Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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Status Report on Power Reactors

Rapport d'étape sur les centrales nucléaires

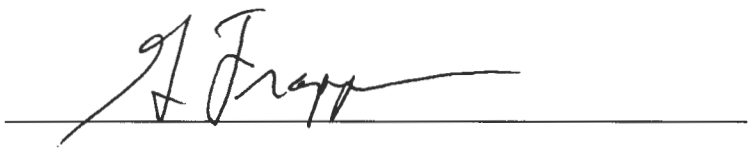
Commission Meeting
May 28, 2018

Réunion de la Commission
Le 28 mai 2018

This document summarizes the status of the Power Reactor facilities as of May 22, 2018.

Ce rapport résume le rapport d'étape sur les centrales nucléaires en date du 22 mai 2018.

Signed on / Signé le
2018-05-23



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1. Power Reactors Status as of May 22, 2018

1.1 Bruce A and B

Operational Status
Unit 1 is at Full Power
Unit 2 is at Full Power
Unit 3 is at Full Power
Unit 4 is in Guaranteed Shutdown State
Unit 5 is at Full Power
Unit 6 is at Full Power
Unit 7 is at Full Power
Unit 8 is at Full Power
Licensing
Power Reactor Operating Licence expires on May 31, 2020. Commission Public Hearing Part 1 was held in Ottawa on March 14, 2018. Commission Public Hearing Part 2 will be held in Kincardine May 28-31, 2018.
Comments
Unit 4 is in a planned maintenance outage.
Event Notifications and Updates
Update on EIR: Failure of the Primary Heat Transport Pump Seals at Bruce A Unit 4 (CMD 18-M13, March 15, 2018). On March 4, 2018 Unit 4 PHT pump 4 experienced a triple seal failure. The unit was shut down safely, and releases to the public and environment remained within the normal operating range. A collective dose of 0.90 mSv was received by the 30 workers involved in the clean-up, with a maximum dose of 0.245mSv and no unplanned doses being received. Bruce Power completed a Technical Operability Evaluation (TOE) on March 6, 2018 to determine if the units at Bruce A and B required mitigating actions for continued operation. As a result of the TOE, Unit 2 was shut down on March 11, 2018 to install enhanced vibration monitoring instrumentation. Bruce Power then implemented more restrictive pump vibration limits on all units, monitored by control room staff, to reduce the likelihood of seal failures. Additionally, the allowable concentration of I-131 in the heat transport system was reduced to mitigate potential worker dose and releases to the public and the environment if another triple seal failure were to occur. CNSC staff performed a reactive inspection on March 8th and 9th to determine if Bruce Power's response to the event was adequate. CNSC staff have determined that Bruce Power's response was in compliance with its license, regulatory requirements and their internal processes and that Bruce Power is making adequate provision for the protection of the environment, and the health and safety of workers and the public. Bruce Power is performing a root cause investigation (RCI) to determine the cause of the failure of the pump seals. Forensic investigation of the failed Unit 4 P4 seal and rotating assembly has been completed. Using the forensic results and other information, Bruce Power is systematically

reviewing all possible failure modes to ultimately arrive at the root cause of the event. CNSC Staff are being kept up to date on the progress of the RCI via bi-weekly meetings with Bruce Power.

CNSC staff are satisfied with the mitigation measures and the progress on the root cause investigation. Following completion of Bruce Power's root cause investigation in late June, CNSC staff will be reviewing the report to assess Bruce Power's root cause analysis and corrective actions.

See Appendix A for diagrams.

Actions from previous Commission meetings
None.

1.2 Darlington

Operational Status
Unit 1 is at Full Power
Unit 2 is Shutdown for Refurbishment
Unit 3 is in Guaranteed Shutdown State
Unit 4 is at Full Power
Licensing
Power Reactor Operating Licence expires on November 30, 2025.
Comments
Darlington Unit 3 is in a planned maintenance outage. **May 11, 2018**: OPG has informed CNSC staff of a radiation dose action level exceedance of a worker, who was conducting moderator heat exchanger work in Unit 3 and was wetted with moderator water. No regulatory limits for Tritium have been exceeded. OPG has reported the event under REGDOC-3.1.1 and is currently investigating. Results of the final dose assessment will be shared with CNSC staff as they become available. Unit 2 refurbishment update: Calandria tube removal is now complete and transition into core reconstruction is in progress.
Event Notifications and Updates
None.
Actions from previous Commission meetings
None.

1.3 Pickering

Operational Status
Unit 1 is at Full Power
Unit 2 is in a Safe Storage State
Unit 3 is in a Safe Storage State
Unit 4 is in Guaranteed Shutdown State
Unit 5 is at Full Power
Unit 6 is at 97% of Full Power
Unit 7 is at Full Power
Unit 8 is at Full Power
Licensing
Power Reactor Operating Licence expires on August 31, 2018. Commission Public Hearing Part 1 was held in Ottawa on April 14, 2018. Commission Public Hearing Part 2 will be held in Pickering on June 25-29, 2018.
Comments
Unit 6 is at 97% of Full Power, following a planned maintenance outage.
Event Notifications and Updates
None.
Actions from previous Commission meetings
None.

1.4 Point Lepreau

Operational Status
Unit is in Guaranteed Shutdown State
Licensing
Power Reactor Operating Licence expires on June 30, 2022.
Comments
Point Lepreau Nuclear Generating Station is in a planned maintenance outage.
Event Notifications and Updates
NB Power has informed CNSC staff of an alpha uptake by one worker on April 30th, 2018. The preliminary dose estimate (0.0565mSv) was calculated to be less than NB Power's action level and well below the regulatory limit. NB Power is currently investigating. This event will be reported under REGDOC 3.1.1. CNSC staff are awaiting the report.
Actions from previous Commission meetings
None.

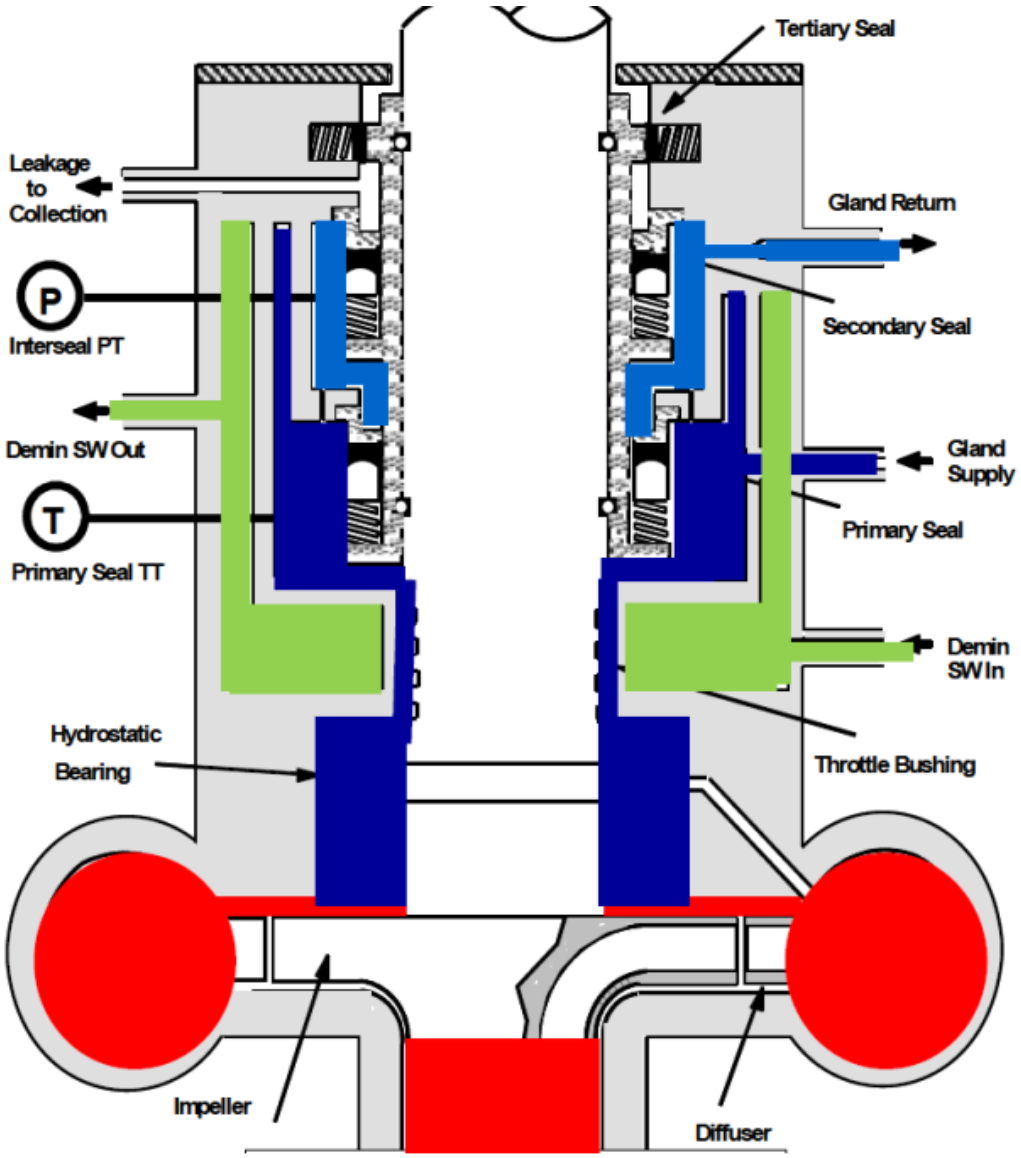
1.5 Other

None.

Appendix A: Bruce Primary Heat Transport Pump Diagrams

Figure 1: Primary Heat Transport Pump Stool

Figure 2: Primary Heat Transport (PHT) Gland Seals



Red is indicates hot D_2O in the PHT system

Green is closed loop demineralized water

Blues are cool and clean D_2O

Figure 3: Simplified Diagram of Primary Heat Transport PUMP