AREVA

October 29, 2012
REL:12:045

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 2, 2012 Condition Reported Under 10 CFR 70 Appendix A Criterion (b)(1) (NRC Event No. 48366); AREVA NP Inc. Richland Facility; License No. SNM-1227; Docket No. 70-1257**

On October 2, 2012, AREVA NP Inc. reported to the NRC (NRC Event Report 48366) under 10 CFR 70 Appendix A criterion (b) (1) that within the approved existing ISA certain loss of containment accident sequences resulting in ocular exposure to uranyl nitrate (UN) solution had been wrongly determined to be 10 CFR 70 low consequence events. While this report was made based on the treatment of UN sprays to the eye, AREVA indicated that this scenario could be applied to other hazardous chemicals falling under the scope of the ISA treatment. Specifically two other types of chemical exposures documented in the existing facility ISA as 10 CFR 70 low consequence events needed to also be re-evaluated with respect to the 10 CFR 70 consequence of concern thresholds. These types of chemical exposures are dermal contact and inhalation of liquid aerosols.

The attachment to this letter provides the required 30-day follow-up report required by 10 CFR 70 Appendix A (b) and contains the information required by 10 CFR 70.50(c)(2)

If you have questions about this condition 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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Attachment to REL:12:045

Caller Identification

This condition was reported to the NRC Operations Center by Robert E. Link, AREVA EHS&L Manager, on October 2, 2012 at 2056 EDT.

Date, Time, and Exact Location of Incident

The reportable condition was determined to exist on October 2, 2012 at approximately 0730 hours local time. This condition involved the Richland facility ISA.

Incident Description

On Friday 9/28/2012 while completing ISA meetings on a new facility, several accident sequences were identified that had the potential for creating ocular exposures that could lead to intermediate consequences in accordance with 10 CFR70. The sequences involved UN solutions. IROFS were identified for the new facility.

As a follow-up to this activity, on 10/02/2012, plant safety personnel reviewed existing ISA accident sequences for other process systems where UN solution is present and at 0730 reported to the EHS&L Manager that similar loss of containment accident sequences within the approved existing ISA in other process systems had been previously determined to be 10 CFR 70 low consequence events.

This report was made under 10CFR 70 Appendix A criterion (b) (1) which states "Any event or condition that results in the facility being in a state that was not analyzed, was improperly analyzed, or is different from that analyzed in the Integrated Safety Analysis, and which results in failure to meet the performance requirements of 10 CFR 70.61."

10 CFR 70.61 (4) (e) states in part "...Each engineered or administrative control or control system necessary to comply with paragraphs (b), (c), or (d) of this section shall be designated as an item relied on for safety." The existing personal protective equipment (PPE) and safety protocols to mitigate against the consequences of exposure to toxic chemicals, e.g. using safety showers and eye wash stations, seeking first aid, and as needed obtaining medical treatment, were not at the time of the report designated as items relied on for safety (IROFS).

While this report was made based on the treatment of UN sprays to the eye, this scenario can be applied to other hazardous chemicals falling under the scope of the ISA treatment. Based on information obtained during the ISA activities for this new process, two other types of chemical exposures documented in the existing facility ISA as 10 CFR 70 low consequence events also need to be re-evaluated with respect to the 10 CFR 70 consequences of concern thresholds. These types of chemical exposures are dermal contact and inhalation of liquid aerosols.

Safety Significance of the Incident

This condition is viewed by AREVA as a technical as opposed to a substantive compliance issue in that fuel cycle facilities have been and continue to be run in a safe and efficient manner.

Each process-specific ISA was based on applicable chemical industry standards, which the NRC endorsed as appropriate for accomplishing the hazards analysis required by regulation and supported by guidance.

In addition, AREVA protects its employees and members of the public by preventing chemical releases, using PPE to minimize exposures to employees when releases occur, and mitigating of dermal and ocular exposures if / when they do occur.

Incident Response Actions

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

- Appropriate internal and regulatory notifications were made. State agencies were not notified nor was a press release made.
- A condition report was initiated into the AREVA Corrective Action Program (CR 2012-7435).
- Safety personnel reconfirmed the adequacy of existing PPE protocols required by existing procedures used to prevent chemical exposure in all areas of the HRR site.
- Certain PPE and safety protocols to mitigate the consequences of significant exposures to toxic chemicals have been designated as IROFS for the UNB.

Interim and Near-Term Corrective Actions

While the facility continues to operate safely under the constraints of existing operating procedures, AREVA is taking the following interim and near term actions:

- EHS&L management continues to dialogue with industry peers via NEI to establish a working group and to develop quantitative standards, if feasible, for dermal and ocular exposures to hazardous chemicals.
- A revision to E-15-03-004, "Preparation & Review of RHAs and ChHAs", was drafted and is currently routing for approval. This revision will assure the consequences, as applicable, of dermal, ocular, and inhaled aerosol exposures are appropriately considered. The revision will also assure that the PPE and / or engineered barriers necessary to minimize the potential for such exposures, and the actions needed to mitigate the consequences should these exposures occur will be clearly established. When needed to meet Performance Criteria in 70.61, the required PPE, engineered barriers and mitigative actions will be designated as IROFS.

Sequence of events

The issue of dermal and ocular exposures and whether licensees are required to establish quantitative standards for workers has been a point of discussion between the NRC and the fuel cycle licensees for a number of years, including letter exchanges dating back to September 8, 2008, culminating in a public meeting on November 12, 2009. OSHA was present at the public meeting and specifically stated that no known quantitative industry standards for dermal and ocular exposures existed, and that the methods OSHA used to address these issues relied primarily upon prevention of exposures, and when that failed, mitigation efforts. At that meeting industry requested guidance on how to deal with dermal (and ocular) exposures, and a clarification / definition of the terms "serious long lasting health effects" versus "mild transient health effects."

A letter issued by Mr. Mike Tschiltz, Acting Director, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, dated August 16, 2010 officially states that licensees must establish quantitative standards for chemical exposures for workers and members of the public. Furthermore, the body of the letter does not specifically mention dermal or ocular exposure and declines to provide the requested clarification / definition of "serious long lasting health effects" versus "mild transient health effects." The letter requests that follow-up questions be directed to NRC staff. Subsequent AREVA inquiries to NRC staff did not result in any useable clarifications.

Additionally, none of the sample problems in NUREG/CR-6410, "Nuclear Fuel Cycle Facility Accident Analysis Handbook," or guidance in NUREG 1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," address the issue of dermal and/or ocular exposures to hazardous chemicals. As recently as 10/17/2012 AREVA contacted NRC staff regarding this topic to see if any additional guidance on how to meet NRC expectations was available. NRC staff indicated that no additional guidance had been developed.

In the absence of any referenceable quantitative standards (e.g. OSHA, NRC, or other regulatory standards or chemical industry standards) for dermal and ocular exposures, AREVA's EHS&L organization established a team of facility experts and a contract physician to provide input to establish a qualitative standard for dermal and ocular exposures to UN solution with up to 8% excess nitric acid for the new UNB facility. As this group deliberated they determined that:

- Unmitigated aerosols sprayed directly to the face, if directly inhaled, could threaten the life of an individual.
- an unmitigated ocular exposure could result in irreversible or other serious, long lasting health effects to a worker, namely loss of vision.
- unmitigated dermal exposure would not have 10 CFR 70.61consequences of concern.

Based on these qualitative consequence determinations and the team's understanding of the terms "could threaten the life of a worker" and "serious long lasting health effects," the process hazards analysis (PHA) for the UN storage building listed ocular exposure as a 10 CFR70 intermediate consequence, and direct inhalation of aerosols sprayed directly into the face as a 10 CFR70 high consequence event. Because these conclusions differed from the conclusions reached in other facility PHA's using similar UN solutions, EHS&L determined that the reporting

criteria in 10 CFR70 Appendix A criterion (b) (1), i.e. "Any event or condition that results in the facility being in a state that was not analyzed, was improperly analyzed, or is different from that analyzed in the Integrated Safety Analysis, and which results in failure to meet the performance requirements of § 70.61," was met and made the required report to the NRC. No other government agencies were notified and a press release was not issued.

It is noted that the existing ISA, now considered deficient, does deal with vapor exposures per the existing regulatory guidance. AREVA's ISA summary also provides a listing of the quantitative standards used to assess the consequences of potential vapor exposures to any of the comingled hazardous materials used in AREVA's 10 CFR 70 regulated processes.

Probable Cause of Incident

This is an industry-wide issue stemming from a lack of clear guidance to industry regarding the issue of dermal and ocular exposures and the lack of any referenceable quantitative standards that correlate to 10CFR 70.61 consequences of conern. Additionally, the terms "could threaten the life of a worker" and "serious long lasting health effects" can be interpreted to mean different things and require clarification.

Actions to Prevent Recurrence

Updates to the procedures for performing safety analyses will be made in an attempt to define the terms "could threaten the life of a worker" and "serious long lasting health effects" relative to dermal and ocular exposures.

Updates to the facility ISA (PHAs and ChHAs) and the ISA Summary, as appropriate, will be made as re-evaluations of the previous consequence determinations are completed. Due to the lack of referenceable quantitative standards for dermal and ocular exposures that correlate to 10 CFR 70.61 consequences of concern, qualitative standards will have to be established and used. This effort is expected to take 12 months.

AREVA will continue to work with the Nuclear Energy Institute and other fuel cycle facilities in an effort to establish quantitative standards for dermal and ocular exposures to hazardous chemicals that may exceed 10 CFR 70 consequences of concern thresholds. This effort is expected to take 2-3 years or longer as it may require basic research not now available and may result in further revisions to AREVA's safety documentation.