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**Presentation from
Ontario Power Generation**

**Présentation d'
Ontario Power Generation**

In the Matter of the

À l'égard de

Status Report on Power Reactors

Rapport d'étape sur les centrales nucléaires

**Update on risk of alpha exposures during
the refurbishment activities at the
Darlington Nuclear Generating Station**

**Mise à jour sur le risque d'exposition au
rayonnement alpha durant les activités de
réfection à la centrale nucléaire de Darlington**

Commission Meeting

Réunion de la Commission

August 22, 2018

Le 22 août 2018

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ONE
TEAM
ONE
GOAL...

Darlington Unit 2: Alpha Uptake

August 22, 2018

Purpose

Update to the Commission on risk of potential alpha exposures during Darlington Refurbishment activities.

R001

Safety
Quality
Schedule
Cost



Content: Follow-up and Improvements



1. Event and Response
2. Protection of Workers
3. Radioactive Waste Processing Building (RWPB)
Specific Improvements
4. Current Work in the Reactor Vault
5. Reactor Vault Radiation Protection Enhancements
6. Keeping CNSC Staff Informed
7. Summary



1.0 Event and response



On February 5, 2018, two workers were performing Dry Storage Overpack (DSO) lidding in the Retube Waste Processing Building (RWPB):

- OPG failed to conservatively increase the ALPHA classification in the RWPB's hardware stations from ALPHA 1 to ALPHA 3 to reflect the potential hazards associated with the current series. This, in conjunction with below standard worker practices, resulted in a internal contamination event.
- Due to the ALPHA 1 classification at the start of the shift, workers were not required to be wearing respiratory protection
- OPG took immediate measures to correct
- OPG reflected on why this happened, including our lack of promptness on reporting alpha issues to CNSC
- CNSC sent us 12(2) to voice a concern & ask for details about our proposed Radiation Personal protection equipment (RPPE) strategies.



OPG responded to the CNSC 12(2) request as committed.

SAFETY • QUALITY • SCHEDULE • COST

2.0 Protection of workers: RP Program Improvements



OPG has a sound Radiation Protection Program, consistent with industry best practices.

To Protect workers OPG has taken strong measures to prevent reoccurrence including:

- Additional RP staff to provide direct supervisory oversight in the field;
- Enhancements to the current RPC training program; and
- Detailed reviews of upcoming work series to identify specific radiological risks, including alpha hazards.



3.0 RWPB Specific Improvements



RWPB is not in use for U2, but will be for U3 refurbishment. The changes we made for U3 are:

- **RP:** All RWPB contamination control areas are **Alpha level 3** by default.
- **Oversight:** Improved integration between execution and RP organizations at the shop floor and management levels.
- **Monitoring:** Cameras in the hardware station to allow remote monitoring through teledosimetry.
- **Hardware modifications:** Waste tooling system modifications in progress to reduce source term and improve engineered contamination control barriers.



4.0 Current work in the Reactor Vault

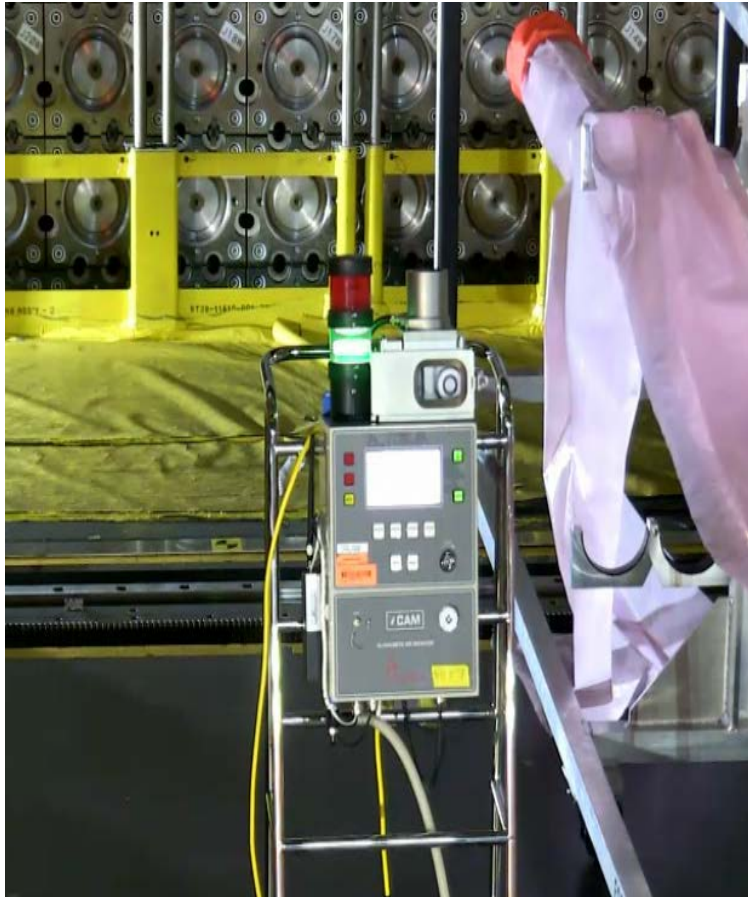


The Unit 2 reactor vault is alpha level III, due to the presence of alpha contamination.

- In the interest of maintaining dose ALARA, new Calandria Tube installation work is being performed without respiratory protection, under the following conditions:
 - Alpha contamination levels are kept below 100 DPM/100cm²;
 - Workers are not making direct contact with sources of contamination;
 - Continuous RPC presence is maintained at the worksite; and
 - No destructive or abrasive work is being performed in the area



5.0 Reactor Vault RP Enhancements



- **Vault “Deep clean” and survey campaign to reduce contamination levels**
- **Respirators worn during the first 10 CT installs to validate expected alpha levels.**
- **Frequent contamination surveys to maintain a current, detailed, hazard characterization.**
- **Active and passive airborne monitoring capability.**
- **Installation of additional physical barriers around the respirator free work area.**
- **Conservative action levels for alpha contamination in areas where respiratory protection is not required.**



6.0 Keeping CNSC staff informed



OPG is sensitive to the need for prompt reporting of events of concern, therefore:

- REG DOC 3.1.1. Clause 18:.... *If in doubt, report.*
- Internal procedure to be changed and OPG will ensure prompt reporting in accordance with RegDoc 3.1.1. and CNSC expectations

OPG keeps CNSC staff informed routinely:

- Meet with CNSC weekly by video conference
- Meet in a monthly face to face with CNSC Staff and Director to discuss progress and highlight issues
- Provide updates on all commitments made and the status of each
- Maintain the protocol to keep CNSC informed of progress of closing issues relevant to Return to Service of U2



7.0 Summary



- Radiological alpha safety measures implemented:
 - Increased RPC awareness through Alignment training and mentorship
 - Increased supervisory oversight in the field
 - Increased contamination survey frequencies and written response protocol for changing conditions.
 - Action levels established for areas where workers do not require respiratory protection.
- Rigorous requirements for contamination control in the respirator free area of vault:
 - Surface contamination maintained less than 100 DPM/100cm² α
 - No airborne contamination indications, even if below 1 DAC.
 - Personal air samplers on all workers plus multiple monitors in place

