

A photograph of the Bruce A nuclear power plant, featuring large industrial buildings and cooling towers, situated behind a rocky shoreline and a body of water.

# Radiation Protection Challenges Returning Bruce A - Units 1 & 2 to Service

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*Innovation at work*

# Refurbishment by Numbers

- 7 years for the project
- 8 years U1 and U2 laid up
- 8 unit operating site
- 25% of Ontario's power from Bruce Site
- 6300 Mega Watt output – Worlds Largest Site
- 2658 person rem for project



# Bruce Power

- 8 Unit PHWR site
  - Bruce A Units 1-4
  - Bruce B Units 5-8
- Bruce Power operating May 2001
  - Bruce A was laid up
  - Commenced Restart activities on U3 and U4

# Units 1 and 2 Restart -Overview

- Restart project contracted out
- Independent of operating units
- Established 'shadow organization' including RP
- Little oversight of activities

# Restart RP Organization

- Self protection model
- RP group direct support to high risk activities
- ALARA Section
- Radiological waste
- Dosimetry location

# Restart RP Organization

- Established own procedures/processes
- Introduced new PPE
- Introduced new instruments
- Established own RP qualification structure
- Established own CNSC liaison/interaction protocols and policies



# Alpha Radiation Event

- December 2009
  - Significant alpha contamination
  - All work stopped
  - Extent of Condition
  - Recovery plan
  - RP Reorganized – new staff/management
  - Corporate oversight established

# Governance and Oversight

- Governance Procedure Issued
  - Framework for Restart RP
  - Articulated required controls
  - Identified operating differences
  - Established RP first steps towards integration and commissioning
- CNSC reporting (metrics, alpha) through Corporate



# Integration to Operations

## Portable RP Instruments

- Many items not supported/used by BP
- Procedures required for
  - Calibration
  - Maintenance
  - Training
  - Field use
- Transition plan developed

# Integration to Operations

## PPE

- Own laundry contract
  - Integrate plastic suits back into BP
- Different PPE used
  - Withdrawn from service
  - Reassessment of suitability of PPE
- Managed transition from Restart 'approved' PPE to BP PPE

# Integration to Operations Resources and Structure

- Summer 2011 Restart RP organization transferred to Bruce A RPM
  - Staff to 4 unit operation
  - Transition plan for RP
  - Rezoning of Units from construction islands to operating plants
  - Removal of Restart specific qualifications
  - Bruce Power procedures
  - Restructuring RP Management roles and responsibilities



# RP Demobilization

- Removal of construction equipment
  - New organization established
    - DEMOB
    - Accountable to Corporate RP
    - Oversight and governance established
  - Equipment cleared for transport only
    - Stored off site (Energy Solutions)
    - Full clearance surveys to be conducted

# RP Lessons/Key Points

- Maintain oversight and governance
- Ensure good RP standards are maintained
- Establish RP model that not only supports the project but is set up to aid transition to operations
- Ensure RP staff are SQEP
  - Refurbishment work is different to Operations