

November 18, 2011
REL:11:049



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 October 20, 2011 Incident Reported Under 10 CFR 70 Appendix A Criterion (a)(5) (NRC Event No. 47360); AREVA NP Inc. Richland Facility; License No. SNM-1227; Docket No. 70-1257

On October 20, 2011, the AREVA NP Inc. Richland facility reported that during discussions with an NRC inspector, the AREVA Richland Nuclear Criticality Safety Manager concluded that a previous determination made on Friday, 7/22/2011 which declared an IROFS (a criticality drain on a HEPA filter housing) to be only in a degraded state was erroneous. Subsequent evaluation of the IROFS in System 186 (Supercritical CO₂ Uranium Extraction Recovery Process) indicated that the IROFS was in fact in a failed state in that a pre filter in the HEPA housing was sitting on the drain where it could possibly have prevented it from performing the required safety function. The original discovery was made during a routine PM of the system (a management measure prescribed to this IROFS).

The initial report (NRC Event No.47360) was made because the plant condition potentially met the one hour reporting criterion in 10 CFR 70 Appendix A (a)(5) in that the drain was one of two declared IROFS preventing a criticality accident sequence and had been in a potentially failed state for more than 8 hours.

However, after careful consideration of the guidance contained in FCSS ISG-12 and NUREG 1520 Rev. 1, AREVA has concluded that this condition did not meet the reporting requirements set forth in 10CFR 70 Appendix A and formally retracts the previously made report.

The reasons AREVA has concluded this report can be retracted are primarily based on pg. 3 of ISG-12 which states in part:

"All situations where IROFS have failed or degraded are reportable under Paragraphs (a)(4), (a)(5), or (b)(2), except for the following:

1. The failed or degraded IROFS are not needed to meet the performance requirements. Thus the ISA summary should indicate that the remaining IROFS are sufficient to meet the performance requirements."

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AREVA NP INC.

2101 Horn Rapids Road, Richland, WA 99354
Tel.: 509 375 8100 www.aveva.com

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The AREVA ISA Summary for this process lists three accident sequences (11.3, 11.4, and 11.5) where the subject criticality drain, IROFS 6914, is credited. In each of these sequences the initiating event is an unidentified process upset that could produce solution concentrations of 285 g U/l or greater.

Process testing in a pilot facility could not produce solution concentrations this high. Likewise, the ISA Team reviewing the production process could not identify any process upset conditions that could produce solution concentrations this high and conservatively assigned the occurrence frequency of this hypothetical process upset as one time in ten years. The index number associated with this initiating event frequency is a -1 and conservatively addresses the potential unforeseen upsets which are possible with chemical process scale-ups, from pilot facilities to full scale production processes.

IROFS 6913, a passive engineered IROFS that is the other credited IROFS in these three accident sequences, is assigned a probability of failure on demand (PFOD) of -3. Summing these index numbers results in a controlled event index (CEI) = -4.

AREVA's NRC-approved ISA Summary defines accident sequences as Highly Unlikely if IROFS are in place such that a $CEI \leq -4$ is established. Therefore the performance criterion 70.61 (b), that high consequence events must be highly unlikely, is met.

The other performance criterion applicable to criticality accident sequences is 70.61 (d) which requires that the "risk of criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical, including the use of an approved margin of subcriticality." The NCSA for this system, NCSA-186, demonstrates that even after failure of IROFS 6914, k_{eff} remains within the approved subcritical margins. Therefore this criterion is also met.

Even though a 30-day follow up report is now technically not required, AREVA is attaching additional information pertaining to this plant condition to assist the NRC in its evaluation.

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

/mah

cc: U.S. Nuclear Regulatory Commission, Region II
Attn: M. D. Sykes, Chief
Fuel Facility Branch 3
Marquis One Tower, 23 T85
245 Peachtree Center Avenue N.E., Suite 1200
Atlanta, GA 30303-8931

ATTACHMENT

Caller Identification

This condition was reported to the NRC Operations Center by Robert E. Link, AREVA EHS&L Manager, on October 20, 2011 at 10:03 PDT (509-375-8409).

Date, Time, and Exact Location of Incident

The condition, previously believed to be reportable, was determined on October 20, 2011 at approximately 0910 hours local time. This condition involved a criticality drain (C186DR14) on HEPA filter box K31-17-46, which is located on the second floor (mezzanine) in Room 131 of the UO2 building.

Incident Description

On 07/22/11 at approximately 0830 hours, NCS was notified that, while performing PM C100P001, an instrument technician discovered the criticality drain (C186DR14) on the HEPA filter box K31-17-46 did not pass the PM requirement. Upon discovery, NCS and maintenance were contacted and the cause of the failed criticality drain (C186DR14) PM was investigated.

The NCS engineer initially determined that the drain capacity was degraded but not failed because, based on the understood information, the criticality drain port had some path for solution (the needed 1-2 liters per minute) to flow out of the housing. However, the follow-up evaluation on October 20, 2011, presented additional information which contradicted the IROFS initial determination of being in a degraded state, and revealed that the IROFS was in fact in a failed state.

Safety Significance of the Incident

The safety significance of this event is low. The HEPA filter is on the exhaust of a process enclosure where incinerator ash is processed for uranium recovery. Both the ash from processing and any mist from a process vessel leak would contain only small amounts of U. Potential accident sequences dealing with catastrophic fluid release were extensively evaluated in the facility ISA and no associated nuclear criticality consequences were identified. Furthermore, the ISA team was unable to identify any mechanism whereby a critical concentration, approximately 285 g U/liter, of solution could be created inside the process enclosure venting via the subject HEPA filter and associated housing.

Incident Response Actions

The system was in a safe shutdown while the criticality drain PM was being performed. Upon discovery of this plant condition, appropriate safety organization notifications were made and the system remained in the safe shutdown state until appropriate corrective actions were completed and the safety organization gave permission to restart the system.

Interim and Near-Term Corrective Actions

AREVA installed a permanent grate over the criticality drain inlet to assure that the drain would remain unobstructed and free flowing regardless of the prefilter location. This action was completed on July 22, 2011 and has been present since that time.

Incident Cause

The cause of this plant condition is the inappropriate design placement of the criticality drain (C186DR14). AREVA is still evaluating the cause of this inadequate design and failure to identify the unsuitable placement during the design review process and equipment installation. The results of this evaluation and associated preventative actions will be documented in the AREVA corrective action system.

bc: D. M. Grandemange
R. J. Land
L. J. Maas
C. D. Manning
S. C. Powers
L. G. Stephens
P. J. Veysey