



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

February 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. 70-27/2009-004 AND NOTICE OF VIOLATION**

Dear Mr. Cochrane:

This letter refers to inspections conducted from October 1 through December 31, 2009, 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 October 22, 2009, November 5, 2009 and January 7, 2010, the findings were discussed with you and those 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, Management Organization and Controls, Radiation Protection, Emergency Preparedness and Operator Training. 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 subject inspection report. The violation is being cited in the Notice because it was identified by the NRC.

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/**

D. Charles Payne, 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 70-27/2009-004

cc w/encls:

Barry L. Cole, Manager  
Licensing and Safety Analysis  
Babcock and Wilcox  
Nuclear Operations Group, Inc.  
P.O. Box 785  
Lynchburg, VA 24505-0785

Leslie P. Foldesi, Director  
Bureau of Radiological Health  
Division of Health Hazards Control  
Department of health  
1500 East Main Street, Room 240  
Richmond, VA 23219

Distribution w/encls: (See page 3)

Distribution w/encls:

- M. Tschlitz, NMSS
- M. Baker, NMSS
- P. Habighorst, NMSS
- A. Gooden, RII
- C. Payne, RII
- P. Silva, NMSS
- K. Ramsey, NMSS

PUBLICLY AVAILABLE   
  NON-PUBLICLY AVAILABLE   
  SENSITIVE   
  NON-SENSITIVE  
 ADAMS:  Yes   
 ACCESSION NUMBER: \_\_\_\_\_   
  SUNSI REVIEW COMPLETE

|              |                       |                   |                   |                  |                  |            |          |
|--------------|-----------------------|-------------------|-------------------|------------------|------------------|------------|----------|
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| SIGNATURE    | <b>AG for 2/10/10</b> | <b>AG 2/10/10</b> | <b>JP 2/10/10</b> | <b>PS 2/5/10</b> | <b>CC 2/8/10</b> | CP 2/12/10 |          |
| NAME         | SSubosits             | AGooden           | JPelchat          | PStartz          | CCramer          | Classifier |          |
| DATE         | 2/ /2010              | 2/ /2010          | 2/ /2010          | 2/ /2010         | 2/ /2010         | 2/ /2010   | 2/ /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 October 1 and December 31, 2009, 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, "Approval of Changes" requires, in part, that minor configuration changes be evaluated and approved by all required evaluators, area management and the change originator.

Quality Work Instruction (QWI) 5.1.7, "Change Management" requires, in part, completion of a change request for changes to plant equipment which are not like-kind replacements or repairs.

Contrary to the above, on December 24, 2009, the licensee performed modifications to piping on a scrubber system without an approved change request. Specifically, the licensee failed to document reviews and approvals of the modifications to scrubber system piping in a change request as required by QWI 5.1.7 prior to implementation of the minor piping modifications in the Specialty Fuels Facility.

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 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 12<sup>th</sup> day of February, 2010

U. S. NUCLEAR REGULATORY COMMISSION  
REGION II

Docket No.: 70-27

License No.: SNM-42

Report No.: 70-27/2009-004

Licensee: Babcock and Wilcox

Facility: Nuclear Operations Group

Location: Lynchburg, Virginia

Dates: October 1 through December 31, 2009

Inspectors: S. Subosits, Senior Resident Inspector  
J. Pelchat, Senior Fuel Facilities Inspector  
C. Cramer, Fuel Facilities Inspector  
P. Startz, Fuel Facilities Inspector  
R. Prince, Fuel Facilities Inspector  
G. Goff, Fuel Facilities Inspector-in-Training

Approved by: D. Charles Payne, Chief  
Fuel Facility Inspection Branch 1  
Division of Fuel Facility Inspection

Enclosure 2

## EXECUTIVE SUMMARY

Babcock & Wilcox Nuclear Operations Group, Inc.  
NRC INSPECTION REPORT 70-27/2009-004

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 Operational Safety (October 19 through 22), Management Organization and Controls, Operator Training, and Emergency Preparedness (November 2 through 6).

### Plant Operations

- A violation was identified when a Change Request was not completed for a minor piping modification implemented on a Scrubber System in the Specialty Fuels Facility as required by License Application Section 11.1.3.2 and Quality Work Instruction 5.1.7. (Paragraph 2.a)
- The licensee plans to conduct a more thorough and comprehensive review, and implement any needed corrective actions, following multiple leaks associated with stainless steel filter housings in the Uranium Recovery area. The licensee's corrective actions to date were found to be adequate. These included the procurement of an alternative material of construction for the threaded rod internal to the housing and periodic examinations of the rods to inspect for corrosion and material integrity. (Paragraph 2.b)

### Operational Safety

- The items relied on for safety (IROFS) controls reviewed were being properly implemented and available to perform their intended safety function. Functional tests of IROFS adequately tested the safety function of the controls. (Paragraph 3)

### Management Organization and Controls

- A review of a sample of corrective action reports verified that the corrective actions were thorough and the extent of condition and effectiveness verifications were being conducted on safety significant corrective actions. A review of audits of licensee programs, including the Nuclear Criticality Safety program, were found to be thorough and in compliance with the license requirements. (Paragraph 4)

### Operator Training

- Operators that were interviewed demonstrated adequate knowledge of their job responsibilities for their work areas. (Paragraph 5)

Emergency Preparedness

- Based on interviews with off-site personnel, the interface with off-site support groups was found to be properly maintained. Based on document reviews and interviews with response personnel, emergency response training was found to be adequate. Visual inspection of the licensee's emergency response vehicles indicated that proper emergency equipment maintenance and inventory checks were being conducted on the vehicles. (Paragraph 6)

Radiation Protection

- Radiation Protection response to Special Nuclear Material-bearing fuel breach incidents at the facility was effectively implemented. The licensee took adequate corrective actions to prevent recurrence of the fuel breaches. (Paragraph 7)

Attachment:

Partial 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 manufacturing, RTRT, Specialty Fuels Facility (SFF), waste storage, and UR areas. The inspectors observed that personnel complied with approved, written nuclear criticality safety (NCS) limits. The inspectors conducted detailed reviews of the unfavorable geometry container control requirements for the UR process area, and interviewed UR operators and NCS engineers. The inspectors verified that there was adequate staffing, operator attentiveness and compliance with procedures, and verified that safety controls were being implemented. During a tour of the SFF area on December 23, 2009, the inspectors questioned a maintenance mechanic regarding the change request and work order documentation for a piping modification that was being made to the scrubber system for Workstation 320. The change request documentation was not available in the field and as a follow up the inspectors requested a copy of the applicable change request from SFF area management.

On December 24, 2009, the licensee provided the inspectors a copy of change request (CR) number 1031864 which only allowed a like-kind replacement of two float switches in the scrubber system piping. The inspectors were informed that the piping modification was completed because it was a like-kind replacement. The inspectors further questioned the need for documentation of the change under a CR as the piping change resulted in a change in pipe diameter and a change of material from polyvinyl chloride (PVC) piping to stainless steel tubing. In addition, a modification was made to add a length of flexible plastic tubing internal to the piping to act as a downcomer to prevent liquid additions into the piping from splashing out of the overflow line. The inspectors concluded the changes were minor in nature, but that they did not constitute a like-kind replacement. The inspectors noted that minor configuration changes (that is, changes to non-radiological equipment in controlled areas) are required to be evaluated, reviewed and approved pursuant to Section 11.1.3.2, "Approval of Changes" of the License Application (LA) for License SNM-42. The inspectors also noted that Quality Work Instruction (QWI) 5.1.7, "Change Management," requires a CR with appropriate reviews and approvals for changes to plant equipment which do not qualify as like-kind replacements or repairs. The failure to complete a CR for minor piping modifications to scrubber system for SFF Workstation 320 was a violation of the change management procedure QWI 5.1.7 (VIO 70-27/2009-04-01: Failure to Comply with Change Management Procedure for Scrubber System Piping Modification in SFF).

(2) Conclusions

A violation was identified when a CR was not completed for a minor piping modification implemented on a Scrubber System in the SFF as required by LA Section 11.1.3.2 and QWI 5.1.7.

b. Failure of Stainless Steel Filter Housings in Uranium Recovery

(1) Inspection Scope and Observations

On October 27, 2009, a filter enclosure failed in the annular waste tank area of UR spilling approximately 1100 liters of waste water onto the floor. Samples indicated that the concentration of U-235 approximately 0.002 – 0.003 grams per liter (g/l). The licensee cleaned up the spill within 24 hours and created an Unusual Incident Report (UIR) and corrective action report (CA200903249) to review the event. In its corrective action (CA) review, the licensee attributed damage to the threaded rod internal to the filter housing. The rod was damaged by corrosion due to nitric acid exposure in combination with pressure pulses from the annular waste tank discharge pump upstream of the filter housing as the cause of the housing failure and subsequent leak. The licensee stated it plans to change out the housings on a more frequent basis as prior failures of this equipment had not been previously noted in the UR area. The inspectors reviewed two similar events of leaks from filter housings which occurred on December 2 and 11, 2009. The inspectors questioned UR management and staff about the thoroughness of its review of the housing failures and the failure to consider materials of construction as a potential issue. The licensee suspended UR operations on December 15 to perform metallurgical analyses on the failed housings. The licensee's metallurgist identified the presence of manganese sulfate contamination in the 304L stainless steel rods as the likely cause of the material failure in the acidic solutions processed in UR. The licensee developed a return to operation plan which included procurement of housings with 316L stainless steel rods and metallurgical examination of 316L stainless steel rod lot samples prior to installation. Additionally, the licensee will conduct periodic metallurgical (one week, one month and three months) examinations of the rods in the housing at five critical locations in the UR process. The licensee will also perform a formal causal analysis on the filter housing failures and complete a review of alternate materials of construction suitable for future filter housing designs. The inspectors concluded the corrective actions being taken and those planned for CA20093649 would prevent future recurrence of the filter housing failures. No other issues were identified with the licensee's follow up to the filter housing failures.

(2) Conclusions

The licensee stated its intention to conduct a more thorough and comprehensive review, and implement any needed corrective actions, following multiple leaks associated with stainless steel filter housings in the UR area. The licensee's corrective actions to date were found to be adequate. These included the procurement of an alternative material of construction for the threaded rod internal to the housing and periodic examinations of the rods to inspect for corrosion and material integrity.

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 performed walkdowns of items relied on for safety (IROFS) in the filler process areas, acid treatment area, waste treatment area, ventilation systems, recovery area, and the RTRT facility. The IROFS were determined to be in place to perform their intended safety function. No significant safety issues were identified.

The inspectors reviewed modifications made to the low level dissolver process in the UR area with licensee staff. The inspectors determined that the modifications did not affect safety-related equipment.

The inspectors reviewed functional tests for IROFS in the UR area. The functional tests were determined to adequately test the function of the IROFS.

The inspectors discussed operating procedures with operators to ensure that the operators were aware of administrative IROFS and their responsibilities. The inspectors determined that the operators were knowledgeable of their procedures and the related IROFS. No significant issues were identified.

b. **Conclusions**

The IROFS controls reviewed were being properly implemented and available to perform their intended safety function. Functional tests of IROFS reviewed adequately tested the safety function of the controls.

4. **Management Organization and Controls (IP 88005)**

a. **Inspection Scope and Observations**

The inspectors reviewed management organization changes since the last inspection. Significant management changes included a new security department manager and a nuclear safety and licensing manager. Both managers were promoted from within the company. The inspectors interviewed the new managers and determined that they were knowledgeable of their functions, responsibilities, and recognized their authority for security and safety. The inspectors identified no significant deficiencies with the qualifications of the new managers.

The inspectors reviewed significant examples of the licensee's CA program to determine if the program was being conducted in accordance with appropriate facility procedures and license conditions. The examples selected for review included: (1) CA-200901867; Bay 5A fire sprinkler degradation; (2) CA-200901381, uranium mass log not completed per procedure OP-0001003; (3) CA-200800623, inadequate evidence that fire dampers were functionally tested; and (4) CA-200900215, inconsistent uranium accountability specifications between procedures and safety related documents. The inspectors

determined that the licensee was implementing effective and relevant corrective actions in response to internally identified deficiencies. The inspectors also identified that the licensee was actively pursuing extent of condition issues and performing effectiveness evaluations on prominent safety-related issues. The inspectors identified no significant deficiencies with the performance of the licensee's corrective action program.

The inspectors verified that operators in several active production areas had access to, and were using, the correct operating procedures. The inspectors found that procedures in some production areas were provided on computer terminals and that operators could print a copy to keep at their work station. Some production areas use procedures in paper form. General facility procedures were provided in paper form at various locations around the facility. Many operating procedures are initiated, revised, reviewed, approved for release, and controlled by a computerized document management system. An internal organization referred to as Central Document Control manages the release of approved documents and provides supervisory functions to ensure compliance with document control policies. The final automated distribution of approved procedures is performed and controlled by additional software applications. The inspectors monitored production operators logging onto local area computers using non-contact sensors that interrogated their security badges. The log-on process automatically checks to ensure the operator has been re-qualified on the latest procedures. If necessary, the operator may read the latest revisions, re-qualify, and immediately perform the production operations. The inspectors evaluated a sample procedure in the production area and confirmed that it matched the revision specified in the document management system. The inspectors discussed the operation of the document management system and applicable internal controls with two computer programmers. The inspectors identified no significant deficiencies with the functions and performance of the document management system.

The inspectors reviewed the licensee's internal audit program to determine if the program was in compliance with licensee procedures and license requirements. The following audits were evaluated: (1) Audit 257-2C, NCS audit resulting in three issues entered into the CA program; (2) Audit 256-1B, resulting in sixteen findings entered into the CA program; and (3) Audits 257-2B, 258-1B, 258-3C, 258-3D, 258-3C, 259-4C, and 259-4D, multiple findings entered into the CA program. The inspectors concluded that the internal audits reviewed were relevant, thorough, and constructive. No issues were identified with the licensee's internal auditing program.

(2) Conclusions

A review of a sample of corrective action reports verified that the corrective actions were thorough and the extent of condition and effectiveness verifications were being conducted on safety significant corrective actions. A review of audits of licensee programs, including the NCS program, were found to be thorough and in compliance with the license requirements.

**5. Operator Training (IP 88010)****a. Inspection Scope and Observations**

The inspectors interviewed several production operators and their supervisors. The inspectors discussed training requirements and expectations with the responsible supervisor and reviewed training qualification records. The inspectors found the operators to be trained on the hazards of the area and to be knowledgeable of their job responsibilities. The inspectors confirmed that the operators were only performing activities for which they were qualified. The inspectors determined that training was being effectively managed by the operators' supervisor.

The inspector discussed the training programs with the training specialists. No major changes in the training program had occurred since the last inspection. The inspectors identified no significant deficiencies with the licensee's training program.

**b. Conclusions**

Operators that were interviewed demonstrated adequate knowledge of their job responsibilities for their work areas.

**6. Emergency Preparedness (IP 88050)****a. Inspection Scope and Observations**

The inspectors reviewed the licensee's Emergency Preparedness Manual. No significant changes to the emergency preparedness program were noted since the last inspection. Some minor revisions were made for clarification purposes. The inspectors determined that such changes were completed in accordance with the licensee's change management process, received the appropriate level of review from licensee staff and management, and were adequately communicated to affected personnel.

Regarding off-site emergency response organizations, inspectors interviewed the Campbell County Director of Public Safety's Fire Marshal. The inspectors determined through interviews that B&W NOG interacts with this individual monthly and provides a copy of its current Emergency Preparedness Manual. The inspectors also determined during this interview that this individual would be paged by B&W NOG when an emergency occurs. The inspectors were told that the Campbell County Department of Public Safety has "reverse 911" service to notify residences near B&W NOG in case of an emergency.

The inspectors reviewed the annual emergency management training records. From a review of the records and interviews, the inspectors determined that the training was adequate.

The inspectors inspected the training room and vehicle bay at the licensee's Fire Station 1. The inspectors reviewed the computer database for checks and inspections of equipment such as fire extinguishers, self-contained breathing apparatuses (SCBAs), ventilation controls. The inspectors verified, using the licensee's inventory procedures,

that the required equipment was properly stocked and maintained. The inspectors also inventoried two ambulances to verify they were stocked with proper equipment and supplies. The ambulances were found to be properly stocked and the equipment had proper calibration dates.

b. Conclusions

Based on interviews with off-site personnel, the interface with off-site support groups was found to be properly maintained. Based on document reviews and interviews with licensee personnel, emergency response required training was found to be adequate. Examination of the licensee's emergency response vehicles determined that required emergency equipment maintenance and inventory checks were conducted on the vehicles.

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

a. Inspection Scope and Observations

While performing shearing operations on an RTRT fuel element on November 11, 2009, an operator breached the SNM-bearing portion of the element. The operator made two successive cuts on the element. The first cut was completed in accordance with procedural requirements but, before the second cut was made, the operator failed to correctly orient the fuel element. As a result, the SNM-bearing portion of the element was breached. The operator noted his mistake almost immediately when he picked up the element and subsequently contacted his foreman. The Radiation Protection (RP) department was notified to respond to the area. The area was barricaded and tape was placed on the exposed portion of the fuel element where it had been breached. The breached fuel element was transported to the RTRT radiological control area for storage. Radiation protection surveys showed the maximum smearable alpha contamination was less than the clean area action level of 111 dpm/100 cm<sup>2</sup>. As a result, the area required minimal cleanup. Because the area was cleaned up within 24 hours, the event was not reportable to the NRC. The inspectors reviewed the incident and concluded that a lack of attention to the details of the shearing procedure was the primary cause of the fuel element breach.

An Unusual Incident Report (UIR) was generated for the event and the issue was entered into the licensee's corrective action system at a level 2 (CA 200903365). A level 2 UIR requires an investigation, a determination of the cause(s), and proposed corrective actions. The inspectors did not note any issues with the licensee's response and follow up to this incident.

A second fuel breach in Bay 12A also occurred on November 11, 2009, when a machinist, who was machining an out-of-specification SNM-bearing fuel component for scrap recovery purposes, noted that the cutting apparatus had intruded slightly on the fuel portion of the component. The machinist took multiple swipes of the affected area and measured them with an alpha contamination frisker. The readings of the swipes confirmed the presence of contamination and a breach of the fuel. The machinist suspended operation of the cutting device and contacted RP to respond to the area.

Radiation protection personnel surveyed the two workers in the area and found no contamination. The maximum alpha contamination level detected was 495 dpm/ 100 cm<sup>2</sup>. Plant personnel subsequently cleaned up the area under a special radiation work permit (RWP) written specifically for breaches of fuel. Because the area was cleaned up within 24 hours, the contamination event was not reportable to the NRC.

Following cleanup, the machining operations on the fuel component were completed with an RP technician present to monitor for contamination. The breached fuel component was transferred to the UR area. No contamination was found from surveys of the scrap component and machining apparatus. A UIR was generated for the incident, and the issue was entered into the licensee's corrective action system (CA 200903367).

The inspectors interviewed the machinist on duty, the area engineer, the area foreman, and RP personnel regarding these actions prior to, during and after the incident. The inspectors concluded that geometric imperfections in the component contributed to the fuel breach. The inspectors reviewed the documentation and work instructions that were provided to the machinist. The inspectors noted that most of the instructions were generic or skill of the craft in dealing with component imperfections, and were a contributing cause to the event. The machinist's actions to survey the component periodically during the machining operations were notable, but were not required by the work instructions. The inspectors questioned the lack of more formal instructions for this operation, particularly the need to periodically monitor for fuel breaches. The licensee stated its intention to develop a formal procedure to ensure that adequate instructions for disassembly of components, including steps to monitor the machining of scrap SNM-bearing components for contamination, are provided to the operator. The inspectors did not note any other issues with the licensee's response to this event.

b. Conclusions

Radiation protection responses to SNM-bearing fuel breach incidents at the facility were effectively implemented. The licensee took adequate corrective actions to prevent recurrence of the fuel breaches.

8. Followup of Previously Identified Issues

Violation (VIO) 70-27/2008-02-02: Failure to Apply Engineered or Administrative Controls to the Extent Needed to Reduce the Likelihood of Occurrence of Accident Sequence SB1-1a1

The inspectors reviewed the corrective actions that were taken for the failure to apply engineered or administrative controls to the extent needed to reduce the likelihood of occurrence of accident sequence SB1-1a1 so that, upon implementation of such controls, the accident sequence is highly unlikely. The inspectors determined that the licensee adequately addressed the issues related to this violation by performing an annual functional test of the auxiliary scrubber ventilation fan that ensured operability of the IROFS. This item is closed.

9. **Exit Meeting**

The inspection scope and results were summarized on October 22, and November 5, 2009, and January 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  
J. Calvert, Manager, Industrial Health and Safety  
R. Cochrane, General Manager  
J. Creasey, Manager, Uranium Processing  
B. Cole, Manager, Licensing & Safety Analysis  
B. Dilling, Emergency Preparedness Officer  
D. Faidley, Manager, Nuclear Criticality Safety  
M. Hicks, Manager, Security  
D. Spangler, Manager, Nuclear Safety and Licensing  
M. Suwala, Manager, Nuclear Materials Control  
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 AND CLOSED

| <u>Item Number</u> | <u>Status</u> | <u>Description</u>  |
|--------------------|---------------|---|
| 70-27/2009-04-01   | Open          | VIO - Failure to Comply with Change Management Procedure for Scrubber System Piping Modification in SFF. (Paragraph 2.a)  |
| 70-27/2008-02-02   | Closed        | VIO - Failure to apply engineered or administrative controls to the extent needed to reduce the likelihood of occurrence of accident sequence SB1-1a1. (Paragraph 10.a) |

### 3. INSPECTION PROCEDURES USED

IP 88135 Resident Inspection Program for Category I Fuel Cycle Facilities  
IP 88020 Operational Safety  
IP 88050 Emergency Preparedness  
IP 88005 Management Organization and Controls  
IP 88010 Operator Training/Retraining