

January 6, 2009

Mr. Charles Perkins, Site Manager
AREVA NP, Inc.
2101 Horn Rapids Road
Richland, WA 99352-5102

SUBJECT: INSPECTION REPORT NO. 70-1257/2008-203

Dear Mr. Perkins:

The U.S. Nuclear Regulatory Commission (NRC) conducted a routine announced criticality safety inspection at your Richland, Washington, facility from December 8-11, 2008. The purpose of the inspection was to determine whether activities involving licensed materials were conducted safely and in accordance with NRC requirements. An exit meeting was held on December 11, 2008, during which inspection observations and findings were discussed with your staff.

The inspection, which is described in the enclosure, focused on: (1) new and changed nuclear criticality safety (NCS) analyses; (2) NCS-related administrative and operating procedures; (3) NCS inspections, audits and investigations; (4) NCS-related internally reported events; (5) open item review; and (6) observation of ongoing plant operations. The inspection consisted of analytical basis review, selective review of related procedures and records, examinations of relevant NCS-related equipment, interviews with NCS engineers and plant personnel, and facility walkdowns to observe plant conditions and activities related to safety basis assumptions and related NCS controls.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice," a copy of this letter and the enclosure will be available in the public electronic reading room of the NRC's Agency-Wide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html>.

C. Perkins

- 2 -

If you have any questions concerning this report, please contact Dennis Morey, of my staff, at (301) 492-3112.

Sincerely,

/RA/

Patricia A. Silva, Chief
Technical Support Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-1257
License No.: SNM-1227

Enclosure: Inspection Report 70-1257/2008-203

cc w/enclosures: L. J. Maas, AREVA NP
C. D. Manning, AREVA NP
R. E. Link, AREVA NP

cc w/o enclosures: Mr. Gary Robertson, Washington Department of Health

C. Perkins

- 2 -

If you have any questions concerning this report, please contact Dennis Morey, of my staff, at (301) 492-3112.

Sincerely,

/RA/

Patricia A. Silva, Chief
Technical Support Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-1257
License No.: SNM-1227

Enclosure: Inspection Report 70-1257/2008-203

cc w/enclosures: L. J. Maas, AREVA NP
C. D. Manning, AREVA NP
R. E. Link, AREVA NP

cc w/o enclosures: Mr. Gary Robertson, Washington Department of Health

DISTRIBUTION:

TSB r/f AGooden, RII DRich, RII ASheppard, RII
MBaker, FMB

ML083570559

OFFICE	FCSS/TSB		FCSS/TSB		FCSS/TSB	
NAME	DMorey		PJenifer		PSilva	
DATE	12/29/08		12/30/08		1/06/09	

OFFICIAL RECORD COPY

**U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS**

Docket No.: 70-1257

License No.: SNM-1227

Report No.: 70-1257/2008-203

Licensee: AREVA NP, Inc.

Location: Richland, WA

Inspection Dates: December 8-11, 2008

Inspector: Dennis Morey, Criticality Safety Inspector, NRC Headquarters

Approved by: Patricia A. Silva, Chief
Technical Support Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Enclosure

EXECUTIVE SUMMARY

AREVA Nuclear Power, Inc. U.S. Nuclear Regulatory Commission Inspection Report No. 70-1257/2008-203

Introduction

Staff of the U.S. Nuclear Regulatory Commission (NRC) performed a routine and announced nuclear criticality safety (NCS) inspection of the AREVA Nuclear Power Inc. (AREVA NP) facility in Richland, Washington from December 8-11, 2008. The inspection included an on-site review of the licensee's NCS program; NCS analyses; plant operations; NCS inspections, audits and investigations; NCS-related internal events; and open item follow-up. The inspection focused on risk-significant fissile material processing activities in the Dry Conversion Facility (DCF); the Line #2 Ammonium Diuranate (ADU) conversion area; the Uranium Dioxide (UO₂) building pellet, rod, and bundle fabrication areas; the blended low-enriched uranium (BLEU) facility; the BLEU powder storage area; and the Engineering Laboratory Operations (ELO) facility.

Results

- A weakness was identified regarding non-favorable geometry containers in the Engineering Laboratory Operations facility.
- A weakness was identified regarding the posted boundaries of moderation controlled areas.
- No safety concerns were noted regarding NCS-related administrative and operating procedures.
- No safety concerns were noted regarding licensee internal NCS audits.
- No safety concerns were identified during a review of recent licensee internal events.

REPORT DETAILS

1.0 Plant Status

The licensee manufactures light water reactor fuel at its Richland Washington facility. During the inspection the licensee was conducting slightly reduced operations in the dry conversion area due to ongoing plant modifications and was conducting routine powder preparation, pelletizing and bundle fabrication operations. The licensee was also performing waste management operations and other support and maintenance functions during the inspection.

2.0 Nuclear Criticality Safety Program (IP 88015 & 88016)

a. Inspection Scope

The inspector reviewed the licensee NCS program and selected NCS analyses. The inspector evaluated the adequacy of the program and analyses to assure the safety of fissile material operations. The inspector interviewed licensee managers and engineers in the safety and production departments, operations engineers, and selected operators. The inspector reviewed selected NCS-related items relied on for safety (IROFS) to determine that performance requirements have been met for selected accident sequences. During walkdowns, the inspector evaluated the effectiveness of IROFS to assure adequate subcritical margin for normal and credible abnormal conditions. The inspector reviewed selected aspects of the following documents:

- E04-NCSA-120, "UNH Reprocessing," Revision 8, dated May 30, 2008
- E04-NCSA-163, "Industrial Waste Water Treatment Facilities," Revision 11, dated October 9, 2008
- E04-NCSA-185, "Raffinate Treatment Process," Revision 3, dated May 12, 2008
- E04-NCSA-190, "UO₂ Pellet Dissolution," Revision 5, dated July 1, 2008
- E04-NCSA-323, "BLEU Powder Receipt and Download," Revision 7, dated November 20, 2008
- E04-NCSA-335, "BLEU Inner Powder Container Filling, Storage and On-plant Movement," Revision 3, dated September 11, 2008
- E04-NCSA-355, "BLEU Powder Storage," Revision 7, dated May 6, 2008
- E04-NCSA-540, "Bundle Assembly and Storage," Revision 3, dated May 12, 2008
- E04-NCSA-771, "Warehouse #2 (East End)," Revision 7, dated July 1, 2008

b. Observations and Findings

The inspector observed that the licensee had an NCS program which was independent from production and was implemented through written procedures. The inspector also observed that the licensee NCS program reviewed process changes affecting criticality safety.

During walkdowns in the ELO facility, the inspector noted three large plastic garbage bags on a table near the rotary drum vacuum pump and raffinate storage tanks. The bags were being used to package pre-filters and were allowed in the area so long as they were under observation or were laid flat (closed). The inspector had no immediate

safety concern because the bags were observed laying flat. The inspector went over the criticality safety analysis (CSA) for the area and questioned why there were no NCS controls on non-favorable geometry (NFG) containers in ELO as in other areas that processed fissile solutions. Licensee staff opened a Condition Report (2008-6677) to evaluate the concern. The licensee determined that the existing evaluations were adequate but could be clarified. The licensee indicated that clarification of ELO accident sequences in appropriate CSAs was under review. Clarification of analytical conclusions regarding fissile solution accumulations in the ELO facility will be tracked as **Inspection Follow-up Item (IFI) 70-1257/2008-203-01**.

c. Conclusions

A weakness was identified regarding non-favorable geometry containers in ELO.

3.0 NCS Administrative and Operating Procedures (IP 88015)

a. Inspection Scope

The inspector reviewed NCS administrative procedures to determine whether the procedures adequately implement the NCS program described in the license. The inspector reviewed selected aspects of the following documents:

- E04-05-001, "NCS Standards," Revision 7, dated March 10, 2008
- E04-06-001, "Review of NCS Specifications," Revision 3, dated January 2, 2008
- E04-06-003, "Review of NCS Standards," Revision 3, dated March 11, 2008
- E04-06-004, "Preparation and Review of NCS Documents," Revision 3, dated February 21, 2007
- E04-06-005, "Review of NCS Implementing Documents," Revision 3, dated March 3, 2008
- E12-01-002, "Work Sequence Plan Preparation," Revision 1, dated February 6, 2007

b. Observations and Findings

The inspector reviewed the licensee's administrative and operating procedures for preparation of NCS analyses and NCS specifications and compared the guidance to the approved and implemented CSAs (reviewed in section 2.0 above). The inspector also reviewed licensee temporary operating procedures, known as work sequence plans (WSP), and compared the guidance to an example WSP. The inspector interviewed licensee managers, NCS engineers, system engineers, and facility operators regarding NCS program implementation during document reviews and facility walkdowns. The inspector determined that the licensee's NCS program is adequately controlled through compliance with approved administrative and operating procedures.

c. Conclusions

No safety concerns were noted regarding NCS-related administrative and operating procedures.

4.0 Nuclear Criticality Safety Inspections, Audits, and Investigations (IP 88015)

a. Inspection Scope

The inspector reviewed licensee internal audit procedures, records of previously completed audits of fissile material operations, and records of NCS infractions. The inspector reviewed selected aspects of the following document:

- E04-06-002, "Routine NCS Audits," Revision 2, dated June 17, 2008

b. Observations and Findings

The inspector observed the performance of NCS audits in the vaporization, ADU, and ELO facilities. The inspector found that NCS audits were conducted according to procedural requirements. The inspector observed the licensee auditor question facility operators regarding specific NCS controls and noted that NCS audits were focused on determining that plant operations conform to those requirements listed in the applicable NCS specification documents.

c. Conclusions

No safety concerns were noted regarding licensee internal NCS audits.

5.0 Nuclear Criticality Safety Event Review and Follow-up (IP 88015)

a. Inspection Scope

The inspector reviewed the licensee's response to internally-reported events. The inspector reviewed the progress of investigations and interviewed licensee staff regarding immediate and long-term corrective actions. The inspector reviewed selected aspects of the following documents:

- E18-01-001, "External Reporting of 10CFR70 Appendix A Reportable Safety Events or Conditions," Revision 3.1, dated March 19, 2007
- E18-01-002, "Safety, Environmental, or MC&A Incident Notifications," Revision 8, dated November 20, 2007

b. Observations and Findings

The inspector reviewed selected licensee internally-reported events from a licensee log of internal events reported in the previous year. The inspector observed that internal events were investigated in accordance with written procedures and appropriate corrective actions were assigned. For several selected events, the inspector discussed the licensee reportability evaluation, reviewed approved CSAs and performed facility walkdowns. The inspector had no safety concerns regarding licensee identification, investigation, and resolution of internal NCS-related events.

c. Conclusions

No safety concerns were identified during a review of recent licensee internal events.

6.0 Plant Activities (IP 88015)

a. Inspection Scope

The inspector performed plant walkdowns to review activities in progress and to determine whether risk-significant fissile material operations were being conducted safely and in accordance with regulatory requirements. The inspector interviewed operators, NCS engineers, and process engineers both before and during walkdowns. The inspector reviewed selected aspects of the following document:

- E04-NCSS-G92, "Moderation Control," Revision 3, dated November 5, 2008

b. Observations and Findings

The inspector performed walkdowns of DCF; the Line #2 ADU conversion area; the UO₂ building pellet, rod, and bundle fabrication areas; the BLEU facility; the BLEU powder storage area; and the ELO facility. The inspector noted that observed operations were performed in accordance with written procedures.

The inspector reviewed implementation of moderation control in various plant areas. The inspector noted that the licensee identifies moderation controlled areas throughout the facility and designates the boundaries of those areas with black and white checked tape on the floor. The inspector observed areas throughout the AREVA facility that were designated with the black and white checked tape. In the BLEU container powder transfer area, the inspector noted that it was difficult to identify the boundaries of the moderation controlled area. Licensee staff indicated that an extra black and white checked stripe may have been in place which confused the boundary location. Since there was tape at the entry to the area, the inspector determined that there was no immediate safety concern. The licensee indicated that a review would be needed prior to removing any boundary tape. Correction of moderation controlled area boundaries in the BLEU powder handling area will be tracked as **IFI 70-1257/2008-203-02**.

c. Conclusions

A weakness was identified regarding the posted boundaries of moderation controlled areas.

7.0 Open Item Review

VIO 70-1257/2008-202-01

This item tracks the failure to provide adequate written procedures to prevent employees from working independently at work stations after failing to complete annual requalification training. During a previous inspection, the inspectors determined that two fissile operators were overdue on training by 1-2 months past the annual date specified

for the employee. One operator had failed the refresher training exam twice and one had failed four times, which is the reason they were considered overdue. Both operators continued to have access to fissile material work stations.

During the current inspection, the inspector determined that the licensee had completed five corrective actions and had actions in place for a sixth long-term corrective action as follows:

1. Place refresher exam in a unique location rather than as part of a vendor course – complete
2. Revise training procedure to incorporate the above change and to be specific about actions on exam failure – complete
3. Modify instructions on auto e-mail sent after two failures to note that employee cannot work with fissile material - complete
4. Brief managers and supervisors to remove access for employees failing the exam twice - complete
5. Revise procedure SOP 40486 to require daily checking of training portfolio for procedure updates or other required training - complete
6. Install barcode reader at entry turnstiles and work stations to deny access if training is incomplete. This action is pending software acquisition and has a one-year estimated time of completion.

The inspector administratively closed **Violation (VIO) 70-1257/2008-202-01**. The corrective actions taken were reviewed and the violation was closed in **Inspection Report 70-1257/2008-005**. This item is closed.

8.0 Exit Meeting

The inspector communicated the inspection scope and results to members of AREVA December 11, 2008. Licensee management acknowledged and understood the findings as presented.

SUPPLEMENTARY INFORMATION

1.0 List of Items Opened, Closed, and Discussed

Items Opened

- IFI 70-1257/2008-203-01** Tracks implementation of NFG controls in the ELO facility.
- IFI 70-1257/2008-203-02** Tracks correction of moderation controlled area boundaries in the BLEU powder handling area.

Items Closed

- VIO 70-1257/2008-202-01** Failure to provide adequate written procedures to prevent employees from working independently at work stations after failing to complete annual requalification training.

Items Discussed

None

2.0 Inspection Procedures Used

- IP 88015 Nuclear Criticality Safety Program
IP 88016 NCS Evaluations and Analyses

3.0 Key Points of Contact

AREVA NP, Inc. - Richland

- C. Manning Manager, NCS
W. Doane NCS Team Leader
L. Maas Manager, Regulatory Compliance
R. Link Manager, Environmental, Health, Safety, and Licensing
K. Kulesza NCS Engineer
C. Kahambwe NCS Engineer
T. Tate Manager, Environmental Protection

NRC

- D. Morey Senior Criticality Safety Inspector

All attended the exit meeting on December 11, 2008

4.0 List of Acronyms and Abbreviations

ADAMS	Agency-Wide Document Access and Management System
ADU	ammonium diuranate
AREVA NP	AREVA Nuclear Power, Inc. (current company name)
BLEU	blended low-enriched uranium
CSA	criticality safety analysis
DCF	Dry Conversion Facility
ELO	Engineering Laboratory Operations
IFI	inspection follow-up item
IP	inspection procedure
IROFS	item relied on for safety
NCS	nuclear criticality safety
NCSA	nuclear criticality safety analysis
NCSS	nuclear criticality safety specification
NFG	non-fissile geometry
NRC	Nuclear Regulatory Commission
SNM	special nuclear material
SOP	standard operating procedure
UNH	uranyl nitrate hexahydrate
UO ₂	uranium dioxide
VIO	violation
WSP	work sequence plan