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Commission Meeting, November 8, 2018
CMD 18-M39.B

Regulatory Oversight Report (ROR) for Canadian Nuclear Power Generating Sites: 2017

Outline

- Introduction
- General Regulatory Findings
- Performance Results for Nuclear Power Plants and Waste Management Facilities
- Closing Remarks

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Regulatory Oversight Report (ROR) for Canadian Nuclear Power Generating Sites: 2017

This presentation provides

- General conclusions from the ROR
- Highlights and illustrative results from the ROR
- Updates since the public posting of the ROR

Details are in ROR and in supplemental CMD

CNSC Regulatory Oversight Reports

- August 23, 2018: Research Reactors and Class IB Accelerators: 2016-17
- October 3, 2018: Use of Nuclear Substances in Canada: 2017
- November 8, 2018: Canadian Nuclear Power Generating Sites: 2017
- December 12/13, 2018: Uranium and Nuclear Substances Processing Facilities: 2017
- December 12/13, 2018: Uranium Mines, Mills, Historic and Decommissioned Sites: 2017

Reporting on licensee performance based on CNSC oversight

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INTRODUCTION

Introduction

Major Changes in 2017 Regulatory Oversight Report

- Increased scope: nuclear power plants (NPPs) and waste management facilities (WMFs) on same nuclear power generating site (NPGS) are addressed in the same regulatory oversight report (ROR)
- Aligned content and structure more closely with the 14 safety and control areas (SCAs)
  - Added section 15 for “other matters of regulatory interest”
- Focused on developments in 2017
- Replaced “integrated plant ratings” (quantitative in nature) with “overall ratings” (qualitative in nature) for NPPs and WMFs
- Included data for radiological releases to the environment

Introduction
Highlights of Changes to ROR Based on 2016 ROR Comments

- More details on public information and disclosure and engagement activities with Indigenous communities
- More detail on emergency exercises and the organizations responsible for nuclear emergency management at all levels
- Removed some of the data on collective dose

Introduction
Follow-up on Commission Requests (with ROR page references)

ROR provides information requested of CNSC staff

- Bruce primary heat transfer pump seal failure (p. 184)
- Data on contaminants of interest at Pickering Waste Management Facility (p. 147)
- Review of Ontario Auditor General's Annual Report 2017 and potential improvements to CNSC emergency management processes (p. 66)
- Outstanding corrective actions required to be completed by NB Power (p. 154)
- Establishment of a regulatory position on risk aggregation (p. 37)
- Refurbishment-related internal contamination event at Darlington Nuclear Generating Station (p. 82)

Supplemental CMD 18-M39.A provides additional details

Introduction

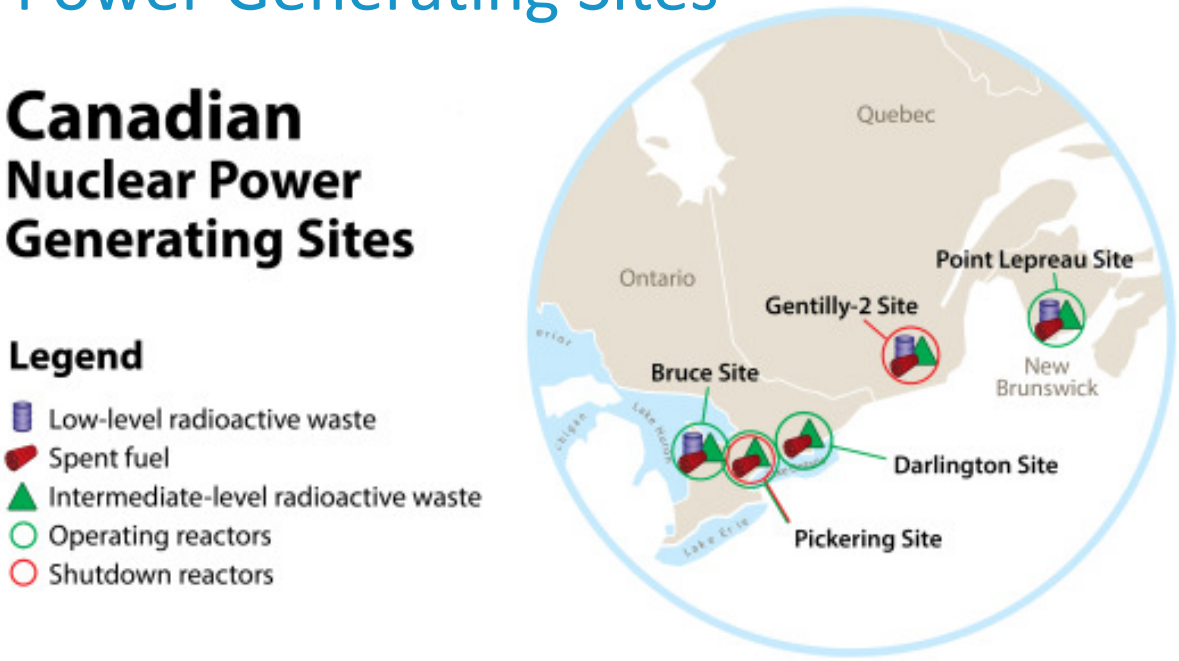
Canada's Nuclear Power Generating Sites

5 NPPs

- 18 operational reactors
- 1 reactor in refurbishment
- 3 reactors in safe storage (Pickering Units 2 and 3 and Gentilly-2)

5 WMFs

- Darlington, Pickering and Western WMFs have separate licenses
- G-2 and Point Lepreau WMFs are included in the NPP licence



Introduction

Facilities Covered by 2017 NPGS ROR

Facility	Licensee	Location	Manages	Operation start
Bruce A	Bruce Power Inc.	Tiverton, ON	Four operating reactors	1977
Bruce B	Bruce Power Inc.	Tiverton, ON	Four operating reactors	1984
DNGS	Ontario Power Generation Inc.	Clarington, ON	Four operating reactors (one in refurbishment)	1990
PNGS	Ontario Power Generation Inc.	Pickering, ON	Six operating reactors, two defueled and in safe storage	Units 1, 4: 1971 Units 5–8: 1982
Point Lepreau	New Brunswick Power Corp.	Lepreau, NB	One operating reactor	1982
Gentilly-2	Hydro-Québec	Bécancour, QC	One reactor transitioning to dry safe storage	1983
DWMF	OPG	Clarington, ON	High Level Waste (HLW) from DNGS Intermediate Level Waste (ILW) from DNGS refurbishment	2008
PWMF	OPG	Pickering, ON	HLW from PNGS ILW from PNGS Units 1-4 refurbishment	1996
WWMF	OPG	Tiverton, ON	HLW from Bruce A and B NPPs ILW from Bruce Units 1 and 2 refurbishment and from DNGS, PNGS, and Bruce A and B operations LLW from DNGS, DWMF, PNGS, PWMF, Bruce A and B and WWMF operations	1974
RWOS-1 *	OPG	Tiverton, ON	L&ILW from Douglas Point WMF and PNGS	Mid-1960

* RWOS-1 is covered by assessment for WWMF in section 3.5 of ROR

Introduction
Compliance Verification Program

- Risk-informed and performance-based verification of compliance with requirements through
  - Inspections, desktop reviews, surveillance/monitoring, and technical assessments
  - Review of event, periodic, and other licensee reports
  - Tracking of actions and verification of closure
- Compliance activities
  - >15,000 person-days of effort for NPPs and >1000 person-days for WMFs
  - > 400 CNSC staff, which includes >30 site inspectors at NPPs
  - ~120 inspections
  - ~1,550 findings

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GENERAL REGULATORY FINDINGS

General Regulatory Findings

Overall Ratings

DNGS	PNGS	Point Lepreau	BRUCE A	BRUCE B	Gentilly-2	DMWF	PWMF	WWMF
FS	FS	SA	FS	SA	SA	SA	SA	SA

FS Fully satisfactory
SA Satisfactory
BE Below expectations
UA Unacceptable

General Regulatory Findings
General Observations (1/2)

- In general, events were of low safety significance
  - Licensees took appropriate actions to address them
  - No NPP or WMF events above the International Nuclear Event Scale (INES) level 0
- Reactor trips and other transients at NPPs were infrequent and managed safely
- Accident frequency and severity for conventional health and safety continued to be low for NPPs and WMFs

All NPPs and WMFs were operated safely

General Regulatory Findings

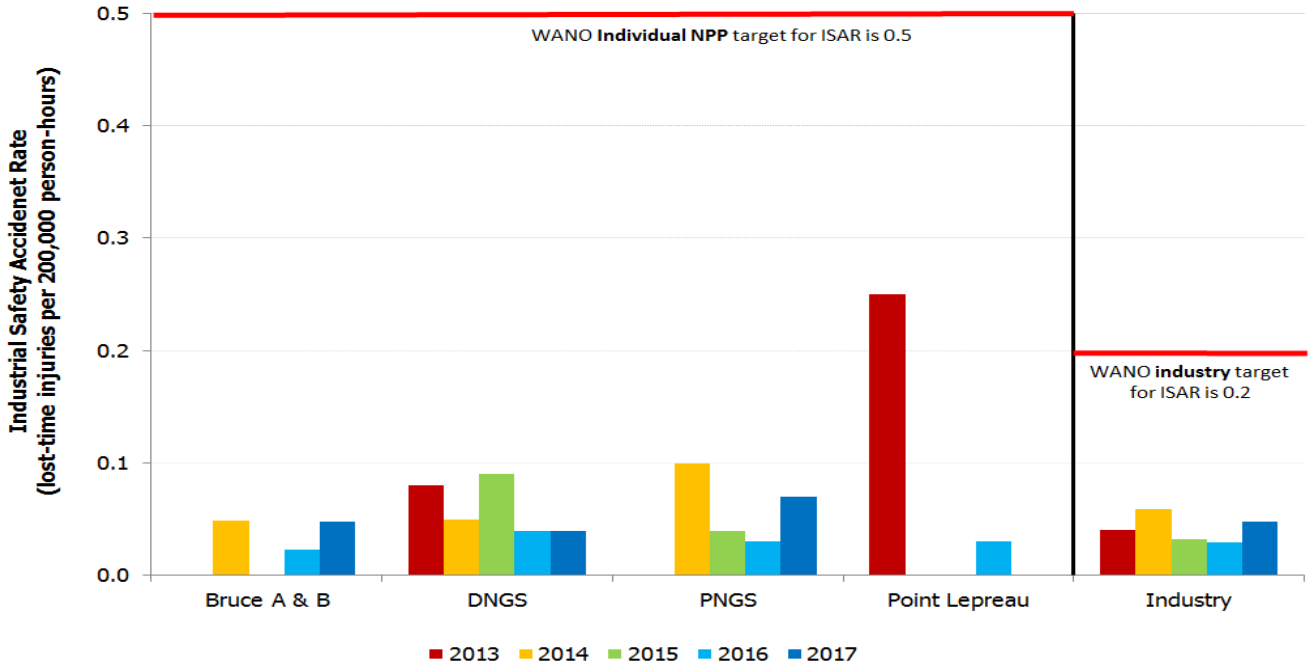
General Observations (2/2)

- Radiological releases to the environment (water and air) were well below derived release limits (DRLs) and action levels (ALs) – protecting public and environment
  - CNSC's Independent Environmental Monitoring Program (IEMP) results for Darlington, Pickering and Point Lepreau sites confirmed this conclusion
  - Licensees continued to refine DRLs and associated environmental action limits
- Radiological doses to workers at the NPGSs did not exceed regulatory limits
- Licensees met requirements related to nuclear security and Canada's international obligations
  - IAEA safeguards conclusion: all nuclear material in Canada remained in peaceful activities, including the nuclear material at the NPPs and WMFs

CNSC staff assured environment protection, worker safety, and security

General Regulatory Findings

Trend of Industrial Safety Accident Rate at Operating NPPs



Industrial safety accident rates for workers were well below targets published by World Association of Nuclear Operators (WANO)

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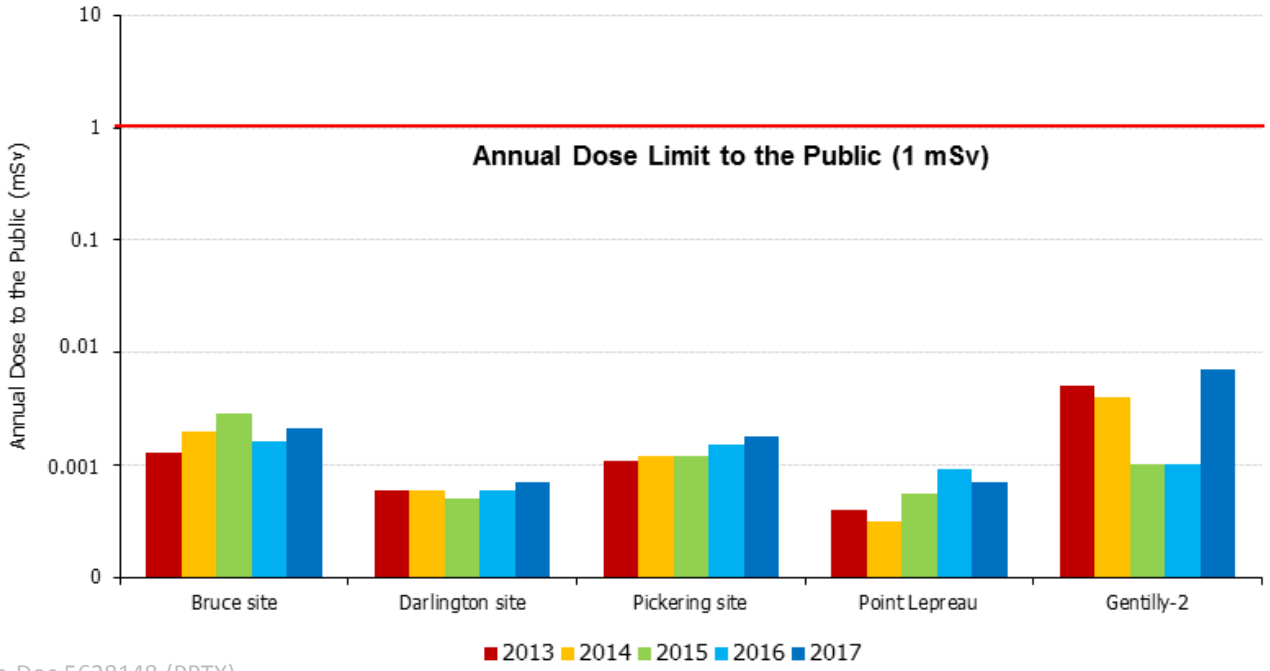
General Regulatory Findings

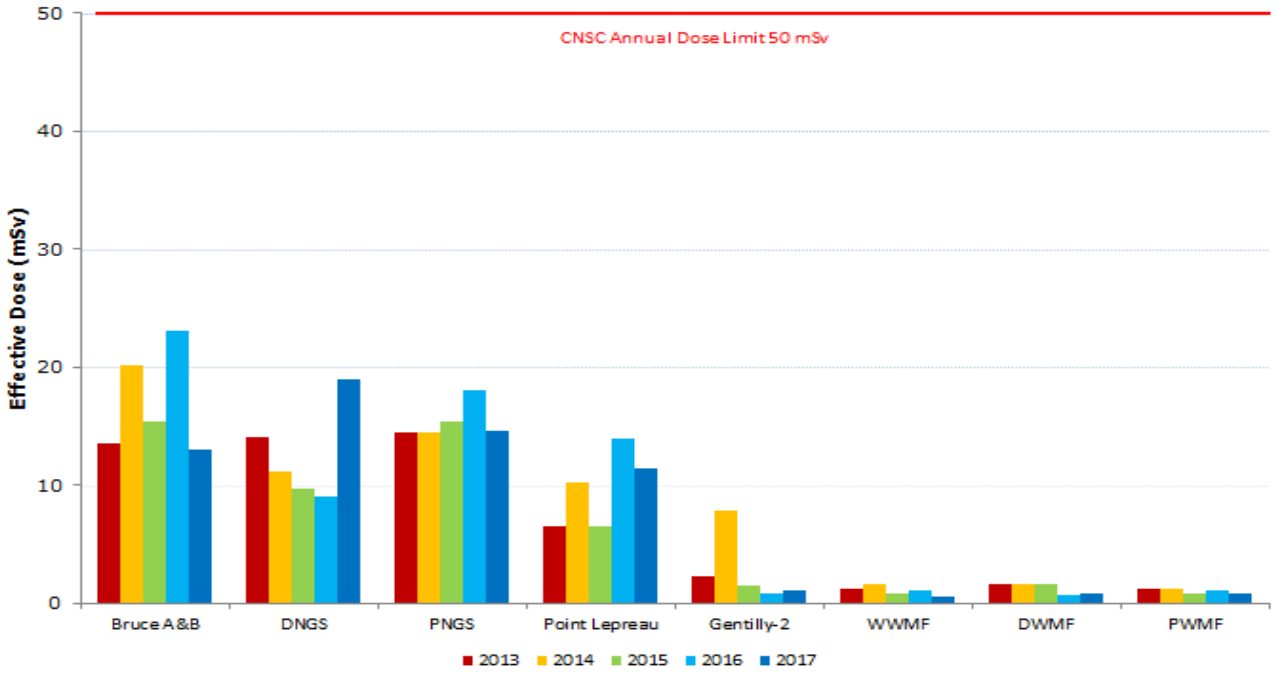
Trend of Annual Dose to the Public from NPGSs



Radiological doses to the public were well below regulatory limits

General Regulatory Findings

Trend of Annual Maximum Doses to Workers at NPGS



Radiological doses to workers at the NPGSs did not exceed regulatory limits

General Regulatory Findings

Notable Technical Developments (1/4)

- Collective licensee R&D related to nuclear safety, including
  - Support for re-categorization of existing Category-3 CANDU Safety Issues (CSIs) to Category 2 (i.e., lower significance)
- Improvements in safety analysis
  - Specific work to re-categorize Category 3 CSIs related to large-break loss-of-coolant accidents
  - Development of Severe Accident Software Simulator for multi-units
  - OPG submitted results of pilot whole-site PSA for Pickering
- Improvements to radio interoperability systems

General Regulatory Findings

Notable Technical Developments (2/4)

- Ongoing Fuel Channel Life Management activities to confirm fitness for service of pressure tubes
- Continuous improvement in NPP maintenance backlogs and deferrals
- Staged implementation of new requirements for fitness for duty
  - REGDOC-2.2.4 , *Fitness for Duty, Volume I: Managing Worker Fatigue*
  - REGDOC-2.2.4, *Fitness for Duty, Volume II: Managing Alcohol and Drug Use*
- Extensive activities related to public information and disclosure and Indigenous relations

General Regulatory Findings
Notable Technical Developments (3/4)

- Highlights of follow-up to Fukushima Daiichi accident
  - Originally 36 Fukushima Action Items opened for NPPs
  - All were closed by Dec 2015
  - 43 Station Specific Action Items (SSAIs) created and tracked to address lessons learned:

NPP	# SSAIs
Darlington	9
Pickering	9
Point Lepreau	11
Bruce	13
Gentilly-2	1

General Regulatory Findings
Notable Technical Developments (4/4)

- 38 SSAIs now closed; 5 remain open
- All SSAIs for Pickering and Gentilly-2 are closed
- 3 SSAIs for Bruce still open; all due by end of 2019
  - Shield tank overpressure protection
  - Containment filtered venting system
  - Coolant makeup
- 1 SSAI for Point Lepreau still open; due by March 2019
  - Evaluation of emergency response to malevolent aircraft impact
- 1 SSAI for Darlington still open; CNSC staff reviewing OPG's closure request
  - Implementation of emergency mitigating equipment and telecommunications projects

Additional safety enhancements ongoing

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PERFORMANCE RESULTS FOR NPPS & WMFS

Darlington Nuclear Generating Station (DNGS)

CNSC Staff effort specific to DNGS (person-days)	2017	Trend
Compliance	3,702	↔
Licensing	1301	↓
Compliance & Licensing	**5003**	↔

Compliance and licensing effort based on facility risk

DNGS

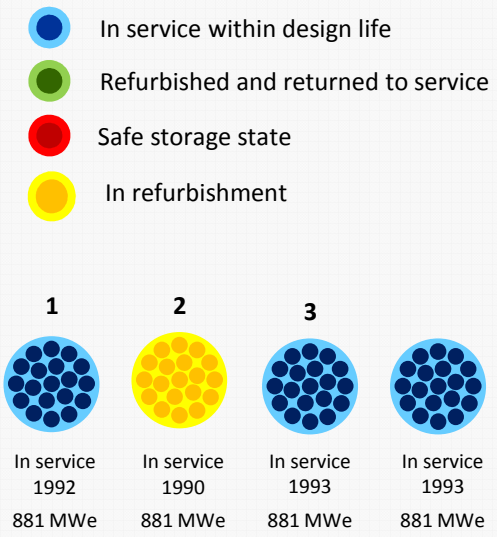
Introduction

Station status

- Units 1,3, 4 – Operational
- Unit 2 shutdown in October 2016 for refurbishment

Operating licence

- Licence renewal hearing held in 2015
- Licence was renewed in 2016
- Licence period: January 2016 to November 2025
- Darlington Waste Management Facility (DWMF) is operated under a separate licence



DNGS
Introduction

- Refurbishment of Unit 2 started on October 2016
- CNSC compliance verification activities verify compliance with Integrated Implementation Plan (IIP) commitments, which is on schedule
- IIP includes station improvement opportunities identified in 2012 during environmental assessment for refurbishment project
  - shield tank over-pressure modifications in all four units – complete for all operating units
  - containment filtered venting system - complete
  - emergency power generator 3 - complete
  - powerhouse steam venting system – complete for all operating units

Results for DNGS
Summary of Safety Assessment for 2017

Safety and Control Area	Rating
Management System	SA
Human Performance Management	SA
Operating Performance	FS
Safety Analysis	FS
Physical Design	SA
Fitness for Service	SA
Radiation Protection	SA ↓
Conventional Health and Safety	FS ↑
Environmental Protection	SA
Emergency Management and Fire Protection	SA
Waste Management	FS
Security	SA
Safeguards and Non-Proliferation	SA
Packaging and Transport	SA
Overall Rating	**FS**

Results for DNGS
Regulatory Compliance Highlights (1/2)

- Outage management performance continued to be strong during planned and forced outages
- Continued to improve safety analysis
  - updated fire hazard analysis (FHA) and fire safe shutdown analysis (FSSA)
  - updated probabilistic safety assessment (PSA)
  - Revised implementation plan for REGDOC-2.4.1, *Deterministic Safety Analysis*
- Met reliability targets of special safety systems for all units
- Preventive maintenance deferrals and backlogs for corrective and deficient maintenance were better than industry averages and stable or trending down

Results for DNGS
Regulatory Compliance Highlights (2/2)

- Implemented real-time automatic data transfer system to provide plant information to CNSC in case of nuclear emergency
- OPG implemented version 1 of REGDOC-2.10.1 *Nuclear emergency preparedness and response* (2014)
- OPG continued to effectively characterize, minimize, and manage waste

Results for DNGS
Regulatory Focus (1/2)

- Continued CNSC monitoring and compliance verification for refurbishment to ensure safety is maintained
  - Unit 2 refurbishment and return to service planned for February 2020
- Increased oversight in Radiation Protection (SCA) as a result of findings related to
  - Hazard posting and contamination control
  - Review and verification of radiological survey results
  - Shipment of four electrical motors (Event Initial Report)

Results for DNGS
Regulatory Focus (2/2)

Enhanced Oversight of Alpha Monitoring and Control for the Refurbishment Project

- Reactive Inspection
- Increased Field Surveillance
- Increased Communication with OPG on alpha monitoring and control initiatives
- Request Pursuant to Subsection 12(2) of the General Nuclear Safety and Control Regulations

Pickering Nuclear Generating Station (PNGS)

CNSC Staff effort specific to PNGS (person-days)	2017	Trend
Compliance	4,497	↔
Licensing	2399	↑
Compliance & Licensing	**6896**	↑

Compliance and licensing effort based on facility risk

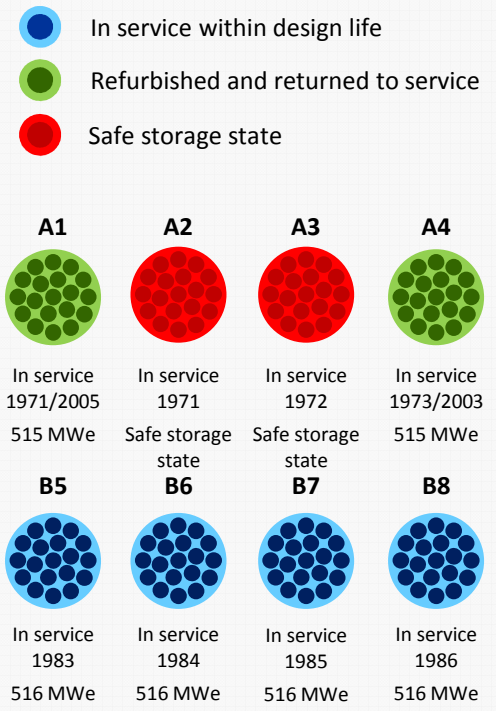
PNGS
Introduction

Station status

- Units 1, 4, and 5 to 8 - operational
- Units 2 and 3 - safe storage

Operating licence

- Licence renewal hearing held in 2018: Part 1 in April 2018 and Part 2 in June 2018
- NPP licence renewed by the Commission in 2018
- Licence period: Sept 1, 2018 to Aug 31, 2028
- Pickering Waste Management Facility (PWMF) is operated under a separate licence, issued by the Commission in April 2018



PNGS
Introduction

- OPG conducted PSR and developed IIP to support continued safe operation
- Commission authorized OPG to operate Units 5 – 8 up to 295,000 equivalent full power hours, in the renewed operating licence
- OPG indicated intent to cease commercial operations on December 31, 2024

Results for PNGS

Summary of Safety Assessment for 2017

Safety and Control Area	Rating
Management System	SA
Human Performance Management	SA
Operating Performance	FS
Safety Analysis	FS
Physical Design	SA
Fitness for Service	SA
Radiation Protection	SA
Conventional Health and Safety	FS
Environmental Protection	SA
Emergency Management and Fire Protection	SA
Waste Management	FS
Security	SA
Safeguards and Non-Proliferation	SA
Packaging and Transport	SA
Overall Rating	**FS**

Results for PNGS
Regulatory Compliance Highlights (1/3)

- No Event Initial Reports (EIRs) for PNGS
- Continued to enhance PSA
  - Enhanced PSA for Pickering Units 5 – 8
  - Preparing enhanced PSA for Units 1, 4 by end of 2018
  - Implementing REGDOC-2.4.2, *Probabilistic Safety Assessment for Nuclear Power Plants*, by 2020
  - OPG submitted whole-site PSA pilot project for Pickering

Results for PNGS

Regulatory Compliance Highlights (2/3)

- Continued to improve deterministic safety analysis
  - Updated Fire Hazard Analysis and Fire Safe Shutdown Analysis
  - Updated implementation plan for REGDOC-2.4.1, *Deterministic Safety Analysis*
- Completed design improvements related to risk improvement plan
  - Modified emergency mitigating equipment (EME)
  - Installed passive autocatalytic recombiners (for hydrogen), tie-downs for EME to resist high winds, and flood barriers
- Met reliability targets of special safety systems for all units

Results for PNGS
Regulatory Compliance Highlights (3/3)

- Life cycle management plans for major components meet requirements
- Implemented real-time automatic data transfer system to provide plant information to CNSC in case of nuclear emergency

Results for PNGS
Regulatory Focus

- CNSC staff monitoring long-term corrective action to address findings related to seismic design basis
- Preventive maintenance deferrals and backlogs for corrective and deficient maintenance were above industry average
  - However, they were trending down and functions of safety systems were maintained
- Exercise Unified Control tested emergency preparedness during a severe accident
  - CNSC inspection identified both compliant and non-compliant findings (e.g., awareness, adherence to procedures)
  - CNSC staff monitoring OPG's corrective action

Point Lepreau Nuclear Generating Station

CNSC Staff effort specific to PLNGS (person-days)	2017	Trend
Compliance	2,517	↓
Licensing	1119	↑
Compliance & Licensing	**3636**	↑

Compliance and licensing effort based on facility risk

Point Lepreau
Introduction

Station status

- Operational

Operating licence

- NPP licence includes the Solid Radioactive Waste Management Facility (SRWMF)
- Licence renewal hearing held in 2017: Part 1 in Jan 2017 and Part 2 in May 2017
- Licence was renewed by the Commission in June 2017
- Licence period:
  July 1, 2017 to June 30, 2022

In service within design life

Refurbished and returned to service

Safe storage state

In service
1983/2012
660 MWe

Point Lepreau
Introduction

- No EIRs for Point Lepreau between Jan 2017 and June 2018
- NB Power started PSR to support next licence period (anticipated 2022-2032)
  - NB Power submitted high-level project execution plan
  - CNSC staff reviewing PSR basis document
  - Safety factor reports to be submitted in 2018 and early 2019
- In preparation for "Synergy Challenge 2018" emergency exercise, CNSC reviewed NB Power submissions on
  - sharing plant data information during emergencies
  - design of the new Off-site Emergency Operations Center

Results for Point Lepreau

Summary of Safety Assessment for 2017

Safety and Control Area	Rating
Management System	SA
Human Performance Management	SA
Operating Performance	SA
Safety Analysis	FS
Physical Design	SA
Fitness for Service	SA
Radiation Protection	SA
Conventional Health and Safety	FS
Environmental Protection	SA
Emergency Management and Fire Protection	SA
Waste Management	SA
Security	SA
Safeguards and Non-Proliferation	SA
Packaging and Transport	SA
Overall Rating	**SA**

Results for Point Lepreau
Regulatory Compliance Highlights (1/3)

- CNSC staff inspected simulator-based initial certification examinations for shift supervisors and written certification examinations
  - Staff found that examinations met requirements
  - NB Power addressing one minor non-compliance related to simulator modelling capabilities
- NB Power continued to improve safety analysis
  - CNSC staff's review of the 2016 safety report update confirmed that it met requirements (included new sections on PSA, fire hazards, severe accident management guidelines)
  - Updated Fire Hazard Analyses and Fire Safe Shutdown Analyses in 2017
  - CNSC staff satisfied with implementation of REGDOC-2.4.1, *Deterministic Safety Analysis*

Results for Point Lepreau

Regulatory Compliance Highlights (2/3)

- NB Power revised operating procedures for abnormal plant conditions
- Comprehensive fire protection program
  - CNSC staff findings corroborated by third party reviews
- Met reliability targets of special safety systems
- NB Power completed long-term actions to address findings related to system health monitoring

Results for Point Lepreau

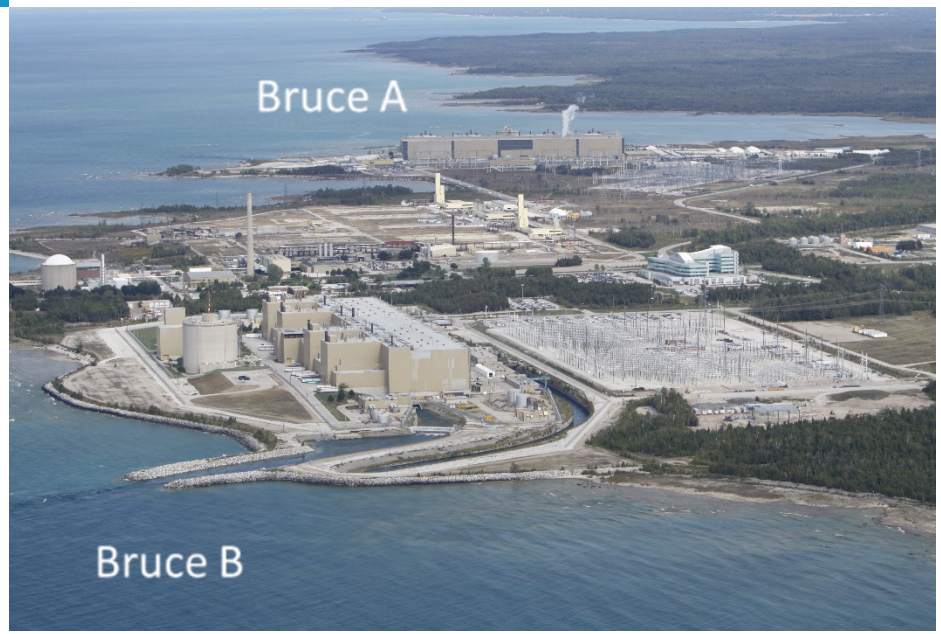
Regulatory Compliance Highlights (3/3)

- Preventive maintenance deferrals and backlogs for corrective and deficient maintenance were better than industry averages and stable or trending down
- Effective radiation protection program
  - Doses to workers were below regulatory limits and ALs
  - No contamination control ALs were exceeded
- Conventional health and safety work practices and conditions contributed to high degree of personnel safety

Results for Point Lepreau
Regulatory Focus

- CNSC staff continued to monitor procedural adequacy and adherence
  - By 2018, issues were addressed satisfactorily
- Corrective action plan for the chemistry process documentation, following an inspection on Chemistry Control in September 2017
- NB Power implementing data transfer to CNSC during emergencies

Bruce A and Bruce B Nuclear Generating Stations



CNSC Staff effort specific to BNGS (person-days)	2017	Trend
Compliance	4871	↔
Licensing	1472	↓
Compliance & Licensing	**6343**	↔

Compliance and licensing effort based on facility risk

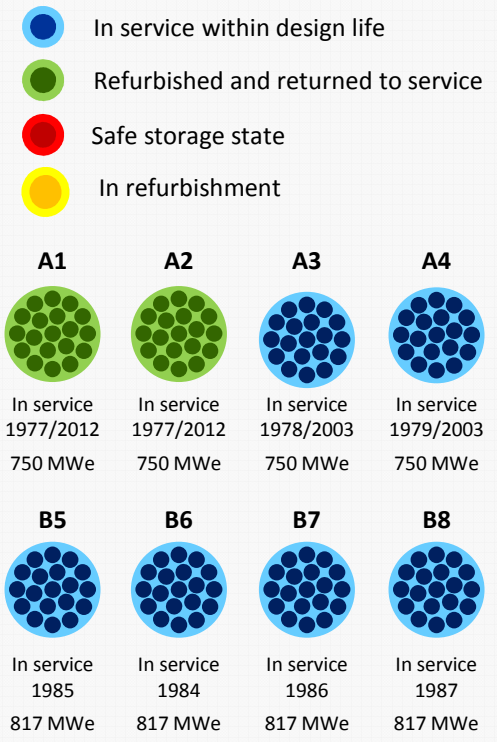
Bruce A and B
Introduction

Station status

- Bruce A, Units 1 to 4 - operational
- Bruce B, Units 5 to 8 – operational

Operating licence

- Includes Central Maintenance and Laundry Facility
- Bruce Power hearing for licence renewal was held in March and May 2018
  - to accommodate update of licensing basis before major component replacement outage for Bruce NGS Units 3 to 8 (planned to begin in 2020 with Unit 6)



Bruce A and B
Introduction

- NPP licence renewed by the Commission in 2018
- Licence period: October 1, 2018 to September 30, 2028
- Bruce Power conducted PSR in support of licence renewal and major component replacement outage
  - Safety factor reports, global assessment report, and IIP prepared for Bruce A and B
  - CNSC staff satisfied with IIP progress

Results for Bruce A and B

Summary of Safety Assessment for 2017

Safety and Control Area	Rating Bruce A	Rating Bruce B
Management System	SA	SA
Human Performance Management	SA	SA
Operating Performance	FS	FS
Safety Analysis	FS	FS
Physical Design	SA	SA
Fitness for Service	SA	SA
Radiation Protection	FS	FS
Conventional Health and Safety	FS	SA
Environmental Protection	SA	SA
Emergency Management and Fire Protection	SA	SA
Waste Management	FS	FS
Security	SA	SA
Safeguards and Non-Proliferation	SA	SA
Packaging and Transport	SA	SA
Overall Rating	**FS**	**SA**

Results for Bruce A and B

Regulatory Compliance Highlights (1/3)

Continued to improve safety analysis

- Updated Fire Hazard Analyses and Fire Safe Shutdown Analyses
- Continued implementation of REGDOC-2.4.1, *Deterministic Safety Analysis*
- To support implementation, Bruce Power submitted the technical basis and analysis results for common mode events at Bruce A
- CNSC staff are reviewing Bruce Power's incorporation of the results for both Bruce A and B in the respective safety reports
- Implementing REGDOC-2.4.2, *Probabilistic Safety Assessment for Nuclear Power Plants*, by 2019
- CNSC staff reviewed Bruce Power's submission on PSA methodologies and computer codes and found it acceptable

Results for Bruce A and B

Regulatory Compliance Highlights (2/3)

- Special safety systems for all units met their reliability targets in 2017 with one exception: emergency cooling injection for Units 1 and 3
  - Bruce Power reset valve opening speeds (they were faster than analyzed) to match safety analysis
  - CNSC staff were satisfied with the corrective actions and with reliability program at Bruce A and B
- Improved chemistry control by enhancing condensate extraction system
- Preventive maintenance deferrals and corrective maintenance backlog were better than industry averages and trending down for Bruce A and B
- Radiation protection improvements
  - Dose monitoring and control and work planning, which contributed to improving trend in collective dose
  - Significant decrease in personal contamination events in 2017 (to well below industry standard)

Results for Bruce A and B

Regulatory Compliance Highlights (3/3)

- Bruce Power made numerous investments in security-related facilities and equipment in 2017
- Bruce Power developed emergency data system with back-up power and off-site data redundancy

Results for Bruce A and B
Regulatory Focus

- Exceedances of hours-of-work limits for certified staff
- Fitness for service of pressure tubes prior to their replacement during major component replacement
- Bruce Power's program You Can Count On Me, which re-emphasizes the need to work safely
- Bruce Power's Indigenous engagement program, including Fisheries Act Authorization application
- Execution of the IIP

Réunion de la Commission, le 8 novembre 2018
CMD 18-M39.B

Installations de Gentilly-2

Effort du personnel de la CCSN à Gentilly 2 (personne-jour)	2017	Tendance
Activités de conformité	245	↓
Activités d'autorisation	48	↓
Conformité et autorisation	**293**	↓

Les efforts pour les activités de conformité et d'autorisation sont basés sur le risque aux installations

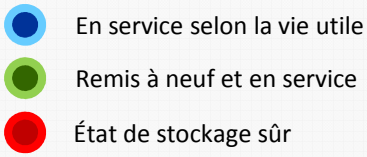
Gentilly-2
Introduction

État de la centrale

- Transition du stockage sûr en piscine vers le stockage sûr à sec

Permis d'exploitation

- Audience sur la demande de permis de déclassement et la gestion des déchets tenue en mai 2016
- Permis de déclassement d'un réacteur de puissance délivré par la commission en juin 2016
- Période d'autorisation : du 1er juillet 2016 au 30 juin 2026



En service 1983

État de stockage sûr déc. 2014

Réunion de la Commission, le 8 novembre 2018
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Résultats de Gentilly-2

Sommaire de l'évaluation de la sûreté de 2017

Domaine de sûreté et de réglementation	Cote
Système de gestion	SA
Gestion de la performance humaine	SA
Conduite de l'exploitation	SA
Analyse de la sûreté	SA
Conception matérielle	SA
Aptitude fonctionnelle	SA
Radioprotection	SA
Santé et sécurité classiques	SA
Protection de l'environnement	SA
Gestion des urgences et protection-incendie	SA
Gestion des déchets	SA
Sécurité	SA
Garanties et non-prolifération	SA
Emballage et transport	SA
Côte globale	**SA**

Résultats de Gentilly-2

Faits saillants de la conformité réglementaire (1/2)

- Poursuite de l'adaptation de la formation du personnel afin de tenir compte de la transition vers le stockage sûr
  - Hydro-Québec révise la formation associée à divers postes et met en œuvre le REGDOC-2.2.2, *La formation du personnel*
- Ajustement par Hydro-Québec de ses programmes d'inspections périodiques et de gestion du vieillissement afin de tenir compte de l'évolution du site, tout en continuant de respecter les exigences réglementaires
- Dose maximale au travailleur atteignant seulement 3,2 % des limites réglementaires

Résultats de Gentilly-2

Faits saillants de la conformité réglementaire (2/2)

- Hydro-Québec a modifié son système de gestion de l'environnement afin de se conformer au REGDOC-2.9.1, *Principes, évaluations environnementales et mesures de protection de l'environnement*
  - le personnel de la CCSN examine les modifications aux programmes
- Hydro-Québec a procédé au retrait de la brigade incendie industrielle sur le site

Résultats de Gentilly-2
Enjeux de réglementation (1/1)

- Le personnel de la CCSN a inspecté la gestion des documents et a relevé des constatations de faible importance associées au dépôt de documents semi-actifs
- Le personnel de la CCSN a inspecté la sécurité et a recommandé des améliorations
  - Hydro-Québec a évalué la dernière recommandation en 2018

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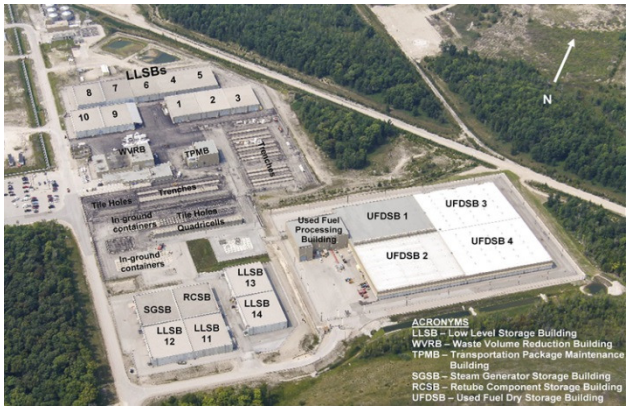
Darlington Waste Management Facility (DWMF)
Pickering Waste Management Facility (PWMF)
Western Waste Management Facility (WWMF)

DWMF

PWMF



WWMF
(on Bruce site)

DWMF, PWMF and WWMF
Effort and Trends over the Last 4 Years

CNSC staff effort specific to individual WMF Facility (person-days)	DWMF 2017	Trend	PWMF 2017	Trend	WWMF 2017	Trend
Compliance	161	↑	94	↓	227	↑
Licensing	75	↑	209	↑	258	↑
Total Compliance & Licensing	**236**	**↑**	**303**	**↑**	**485**	**↑**

Compliance and licensing effort based on facility risk

DWMF, PWMF and WWMF
Introduction

- Waste Facility Operating Licences
  - DWMF: Valid from March 2013 to April 2023
  - PWMF: Valid from April 2018 to August 2028
  - WWMF: Valid from June 2017 to May 2027
- The licences authorize the construction of additional storage, processing, and/or sorting buildings at each site
  - DWMF: two additional Dry Storage Container (DSC) storage buildings
  - PWMF: three additional DSC storage buildings and one DSC processing building
  - WWMF: four additional DSC storage buildings, 11 additional low and intermediate-level waste storage buildings, 270 additional in- ground containers, 30 in-ground containers for heat exchangers, one large object processing building, and one waste sorting building

Results for DWMF, PWMF and WWMF

Summary of Safety Assessment for 2017

Safety and Control Area	Rating DWMF	Rating PMWF	Rating WWMF
Management System	SA	SA	SA
Human Performance Management	SA	SA	SA
Operating Performance	FS	FS	FS
Safety Analysis	FS	FS	FS
Physical Design	SA	SA	SA
Fitness for Service	SA	SA	SA
Radiation Protection	SA	SA	SA
Conventional Health and Safety	FS	FS	FS
Environmental Protection	SA	SA	SA
Emergency Management and Fire Protection	SA	SA	SA
Waste Management	SA	SA	SA
Security	SA	SA ↓	SA ↓
Safeguards and Non-Proliferation	SA	SA	SA
Packaging and Transport	SA	SA	SA
Overall Rating	**SA**	**SA**	**SA**

Results for DWMF, PWMF and WWMF
Regulatory Compliance Highlights (1/2)

- Maximum worker doses at WMFs were only small fractions of regulatory limit
  - Maximum dose at DWMF was 1.6% of limit
  - Maximum dose at PWMF was 1.8% of limit
  - Maximum dose at WWMF was 1.2% of limit
- No lost-time injuries at any of the WMFs in 2017
- OPG operated DWMF, PWMF, and WWMF in 2017 in accordance with their operating policies, principles and operational safety requirements
- Tritium releases at PWMF were below the derived release limits and decreasing

Results for DWMF, PWMF and WWMF
Regulatory Compliance Highlights (2/2)

- CNSC staff reviewed and were satisfied with the updated safety reports for the DWMF and the WWMF
- OPG revised the radiation protection action levels for DWMF, PWMF, and WWMF
  - CNSC staff confirmed that the revised action levels more suitably reflect appropriate control within each radiation protection program
- OPG updated the environmental risk assessments for the WWMF in 2016 and the Pickering Site in 2018
  - CNSC staff concluded that they were consistent with the regulatory requirements
- 13 low safety significance reportable events in total
  - CNSC staff were satisfied with OPG's corrective measures for all events
  - All events closed

Results for DWMF, PWMF and WWMF

Regulatory Focus

- During a CNSC inspection in 2017 at the DWMF, CNSC staff found that OPG discontinued the incoming inspection for new dry storage containers (DSCs) prior to use, but failed to follow the change management process and update internal documentation
  - Interface between OPG and its contractors at DWMF did not meet requirements
  - As a result, OPG implemented a change management committee
  - OPG committed to applying the corrective actions at all three WMFs
  - CNSC staff monitoring the implementation of corrective actions

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CLOSING REMARKS

Closing remarks
Consultation on 2017 NPGS Report

- Notice of Meeting and participant funding posted on February 10, 2017
- Two applicants received $11,920 to participate at this meeting
  - Gordon Dalzell
  - Canadian Environmental Law Association
- Interventions received from the funded participants and four other intervenors
  - Canadian Nuclear Workers' Council
  - Power Workers' Union
  - SOS Great Lakes
  - Sandy Greer

CNSC staff responses to interventions summarized in supplemental CMD 18-M39.A

Closing remarks
Next Steps

- Revise the NPGS ROR
  - Fix identified errors and omissions
  - Address comments from intervenors
  - Address comments raised at Commission meeting
  - Edit and translate
- Prepare for publication (March 2019)
- Continue to fulfill ongoing Commission requests for updates
- Follow up unresolved findings from 2017 to ensure continued safe performance at NPPs and WMFs
- Continue commitment to CNSC's Compliance Verification Program

Closing remarks

Final Conclusions

- Doses to workers and public were below regulatory limits
- Operations at NPPs and WMFs were conducted safely
- All SCAs rated either Satisfactory or Fully Satisfactory
- Issues identified during compliance verification activities and events were either addressed or are being addressed
- Licensees conducting R&D, implementing new requirements, and conducting other activities to improve safety
- Effective CNSC compliance program

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