May 26, 2010

EN45805

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

SUBJECT: INSPECTION REPORT NO. 70-0027/2010-203 AND NOTICE OF VIOLATION

Dear Mr. Cochrane:

The U.S. Nuclear Regulatory Commission (NRC) conducted a routine announced nuclear criticality safety (NCS) inspection at your Babcock and Wilcox Nuclear Operations Group, Inc. facility in Lynchburg, Virginia from April 26-30, 2010. The purpose of the inspection was to determine whether activities involving special nuclear materials were conducted safely and in accordance with regulatory requirements. Observations and findings were discussed with members of your management and staff throughout the inspection and at an exit meeting held on April 30, 2010.

The inspection, which is described in the enclosure, focused on the most hazardous activities and plant conditions; the most important controls relied on for safety and their analytical basis; and the principal management measures for ensuring controls are available and reliable to perform their functions relied on for safety. The inspection consisted of analytical basis review, selective review of related procedures and records, examinations of relevant NCS-related equipment, interviews with NCS engineers and plant personnel, and facility walkdowns to observe plant conditions and activities related to safety basis assumptions and related NCS controls.

Based on the results of this inspection, NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC's Enforcement Policy included on the NRC's web site at www.nrc.gov; select Public Meetings & Involvement, then Enforcement Policy. The violation is being 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 NRC during the inspection. The violation being cited as a Severity Level IV is the failure to conduct operations according to administrative limits regarding storing moderating materials on a cart designated for fuel.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with Title 10 of the Code of Federal Regulations 2.390 of NRC's "Rules of Practice," a copy of this letter and the enclosure will be made publicly available in the public electronic reading room of the NRC's Agency-Wide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/ADAMS.html.

If you have any questions concerning this report, please contact Tamara Powell, of my staff, at (301) 492-3211.

Sincerely,

/RA/ C. Hrabal for

Patricia A. Silva, Chief
Technical Support Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

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

Enclosures:
1. Notice of Violation
2. Inspection Report No.: 70-27/2010-203

cc: Barry Cole
Licensing Officer
Babcock and Wilcox Nuclear Operations Group, Inc.

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Babcock and Wilcox Nuclear Operations Group, Inc.

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DATE	5/25/10	5/25/10	5/26/10	5/26/10

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NOTICE OF VIOLATION

Babcock and Wilcox Nuclear Operations Group, Inc. Docket No.: 70-27
Lynchburg, VA License No. SNM-42

During a Nuclear Regulatory Commission (NRC) inspection conducted April 26-30, 2010, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

> Safety Condition No. S-1 of Special Nuclear Material License No. 42 requires that material be used in accordance with the statements, representations, and conditions in the license application dated June 29, 2007, and supplements thereto.
>
> Chapter 5.1.2 of the License Application states, in part, that activities at the site involving special nuclear material are conducted according to limits and controls established by Nuclear Criticality Safety (NCS). The administrative limits and controls are provided to the operating areas on nuclear criticality safety postings or in operating procedures or both.
>
> Nuclear Criticality Safety Procedure NCS-07, "Handling Fuel, Dummy Fuel, and Non-Fuel Components," states, in part, that non-fuel components constructed primarily of moderating material may not be stored on designated fuel racks or carts.
>
> Appendix A to Nuclear Criticality Safety Procedure NCS-05, "Moderation Control," identifies "wood" among the list of moderating materials.
>
> Contrary to the above, on April 28, 2010, the licensee failed to conduct operations according to administrative limits established by NCS and provided in an NCS procedure. Specifically, a cart designated for fuel was being used to store moderating material (i.e. wooden crates). The cart was left unattended in an area used to process fuel.

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

Pursuant to the provisions of 10 CFR 2.201, Babcock and Wilcox Nuclear Operations Group, Inc. 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 copies to the Chief, Technical Support Branch, Division of Fuel Cycle Safety and Safeguards, NMSS, and Regional Administrator, Region II, 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: (1) the reason for the violation, or, if contested, the basis for disputing the violation; (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 Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other actions 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 enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room (PDR), or from the NRC's document system, 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, 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 2.790(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 _26**_ day of May 2010**

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Docket No.:	70-27
License No.:	SNM-42
Report No.:	70-27/2010-203
Licensee:	Babcock and Wilcox Nuclear Operations Group, Inc.
Location:	Lynchburg, Virginia
Inspection Dates:	April 26-30, 2010
Inspectors:	Tamara Powell, Criticality Safety Inspector Natreon Jordan, Criticality Safety Inspector
Approved by:	Patricia A. Silva, Chief Technical Support Branch Division of Fuel Cycle Safety and Safeguards Office of Nuclear Material Safety and Safeguards

Enclosure 2

EXECUTIVE SUMMARY

Babcock and Wilcox Nuclear Operations Group, Inc.
NRC Inspection Report 70-27/2010-203

Introduction

Staff of the U.S. Nuclear Regulatory Commission (NRC) performed a routine and announced nuclear criticality safety (NCS) inspection of the Babcock and Wilcox Nuclear Operations Group, Inc. (B&W NOG), Lynchburg, Virginia facility from April 26-30, 2010. The inspection included an on-site review of the licensee NCS program, NCS-related inspections, audits and investigations, plant operations and open item review. The inspection focused on risk-significant fissile material processing activities including fuel fabrication and machining; the uranium recovery area; the Research, Test Reactor and Target (RTRT) area; and the Specialty Fuels Facility (SFF).

Results

- No safety concerns were identified regarding development, review, or approval of NCS analysis, calculations or resulting NCS controls.
- No safety concerns were noted regarding NCS-related events and corrective actions were adequately tracked by the licensee.
- No safety concerns were identified regarding NCS audits.
- No safety concerns were identified with regard to training and qualification of NCS staff.
- No safety concerns were identified regarding the licensee's Criticality Accident Alarm System (CAAS) coverage of fissile material operations.
- A severity level IV violation was identified for the failure to comply with administrative limits for a fuel cart.

REPORT DETAILS

1.0 Summary of Plant Status

B&W NOG manufactures high-enriched uranium fuel, reactor core components and reactor cores at its facility near Lynchburg, VA. During the inspection, the licensee conducted routine fuel manufacturing operations and maintenance activities in the fuel fabrication and uranium recovery areas.

2.0 Nuclear Criticality Safety Program (IP 88015 & IP 88016)

a. Inspection Scope

The inspectors reviewed NCS analyses to determine that criticality safety of risk-significant operations was assured through engineered and human controls with adequate safety margin, preparation and review by qualified staff. The inspectors reviewed selected aspects of the following documents:

- [Nuclear Criticality Safety Evaluation] NCSE-02, "Nuclear Criticality Safety Analyses and Quality Assurance Reviews," Rev. 38, dated October 30. 2009
- NCS-2010-028, "NCS Safety Analysis to Revise the Safety Basis for the ATR Vertical Plate Cart in RTRT," dated February 8, 2010
- NCS-2010-033, "Nuclear Safety Release for CR-1032894 'Relocating SFF Waste Column Spacing Requirements," dated February 8, 2010
- NCS-2010-054, "NCS Analysis for Cluster Poison Fixture Material Change CR-1033095," dated March 11, 2010
- NCS-2010-077, "NCS Analysis for Pickling of U-Metal in Conversion: SER 10-008 Phase 1," dated April 15, 2010
- NCS-2010-081, "Safety Analysis – Revised NCS Requirements for SER 08-043 Phase 1 RTRT Fully Fueled UMo Plate Production per SER 08-043 Phase 1," dated April 7, 2010

b. Observations and Findings

The inspectors reviewed NCS approvals, NCS evaluations, and supporting calculations for new, changed, and other selected operations. Within the selected aspects reviewed, the inspectors determined that the analyses were performed by qualified NCS engineers, that independent reviews of the evaluations were completed by qualified NCS engineers, and that the analyses provided for sub-criticality of the systems and operations. The inspectors observed that the analyses contained appropriate limits on controlled parameters for each credible accident sequence leading to inadvertent criticality. NCS analyses and supporting calculations demonstrated adequate identification and control of NCS hazards to assure operations within subcritical limits.

c. Conclusions

No safety concerns were identified regarding development, review, or approval of NCS analysis or calculations or resulting NCS controls.

3.0 Nuclear Criticality Safety Event Review and Follow-Up (IP 88015 & IP 88016)

a. Inspection Scope

The inspectors reviewed the licensee's response to reportable and non-reportable events including Event Number 45805 that occurred on March 31, 2010 and was reported to the NRC on April 1, 2010. The inspectors reviewed the progress of investigations and interviewed licensee staff regarding immediate and long-term corrective actions. The inspectors reviewed selected aspects of the following documents:

- OP-1011870, "Crane Control Operation and Testing," Rev. 8, dated April 22, 2010
- Safety Analysis Report 15.37, "Higher Tier Assemblies," Revision 80, dated March 30, 2010
- NCS-2004-117, "Nuclear Criticality Safety Analysis Supporting Phase 1 of SER04-018, Smart Cranes in Bay 8 UT" [Ultrasonic Testing], dated June 15, 2004
- NCS-2010-034, "Safety Concern Analysis for Extra Mass Placed in Bread Pan (CA201000291)," dated February 11, 2010
- NCE-2010-041, "Safety Concern Analysis [Safety Concern Analysis] for Inadequate Engineered Control on Bay 8 Smart Crane (CA201000372)," dated February 22, 2010
- NCS-2010-044, "Nuclear Safety Release for New Enhancements to the Physical Barriers to Prevent Forklift Access to the Bay 8 UT Tanks," dated February 20, 2010
- NCS-2010-048, "NCS Safety Concern: Solution Volume Upset in Workstation 30 (SFF)(CA201000438)," dated March 1, 2010
- NCS-2010-050, "30-Day Report to the General Manager for CA-201000275-Trash Bag Placed on Top of 5-Inch Waste Column," dated March 3, 2010
- NCS-2010-051, "Safety Concern Analysis [SCA] for Alcohol Discovered in Three 5-Inch Waster Columns (CA201000480)," dated March 8, 2010
- NCS-2010-053, "Nuclear Criticality Safety Release Supporting CR-1032969, 'Revise the Safety Basis for the RTRT ATR Vertical Plate Cart'," dated March 8, 2010
- NCS-2010-060, "SCA for Extra Moderation in RTRT <- 2.5-Liter Container Rack (CA201000579)," dated March 17, 2010
- NCS-2010-062, "30-Day Report to the General Manager for CA-201000372-Inadquate Engineered Control on Bay 8 Smart Crane," dated March 18, 2010
- NCS-2010-067, "30-Day Report to the General Manager for CA-201000438-Solution Volume Upset in Workstation 30," dated March 22, 2010
- NCS-2010-071, "Safety Concern Analysis for Bypassing the UT Crane Interlock (CA201000612)," dated March 25, 2010
- NCS-2010-072, "Safety Concern Analysis for Failed Functional Test of the Bay 8 Smart Crane – CA201000674," dated April 1, 2010
- NC-2010-073, "30-Day Report to the General Manager for CA201000480 – Alcohol in Three 5-Inch Waste Columns," dated April 1, 2010
- NCS-2010-076, "30-Day Report to the General Manager for CA-201000579 – Extra Moderation on RTRT <-2.5-Liter Container Rack," dated April 6, 2010
- NCS-2010-086, "NCS Safety Analysis Supporting Additional Independent Administrative Control on the Horizontal UT Tanks," dated April 12, 2010
- NCS-2010-089, "SCA for Placing Three Pre-Filers in a 5-Inch Waste Column (CA201000792)," dated April 16, 2010

b. Observations and Findings

On March 29, 2010, an UT Smart Crane tripped into fault mode and the crane's Programmable Logic Controller (PLC) was reset so that functional tests could be performed. The Smart Crane is an active engineered control that prevents simultaneous immersion in water of two fuel bearing components of concern in an UT tank. The crane failed its functional test and the PLC was checked. The licensee determined that the PLC was not indicating the tank as loaded with a component of concern. The PLC was manually set to identify the tank as loaded and the testing resumed. The crane then failed a test on another tank that did not contain a component of concern. The operator should have been able to transfer the test weights into the zone of the tank because it weighed less than 500 lbs, but the crane's safety interlock stopped the weights at the zone boundary. The tank was reset and all tanks passed the functional test. A definite cause could not be determined and operations continued.

On March 30, 2010, the indicating lights for the UT crane did not provide the correct indication of tank loaded/unloaded status. On March 31, 2010, the licensee determined that the crane's linear encoder was damaged and not accurately tracking the crane's position. This failure would allow the crane to move but give a false indication of crane position to the PLC. The failure of the smart crane as an item relied on for safety (IROFS) (EN45805) was reported to the NRC within 24 hours.

The inspectors noted that the accident sequence was analyzed in the Integrated Safety Analysis (ISA) and two IROFS were credited. IROFS 1 was the operator controlling the number of items of concern in a tank. IROFS 2 was the PLC crane controller preventing a second load greater than 500 pounds inside the zone when a load greater than 500 pounds is inside the zone. The only protection remaining was the operator performing a routine task, and therefore the performance requirements were not met.

The inspectors noted that the risk significance was low because at the time of the failure, there were no items of concern in the UT tank. The licensee indicated that long term corrective actions were being developed; however in the interim, an additional independent administrative control was added which requires that the crane remain locked when not in use. The crane is only unlocked upon designated personnel making an independent verification that the tank is empty. The inspectors verified that the applicable sequences in the ISA were revised to credit this additional IROFS. The inspectors determined that events were investigated in accordance with written procedures and appropriate corrective actions were assigned.

c. Conclusions

No safety concerns were noted regarding NCS-related events and corrective actions were adequately tracked by the licensee.

4.0 Nuclear Criticality Safety Inspections, Audits, and Investigations (IP 88015)

a. Inspection Scope

The inspectors reviewed results of the most recent NCS quarterly audit to assure that appropriate issues were identified and resolved. The inspectors reviewed selected aspects of the following documents:

- NCSE-03, "NCS Audits and Inspections," Rev. 24, dated February 27, 2009
- NCS-2010-091, "Improvement Suggestion to Scenarios for Release of Material to Annular Waste Tanks in SAR 15.12A," dated April 19, 2010
- NCS-2010-092, "NCS Violation and Observation Summary - 1st Quarter 2010," dated April 23, 2010

b. Observations and Findings

The inspectors determined that the licensee's NCS audits were conducted in accordance with written procedures. The inspectors noted that the audits were performed by NCS engineers who reviewed open NCS issues from previous audits; reviewed new violations that occurred during the audit quarter; reviewed the adequacy of control implementation; reviewed plant operations for compliance with license requirements, procedures, and postings; examined equipment and operations to determine that past evaluations remained adequate; and analyzed non-compliances for potential trends.

c. Conclusions

No safety concerns were identified regarding NCS audits.

5.0 Nuclear Criticality Safety Training (IP 88015)

a. Inspection Scope

The inspectors reviewed records and procedures associated with training and qualification of NCS staff members. The inspectors reviewed selected portions of the following documents:

- NCSE-07, "Qualification and Training Requirements for a Nuclear Criticality Safety Engineer," Rev. 13, dated April 28, 2010
- NCS-2010-003, "Qualification of Engineer A as an NCS Auditor," dated January 14, 2010
- NCS-2010-024, "Qualification of Engineer A as an NCS Evaluator," dated February 3, 2010

b. Observations and Findings

The inspectors reviewed procedure NCSE-07, which specifies the requirements for the training and qualification of NCS staff members. The inspectors reviewed the qualification requirements and records for selected NCS staff to determine that qualifications were commensurate with the responsibilities involved with performing the duties of NCS Auditor and NCS Evaluator. The inspectors interviewed recently qualified NCS staff concerning items listed in their qualification memos, as well as recently issued or revised analyses for which they had had responsibility. The inspectors determined that the items listed in NCS staff qualification memos satisfied the requirements of procedure NCSE-07, that training involved considerable mentoring by senior staff and questioning by the NCS Manager, and that staff appeared knowledgeable in all aspects of NCS.

c. Conclusions

No safety concerns were identified with regard to training and qualification of NCS staff.

6.0 Criticality Accident Alarm System (IP 88017)

a. Inspection Scope

The inspectors reviewed documentation of CAAS coverage, interviewed engineering and maintenance staff, and performed facility walkdowns to determine the adequacy of the licensee CAAS. The inspectors reviewed selected aspects of the following documents:

- NCS-2005-073, "Level 2 Evaluation to Relocate Criticality Pair 2-7 and 2-8 (SER 05-014, Phase 1)," dated April 11, 2005
- NCS-2007-188, "NCS analysis Addressing Criticality Accident Monitor Coverage at the Container Storage Building per SER 06-040 Phase 1 Revised," dated August 16, 2007
- "Calibration and Monthly Check of Criticality Monitors 2010" (logbook)
- "Criticality Alarm System Failure Event Log 2010" (logbook)

b. Observations and Findings

In selected facility areas, the inspectors verified that the licensee's placement of criticality accident alarm detectors has been established in accordance with the criteria described in 10 CFR 70.24. The inspectors reviewed licensee procedures for maintaining and testing the criticality alarm system and observed the monthly check of the monitoring system. The inspectors also interviewed Radiation Control Office personnel concerning the calibration and testing of the criticality detectors and the monitoring system. Inspectors also reviewed the Criticality Alarm System Event and Calibration Log entries. The inspectors determined that functional testing and preventive and corrective maintenance were being performed in accordance with procedures and so as to ensure the entire alarm system was maintained to a high degree of reliability.

c. Conclusions

No safety concerns were identified regarding the licensee's CAAS coverage of fissile material operations.

7.0 Plant Operations (IP 88015)

a. Inspection Scope

The inspectors performed plant walkdowns to review activities in progress and to determine whether risk-significant fissile material operations were being conducted safely and in accordance with regulatory requirements. The inspectors interviewed operations staff and NCS engineers both before and during walkdowns. The inspectors reviewed selected aspects of the following documents:

- NCS-05, "Moderation Control," Revision 5, dated March 15, 2003

- NCS-07, “Handling Fuel, Dummy Fuel, and Non-Fuel Components,” Revision 7, dated March 1, 2008

b. Observations and Findings

The inspectors performed walkdowns in the fuel fabrication and machining shops, the uranium recovery area, the RTRT area, and the SFF. The inspectors verified that controls identified in NCS analyses were installed or implemented and were adequate to ensure safety. The inspectors also verified that safety was maintained for observed facility operations. The cognizant, NCS engineers were knowledgeable and interacted regularly with operators on the process floors. The inspectors verified the adequacy of management measures for assuring the continued availability, reliability, and capability of safety-significant controls relied upon by the licensee for controlling criticality risks.

While conducting a walkdown of the fuel fabrication areas, the inspectors observed an unattended cart being used to store wooden crate material in an area used to process fuel. Upon further discussion with NCS personnel, the inspectors determined that there was an area procedure in place restricting carts designated for fuel from being used to store non-fuel components constructed primarily of moderating material. This requirement in NCS-07 references Appendix A of NCS-05, which provides a list of the type of moderating materials that are restricted from being placed on fuel carts. Wood is listed in NCS-05 as moderating material. The inspectors noted that although analyses evaluating the effects of reflection had been performed, the explicit scenario involving the cart had not been analyzed. As an immediate corrective action the wooden material was removed from the cart and NCS personnel walked down adjacent process areas to ensure that similar incidents had not taken place. The licensee also informed the inspectors that long term corrective actions are being developed. Failure to conduct operations according to administrative limits (e.g. storing moderating material on a cart designated for fuel) is **Violation (VIO) 70-27-2010-203-01.**

c. Conclusions

A severity level IV violation was identified for the failure to comply with administrative limits for a fuel cart.

8.0 Open Item Review

IFI 70-27/2010-201-01

This item tracks revision of validation and supporting calculations to adequately justify use of PVC piping as a neutron absorber. During the previous inspection, the inspectors noted that the criticality analysis for PVC piping took credit for the thickness and density of the piping as a neutron absorber in some models. The inspectors questioned whether PVC was properly validated for use in these calculations. The licensee had planned to revise the PVC piping analysis to evaluate for sensitivity of these models to the presence of chlorine and enhance the validation by adding more experiments containing chlorine. During this inspection, the licensee stated that the revision to the PVC piping analysis had not yet been completed. This item remains open.

VIO 70-27/2010-201-02

This item tracks the licensee's failure to adequately demonstrate subcriticality under bounding moderation and spacing conditions for bowed fuel on the RTRT vertical spacing cart. The licensee identified corrective actions which included the completion of a formal NCS analysis to verify that the spacing between elements does not need to be controlled when the effect of interstitial moderator is taken into account and the revision of the SCA to demonstrate that the safety limit was not exceeded. During this inspection, the inspectors reviewed the revised NCS analysis and verified compliance with the applicable limits for normal and abnormal case calculations. The inspectors had no safety concerns regarding the licensee's evaluation. The inspectors determined that the licensee had completed all corrective actions. This item is closed.

IFI 70-27/2010-201-03

This item tracks revision of the training and qualification procedure NCSE-07 with regard to what training is required before an NCS engineer can perform a QA computer code validation. During the previous inspection, the inspectors noted that NCS Engineers were allowed to perform a QA code validation and verification without the requirement that they are knowledgeable of procedure NCSE-11, "Verification and Validation of Computer Codes Used." During this inspection, the inspectors reviewed the revised procedure and noted that the procedure had been revised to require NCS Engineers be familiar with NCSE-11 and have management approval prior to performing a QA code validation and verification. This item is closed.

VIO 70-27/2009-006-02

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. This item is closed.

VIO 70-27/2009-006-03

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. This item is closed.

VIO 70-27/2009-006-04

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 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.

9.0 Exit Meeting

The inspectors presented the inspection scope and results to members of the licensee's management and staff during an exit meeting on April 30, 2010. The licensee acknowledged and understood the findings as presented.

SUPPLEMENTARY INFORMATION

1.0 List of Items Opened, Closed, and Discussed

Items Opened

VIO 70-27/2010-203-01	Failure to conduct operations according to administrative limits (e.g. storing moderating material on a cart designated for fuel)

Items Closed

VIO 70-27/2010-201-02	Failure to adequately demonstrate subcriticality under bounding moderation and spacing conditions for bowed fuel on the RTRT fuel cart.
IFI 70-27/2010-201-03	Tracks revision of the training and qualification procedure NCSE-07 with regard to what training is required before an NCS engineer can perform a QA computer code validation.
VIO 70-27/2009-006-02	Failure to adequately disable the band saw cutting fluid reservoir in accordance with the nuclear safety release SER 03-087.
VIO 70-27/2009-006-03	Failure to establish double contingency for the band saw cutting fluid reservoir in the modified configuration.
VIO 70-27/2009-006-04	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 vessel.

Items Discussed

IFI 70-27/2010-201-01	Tracks revision of validation and supporting calculations to adequately justify use of PVC piping as a neutron absorber.

2.0 Inspection Procedures Used

IP 88015	Nuclear Criticality Safety Program
IP 88016	Nuclear Criticality Safety Evaluations and Analyses
IP 88017	Criticality Accident Alarms

3.0 Partial List of Persons Contacted

B&W NOG

R. Cochrane	General Manager, B&W NOG
D. Faidley	Nuclear Criticality Safety
L. Wetzel	Advisory Engineer, Nuclear Criticality Safety
B. Cole	Manager, Licensing and Safety Analysis
C. Goff	Group Lead, Licensing and Safety Analysis

M. Hicks	Manager, Security
D. Ward	Manager, EHS&S
J. Burch	Manager, Operations

NRC

T. Powell	Criticality Safety Inspector, NRC Headquarters
N. Jordan	Criticality Safety Inspector, NRC Headquarters
S. Subosits	Senior Resident Inspector, NRC Region II

4.0 List of Acronyms

B&W NOG	Babcock and Wilcox Nuclear Operations Group Inc.
CAAS	Criticality Accident Alarm System
IFI	inspector follow-up item
IP	inspection procedure
IROFS	item relied on for safety
ISA	integrated safety analysis
NCS	nuclear criticality safety
NCSE	nuclear criticality safety evaluation
NOV	Notice of Violation
PLC	Programmable Logic Controller
RTRT	Research, Test Reactor, and Target
SAR	Safety Analysis Report
SCA	Safety Concern Analysis
SER	Safety Evaluation Report
SFF	Specialty Fuels Facility
SNM	Special Nuclear Material
UT	Ultrasonic Testing