

# S-99 Preliminary Report

Bruce Power Inc., P.O. Box 1540, Tiverton, Ontario N0G 2T0

**INSTRUCTIONS FOR COMPLETION** (check form is current version available electronically from [here](#))

**Initiating Line:** i) Complete the applicable check boxes (by right clicking on box and selecting “*properties*”) and enter required details by over-typing the form fields (including entering “not applicable” if this is appropriate). Please note that the CNSC expectation is for information required by clauses S-99 6.3.3.1.3(a) to (e) below to be directly entered in full so that the preliminary report is self-contained without having to reference the applicable SCR for details. For example, a statement containing a phrase such as “...details as per SCR...” would be unacceptable to the CNSC.

ii) Review and email the completed preliminary report form (**with the email subject line containing the words “S-99 Preliminary Report”**) to the applicable facility Duty Managers mailbox as follows:  
**For Bruce A facility, email completed preliminary report to [BNPD BA S-99 Prelim Reports](#)**  
**For Bruce B facility, email completed preliminary report to [BNPD BB S-99 Prelim Reports](#)**

**Duty Manager:** i) Review and follow-up as required.  
 ii) Distribute completed preliminary report to CNSC via email as follows:  
**to:** [ken.lafreniere@cncs-ccsn.gc.ca](mailto:ken.lafreniere@cncs-ccsn.gc.ca); [john.vanberlo@cncs-ccsn.gc.ca](mailto:john.vanberlo@cncs-ccsn.gc.ca);  
**cc:** [alexis.gallant@cncs-ccsn.gc.ca](mailto:alexis.gallant@cncs-ccsn.gc.ca); [julie.poirier@cncs-ccsn.gc.ca](mailto:julie.poirier@cncs-ccsn.gc.ca);  
[BNPD DLA](#) plus any other internal distribution as required

Report Reference ID	Most Applicable S-99 Clause 6.3.1
B-2010-28184910	6.3.1(3)

**Title**

Alpha Contamination in Previously Identified Unit 1 Long Lived Airborne Particulate

**Date that the event was determined to be reportable under S-99 6.3.1. Preliminary report to be made either “immediately” [S-99 6.3.3.1.2(a)] or “by the end of next business day” [S-99 6.3.3.1.2(b)] \* To be completed by the Duty Manager ONLY.**

\***Reportable Date:** 07 Jan 2010

**State the date, time and circumstances of the discovery of the situation or event. [S-99 6.3.3.1.3(a)]**

Discovery Date: 05Jan10                      Time: 14:00 hrs

Circumstances of the Discovery

Early in the morning of November 26<sup>th</sup> a routine airborne sample indicated long-lived particulate. Procedural adherence and Radiation Exposure Permit controls were reinforced and survey frequency was increased. In the morning of November 28<sup>th</sup> another airborne sample indicated long-lived activity; identified via gamma spectroscopy to be Cobalt-60 and the J-prep work was stopped. The J-prep work areas were tented and ventilated with HEPA systems. Follow-up surveys indicated the presence of alpha contamination after which additional care, control and monitoring was implemented during PPE removal. The alpha was quantified by a third party laboratory and results received December 21<sup>st</sup>. Work in the area had been halted 21 December as part of the Christmas break. Calculations to determine potential impact of the analysis results received on 21 December was undertaken and completed on 5 January 2010. Conservative interpretation of the results indicated the potential that an action level for inhalation of airborne radioactivity from alpha contamination may have been exceeded during Bruce A Unit 1 Vault work.

**State the date and time of the onset, and the duration, of the situation or event, or a best estimate thereof. [S-99 6.3.3.1.3(b)]**

Event Date: 26Nov09                      Time: 14:00 hrs

Duration or Best Estimate Thereof

In the timeframe of November 24<sup>th</sup>-28<sup>th</sup> there is the possibility that workers not directly performing J-prep work but working in the vault area may have been exposed to an airborne alpha hazard.

**Identify the affected nuclear power plant and any associated reactor units, structures, systems, components, functions or personnel affected by the situation or event. [S-99 6.3.3.1.3(c)]**

Bruce NGS A                       Unit(s): 0     1     2     3     4     None

Bruce NGS B  Unit(s): 0  5  6  7  8  None

Affected Structures, Systems, Components, Functions or Personnel

A conservative decision has been made to place affected individuals on removal from further radiation work until additional information regarding potential exposure is obtained. Access to the Unit 1 vault is restricted until clean up is completed.

**Describe the occurrence and consequences of the situation or event, and any actions that the licensee has taken, or proposes to take, with respect to the situation or event. [S-99 6.3.3.1.3(d)]**

The purpose of this is to conservatively report the potential that an action level for inhalation of airborne radioactivity from alpha contamination may have been exceeded during Bruce A Unit 1 Vault work.

Unit 1 J-prep work started November 24<sup>th</sup> using the same engineering controls and plastic suit PPE used during the Unit 2 J-prep campaign. Unit 2 work was completed without any airborne particulate contamination being detected. Early in the morning of November 26<sup>th</sup> a routine airborne sample indicated long-lived particulate. Procedural adherence and Radiation Exposure Permit controls were reinforced and survey frequency was increased. In the morning of November 28<sup>th</sup> another airborne sample indicated long-lived activity; identified via gamma spectroscopy to be Cobalt-60 and the J-prep work was stopped. The J-prep work areas were tented and ventilated with HEPA systems and additional care, control and monitoring was implemented during PPE removal. Follow-up surveys indicated the presence of alpha contamination.

Air samples were sent to a third party vendor to quantify the alpha contamination present. Results were received December 21<sup>st</sup>. Alpha emitters were confirmed to be present at levels which warranted additional follow-up. In the timeframe of November 24<sup>th</sup>-28<sup>th</sup> there is the possibility that workers not directly performing J-prep work but working in the vault area may have been exposed to an airborne alpha hazard.

Whole Body Counting performed to date on most of the potentially exposed individuals indicated six cases of trace amounts of Co-60 or Cs-137 activity at the first screening counts. Subsequent investigative counts did not confirm internal uptakes of these nuclides.

A team has been assembled to determine how many workers are involved and which individuals require additional large volume bioassay alpha dosimetry. Currently Bruce Power does not have this alpha dosimetry capability; arrangements are being made with Atomic Energy of Canada Limited Chalk River facility to perform the analyses as required. Final dose results will be provided as soon as they are available. A root cause investigation into the event is underway to identify the magnitude and cause of this event and to identify actions to prevent a recurrence.

The completion of the J-prep work has been deferred until a later date. Access to the unit 1 vault is currently restricted. Detailed surveys of the vault have been completed and a clean-up plan is being developed.

**Describe any exposure of a person to radiation as a consequence of the situation or event. [S-99 6.3.3.1.3(e)]**

Preliminary review of vault access logs between November 24-28<sup>th</sup> combined with a conservative estimate of maximum alpha airborne hazard levels suggests that an Action Level may have been exceeded before the affected areas were tented and additional controls put in place.