



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

[REDACTED]

February 20, 2004

NMED No. 030802

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. 70-27/2004-001

Dear Mr. Nash:

This refers to the inspection conducted from December 14, 2003, through January 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.

Within the scope of the inspection, violations or deviations were not identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and Enclosure 1 will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). Enclosure 2 contains sensitive information associated with the BWXT material control and accounting program and physical protection program and, therefore, in accordance with 10 CFR 2.790(d), will not be made publicly available.

[REDACTED]

[REDACTED]

[REDACTED]

BWXT

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

Sincerely,

**/RA BY WILLIAM B. GLOERSEN
ACTING FOR/**

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) **2.790 Information**

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BWXT

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-27

License No.: SNM-42

Report No.: 70-27/2004-001

Licensee: BWX Technologies, Inc.

Facility: Nuclear Products Division

Location: Lynchburg, Virginia

Dates: December 14, 2003, through January 24, 2004

Inspectors: G. Wertz, Senior Resident Inspector
A. Gooden, Health Physicist
D. Hartland, Senior Fuel Facility Inspector

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

Enclosure 1

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NRC INSPECTION REPORT 70-27/2004-01 (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. Specialized inspections and review of documentation were conducted by regional inspectors in the areas of management controls, maintenance and surveillance (December 15 through 19), and radiation protection (January 12 through 16). 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 performed in accordance with radiation work permit requirements. Housekeeping was adequate to ensure routes of egress were clear in case of an emergency (Paragraph 2.a).
 - Special nuclear material processing operations were properly secured for the shutdown period. Radiation protection and nuclear criticality safety posting and barriers, fire protection and housekeeping were effectively maintained (Paragraph 2.a).
 - The fourth quarter 2003 Nuclear Criticality Safety Findings and Observations Report was properly completed and reviewed by management. No significant findings were identified and the corrective actions were captured in the tracking system (Paragraph 2.a).
 - Nuclear criticality safety control devices and measures were properly implemented (Paragraph 2.b).
 - A newly installed valve leaked nitric acid in a remote area of the facility. Although the root cause analysis was not performed in a timely fashion, the proposed corrective action to leak test new valves following installation was appropriate (Paragraph 2.c).
 - Uranium oxide nuclear criticality safety handling and storage requirements were properly evaluated and implemented (Paragraph 2.d).
 - Nuclear criticality safety controls for the low-level radioactive waste water retention tanks were effectively implemented. Administrative controls were well understood by the waste water operator who performed retention tank sampling and uranium-235 mass calculations properly (Paragraph 2.e).
- [REDACTED]

- New uranium oxide milling and blending equipment were properly installed in a modified glovebox in accordance with the safety evaluation report requirements for nuclear criticality safety and radiation protection. Operation of the equipment was performed in accordance with the approved operating procedure by trained operators. Engineering and supervisory oversight were effective to resolve operational issues (Paragraph 2.f).

Management Controls

- Safety committees, audits, and incident reporting activities reviewed were being performed in accordance with license requirements. The licensee intended to enhance requirements for reporting deficiencies to include failures identified during testing of safety system components (Paragraph 3).

Maintenance and Surveillance

- Weekly testing performed on the in-line liquid monitors did not include verification that the electronics would actuate at the required setpoint. Subsequent testing was performed on the monitors which verified that the system would have responded as designed. A corrective action was initiated to identify proper test requirements (Paragraph 4).

Radiation Protection

- Based on documentation and interviews, the equipment selected for detecting the presence of radioactive material on smears, air samples, and personnel was adequately maintained and performed the intended safety function in a reliable and accurate manner (Paragraph 5.a).
- Based on exposure results through November 2003, the licensee's program for controlling and monitoring external exposures to radiation was appropriately implemented (Paragraph 5.b).
- Administrative dose limits were established and investigation of causal factors was initiated when action limits were exceeded. Based on exposure data and interviews, the inspector concluded that the licensee's internal exposure control program was implemented in a manner to track and identify undesirable trends, and maintain exposure as low as reasonably achievable and less than the regulatory limits (Paragraph 5.c).
- The contamination survey program was effective in the identification of areas requiring cleanup. However, inadequate procedure guidance and ineffective training resulted in inconsistent hand-held survey techniques used by the laundry operators. The corrective action was prompt and effective, and no loss of contamination control was observed (Paragraph 5.d).

- Based on licensee performance, interviews, and documentation, the inspector determined that notification and reporting was performed in accordance with requirements in the license and 10 CFR 19.13 (Paragraph 5.e).

Attachment:

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

[REDACTED]

REPORT DETAILS

1. Summary of Plant Status

Routine fuel manufacturing operations and maintenance activities were conducted in the [REDACTED] processes, and in the Research Test Reactors and Targets (RTRT) processes. Uranium recovery, downblending and other routine operations and maintenance activities were conducted in the Uranium Recovery (UR) facility. Most processing operations ceased for the holiday week on December 24, 2003, and resumed on January 2, 2004.

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

(a) Routine Observations

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 (i.e., high winds, cold weather, or flooding), or blocked evacuation pathways were observed. During tours of [REDACTED]

[REDACTED]

[REDACTED]

he facility, the inspector noted radiological signs, postings, and procedures were properly posted or readily available. The inspector observed conditions and determined that equipment and devices used to confine and contain [REDACTED] [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.

(b) Plant Shutdown Observations

During the shutdown period (December 24, 2003, through January 2, 2004), the inspector performed tours of various special nuclear material (SNM) processing areas focusing on the [REDACTED], minimization of potential fire hazards, and adequacy of radiation protection (RP) and NCS postings and barriers. Housekeeping was adequate and no discrepancies were observed.

(c) NCS Findings and Observation Summary

The fourth quarter 2003 NCS Findings and Observations Summary report documented six findings and five observations. The audit was performed, as required by SNM-42 License Application 2.8.1.2, "NCS Audits," and the findings and observations were documented in accordance with the requirements of Nuclear Criticality Safety Engineering (NCSE) Procedure NCSE-03, "Nuclear Criticality Safety Audits and Inspections." The inspector reviewed the safety significance and apparent cause determinations with NCS engineers and determined that the findings were properly characterized as low safety significance. The corrective actions appeared appropriate and were captured in the commitment tracking program with assigned responsible managers and completion dates.

(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.

SNM processing operations were properly secured for the shutdown period. RP and NCS posting and barriers, fire protection and housekeeping were effectively maintained.

The fourth quarter 2003 NCS Findings and Observations Reports was properly completed and reviewed by management. No significant findings were identified and the corrective actions were captured in the tracking system.

[REDACTED]

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) Observations and Findings

The inspector toured fuel processing, storage, and recovery 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 both [REDACTED] areas of the facility, the inspector observed proper spacing practices and controls, use of storage locations, and identification of SNM.

(3) Conclusions

NCS control devices and measures were properly implemented.

c. Corrective Action (CA) Review of Nitric Acid Leak

(1) Inspection Scope

The inspector reviewed the corrective actions associated with a nitric acid leak.

(2) Observations and Findings

On October 6, 2003, workers noticed that a newly installed valve had leaked approximately three gallons of nitric acid onto the ground outside the [REDACTED]. The leak was promptly isolated and the nitric acid spill was neutralized. The leaking valve was removed and disassembled for root cause analysis (RCA) which indicated that the valve had leaked through the seat. The inspector toured the leak-affected area and reviewed the RCA report focusing on the effectiveness of the corrective action. The event was described in NRC Event Notification 40230 (NMED No. 030802).

The inspector discussed the event with the cognizant industrial engineer who indicated that the valve had been installed (using a maintenance work order) to support connection of a [REDACTED] under construction. Following installation, the valve was isolated in the normal locked-closed position, but not leak tested (an observation of the valve was performed, but not under system pressure). Furthermore, the inspector noted that valves installed under maintenance work orders

[REDACTED]

(versus change requests) did not have a requirement to perform a leak test. Since this valve provided a primary boundary for nitric acid, the inspector was concerned about the potential for other connection valves to leak (hazardous chemicals) and discussed this with the industrial engineering supervisor. As a result, a required training package was developed and reviewed with maintenance and industrial engineering personnel to ensure that leak tests were performed on future connection valves following installation.

The inspector noted that the RCA took almost three months to complete which appeared inconsistent with the potential safety consequence of the event. The inspector discussed the timeliness of the RCA with both the safety and industrial engineering managers whom agreed that the RCA should have been completed sooner. The responsible safety manager indicated that the RCA had not been captured in a tracking system (with a required completion date) which would have ensured a more expeditious completion and management review of the proposed corrective action.

(3) Conclusions

A newly installed valve leaked nitric acid in a remote area of the facility. Although the RCA was not performed in a timely fashion, the proposed corrective action to leak test new valves following installation was appropriate.

d. NCS Review of Receipt and Storage of Uranium Oxide

(1) Inspection Scope

NCS analysis 2003-266 delineated the requirements for the receipt and storage of uranium oxide. The inspector reviewed the analysis, and material storage and NCS posting requirements. The inspector toured the SNM storage areas focusing on the material storage and NCS posting requirements.

(2) Observations and Findings

The NCS analysis properly evaluated the uranium oxide handling and storage requirements. Supplied values of moderating materials (impurities) were accurately evaluated for NCS considerations. Conservative judgement was used by NCS engineers to provide additional safety margin by limiting each storage unit to one uranium oxide container. The NCS postings accurately reflected this NCS analysis requirement. The uranium oxide containers were inspected in their storage locations [REDACTED] and were observed stored in accordance with the NCS posting requirements. No discrepancies were noted.

(3) Conclusions

Uranium oxide NCS handling and storage requirements were properly evaluated and implemented.

[REDACTED]

e. Low-level Radioactive (LLR) Waste Water Retention Tank Sampling

(1) Inspection Scope

The LLR waste retention tanks are the first non-favorable geometry tanks in the waste water processing cycle. As such, the inspector reviewed the safety basis for ensuring that a nuclear criticality accident was prevented, discussed the NCS controls with the cognizant NCS engineer, and observed implementation of the administrative controls by a waste water processing operator.

(2) Observations and Findings

The NCS controls for the LLR waste retention tanks involved maintaining less than the critical mass of uranium-235 (U-235). Mass controls included establishment of a U-235 concentration limit at both the point of waste water generation and prior to entry into the retention tanks. The inspector discussed these concentration control limits with an NCS engineer and noted that double contingency safety measures appeared appropriate to prevent an over-concentration of U-235 in the LLR waste water system.

The inspector observed the waste treatment operator perform sample operations in preparation for retention tank release. The operator performed the sampling in accordance with Environmental Protection Procedure, EP-321, "Sampling, Analysis, Reporting, and Release of Retention Tanks for Dynamic U-235 Inventory." The inspector noted that the administrative U-235 mass limits were clearly delineated in the procedure, understood by the operator and effectively controlled. Other NCS control checks included visual inspection for unusual substances and, monthly tank cleaning and flushing. The inspector reviewed the sample data and U-235 mass calculations performed by the operator and no discrepancies were observed. The inspector observed that the operator was very proficient at performing the sample analysis and U-235 mass calculations and the data analysis log sheets were properly completed.

(3) Conclusions

NCS controls for the LLR waste water retention tanks were effectively implemented. Administrative controls were well understood by the waste water operator who performed retention tank sampling and U-235 mass calculations properly.

f. Modification and Operation of Uranium Oxide Milling and Blending Glovebox

(1) Inspection Scope

The inspector reviewed the Safety Evaluation Report (SER), RWP, and operating procedure (OP), and observed modification and operation activities focusing on NCS and RP of the operation of the newly installed milling and blending equipment.

(2) Observations and Findings

On January 12, uranium oxide milling and blending operations began using newly installed milling and blending equipment in a modified glovebox. Milling and blending equipment installation and glovebox modification were performed in accordance with the specifications of SER 03-070, "Milling, Blending of U3O8 in Material Handling Glovebox." The inspector reviewed the SER requirements for RP and NCS. The RP requirements for the glovebox modification work were delineated in RWP 03-138 and observed to be properly implemented by the inspector. Additional glovebox ventilation requirements identified in the SER were satisfactorily tested. NCS postings were consistent with the SER requirements and posted conspicuously to aid the operators. A water shield was properly installed over the glovebox as a result of a previous overhead water leak (see NRC Inspection Report 70-27/2003-008).

The inspector observed the glovebox equipment operation and noted that it was performed in accordance the requirements of OP-1014417, "Mill and V-Cone Blender Operation." The inspector noted that the operators had been trained in advance of equipment operation. Engineering and supervisory oversight appeared effective to resolve any issues identified by the operators. The initial operation of the blender resulted in the power supply breaker tripping. Maintenance personnel responded effectively and restored the electrical power. The responsible supervisor resolved the process problem which caused the loss of power.

(3) Conclusions

New uranium oxide milling and blending equipment were properly installed in a modified glovebox in accordance with the SER requirements for NCS and RP. Operation of the equipment was performed in accordance with the approved OP by trained operators. Engineering and supervisory oversight were effective to resolve operational issues.

3. Management Organization and Controls (Inspection Procedure (IP) 88005)

a. Inspection Scope

The inspector assessed whether the licensee's onsite review committees were functioning in accordance with license conditions and that the licensee was implementing a system for performing internal audits and reporting incidents.

b. Observations and Findings

The inspector attended a meeting of the Change Review Board (CRB) and reviewed recent Safety Review Board (SRB) meeting minutes. The inspector observed that a quorum was present at the CRB and that agenda items were discussed in detail prior to approval. The inspector walked down modifications (i.e., installation of contactors and relocation of chemical tanks) being implemented in the uranium recovery area and

reviewed documentation to verify that the required safety reviews and approvals were performed. The inspector noted that the SRB was meeting at the required frequency and that recommendations made by the board were properly documented and addressed.

The inspector also reviewed summaries of quarterly audits performed by Licensing & Safety Analysis personnel, which included review of the implementation of controls listed in the Safety Analysis Report, and verified that corrective actions to deficiencies identified were tracked to completion. The inspector reviewed the backlog of overdue commitments and corrective actions in the licensee's incident reporting system and noted that the backlog was minimal. The inspector noted during discussion with licensee staff that they intended to enhance requirements for reporting deficiencies to include failures identified during testing of safety system components.

c. Conclusions

Safety committees, audits, and incident reporting activities reviewed were being performed in accordance with license requirements. The licensee intended to enhance requirements for reporting deficiencies to include failures identified during testing of safety system components.

4. Maintenance and Surveillance (IP 88025)

a. Testing of the In-Line Liquid Monitors

The inspector observed maintenance and surveillance activities to assess for compliance with procedure and other license requirements.

b. Observations and Findings

On December 18, 2003, the inspector observed performance of the weekly operational check of in-line liquid monitors. The monitors were in place to limit the U-235 mass that entered the geometrically unfavorable retention tanks used to collect liquid waste. If the U-235 concentration of the waste water was greater than or equal to 0.0375 grams per liter, an alarm would sound and automatic valve closure would isolate flow to the retention tanks.

The intent of the weekly test was to check the electronics and ensure that the valves would close when exposed to a radiation source greater than the 0.0375 grams per liter setpoint. The inspector noted that multi-point calibrations of the in-line monitors were performed biannually using calibrated solutions, but the calibration did not verify that the electronics would actuate at the designated setpoint and isolate (close) the valves.

The inspector discussed the issue with RP staff who, on the following day, verified that the system responded as designed. Furthermore, the licensee initiated CA 2003-820 to evaluate an effective means to verify valve activation at the designated setpoint.

c. Conclusions

Weekly testing performed on the in-line liquid monitors did not include verification that the electronics would actuate at the required setpoint. Subsequent testing was performed on the monitors which verified that the system would have responded as designed. A corrective action was initiated to identify proper test requirements.

5. **Radiation Protection (IP 83822)**

a. Radiation Protection Program Equipment (R1.03)

(1) Inspection Scope

Fixed and portable equipment used for detecting the presence of radioactive material on smears, air samples, and personnel were examined to determine if the selected equipment was calibrated, adequately maintained, and reliable to perform the intended safety function.

(2) Observations and Findings

Calibration procedures for the hand and foot monitors were reviewed and discussed with calibration personnel and considered adequate for establishing the accuracy of equipment to detect the presence of radioactive contamination. Interviews and observations with personnel assigned the responsibility for performing the sample analysis disclosed that interviewees were very familiar with the equipment quality assurance checks, system operability, and the significance of instrumentation accuracy and precision on sample results. The inspector conducted interviews with calibration personnel, as well as instrument operators, and reviewed the source check operability log for the Series 5 counters covering the period September 1, 2003, through January 12, 2004. The documentation disclosed that the equipment provided reliable and accurate results.

(3) Conclusions

Based on documentation and interviews, the equipment selected for detecting the presence of radioactive material on smears, air samples, and personnel was adequately maintained and performed the intended safety function in a reliable and accurate manner.

b. External Exposure Control (R1.04)(1) Inspection Scope

The inspector reviewed radiation protection procedures, and discussed with licensee representatives personnel exposure data to determine if exposures were in compliance with 10 CFR Part 20 limits, and if controls were in place to maintain occupational doses as low as reasonably achievable (ALARA).

(2) Observations and Findings

Procedures contained administrative action limits, and dose goals were established to maintain exposures less than the occupational limits in 10 CFR 20.1201. Table 1 displays the maximum assigned exposure data for calendar years (CY) 2002 and 2003 (as of November) thermoluminescent dosimeter (TLD) results. No regulatory or license limits were exceeded. Based on November data, the Nuclear Products Division (NPD) estimated maximum assigned external exposure for CY 2003 was less than CY 2002 results. At the Lynchburg Technology Center (LTC), the maximum assigned external exposure was increased approximately 14 percent when compared to CY 2002. The increase was attributed to the Hanford Tank Project. The inspector reviewed the Hanford Tank Project exposures and determined that the lessons learned and ALARA initiatives implemented from the initial campaign involving the Hanford Tank Project were effective in reducing exposures during the second campaign.

Table 1. Annual Exposures

Year		Deep Dose Equivalent (DDE) - rem	Shallow Dose Extremity (SDE) - rem	Total Effective Dose Equivalent (TEDE) - rem	Collective TEDE (person-rem)	Committed Effective Dose Equivalent (CEDE) - rem
2002	NPD	0.439	0.158	0.696	36.41	0.696
	LTC	1.24	3.69	1.24	9.00	0.004
*2003	NPD	0.179	0.091	0.572	35.00	0.572
	LTC	1.41	4.84	1.41	7.95	0.000

*Note: TLD data through November 2003.

(3) Conclusions

Based on exposure results through November 2003, the licensee's program for controlling and monitoring external exposures to radiation was appropriately implemented.

c. Internal Exposure Control (R1.05)

(1) Inspection Scope

The inspector reviewed controls for assessing internal exposure to verify that the administrative and physical controls were in place to control occupational dose ALARA. Exposure data based on air sampling and bioassay results were reviewed to determine if exposures resulting from various plant operations exceeded limits in 10 CFR 20.

(2) Observations and Findings

Administrative dose limits were established and when action limits were exceeded, an investigation into the causal factors was initiated. Table 1 above provides the maximum assigned internal exposure based on breathing zone air sampling data through December 2003. When compared to the previous year, results were reduced approximately 18 percent at NPD, and at LTC, no internal exposure was recorded for CY 2003. The CY 2003 maximum assigned internal exposure was approximately 11 percent of the annual limit in 10 CFR 20.1201. The inspector reviewed two internal dose assessments to determine the adequacy of assumptions and the assignment of exposure. No problems were noted.

(3) Conclusion

Administrative dose limits were established and an investigation into the causal factors was initiated when limits were exceeded. Based on exposure data and interviews, the inspector concluded that the licensee's internal exposure control program was implemented in a manner to track and identify undesirable trends and maintain radiation dose ALARA and less than the regulatory limits.

d. Surveys (R1.08)

(1) Inspection Scope

The contamination control survey program was reviewed to determine if surveys were effective in the identification of contamination and were being performed in accordance with procedures.

(2) Observations and Findings

The inspector observed personnel performing facility contamination surveys and determined that personnel were knowledgeable regarding the potential sources of contamination and conducted surveys in a manner to identify both fixed and removable contamination. Contamination survey documentation for select locations at LTC and NPD were reviewed to determine if timely and effective corrective actions were taken in response to locations which exceeded action limits. Documentation showed that the

licensee promptly cleaned the area and re-surveyed to ensure that the area was less than the action limits. During plant tours at LTC, the inspector noted examples of poor housekeeping as evidenced by several large bags of trash (both low-level radioactive and regular trash), contaminated messaline cloth, shoe covers and gloves on the floor, and the elevated background counts for personnel contamination survey equipment inside the extraction laboratory resulting from the build-up of samples stored inside the laboratory. Poor housekeeping was also identified by the licensee during an internal audit conducted the fourth quarter of 2003 and was documented as a recurrent problem for most of 2003. In response to the inspector's observations and comments, the licensee discussed near term corrective action to cleanup all areas by January 21, 2004, and implement corrective actions to prevent a recurrence.

The inspector reviewed the procedures and type of survey instruments used (to compensate for the out-of-service laundry monitoring system) to survey protective clothing, and interviewed the personnel with responsibility for performing laundry surveys to determine their adequacy. The inspector noted that the survey procedure (RP-02-04) did not include guidance on performing surveys of shoe covers using hand-held survey instruments. Consequently, the inspector observed laundry personnel performing surveys using inconsistent techniques for detecting the presence of alpha contamination based on the instruments response time and the distance between the surface being surveyed and the detector. The inspector discussed this issue with the licensee who took immediate steps to retrain personnel and initiate procedural changes to provide detailed guidance on surveying. No indication of a loss of contamination control was observed.

(3) Conclusions

The contamination survey program at both LTC and NNFD was effective in the identification of areas requiring cleanup. Inadequate procedure guidance and ineffective training resulted in inconsistent hand-held survey techniques used by the laundry operators. However, corrective actions were prompt and effective, and no loss of contamination control was observed.

e. Notifications and Reports (R1.09)

(1) Inspection Scope

The radiation safety incidents (RSINs) file and shift log books were reviewed for determining the reportability of events to NRC and workers. The availability of workers' exposure data was reviewed.

(2) Observations and Findings

Randomly selected incidents covering the period November 2003 through January 12, 2004, did not require notification to NRC. Appropriate followup actions were taken in

response to each event reviewed. For incidents which required worker notification to ensure that personnel were aware of the potential for exposure, the licensee provided follow up in the event the employee required work restrictions. Several operators were questioned regarding the availability and/or provision of exposure data by the licensee. In response, interviewees indicated that at least once a year the exposure information was provided.

(3) Conclusions

Based on licensee performance, interviews, and documentation, the inspector determined that notification and reporting was done in accordance with the requirements in the license and 10 CFR 19.13.

6. Emergency Preparedness (TI 2600/006)

a. Followup of Previous Identified Issues

Inspector Followup Item (IFI) 70-27/2003-07-01 was opened following NRC inspector observation during Hurricane Isabel that certain security response actions implemented during severe weather may inhibit emergency site access. The licensee decided to amend the responsibility of the EOC security coordinator to review security measures implemented during severe weather to ensure that emergency site access was available as necessary. The change was described in (a planned revision to) Emergency Preparedness Procedure EP-06-01, "Emergency Organization." The inspector reviewed the procedure revision and required security coordinator training, and determined that the licensee's actions adequately resolved the issue. IFI 70-27/2003-07-01 was closed.

7. Exit Meeting

The inspection scope and results were summarized on December 19, 2003, January 16 and January 30, 2004, with the licensee. 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]

ATTACHMENT

1. **LIST OF PERSONS CONTACTED**

Licensee

C. Abernathy, Supervisor, Nuclear Material Control
S. Baker, Manager, RTRT
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
K. Hour, Manager, LTC Nuclear Material Engineering
L. Morrell, Manager, Licensing and Safety Analysis
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
C. Yates, Manager, Nuclear Material Control

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

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

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
70-27/2003-07-01	Closed	IFI - Site Access During Storm Conditions

3. **INSPECTION PROCEDURES USED**

TI 2600/006	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 88005	Management Organization and Controls
IP 88025	Maintenance and Surveillance Testing
IP 83822	Radiation Protection

4. LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CA	Corrective Action
CEDE	Committed Effective Dose Equivalent
CRB	Change Review Board
CY	Calendar Year
DDE	Deep Dose Equivalent
EOC	Emergency Operations Center
IFI	Inspector Followup Item
IP	Inspection Procedure
LLR	Low-level Radioactive
LTC	Lynchburg Technology Center
MAA	Materials Access Area
NCS	Nuclear Criticality Safety
NCSE	Nuclear Criticality Safety Engineering
NPD	Nuclear Products Division
OP	Operating Procedure
RCA	Root Cause Analysis
RP	Radiation Protection
RSIN	Radiation Safety Incident Notice
TRTR	Research Test Reactor and Targets
RWP	Radiation Work Permit
SDE	Skin Dose to the extremity
SER	Safety Evaluation Report
SNM	Special Nuclear Material
SRB	Safety Review Board
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TI	Temporary Instruction
U-235	Uranium - 235
UR	Uranium Recovery