



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

July 29, 2010

NRC Event Nos. 45805 and 46001

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. 70-27/2010-002

Dear Mr. Cochrane:

This letter refers to inspections conducted from April 1 through June 30, 2010, 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. At the conclusion of the inspections on June 10, 2010, and July 7, 2010, the findings were discussed with you and members of your staff identified in the enclosed report.

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 the license. Areas examined during the inspections included: Plant Operations, Radiation Protection, Facility Support, and Permanent Plant Modifications. 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, it was concluded that the facility was operated safely during the inspection period and, no cited violations or deviations were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response 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/readingrm/adams.html>.

R. Cochrane

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

Sincerely,

/RA/

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 70-27/2010-002

cc w/encl:
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PUBLICLY AVAILABLE
 NON-PUBLICLY AVAILABLE
 SENSITIVE
 NON-SENSITIVE
 ADAMS: Yes
 ACCESSION NUMBER: _____
 SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	HQ:NMSS	
SIGNATURE	<i>Via email</i>	AG 7/29/10	CC 7/29/10	AG 7/29/10	<i>Via email 7/28</i>	Via email	
NAME	SSubosits	AGooden	CCramer	Classifer	OLopez	TMarenchin	
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E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-27

License No.: SNM-42

Report No.: 70-27/2010-002

Licensee: Babcock and Wilcox

Facility: Nuclear Operations Group

Location: Lynchburg, Virginia

Dates: April 1 through June 30, 2010

Inspectors: S. Subosits, Senior Resident Inspector
T. Marenchin, Criticality Safety Inspector, NMSS
O. López, Fuel Facilities Inspector, RII
C. Cramer, Fuel Facilities Inspector, RII

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

Enclosure

EXECUTIVE SUMMARY

Babcock & Wilcox Nuclear Operations Group, Inc.
NRC INSPECTION REPORT 70-27/2010-002

This inspection period included periodic observations conducted by the Senior Resident Inspector during normal and off-normal shifts in the areas of Plant Operations, Management Organization and Controls, and Maintenance and Surveillance. Regional-based inspectors and an inspector from NRC Headquarters conducted a specialized inspection and review of documentation in the area of Permanent Plant Modifications (June 7-10).

Plant Operations

- The facility was operated safely in accordance with operating procedures. No findings of significance were identified. (Paragraph 2.a)
- On April 1, 2010, the licensee reported the failure of an Item Relied on for Safety (IROFS) known as the Smart Crane System used for loading and unloading Special Nuclear Material (SNM)-bearing components in water-filled Ultrasonic Testing (UT) tanks. The licensee reported the loss of the IROFS to the NRC in EN 45805 as a 24-hour report in accordance with the requirements of 10 CFR 70 Appendix A(b)(2). The UT tank to be loaded at the time of the crane malfunction did not contain any SNM-bearing component. Therefore, the risk significance of the IROFS failure was determined to be low. The licensee conducted an adequate investigation to identify the root cause and the appropriate corrective actions to prevent recurrence. No findings of significance were identified. (Paragraph 2.b)
- General housekeeping was adequate, transient combustible material was adequately controlled, and fire suppression equipment was in adequate condition in the Uranium Recovery (UR) area. No findings of significance were identified during a fire safety tour in the UR area. (Paragraph 2.c)

Radiation Protection

- Work activities conducted under a Radiation Work Permit (RWP) were performed in accordance with the RWP and ensured that contamination control was adequately maintained for the work area in UR. No findings of significance were identified. (Paragraph 3)

Facility Support

- No findings of significance were identified with corrective action reports pertaining to the fuel manufacturing areas. (Paragraph 4)

Follow-up on Events

- On June 11, 2010, a leak of flush solution into a glovebox containing SNM, resulted in the identification of an unanalyzed condition which failed to meet the performance requirements of 10 CFR 70.61. The incident was reported to the NRC in EN 46001 as a 24-hour report in accordance with the requirements of 10 CFR 70 Appendix A(b)(1). An event follow up inspection will be performed in response to the event and the results of the inspection will be documented in inspection report 70-27/2010-003.

Permanent Plant Modifications

- A minor violation was identified for the licensee's failure to include an administrative nuclear safety control (NCS) control as a note on a NCS posting. No significant findings were identified. (Paragraph 6)

Attachment:

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

REPORT DETAILS

1. 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 operations were conducted in the UR facility.

NRC Commissioner George Apostolakis met with licensee management and toured the facility on May 19, 2010.

NRC Commissioner William C. Ostendorff met with licensee management and toured the facility on June 2, 2010.

NRC Commissioner William D. Magwood, IV met with licensee management and toured the facility on June 18, 2010.

2. Plant Operations

a. Plant Operations (Inspection Procedure (IP) 88135)

(1) Inspection Scope and Observations

The inspectors performed tours of the fuel and element manufacturing, Specialty Fuels Facility (SFF), and UR areas throughout the inspection period. During the tours, the inspectors also reviewed supervisor turnover logsheets, interviewed supervisors to obtain operations status, maintenance activity information, and issues requiring supervisory attention. The inspectors focused their observations on compliance with operating procedures and interviewed more than a dozen operators to gauge their understanding of NCS postings and operations procedure requirements. The inspectors observed that personnel complied with NCS limits and demonstrated adequate knowledge of procedural requirements in their area of responsibility. The inspectors reviewed a sample of five NCS-related IROFS for the low level dissolver system in UR and verified that their implementation in the field was adequate.

(2) Conclusions

The facility was operated safely in accordance with operating procedures. No findings of significance were identified.

b. Safety-Significant System Walkdown (IP 88135)

(1) Inspection Scope and Observations

During the inspection period, the inspectors performed a walkdown of two safety significant systems within the operating areas of the facility. The two systems were the UR Uranyl Nitrate Crystal Drum Dryer, and the Bay 7 and 8 UT Tanks. To review these systems, the inspectors reviewed Safety Analysis Reports (SAR) 15.9 for the Drum Dryer and 15.37 for the UT Tanks of the Integrated Safety Analysis (ISA) Summary and noted the controls designated as an 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 and NCS postings.

Smart Crane System IROFS Failure for Bay 8 UT Tanks

The inspectors reviewed EN 45805 concerning the failure of the Smart Crane System in the Bay 8 UT Area. The inspectors noted that on March 29, 2010, the licensee's NCS staff was notified that a Smart Crane utilized for loading SNM-bearing components in the Bay 8 UT tanks area had failed a functional test. A functional test had been conducted because a fault in the crane controls and subsequent repairs required the test before the crane could be put back into service. Following troubleshooting and investigation of the test failure, NCS requested area quality assurance (QA) personnel to monitor the warning/indicating lights on the crane as it was moved over the UT tanks in the area to ensure that the lights were providing the proper status of the water-filled tanks as either loaded or unloaded. On March 30, 2010, while removing a fixture used for moving SNM-bearing components from a UT tank, a QA technician noted that the crane failed to its safe mode and the indicating lights incorrectly displayed the status of the tank as being loaded with a component although it was not loaded. Following the discovery, QA personnel notified NCS and shutdown operation of the crane. Following additional troubleshooting by Industrial Engineering on March 31, 2010, it was determined that a linear encoder, which tracks the position of the crane with respect to the four UT tanks and their exclusion zones was damaged and giving inaccurate indications of the crane position to the Smart Crane Programmable Logic Controller (PLC), which controls the crane's movements by interpreting the inputs from the load cell and linear encoder. Operations with the crane were shutdown and on April 1, 2010, the licensee made a 24-hour report to the Headquarters Operations Officer (HOO) pursuant to the reporting requirements of 10 CFR 70 Appendix A (b)(2). The failure to provide an accurate position of the crane would not prevent an operator from loading two SNM-bearing components in a single UT tank and thus the failure of the Smart Crane as an IROFS meant it could no longer be credited as available and double contingency could not be assured for the applicable NCS accident scenarios in the ISA. The inspectors concluded that because the UT tank to be loaded at the time of the crane malfunction did not contain any SNM-bearing component that the risk significance of the crane failure was low.

The inspectors did note that as part of the immediate actions taken, the licensee established an additional administrative IROFS control for three of the Smart Crane Systems in Bay 7 and Bay 8. The fourth smart crane system for the Bay 8 hot water rinse tank was in a separate enclosure isolated from all other tanks by walls. The administrative control required that the crane pendant control be maintained under lock and key when not in use and required a second individual to verify that any tank to be loaded with a SNM-bearing component does not contain other SNM-bearing components already. This additional administrative control was implemented in response to the failure of the Smart Crane as an IROFS to ensure performance requirements are met for NCS. The licensee is assessing as a long term corrective action other options to replace the administrative control on the crane control pendant.

In the days following the event, the licensee completed repairs to the Smart Crane and returned it to operation as a functional IROFS. The licensee established an incident investigation team to review the event, determine causal factors, identify corrective actions and perform an extent of condition review on cranes through out the facility. The inspectors reviewed the root cause investigation team report for corrective action (CA) 201000674 and concluded that the investigation team had adequately justified the damaged linear encoder as the root cause of the smart crane system failure. The inspectors also concluded that the proposed corrective actions for identification of performance of smart crane system checks on a daily frequency and improvements to the preventive maintenance (PM) plans associated with the Smart Crane Systems were appropriate to prevent future crane failures. The inspectors reviewed the licensee's extent of condition review and concluded that the four smart crane systems identified in the review were the only crane systems applicable to the corrective actions identified in the investigation team's report.

(2) Conclusions

On April 1, 2010, the licensee reported the IROFS failure of a Smart Crane System used for loading and unloading SNM-bearing components in water-filled UT tanks. The licensee reported the loss of the IROFS to the NRC in EN 45805 as a 24-hour report in accordance with the requirements of 10 CFR 70 Appendix A(b)(2). The UT tank to be loaded at the time of the crane malfunction did not contain any SNM-bearing component. Therefore the risk significance of the IROFS failure was determined to be low. The inspectors determined that the licensee conducted an adequate investigation to identify the root cause and the appropriate corrective actions to prevent recurrence. No findings of significance were identified.

c. Fire Protection (IP 88135)

(1) Inspection Scope and Observations

During daily plant tours, the inspectors verified that transient combustibles were being adequately controlled. The inspectors conducted a fire safety walkdown of the UR area and verified that housekeeping throughout all segments of the area was adequate to minimize the risk of fires. The inspectors also verified adequate control of transient combustible materials. The inspectors walked down various fire suppression components in the UR facility and verified the components were in satisfactory condition based on visual observations.

(2) Conclusions

General housekeeping was adequate, transient combustible material was adequately controlled, and fire suppression equipment was in adequate condition in the UR area. No findings of significance were identified during a fire safety tour in the UR area.

3. Radiation Protection (IP 88135)

(1) Inspection Scope and Observations

During tours and walkdowns of the licensee's radiological controlled areas, the inspectors verified that operators and maintenance personnel complied with radiation protection (RP) procedures. The inspectors noted that plant workers wore breathing zone samplers as required, used protective clothing in accordance with RP guidance, and properly monitored for radioactive contamination upon exiting the controlled area.

The inspectors reviewed RWP 10-0026, Revision 1, for removal of vessels and equipment associated with the Tertiary and Secondary Solvent Extraction processes. The work involved removing multiple vessels, pumps and supporting instrumentation and service lines in UR. The inspectors noted that the RWP contained adequate requirements concerning the pre-job surveys on elevated surfaces prior to equipment removal, respiratory equipment, dosimetry, steps to control radioactive contamination, and protective clothing requirements. The inspectors noted that the RWP was posted at the work site for employees' review and observation. During the inspectors' observations of work in the area, workers entering to perform work under the RWP area were signed onto the RWP as required, and followed the requirements of the RWP.

(2) Conclusions

Work activities conducted under a RWP were performed in accordance with the RWP and ensured that contamination control was adequately maintained for the work area in UR. No findings of significance were identified.

4. Facility Support

Management Organization and Controls (IP 88135)

(1) Inspection Scope and Observations

The inspectors performed a review of thirteen licensee's Preventive/Corrective Action System entries for the fuel manufacturing area to ensure that issues important to safety were being identified and tracked to closure. The inspectors verified that issues were being properly identified, reviewed and tracked to completion.

(2) Conclusions

No findings of significance were identified with corrective action reports pertaining to the fuel manufacturing areas.

5. Follow-up on Events (88135)

(1) Inspection Scope and Observations

The inspectors reviewed EN 46001 involving an unanalyzed condition (EN 46001) which failed to meet the performance requirements of 10 CFR 70.61 in accordance with Appendix A of 10 CFR 70. On June 11, 2010, while maintenance was being performed on the High Level Trough Dissolver glovebox enclosures in UR, an operator noticed a small quantity of liquid, approximately one liter in volume, in an adjoining glovebox. The enclosure was a pass-through glovebox that does not normally contain SNM. The event was reviewed for the need to activate the emergency response plan and the licensee determined that, based on the fact that a liter of solution could not go critical, no plan activation was required. The liquid was sponged up and placed in a favorable geometry container. Following review by the licensee's NCS staff, the event was reported to the Headquarters Operations Officer (HOO) as a 24-hour reportable event pursuant to 10 CFR 70, Appendix A(b)(1) as an unanalyzed condition which failed to meet the performance requirements of 10 CFR 70.61. The licensee shut down the trough dissolvers system and assigned a root cause investigation team to review the event as a level 1 corrective action in CA-201001322. The results of the investigation team's review of the event will include identification of causal factors, corrective actions to prevent recurrence and the conduct of an extent of condition review.

Testing by the license later determined that water had leaked through the trough dissolvers 3 and 4 glovebox door seal, which was found to be degraded, on the adjoining glovebox during a flushing activity with a flexible hose mounted in the gloveboxes. The flushing activity was intended to reduce contamination inside the trough dissolver glovebox in preparation for a maintenance activity. Approximately one liter of liquid in the pass-through glovebox was sponged up and placed in a favorable geometry container and counted for Uranium-235 (U-235) content. The sample concentration was determined to be 26 grams U-235/liter. Additional decontamination of the interior of the pass-through glovebox for dissolver troughs 3 and 4 and the identical pass-through glovebox for dissolver troughs 1 and 2, found a surface contamination total of 112 grams of U-235 between the two gloveboxes including the initial liquid recovered. The pass-through glovebox for dissolver trough 1 and 2 did not leak as there was no liquid noted from the flushing activity.

The inspectors reviewed the event in the field and verified that the gasket seal on the door between the troughs 3 and 4 dissolver glovebox and the pass-through glovebox was in a degraded condition, which allowed a leak. The inspectors also determined that the pass-through glovebox was not equipped with drains to prevent liquid from collecting in the enclosure. The inspectors reviewed the licensee's NCS concern analysis and determined that the presence of a solution in the pass-through glovebox had not been analyzed for the condition found and that the mass of U-235 recovered from decontamination efforts in the pass-through gloveboxes was well below the critical limit for a full water-reflected system. An event follow up inspection by NCS inspectors from the Office of Nuclear Materials Safety and Safeguards (NMSS) and the Senior Resident Inspector will be conducted and the inspection results will be discussed in detail in the next quarterly resident inspection report 70-27/2010-003.

(2) Conclusions

On June 11, 2010, a leak of flush solution into a glovebox, allowed to contain SNM and not equipped with a drain, resulted in the identification of an unanalyzed condition which failed to meet the performance requirements of 10 CFR 70.61. The incident was reported to the NRC in EN 46001 as a 24-hour report in accordance with the requirements of 10 CFR 70 Appendix A(b)(1). An event follow up inspection will be performed as a follow up to the event and the results of the inspection will be documented in the next quarterly inspection report 70-27/2010-003.

6. Permanent Plant Modifications (88070)

(1) Inspection Scope

The inspectors performed a review of the ISA changes and permanent plant modifications (PPMs) that were made during the last year in the fuel manufacturing and uranium recovery process areas. The inspectors reviewed twenty three change request packages and six safety evaluation requests (SERs) to determine if the modifications were performed and authorized according to the applicable procedures, and to verify compliance with 10 CFR 70.72. In addition, the modifications were reviewed to ensure that any potential modifications to an accident sequence were properly accounted for and addressed. The inspectors walked down and reviewed PPMs to verify that the "as built" drawings agreed with the field configuration. For the reviewed PPMs, the inspectors verified that operating procedures were updated to reflect the modifications and that training on the modifications was provided as necessary. The inspectors verified that the licensee had management measures in place to ensure that IROFS affected by facility changes were capable of performing their intended safety function before approving the modification for operation.

(2) Observations

The inspectors reviewed the addition of a new process for removing surface contaminants from uranium metal (U Metal) utilizing existing dissolution equipment in the conversion area as described in SER 10-008, "Pickling of U Metal in Conversion Area." This new process includes: dissolvers, an evaporation system, storage columns, drum dryers, and the three-inch solvent extraction process in the UR area. The inspectors interviewed operators and engineers regarding the new processes. The operators and engineers were well informed of the process and safety controls that had been identified. The inspectors reviewed multiple procedures related to this new process including: \

- 1) Uranium metal dissolution in Conversion Area;
- 2) Uranium metal dissolution using dissolver 2;
- 3) Dissolve Uranium Oxide (UO_x) and transfer/sample Uranyl Nitrate solution;
- and 4) Operating Procedure for U-Metal Pickling in Conversion.

The inspectors determined that the procedures provided adequate detail for the operators to successfully perform their tasks.

The inspectors walked down the IROFS applicable to the process, reviewed the safety analysis to determine the IROFS safety margin, and reviewed the IROFS verification document for the area. The IROFS for this area were available to perform their intended safety function. The inspectors determined the licensee had performed an adequate

analysis to ensure a significant margin of safety resulting from implementing the IROFS for this process; however the inspectors identified a potential safety issue when reviewing SER 10-008 from downstream impacts on the three-inch solvent extraction system. The issue identified was a potential new fire accident scenario resulting from a byproduct of the uranium metal dissolution and subsequent carryover to processing with the organic solvent in the three-inch solvent extraction process in the UR area. The issue was brought to the licensee's attention and they committed to conduct an analysis to determine if there is a potential safety issue and if determined to be credible, any IROFS required to prevent and/or mitigate the accident scenario. The inspectors reviewed the licensee's analysis and determined that the licensee had provided a defensible basis for concluding that a credible mechanism for a fire from carryover of the dissolution byproduct into the three-inch solvent extraction system did not exist in the process.

The inspectors reviewed SER 09-013, "Relocation of Bay 5A Scrubber Fan and Stack." The inspectors discussed the change with engineers and operators. The inspectors determined that the change was reviewed appropriately and that no significant operational changes resulted from the equipment move. The inspectors also reviewed SER 08-048, "Installation of 5 Ton Cranes to Support new AHT Furnace." The inspectors discussed the change with engineers and operators. The inspectors determined that the change was reviewed appropriately and that no new accident scenarios resulted from this change.

To assess the impacts to NCS from plant modifications, the inspectors reviewed four NCS analyses associated with PPMs. In the course of their reviews the inspectors noted that in the fuel manufacturing area, the licensee had decided to change the type of vacuum cleaner to one that is commercially available with more capacity, allowing more usage between cleanings of the vacuum cleaner. The inspectors determined that during the course of implementing the criticality controls for the new vacuum cleaner, the licensee had decided to revise the posting and controls associated with the vacuum cleaner. The original NCS analysis, NCS-2008-20, had a control to empty the vacuum cleaner each operational day. This control was included because the licensee's NCS staff believed that is how the old vacuum cleaner was being used by Operations personnel. The original NCS analysis was not completely implemented through the licensee's configuration management, though the NCS posting associated with it had been implemented by area operations. In the intervening time, the licensee completed a new NCS analysis, NCS-2009-137, to change the control and was able to modify the original NCS posting and not issue a new revision to the NCS posting. The new NCS analysis had a control that states that the vacuum shall be cleaned out once the solids reach the level of the water line. This administrative control was listed on the NCS posting as a note. When the licensee staff went to implement the new NCS analysis, the posting from the original NCS analysis was in place in the field. Since the new analysis did not revise the original NCS posting because the posting associated with NCS-2008-20 had not been implemented, the original posting associated with NCS-2008-20 appeared to be correct due to the numbering. The note that was required to be on the posting to empty the vacuum cleaner when the sludge exceeds the water line was missing.

The inspectors determined that one of the contributing causes for the failure to include the administrative control as a note on the posting was the fact that the licensee performed a new NCS analysis instead of revising the current analysis. This leads to a string of NCS analyses that cover an area instead of one precise analysis covering an area or piece of equipment. The licensee's NCS procedure, NCSE-02, which outlines the requirements to be followed in performing Nuclear Safety Releases (NSRs) of processes and equipment, requires that for a NSR to be issued that all NCS-related requirements for operation have been satisfied. The licensee failed to implement the correct NCS posting as required by NCSE-02. The inspectors observed that the licensee had in place, in addition to the NCS posting, a procedure, M11-FAWM-0009, that required the licensee to clean out the vacuum cleaner once the solids reach the level of the water line. Based on the existence of this procedure the inspectors determined the noncompliance with the implementation of the NCS posting was minor in safety significance and constituted a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC Enforcement Policy.

The inspectors reviewed the licensee's assessment of extent of condition, which included a review of all NCS postings for the fuel manufacturing areas to ensure they were the correct posting. The licensee did not find any other occurrences of implementing an incorrect posting. The inspectors reviewed CA 201001261, which proposed to perform a justification analysis to document that the NCS posting in the field is adequate and reflects what is in the current ISA. The inspectors determined that the licensee initiated an appropriate corrective action to prevent the incorrect NCS posting from being implemented in the fuel manufacturing areas.

(3) Conclusions

A minor violation was identified for the licensee's failure to include an administrative NCS control as a note on a NCS posting. No significant findings were identified.

7. Open Items Review

a. Violation (VIO) 70-27/2009-006-02: Failure to adequately disable band saw cutting fluid reservoir

This violation concerned the failure to adequately disable the band saw cutting fluid reservoir in accordance with the nuclear safety release SER 03-087. During a previous inspection, the inspectors noted that the licensee planned to disable the reservoir and establish double contingency by cutting an opening in the reservoir side wall that would only allow a one-inch slab in the reservoir. During this inspection, the inspectors performed a walkdown of the band saw and verified that the modifications had been completed as designed. This item is closed.

b. VIO 70-27/2009-006-03: Failure to establish or maintain double contingency

This violation concerned the failure to establish double contingency for the band saw cutting fluid reservoir in the modified configuration. During a previous inspection, the inspectors concluded that adequately disabling the saw reservoir would effectively

establish double contingency. During this inspection, the inspectors verified that modifications to the band saw to disable the reservoir had been completed as designed. This item is closed.

c. VIO 70-27/2009-006-04: Failure to analyze or limit the risk of a nuclear criticality accident

This violation concerned the failure to evaluate an accident scenario or establish appropriate controls preventing the accumulation of fissile material and moderator in the band saw cutting fluid reservoir, an unfavorable geometry. During a previous inspection, the inspectors determined that the licensee had adequately completed the evaluation of the accident scenario of fissile solution accumulation in the old reservoir. During this inspection, the inspectors verified that corrective actions related to criticality safety had been completed. This item is closed.

8. Exit Meeting

The inspection scope and results were summarized on June 10, and July 7, 2010, with R. Cochrane, Vice-President and General Manager, and other members of the licensee's staff. Although proprietary information and processes were reviewed during this inspection, proprietary information is not included in this report.

ATTACHMENT

1. **LIST OF PERSONS CONTACTED**

J. Burch, Manager, Operations
R. Cochrane, Vice-President and General Manager
B. Cole, Manager, Licensing & Safety Analysis
K. Conway, Manager, Radiation Protection
D. Faidley, Manager, Nuclear Criticality Safety
M. Hicks, Manager, Security
D. Miller, Manager, Uranium Recovery Operations
D. Spangler, Manager, Nuclear Safety and Licensing
B. Stratton, Supervisor, Radiation Protection
D. Ward, Manager, Environment, Safety, Health and Safeguards
C. Yates, Manager, Uranium Processing Operations

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

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

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
70-27/2009-06-02	Closed	VIO - Failure to adequately disable band saw cutting fluid reservoir. (Paragraph 7.a)
70-27/2009-06-03	Closed	VIO – Failure to establish or maintain double contingency. (Paragraph 7.b)
70-27/2009-06-04	Closed	VIO – Failure to analyze or limit the risk of a nuclear criticality accident. (Paragraph 7.c)

3. **INSPECTION PROCEDURES USED**

IP 88135	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 88070	Permanent Plant Modifications

4. **DOCUMENTS REVIEWED**

<u>Number</u>	<u>Title</u>
CR 1018374	Nitric Acid Tank Glass Rings
CR 1027979	Instruction for Placing used Oil Containers in 55-Gallon Drums
CR 1029125	Revised Bay 7 Storage Limits and Postings
CR 1029611	VAFF Element Run

DOCUMENTS REVIEWED (continued)

<u>Number</u>	<u>Title</u>
CR 1029885	Modification of OP-0061141
CR 1029890	Modify LLD Trays to Meet Two and a Half Inch Height Restriction
CR 1030398	Emergency Plan
CR 1031024	Updated NCS Posting for NMC Met Lab Work Room
CR 1031544	QWI 14.1.10 and N-79
CR 1031547	SAR and Appendix 15.22
CR 1031647	RTRT ARC Melter Coolant Procedure Revision
CR 1031796	SAR 15.23 and Appendix Revision
CR 1032129	New Filter Housing for SFF AGR Dissolvers
CR 1032142	Doall Saw Coolant Reservoir Modification
CR 1032488	EPR-02-04 Revision 29
CR-1026790	Add Hypalon Glove to HLD Gloveboxes
CR-1027852	SAR & Appendix 15.23
CR-1029375	[CLASSIFIED]
CR-1029613	Administrative Changes to SAR 15.37 Appendix
CR-1029705	[CLASSIFIED]
CR-1031038	Modify OP-61246 to Isolate Columns 1 & 2 for Final Use Only
CR-1031538	Safety Analysis Report Class "C" Changes
CR-103221	Moving Primary Scrub Column on HLD in Recovery
SER 09-056	Phase 01: Butterfly Drain Valves
SER 10-003	Phase 01: Moving Primary Scrub Column on HLD
SER 10-008	Phase 1 Pickling of U Metal in Conversion Area
SER 08-048	Phase 1 Installation of 5 Ton Crane to Support New AHT Furnace
SER 09-013	Phase 1 Relocation of Bay 5A Scrubber Fan and Stack - Foundation and Site Prep Work
SER 09-013	Phase 2: Relocation of Bay 5A Scrubber Fan and Stack Disconnection, Relocation, and Reconnection of the Stack
M11-FAWM-0009	Removal and Disposal of Wet Vacuum Collected Fuel Residue
NCS-2008-154	IROFS Verification for Safety Analysis Report 15.16
NCS-2008-20	NCS Safety Analysis for the New Rainbow Vacuum
NCS-2009-132	NCS Safety Analysis for the New Rainbow Vacuum
NCS-2009-167	NCS Safety Release Support Phase 1 of SER 08-037
NCS-2008-006	NCS Analysis for RTRT Element Autoclaving
NCS-2010-077	NCS Analysis of U Metal Pickling in Conversion Area
NCSE-02	NCS Analyses & Quality Assurance Reviews
NCS 15-34-007	NCS Posting for New Rainbow Vac
OP-1001591	U Metal Dissolution in Conversion Area
OP-1007886	U Metal Dissolution Using Dissolver 2
OP-1016133	Dissolve UO _x and Transfer/Sample UN Solution
OP-1033051	Operating Procedure for U-Metal Pickling in Conversion
OP-1010970	Vertical Tube Furnace System
OP-0021001	Operating Procedure for Pickling

DOCUMENTS REVIEWED (continued)

<u>Number</u>	<u>Title</u>
OP-1006912	Determining HF Concentration
OP-1018680	Recovery High Level Dissolution
OP-0061129	Drum Dryer Collection of Uranyl Nitrate Crystals
OP-1014952	Centrifugal Contactor Extraction System
OP-1011870	Crane Control Operation and Testing
OD-0649	Weekly Inventory of Nuclear Materials
QWI 2.1.3	Integrated Safety Analysis Methodology
QWI 5.1.7	Safety Evaluation Request Criteria
B-CM(ME)-1396	[CLASSIFIED]
CA 201000149	
CA 201000275	
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CA 201000792	
CA 201001071	
CA 201001081	
CA 201001170	
CA 201001196	
CA 201001198	
CA 201001261	
CA 201001470	
SAR 15.9	Main Extraction and Drum Dryer Processes in Uranium Recovery
SAR 15.37	Higher Tier Assemblies