plan addressed the 4 phases of the refurbishment project:

- 1. Lead-in phase:** preparation activities for refurbishment (Complete)
- 2. Component Removal phase:** removal of reactor core components (Complete)
- 3. Installation phase:** installation of reactor core components (On-going)
- 4. Lead-out phase:** including fuel load, system, structures and components commissioning, start-up of the unit (Planned)

This year OPG will be entering the lead-out phase for return to service of Unit 2



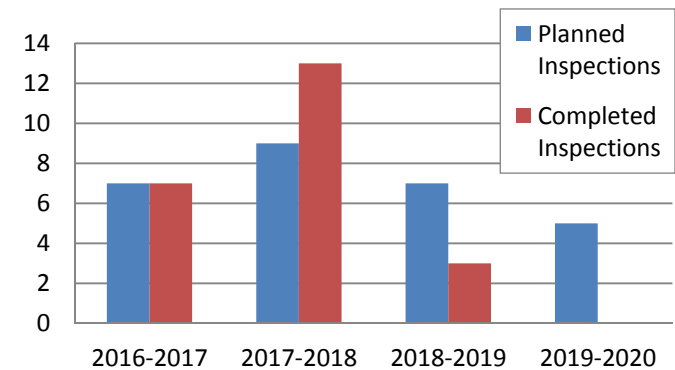


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Refurbishment Compliance Plan – Darlington Unit 2

- CNSC compliance verification activities include technical assessments, surveillance and inspections
- Total effort for refurbishment compliance verification activities is ~4500 days
- CNSC staff have completed 23 refurbishment focused inspections since 2016
- Inspections cover multiple safety and control areas (SCAs)

Planned and Completed Inspections



Compliance verification activities are planned and risk informed

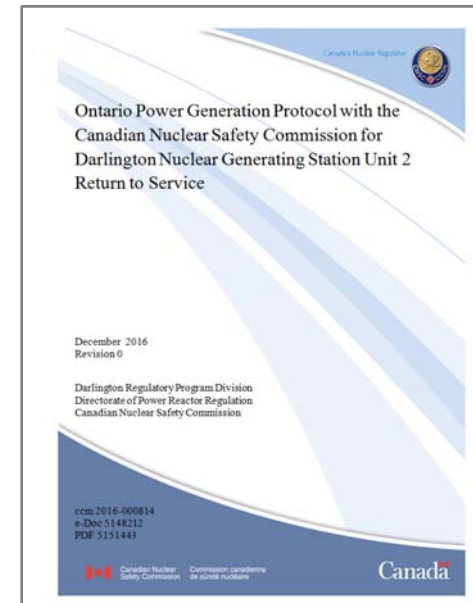


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Return to Service Protocol

- Identifies IIP commitments, detailed pre-requisites and deliverables for the removal of each Regulatory Hold Point.
- Establishes schedule for OPG submissions and CNSC staff assessments.
- Incorporates lessons learned from previous projects.

**Return to Service Protocol
is well defined and managed**

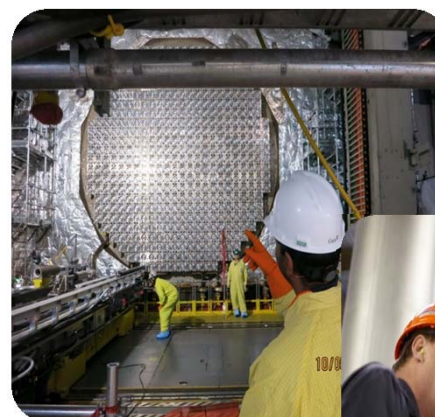




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Return to Service – Improvements, Plant and Personnel

- To confirm that improvements identified in the Integrated Implementation Plan have been completed.
- To confirm that the systems, equipment, procedures, and qualified staff are available and ready for the unit return to service.





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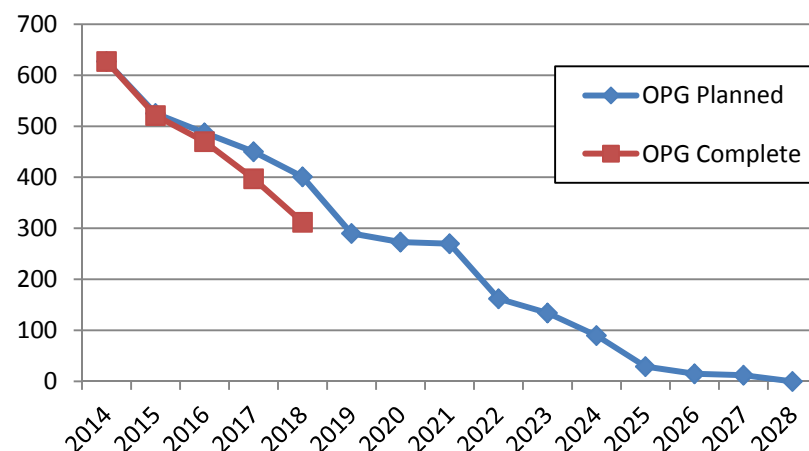
Progress – Integrated Implementation Plan for all Darlington Units

- The Integrated Implementation Plan (IIP) consists of 627 IIP commitments.
- OPG has completed 315 commitments of the IIP.

OPG is on track with completing their IIP commitments

Integrated Implementation Plan Progress

January 2019





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Integrated Implementation Plan – Unit 2 Return to Service

- Total of 72 IIP commitments associated with Unit 2 Restart.
- Completion of Unit 2 IIP commitments are tracked through the Protocol.
- IIP commitments are associated with each Regulatory Hold Point.
- OPG has completed 38 IIP commitments as of January 2019.

Completion of IIP commitments for Unit 2 Restart are tracked through the Protocol



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Pre-requisites for the Removal of each Regulatory Hold Point

PEOPLE

- Staffing levels adequate
- Operating procedures validated
- Specified training is complete and staff qualified

PLANT

- Required Systems, Structures, and Components (SSCs) are Available for Service
- SSCs procurement, installation and testing meet regulatory requirements
- Required analyses have been conducted



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Completion Assurance Document (CAD)

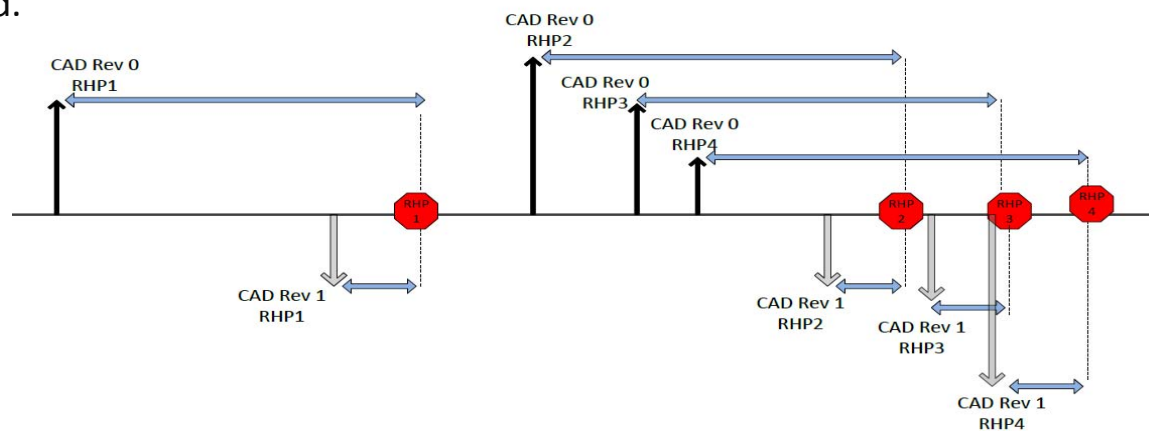
- For each Regulatory Hold Point, OPG will submit a Completion Assurance Document (CAD) to the CNSC.
- CAD will confirm that all pre-requisites, modification commissioning, testing, system restart activities and commitments have been completed.
- Any open items are identified, assessed and tracked in the CAD.



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Return to Service Timeline

- CAD Rev 0 is provided to CNSC prior the scheduled removal of the regulatory hold point.
- Pre-requisites, commissioning, testing, system restart activities and commitments are provided to the CNSC as they are completed.
- CAD Rev 1 is provided to CNSC documenting all the work is complete and open items are addressed.






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Process to release – recommendation to EVP-CROO

- CNSC Staff recommendation to the EVP-CROO at least 7 working days prior to OPG's scheduled hold point removal date.
- The recommendation will be based on:
 - Compliance assessments
 - Surveillance and verification activities
 - Inspections
- Once all pre-requisites and regulatory commitments have been met, EVP-CROO will issue a Record of Consent, Including Reasons for Decision for the removal of each Regulatory Hold Point.

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UNPROTECTED
(Version #1)
Date Signed:

Template

**Request by OPG to Remove
Regulatory Hold Point for Prior To Fuel
Load for Unit 2
Darlington Nuclear Generating Station**

**Request for the Executive Vice-President and
Chief Regulatory Operations Officer to:**

Issue Required Consent

Submitted by:
CNSC staff

Canada



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Closing remarks

- CNSC staff have processes for compliance oversight of the refurbishment project and monitoring of return to service activities.
- Processes incorporate CNSC experience from previous refurbishments projects.
- Removal of the Regulatory Hold Points requires that all pre-requisites and restart activities be completed and meet regulatory requirements.
- OPG and CNSC staff will provide and update to the Commission following the return to service of Unit 2 at a meeting of the Commission, with public participation.

CNSC staff will continue to update the Commission on the status of the refurbishment project



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