

March 31, 2011  
REL:11:014



U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Director, Office of Nuclear Material Safety  
and Safeguards  
11555 Rockville Pike  
One White Flint North  
Rockville, MD 20852

Gentlemen:

**Subject: Response to Notice of Violation (70-1257/2011-201)**

References: Letter, P.A. Silva to R. Land; Inspection Report Number 70-1257/2011-201 and Notice of Violation; March 11, 2011

Attached is AREVA NP's (AREVA's) response to the violation described in the referenced letter.

If you have questions or require further information, please contact me at 509-375-8409 or C. D. Manning of my staff at 509-375-8237.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Robert Link'.

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

JE07

cc: Victor McCree  
Regional Administrator  
NRC Region II

Marvin D. Sykes, Branch Chief  
Fuel Facility Inspection Branch 3  
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/mah

**Reply to Notice of Violation**  
**NRC Inspection Report 70-1257 / 2011-201; AREVA NP Inc.**

**Violation** VIO 70-1257/2011-201-01

The violation as stated in the referenced Notice of Violation (NOV) is as follows:

10CFR 70.61(b) states that the risk of each credible high-consequence event must be limited. Engineered controls, administrative controls, or both, shall be applied to the extent needed to reduce the likelihood of occurrence of the event so that, upon implementation of such controls, the event is highly unlikely or its consequences are less severe than those in paragraphs (b)(1)-(4) of this section .

10 CFR 70.61 (e) states, in part, that 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.

Contrary to the above, on and before December 2, 2010, the licensee failed to designate controls as items relied on for safety to limit the risk of a credible high-consequence event. Specifically, the licensee failed to implement items relied on for safety for the ammonia recovery facility stripper column to prevent an inadvertent nuclear criticality, which is a credible high consequence event.

This is a Severity Level IV violation. (VIO 70-1257/2011-201-01)

**Reason for the Violation**

The reason for the violation is that the individuals who participated in the ISA evaluation of the Ammonia Recovery Facility (ARF) failed to identify gradual accumulation of uranium in the ARF Stripper Column and its ancillary equipment as a credible mechanism to create a nuclear criticality hazard. When Tanks 713A and 713B (feed tanks to the ARF facility) were installed, the subject of uranium entering the tanks was thoroughly investigated. Several items relied on for safety (IROFS) were developed to assure that uranium content in the tanks would be controlled and that nuclear criticality safety could be assured. Effluent from the ADU process is treated by ion exchange before being discharged to reduce the uranium concentration below the solubility limit, so normally the uranium in the 713A and 713B tanks would stay in solution and no solids would form. The fact that uranium precipitates slowly when in the super-saturated state was considered during the original ISA as a possible method for forming solid ammonium diuranate (ADU) in the 713A and 713B tanks. The absence of significant uranium solids in the 713A and 713B tanks and presence of filters that were installed downstream of the 713A and 713B tanks was the basis for concluding that uranium solids would not be transferred to and remain in the ARF equipment. Additionally, the ISA Team did not identify any mechanisms whereby the very low U concentrations in the solutions fed to the ARF stripper would result in the formation of significant U-bearing solids.

It is noted that, even though no U-accumulation in ARF was anticipated, there was an established defense-in-depth, namely, a procedural requirement that information based on laboratory analysis of U-content following an acid wash be recorded and transmitted to the NCS group. This defense-in-depth control is what alerted the AREVA NP safety staff to this potential condition.

## Corrective Actions Taken

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

1. The condition was entered into AREVA's corrective action program (CR 2010-8769).
2. AREVA commissioned an Apparent Cause Analysis (ACA) to evaluate the cause of this plant condition. The following corrective actions identified by this ACA, listed in the inspection report as complete are:
  1. Update the ISA/PHA [Process Hazards Analysis] procedure E15-03-005 to include a section/list of lessons learned from oversights and discovered inadequacies in ISAs/PHAs.
  2. Train ISA/PHA team leaders to the revised procedure E15-03-005 that includes lessons learned / oversights from previous ISAs/PHAs.
  3. Review the specific facts associated with this event with personnel directly involved with the ISA process and remind them of the importance of a questioning attitude while performing and implementing safety analyses.
  4. Re-evaluate the other points where SNM is declared sufficiently separated from process streams to be outside of 10CFR 70 subpart H requirements and verify that a sound technical basis is provided for the declaration.
  5. Complete evaluation of additional actions that may be needed to adequately address other potential generic implications of this plant condition (gradual accumulations of uranium-bearing materials in process equipment.)
  6. Complete a detailed extent-of-condition review of the remaining ARF equipment and implement, as needed, additional IROFS and supporting management measures.
  7. Modify Integrated Safety Analysis Program Standard, E15-03-002, to address long-term accumulation of uranium in solid form, due to unidentified mechanisms of accumulation.
  8. Train ISA/PHA team leaders to the updated ISA Program Standard E15-03-002.
  9. Evaluate re-routing Tanks 713A/713B cleanout residue to the miscellaneous uranium recovery system (MURS) rather than sending it downstream to the ARF.
  10. Evaluate improving the effectiveness of Tanks 713A/713B cleanout by using a "Sandpiper" pump to more completely drain the tanks.
  11. Evaluate improved in-line monitoring before tanks 713A/713B (i.e. reducing the set point to something less than 100ppm). This action has potential for decreasing the rate of deposition of uranium in the ARF.

## Actions to Avoid Future Violations

In addition to the actions listed above that have already been taken, the following actions are also expected to prevent a repeat of this condition:

12. Implement the recommendation to improve cleanout effectiveness of Tanks 713A/713B. ECD:12/30/2011.
13. Implement the recommendations from action item 11 above to improve the controls, i.e. revise alarms and interlock set points, on liquid effluent from the ADU line to minimize U losses / duration of process upsets). ECD:5/31/2011

## Date of Full Compliance

AREVA believes that it is in full compliance with the subject regulation.