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

[redacted]

December 11, 2006

Mr. R. P. Cochrane, General Manager
BWX Technologies, Inc.
Nuclear Products Division
P. O. Box 785
Lynchburg, VA 24505-0785

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2006-008 AND NOTICE OF VIOLATION

Dear Mr. Cochrane:

This refers to the inspection conducted from October 1 through November 11, 2006, at the Nuclear Products Division facility. The purpose of the inspection was to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed report.

Areas examined during the inspection included: Plant Operations, Management Organization and Controls, Radiation Protection, and Emergency Preparedness. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of this inspection, the NRC has determined two violations of NRC requirements occurred. The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. If you contest these violations or their 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 20555-0001, and the NRC Senior Resident Inspector at your facility.

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

[redacted]

[redacted]

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

Sincerely,

/RA/

David A. Ayres, 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

cc w/encls:
Leah R. Morrell
Manager, Licensing and Safety Analysis
BWX Technologies
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)

[redacted]

[redacted]

Distribution w/encls:
D. Ayres, RII
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A. Gooden, RII
G. Wertz, RII
M. Galloway, NMSS
B. Gleaves, NMSS
N. Baker, NMSS
J. Cruz, NSIR

[redacted]

ADAMS: X☐ Yes ACCESSION NUMBER:_____

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	EICS		
SIGNATURE	via phone					
NAME	G Wertz:	A. Gooden	[redacted]	C. Evans		
DATE	12/11/2006	May 18, 2008	May 18, 2008	May 18, 2008	May 18, 2008	May 18, 2008
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\FileNet\ML063450457.wpd

[redacted]

[redacted]

NOTICE OF VIOLATION

BWX Technologies, Inc.
Lynchburg, Virginia

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

During NRC inspection activities conducted between October 1 through November 11, 2006, two violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

A. Safety Condition S-1 of NRC license SNM-42 authorizes the use of nuclear materials in accordance with Chapters 1-11 of the License Application submitted on July 14, 1995, and supplements thereto. License Application, Section 7.4, requires that specific fire safety controls, if necessary, are identified in the Integrated Safety Analysis Summary to prevent and mitigate the consequences of a fire. The Integrated Safety Analysis Summary, Safety Analysis Report 15.35, identified two fire safety controls related to smoke detection, alarm and shutdown of hydraulic and ventilation systems, respectively, for three nuclear material processing areas.

Contrary to the above, as of the date of this inspection, fire safety controls identified as necessary for preventing or mitigating the consequences of a fire in the Integrated Safety Analysis and related to the ventilation shutdown systems were not implemented in any of the [redacted] nuclear material processing areas and the [redacted] shutdown system was not implemented in [redacted] nuclear material processing area.

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

B. Safety Condition S-1 of NRC license SNM-42 authorizes the use of nuclear materials in accordance with Chapters 1-11 of the License Application submitted on July 14, 1995, and supplements thereto. License Application, Section 11.4, requires activities involving licensed material to be conducted in accordance with written and approved procedures. Procedure HS-FP-017, "Inspection and Testing of Automatic Fire Detectors," Revision 6, requires an annual test to verify that ventilation fans will shutoff if activated by their associated smoke detectors, and requires a biennial sensitivity test of the smoke detectors in accordance with their manufacturer's instructions as described in the vendor manual.

Contrary to the above, as of the date of this inspection, the ventilation shutdown smoke detectors had not been tested annually. No record of annual ventilation shutdown smoke detector testing could be found and the fire protection technician responsible for the testing for the past several years, could not recall ever having performed the annual

[redacted]

test. In addition, the biennial smoke detector sensitivity tests were being performed using an external smoke generation system method which was different from the manufacturer's instructions which involved verification of smoke detector voltage readings.

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

Regarding these Violations, pursuant to the provisions of 10 CFR 2.201, BWX Technologies, Inc., is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region II, and a copy to the NRC Resident Inspector at BWX Technologies, Inc., 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 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 not be modified, suspended, or revoked, or why such other action as may be proper should be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

[redacted]

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

Dated this 11th day of December 2006

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-27
License No.:	SNM-42
Report No.:	70-27/2006-008
Licensee:	BWX Technologies, Inc.
Facility:	Nuclear Products Division
Location:	Lynchburg, Virginia
Dates:	October 1 through November 11, 2006
Inspectors:	G. Wertz, Senior Resident Inspector
Approved by:	David A. Ayres, Chief Fuel Facilities Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure 2

[redacted]

EXECUTIVE SUMMARY

BWX TECHNOLOGIES, INC., NUCLEAR PRODUCTS DIVISION
NRC INSPECTION REPORT 70-27/2006-008

This inspection 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, Radiation Protection, and Emergency Preparedness.

Plant Operations

- Two violations were identified when fire safety controls identified in the Integrated Safety Analysis were not implemented in the facility, and fire safety testing was not done in accordance with the approved procedure (Paragraph 2.a).

- A review of the Integrated Safety Analysis for the [redacted] indicated that the Safety Analysis Report accident scenarios, management measures and Items Relied on For Safety had been established and maintained to ensure safe operation (Paragraph 2.b).

- The [redacted] was done in accordance with the requirements of the Safety Evaluation Report (Paragraph 2.c).

- Preliminary [redacted] handling operations at the Lynchburg Technology Center were performed safely and in accordance with the Radiation Work Permit and Safety Evaluation Report requirements (Paragraph 2.d).

Management Organization and Controls

- The licensee identified and corrected a degraded Nuclear Criticality Safety Item Relied on For Safety. The risk significance was low based on a review of the applicable Nuclear Criticality Safety analysis and associated accident scenarios. The corrective actions included implementation of revised Nuclear Criticality Safety postings and a review to verify that other passive engineered Nuclear Criticality Safety controls had been maintained (Paragraph 3).

Radiation Protection

- Radiation protection daily surveillance logs and Radiation Safety Incident Notices indicated no significant radiation protection issues. A special nuclear material spill in [redacted] was properly handled and reported (Paragraph 4).

[redacted]

[redacted]

Emergency Preparedness

- The licensee effectively tested and demonstrated their emergency response capabilities during a quarterly emergency preparedness exercise (Paragraph 5).

Attachment:
Partial Listing of Persons Contacted
List of Items Opened, Closed and Discussed
Inspection Procedures Used

[redacted]

[redacted]

REPORT DETAILS

1. **Summary of Plant Status**

Routine fuel manufacturing operations and maintenance activities were conducted in the fuel process areas and in the [redacted] facility. Uranium recovery was conducted in the [redacted] facility.

Ms. Patricia Holahan, Director of the Division of Security Policy in the office of Nuclear Security and Incident Response (NSIR), toured the facility on October 16, 2006. Joe Rivers, NSIR, Bill Gleaves, Nuclear Material Safety and Safeguards (NMSS), and, Geoff Wertz, Senior Resident Inspector, accompanied Ms. Holahan on the tour.

Admiral Kirkland Donald, Director of the Naval Nuclear Propulsion Program, toured the facility on November 9. 2006.

2. **Plant Operations (Inspection Procedure (IP) 88135)**

a. Safety Analysis Report 15.35 Safety Review

1) Inspection Scope and Observations

The inspector reviewed items relied on for safety (IROFS), safety controls, and management measures listed in the Integrated Safety Analysis (ISA) for Safety Analysis Report (SAR) 15.35. No discrepancies were identified in the Nuclear Criticality Safety (NCS), Radiation Protection (RP) or Chemical Safety areas. However, the following issues were identified in Fire Protection (FP):

Fire Safety Controls

SAR table 15.35.4.4.1 credits smoke detection systems which alarm and shutdown the [redacted] pumps and ventilation system fans for [redacted] distinct special nuclear material (SNM) processing areas in order to mitigate the consequences of a fire. Information provided by the FP engineer indicated that the ventilation shutdown system was neither installed nor tested for any of the [redacted] areas. In addition, for processing area [redacted], the [redacted] shutdown system had not been installed nor tested, and the sprinkler system did not have the capability to be flow tested. License Application (LA) Section 7.4 states that "specific fire safety controls, if necessary, are identified in the ISA Summary to prevent and mitigate the consequences of a fire involving these materials." Failure to implement these fire safety controls, as listed in the ISA SAR 15.35, was a violation (VIO 70-27/2006-08-01: Failure to Implement Fire Safety Controls).

[redacted]

Management Measures

SAR table 15.35.4.4.1 credits annual testing in accordance with procedure HS-FP-017, "Inspection and Testing of Automatic Fire Detectors," as the management measures used to ensure the fire safety controls described above remain available. The inspector learned that the FP technicians were not performing the procedure as written. Specifically, HS-FP-017, Section 6.3.3, which requires an annual test to verify that the ventilation system will isolate air flow when the smoke detectors activate, had not been performed. The FP technician responsible for the test for the past several years could not recall it ever having been done. In addition, the FP technicians were performing the smoke detector biennial sensitivity testing using an external smoke generation system which was different than described in HS-FP-017, Section 6.4, which required smoke detector voltage testing in accordance with the manufacturer's instructions. LA Section 11.4, requires activities involving licensed material to be conducted in accordance with written and approved procedures. Failure to perform ventilation and fire detector sensitivity testing in accordance with Procedure HS-FP-017 was a violation (VIO 70-27/2006-08-02: Failure to Perform Fire Detector Testing in Accordance With Procedural Requirements).

Risk and Regulatory Significance

The inspector performed a risk review of the fire safety controls noting that they were not designated as IROFS. The inspector reviewed SAR 15.35, Appendix A, [redacted]; technical work record (TWR) RP-TWR 05-017; and the ISA methodology described in Quality Work Instruction (QWI) 2.1.3, "Integrated Safety Analysis Methodology," and concurred with the licensee's assessment that the safety controls were not necessary to meet the performance criteria of 10 CFR 70.61. However, the fire safety controls were considered important because they mitigated the potential adverse consequences that a fire could have on [redacted] SNM or other hazardous materials. As such, the violations were considered more than minor. In addition, the violations were not treated as non-cited violations since the license had numerous opportunities during the past several years, in which to perform the ventilation system testing in accordance with the procedure, and/or audit the ISA fire safety controls, in order to identify and correct these deficiencies.

2) Conclusions

Two violations were identified when fire safety controls identified in the ISA were not implemented in the facility and fire safety testing was not done in accordance with the approved procedure.

b. Uranium Recovery Scrubber Safety Review

1) Inspection Scope and Observations

The inspector reviewed SAR 15.14, the IROFS, and the corresponding accident scenarios associated with the operation of the UR scrubber. The inspector toured the scrubber system, reviewed the passive engineered controls with NCS engineers, and validated that the IROFS were accurately reflected on drawing 14ASD2-1002E and in NCS Analysis 2002-210. Active engineered controls were reviewed and determined to be maintained by functional tests done in accordance with Operating Procedure (OP) 0061143. The inspector reviewed Process Hazards Analysis (PHA) accident scenarios [redacted], noting effective correlation to the SAR control limits, associated IROFS and management measures. The PHA accident scenarios' frequency, protection, overall likelihood, and risk zone determinations were reviewed and determined to have been established correctly and in accordance with QWI 2.1.3, "Integrated Safety Analysis Methodology."

2) Conclusions

A review of the ISA for the UR Scrubber indicated that the SAR accident scenarios, management measures and IROFS had been established and maintained to ensure safe operation.

c. [redacted]

1) Inspection Scope and Observations

The [redacted] was completed in late September. The inspector had routinely observed [redacted] over the past year, and following completion, reviewed and inspected the operational requirements listed in Safety Evaluation Report (SER) 05-089, NCS analyses NCS-2006-111, and NCS-204-202. The inspector reviewed the [redacted] and verified that the SNM was stored in accordance with the NCS postings. The inspector reviewed the criticality detector coverage with the cognizant NCS engineer and determined that coverage had been adequately maintained using existing radiation monitors located in adjoining areas. The fire detection and mitigation systems were installed as required by the SER.

2) Conclusions

The [redacted] was done in accordance with the requirements of the SER.

d. Lynchburg Technology Center [redacted] Handling Activities

1) Inspection Scope and Observations

The inspector reviewed SER 06-041, "[redacted]," and observed Lynchburg Technology Center (LTC) operators place the [redacted] into the newly fabricated support stand [redacted]. The inspector reviewed future activities which will include additional equipment installation [redacted]. The activities observed were performed safely and in accordance with the requirements of RWP LTC-06-56. The SER operational requirements were properly evaluated and approved by the safety disciplines.

2) Conclusions

Preliminary [redacted] handling operations at the LTC were performed safely and in accordance with the RWP and SER requirements.

3. **Management Organization and Controls (IP 88135)**

a. Inspection Scope and Observations

The inspector reviewed corrective action (CA) 2010784 which documented the licensee's evaluation of a degraded IROFS. The inspector toured the affected area and reviewed the corresponding PHA accident scenarios in SAR 15.26 with the cognizant NCS engineer. NRC Headquarters NCS inspectors also reviewed NCS Safety Analysis 2006-199 which indicated that the NCS accident scenarios remained highly unlikely, and concurred with the licensee's assessment.

The licensee's corrective actions included the immediate removal of all [redacted] until completion of the above NCS analysis which revised the NCS postings. The cause of the degraded IROFS was the failure several years ago to perform a visual verification of the ISA credited passive engineered control. As a result, the NCS Manager reviewed the issue with his staff and directed a verification of all passive engineered NCS controls in the facility through the weekly NCS area audit process. The inspector verified the installation of the revised NCS postings and observed an NCS engineer's weekly audit and review of passive engineered controls in UR.

b. Conclusions

The licensee identified and corrected a degraded NCS IROFS. The risk significance was low based on a review of the NCS analysis and accident scenarios. The CAs included implementation of revised NCS postings and a review to verify other passive engineered NCS controls had been maintained.

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

a. Inspection Scope and Observations

The inspector reviewed RP daily surveillance logs for the month of October. No RP log issues observed appeared significant to warrant initiation of a Radiation Safety Incident Notice (RSIN). The inspector reviewed an SNM solution spill which occurred in [redacted] on October 18 when maintenance attempted to tighten a leaking fitting and inadvertently cracked an adjoining weld. The SNM solution leaked to the designated favorable geometry [redacted] the area was promptly isolated, and the solution cleaned up. The foreman evaluated and reported the event in accordance with OP-0061167, "Spill and Leak Handling Emergency Procedure." The inspector reviewed the RSIN log noting no significant RP issues.

b. Conclusions

RP daily surveillance logs and RSINs indicated no significant RP issues. An SNM spill in [redacted] was properly handled and reported.

5. **Emergency Preparedness (IP 88135)**

a. Inspection Scope and Observations

The inspector observed the first shift emergency preparedness drill conducted on [redacted] The drill scenario involved credible accident conditions including contaminated injured workers and effectively exercised the emergency team and Emergency Operations Center staff. Communications and command and control were effective. The post-drill critique comments identified communication improvements.

b. Conclusions

The licensee effectively tested and demonstrated their emergency response capabilities during a [redacted] drill.

6. **Exit Meeting**

The inspection scope and results were summarized on November 17, 2006, 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.

The Environmental, Safety, Health and Safeguards Manager disagreed with the inspection findings in that the two cited violations were not within NRC jurisdiction.

[redacted]

ATTACHMENT

1. LIST OF PERSONS CONTACTED

J. Burch, Manager, Operations
R. Cochrane, Manager, General Manager
J. Creasey, Manager, Uranium Processing
R. Hogg, Acting Manager, Nuclear Criticality Safety
L. Morrell, Manager, Licensing & Safety Analysis
T. Nicks, Manager, Security
S. Schilthelm, Manager, Safety and Licensing
D. Spangler, Manager, Radiation Protection
M. Suwala, Manager, Nuclear Materials Control
D. Ward, Manager, Environment, Safety, Health and Safeguards

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

2. LIST OF ITEMS OPENED AND CLOSED

Item Number	Status	Description
70-27/2006-08-01	Opened	Failure to Maintain Fire Safety Controls (Paragraph 2.a)
70-27/2006-08-02	Opened	Failure to Perform Fire Detector Testing in Accordance With Procedural Requirements (Paragraph 2.a)

3. INSPECTION PROCEDURE USED

IP 88135 Resident Inspection Program for Category I Fuel Cycle Facilities

[redacted]