

December 5, 2013
REL: 13:049



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 November 8, 2013 Incident Reported Under 10 CFR 70.50 (b)(2) (NRC Event No. 49524); AREVA NP Inc. Richland Facility; License No. SNM-1227; Docket No. 70-1257

On November 8, 2013 AREVA NP reported to the NRC, under 10 CFR 70.50(b)(2), that earlier that day an Air Balance technician at the Richland fuel fabrication facility had discovered that the primary and final HEPA filters in the K-32A exhaust system servicing the ammonium diuranate (ADU) area showed signs of deterioration. As a courtesy, the incident report was also forwarded to the Washington State Department of Health, Radioactive Air Emissions Section.

This 30-day follow-up report is being submitted in accordance with 10 CFR 70.50(c)(2).

Caller Identification

The condition was reported to the NRC Operations Center by Robert E. Link, Manager, Environmental, Health, Safety and Licensing (EHS&L) at approximately 18:10 hours (EST) on November 8, 2013 (Event No. 49524).

Incident Description

On the morning of 11/08/2013 Air Balance was requested to inspect the K-32A HEPA filters based on increased stack sample results. The Air Balance technician had also noted that the differential pressure across the primary filter, as indicated on the installed Magnehelic gauge, was notably less than the previous day. This also could be indicative of reduced HEPA performance.

After switching exhaust flow to a separate parallel set of HEPA filters, the Air Balance technician inspected the HEPAs and noticed that both the primary and final filter appeared physically compromised. Appropriate internal notifications were made to the Operations, Safety, and Engineering organizations.

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At 12:35 a Health and Safety Technician (HST) smeared the downstream side of the filter housing as required per procedure when final HEPA filters are being replaced. The results met clean area limits, indicating negligible deposits of unfiltered contaminants.

At 13:45 new primary and final HEPA filters were installed. The final HEPA was satisfactorily DOS tested, verifying its > 99.95% filtration performance.

Safety Significance

The stack concentrations for the two immediately prior 24-hour periods were initially calculated to be $1.2\text{E-}11$ $\mu\text{Ci/ml}$ alpha (U), slightly above HRR's lowest action level of $1.0\text{E-}11$. After benefit of radon decay, the results fell to $7.8\text{E-}13$ and $8.7\text{E-}13$, respectively. The final results were projected to concentrations of approximately $3.1\text{E-}17$ and $3.5\text{E-}17$ $\mu\text{Ci/ml}$ at the boundary of the restricted area (orders of magnitude less than the 10 CFR 20 Appendix B table 2 equivalent concentration for air based upon ICRP 66 and 68 models for Type S uranium compounds). The total calculated activity of low enriched uranium released was approximately $5\text{E-}2$ μCi for the period from 11/05/13 to 11/12/13. Thus the potential dose to a member of the public and the effect on the environment were essentially negligible. The risk to onsite personnel was also negligible. No external conditions affected the event.

Simultaneous failure of both primary and final K-32A HEPAs was analyzed in the Integrated Safety Analysis and was found not to constitute either an intermediate or high consequent event.

Incident Response Actions

The air effluent flow was diverted to a set of parallel HEPA filters. The compromised HEPA filters were replaced on November 8, 2013.

The associated corrective action report, initiated on November 8, 2013, requires an Apparent Cause Analysis (ACA).

Interim and Near Term Corrective Actions

To reduce the probability of recurrence, the following actions are being pursued as conditions of a formal Justification of Continued Operations Under Compensatory Safety Measures:

The frequency of HEPA replacement for K-32A was increased to:

- Every 2 weeks for the primary HEPA and
- For the final HEPA, every 3 months or after the primary HEPA has been changed out four times due to drops in differential pressure (read daily).

These frequencies are conservative relative to historic changeout frequencies for these filters and the replacements will occur even in the absence of visual signs of

deterioration. The changes in frequency are subject to modification depending upon other measures taken and subsequent experience.

Increased monitoring will be maintained by Uranium Conversion and Recovery (UCAR) Operations on the S-184 scrubber. This scrubber is located upstream of the K-32A HEPAs and reduces the chemical constituents reaching the K-32A HEPAs. Data on flow rate, liquid level, processes operating, etc. will be recorded each shift.

Monitoring for the K-32A filters will be maintained by Air Balance and UCAR Operations. This oversight will record differential pressure readings and filter changeouts on a shift basis. The increased frequency of monitoring the differential pressure is subject to modification depending upon other measures taken and subsequent experience.

Incident Cause

The HEPA filters servicing the K-32A exhaust system are subject to a chemical atmosphere, including ammonia and hydrogen fluoride. This fact serves as the historic basis for enhanced surveillance applied to these filters and, based on preliminary investigation, is believed to have contributed to this incident.

Corrective Actions:

In addition to the actions mentioned above, Engineering will evaluate potential modifications to the K-32A off-gas treatment system to reduce challenges to the HEPA filters. This may include improving the operation of the scrubber or replacing it with a more efficient unit

If you have any questions or require additional information, please call me 509-375-8409.

Sincerely,



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

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