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

August 14, 2009

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

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2009-002 AND NOTICE OF VIOLATION

Dear Mr. Cochrane:

This letter refers to inspections conducted from March 22 through June 30, 2009, at the Babcock and Wilcox Nuclear Operations Group facility in Lynchburg, VA. The purpose of the inspection was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. At the conclusion of the inspections March 26, June 11, and July 1, 2009, 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, Emergency Preparedness, and Fire Protection. 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 Severity Level IV violations of NRC requirements occurred. Both violations were evaluated in accordance with the NRC Enforcement Policy included on the NRC's Web site at www.nrc.gov; select **What We Do, Enforcement,** then **Enforcement Policy.** 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. The violations are being cited in the Notice because they were identified by NRC during the inspection. If you contest the violations or the 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 enclosed Notice when preparing your response. For your consideration in presenting the corrective actions, the guidance from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is available on the NRC website and may be helpful. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

We received your reply to our Notice of Violation 70-27/2008-004-01 by letter, dated February 26, 2009. This reply met the requirements of 10 CFR 2.201 and your corrective actions will be reviewed during a future inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosures, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/readingrm/adams.html.

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

Sincerely,

/RA/

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

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

Enclosures: 1. Notice of Violation
2. NRC Inspection Report No. 70-27/2009-002

cc w/encls:
Barry L. Cole, Manager
Licensing and Safety Analysis
BWX Technologies, Inc.
P.O. Box 785
Lynchburg, VA 24505-0785

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

Distribution w/encls:
M. Tschlitz, NMSS
M. Baker, NMSS
P. Habighorst, NMSS
A. Gooden, RII
C. Payne, RII
P. Silva, NMSS
K. Ramsey, NMSS

X PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER:__ _____ X SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI
SIGNATURE	***AG for 8/13/09***	***AG 8/13/09***	***RP 8/13/09***	***PS 8/13/09***	***RG 8/13/09***	AG for 8/13/09	AG for 8/13/09
NAME	SSubosits	AGooden	RPrince	PStartz	Classifier	CCramer	OLopez
DATE	8/ /2009	8/ /2009	8/ /2009	8/ /2009	8/ /2009	8/ /2009	8/ /2009
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\FFBII\REPORTS\DRAFT INSPECTION REPORT FOLDER\BWXT\IR2009-001 RI.DOC

NOTICE OF VIOLATION

Babcock & Wilcox Nuclear Operations Group, Inc. Docket No. 70-27
Lynchburg, Virginia License No. SNM-42

During NRC inspection activities conducted between March 22 and June 30, 2009, 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 October 24, 2006, and supplements thereto.

License Application, Section 11.4, "Procedures" requires activities involving licensed material to be conducted in accordance with written and approved procedures.

Procedure OP-0001003, requires tracking of special nuclear material transfers for Uranium-235 content on mass log datasheet M35-025 for nuclear criticality safety purposes.

Contrary to the above, prior to May 7, 2009, personnel failed to document a transfer of special nuclear material from a glovebox on mass log datasheet M35-025 as required by OP-0001003.

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

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 October 24, 2006, and supplements thereto.

License Application, Section 11.4, "Procedures" requires activities involving licensed material to be conducted in accordance with written and approved procedures.

Procedure HS-FP-008, Wet Pipe Sprinkler Systems, Attachment 1, states in part that, sprinkler heads shall be inspected from the floor level annually and sprinklers shall not show signs of corrosion.

Procedure HS-FP-008, Wet Pipe Sprinkler Systems, Attachment 1, states in part that, if inspection or testing reveals a failure to comply with procedure requirements, initiate immediate actions to bring in to compliance or initiate a corrective action.

Contrary to the above, prior to Jun 11, 2008, the licensee failed to initiate immediate or timely corrective action to bring in to compliance the sprinkler heads located in the Uranium recovery area when inspections revealed signs of corrosion.

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

Pursuant to the provisions of 10 CFR 2.201, Babcock and Wilcox NOG is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region II, and a copy to the NRC Senior Resident Inspector at Babcock & Wilcox NOG, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time. 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.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html to the extent possible, it should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

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

Dated this 14th day of August, 2009

U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.:	70-27
License No.:	SNM-42
Report No.:	70-27/2009-002
Licensee:	Babcock and Wilcox
Facility:	Nuclear Operations Group
Location:	Lynchburg, Virginia
Dates:	March 22 thru June 30, 2009
Inspectors:	S. Subosits, Senior Resident Inspector A. Gooden, Senior Fuel Facilities Inspector O. Lopez, Fuel Facilities Inspector C. Cramer, Fuel Facilities Inspector P. Startz, Fuel Facilities Inspector R. Prince, Senior Fuel Facilities Inspector
Approved by:	D. Charles Payne, Chief Fuel Facility Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure 2

EXECUTIVE SUMMARY

Babcock & Wilcox Nuclear Operations Group, Inc.
NRC INSPECTION REPORT 70-27/2009-002

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, and Maintenance and Surveillance. Regional based inspectors conducted specialized inspections and reviews of documentation in the areas of Environmental Protection and Radiation Protection; Fire Protection, Radioactive Waste Management, Permanent Plant Modifications, Transportation, and observation and evaluation of the biennial emergency exercise.

Plant Operations

- A violation was identified when entries in a special nuclear material (SNM) mass log were not completed as required by the applicable operations procedure. (Paragraph 2.a)

- On April 3, the emergency team provided an effective response to a nitric acid leak from a valve on the rooftop into Bay 6A. No licensed material was involved in the chemical spill and the airborne concentrations of nitric acid did not meet the criteria for an Alert. A root cause investigation team was formed to investigate the cause of the leak and identify corrective actions. The corrective actions identified were adequate to prevent recurrence of the acid leak. (Paragraph 2.b)

Management Organization and Controls

- A modification to the High Level Dissolver system was completed in accordance with change management procedures. No operational or procedure problems were noted with the modified process equipment or revised operations procedure. (Paragraph 3)

Fire Protection

- Fire detection and suppression systems, including Items Relied On For Safety, were properly implemented. Process areas, equipment, and material storage areas were operated in accordance with fire safety requirements. A violation was identified for the failure to initiate immediate or timely corrective actions to bring the sprinkler heads located in the Uranium Recovery area into compliance when inspections revealed signs of corrosion. (Paragraph 4)

Emergency Preparedness

- The licensee's response to the postulated accident was considered a successful demonstration of a licensee prepared to implement the Emergency Plan and Emergency Plan implementing procedures. The failure to declare the event as a Site Area Emergency and the inadequate triage performance were considered two examples of exercise weaknesses requiring corrective action. (Paragraph 5)

Permanent Plant Modifications

- Based on safety reviews, system walk-down, and interviews, the change involving the addition of safety notes had no impact on those safety controls that were in place to protect the workers and environment such that the worst case accident would not result in exceeding the performance requirements in 10 CFR 70.61. (Paragraph 6)

Effluent Control and Environmental Protection

- The licensee's radioactive effluent control and environmental protection programs were adequately implemented to ensure that liquid and gaseous radioactive effluents were maintained within regulatory limits. Adequate controls were in place to identify adverse trends and the licensee had established appropriate action levels to provide early indication of any adverse trend. Radioactive effluent and environmental monitoring equipment and systems were properly maintained in accordance with approved procedures. (Paragraph 7)

Radiation Protection

- Radiation protection surveillance activities, instrument operation and calibration, and ALARA program activities were properly maintained. Self-assessments and quality assurance surveillances of radiation protection program activities were adequately implemented. Training and qualification activities for radiation protection personnel were current and implemented in accordance with the licensee's training program. (Paragraph 8)

Radioactive Waste Management

- The licensee's radioactive waste activities were performed in accordance with regulatory requirements and approved procedures. (Paragraph 9)

Transportation Activities

- The licensee's transportation activities were performed in accordance with regulatory requirements and approved procedures. (Paragraph 10)

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

REPORT DETAILS

1. Summary of Plant Status

Routine fuel manufacturing operations and maintenance activities were conducted in the fuel processing areas and in the Research Test Reactors and Targets (RTRT) facility. Uranium recovery was conducted in the Uranium Recovery (UR) facility.

NRC Commissioner (now Chairman) Dr. Gregory Jaczko visited the site, toured the facility, and observed a security exercise on April 14, 2009.

2. Plant Operations

a. Plant Operations (Inspection Procedure (IP) 88135)

(1) Inspection Scope and Observations

The inspectors performed daily tours of the shop floor, fuel manufacturing, Specialty Fuels Facility (SFF), RTRT and UR areas. During a tour on May 7, 2009, the inspectors identified a mass log datasheet for glove box Workstation 19 in the SFF was missing an entry. The inspectors noted the glove box was empty, although the mass log datasheet contained entries indicating special nuclear material (SNM) had been placed in the glove box on March 28, 2009. The mass log data sheet, Form M35-025, did not have an entry showing that all of the material had been removed from Workstation 19 and thus the U-235 content was zero in the glove box. The inspectors notified the area supervisor and the mass log was subsequently zeroed out. The operator, who made the material transfers, failed to document the removal of the material from Workstation 19 into a subsequent glove box, Workstation 18, after the material had been processed in Workstation 130. The operator indicated that he was trained to perform operations in the area, but did not realize there was a requirement to complete the mass log for SNM transfers associated with Workstation 19. Area supervision attributed the error to infrequent use of the glove box, and the length of time to process material through Workstation 130, which is often several days. The licensee also concluded that the use of two mass logs for the series of glove boxes connected to Workstation 130 is unique in comparison to other glove box configurations in the SFF and that this contributed to the operator error. The inspectors determined that the likelihood of exceeding the U-235 mass limits was increased based on the operator's lack of awareness of the requirement and the contributing factors identified by the licensee. Operations Procedure (OP)-0001003 requires completion of the mass log to ensure compliance with the administrative Item Relied On For Safety (IROFS) for mass of U-235 in the workstation. The inspectors determined that the operator's failure to complete the entries in the mass log form was a violation (VIO) of OP-0001003 (VIO 70-27/2009-02-01: Failure to Complete Required SNM Mass Log Entries).

(2) Conclusions

A violation was identified when entries in a SNM mass log were not completed as required by the applicable operations procedure.

b. Nitric Acid Leak from Rooftop into Bay 6A

(1) Inspection Scope and Observations

On April 3, at approximately 4:00 p.m., a leak from the nitric acid supply line on the roof of Bay 6A breached the roof and sprayed two operators inside Bay 6A. The operators, who were wearing the required personal protective equipment for Bay 6A operations proceeded to the bathroom and rinsed the affected areas of skin. The on-site emergency (E)-team responded and evaluated the operators for further treatment. They determined no further treatment was necessary for the operators and personnel placed the acid treatment operations in a safe shutdown state before exiting the area. The B&W site emergency operations center (EOC) was activated shortly after 4:00 p.m. and the emergency management organization (EMO) was notified by EOC automated pager system. The NRC senior resident inspector was notified of the incident via pager, responded to the site by 4:30 p.m., observed EOC response to event and established telephone contact with NRC Region II Division of Fuel Facility Inspection (DFFI) management.

Because the leak was a strong acid, as a precaution, the EMO directed evacuation of all personnel from Bays 5A through 10A. The E-team responded to the roof area and discovered a nitric leak on a spoolpiece of piping which was not doubly encased. Nitric acid flow was subsequently isolated at the tank farm. Emergency shutdown actions were verified to be complete in the Bay 6A area and all acid treatment tanks were checked to ensure the liquid contents had dumped to the waste treatment facility. The E-team also noted that acid had leaked into the men's restroom in Bay 6A and that power had been lost to air compressors, a crane, and the chillers for the area. The power loss was later determined to be due to acid intrusion into an electrical bus duct in the area. After verification that all SNM-related operations were in a safe shutdown state, the E-team focus shifted to verifying the airborne concentration of nitric acid and neutralizing the pool of acid on the rooftop area. At approximately 8:00 p.m., the E-team verified by air sampling that the nitric acid concentration was approximately 0 parts per million and an alert declaration was not required under the chemical release criteria in the site Emergency Plan. The soda ash (Na_2CO_3) available on-site was applied to the spill and additional Na_2CO_3 was procured from an off-site vendor. At 11:00 p.m. with approximately 90% of the spill neutralized, the licensee terminated the EOC activation and suspended response actions on the rooftop due to concerns about structural integrity of the roof. In response to a media inquiry from a local television station regarding the nature and severity of the event, the licensee issued a press release and made a concurrent notification to the NRC (Event Notification 44969) in accordance with 10 CFR 70 Appendix A reporting requirements.

On April 4, the licensee determined that the roof area was structurally safe to continue recovery actions to neutralize the spill. The spill was completely neutralized and an assessment of the cause of the leak was initiated under corrective action report, CA200901004. The investigation found a number of the carbon steel bolts on the rooftop valve for the nitric acid supply line missing or degraded. A number of causal factors were identified by the post-incident review team (PIRT) including the use of carbon steel bolts, the area for inspection of the valve and acid supply line was not

easily accessible, and no secondary containment was installed around the valve. Repairs to the leaking valve were completed to address the concern with corrosion of carbon steel bolts; stainless steel bolts are now being used for valve flange connections in the piping for the nitric acid line.

A list of fourteen corrective actions to prevent recurrence was proposed for the event. Of that list the following actions are most pertinent to addressing the causal factors for the event: 1) implementation of a preventive maintenance plan for chemical and waste transfer lines; 2) improve rooftop access for inspection of valves and transfer lines; 3) addition of an emergency stop (E-stop) for the nitric acid supply system at the tank farm; 4) improvements to the visual inspection requirements for transfer lines in environmental procedure E-710; and 5) evaluate secondary containment/leak detection needs for valves on acid lines. The inspectors reviewed the corrective actions and concluded they are adequate to prevent recurrence.

(2) Conclusions

On April 3, the emergency team provided effective response to a nitric acid leak from valve on the rooftop into Bay 6A. No licensed material was involved in the chemical spill and the airborne concentrations of nitric acid did not meet the criteria for an Alert. A root cause investigation team was formed to investigate the cause of the leak and identify corrective actions. The corrective actions identified were adequate to prevent recurrence of the acid leak.

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

a. High Level Dissolver Operations

(1) Inspection Scope and Observations

In August 2008 the licensee observed electrical spark generation during dissolution operations in the High Level Dissolvers. The original troughs were a corrosion-resistant metal alloy coated with Teflon. In response to the discovery of sparks from the electrolyte solution in the trough onto the exposed metal in the troughs and the potential for ignition of hydrogen gas evolved during dissolution, the licensee is installing new troughs made of Kynar. Kynar, also known as Polyvinylidene Fluoride, is a non-conductive, fluoropolymer material.

The inspectors reviewed change management documentation associated with change request (CR) 1026843 and safety evaluation request (SER) 08-047 for the modification of the high level trough dissolvers and associated piping. The inspectors determined the material change, trough configuration and updates to the integrated safety analysis (ISA) in Safety Analysis Report (SAR) 15.5 were properly evaluated in the SER. The inspectors reviewed CR-1030155 which revised OP-1018680, Recovery High Level Dissolution, to accommodate operation of the new troughs. On April 9, the inspectors observed the initial batch operation of the new troughs and four other batches during the first two weeks of operation. No significant operational problems were noted

with the dissolver configuration or the revised operations procedure. The Inspector Followup Item (IFI 2008-03-01: Review of the Licensee's Investigation Regarding the Discovery of Spark Generation in the High Level Trough Dissolvers) will remain open until the installation and startup of the remaining Kynar trough is complete.

(2) Conclusion

A modification to the High Level Dissolver system was completed in accordance with change management procedures. No operational or procedure problems were noted with the modified process equipment or revised operations procedure.

4. Fire Protection (IP 88055)

a. Inspection Scope and Observations

The inspectors reviewed the Bay 17 area, component storage area, and the UR process and concluded they were being operated in accordance with fire safety requirements. The licensee adequately controlled combustible and flammable materials throughout the facility. The inspectors reviewed maintenance records and walked down selected components of the fire detection system and noted that they were properly implemented. The reviewed components included fire alarm central station, smoke detectors, and heat detectors. No safety issues were identified. The inspectors also reviewed the pre-fire plan for the fuel process and UR. No discrepancies were noted.

The inspectors reviewed an impairment permit that was in place for one of the fire water tanks. The tank had been taken out of service to perform an internal inspection. The inspectors noted that the licensee took compensatory measures to ensure that adequate water supply remained available to support the fire protection sprinkler systems. The inspectors reviewed hot work activities performed in UR. No safety issues were identified.

The inspectors walked down sprinkler systems and manual fire fighting equipment in the Bay 17, component storage area, and UR. The inspectors also reviewed maintenance records for the fire suppression systems. The inspectors confirmed that the sprinklers were not obstructed, that the water supply to the system was readily available with correct valve positioning and pumping capacity.

During the walk down of the UR sprinkler system, which is designated as an IROFS, the inspectors observed signs of corrosion on the sprinkler heads. The inspectors noted that the licensee was visually inspecting the sprinkler heads in accordance with procedure requirements. However, the licensee did not initiate immediate actions to bring the system in to compliance. Procedure HS-FP-008, states in part that, sprinkler heads shall be inspected from the floor level annually and sprinklers shall not show signs of corrosion. In addition, if the inspection reveals a failure to comply with procedure requirements, the individual conducting the inspections is required to initiate immediate actions to bring into compliance or initiate a corrective action request. The failure to initiate immediate or timely corrective actions to bring the sprinkler heads located inside

the UR area into compliance when inspections revealed signs of corrosion is a violation of requirements in Procedure HS-FP-008 (VIO 70-27/2009-02-02: Failure to Initiate Actions to Restore the Condition of Sprinkler Heads with Observed Signs of Corrosion).

b. Conclusions

Fire detection and suppression systems, including Items Relied On For Safety, were properly implemented . The process areas, equipment, and material storage areas were operated in accordance with fire safety requirements. A violation was identified for the failure to initiate immediate actions to bring into compliance the sprinkler heads located in the Uranium Recovery area when inspections revealed signs of corrosion.

5. Emergency Preparedness (IP 88051)

a. Evaluation of Exercises and Drills (F4)

(1) Inspection Scope and Observations

Section 4.3 of the Emergency Plan requires an emergency exercise be conducted on a biennial basis. The licensee conducted an emergency exercise on June 9, 2009, to fulfill this requirement. Members of the NRC Region II Incident Response Team and the NRC Resident Inspector at B&W NOG participated in the exercise from the Region II Incident Response Center and the B&W NOG EOC, respectively. The exercise scenario was submitted in accordance with the Plan requirements and postulated adequate accident conditions for evaluating the licensee's performance in the implementation of actions to protect the health and safety of the workers, the public, and the environment. The inspectors observed performance by the licensee at the incident scene, the on-scene command post, and the EOC.

The exercise scenario postulated an accident involving a fire and the potential for criticality with serious injuries to personnel working in the area. Within the areas that were evaluated, with two exceptions, the licensee's performance to mitigate the postulated accident was considered successful. The two exceptions, considered critical exercise objectives, involved the event classification by the EMO and the medical triage performed by members of the emergency response team. Although the initial classification of an Alert around 9:07 a.m. was both timely and correct, the conditions rapidly deteriorated such that a loss of all controls and the inability to immediately re-establish the controls existed. In accordance with the "Initial Emergency Assessment Flow Chart," the loss of all controls and the inability to immediately re-establish controls resulting in imminent conditions for a criticality to occur should be declared a Site Area Emergency. The failure to classify the event as a Site Area Emergency was self-identified by the licensee and was attributed to human errors associated with the Emergency Assessment Flow Chart. The second performance weakness resulted when rescue/first aid personnel responded to the least severely injured personnel first resulting in approximately a 30-minute delay before assistance was provided to the most severely injured worker. The inspector discussed the two exceptions as examples of an exercise weakness requiring corrective action. In response, the licensee discussed plans to

human factor the Emergency Assessment Flow Chart to prevent future errors in decision-making regarding the classification of criticality events by relocating the section associated with degraded IROFS to align with the decision matrix under "Potential Criticality". The licensee assigned corrective action tracking number (CA200902099) to follow this issue. In response to the medical triage issue, the licensee indicated that re-training would be conducted to ensure responders properly prioritized medical and first aid assistance during events. Corrective actions taken in response to the exercise weaknesses will be reviewed during a subsequent inspection.

The licensee conducted a critique following the exercise which provided players, controllers, evaluators, and observers an opportunity to provide comments. The licensee's critique was an adequate assessment of the response and items requiring improvement or corrective actions were appropriately identified.

(2) Conclusions

The licensee's response to the postulated accident was considered a successful demonstration of a licensee prepared to implement the Emergency Plan and Plan implementing procedures. Two items were discussed as examples of exercise weaknesses requiring corrective action.

6. **Permanent Plant Modifications**

a. Inspection Scope and Observations

The safety implications associated with the plant modification involving the addition of safety notes to Class B safety equipment located inside recovery area was reviewed. The inspectors reviewed the licensee's 10 CFR 70.72 evaluation, the maintenance work order, the SER, and performed a system walk-down with the Maintenance Engineer to verify the equipment, as installed, was consistent with the description in the maintenance database. The inspectors determined that the addition of equipment safety notes was a program improvement which provided information to maintenance personnel to ensure Class B safety equipment was returned to the proper configuration following maintenance or service repairs; and in the event pre-testing of equipment was required, the appropriate reference including the procedure details were provided in the notes. The inspectors determined from interviews and documentation reviews that the change was made in accordance with the procedure governing change management.

b.` Conclusions

Based on the safety reviews, system walk-down, and interviews, the change involving the addition of safety notes was a program improvement with no impact on those safety controls that were in place to protect the workers and environment such that the worst case accident would not result in exceeding the performance requirements in 10 CFR 70.61.

7. Effluent Control and Environmental Protection (IP 88045)

a. Scope and Observations

The inspectors reviewed procedures relating to the conduct and administration of the effluent and environmental control programs. The inspectors interviewed personnel regarding processes utilized by the licensee to evaluate, review, track and trend data associated with these programs. The inspectors found that adequate controls were in place to identify adverse trends and that appropriate action levels have been established to provide early indication of adverse trends. The inspectors reviewed and discussed with licensee personnel the most recent semi-annual effluent reports issued in August 2008 and February 2009. Effluent releases were noted to be well below regulatory limits. No adverse trends were identified.

The inspectors reviewed procedures and associated data sheets to determine if appropriate controls have been established to maintain analytical equipment within established operating and calibration parameters. The inspectors noted that the licensee provides spiked samples and blank samples to vendor laboratories to routinely evaluate vendor performance. Appropriate parameters specifying the type of analysis, detection sensitivity, and turn around time for analysis of samples were provided in purchase requisitions. Based on discussions with responsible personnel, the inspectors found that personnel were knowledgeable of the importance to maintain analytical equipment within prescribed operating limits.

The inspectors observed the performance of personnel during the change out of environmental air samples and stack effluent samples at various monitoring stations. Licensee personnel demonstrated and explained various aspects of their functions that confirm the proper operational status of monitoring equipment. Licensee personnel were knowledgeable of their responsibilities and activities were performed in accordance with approved procedures.

The inspectors reviewed records associated with the calibration and operation of selected liquid effluent monitors and found that calibration records were current and effluent monitors were calibrated in accordance with approved procedures. The inspectors observed the physical condition and operational status of selected liquid effluent monitors in the field and noted that log sheets documenting daily functional checks were available in the field and were maintained current. No adverse trends in equipment performance were identified. No issues or safety concerns were identified.

The inspectors reviewed procedures and established processes for controlling the release of liquid and gaseous effluents. Environmental and effluent sampling records were reviewed for completeness, accuracy and identification of any adverse trends. The inspectors interviewed licensee personnel regarding the process for sampling and transfer of liquid waste from the Lynchburg Technology Center (LTC) to the main onsite waste processing facility. The inspectors noted that the licensee had established administrative action levels to prevent the transfer of highly contaminated liquid waste to the waste processing facility. In the event that liquid waste samples exceeded established action levels, liquid waste from the LTC could be processed to reduce the

radioactive material concentrations in the waste stream. The inspectors toured the LTC liquid waste processing and hold-up area, and noted the equipment was operable and available for use. The inspectors observed the physical condition and operational status of equipment at the primary sample point for liquid radioactive effluent discharged to settling ponds for eventual release. No issues were identified.

The inspectors reviewed the most recent Triennial Audit of the Radioisotope and Analytical Chemistry Laboratory (RACL). The RACL is the primary vendor laboratory utilized by the licensee to analyze effluent and environmental samples. The inspectors noted that several observations were identified in the audit. No findings were identified. The inspectors reviewed the observations and noted a low threshold for the identification of issues. No safety concerns were associated with the observations.

b. Conclusions

The licensee's radioactive effluent control and environmental protection programs are being adequately implemented to ensure that liquid and gaseous radioactive effluents are maintained within regulatory limits. Adequate controls were in place to identify adverse trends and the licensee has established appropriate action levels to provide early indication of any adverse trend. Radioactive effluent and environmental monitoring equipment and systems were properly maintained in accordance with approved procedures.

8. Radiation Protection (IP 88030)

a. Scope and Observations

The inspectors observed Radiation Control Technicians (RCT) performing routine surveys in the fuel recovery areas and surveys associated with the release of material from the controlled area. RCTs demonstrated adequate contamination survey and air sample filter change out techniques. Breathing zone air monitoring stations were positioned at appropriate locations to obtain representative air samples in work areas normally occupied by operators. The inspectors reviewed selected survey results for accuracy and completeness. No issues or concerns were identified.

The inspectors reviewed documentation of daily source response and operational checks of radiation monitoring equipment, and functional alarm verification of contamination monitors located at exit points from controlled areas. Licensee personnel were knowledgeable of the operational check requirements and activities were performed in accordance with approved procedures.

The inspectors reviewed a sample of records associated with portable survey instruments, in-line monitors, and hand-and-foot contamination monitors. The inspectors reviewed several calibration sources for appropriate configuration and to confirm suitability of sources for their intended function. The inspectors found that personnel responsible for calibration were knowledgeable of calibration techniques and associated

procedural requirements. The inspectors reviewed selected calibration records for accuracy and completeness. Inspection samples included several Eberline EC-11 monitors and a Sirius 4AB hand and foot monitor. No issues or concerns were identified.

The inspectors interviewed personnel regarding the as low as reasonably achievable (ALARA) program, and the trending and tracking of personnel exposures. The inspectors noted that ALARA committee meetings were held on a routine basis. ALARA committee meeting agendas included a review of personnel exposures, a review of radiation safety incident notices, and mechanisms to track committee action items. The inspectors noted that the licensee had established action levels associated with daily personnel exposures. In the event that action levels are exceeded, steps are initiated to evaluate the situation and, if necessary, implement corrective measures. The inspectors noted that these action levels were conservative and established at values well below regulatory exposure limits.

The inspectors reviewed the most recent independent review of the Radiation Control program conducted by an individual familiar with the licensee's program who had been employed as a contractor to the Radiation Control group. The independent review included interviews, field observations, and document reviews. The scope and depth of the program review was adequate to assess the licensee's program. The inspectors interviewed individuals responsible for scheduling and performing quality assurance (QA) surveillances of the Radiation Control program and reviewed selected QA surveillances. Surveillance findings and observations were adequately assessed and mechanisms were in place to track issues to closure in accordance with approved procedures.

The inspectors reviewed the licensee's program associated with the training and qualification of Radiation Control personnel and several new Health Physicists. The inspectors interviewed cognizant personnel and concluded that selected individuals were adequately qualified and trained. The inspectors noted that the licensee had initiated efforts to prepare RCTs for the National Registry of Radiation Protection Technologists (NRRPT) exam. Several RCTs have received NRRPT certification. The licensee's training and qualification program adequately addressed initial, continuing, and requalification requirements for various Radiation Control positions. The inspectors determined that individuals were trained and qualified in accordance with the licensee's program requirements. The inspectors confirmed current National Voluntary Lab Accreditation Program (NVLAP) certification of the licensee's dosimeter vendor.

b. Conclusions

Radiation protection surveillance activities, instrument operation and calibration, and ALARA program activities were properly maintained. Self-assessments and quality assurance surveillances of radiation protection program activities were adequately implemented. Training and qualification activities for radiation protection personnel were current and implemented in accordance with the licensee's training program.

9. **Radioactive Waste Management (IP 88035)**

a. Inspection Scope and Observations

The inspectors reviewed written procedures and observed operators performing tasks related to radioactive waste. The procedures were clearly written and delineated responsibilities related to radioactive waste management. The operators were cognizant of their responsibilities and the requirement to perform tasks in accordance with facility procedures. No issues were identified relating to management controls.

The inspectors reviewed the quality assurance program for radioactive waste management and determined that the licensee was performing audits as specified in the license application. The findings from these audits were appropriately being entered into a corrective action program for resolution.

The inspectors reviewed the licensee's program for classifying low-level radioactive waste. The inspectors looked at the procedures for classifying waste as well as records relating to waste. The inspectors determined that the licensee had an effective program for determining the classification of low-level waste.

The inspectors reviewed the licensee's program for ensuring that the waste form meets the requirements of 10 CFR 61.56. The licensee had adequate procedures in place to ensure that waste was packaged in compliance with the regulations.

The inspectors reviewed the licensee's procedures for labeling waste shipments and tracking radioactive waste. The procedures were adequate to ensure that radioactive waste was properly labeled based on the contents of the shipment, and the procedures specified actions to be taken should the shipments not reach the intended destination in the time specified. No radioactive waste shipments were made during the inspection.

The inspectors reviewed the procedures for placement, inspection, and repackaging of radioactive waste. The licensee had programs in place to ensure that solid waste was being placed in specific storage areas based on the type of waste. The licensee also had requirements for periodic inspection and repackaging of waste, if required. No issues were identified.

The inspectors performed walk-downs of all solid radioactive storage areas at the NOG facility and at the Lynchburg Technology Center (LTC). The storage areas had adequate postings to ensure that the proper material was being stored in the area and the material was safely stored in regard to nuclear criticality safety requirements. The containers were properly labeled to reflect the material within the containers and the containers were generally in good physical condition. The containers were being stored in a manner that provided immediate access for inspections and the storage areas provided adequate protection from the environmental elements and intrusion. No issues were identified.

b. Conclusions

Radioactive waste activities were performed in accordance with regulatory requirements and procedures.

10. Transportation Activities (IP 86740)

a. Inspection Scope and Observations

The inspectors reviewed a selection of shipping records involving the shipment and receipt of material and low-level radioactive waste. The licensee had an adequate program in place to ensure that the required shipping documentation accompanied all packages being shipped.

The inspectors reviewed a number of procedures involving packaging, shipping, and receiving of radioactive materials. The procedures provided sufficient guidance to ensure that radioactive material was shipped and received in accordance with the regulations.

The inspectors observed the licensee receiving a shipment of material. The personnel receiving the material followed the appropriate procedures. The inspectors interviewed members of the transportation staff to ensure they were knowledgeable of NRC and Department of Transportation (DOT) requirements. No issues were identified.

The inspectors reviewed the training of the transportation staff to ensure they had received the proper training as specified by the license. No issues were identified.

The inspectors reviewed audits of the transportation program and determined the licensee was performing periodic audits of the transportation program as required. The results of the audits were being appropriately addressed in the corrective action program. No issues were identified.

The licensee's certificates of compliance for packages used for transportation of radioactive material were current, including the necessary design information and packaging criteria.

b. Conclusions

Transportation activities were performed in accordance with regulatory requirements and procedures.

11. Followup of Previously Identified Issues

a. Violation (VIO) 70-27/2008-04-01 Failure to Adhere to Procedure and Valving Instruction Resulted in a Spill of SNM-Bearing Solution

The inspectors reviewed the completed corrective actions which included counseling of the operator involved with the column overflow on procedure compliance, modification of wiring for the alarms on the primary overflow columns to remove a common ground wire, and revising preventive maintenance plans to inspect wiring for connection integrity and signs of degradation or corrosion. The inspectors concluded the corrective actions were adequate. This item is closed

12. Exit Meeting

The inspection scope and results were summarized on March 26, June 11, and July 1, 2009, with R. Cochrane, General Manager, and other members of the licensee's staff. Although proprietary information and processes were reviewed during the inspections, proprietary information is not included in this report. No dissenting comments were received from the licensee.

ATTACHMENT

1. LIST OF PERSONS CONTACTED

J. Burch, Manager, Operations
J. Calvert, Manager, Industrial Health and safety
T. Cayton, Engineer, Computerized Maintenance System
R. Cochrane, General Manager
J. Creasey, Manager, Uranium Processing
B. Dilling, Emergency Preparedness Officer
D. Faidley, Manager, Nuclear Criticality Safety
B. Cole, Manager, Licensing & Safety Analysis
T. Nicks, Manager, Security
C. Yates, 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
70-27/2009-02-01	Open	VIO - Failure to Complete Required SNM Mass Log Entries. (Paragraph 2.a)
70-27/2009-02-02	Open	VIO - Failure to Initiate Actions to Restore the Condition of Sprinkler Heads with Observed Signs of Corrosion. (Paragraph 4)
70-27/2008-03-01	Open/Discussed	IFI – Review of the Licensee's Investigation Regarding the Discovery of Spark Generation in the High Level Trough Dissolvers. (Paragraph 3)
70-27/2008-04-01	Closed	VIO – Failure to Adhere to Procedure and Valving Instruction Resulted in a Spill of SNM-Bearing Solution. (Paragraph 11)

3. INSPECTION PROCEDURES USED

IP 88135	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 88020	Operational Safety
IP 88051	Evaluation of Exercises and Drills
IP 88070	Permanent Plant Modifications
IP 88055	Fire Protection (Annual)
IP 88045	Effluent Control and Environmental Protection
IP 88035	Radioactive Waste Management
IP 86740	Transportation Activities