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

[redacted]

August 23, 2004

BWX Technologies, Inc.
ATTN: Mr. W. D. Nash, Vice President
and General Manager
Nuclear Products Division
P. O. Box 785
Lynchburg, VA 24505-0785

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2004-005

Bear Mr. Nash:

This refers to the inspection conducted from June 13 through July 24, 2004, 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 are identified in the report. 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 that two violations of NRC requirements occurred. These violations are being treated as non-cited violations (NCV), consistent with Section VI.A.8 of the Enforcement Policy. The NCVs are described in the subject inspection report. If you contest the violations or significance of these NCVs, 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 Resident Inspector at your facility.

[redacted]

[redacted]

[redacted]

Thank you for your response dated May 11, 2004, to our Notice of Violation which was issued on April 16,2004. The reply met the requirements of 10 CFR 2.201 and your corrective actions were reviewed during this inspection period.

[redacted]

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

Sincerely,

[redacted]

David A. Ayres, Chief
Fuel Facility Inspection Branch 1
Division of Fuel Facility Inspection

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

Enclosures: 1. NRC Inspection Report (Part 1)
2. NRC Inspection Report (Part 2) [redacted]

cc w/encls:
Leah R. Morrell
Manager, Licensing and Safety Analysis
BWX Technologies
P. O. Box 785
Lynchburg, VA 24505-0785

[redacted]

[redacted]

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-27
License No.:	SNM-42
Report No.:	70-27/2004-005
Licensee:	BWX Technologies, Inc.
Facility:	Nuclear Products Division
Location:	Lynchburg, Virginia
Dates:	June 13 through July 24,2004
Inspector:	G. Wertz, Senior Resident Inspector N. Rivera, Fuel Facility Inspector A. Gooden, Senior Fuel Facility Inspector
Approved by:	David A. Ayres, Chief Fuel Facilities Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure 1

[redacted]

[redacted]

NRC INSPECTION REPORT 70-27/2004-05 (PART 1)

EXECUTIVE SUMMARY

BWX Technologies, Inc., Nuclear Products Division

This inspection included periodic observations conducted by the senior resident inspector during normal and off-normal shifts in the area of facility operations. A specialized inspection and review of documentation were conducted by regional inspectors in the areas of Environmental Protection and Emergency Preparedness (June 28 through July 2). The results of these inspections are included in Part 1 of this report.

Plant Operations

- The facility was operated safely and in accordance with regulatory and license requirements. The Emergency Operations Center and associated equipment were maintained in a state of readiness. Maintenance work was done in accordance with radiation work permit requirements. Housekeeping was adequate to ensure routes of egress were clear in case of an emergency and fire hazards were minimized (Paragraph 2.a).

- Nuclear criticality safety control devices and measures were properly implemented (Paragraph 2.b).

- A non-cited violation of NRC requirements was identified when a failed [redacted] detector resulted in a loss of criticality monitoring system coverage to the Lynchburg Technology Center [redacted]. The licensee took prompt corrective action to restrict personnel access until the system was restored. Additional administrative controls were implemented to prohibit the introduction of any special nuclear material into the [redacted] until completion of a nuclear criticality safety evaluation and determination of final corrective action (Paragraph 2.c).

- Modification of Uranium Recovery processing equipment to support uranium [redacted] was performed in accordance with safety evaluation report requirements. Nuclear criticality safety controls were properly implemented. Operators were cognizant of the new procedural requirements and engineering oversight was effective to ensure safety of operation (Paragraph 2.d).

Management Organization and Controls

- A non-cited violation was identified when an operator inadvertently failed to close *two* valves as specified in the operating procedure for shutdown of the [redacted] system. A flammable solution spill resulted. Although the spill could result in an [redacted] the items relied on for safety were available [redacted]

[redacted] The corrective action appeared adequate to preclude recurrence. An inconsistency between operating procedure guidance for emergency shutdown and timely evacuation of the area was identified by the inspector and corrected by area management (Paragraph 3).

Chemical Safety

- Corrective actions for an acid burn to a Uranium Recovery operator appeared effective to prevent recurrence. Decontamination of the operator was performed appropriately prior to transport to an offsite medical facility (Paragraph 4).

Environmental Protection

- The Environmental Monitoring Program was implemented in accordance with license requirements and site procedures. However, the inspector identified a potential weakness due to a lack of procedural specificity necessary to ensure the consistent collection of representative environmental samples (Paragraph 5.a).

- The licensee was monitoring the [redacted] in accordance with the License Application requirements (Paragraph 5.b).

Maintenance and Surveillance

- Shutdown maintenance work activities were performed safely. Special nuclear material was properly stored and radiological postings accurately reflected hazardous work environments. Safety personnel were active in management oversight of work activities. A new hard hat policy prevented one possible injury. Unplanned electrical distribution problems were properly assessed and safely corrected. No reduction [redacted] safety system effectiveness resulted from the electrical distribution problems (Paragraph 6).

Emergency Preparedness

- Program changes had no impact on emergency preparedness. The independent audit included both performance and compliance based assessments. Corrective actions were identified but not fully implemented to ensure that controlled documents were maintained current and up to date (Paragraph 7.a).

- The revised procedures in the Emergency Preparedness Manual continue to implement the Emergency Plan (Paragraph 7.b).

[redacted]

[redacted]

- Based on interviews and training documentation, emergency response training was adequate and all personnel selected for review was trained in accordance with procedures (Paragraph 7.c).

- Based on interviews and records reviewed, the inspector determined that the offsite interface was properly maintained (Paragraph 7.d).

- The licensee conducted exercises in accordance with the requirements of the Plan. The performance of [redacted] drills involving activation of the emergency organization demonstrated a commitment to training and maintaining the proficiency of the response organization (Paragraph 7.e).

- Based on the equipment operability checks and audit documentation, the inspector determined that the reliability of selected equipment was good and the equipment was maintained in a state of operational readiness (7.f).

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

[redacted]

[redacted]

REPORT DETAILS

1. **Summary of Plant Status**

Routine fuel manufacturing operations and maintenance activities were conducted in the [redacted] processes. [redacted] other routine operations and maintenance activities were conducted in the [redacted]

2. **Plant Operations (Temporary Instruction (TI) 2600/006)**

a. Conduct of Operations - Routine Observations

(1) Inspection Scope

The inspector toured the licensee's facilities to observe various operational and work activities. Observed activities were assessed to determine if the facility was operated safely and in accordance with license and regulatory requirements. The inspector also checked the Emergency Operations Center (EOC) and associated equipment to determine if the facility was maintained in a state of readiness.

Housekeeping associated with the storage of equipment and materials throughout the facility was also reviewed for any significant potential hazards. The inspector performed a routine fire safety tour to verify that fire hazards were minimized especially in locations containing hazardous chemicals or [redacted] nuclear materials.

The inspector reviewed various operational procedures and records, radiation work permits (RWP), and nuclear criticality safety (NCS) postings, to determine if operations were performed safely and in accordance with approved plant procedures and postings.

(2) Observations and Findings

The inspector observed that specific operations were performed safely and in accordance with approved plant procedures and postings. Discussions with operations personnel confirmed an understanding of the procedural and posting requirements. The inspector verified that the EOC and associated equipment were maintained in a state of readiness.

Outside areas were toured and inspected. No conditions that could create an undesirable situation or hazard in the event of adverse weather (high winds, cold weather, or flooding), or blocked evacuation pathways were observed. During tours of the facility, the inspector noted radiological signs, postings, and procedures were

[redacted]

[redacted]

properly posted or readily available. The inspector observed conditions and determined that equipment and devices used to confine and contain radioactive contamination and airborne radioactivity in [redacted] and other [redacted] areas [redacted] were in proper working condition, and that proper personal protective clothing and dosimetry were issued and properly worn. During process area tours, the inspector noted that emergency egress routes were adequately clear of debris.

RWP 04-80 described the radiological controls determined necessary to protect the workers while removing special nuclear material (SNM) samples from the downblending [redacted] The inspector reviewed the RWP and observed the work area noting appropriate application of RWP requirements. Operators questioned were cognizant of the respirator and personnel protection (clothing) requirements. No discrepancies were identified.

(3) Conclusions

The facility was operated safely and in accordance with regulatory and license requirements. The EOC and associated equipment were maintained in a state of readiness. Maintenance work was done in accordance with radiation work permit requirements. Housekeeping was adequate to ensure routes of egress were clear in case of an emergency and fire hazards were minimized.

b. Implementation of Process Safety Controls

(1) Inspection Scope

The inspector reviewed nuclear criticality control devices and measures in effect during this inspection period in order to assess the effectiveness of the licensee's program for prevention of an inadvertent criticality.

(2) _____

The inspector toured [redacted] areas and observed that personnel complied with approved, written NCS limits and controls, especially in areas where the licensee was using administrative controls rather than passive or active engineering controls. The inspector verified NCS limits were posted and available to the operators. During tours of [redacted] areas of the facility, the inspector observed proper spacing practices and controls, use of storage locations, and identification of SNM.

[redacted]

[redacted]

(3) Conclusions

NCS control devices and measures were properly implemented.

c. Lynchburg Technology Center (LTC) Criticality Monitoring System (CMS) Failure

(1) Inspection Scope

On May 27, an LTC technician performing a monthly source check of the LTC CMS, discovered that [redacted] detectors used to detect an inadvertent criticality from [redacted] would not have provided a high alarm signal. As such, the CMS detection and alarm activation system was impaired. The event was reported to the NRC in Event Notification 40782. The inspector reviewed the event in order to evaluate the safety significance of the detector failure, the adequacy of the licensee's root cause determination and corrective actions, and the effectiveness of the LTC CMS.

(2) Observations and Findings

The licensee promptly isolated personnel access to th[redacted]ntil the[redacted] detector was repaired (on May 28) and the CMS was restored to an operational status. Although the monthly source check was last performed on April 11, no SNM had been stored in any of the LTC [redacted] since February 20, 2001; and therefore, the risk of an inadvertent criticality during the intervening period of potential CMS inoperability was low. The licensee determined that a failed resistor caused the loss of alarm function and decided to prohibit the introduction of any SNM into the [redacted] until a detailed system assessment of the LTC CMS was completed. The administrative controls developed to prohibit SNM in the [redacted] were described by procedure B-HC-15, "Transfer of SNM and Source Material Within the [redacted] and NCS posting PLANT-002, "No [redacted] Material" and appeared effective. The inspector also reviewed the root cause analysis and corrective action (CA) 2004-363 with the LTC radiation control (RC) supervisor and technicians and concurred with the licensee's assessment and immediate corrective actions. The licensee planed to complete a detailed NCS evaluation (by December 31, 2004) and evaluate further corrective action to preclude recurrence.

SNM-42, License Application Section 4.1.5 requires the licensee to maintain a CMS that is capable of providing a clearly audible alarm signal if an accidental criticality occurred. Sometime between April 11 and May 27, 2004, [redacted] detector failed which resulted in a loss of CMS coverage for LTC [redacted] and a violation of NRC requirements. This non-repetitive, licensee-identified and corrected violation is treated as a non-cited violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV

[redacted]

[redacted]

70-27/2004-05-01, Failure to Maintain the Lynchburg Technology Center Criticality Monitoring System).

(3) Conclusions

An NCV of NRC requirements was identified when a failed [redacted] detector resulted in a loss of CMS coverage to the LTC [redacted]. The licensee took prompt corrective action to restrict personnel access until the system was restored. Additional administrative controls were implemented to prohibit the introduction of any special nuclear material into the hot cells until completion of a nuclear criticality safety evaluation and determination of final corrective action.

d. [redacted]

(1) Inspection Scope

The inspector reviewed modifications performed to the [redacted] in order to facilitate processing a different form of [redacted] NM. The review included an evaluation of the changes and requirements delineated in the Safety Evaluation Request (SER), NCS Analysis, and Safety Analysis Report (SAR).

(2) Observations and Findings

SER 04-034 [redacted] described the modifications necessary to support use of the existing uranium [redacted]. The modifications included the addition of a [redacted] system, [redacted] filters, and [redacted] lines to transfer the [redacted] product to sampling and storage [redacted]. NCS Evaluation 2004-168 described the NCS requirements necessary to support the [redacted] material process including installation of the following engineered controls: backflow prevention (air gap) devices to the [redacted] and [redacted] lines; drains [redacted] gloveboxes; and [redacted] unused lines (rather than isolating valves). Safe geometry storage [redacted] and filter housings contributed to ensure an inadvertent criticality remained highly unlikely. The inspector reviewed the revised accident scenario analysis in NCS 2004-168 and changes to SAR 15.16, [redacted] Process in [redacted] Operations." No discrepancies were identified.

The inspector observed [redacted] operations which were performed in accordance with Operating Procedure (OP)-1016133, [redacted] and Transfer/Sample [redacted] Solution." UR operators were cognizant of the procedural requirements and engineers were present through the initial processing operation to ensure effective technical oversight and operational safety. The inspector toured the facility with NCS engineers and verified that the analyzed NCS change requirements had been

[redacted]

[redacted]

implemented. NCS postings were updated to reflect the [redacted] process material. [redacted] limit restrictions were controlled by NCS postings and operator logs, which the inspector verified.

(3) Conclusions

Modification of UR processing equipment to support uranium [redacted] was performed in accordance with safety evaluation requirements. NCS controls were properly implemented. Operators were cognizant of the new procedural requirements and engineering oversight was effective to ensure safety of operation.

3. **Management Organization and Controls (TI 2600/006)**

a. Inspection Scope

The inspector reviewed the licensee's root cause and corrective actions to prevent recurrence of a solution spill observed in UR on March 4, 2004. The event was captured in CA 2004-133.

b. Observations and Findings

Organic solution overflowed and spilled from a [redacted] system [redacted] when an operator inadvertently failed to close two valves prior to system shutdown as specified in OP-0061120, [redacted] Uranium [redacted] System." The [redacted] solution had already been stripped [redacted] and did not present a radiological health hazard to the operator. Immediate corrective actions taken included posting and isolation of the affected area, and prompt clean up. However, the [redacted] material was flammable and Safety Analysis Report 15.10 [redacted] Process in UR" indicated that [redacted] As such, the inspector reviewed the items Relied on For Safety (IROFS) credited [redacted] No IROFS deficiencies were identified.

CA 2004-133 accurately described the event and determined the root cause. The planned corrective action to install a high-level switch appeared adequate to prevent another operator-induced spill. However, the inspector identified a concern with the OP emergency shutdown guidance which specified manipulation of numerous switches and valves and did not allow the operator to immediately evacuate the area. The inspector questioned an operator who indicated that they were to shutdown the system, as specified by the OP, before evacuating the area. In addition, valve labels were missing or hard to read. The inspector discussed the issues with the area manager who planned to revise the OP to direct the operators to leave the area immediately during an evacuation.

[redacted]

[redacted]

SNM-42, License Application Section 2.7 requires activities involving licensed material be conducted in accordance with written and approved procedures. On March 4, 2004, an operator failed to close two valves as specified by procedure which resulted in a spill of [redacted] flammable solution and a violation of NRC requirements. This non-repetitive, licensee-identified and corrected violation is treated as an NCV, consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 70-27/2004-05-02, Failure to Follow Procedure Resulted in a Flammable Solution Spill).

c. Conclusions

An NCV was identified when an operator inadvertently failed to close two valves as specified in the OP for shutdown of the [redacted] system. A flammable solution spill resulted. Although the spill could result in an intermediate consequence event, the items relied on for safety were available to mitigate the consequences. The corrective action appeared adequate to preclude recurrence. An inconsistency between OP guidance for emergency shutdown and timely evacuation of the area was identified by the inspector and corrected by area management.

4. **Chemical Safety Operations (TI 2600/006)**

a. Inspection Scope

On June 6, a UR operator was transported offsite for medical treatment of a chemical injury involving radioactive material. The inspector reviewed the root cause of the event and corrective actions, and discussed the issue with the injured employee and radiation protection (RP) personnel in order to assess the effectiveness of the licensee's radiological and chemical safety programs. The event was captured in CA 2004-391.

b. Observations and Findings

The chemical burn was discovered when the operator was unable to exit the controlled area because the personnel radiation monitor alarmed indicating contamination of the operator's right hand. Radiological decontamination of the operator's hand by warm water wash indicated possible exposure to hydroflouric (HF) acid as the contaminated area (right middle finger) was inflamed and some of the operator's skin had begun to blister and peel. The operator was treated by the emergency team with sodium bicarbonate and calcium gluconate gel prior to transport to Lynchburg General Hospital and the University of Virginia Hospital for additional treatment. The operator returned to limited work activities and is expected to make a complete recovery.

[redacted]

[redacted]

An incident investigation team determined that the operator had inadvertently cut through three gloves, possibly by striking a chemical addition line, while cleaning [redacted]. The outer glove was recovered and a slit was found in the affected area. The two inner gloves had been disposed and could not be examined. Although the operator did not recall striking the chemical addition line, the inspector reviewed the area noting the proximity of the chemical addition line to the [redacted] and determined that the cause appeared plausible.

The corrective actions included: an inspection of the chemical resistant gloves for signs of deterioration; a water flush of the chemical addition line following HF addition; an evaluation of [redacted] cleaning enhancements and the use of cut resistant gloves; refresher training for the chemical processing operators, and formation of an investigation team to evaluate actions that could minimize chemical burns site-wide. The inspector concluded that the corrective actions appeared comprehensive to preclude recurrence.

The inspector reviewed the results of the personnel decontamination activities performed prior to transport to the hospital. The contaminated area was flushed with water and the contamination was considered fixed when subsequent surveys showed no further reduction in the radioactivity following several flushes. The final survey was approximately 3400 disintegrations per minute and properly documented on RP 02-06, Form 1. The inspector discussed the decontamination treatment with the assigned RC technicians and RP manager and concluded that the proper radiation protection practices were employed prior to transporting the operator offsite.

c. Conclusions

Corrective actions for a HF acid burn to a UR operator appeared affective to prevent recurrence. Decontamination of the operator was performed appropriately prior to transport to an offsite medical facility.

5. **Environmental Protection (Inspection Procedure (IP) 88045) R2**

a. Environmental Monitoring Program

(1) Inspection Scope

The inspector reviewed the Environmental Monitoring Program at the Nuclear Products Division (NPD) in order to assess the licensee's compliance with requirements of Chapter 5 of the License Application and to evaluate the radiological environmental effects of plant operations. The inspector also reviewed LTC environmental sampling

[redacted]

data and selected procedures to ensure that changes did not reduce the effectiveness of the environmental program requirements.

(2) Observations and Findings

The inspector reviewed gross alpha and beta results for soil, vegetation, surface water, groundwater, sediment, and the site boundary air samples for calendar year (CY) 2003. As noted in previous inspections, the licensee continued to monitor sediment sample results from previously contaminated areas. The inspector reviewed the annual ground water well monitoring results for CY 2003 for NPD and LTC. The inspector noted that gross alpha and gross beta activity levels were below the licensee's action levels and no findings of significance were identified.

The inspector reviewed the following procedures:

- Collection Analysis of Environmental Soil, Surface Water, Sediment, Vegetation, and Fallout Samples, RP-08-01, Revision 11, dated April 19, 2004.
- Environmental Air Sample Collection and Analysis, RP-08-02, Revision 10, dated December 15,2003.
- Ground Water Sampling, RP-08-22, Revision 5, dated September 2, 2002.

The inspector observed air sampling equipment noting that they were calibrated and adequately maintained. The inspector observed the collection of selected environmental media samples (soil, vegetation, sediment, and surface water) upstream and downstream of the plant, and the site boundary air samples. The inspector determined that the RC technician was knowledgeable in the collection of environmental media. However, the inspector noted that the guidance in RP-08-01 regarding the collection of an environmental sample did not have sufficient detail to ensure that a technician less familiar with the process could obtain a representative sample. The licensee planned to review the procedure and evaluate any necessary changes. No findings of significance were identified.

The inspector observed the RC and LTC laboratory facilities and verified that a sample chain of custody procedure was in place and adequate. Also, the inspector reviewed raw data for the hillside survey and the environmental thermoluminescence dosimeters (TLDs). No findings of significance were identified.

(3) Conclusions

The Environmental Monitoring Program was implemented in accordance with license requirements and site procedures. However, the inspector identified a potential

weakness due to a lack of procedural specificity necessary to ensure the consistent collection of representative environmental samples.

b. LTC [redacted] Monitoring Requirements

(1) Inspection Scope

The inspector reviewed documents related to the LTC [redacted] to determine if the licensee was in compliance with the requirements of Chapter 5 of the License Application.

(2) Observations and Findings

The inspector reviewed the raw data for the groundwater wells [redacted] and the [redacted] daily checklist. The inspector verified that the licensee was monitoring and maintaining the water level of the [redacted] within the range required by the License Application. The inspector verified that the licensee was compliant with Section 5.4.10 of the License Application which required biennial visual inspection of the [redacted] by a structural engineer to ensure [redacted] integrity. By letter dated November 26, 2003, no cracks or degradations of the [redacted] were observed. No findings of significance were identified.

(3) Conclusions

The licensee was monitoring the [redacted] in accordance with the License Application requirements.

6. **Maintenance and Surveillance (TI 2600/006)**

a. Inspection Scope

The inspector observed plant maintenance activities during the annual shutdown week July 3 through 11, 2004. The inspector toured the facility focusing on proper storage of SNM and radiological controls implemented to protect the workers.

b. Observations and Findings

Shutdown maintenance activities observed were properly performed. SNM was stored in advance of the maintenance work and radiological postings observed were consistent with the work activities and potential hazards. The inspector noted safety managers were active in their oversight of work activities. Safety management also implemented a new requirement for workers to wear hard hats 2nd safety glasses throughout the facility

[redacted]

during the work week. This decision proved fortunate to at least one worker who avoided injury when struck on the hard hat by a falling object.

The emergency power system was challenged twice during the shutdown week. On July 3, 2004, asphalt removal contractors skinned the electrical insulation on an electrical line supplying a high mast light. No [redacted] equipment was impaired as the electrical line was properly removed from service and repaired [redacted]. The excavation had been evaluated prior to the work starting and the excavation depth specified was sufficient to avoid contact; however, in one area, the electrical cable ran closer to the surface than expected. Power supply to the International Atomic Energy Agency (IAEA) monitoring equipment had to be isolated to repair the cable. The proper notifications were made in advance to inform the IAEA and no IAEA equipment problems resulted. The facility alarm system activated due to the power supply problems: however, all gases had already been isolated and the event was properly captured in CA 2004-481. On July 10, 2004, a fuse failed in the same electrical distribution circuit rendering indoor lighting out of service [redacted] Again, a safety work order was issued to replace the fuse and no other [redacted] equipment was affected.

c. Conclusions

Shutdown maintenance work activities were performed safely. SNM was properly stored and radiological postings accurately reflected work hazards. Safety management oversight was active in ensuring safe work activities. A new hard hat policy prevented one possible injury. Unplanned electrical distribution problems were properly assessed and safely corrected. No reduction in [redacted] safety system effectiveness resulted from the electrical distribution problems.

7. **Emergency Preparedness (IP 88050)**

a. Review of Program Changes (F3.01)

(1) Inspection Scope

Changes to the Emergency Plan (EP), organization, facilities, and equipment were reviewed to assess the impact on the effectiveness of the program. The adequacy of the emergency preparedness audit required by Section 4.5 of the Plan was also evaluated.

(2) Observations and Findings

Since the last inspection, the Emergency Preparedness Officer (EPO) position was reassigned during October 2003, and most recently during June 2004. The referenced

[redacted]

[redacted]

position is assigned the day to day responsibility for emergency preparedness with support provided from other groups (Industrial Health and Safety and Radiation Protection) to maintain the readiness of the emergency equipment and facilities. The inspector determine that the referenced change should not impact emergency preparedness in that management oversight responsibility for emergency preparedness remained as previously assigned. In addition, based on an interview with the former EPO, a transition document containing the various program commitments and the frequency for demonstrating such commitments was provided to the newly assigned EPO to assist with the transition.

Plan changes were submitted by letter in accordance with 10 CFR 70.32(i). The most recent revisions were submitted by letter dated January 8,2004. During the period of the inspection, no decision had been made by NRC regarding the acceptability of the changes. A significant facility change (June 2004) since the last inspection involved the relocation of the Alternate Emergency Operations Center (AEOC) from the Emergency Team training trailer. The relocation of the AEOC had no impact on emergency preparedness.

The independent audit included both performance and compliance based assessments. The audit was a detailed assessment of program compliance with NRC requirements. The inspector noted that the licensee and NRC audits had identified outdated documents in both the primary EOC and AEOC. Consequently, during the tour of onsite and offsite facilities maintained by the licensee, the inspector reviewed the status of emergency preparedness controlled documents. The inspector noted *a* superceded copy of the Initial Emergency Assessment Flow Chart was located with the Emergency Preparedness Manual *at* the offsite EOC. The document was immediately removed from inventory and replaced with *the* current revision number. In response to the inspector's observations, the licensee provided documentation to show that the corrective actions for the previous deficiencies and to prevent a recurrence had been identified during May 2004; but full implementation *was* not planned until July 31, 2004. The inspector discussed with the licensee this finding and the importance of taking a very detailed and critical review of the planned corrective actions to assure the adequacy of corrective actions in preventing any further examples of superceded controlled documents.

(3) Conclusions

Program changes had no impact on emergency preparedness. The independent audit included both performance and compliance based assessments. Corrective actions were identified but not fully implemented to ensure that controlled documents were maintained current and up to date.

[redacted]

b. Implementing Procedures (F3.02)

(1) Inspection Scope

Changes to the Emergency Preparedness Manual (**EPM**) were reviewed for adequacy and to ensure that the revised procedures continue to implement the Emergency Plan.

(2) Observations and Findings

Randomly selected procedure changes were considered procedure updates or enhancements and continue to implement the Plan requirements.

(3) Conclusions

The revised procedures in the Emergency Preparedness Manual continue to implement the Emergency Plan.

c. Training and Staffing of Emergency Organization (F3.03)

(1) Inspection Scope

Emergency response training was reviewed to determine if the licensee had provided adequate training to all personnel designated as the primary and/or alternate Emergency Director (ED), to other key personnel assigned to the emergency management organization (EMO), and members of the emergency team (ET).

(2) Observations and Findings

The inspector reviewed the training outline and observed training provided to [redacted] personnel assigned responsibility as the interim **ED** on back shifts, holidays: and weekends. No problems were noted. The training appeared to provide position-specific details to assist in executing the responsibilities of the ED. Documentation in support of emergency response training for other key members of the emergency organization was reviewed and no deficiencies were noted. Training provided adequate information regarding roles, responsibilities, and recent changes to the Plan and EPM.

(3) Conclusions

Based on interviews and training documentation, emergency response training was adequate and all personnel selected for review was trained in accordance with procedures.

[redacted]

[redacted]

d. Offsite Support (F3.04)

(1) Inspection Scope

Licensee activities in the areas of training, agreements, and exercises were reviewed to determine if the licensee was periodically involving offsite support groups.

(2) Observations and Findings

All agreements with offsite support groups were maintained current in accordance with Section 7.7 of the Plan. Regarding offsite support training, annual training was offered in accordance with the Plan and procedures. On November 3,2003, a site familiarization tour was provided to offsite fire support personnel and the Campbell County Director of Public Safety. Training for offsite response personnel was provided during March 2003 (hospital) and October 2003 (fire and rescue). Although training was offered, no training had been conducted thus far in CY 2004. The licensee invited offsite authorities to participate in the last biennial exercise conducted on June 4, 2003.

(3) Conclusions

Based on interviews and records reviewed, the inspector determined that the offsite interface was properly maintained.

e. Drills and Exercises (F3.05)

(1) Inspection Scope

Section 4.3 of the Emergency Plan required that an emergency exercise be conducted biennially. This area was reviewed for adequacy in testing both onsite and offsite emergency response capability. The effectiveness of the licensee's critique to self identify areas of improvement was also reviewed.

(2) Observations and Findings

The last biennial exercise was observed by NRC on June 4,2003, and included participation by State and local support agencies. In addition to a biennial exercise, the licensee conducted [redacted] drills involving activation of the emergency organization. The licensee's drill frequency [redacted] and the accident scenarios that were postulated posed sufficient challenges to maintain the proficiency of response personnel.

[redacted]

[redacted]

Critique items resulting from the drills and/or exercises were reviewed by the Emergency Preparedness Committee (EPC) and, if needed, tracked for corrective actions until completion.

The inspector observed the licensee's [redacted] announced evacuation drill conducted on [redacted] during normal shift operations. Workers promptly evacuated and reported to assembly locations for accountability purposes. The evacuation drill was adequate for reviewing effectiveness of procedures, evacuation routes, and plant personnel knowledge regarding the alarm for criticality and assembly location. The criticality alarm was clearly audible.

(3) Conclusions

The licensee conducted exercises in accordance with the requirements of the Plan. The performance of [redacted] drills involving activation of the emergency organization demonstrated a commitment to training and maintaining the proficiency of the response organization.

f. Emergency Equipment and Facilities (F3.06)

(1) Inspection Scope

Emergency response equipment, instrumentation, and supplies used to evaluate and assess radiological conditions were examined to determine if maintained in a state of operational readiness.

(2) Observations and Findings

The inspector observed an inventory and operability check of equipment at several locations and noted that survey instruments were operational, and the response to a radiation check source was within the expected range based on calculated source activity. The remaining equipment (respiratory protection, air samplers, etc.) and supplies were checked for shelf-life, reliability and quantity, and found to be maintained in a state of readiness. As stated above in Paragraph 2.a, the licensee took actions in response to the inspector's observations regarding a superceded copy of the Initial Emergency Assessment Flow Chart located with the Emergency Preparedness Manual at the offsite EOC. Documentation in support of the equipment audits and operability checks were reviewed covering the psriod July 2003 to April 2004. No problems noted. In the event deficiencies were found corrective actions were taken to resolve deficiencies. In addition, as a followup to NRC event reporting involving criticality detector failure (Event No. 40782), the inspector reviewed the operability test and calibration records for the neutron detectors at the LTC. No problems were noted.

[redacted]

Based on interviews, the monthly test, and annual calibration results, the detectors appeared to be reliable and rarely required any adjustments. The detectors were found within the tolerance range and performed the intended function as designed.

(3) Conclusions

Based on the equipment operability checks and audit documentation, the inspector determined that the reliability of selected equipment was good and the equipment was maintained in a state of operational readiness.

8. **Followup on Previously Identified Issues (TI 2600/006)**

Review of Corrective Actions Associated with Failure to Immediately Notify the NRC Following Receipt of a Radioactive Package in Excess of External Radiation Limits

The inspector reviewed the corrective actions delineated in the Reply to Notice of Violation letter dated May 11, 2004, in response to violation (VIO) 70-27/2004-02-02. The violation occurred when an immediate NRC notification was not performed following receipt of radioactive material package in excess of external radiation limits. An inadequate understanding of the requirement of implementing procedure, RP- 09-19, was the main contributor to the notification delay. As such, the licensee's corrective actions included a revision of RP- 09-19 which further emphasized the immediate NRC notifications for various radioactive package discrepancies. Personnel were trained to understand the requirements and recognize the enhanced guidance in the revised procedure. The inspector reviewed the procedure and discussed the changes with the responsible personnel who were cognizant of the requirements. The inspector concluded that the corrective actions appeared adequate to preclude another late notification event.

9. **Exit Meeting**

The inspection scope and results were summarized on July 2, 2004, with D. Ward, Manager of Environmental, Health, Safety and Safeguards, and on July 28, 2004, with W. Nash, Vice President and General Manager, and other members of the licensee's staff. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes was deleted from Part 1 of this report. No dissenting comments were received from the licensee.

[redacted]

1. **LIST OF PERSONS CONTACTED**

Licensee

C. Abernathy, Supervisor, Nuclear Material Control
W. Baker, Supervisor, Nuclear Materials Control
T. Brown, Manager, Operations
J. Calvert, Manager, Industrial Health and Safety
C. Carr, Manager, Administration and Security
J. Creasey, Manager, Uranium Processing Services
R. Coats, Manager, Environmental Protection
L. Duncan, Manager, Nuclear Criticality Safety
L. Morrell, Licensing & Safety Analysis
J. Myrick-Jenkins, Industrial Health & Safety
W. Nash, Vice President and General Manager
S. Niedzialek, Manager, CRF Operations and Maintenance
C. Reed, Manager, Uranium Process Services
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
D. Wilson, Supervisor, Radiation Control

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

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

Item Number	Status	Description
70-27/2004-02-02	Closed	VIO - Failure to Immediately Notify the NRC Following Receipt of a Radioactive Material Package in Excess of External Radiation Limits (Paragraph *8)*
70-27/2004-05-01	Opened	NCV - Failure to Maintain the bynchburg Technology Center Criticality Monitoring System (Paragraph2.c)

Attachment

[redacted]

[redacted]

70-27/2004-05-02	Opened/Closed	NCV - Failure to Follow Procedure Results in a Flammable Solution Spill (Paragraph 3)

3. INSPECTION PROCEDURES USED

TI 2600/006	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 88045	Environmental Protection
IP 88050	Emergency Preparedness

4. LIST OF ACRONYMS USED

AEOC	Alternate Emergency Operations Center
CA	Corrective Action
[redacted]	[redacted]
CMS	Criticality Monitoring System
CY	Calendar Year
ED	Emergency Director
EMO	Emergency Management Organization
EOC	Emergency Operations Center
EPC	Emergency Preparedness Committee
EPM	Emergency Preparedness Manual
EPO	Emergency Preparedness Officer
HF	Hydroflouric
IAEA	International Atomic Energy Agency
IP	Inspection Procedure
IROFS	Item Relied On For Safety
[redacted]	[redacted]
LTC	Lynchburg Technology Center
MAA	Materials Access Area
NCS	Nuclear Criticality Safety
NCV	Non-cited Violation
NPD	Nuclear Products Division
OP	Operating Procedure
RC	Radiation Control
RP	Radiation Protection
[redacted]	[redacted]
RWP	Radiation Work Permit
SAR	Safety Analysis Report

[redacted]

[redacted]

SER	Safety Evaluation Request
SNM	Special Nuclear Material
TI	Temporary Instruction
UR	Uranium Recovery
VIO	Violation

[redacted]