



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

May 12, 2010

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

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2010-001 AND NOTICE OF VIOLATION

Dear Mr. Cochrane:

This letter refers to inspections conducted from January 1 through March 31, 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 January 29, 2010, March 19, 2010 and April 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, Operational Safety, Radiation Protection, Radioactive Waste Management, and Transportation of Radioactive Materials. 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 a Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the enclosed inspection report. The violation is being cited in the Notice because it was self-revealing.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration in presenting the corrective actions, the guidance from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is available on the NRC website and may be helpful. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

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>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 70-27/2010-001

cc w/encls:

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Distribution w/encls: (See page 3)

Distribution w/encls:

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- S. Vias, RII
- M. Baker, NMSS
- P. Habighorst, NMSS
- A. Gooden, RII
- P. Silva, NMSS
- M. Adams, NMSS

X PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE X NON-SENSITIVE
 ADAMS: X Yes ACCESSION NUMBER: _____ x SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI
SIGNATURE	<i>Via phone 4/29</i>	<i>AG 4/29</i>	<i>MC 4/28</i>	<i>Email 4/29</i>	<i>Email 4/29</i>	AG 4/29	
NAME	SSubosits	AGooden	MCrespo	JFoster	MThomas	Classifier	
DATE	5/ /2010	5/ /2010	5/ /2010	5/ /2010	5/ /2010	5/ /2010	5/ /2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

NOTICE OF VIOLATION

Babcock & Wilcox Nuclear Operations Group, Inc.
Lynchburg, Virginia

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

During NRC inspection activities conducted between January 1 and March 31, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Safety Condition S-1 of NRC license SNM-42 authorizes the use of nuclear materials in accordance with Chapters 1 through 11 of the License Application submitted on October 24, 2006, and supplements thereto.

License Application, Section 11.1.3.2, "Contamination Control" requires, in part, that personnel not enter uncontrolled areas if direct contamination readings on either the hand or shoes exceed background levels.

Radiation Protection (RP) Procedure, RP-02-06, Revision 9, "Personnel Surveys and Decontamination", step 8.1.1 requires that an RP technician survey the hands, shoes, face and any suspected clothing of individuals who are found to be radiologically contaminated or suspected of contamination.

Contrary to the above, on March 10, 2010, following confirmation of hand contamination at the exit point of a radiologically controlled area, an RP technician failed to perform a survey of the operator's left shoe, which along with the operator's left pant leg was later found to be contaminated after the operator had exited the controlled area and walked to the RP office for further decontamination of the hands. As a result RP surveys found contamination levels in an uncontrolled area in excess of the area limits.

This is a Severity Level IV violation (Supplement VI).

Pursuant to the provisions of 10 CFR 2.201, Babcock and Wilcox Nuclear Operations Group is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region II, and a copy to the NRC Senior Resident Inspector at your facility, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

Enclosure 1

If you contest this violation or its significance, 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 20555-001, and the NRC Senior Resident Inspector at your facility.

Because 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/reading-rm/adams.html>. To the extent possible, it should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 12th day of May, 2010

U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-27

License No.: SNM-42

Report No.: 70-27/2010-001

Licensee: Babcock and Wilcox

Facility: Nuclear Operations Group

Location: Lynchburg, Virginia

Dates: January 1 through March 31, 2010

Inspectors: S. Subosits, Senior Resident Inspector
M. Crespo, Senior Fuel Facilities Inspector
M. Thomas, Senior Fuel Facilities Inspector
J. Foster, Fuel Facilities Inspector
G. Goff, Fuel Facilities Inspector-in-Training

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

Enclosure 2

EXECUTIVE SUMMARY

Babcock & Wilcox Nuclear Operations Group, Inc.
NRC INSPECTION REPORT 70-27/2010-001

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 conducted specialized inspections and reviews of documentation in the areas of Radiation Protection, Radioactive Waste Management and Transportation of Radioactive Materials (January 25-29), and Operational Safety (March 15-19).

Plant Operations

- The facility was operated safely in accordance with operating procedures. (Paragraph 2.a)
- The licensee's corrective actions including changes to the material of construction for the internal rod in the filter housing and periodic metallurgical examination of the housing internals exposed to harsh solution environments were adequate to prevent future failures in the Uranium Recovery (UR) process area. (Paragraph 2.b)
- A minor violation was identified for exceeding the U-235 mass Nuclear Criticality Safety (NCS) posting limit for a storage bin in the facility's Metallurgical Laboratory. The licensee initiated appropriate corrective actions to prevent recurrence of the non-compliance. (Paragraph 2.c)

Operational Safety

- The Items Relied on for Safety (IROFS) controls reviewed were properly implemented to perform their intended safety functions. An Inspector Followup Item (IFI) was identified to follow up on a decision by the licensee whether to conduct an extent of condition review for inadequacies in fire safety-related Integrated Safety Analysis (ISA) accident scenarios following the discovery of errors in the description of fire-safety features for the Research and Test Reactors and Targets (RTRT) area in the accompanying accident scenarios. (Paragraph 3)

Transportation

- Shipments of radioactive materials were prepared and shipped in accordance with applicable regulations and plant procedures. Certificates of compliance were maintained current. Shipping paper records were properly completed and maintained in accordance with applicable regulations. (Paragraph 4)

Radioactive Waste Management

- Radioactive waste activities were performed in accordance with regulatory requirements and procedures. (Paragraph 5)

Radiation Protection

- The procedural changes and Radiation Work Permits (RWPs) were in accordance with procedural and license requirements. (Paragraph 6.a)
- The instrument and equipment calibrations were in accordance with procedure and license requirements. (Paragraph 6.b)
- The postings, labeling, and surveys were in accordance with procedure and regulatory requirements. (Paragraph 6.c)
- The licensee was in compliance with radiation protection reporting requirements. (Paragraph 6.d)
- A violation was identified for the failure of a Radiation Protection (RP) technician to conduct a contamination survey of the shoes on an operator who had confirmed contamination on one hand prior to allowing the individual to exit into an uncontrolled area. The failure to perform a shoe survey of the operator resulted in subsequent contamination of a clean area. (Paragraph 7)

Attachment:

Listing of Persons Contacted

List of Items Opened, Closed and Discussed

Inspection Procedures Used

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 Uranium Recovery (UR) facility.

2. Plant Operations

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

(1) Inspection Scope and Observations

The inspectors performed daily tours of the fuel and element manufacturing, RTRT, and UR areas. The inspectors performed routine fire safety tours of the UR and RTRT areas and verified that housekeeping was adequate to minimize the risk of fires. The inspectors observed that personnel complied with nuclear criticality safety (NCS) limits. The inspectors verified that there was adequate staffing, operator attentiveness and compliance with procedures, and verified that safety controls were being implemented.

During a system walk down of the Bay 6A Acid Treatment area the inspectors questioned an operator on procedure requirements and nuclear criticality safety principles specific to the area. The operator demonstrated a less than adequate understanding of moderation and the importance of other NCS controls when moderator is present in abundance. The inspectors made area management aware of the observation and area management committed to complete training on NCS principles and controls with the workers assigned to the area. The inspectors interviewed other personnel and determined that they demonstrated adequate knowledge of NCS principles and posting requirements, and area procedure requirements.

(2) Conclusions

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

b. Failures of Stainless Steel Filter Housings in Uranium Recovery

(1) Inspection Scope and Observations

As a follow up to the multiple failures of filter housing enclosures and resulting spill incidents during the last quarter of 2009, the inspectors reviewed the licensee's corrective actions and apparent cause determination. Following the third failure of a filter housing, the licensee suspended UR Operations from December 15, 2009 and until January 18, 2010. During this timeframe, the licensee initiated an investigation into the cause of the failures and identified corrective actions to prevent future incidents. The inspectors reviewed the finding by the licensee's metallurgist which identified the presence of manganese sulfide contamination in the stainless steel internal components as the cause of the material failure in the acidic solutions processed in UR. The

inspectors reviewed the finding and agreed that the presence of the contamination was the cause of the material failure. In Corrective Action (CA) 200903649, the licensee developed a return to operation plan which included procurement and installation of housings with 316L stainless steel internal components, which are less susceptible to corrosion from nitric acid, in addition to metallurgical examination for quality assurance of 316L stainless steel rod lot samples prior to installation. Additionally, the licensee committed to conduct periodic destructive metallurgical (one week, one month and three months) examinations of the rods in the housing at five critical locations in the UR process. The inspectors reviewed the results of the one week examinations and concluded there were no identifiable corrosion issues with the housings examined. The inspectors noted that there have not been any issues with leaks on the filter housings that have been replaced during the report period. The inspectors concluded the corrective actions taken have adequately addressed the housing failures to prevent future recurrence.

(2) Conclusions

The licensee's corrective actions including changes to the material of construction for the internal components in the filter housing and periodic metallurgical examination of the housing internals exposed to harsh solution environments were adequate to prevent future failures in the UR process area. No findings of significance were identified.

c. Exceedance of Metallurgical Laboratory NCS Posting

(1) Inspection Scope and Observations

The inspectors interviewed personnel, reviewed pertinent documents and the licensee's corrective actions as a follow up to an issue in the Metallurgical Laboratory work area in which a Nuclear Materials Control (NMC) Operator assigned to the area discovered there were unrecorded fuel samples in excess of the sample quantities recorded on the NCS mass log form for one of the NCS storage cabinet locations. Following discovery on February 8, 2010, the employee contacted area supervision and NCS was also contacted to assess the situation. The licensee determined that the excess fuels segments resulted in exceeding the NCS posting limit of 350 grams U-235 by more than 80 grams. The licensee later determined that the unrecorded samples for this particular storage location were entered on the mass control log for a different storage location in the area. The inspectors interviewed area personnel and NCS personnel and reviewed the applicable portion of the Integrated Safety Analysis (ISA), NCS mass log documentation, and the licensee's NCS Safety Concern Analysis. The inspectors determined other Items Relied on for Safety (IROFS), including spacing and moderation control, remained reliable and available such that criticality remained highly unlikely. The inspectors also noted that the U-235 content of the storage location was 432.35 grams compared to the safety limit of 19 kilograms for a storage location. Based on the existence of additional IROFS and sufficient margin between the as-found U-235 content of the storage location and the NCS safety limit, the inspectors determined the non-compliance with the NCS posting limit for mass of U-235 was minor in safety significance and that 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 the contents of all remaining storage bin locations in the Metallurgical Laboratory for compliance with the NCS posting limit and completion of the mass log form. The licensee found multiple locations which had samples in the storage bins that were not recorded on the accompanying mass logs, but the discrepancies did not exceed the 350 gram U-235 mass limit. The discrepancies were corrected and all samples were returned to the appropriate storage bins. The inspectors reviewed the licensee's CA 201000291, which proposes installation of a French door with assignment of a single NMC person responsible for retrieval of storage bins from the shelf locations to eliminate NCS mass log entry errors from multiple individuals having access to the storage area. In the CA, the licensee also commits to revision of the mass control form requiring two individuals to verify the contents of the storage bins upon signing them out from the modified storage area. The inspectors determined that the licensee initiated appropriate corrective actions to prevent less than adequate U-235 mass log record keeping for the storage locations in the area.

(2) Conclusions

A minor violation was identified for exceeding the U-235 mass NCS posting limit for a storage bin in the facility's Metallurgical Laboratory. The licensee initiated appropriate corrective actions to prevent recurrence of the non-compliance.

3. **Operational Safety (IP 88020) Identification of Safety Controls and Related Programs (O1.01), Implementation of Safety Controls (O1.02), and Safety Control Support Programs (O1.03)**

a. Inspection Scope and Observations

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

The inspectors reviewed more than twenty five ISA accident scenarios for the above areas. During the reviews, the inspectors requested the licensee to explain the basis for the evaluations for the accident sequences that resulted in no IROFS being required. During the explanation of fire protection scenario HUAL3-1, the licensee informed the inspectors that the area description had inaccuracies which had been identified during an internal quality assurance audit. The scenario had incorrectly stated that the Aluminum Powder room had a 1-hour fire barrier and electrical equipment rated as Class II, Division 2. To correct the errors, the licensee had modified the scenario to state that the room was "constructed of non-combustible material and provided positive separation from surrounding areas." The room does not store Special Nuclear Material (SNM) and the inaccuracies did not effect the determination of whether IROFS were required; therefore, the error was of minor significance. However, the inspectors questioned the licensee if an extent of condition had been initiated to determine if other scenarios (not

necessarily limited to fire protection) had been evaluated to identify other inaccuracies. The licensee stated that the decision to implement the extent of condition evaluation had not yet been finalized. Therefore, to evaluate the licensee's decision to perform (and potential results) of an extent of condition review, an Inspector Follow-up Item (IFI) will be opened (IFI 70-27/2010-001-01: Potential Extent of Condition Review for Inaccuracies in Fire Safety-Related ISA Accident Scenarios).

b. Conclusions

The IROFS controls reviewed were being properly implemented to perform their intended safety functions. An IFI was identified to follow up on the licensee decision on whether to conduct an extent of condition review for inadequacies in fire safety-related ISA accident scenarios following the discovery of errors in the description of fire-safety features for the RTRT area in the accompanying accident scenarios.

4. **Transportation (IP 86740)**

a. Inspection Scope and Observations

The inspectors reviewed a number of shipping records involving the shipment and receipt of SNM products and waste disposal and determined that the licensee ensured that the appropriate documentation accompanied all 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 observed the licensee load a shipment of material for transport as 'exclusive use shipment' and that the personnel loading the shipment followed the appropriate procedures. The inspectors also interviewed the radiation protection and transportation personnel and determined they were knowledgeable of NRC and Department of Transportation (DOT) requirements.

The licensee's certificates of compliance for packages used for transportation of radioactive material were current, including the necessary design information and packaging criteria. The inspectors interviewed personnel responsible for the shipment and receipt of material and verified they were knowledgeable of NRC and DOT requirements in addition to plant procedures for the transport of radioactive materials.

The inspectors reviewed the training of the transportation staff to ensure they had received the proper training as specified by the license.

The inspectors reviewed audits of the transportation program and determined the licensee had performed periodic audits as required. The results of the audits were being appropriately documented and addressed in the corrective action program.

b. Conclusions

Shipments of radioactive materials were prepared and shipped in accordance with applicable regulations and plant procedures. Certificates of compliance were maintained current. Shipping paper records were properly completed and maintained in accordance

with applicable regulations. The transportation activities reviewed were conducted in accordance with regulatory requirements. No findings of significance were identified.

5. Radioactive Waste Management (IP 88035)

a. Inspection Scope and Observations

The inspectors reviewed written procedures and observed operators performing tasks related to radioactive waste. 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 the quality assurance program for radioactive waste management and determined that the licensee had performed audits as specified in the license application. The inspectors verified that the findings from these audits were appropriately entered into a corrective action program for resolution.

The inspectors reviewed the licensee's program for classifying low-level radioactive waste. The inspectors looked at the procedures for classifying waste as well as records relating to waste. The inspectors determined that the licensee had an effective program for determining the classification of low-level waste.

The inspectors reviewed the licensee's program for ensuring that the waste form meets the requirements of 10 CFR 61.56. The inspectors verified that licensee had adequate procedures in place to ensure that waste was packaged in compliance with the regulations.

The inspectors reviewed the licensee's procedures for labeling waste shipments and tracking radioactive waste. The inspectors determined that the procedures were adequate to ensure that radioactive waste was properly labeled based on the contents of the shipment, and that the procedures specified actions to be taken should the shipments not reach the intended destination in the time specified. No radioactive waste shipments were made during the inspection.

The inspectors reviewed the procedures for placement, inspection, and repackaging of radioactive waste. The inspectors verified that the licensee had programs in place to ensure that solid waste was being placed in specific storage areas based on the type of waste and that the licensee also had requirements for periodic inspection and repackaging of waste, if required.

The inspectors performed walk-downs of selected radioactive storage areas at the Nuclear Operations Group (NOG) facility and at the Lynchburg Technology Center (LTC). The inspectors determined the storage areas had adequate postings to ensure that the proper material was being stored in the area and the material was safely stored in regard to NCS requirements. The inspectors verified the containers were properly labeled to reflect the material within the containers and the containers were generally in good physical condition. The inspectors verified that containers were being stored in a

manner that provided immediate access for inspections and the storage areas provided adequate protection from the environmental elements and intrusion.

b. Conclusions

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

6. Radiation Protection (IP 88030)

a. Radiation Protection Procedures (R1.02)

(1) Inspection Scope and Observations

To verify compliance with procedural and license requirement, the inspectors reviewed a sample of Radiation Protection (RP) procedures revised since the last inspection and a sample of Radiation Work Permits (RWP). The inspectors determined that there were no significant changes to the procedures which affected safety. The inspectors verified that the radiation technicians were aware of the changes to the procedure through discussion and by reviewing several training sign-off forms. The inspectors verified the RWP sampled were completed in accordance with approved procedures.

(2) Conclusions

The procedure changes and RWPs were in accordance with procedural and license requirements. No findings of significance were identified.

b. Instruments and Equipment (R1.03)

(1) Inspection Scope and Observations

The inspectors observed the calibration of a digital rate meter with an alpha scintillation probe and determined the activities were in accordance with approved procedures. The calibration utilized NIST-traceable sources as required by the license. The inspectors examined several survey instruments throughout the facility and found the instruments to be in calibration and in good physical condition.

(2) Conclusions

The instrument and equipment calibrations were in accordance with procedural and license requirements. No findings of significance were identified.

c. Postings, Labeling, Control (R1.05), Surveys (R1.06)

(1) Inspection Scope and Observations

The inspectors conducted a tour of the facilities and determined that the areas were properly posted. The outside perimeter was labeled with the Radioactive Material

Caution sign as specified in the license. The NRC Form 3, Notice to Workers, was prominently displayed in the front entrance hall of the facility as required by 10 CFR 19.11.

The inspectors observed personnel performing contamination control surveys in Specialty Fuel Facility (SFF) and the Chemistry Laboratory, and the collection of air filters in Advance Fuel and Manufactured Fuel Process (MFP). The inspectors determined that both activities were in accordance with approved procedures. The inspectors reviewed documentation from several monthly smear surveys which included the cafeteria, Filler 1, NMC Storage, and RTRT. The inspectors accompanied portions of the daily radiation safety inspections, a safety initiative specified in the license application. The inspectors reviewed several completed radiation safety inspection check sheets from the past month, including the weekends, and also reviewed the applicable procedure. The inspectors observed the employees don their personal protective equipment (PPE) and conduct personnel surveys and determined that both were in accordance with the license requirements.

The inspectors observed contamination control and external radiation surveys in the Primary Equipment Cell and the Failure Analysis Lab in the LTC. The inspectors verified that the locked high radiation areas sampled were secured. The inspectors also conducted independent external radiation surveys in the Storage Trailers, Metals Prep Lab, Sample Distribution Lab, and the Building B Perimeter of the LTC. The inspectors verified that the areas examined were properly posted and the containers were properly labeled. The inspectors also located the NRC Form 3, Notice to Workers, in the front entrance hall of the LTC.

(2) Conclusions

The posting, labeling, control, and surveys were in accordance with procedural and regulatory requirements. No findings of significance were identified.

d. Notification and Reports

(1) Inspection Scope and Observations

The inspectors verified that the licensee did not have any reportable events applicable to radiation protection since the last inspection. The inspectors reviewed the internal exposure report for 2009; however, the external exposure results had not yet been received. The maximum internal exposure of 429.35 mrem was not in exceedance of the regulatory dose limit and did not require reporting. The licensee did not have any loss or theft of materials in 2009.

(2) Conclusions

The licensee was in compliance with radiation protection reporting requirements. No findings of significance were identified.

7. **Radiation Protection (IP 88135)**

a. **Inspection Scope and Observations**

The inspectors followed up on a contamination incident in the UR area by conducting personnel interviews, and RP procedure and documentation reviews. The incident occurred on March 10, 2010, when a UR operator was unable to clear the hand and foot monitor at the UR controlled area exit point. The monitor indicated contamination of the left hand, but did not indicate any contamination on the bottom of the operator's shoes. A radiation protection (RP) technician responded and measured 375 disintegrations per minute (dpm) alpha/100 cm² on the left hand. The operator was questioned by the RP technician regarding work activities that may have caused the contamination. The individual could only recall manipulating several valves and starting up the centrifugal contactor system. The operator was put in cotton gloves and reported to the RP office for further decontamination. Further surveying, conducted in the RP office, found that the left leg of the individual's pants and top of the left shoe were contaminated also. At this point, the operator noted having stopped to use a restroom on the way to the RP office. As a result, the restroom was surveyed and smearable radioactive contamination levels were found with a maximum level of 500 dpm alpha /100 cm² which was in excess of clean area limits. The restroom was subsequently decontaminated to below clean area limits for radioactive contamination.

The inspectors noted that the licensee took steps to retrieve the operator's protective clothing from the collection bin at the exit point of the UR controlled area. The protective clothing was surveyed and found to be highly contaminated with contamination levels in the range of 100,000 dpm alpha/100 cm². Following further questioning of the operator on work activities conducted during the less than two hours on-duty prior to the incident, the operator remembered stopping and kneeling on the UR floor to clean a metal tray below an evaporator. RP personnel confirmed the area around the metal tray as the source of initial contamination to the operator's protective clothing. The inspectors noted that per RP Procedure RP-02-06, Rev. 9, "Personnel Surveys and Decontamination", that upon discovery of contamination, an RP technician is required to survey an individual's hands, face, shoes and any suspected clothing. The inspectors determined that the RP technician did not perform a survey of the individual's left shoe and as a result the full extent of contamination was not known prior to releasing the operator to pass through clean areas to get to the RP office. The contamination level on the top side of the shoe was approximately 6,000 dpm alpha/100 cm² when surveyed later in the RP office. An adequate survey would have detected the contamination on the top side of the operator's shoe. The failure to perform a shoe survey of the operator resulted in contamination of a clean area and is a violation of RP Procedure RP-02-06 (Violation (VIO) 70-27/2010-001-02: Failure to Conduct an Adequate Shoe Survey to Detect Contamination Prior to Releasing an Operator to a Clean Area). The inspectors also determined that the operator's failure to provide a thorough summation of work activities when interviewed by the responding RP technician, following initial detection of the contamination, contributed to the contamination incident.

b. Conclusions

A violation was identified for the failure of a Radiation Protection (RP) technician to conduct a required contamination survey of the shoes on an operator who had confirmed contamination on one hand prior to allowing the individual to exit into an uncontrolled area. The failure to perform a survey of the operator's shoes resulted in contamination of a clean area.

8. Follow-up of Previously Identified Issues

a. Violation (VIO) 70-27/2009-002-01: Failure to Complete Required SNM Mass Log Entries

The violation involved licensee personnel failing to properly document SNM transfers on mass log datasheets in the Specialty Fuels Facility (SFF). The mass log datasheets were utilized as a management measure to ensure compliance with a nuclear criticality safety control. The inspectors reviewed the corrective actions to verify that the licensee had taken actions that were adequate to prevent recurrence. The inspectors reviewed the mass log datasheets for proper entries at several material work stations in the SFF.

Each of the mass log datasheets reviewed were adequately documented. Operators in the area were interviewed to determine the extent of the training they received regarding the violation. The inspectors determined that the operator's training properly reinforced how to properly fill out the mass log data sheets for work stations and emphasized the non-routine aspects of certain workstations. The inspectors determined that operators were knowledgeable of the nuclear criticality safety aspects of their areas. No other issues were identified. This item is closed.

b. VIO 70-27/2009-004-01: Failure to Comply with Change Management Procedure for Scrubber System Piping Modification in SFF

The violation involved a minor maintenance task on the scrubber system in SFF. The task was to perform a like kind change out of the float switches on the scrubber system. However, this required a rebuild of the scrubber system. During the maintenance evolution, the inspectors noted that the maintenance personnel had implemented non-like kind modifications to portions of the piping of the scrubber system without authorization. The inspectors reviewed the corrective actions to verify that the licensee had taken actions that were adequate to prevent recurrence. The inspectors reviewed the licensee's investigation (captured in CA 201000006) of the issue and noted that the licensee had identified that the work request authorizing the work failed to identify the items relied on for safety (IROFS) that were potentially affected by the work. The inspectors verified the licensee adequately assessed the unauthorized modifications and determined them to be safe. In addition, the inspectors reviewed the long-term corrective actions the licensee planned to implement. The inspectors noted that, among other actions, the licensee would be implementing an extent of condition review of recent work orders to determine if other work orders had failed to identify IROFS potentially affected by the work. The estimated completion date was August 31, 2010. Therefore, this item will remain open pending inspection of the completed extent of condition.

c. IFI 70-27/2008-003-01: Review of the Licensee's Investigation Regarding the Discovery of Spark Generation in the High Level Trough Dissolvers

The inspectors reviewed, over a series of months, the operation of the High Level Trough Dissolvers following the installation of non-conductive polymer-based troughs to prevent electrical spark generation during the dissolution reaction. The inspectors observed numerous runs in each trough and no recurrence of electrical spark generation has been noted for any of the dissolution runs conducted since installation of the new troughs. Based on these reviews the item is closed.

9. **Exit Meeting**

The inspection scope and results were summarized on January 29, March 19, and April 7, 2010, with R. Cochrane, 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, General Manager
J. Creasey, Manager, Uranium Processing
B. Cole, Manager, Licensing & Safety Analysis
K. Conway, Manager, Radiation Protection
D. Faidley, Manager, Nuclear Criticality Safety
L. Hall, Unit Manager, Nuclear Materials Control
M. Hicks, Manager, Security
S. Callahan, Manager, Quality Assurance
D. Miller, Manager, Uranium Recovery Operations
W. Ogden, Unit Manager, Nuclear Material Control
D. Spangler, Manager, Nuclear Safety and Licensing
B. Stratton, Supervisor, Radiation Protection
M. Suwala, Manager, Nuclear Materials Control
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>
70-27/2010-001-01	Open	IFI - Potential Extent of Condition Review for Inaccuracies in Fire Safety-Related ISA Accident Scenarios. (Paragraph 3.a)
70-27/2010-001-02	Open	VIO – Failure to Conduct an Adequate Shoe Survey to Detect Contamination. (Paragraph 7.a)
70-27/2009-002-01	Closed	VIO - Failure to Complete Required SNM Mass Log Entries. (Paragraph 8.a)
70-27/2009-004-01	Reviewed/Open	VIO - Failure to Comply with Change Management Procedure for Scrubber System Piping Modification in SFF. (Paragraph 8.b)
70-27/2008-003-01	Closed	IFI - Review of the Licensee's Investigation Regarding the Discovery of Spark Generation in the High Level Trough Dissolvers. (Paragraph 8.c)

3. **INSPECTION PROCEDURES USED**

IP 88135	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 88020	Operational Safety
IP 88030	Radiation Protection
IP 88035	Radioactive Waste Management
IP 86740	Inspection of Transportation Activities