Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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# Event Initial Report

**Ontario Power Generation Inc.**

Darlington Refurbishment – Retube Waste Processing Building – Internal Contamination Event

Commission Meeting

**March 15, 2018**

# Rapport initial d'événement

**Ontario Power Generation Inc.**

Réfection de Darlington – Bâtiment de traitement des déchets de retubage – Événement de contamination interne

Réunion de la Commission

**Le 15 mars 2018**

Canada

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# EVENT INITIAL REPORT (EIR)

e-Doc 5473049

| EIR: Darlington Refurbishment – Retube Waste Processing Building – Internal contamination event | |
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| **Prepared by:** Directorate of Power Reactor Regulation – Darlington Regulatory Program Division | |
| **Licensee:** Ontario Power Generation | **Location:** Darlington |
| **Date Event was Discovered:** 2018-02-06 | **Have Regulatory Reporting Requirements been met?** Yes ☒ No ☐<br>**Proactive Disclosure:**<br>Licensee: Yes ☐ No ☒ CNSC: Yes ☐ No ☒ |

## Overview

**Reporting Criteria:** 15) Issues, events, occurrences that the Directors-General (DGs) or their designates judge to have potential for repercussions outside the CNSC and for which the DGs or their designates believe the Commission should be informed.

**Description:** At approximately 0230h on February 6, contamination was detected on two Canatom workers. The two workers were performing lidding operations (bolting) on Darlington Storage Over-packs (DSO) in the Waste Tooling System (WTS) hardware station of the Retube Waste Processing Building (RWPB).

Whole body monitoring revealed facial contamination on one of the workers. As a result, the on-shift Health Physicist directed follow-up monitoring activities including whole body counts, nasal swabs, mouth rinse and bioassay sampling. The follow-up monitoring activities indicated the presence of internal contamination for the two Canatom workers performing the lidding operations.

A crane operator was also in the area. However no contamination was detected on this individual

Processing at the RWPB had recently changed from end-fitting processing to pressure tube processing and this DSO contained volume reduced pressure tube material. At the time of the event, the WTS area was designated as an Alpha Level I contamination control area. The workers were wearing protective coveralls, double gloves and booties. No respiratory protection was being used and there was no continuous air monitoring set up in the immediate area.

**Cause(s):**

At the time of the event, alpha classification of the area was not representative of the alpha hazards. Workers were potentially exposed to contamination hazards (primarily alpha) in the absence of suitable protective measures such as respiratory protection and air monitoring. OPG is currently conducting an investigation of the event to identify cause(s).

## Impact of the Event

**On People:**

How many workers have been (or may be) affected? Three Nuclear Energy Workers (NEW) (the two Canatom workers and a crane operator)

How many members of the public have been (or may be) affected by the event? None

How were they affected?

Potential internal radiation exposure from alpha, committed dose in the process of being determined

**On the Environment:** No effects

**Other Implications:** None

## Licensee Actions

**Taken or in Progress:**

- Work area (WTS hardware station) was immediately reclassified from Alpha I to Alpha III, with respiratory protection mandatory.
    - Alpha I classification is used when the relative abundance of loose alpha contamination compared with beta-gamma contamination is minimal. In the unlikely case of an inhalation uptake, the internal dose from alpha emitters is not likely to exceed 10% of the total internal dose.
    - Alpha III classification is used when the relative abundance of loose alpha contamination compared with beta-gamma contamination is elevated. In the unlikely case of an inhalation uptake, the internal dose from alpha emitters is likely to exceed 90% of the total internal dose.
- Enhanced Radiation Personnel Protective Equipment (RPPE) requirements were immediately implemented for

hardware operations (bolting) associated with placing the lids on the DSO.

- Affected workers were removed from radioactive work.
- Follow-up surveys were performed, first in the immediate vicinity of the work area, and subsequently in the entire building. The work area was confirmed to be an Alpha III zone. The entire waste tooling station was also subsequently classified as an Alpha III area which was confirmed by follow-up surveys. No contamination was detected outside the contamination control areas.
- Follow up interviews were conducted with workers and Radiation Protection Coordinators (RPC) to understand the event.
- Analysis of collected fecal bioassay samples has been completed and a dose assessment report is being prepared
- An Apparent Cause Evaluation (ACE) is in progress.
- At CNSC staff request, Event D-2018-04257 was submitted pursuant to REGDOC 3.1.1 clause 18 on February 21, 2018.
- The pressure tube removal series was completed March 3 and no further events of internal contamination have been reported for the RWPB.
- At 0730h on March 8, OPG stood down all work in the refurbishment related contamination control areas (Unit 2 and RWPB) and was conducting a radiological assessment of the alpha zoning to ensure appropriate protective measures were in place.

**Planned:**

- -Following its investigation of the event, OPG will develop a Corrective Action Plan (CAP)

CNSC Actions

**Taken or in Progress:**

- On Thursday February 8, a CNSC site inspector became aware of the contamination event at the RWPB while monitoring a daily OPG meeting. Shortly afterwards, OPG Responsible Health Physicist (RHP) informed site staff in person at the Darlington site office. OPG confirmed that the WTS hardware station was classified as an Alpha III area immediately following the event.
- On February 9, CNSC staff requested OPG to provide a description of the event, immediate actions taken by OPG to protect workers, the results of follow-up surveys, planned dose assessment activities and a retrospective assessment to determine if other workers may have received uptakes.
- On February 13, CNSC staff met with OPG to discuss the CNSC information request regarding the event. Based on the meeting discussions, CNSC staff requested OPG to report the event pursuant to REGDOC-3.1.1, clause 18.
- CNSC staff developed a field inspection guide and conducted a field walkdown on February 22 to independently confirm that Alpha III classification was in effect and that the required work controls and protective measures were in place.
- On February 23, OPG responded to the CNSC information request. CNSC staff are currently reviewing this information.
- CNSC staff are currently conducting a reactive Type II inspection of the OPG Radioactive Protection Program in the Retube Waste Processing Building (RWPB) as follow up to the REGDOC-3.1.1 reportable event D-2018-04257, Internal Uptake from Personnel Contamination Event. Regulatory actions to include enforcement are under review by CNSC staff.
- CNSC staff are actively monitoring the current radiological stand down and the return to operational status of the contamination control areas. This stand down will be reviewed as part of the above CNSC inspection.

**Planned:**

**Additional reporting to the Commission Members anticipated:**

☒ Yes

☐ No

If Yes, provide method of reporting: CNSC staff will provide the results of both the CNSC Type II inspection and the licensee's assessment of committed dose at a future Commission meeting as part of the NPP status report.

| Name and Title | | Signature |
|---|---|---|
| **Gerry Frappier**<br><br>Directorate of Power Reactor Regulation | Director General | Date: March 8/18 |