



May 22, 2008
REL:08:021

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 May 9, 2008 Incident Reported Under 10 CFR 70.50 (NRC Report Number 44197); AREVA NP Inc. Richland Facility; License No. SNM-1227; Docket No. 70-1257

On May 09, 2008, the AREVA NP Inc. Richland facility reported a temporary outage of a portion of the facility Criticality Accident Alarm System (CAAS) when a fuse blew and took two of nine coverage areas offline.

This report was made because the condition met the 24 hour reporting requirements of 10 CFR 70.50 (b) (2).

Caller Identification

This incident was reported to the NRC Operations Center by R.E. Link, Manager, Environmental, Health, Safety & Licensing (EHS&L) on May 9, 2008 at 1126 hours local time.

Date, Time, and Exact Location of Incident

The reportable event occurred May 9, 2008 at 0525 hours local time. The portion of the CAAS that experienced the temporary outage is the area covered by the Nuclear Criticality Detectors (NCDs) located in the Carpenter's Shop and the Specialty Fuels Building. These detectors cover the south and western-most portions of the plant.

Background

The CAAS used at the AREVA Richland facility was originally designed by Battelle Northwest Laboratory and is custom design that is composed of nuclear criticality detectors (NCDs), comparator panels, howler control circuit, audible alarms, power-loss annunciator, a central annunciator and the necessary wiring and controls.

The NCDs are neutron sensitive units which consist of a BF3 tube surrounded by 2.6 inches of polyethylene.

The comparator panels utilize a "two out of N" detectors in the alarm mode shall be required to activate the criticality alarm logic. Typically six detectors are in each comparator panel. The panel provides visual NCS status with an audible annunciation of failure or alarm condition of any detector wired to the cabinet.

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The NCDs are connected to the power supply via a 110 volt three prong amphenol connector (unshielded) and are connected to the alarm annunciator system / comparator panels via a six pin amphenol connector. The cables used have provided decades of reliable service.

Incident Description

On 05/09/2008 at 0525 PDT during a maintenance activity, a fuse in a Nuclear Criticality Detection System cabinet failed open which caused two of the nine Nuclear Criticality Accident Alarm system coverage areas to go offline. The fuse failing open was caused by a short circuit when a wire in the power cable contacted a metal component of the NCD. The wire contacted the metal component because the insulation around the wire had degraded over the decades of use. This is the first incident during the entire history of the plant where the insulation surrounding wires in the power cable had deteriorated and caused this type of problem.

About five minutes after the fuse blew, Security personnel made a plant wide PA announcement to suspend all movement of fissile material. The alarm horns were deactivated using a key switch and manual monitoring of the NCD comparator panels was established at this time and continued until the system was restored to full operation. The individual monitoring the comparator panels manually activates the alarms if a visual indication that two or more NCDs have alarmed is observed.

Safety Significance of the Incident

The safety significance is very low. Accidental nuclear criticality is highly unlikely. The system was only degraded for about 5-minutes before Security personnel made a plant wide announcement to suspend all fissile material movement. NCD coverage for the entire plant was re-established within about 35 minutes. The CAAS is not an IROFS and is not required by the facility ISA.

Incident Response Actions

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

- Security personnel made a plant wide announcement to suspend all fissile material movement.
- Manual monitoring of the NCD comparator panels was established within 10 minutes and continued until the system was restored to full service.
- The NCD panel fuse was replaced within about 40 minutes, restoring NCD coverage to all areas of the plant.
- After a functional test of both banks of the affected NCDs and one additional bank of NCDs using a neutron source, the alarm horns were placed back in automatic mode at 0720 (approximately 55 minutes after the fuse blew). This functional test included a complete stimulus to response test except for the alarm horns which were deactivated during this test.
- Maintenance personnel continued to monitor the system until the system was declared operable and a plant wide PA announcement lifting the suspension of fissile material movement had been made at 0745.

Interim and Near-Term Corrective Actions

- The NCDs located in the Carpenter's shop were replaced.
- The electrical cords and connectors on these detectors were repaired and returned to service.
- NCD cables on 18 of 27 units were inspected during the annual PM that was completed by May 20, 2008.

Incident Cause

The Apparent Cause Analysis (ACA) determined the cause of this incident to be a failure to include a periodic check of electrical chords for degradation in the CAAS preventative maintenance activities. The failure to include this periodic check was determined to be caused by short sightedness on the part of the development of the Preventive Maintenance Procedures (PMs) for the CAAS. This short sightedness might have been prevented if a procedure/checklist had been created to assist PM authors in deciding what types of failure checks should be included when creating a PM.

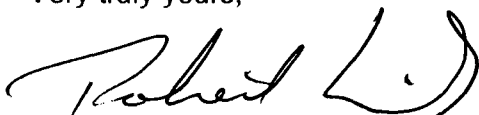
Corrective Actions to Prevent Recurrence

The corrective actions for this incident include:

1. The remaining 9 NCDs will be inspected and replaced if needed. This action is estimated to be complete by June 30, 2008.
2. Revising PM 004551 to require cable replacement with new or appropriately inspected used NCD cables and connectors. Replacement cables and connectors will be inspected for potential degradation. This action is estimated to be complete by June 30, 2008.
3. Creating a guidance procedure / checklist to assist the authors of a PM or instrument repetitive maintenance (IRM) calibration procedure in determining what items should be included in the PM/IRM. This action is estimated to be complete by June 30, 2008.

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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