



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

April 29, 2015

EN 49524

Dr. Ronald J. Land
Site Manager
AREVA, Inc.
2101 Horn Rapids Road
Richland, WA 99354-0130

**SUBJECT: AREVA INC. (RICHLAND) – NUCLEAR REGULATORY COMMISSION
INTEGRATED INSPECTION REPORT 70-1257/2015-002**

Dear Dr. Land:

The Nuclear Regulatory Commission (NRC) conducted announced, routine inspections from January 1 to March 30, 2015, at the AREVA INC., facility in Richland, Washington. The purpose of these inspections was to perform routine reviews of radiation protection and transportation. The enclosed report presents the results of the inspections. At the conclusion of the inspections, the results were also discussed with you and members of your staff at an exit meeting held on March 12, 2015.

During the inspections, NRC staff examined activities conducted under your license, as they relate to public health and safety, to confirm compliance with the Commission's rules and regulations and with the conditions of your license. The inspections consisted of facility walk-downs, selective examinations of relevant procedures and records, interviews with plant personnel, and observations of activities. No findings of significance were identified.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice and Procedure," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room, or from the NRC's Agencywide Documents Access and Management System (ADAMS), which is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html>.

R. Land

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If you have any questions, please call me at (404) 997-4629.

Sincerely,

/RA/

Marvin D. Sykes, Chief
Projects Branch 2
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report 70-1257/2015-002
w/Supplemental Information

cc: (See page 3)

R. Land

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U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-1257

License No.: SNM-1227

Report No.: 70-1257/2015-002

Licensee: AREVA Inc.

Facility: Richland Facility

Location: Richland, Washington 99354

Dates: January 1 through March 31, 2015

Inspectors: P. Startz, Fuel Facility Inspector (Section A.1)
M. Thomas, Senior Fuel Facility Inspector (Section A.2)

Approved by: M. Sykes, Chief
Projects Branch 2
Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

AREVA INC. - RICHLAND
NRC Integrated Inspection Report 70-1257/2015-002
January 1 through March 31, 2015

Inspections were conducted by regional inspectors during normal shifts in the areas of radiation protection and transportation. The inspectors performed a selective examination of licensee activities that were accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, and a review of facility records.

Radiological Controls

- The Radiation Protection program was implemented in accordance with the license application and regulatory requirements. (Section A.1)
- Shipments of radioactive materials were prepared and shipped in accordance with applicable regulations and plant procedures. Certificates of compliance were maintained current. Shipping records were properly completed and maintained in accordance with applicable regulations. (Section A.2)

Attachment

Key Points of Contact
List of Items Opened, Closed, and Discussed
Inspection Procedures Used

REPORT DETAILS

Summary of Plant Status

The AREVA Richland facility converts uranium hexafluoride (UF₆) into uranium dioxide (UO₂) for the fabrication of low-enriched fuel assemblies used in commercial light water reactors. During the inspection period, normal production activities were ongoing.

A. Radiological Controls

1. Radiation Protection (Inspection Procedure (IP) 88030)

a. Inspection Scope and Observations

Inspectors performed direct observations, interviews, and reviews of licensee documents to determine whether the selected radiation protection activities were being conducted in accordance with regulatory requirements and to evaluate the adequacy of certain aspects of the licensee's radiation protection program.

The inspectors reviewed internal and external audits to verify that the radiation protection program was being reviewed, at least annually, to comply with 10 CFR 20.1101. Inspectors also reviewed recently revised radiological protection procedures and determined the changes were in compliance with the license application requirements.

The inspectors reviewed the current organizational structure and interviewed the radiation protection manager, the supervisor for health and safety technicians (HSTs), and a health physicist in order to assess the priority for radiation safety at the facility. The inspectors determined that radiation protection functions and responsibilities focused on worker safety and were not overly influenced by operational factors.

The inspectors checked calibration records for selected survey instruments, exit monitors, radiological laboratory analysis instrumentation, anemometers (for hood ventilation velocities), and determined that this equipment was being maintained in accordance with manufacturer's recommendations, licensee procedures, and the license application.

Through interviews and reviews of the latest available internal and external exposure data from mid-2013 and all of 2014, and concluded that exposure records were maintained in accordance with 10 CFR 20.2106. Total Effective Dose Equivalent, Lens Dose Equivalent, and Shallow Dose Equivalent results were within the licensee action levels and below the 10 CFR 20 regulatory limits of 5 rem/year, 15 rem/year, and 50 rem/year, respectively. In addition, the inspectors also reviewed the in-house urine bioassay program and the most recent results since the last inspection and noted no concerns. The inspectors verified the dosimetry provider used by the licensee is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). Another subcontracted laboratory certificate of accreditation included a Department of Energy "Hanford Site" accreditation for bioassay.

The inspectors reviewed the respiratory protection program including the evaluation of ongoing decontamination, refurbishment, and calibration activities in the respirator facility. The inspectors determined that the respiratory protection program adequately identified potential hazards and that users were properly trained, qualified, and re-qualified in the use of respiratory protection equipment. The inspectors concluded that the program was in compliance with 10 CFR 20.1703, the license application, and applicable procedures.

The inspectors conducted direct inspections of the Dry Conversion Facility (DCF), UO₂ Building, Specialty Fuels Building, Uranium Recovery Incinerator, Uranyl Nitrate Building, Maintenance, Radiation Field Calibration Mezzanine, Engineering Laboratory Operations, and warehouses. The inspectors verified that radiological signs and postings accurately reflected radiological conditions within these areas. All radioactive sources viewed were observed to be locked in their respective metal cabinets and shield containers. The inspectors observed a pre-job briefing concerning maintenance personnel changing out acrylic panels on several radiological glove boxes. The inspectors also accompanied HSTs during routine air sampling monitor filter activities. All areas were posted in accordance with 10 CFR Part 20. The inspectors verified that the Notice to Employees, NRC Form 3, was posted in high traffic areas (near employee entrances/exits) in accordance with 10 CFR 19.11.

The inspectors evaluated laboratory analysis equipment and data transfer protocols in the radiological laboratory for quality controls and data transfer accuracy. This included sample filter preparation and radiation counting in multiple Canberra iMatic™ automatic alpha/beta counting machines; uranium concentration analysis using an ICP-MS, and data quality controls during data transfer from the iMatic™ and the ICP-MS to the Oracle personnel radiological database. Inspectors noted that considerable effort is being directed at maintaining the traditional Oracle database while migrating to the new Canberra HIS-20 Health Physics Information System. The analysis and data transfer protocols were completed in accordance with procedures and demonstrated that the uranium surveys had adequately evaluated the magnitude and extent of radiation levels in accordance with 10 CFR 20.1501.

The inspectors reviewed radiation protection program-related condition reports/corrective actions issued since November 2013 and noted no significant issues with licensee corrective actions.

The 2014 annual As Low as Reasonably Achievable (ALARA) Report had not been completed at the time of the inspection. Inspectors reviewed portions of 2013 and available 2014 data and determined that supporting ALARA program documents will meet the requirements of section 4.2 of the license application when completed.

b. Conclusion

No violations of NRC requirements were identified.

2. Transportation (IP 86740)

a. Inspection Scope and Observations

The inspectors evaluated whether the licensee had established and was maintaining an effective program to ensure radiological and nuclear safety during the receipt, packaging, delivery, and private carriage of licensed radioactive materials. The inspectors also evaluated whether transportation activities were in compliance with the applicable transportation regulations.

The inspectors observed personnel perform the required routine determinations before each shipment. The inspectors observed the loading of packages for a radioactive material shipment. The personnel loading the packages followed the appropriate procedures. The inspectors also observed the inspection of empty shipping containers before loading. The personnel loading and inspecting the packages followed the appropriate procedures.

The inspectors reviewed a number of shipping records involving the shipment and receipt of special nuclear material products. The inspectors verified the storage of shipping records as required by 10 CFR 71.91. The licensee ensured that the appropriate documentation accompanied the packages being shipped. The licensee recorded the required information on the packaging and shipping orders including the transportation index, package activity, labeling, and placards.

The inspectors reviewed the training records to ensure that the licensee had administered 49 CFR 172.704 hazardous materials transportation training to personnel as required by the Department of Transportation and their license. The inspectors also interviewed the transportation personnel and carrier personnel to ensure they were knowledgeable of NRC and U.S. Department of Transportation (DOT) requirements.

The inspectors verified that the licensee met the 10 CFR 71.21 conditions required to use the general license provision for transport of licensed material. The inspectors reviewed the licensee's Quality Assurance Program for packages, observed that it included control of non-conforming packages, and confirmed the control of non-conforming packages in the field. The inspectors reviewed audits of the transportation program and determined the licensee was performing periodic audits of the program as required. Deficiencies identified during audits were appropriately addressed in the corrective action program.

b. Conclusion

No violations of NRC requirements were identified.

B. Other Areas

1. Event Follow-up

a. (Closed) Licensee Event Report 2013-002, Event Notification 49524, Apparent Deterioration of Primary and Secondary HEPA Filters

Inspectors followed up on the licensee's analysis of what caused the deterioration of the primary and secondary K-32 filters, corrective actions to preclude recurrence, the extent of condition, periodic filter replacement, and maintenance monitoring of the filter's performance. The event was discovered November 8, 2013, when maintenance personnel were asked to investigate a slight increase in radiological emissions from the exhaust stack that were fed from these filter housings. Emissions from the stack had indicated a slight increase in levels that exceeded the lowest administrative threshold. Computations of the emission data indicated that the level remained substantially below any regulatory limit and that the potential dose to the public was negligible.

During the maintenance evaluation, technicians noted a decrease in the pressure differential across the filters relative to indications the prior day. The indications were the opposite of normal expected changes. The technicians diverted the exhaust flow through a backup set of filters and opened the filter housing to evaluate the primary and final filters. Technicians discovered physical damage to the filter assemblies on some edges of the pleated filter cloth, possibly very small holes, and some thin spots. The licensee's staff conducted an investigation of the filter deterioration event and determined that the likely cause was related to the high moisture content of the air flowing through the filters, causing the filter fabric to become saturated with water, and this condition created abnormal mechanical stress and wear of the filter cloth. The mechanical stress began to break down the fabric fibers in spots at or near the creases in the fabric.

The inspectors reviewed corrective actions that have been completed to date. The corrective actions included the installation of an inline electric duct heater located upstream of the filter housing. The heater increases the temperature of the airstream and results in a large decrease of relative humidity (RH). The decrease in RH has resulted in the elimination of water saturation of the filter cloth and substantially reduced the mechanical wear of the filter cloth. Additionally, temperature and relative humidity sensors were installed in the duct and connected to the automation system that will indicate an alarm condition in the control room. In addition, the filter change out periodicity was shortened to every two weeks for the primary filter and every three months for the final filter.

Inspectors performed direct inspections of the filter housing, the new inline heater, and instrumentation recently installed as corrective actions. Inspectors also reviewed records covering most of 2014 and 2015. Maintenance records indicated that the filters were being replaced at the periodicity listed above and that physical inspections of the used filters indicated minimal detectable deterioration. Daily inspection records indicated that an inline heater failure was quickly detected and repaired. The temperature and RH sensor logs indicated that consistently warmer and drier air was flowing through the filters. In summary, all information reviewed to date indicates that the filtration system was functioning as designed and was being maintained in

accordance with procedures and maintenance directives. This event is considered closed.

C. Exit Meeting

The inspection scope and results were presented to members of the licensee's staff at various meetings throughout the inspection period and were summarized on March 12, 2015, to R. Land and staff. No dissenting comments were received from the licensee.

SUPPLEMENTAL INFORMATION

1. KEY POINTS OF CONTACT

<u>Name</u>	<u>Title</u>
J. Davis	Packaging Engineer
D. Durham	Radiation Safety Supervisor
S. Edwards	Project Manager
R. Land	Site Manager
L. Maas	Licensing and Compliance Manager
C. Manning	Nuclear Criticality Safety Manager
D. Petersen	Transportation Manager
V. Sakach	Health Physicist
L. Stephens	Operations Strategy and Supply Chain Manager
T. Tate	Environmental, Health, Safety and Licensing Manager
B. Tilden	Operations Manager

Other licensee employees contacted included engineers, technicians, production staff, and office personnel.

2. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Closed</u>	<u>Type</u>	<u>Title</u>
2013-002	LER	EN 49524 Apparent Deterioration of Primary and Secondary HEPA Filters

3. INSPECTION PROCEDURES USED

IP 88030	Radiation Protection
IP 86740	Inspection of Transportation Activities