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

April 26, 2011

EA-08-204
EN 44215
EN 46589

Mr. R. P. Cochrane
Vice-President and General Manager
Babcock and Wilcox
Nuclear Operations Group, Inc.
P. O. Box 785
Lynchburg, VA 24505-0785

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2011-002

Dear Mr. Cochrane:

This refers to an inspection conducted from January 1 through March 31, 2011, at the Babcock and Wilcox Nuclear Operations Group facility in Lynchburg, VA. The purpose of the inspections was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 27, March 3, and March 31 with you and other members of your staff.

The inspections consisted of an examination of activities conducted under the license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Areas examined during the inspections included: Plant Operations, Radiation Protection, and Facility Support. Within these areas, the inspections consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of these inspections, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001, and Stephen G. Subosits, the NRC Senior Resident Inspector at the Babcock and Wilcox Nuclear Operations Group facility in Lynchburg, VA facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," 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 document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact us.

Sincerely,

/RA by Manuel Crespo for/

Steven J. Vias, Chief
Fuel Facility Inspection Branch 1
Division of Fuel Facility Inspection

Docket No. 70-27
License No. SNM-42

Enclosure: NRC Inspection Report 70-27/2011-002

cc w/encl:
Barry L. Cole, Manager
Licensing and Safety Analysis
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Leslie P. Foldesi, Director
Division of Radiological Health
Virginia Department of Health
109 Governor Street, Room 730
Richmond, VA 23219

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Letter to Mr. R. P. Cochrane from Steven J. Vias dated April 26, 2011

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2011-002

Distribution w/encl:
S. Vias, RII
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U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.:	70-27
License No.:	SNM-42
Report No.:	70-27/2011-002
Licensee:	Babcock and Wilcox
Facility:	Nuclear Operations Group
Location:	Lynchburg, Virginia
Dates:	January 1, 2011 through March 31, 2011
Inspectors:	S. Subosits, Senior Resident Inspector R. Gibson, Senior Fuel Facilities Inspector C. Cramer, Fuel Facilities Inspector P. Glenn, Fuel Facilities Inspector G. Goff, Fuel Facilities Inspector
Approved by:	Steven J. Vias, Chief Fuel Facility Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

Babcock and Wilcox
NRC Integrated Inspection Report 70-27/2011-002
January 1 – March 31, 2011

Inspections were conducted by the resident and regional inspectors during normal and off normal shifts in the areas of safety operations, radiological controls, and facility support. The inspectors performed a selective examination of licensee activities which was accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting operation conditions, corrective actions, and a review of facility records.

Safety Operations

- The facility was operated safely in accordance with operating procedures (Paragraph A.1.b.).

- The Items Relied on for Safety reviewed were properly implemented and maintained in order to perform their intended safety function (Paragraph A.2.b.).

- An Unresolved Item was identified to allow review of an unfavorable volume container control issue in the Uranium Recovery area at the next routine Nuclear Criticality Safety inspection (Paragraph A.3.b.).

- Area housekeeping was maintained in accordance with fire safety requirements for special nuclear material processing areas, equipment, and storage areas (Paragraph A.4.b.).

Radiological Controls

- Radiation protection activities were implemented in accordance with license requirements and applicable procedures. An Unresolved Item was identified to review the licensee's evaluation of service water sampling data and to review the progress of corrective actions identified to prevent future service water system configuration errors (Paragraphs B.1.a and B.1.b.).

- Radioactive waste management activities were performed in accordance with regulatory requirements and procedures (Paragraph B.2.b.).

- Radioactive material transportation program requirements were properly implemented and shipments of radioactive materials were prepared and shipped in accordance with applicable regulations and plant procedures (Paragraph B.3.b.).

- One non-cited violation was identified for failure to observe the conditions of approval for channel spacing requirements and fuel elements weight percent requirements in the Certificate of Compliance (CoC) for the Advanced Test Reactor Fresh Fuel Service Shipping Container as required by 10 CFR Part 71.95(a)(3) (Paragraph B.3.b.).

Facility Support

- Maintenance surveillance tests were performed in conformance and in accordance with established work instructions (Paragraph C.1.b.).

- Issues relative to safety were appropriately identified, screened and evaluated in the preventative / corrective action system (Paragraph C.2.b.).

- Emergency actions in response to a hydrofluoric acid chemical exposure drill scenario involving multiple victims were adequately implemented by the licensee's emergency response organization (Paragraph C.3.b.).

Attachment

List of Persons Contacted
List of Items Opened, Closed and Discussed
Inspection Procedures Used
Documents Reviewed

REPORT DETAILS

Summary of Plant Status

Routine fuel manufacturing operations and maintenance activities were conducted in the fuel processing areas and in the Research Test Reactors and Targets (RTRT) facility. Uranium Recovery (UR) operations were shutdown during the period for replacement of Raschig ring filled vessels with favorable geometry vessels within the UR facility.

A. Safety Operations

1. Plant Operations (IP 88135)

a. Inspection Scope and Observations

The inspectors performed daily tours of production areas, observed a select number of shift turnover meetings and observed three operational event nuclear work model critique meetings during the inspection period. Staffing was adequate for the tasks being performed and the operations staff was alert and knowledgeable of the current status of equipment associated with their assigned duties. The critiques were implemented as a tool to aid in information gathering and assessment of certain safety and quality-related events. The critiques that the inspectors observed were judged to be of tangible value in the information gathering and investigation of plant issues.

The inspectors conducted a walk-down and review of portions of the below listed safety significant system(s) involved with the processing of special nuclear materials (SNM) to verify that the existing alignment of the system was correct and that the Items Relied on for Safety (IROFS) were available and reliable to perform their function when needed to comply with the performance requirements.

- High Level Dissolver
- RTRT Fuel Compact Fabrication

To review these systems, the inspectors reviewed Safety Analysis Reports (SAR) 15.5 for the High Level Dissolver System and SAR 15.22 for RTRT Fuel Compact Fabrication process of the Integrated Safety Analysis (ISA) Summary and noted the controls designated as IROFS. During the walkdowns, the inspectors verified that the IROFS controls for the two systems were properly implemented in the field by reviewing the system configuration, applicable operating procedures, pertinent drawings and nuclear criticality safety (NCS) postings.

b. Conclusion

Plant operations were conducted safely and in accordance with approved operating procedures. IROFS reviewed were properly implemented and maintained in order to perform their intended safety function. No findings of significance were identified.

2. Operational Safety (IP 88020)

a. Inspection Scope and Observations

The inspectors reviewed activities and safety controls in the Filler area, Recovery area, and the RTRT area. The inspectors noted compliance with the criticality safety requirements, which constituted a majority of the IROFS in these areas. The inspectors also interviewed operators and determined they were knowledgeable of the safety controls in their areas. The controls reviewed were in place and adequate to meet their intended safety function.

The inspectors reviewed management measures associated with IROFS, including functional tests and surveillances. The inspectors determined that the licensee was implementing effective management measures to ensure that IROFS were available to perform their intended function.

While reviewing the functional test instructions associated with a level indication device which performed an IROFS function in the UR area, the inspectors questioned the applicability of the functional test which relies on solution conductivity. The inspectors questioned if the test performed tested the actual conditions the level indicator would be subjected to in the process. The licensee performed additional testing to ensure that the IROFS was able to perform its intended function. Based on the results of the additional testing, the licensee was able to prove that the level detection device would perform its intended safety function.

The inspectors reviewed items in the licensee's corrective action program to ensure that safety issues were being addressed in an appropriate amount of time.

b. Conclusion

The IROFS reviewed were properly implemented and maintained in order to perform their intended safety function. No findings of significance were identified.

3. Criticality Safety (IP 88135)

a. Inspection Scope and Observations

During daily tours of the shop floor area and the radiologically controlled areas, the inspectors verified various NCS controls were in place, and that personnel understood and followed NCS postings for their workstation. The inspectors sampled a number of criticality-related IROFS for operability and for adequate identification in the field as well as in area operating procedures and NCS postings. The inspectors interviewed operators in the RTRT, Filler and general shop floor areas and noted that operators were knowledgeable of NCS requirements and the IROFS controls at their workstations.

The inspectors reviewed the details of an NCS-related issue reported to the NRC in Event Notification 46589 on February 3, 2011. A portable vise cart holding four metal hardware cabinets with slide-out plastic trays was found in the uranium recovery (UR) container controlled area (CCA). These trays, which did not have drain holes, when treated as a single unit, exceeded the NCS limiting condition of operation of twenty four

liters for container control volume. The licensee could not rule out an overhead leak of special nuclear material-bearing solution filling up the trays as non-credible. The presence of the non-approved containers in the CCA for a period of at least twenty years during past special nuclear material (SNM) processing operations was considered to be the loss of an IROFS that resulted in a failure to meet the performance requirements of 10 CFR 70.61. The inspectors noted that no SNM processing was in progress in the UR area at the time of discovery as the area was shutdown for modification work related to the replacement of Raschig ring filled vessels.

The inspectors reviewed and verified the licensee's immediate actions which included removal of container from the CCA and the performance of an extent of condition sampling review for containers in the area. Liquid SNM processing operations were shutdown for the UR and the Specialty Fuels Facility. The inspectors attended a portion of the critique of the event on February 4, 2011 and noted that the licensee characterized the issue as a level one corrective action requiring a formal investigation team to determine causal factors and recommend corrective actions to prevent recurrence. The inspectors noted that as part of their investigation the licensee reviewed more than seventy eight potential unfavorable geometry containers in the CCA for extent of condition. The licensee's investigation team reviewed the containers and found two without drain holes or openings that would allow solution to drain as part of their investigation. The containers were brought to area management's attention. One container, a toolbox, was removed from the CCA, and the other container was a flammable storage cabinet which was bolted in place in an area without SNM solution transfer lines nearby.

The inspectors reviewed corrective action (CA) 201100409 and the investigation team's associated report. The inspectors noted that the investigation team report identified two causal factors that were appropriate and relative to the event. The first causal factor noted was the ineffective extent of condition reviews associated with prior corrective actions. The report noted that two prior corrective actions (CA20050042 and CA2004001118) for issues relative to control of unfavorable geometry equipment (UGE) in the CCA that required searches of the UR process areas for containers greater than 2.5 liters without controls. The searches conducted at the time of the corrective actions did not identify the metal hardware cabinets found in EN 46589. The second causal factor identified in the report was that the guidance for maintaining UGE in the CCA lacked provisions for periodic reviews to ensure that containers have holes drilled and maintained open to allow solution to pass freely.

The inspectors reviewed the licensee's long term corrective actions to prevent recurrence and determined that when fully implemented the following actions identified should prevent a similar future recurrence of issues involving unfavorable geometry equipment within the CCA boundary. The corrective actions include providing improved procedure guidance in Quality Work Instruction (QWI) 14.1.1; "Preventative/Corrective Action System," on the conduct of extent of condition reviews; training on the revisions to QWI 14.1.1; further evaluation of equipment in the CCA with implementation of IROFS where appropriate; and, the implementation of periodic inspections to ensure proper control and maintenance of existing containers within the CCA boundary. The inspectors also noted the licensee identified a CA to review all events reported to the NRC under 10 CFR 70 Appendix A (a) and (b) performance requirements criteria to ensure the adequacy of any applicable extent of condition reviews conducted in response to applicable events reported to the NRC since January 1, 2006. This

unfavorable geometry container control issue associated with EN 46589 will be tracked as an Unresolved Item (URI) to allow for additional review of the issue and the associated long term corrective actions during the next routine NCS inspection. (URI 70-27/2011-002-01: Nuclear Criticality Safety Review of Unfavorable Geometry Container Control Issue in the Uranium Recovery Area).

b. Conclusion

An URI was identified to allow further review of a unfavorable volume container control issue in the Uranium Recovery area during the next routine Nuclear Criticality Safety inspection. No findings of significance were identified.

4. Fire Protection (IP 88135)

a. Inspection Scope and Observations

During daily plant tours, the inspectors verified that transient combustibles were being adequately controlled and minimized in SNM processing and general shop floor areas. The inspectors conducted fire safety tours for the Mixed and Hazardous Waste Storage areas, RTRT area and Filler area. The inspectors reviewed the control of transient combustible material and ignition sources, and fire detection and suppression capabilities in the areas. In the Mixed Waste Storage Area the inspectors noted a discrepancy with the fire extinguishers in the facility with respect to what was described in ISA section 15.21.4.4, “Fire Safety Analysis,” as the area did not have a BC type extinguisher in place as described in this section of the ISA. The discrepancy with the fire extinguishers, which were not IROFS controls in the Mixed Waste Storage Area, was brought to the attention of a fire protection engineer and the area supervisor. Based on the inspectors discovery and questions regarding accuracy of the fire protection features in the area, the licensee committed in Commitment Tracking System number 34986 to review the storage area for fire code compliance with applicable revisions to the ISA and pre-fire plan, if found necessary. The licensee also installed a BC type fire extinguisher to correct the discrepancy with the ISA.

b. Conclusion

Area housekeeping was maintained in accordance with fire safety requirements for special nuclear material processing areas, equipment, and storage areas. No findings of significance were identified.

B. Radiological Controls

1. Radiation Protection (IP 88135)

a. Inspection Scope and Observations

During tours of the production areas, the inspectors verified workers complied with radiation protection (RP) procedures. The inspectors noted that plant workers properly wore dosimetry, used protective clothing in accordance with posted area requirements or applicable Radiological Work Permits (RWPs), and properly monitored for contamination

upon exiting the controlled area. The inspectors monitored the operation of radiation protection instruments at the controlled area exit points and reviewed the calibration due dates of those instruments. The inspectors reviewed two RWPs concerning work activities for the UR controlled areas. The RWPs were posted for employees' review and observation. Workers utilizing the RWP areas signed onto the RWP, verifying their knowledge of the entry requirements.

On February 23, 2011, the inspectors were notified by licensee management of a configuration error in the site's service water supply. A service water line was found to be connected to the eyewash stations and the sinks in the Waste Operations Field Office Area. The eyewash stations and sinks should have been supplied by a potable (drinking) water supply line. The licensee discovered the issue after UR personnel shut off the service water in the UR facility to perform maintenance activities on two separate occasions, causing interruptions of water supply to the Waste Operations Field Office break and bathroom areas.

The service water system is designed to provide a source of water for the licensee's fire water system, provide non-contact cooling of plant equipment and miscellaneous uses such as toilets and urinals. The service water system is supplied by the Campbell County Utilities and Services Authority, the same source as the potable water line. The difference between the service water line and the potable drinking water line is that the former is held in two one million gallon storage tanks.

The inspectors were aware that the site's former recycle water system, now referred to as service water system, had become contaminated prior to 1990. The system collected stormwater drainage from the roofs at the facility to add to the service water system. The system became contaminated primarily from uranium particulate discharged from the airborne effluent stack that settled out and collected on the UR building roof. These particulates were then subsequently washed by rain runoff from the roof into the recycle water system return. The inspectors reviewed NRC Inspection Report 70-27/1990-19 which detailed the results of the NRC special inspection in 1990 to review the discovery of unmonitored release pathways for radioactive materials associated with the service (recycle) water system. The report provided the inspectors a historical background on the service (recycle) water system. At the time, the service water system was a closed loop recycle system and monitored monthly for gross alpha activity.

The system was, and still is, monitored monthly for alpha activity as required in Radiation Protection procedure RP-08-07 and Section 9.4.2 of the License Application for License SNM-42. The inspectors noted that the licensee has remediated the contamination levels of the service water system to a significant extent since 1990, and rainwater from building rooftops are no longer recycled back into the system. The inspectors noted that the licensee promptly took action to discontinue service water usage at the Waste Operations Field Office. The licensee also informed the inspectors that they planned to communicate the history of the service water system and offer employees in the affected area the opportunity to submit bioassay samples.

In their follow up, the inspectors observed the licensee's critique of the service water configuration error, reviewed the level two CA associated with the issue (CA 201100674) and interviewed maintenance and radiation protection personnel. The licensee was unable to determine exactly when the service water connection line that branched off to the field office area was installed. However, the licensee did identify appropriate

corrective actions which included reviews of water lines throughout the facility, including the Waste Treatment Facility, to verify consistent labeling is applied for the potable, service and distilled/deionized water systems, with relabeling as necessary. In addition, the licensee will evaluate other areas in the facility where service water could be connected to a potable use endpoint. The service water connection error will be tracked as an URI to allow review of the licensee's evaluation of service water sampling data in RPTWR 11-012 in more detail at the next routine RP inspection, verify that communication to the workers is completed and to review the progress of corrective actions identified in CA 201100674. (URI 70-27/2011-002-02: Service Water Connection Error in the Waste Operations Field Office Area)

b. Conclusion

An Unresolved Item was identified to review the licensee's evaluation of service water sampling data and to review the progress of corrective actions identified to prevent future service water system configuration errors. No findings of significance were identified.

2. Radioactive Waste Management (IP 88035)

a. Inspection Scope and Observations

The inspectors observed radioactive waste storage and handling areas for solid, liquid, and mixed wastes at the Nuclear Operations Group facility and the Lynchburg Technology Center. The inspectors noted that entrances to the storage areas were properly posted and containers labeled in accordance with approved procedures and regulatory requirements. Physical condition of the storage containers and housekeeping of the storage areas was adequate. The inspectors interviewed personnel regarding waste management activities and found them to be knowledgeable of the requirements associated with the storage and control of radioactive waste material. The weekly routine inspections of the storage areas were adequate.

The inspectors interviewed personnel regarding self assessments and audits of the radioactive waste management program and determined that the licensee had performed audits as specified in the license application. The inspectors reviewed selected audits and confirmed that assessment findings were entered into the licensee's corrective action program.

The inspectors reviewed written procedures and observed the compaction of 55-gallon solid waste drums at the Supercompactor Facility. The inspectors determined the procedures were clearly written and delineated responsibilities related to radioactive waste management. The inspectors also determined that operators were cognizant of their responsibilities and the requirement to perform tasks in accordance with facility procedures.

The inspectors reviewed records associated with the generation and tracking of radioactive waste material. The inspectors found that radioactive material containers were properly inventoried, inspected, and stored in specified locations. Storage containers were labeled and tracked in accordance with written procedures. Container identification numbers were assigned and entered into the data tracking system.

Documentation accurately reflected the location, amounts, and description of radioactive waste material. No radioactive waste shipments were observed during the inspection.

The inspectors performed walk-downs of the waste water treatment facilities at the Nuclear Operations Group and the Lynchburg Technology Center. The inspectors determined that the waste water generated at the sites was adequately treated and monitored for radioactive concentrations in accordance with procedures and regulatory requirements. The inspectors observed waste water being processed by waste water personnel and determined that the personnel were knowledgeable of the program requirements for processing waste water. Legacy mixed waste accumulated from the laboratories at the Lynchburg Technology Center was classified and characterized in accordance with 10 CFR 61.55 and 61.56 requirements, respectively. The licensee plans to ship the mixed waste to an approved disposal site in June 2011.

b. Conclusion

Radioactive waste management activities were performed in accordance with regulatory requirements and licensee procedures. No findings of significance were identified.

3. Transportation (IP 86740)

a. Inspection Scope and Observation

The inspectors reviewed the licensee's procedures for the shipment of fresh fuel elements to research test reactors and determined that the procedures were adequate. Through discussions with transportion managers, the inspectors determined that the responsibilities and roles of the personnel responsible for the transportation of hazardous material were adequately described in applicable procedures. Interviews of licensee personnel indicated that they were knowledgeable of the requirements associated with transporting licensing material. Quality assurance audits were conducted in accordance with the license requirements.

The inspectors reviewed selected radioactive material shipment manifests [Bills of Lading] and determined that they correctly reflected the classification, quantity, and labeling requirements for the shipment. The certificates of compliance (CoC) for shipping packages were current, including all the necessary design information and packaging criteria. Through discussions with transportation personnel and a review of records, the inspectors determined that the inspection of packages to be shipped were in accordance with procedure requirements and Department of Transportation (DOT) regulations. No special nuclear material shipments were observed during the inspection.

The inspectors observed the annual maintenance inspection on shipping containers Model 5X 22 (CoC 9250) and Model UNC-2600 (CoC 5086) by the licensee's Quality Control Group. The shipping containers were used to ship uranyl nitrate crystals and other unirradiated uranium compounds. The inspectors reviewed the procedures and interviewed the QC personnel and determined they adequately followed the procedures and they were knowledgeable of the procedures requirements. No significant safety issues were identified.

The inspectors reviewed the training and qualification records for the transportation personnel responsible for the radioactive material transportation program. The inspectors determined that the training records were current and adequately covered DOT and procedural training requirements.

On January 19, 2011, Babcock & Wilcox Nuclear Operations Group submitted a 60-Day Written Report to the NRC in accordance with 10 CFR 71.95(c) for instances in which the condition of approval in the CoC were not observed in making a shipment, as required by 10 CFR 71.95(a)(3). On November 23, 2010, the licensee determined that the channel spacing requirements for the Advanced Test Reactor (ATR) Fresh Fuel Shipping Container (CoC 9330) were more restrictive than the design limits for the Massachusetts Institute of Technology (MIT) and the Rhode Island Nuclear Science Center (RINSC) fuel elements, and that during an extent of condition review, discovered that previous shipments of some fuel elements were not in compliance with the requirements of the CoC. Specifically, for the MIT shipments on February 1, 2010, and April 27, 2010, three of the six fuel elements exceeded the channel spacing requirement of 0.082" in the CoC for the ATR fresh fuel service containers. The customers' design limits ranged from 0.0823" to 0.0845". Also, further review revealed that four RINSC shipments on September 27, 2010, exceeded the ATR fresh fuel service containers CoC limit for uranium-234 (0.21 weight percent). The containers contained fuels with 0.215 and 0.217 weight percent U-234. The channel spacing limits for the RINSC fuel elements in the CoC is 0.088; however, the licensee useds go/no-go gauges which only ensured dimensions were between 0.082" and 0.094". The licensee was not able to demonstrate compliance with the CoC limit of 0.088".

The inspectors reviewed the licensee's corrective actions which included:

- requiring transportation personnel to verify individual shipments do not exceed the CoC requirements until the formal procedure implementing this assurance was revised and approved;
- the Transportation Administrator performing a workplace/training meeting to inform the personnel to review all CoC requirements prior to shipment; and
- the request for modifying shipment form (E-4 676) to require a review by the requested personnel to certify compliance with the CoC.

The inspectors determined that the licensee identified the violation of the CoC and took appropriate corrective actions. Therefore, this licensee-identified and corrected condition is being treated as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy. (NCV 70-27/2011-002-03, Failure to Comply with the Conditions of Approval for the Advanced Test Reactor Fresh Fuel Shipping Container)

b. Conclusion

Radioactive material transportation program requirements were properly implemented in accordance with applicable regulations and plant procedures except for one example. One non-cited violation was identified for failure to comply with the conditions of approval for channel spacing requirements and fuel elements weight percent requirements for the Advanced Test Reactor Fresh Fuel Service Container's CoC.

C. Facility Support

1. Maintenance/Surveillance (IP 88135)

a. Inspection Scope and Observations

The inspectors reviewed the work instructions and results for five functional tests performed in the UR area to verify that the IROFS involved in these surveillance tests satisfied the requirements described in the applicable portions of the ISA. The tests results met the identified acceptance criteria and demonstrated that the IROFS were capable of performing their intended safety functions.

b. Conclusion

Maintenance surveillance tests were performed in conformance and in accordance with established work instructions. No findings of significance were identified.

2. Management Organization and Controls (IP 88135)

a. Inspection Scope and Observations

The inspectors performed a screening and reviewed a sample of items entered into the licensee's corrective action program. The inspectors reviewed a sample of twelve corrective actions in the licensee's CA system to ensure that items with impacts on safety for the RTRT and Filler Areas were identified, investigated as necessary and tracked to closure. The inspectors verified that issues affecting safety were properly identified, and reviewed for apparent causes, and that corrective actions to prevent recurrence were identified and tracked to completion in accordance with licensee's CA program implementing procedure.

b. Conclusion

Issues relative to safety were appropriately identified, screened and evaluated in the preventative / corrective action system. No findings of significance were identified.

3. Observation of Emergency Drill (IP 88135)

a. Inspection Scope and Observations

On March 17, 2011, the Senior Resident Inspector (SRI) observed the licensee's quarterly emergency response drill. The SRI evaluated the Emergency Team's response at the incident scene for a drill scenario involving two workers who had been exposed to liquid hydrofluoric acid (HF) near the HF drum pump station behind the UR facility. The inspectors noted that the overall response to incident scene and the victims was satisfactory. The SRI then traveled to Lynchburg General Hospital to observe the response of hospital personnel to the individuals with simulated HF exposures that had been transported to the hospital's emergency room (ER). The SRI noted that the licensee had good communication with the hospital during the drill and that ER personnel demonstrated adequate response to the victims in treating them for exposure to HF. The hospital performed a critique of their response to the drill. The critique

consisted of Lynchburg General Hospital ER personnel, members of the licensee's Emergency Team and hospital administration staff. The SRI observed that the hospital's critique of their response was adequate and captured items for follow up from the drill. Following the drill, the SRI reviewed the licensee's critique documentation for the exercise and verified that participant comments, evaluator comments and recommendations were captured for review and follow-up with the licensee's Emergency Preparedness Committee as required by emergency procedure EP-06-04, "Emergency Drills." Performance of this drill satisfied one of the commitments of LBP-10-18, "Licensing Board Memorandum and Order (Approving Proposed Settlement Agreement and Dismissing Proceeding)," dated October 12, 2010 (ML102850481). Commitment 10.e. from EA-08-204 is considered complete.

During the inspection period, the inspectors reviewed the licensee's emergency plan content for natural phenomena events and emergency plan implementing procedures applicable to these types of events. The emergency plan contains postulated credible events for high winds, lightning strikes, floods and earthquakes. The licensee's emergency plan listed a tsunami as an incredible event because the site was more than two hundred miles from the Atlantic Ocean. Also, per the emergency plan, a volcano is considered an incredible event as there is no history of volcanic activity in the central Virginia area. The licensee's emergency procedure for severe weather addressed emergency response actions for severe weather events such as tornadoes, thunders storms, electrical storms and violent wind storms. The inspectors reviewed the licensee's severe weather procedure and the licensee's procedure for emergency response to a flood from the James River and verified they contained adequate guidance and instructions to respond to the subject events.

b. Conclusion

Emergency actions in response to a hydrofluoric acid chemical exposure drill scenario involving multiple victims were adequately implemented by the licensee's emergency response organization. No findings of significance were identified.

D. Special Topics

1. Follow-up on Events

a. Event Notification 44215: Concurrent Report Due to Off-site Notification to the Commonwealth of Virginia

On May 14, 2008, the licensee discovered a tote (300 gallon capacity) on-site of acid waste being stored in excess of the 90 days allowed by Commonwealth of Virginia Department of Environmental Quality (VA DEQ) regulations. The tote was held for eight additional days because of operator error. VA DEQ letter dated May 21, 2008, states that the agency does not believe that there was a serious threat to the environment as a result of the waste being stored on-site for the extra eight days. Also, DEQ regulations allow large quantity generators to request a 30-day extension to 90-day time limit. The inspectors reviewed the licensee's corrective actions which include retraining employees with responsibilities regarding the accumulation of hazardous waste. The licensee has

re-modified the accumulation area weekly inspection log to require the inspector to check the dates of waste being accumulated and note any in excess of 60 days and then notify the area supervisor. This item is considered closed.

b. Event Notification 46589: Discovery of an Unfavorable Volume Container in the Uranium Recovery Container Controlled Area

On February 2, 2011, the licensee discovered an unfavorable volume container in the Uranium Recovery Container Controlled Area. The licensee reported the issue to the NRC in Event Notification 46589 on February 3, 2011 within the required twenty hour timeframe for notification of reportable events under the following criterion in 10 CFR Part 70 Appendix A (b)(2): Loss or Degradation of Items Relied on for Safety Which Results in Failure to Meet the Performance Requirements of 10 CFR 70.61. The inspectors' detailed review of the issue is contained in paragraph A.3.a of this inspection report. The inspectors will review the status of the licensee's long term corrective actions and the issue will be reviewed at a future NCS inspection. This item will be tracked as Licensee Event Report (LER) 70-27/2011-02-04.

E. Exit Meeting Summary

On January 27, March 3, and March 31, the inspectors presented the inspection results to R. Cochrane and other members of his staff. No dissenting comments were received from the licensee. The inspectors confirmed that proprietary information was examined and discussed but not included in the report.

ATTACHMENT

1. **LIST OF PERSONS CONTACTED**

J. Burch, Manager, Operations
R. Cochrane, Vice-President and General Manager
B. Cole, Manager, Licensing & Safety Analysis
J. Compher, Manager, Industrial Engineering
K. Conway, Manager, Radiation Protection
D. Faidley, Manager, Nuclear Criticality Safety
L. Morrell, Acting Manager, Environmental Protection and Industrial Safety
S. Nagley, Manager, Uranium Processing and Research Reactors
D. Spangler, Manager, Nuclear Safety and Licensing
T. Stinson, Manager, Waste Treatment Operations
D. Ward, Manager, Environment, Safety, Health and Safeguards
C. Yates, Manager, Uranium Processing Operations

Other licensee employees contacted included engineers, operators and technicians.

2. **LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

Item Number	Status	Description
70-27/2011-002-01	Opened	URI - Nuclear Criticality Safety Review of Unfavorable Volume Container Control Issue in the Uranium Recovery Area (Paragraph A.3.a.)
70-27/2011-002-02	Opened	URI - Service Water Connection Error in the Waste Operations Field Office Area (Paragraph B.1.a.)
70-27/2011-002-03	Opened/Closed	NCV - Failure to Comply with the Conditions of Approval for the Advanced Test Reactor Fresh Fuel Shipping Container (Paragraph B.3.a.)
EA-08-204	Discussed	ORDER - October 12, 2010 Atomic Safety and Licensing Board Order (Paragraph C.3.a.)
EN 44215	Closed	LER - Concurrent Report Due to Off-site Notification to the Commonwealth of Virginia (Paragraph D.1.a.)
70-27/2011-002-04	Opened	LER - Discovery of an Unfavorable Volume Container in the Uranium Recovery Container Controlled Area (Paragraph D.1.b.)

3. INSPECTION PROCEDURES USED

IP 88135	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 86740	Inspection of Transportation Activities
IP 88035	Radioactive Waste Management
IP 88020	Operational Safety

4. DOCUMENTS REVIEWED

Number	Title
CA201003178	Corrective Action 201003178
CA201003325	Corrective Action 201003325
CA201003200	Corrective Action 201003200
CA201100015	Corrective Action 201100015
CA201100023	Corrective Action 201100023
CA201100024	Corrective Action 201100024
CA201100121	Corrective Action 201100121
CA201100197	Corrective Action 201100197
CA201100254	Corrective Action 201100254
CA201100269	Corrective Action 201100269
CA201100394	Corrective Action 201100394
CA201100398	Corrective Action 201100398
CA201100409	Corrective Action 201100409
CA201100674	Corrective Action 201100674
CA201100713	Corrective Action 201100713
RPTWR 11-012	Service Water Connection Error, March 9, 2011
QWI 14.1.1	Quality Work Instruction for “Preventative / Corrective Action System”, Rev. 15
SAR 15.5	Safety Analysis Report - Classified
SAR 15.21	Low Level Radioactive Waste Processes – Waste Operations
SAR 15.22	Safety Analysis Report – Research Test Reactor and Targets Fuel Powder and Compact Processes
RWP 11-0006	Radiological Work Permit 11-0006
RWP 11-0022	Radiological Work Permit 11-0022
SER 10-014	Safety Evaluation Request 10-014
SER 10-030	Safety Evaluation Request 10-030
ISA Table 15.5.4.1.1	High Level Dissolver Criticality Safety Parameters and Limits, Controls and Control Maintenance October 10, 2010
ISA Table 15.22.5.1.1	RTRT Fuel Powder and Compact Processes Glovebox, October 25, 2010
OP-0061101	High Level Dissolver Operations