



October 24, 2008  
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U.S. Nuclear Regulatory Commission  
Director, Office of Nuclear Material  
Safety and Safeguards  
Attn: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

**Subject: Thirty-day Follow-up Report to September 25, 2008 Incident Reported Under 10 CFR 70 Appendix A (NRC Report Number 44521); AREVA NP Inc. Richland Facility; License No. SNM-1227; Docket No. 70-1257**

On September 25, 2008, the AREVA NP Inc. Richland facility reported that a wire-mesh spark arrestor, one of two Items Relied on for Safety (IROFS), that provides protection against an intermediate consequence environmental release of blended low enriched uranium (BLEU - material down blended to 5 wt.% U-235 from high enriched uranium) oxides, was missing in the K-3 ventilation system. This IROFS, when correctly installed, provides defense in depth protections against a significant environmental release of BLEU oxide that could result from a fire in the facility's K-3 ventilation system.

In this configuration, a significant environmental release of BLEU oxides could not be demonstrated to be unlikely due to the protections provided by IROFS as required by 10CFR70.61 (c) (3) and (e).

The initial report (NRC Report Number 44521) was made because the plant condition met the 10 CFR 70 Appendix A, 24 hour reporting criteria (b)(1) and (2).

This 30-day follow-up report is being submitted in accordance with 10 CFR 70.50(c)(1).

#### Caller Identification

This condition was reported to the NRC Operations Center by C.D. Manning, Manager, Nuclear Criticality Safety (NCS) on September 25, 2008 at 2003 EDST.

#### Date, Time, and Exact Location of Incident

The reportable condition was determined to exist on September 25, 2008 at approximately 0720 hours local time. This condition involved a missing wire-mesh spark arrestor that appears to have never been installed in the facility K-3 ventilation system. A facility drawing showed a wire-mesh spark arrestor installed between the primary and final HEPA filter. This wire-mesh

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spark arrestor was also credited as within an IROFS boundary in the facility ISA. The K-3 ventilation system provides services to some of the Ceramic area of the UO2 building (primarily Room 100).

#### Incident Description

On September 25, 2008 at approximately 0720 PDST, the Engineer responsible for the HVAC system informed a member of the EHS&L / ISA Staff that a follow-up inspection of the K-3 ventilation system revealed that one of the two wire-mesh spark arrestors, part of IROFS 4530, for the K-3 ventilation system had never been installed in a 68-inch duct between the final and primary HEPA filters even though such a screen was shown on the facility drawings. The ISA summary and ISA Data-base indicated that this spark arrestor was present between the primary and final HEPA filters on this process system.

#### Safety Significance of the Incident

The safety significance of this condition is low. The missing wire-mesh spark arrestor is one of the components of IROFS 4530, which is one of two IROFS associated with an intermediate consequence environmental release as defined in 10CFR 70.61. The initiating event for this accident sequence includes failure of IROFS 4502 (control of combustible material and ignition sources) and a resulting fire that destroys a primary HEPA filter. This initiating event is listed as a 100-year event in the facility ISA. IROFS 4530 is expected to prevent a significant radiological release if the initiating event, a small fire that destroys a primary filter, occurs thereby challenging the integrity of the final bank of HEPA filters. The components of IROFS 4530 include HEPA filters which meet the resistance to heated air and spot flame resistance requirements of sections FC-5150 and 5160 respectively of ASME AG-1, and wire-mesh spark arrestors between the primary and final HEPA filters.

ASME AG-1 section FC-5150 requires filters meeting this design criterion to be exposed to air heated to 700 +/- 50°F for not less than 5 minutes without catching fire. Section FC-5160 requires filters meeting this design criterion to have the frame, filter media, filter pack, and sealing materials exposed to a 2.5 inch blue flame (1750 +/- 50 degrees F) for not less than 5 minutes without sustaining combustion.

In addition, if these IROFS are not available to perform their function, the enabling condition needed for an intermediate environmental consequence event is more than a total of 116 kg of uranium be present in the primary and final HEPA filters involved in the postulated fire. The uranium is conservatively assumed to be high activity blended low-enriched uranium (BLEU), i.e. high enriched uranium blended down to 5% 235U or less. The likelihood of all the uranium on the filters being BLEU material is very low.

Since 1995, primary HEPA filters in the K-3 system have been replaced over 1,600 times. Of these, only 6 have contained more than 2 kg of U. The highest contained about 2.7 kg as compared to the conservative ISA analysis assuming a loading of 116 kg.

### Incident Response Actions

A number of actions were taken in direct response to this incident, as follows:

- The differential pressures of the HEPA filters in the K-3 system were verified to be in acceptable ranges, indicating normal loading.
- A fire-watch was instituted to further limit potential ignition sources and to assure minimal amounts of combustible materials are used near, or in areas serviced by, the K-3 system.
- Wire-mesh to be used in fabricating a spark arrestor was ordered for expedited installation.
- The condition was entered into AREVA's corrective action program.
- AREVA commissioned an Apparent Cause Analysis (ACA) to evaluate the cause of this plant condition.
- A wire-mesh spark arrestor was fabricated and then installed October 4, 2008.

### Interim and Near-Term Corrective Actions

Interim and/or near-term corrective actions that have been taken or are in progress include:

- The appropriate plant personnel were made aware of this condition and were re-trained to the expectations associated with existing requirements.
- Conduct retraining on the need for timely reporting of deficiencies with IROFS.
- Conduct retraining on IROFS 4530 and where it is required to be available and reliable.
- The appropriate safety documentation associated with this condition were updated and the requirements clarified. The changed documents include:
  - The Nuclear Criticality Safety Analysis (CSA) for the HVAC System, E04-NCSA-960 Version 7.0.
  - The Nuclear Criticality Safety Specification (CSS) for the HVAC System, E04-NCSS-960 Version 5.0.
  - The facility Radiation Hazards Analysis, E14-03-001 "Radiological and Toxicological Consequences from Uranium" Version 3.0.

Incident Cause

The Apparent Cause Analysis (ACA) investigation process indicates a single Root Cause, the lack of adequate verification of a specific facility characteristic.

Corrective Actions to Prevent Recurrence

Corrective actions to be included in the ACA are:

- Clarify in engineering procedures the performance criteria for verification of plant equipment that becomes designated as an IROFS.
- Establish and complete appropriate training to the procedural guidance.

The corrective actions recommended by the ACA team listed above are expected to be completed by December 15, 2008.

AREVA management continues to evaluate additional actions to address potential generic implications of this plant condition.

If you have questions about this incident or AREVA NP's associated response, please contact me on 509-375-8409.

Very truly yours,



R. E. Link, Manager  
Environmental, Health, Safety, & Licensing

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