UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVE., NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

October 25, 2011

EA-08-204

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

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2011-004

Dear Mr. Cochrane:

This refers to inspections conducted from July 1 through September 30, 2011, at the Babcock and Wilcox Nuclear Operations Group facility in Lynchburg, VA. The purpose of the inspections was to determine whether activities authorized under the license were conducted safely and in accordance with NRC requirements. The enclosed integrated inspection report documents the inspection findings, which were discussed on September 15, September 22, September 29 and October 3, 2011, with you and other members of your staff.

The inspections consisted of an examination of activities conducted under the license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Areas examined during the inspections included: Safety Operations, Radiological Controls, and Facility Support. Within these areas, the inspections consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress. Based on the results of these inspections, the NRC has determined that no violations of NRC requirements occurred.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure, 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.

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

Sincerely,

/RA/

Steven J. Vias, Chief
Fuel Facility Inspection Branch 1
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report 70-27/2011-004

cc w/encl:
Barry L. Cole, Manager
Licensing and Safety Analysis
Babcock and Wilcox
Nuclear Operations Group, Inc.
P.O. Box 785
Lynchburg, VA 24505-0785

Leslie P. Foldesi, Director
Division of Radiological Health
Virginia Department of Health
109 Governor Street, Room 730
Richmond, VA 23219

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Letter to Mr. R. P. Cochrane from Steven J. Vias dated October 25, 2011

SUBJECT: NRC INSPECTION REPORT NO. 70-27/2011-004

Distribution w/encl:
S. Vias, RII
R. Johnson, NMSS
S. Subosits, RII
J. Pelchat, RII
M. Baker, NMSS
K. Ramsey, NMSS

U. S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.:	70-27
License No.:	SNM-42
Report No.:	70-27/2011-004
Licensee:	Babcock and Wilcox
Facility:	Nuclear Operations Group
Location:	Lynchburg, Virginia
Dates:	July 1, 2011 through September 30, 2011
Inspectors:	S. Subosits, Senior Resident Inspector M. Crespo, Senior Fuel Facilities Inspector O. Lopez, Senior Fuel Facilities Inspector R. Prince, Fuel Facilities Inspector J. Foster, Fuel Facilities Inspector S. Mendez, Fuel Facilities Inspector N. Coovert, Fuel Facilities Inspector
Approved by:	Steven J. Vias, Chief Fuel Facility Inspection Branch 1 Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

Babcock and Wilcox
NRC Integrated Inspection Report 70-27/2011-004
July 1 – September 30, 2011

Inspections were conducted by the resident and regional inspectors during normal and off normal shifts in the areas of safety operations, radiological controls, and facility support. The inspectors performed a selective examination of licensee activities which was accomplished by direct observation of safety-significant activities and equipment, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting operation conditions, corrective actions, and a review of facility records.

Safety Operations

- Plant operations were conducted safely and in accordance with approved operating procedures and Nuclear Criticality Safety Postings. Items relied on for safety reviewed were properly implemented and maintained in order to perform their intended safety function (Paragraphs A.1.b and A.2.b).

- Area housekeeping was maintained in accordance with fire safety requirements for special nuclear material processing areas, equipment, and storage areas (Paragraph A.3.b).

Radiological Controls

- Radiation protection program elements reviewed were found to be in compliance with 10 CFR Part 20 and the license application (Paragraphs B.1.b and B.2.b).

- Environmental monitoring programs were implemented in accordance the license application and applicable regulations (Paragraph B.3.b).

Facility Support

- Maintenance surveillance tests were performed and met the acceptance criteria established in the work instructions. Issues relative to safety were appropriately identified, screened and evaluated in the preventative/corrective action system. (Paragraphs C.1.b and C.2.b).

- Plant modifications were adequately evaluated for safe operations. The licensee implemented adequate management measures to ensure safety-related changes would be maintained to ensure controls remained available and reliable. Unresolved Item (URI) 70-27/2011-004-01 was opened pending the review of the licensee's reassessment of the conclusion that a red oil accident in the Uranium Recovery process is not credible (Paragraphs C.3.a and C.3.b).

- The licensee responded appropriately from the perspectives of emergency response and operational safety following the earthquake of August 23, 2011. No injuries or hazardous material releases occurred at the facility and there were no adverse impacts to plant equipment, the public or environment. (Paragraph C.4.b)

Attachment
List of Persons Contacted
List of Items Opened, Closed and Discussed
Inspection Procedures Used
Documents Reviewed

REPORT DETAILS

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 (UR) operations were conducted in the UR facility.

A. Safety Operations

1. Plant Operations (IP 88135)

a. Inspection Scope and Observations

The inspectors performed daily tours of the facility manufacturing areas, observed three shift turnover meetings and observed two operational event critique meetings during the inspection period. The inspectors interviewed operators, front-line managers, material control and accounting technicians, and process engineering personnel. Staffing was adequate for the tasks being performed and the operations staff demonstrated adequate knowledge of the current status of equipment associated with their assigned duties. The inspectors observed operations in progress in the UR, Filler and RTRT areas throughout the inspection period. The operations that the inspectors observed in these areas were conducted safely and in accordance with the applicable operating procedures.

On August 10, 2011, the inspectors observed a portion of the readiness assessment for restart of the Uranyl Nitrate Crystal Drum Dryer process in the UR facility. The inspectors noted that the personnel performing the assessment asked UR operations personnel probing questions to verify their knowledge of the process and readiness to resume operating the process equipment.

The inspectors conducted a review of portions of the plant areas listed below and their safety significant controls and systems related to the processing and storage of special nuclear materials (SNM) to verify that the existing configurations of the systems were correct and that the items relied on for safety (IROFS) were available and reliable to perform their function when needed to comply with the performance requirements.

- Waste Drum Counting Operations
- Conventional Fuel Process

To review these systems, the inspectors reviewed Integrated Safety Analysis (ISA) Summary Safety Analysis Report (SAR) 15.20 for the Waste Drum Counting area and SAR 15.34 for the Conventional Fuel Process area and noted the controls designated as IROFS. During the walk downs, the inspectors interviewed area operators to verify their knowledge of the IROFS applicable to their work area. The inspectors also verified that the IROFS controls for the two areas were properly implemented in the field by reviewing the system configuration in the field, applicable operating procedures, applicable maintenance instructions and nuclear criticality safety (NCS) postings.

b. Conclusion

Plant operations were conducted safely and in accordance with approved operating procedures. The IROFS reviewed were properly implemented and maintained in order to perform their intended safety function. No findings of significance were identified.

2. Criticality Safety (IP 88135)

a. Inspection Scope and Observations

During daily tours of the shop floor area, RTRT and the UR area, the inspectors verified that NCS controls were in place, and available to perform their intended functions. The inspectors reviewed a sample of nine NCS-related IROFS in the UR area for implementation in the field and identification on associated NCS postings. During their observations, the inspectors noted that the IROFS were properly implemented and that UR operations personnel complied with NCS posting requirements in the UR area.

On morning of September 13, 2011, operations personnel in the RTRT radiologically controlled area discovered that water had accumulated in one of the process furnaces in the area. The inspectors attended the operational event critique and reviewed the NCS concern analysis performed as a result of the event. The inspectors noted that prior to the event, the licensee had recently repaired a solenoid valve on the refrigerant loop for the chiller unit that cools the chilled water supply to the equipment in the area. The solenoid valve on refrigerant loop of the chiller was stuck in the open position and cooled the water to a lower than normal temperature. Normal temperature for the chilled water system is 60 degrees Fahrenheit. The inspectors also noted that the temperature of the pipe supplying chilled water to the furnace was approximately forty seven degrees Fahrenheit at the time following the discovery. The furnace, and other chilled water supplied equipment and piping were found to have condensation on their surfaces as the area was warm and humid at the time of discovery. The inspectors verified that samples of water taken from the cleanup did not show any uranium present and only expected residual levels of uranium were found in the interior of the furnace which was not operational at the time of discovery. The inspectors reviewed the applicable ISA scenarios, HEUA6-11a and HEUA6-11b and the licensee's NCS concern analysis. The inspectors determined from their review that the mass and spacing NCS controls identified in the ISA were available throughout the event and though the loss of moderation control was a loss of an IROFS, the remaining controls satisfied the performance requirements to ensure a criticality remained highly unlikely. As a result the event was not reportable under 10 CFR Part 70 Appendix A reporting criteria. The issue was entered into the licensee's corrective action (CA) system (CA 201102624) and corrective maintenance was performed on the chilled water temperature control system.

b. Conclusion

NCS controls were functional and NCS postings were complied with. No findings of significance were identified.

3. Fire Protection (IP 88135)

a. Inspection Scope and Observations

During daily plant tours, the inspectors verified that transient combustibles were being adequately controlled and minimized in the UR process area and general shop floor areas. The inspectors conducted fire safety tours for UR, Bay 3 and Bay 7 shop floor areas and portions of the Waste Treatment Operations area. The inspectors reviewed the control of transient combustible material and ignition sources, and fire detection and suppression capabilities in the areas. No regulatory issues were noted in the areas reviewed. The inspectors verified that housekeeping in the areas reviewed was sufficient to minimize the risk of fire.

b. Conclusion

Area housekeeping was maintained in accordance with fire safety requirements for SNM processing areas, equipment, and storage areas. No findings of significance were identified.

B. Radiological Controls

1. Radiation Protection (IP 88135)

a. Inspection Scope and Observations

During tours of radiologically controlled areas, the inspectors verified workers complied with radiation protection (RP) procedures. The inspectors observed plant personnel as they removed protective clothing at controlled area step-off pads. The inspectors also observed plant employees perform exit monitoring. The inspectors reviewed two Radiological Work Permits (RWPs) concerning work activities for the UR controlled area. The RWPs contained appropriate instructions and were posted in the work areas for employees' review and observation. Workers utilizing the RWP areas signed onto the RWP, verifying their knowledge of the entry requirements. The inspectors noted that plant workers properly wore dosimetry, used protective clothing in accordance with the applicable RWPs, used appropriate contamination control techniques and performed tasks in accordance with the RWP guidance.

b. Conclusion

No findings of significance were identified.

2. Radiation Protection (IP 88030)

a. Inspection Scope and Obwervations

The inspectors reviewed procedures, records, and assessments pertaining to the RP program and conducted interviews of RP management, engineering staff, supervisors, and radiation control technicians. The portions of the RP program reviewed were

assessed against 10 Code of Federal Regulations (CFR) Part 20 and for compliance with the NRC license application for License SNM-42.

Radiation Protection Program

The inspectors interviewed staff in regards to license application commitments and determined that the RP management reported to senior management outside of operations. The inspectors interviewed staff regarding the authority of the RP organization to suspend operations in response to an unsafe activity. The inspectors determined that multiple levels of the organization felt confident in their authority including the program manager, technical staff, and radiation control technicians. The inspectors reviewed the RP organizational changes made since the last inspection. The inspectors noted one position remained unfilled but did not identify any commitments that were not being met as a result of this vacancy.

The inspectors reviewed the 2010 As Low As Reasonably Achievable (ALARA) report, four quarterly program internal audit reports, and validated that an external audit was performed on a triennial basis. The inspectors determined that the licensee established and tracked program goals, reviewed the radiation protection program content, and implemented frequency requirements in accordance with the license application. The inspectors reviewed items pertaining to radiation protection in the Radiation Safety Information Notice (RSIN) system and the corrective action program and determined that the programs were in compliance with the license application.

Exposure Controls

The inspectors reviewed dosimetry results for the year 2010 dose for the Nuclear Operations Group (NOG) site and for the Lynchburg Technology Center (LTC). The inspectors determined that the Total Effective Dose Equivalent (a summation of internal and external dose) for the employees at each site were less than the regulatory limit. The inspectors verified that the shallow dose equivalent and the lens dose equivalent for the maximally exposed individual at each site were less than the regulatory limits. Since the last inspection, the licensee had no planned special exposures or minors on site. The inspectors reviewed the dose calculations for the declared pregnant workers and the associated fetus and determined that the results were below the regulatory limits. The inspectors reviewed a sampling of NRC Form 5 records prepared in 2010, that communicated dose information annually to the applicable workers and determined that the forms were prepared and disseminated in accordance with the regulations.

The inspectors reviewed dose records and verified that the licensee was monitoring workers likely to receive ten percent of the regulatory limit for annual dose as required by the regulations. The workers were monitored for either external dose, internal dose, or both. The inspectors verified that the vendor that supplied and processed the thermo-luminescent dosimeters (TLD) used for external dosimetry was National Voluntary Laboratory Accreditation Program (NVLAP) accredited. The inspectors accompanied a radiation control technician (RCT) while performing breathing zone lapel samples and surveys. The inspectors determined that surveys, readings, and program response to abnormal results were in compliance with the licensee's procedures. The inspectors reviewed the 2010 audit of a bioassay vendor and determined that the program was in compliance with the license application. The inspectors reviewed the 2010 individual

dose assessments calculated for individuals who exceeded an action level in regards to elevated TLD results, bioassay results, or air sampling results and determined that the doses were properly assessed and assigned.

The inspectors viewed the respiratory protection training video utilized by the staff and determined that it met the objectives listed in the respiratory protection procedure and in the regulations. The inspectors observed a respirator fit test and interviewed the staff on the respiratory program. The inspectors identified the licensee had changed the type of respirators used by the security guards since the last inspection. However, the inspectors further determined that the program change fell outside of the NRC regulations as the respirators were not intended for protection from SNM. The inspectors determined that the respiratory protection program was in compliance with the applicable regulations.

The inspectors reviewed the ventilation program used as an engineering control for ALARA, and determined the notifications and stop work requirements, air flow and filter differential pressure surveillances, and filter replacement maintenance in place maintained the ventilation system in compliance with the license application.

Notification and Reports

The inspectors reviewed the Event Notification database, maintained by the NRC, and determined that no reportable events pertaining to the radiation protection program had been reported since the last inspection. The inspectors interviewed staff and reviewed the corrective action program and verified that an event which would require reporting had not occurred.

As Low As Reasonably Achievable (ALARA)

The inspectors reviewed the minutes of four monthly ALARA Committee meeting and supporting agenda documentation, which included performance graphs, corrective action reviews, procedure reviews, and the results of area walk downs. The inspectors determined that the licensee maintained required attendance, established and tracked program goals, reviewed the radiation protection program content, and implemented meeting frequency requirements in accordance with the license application. The inspectors performed interviews and reviewed procedures, programs, and training. The inspectors determined that the licensee's commitments to minimize exposure and implement the ALARA philosophy were exhibited in management and staff personnel action, clearly defined in procedures, and exposure reduction goals were developed and tracked.

b. Conclusion

Elements of the RP program reviewed during the inspection were found to be in compliance with 10 CFR 20 and the license application. No findings of significance were identified.

3. Effluent Control and Environmental Protection (IP 88045)

a. Inspection Scope and Observations

The inspectors performed a detailed review of the last two semi-annual effluent monitoring reports issued on February 15, 2011 and August 23, 2011. These reports covered the last half of 2010 and the first half of 2011, respectively. The reports were submitted as required by 10 CFR 70.59. The inspectors verified that that maximum potential annual radiation dose to the public from gaseous and liquid effluent releases remained significantly below the licensee's design objectives as well as the limits prescribed in 10 CFR 20.1301. The inspectors evaluated how the raw data was compiled by the licensee and subsequently used to calculate doses to the public. The inspectors also assessed the technical justifications for assumptions used in calculating the liquid effluent discharges.

The inspectors accompanied radiation technicians during the collection of various stack samples on the B&W facility rooftop. All measured gaseous effluents pass through a plant stack. The B&W site has 24 individual stacks and each is specifically monitored for radioactivity of the gaseous effluents. Analytic results from these samples provide the input data for the radiological gaseous effluents that are reported to the NRC pursuant to 10 CFR 70.59. The inspectors verified that the samples were carefully handled and removed for collection and that sampling systems were properly reassembled and realigned following sample collection. Following sample collection and counting in the radiological controls office, the inspectors accompanied a technician to the environmental laboratory for further sample analysis. While in the environmental laboratory, the inspectors verified that the technician used appropriate personnel protective equipment. The inspectors also evaluated and noted no significant issues with the analytical methods used in the environmental laboratory.

The inspectors reviewed recent data, for the first half of 2011, associated with the collection and analysis of soil, water, and vegetation samples from the areas surrounding the facility. The inspectors noted that activity levels were generally very low but that some samples exceeded administrative criteria for activity. The samples were appropriately re-analyzed and resultant issues were appropriately identified and resolved through the licensee's corrective action program process. The inspectors determined that in no case, were regulatory limits exceeded.

The inspectors performed a tour of the waste water treatment facility (WWTF) including potentially contaminated areas. In addition, the inspectors toured the Lynchburg Technology Center (LTC) and its corresponding process effluent stacks.

b. Conclusion

Environmental monitoring programs were implemented in accordance the license application and applicable regulations. No findings of significance were identified.

C. Facility Support

1. Maintenance/Surveillance (IP 88025 and IP 88135)

a. Inspection Scope and Observations

The inspectors focused the inspection on maintenance in the UR area. Functional tests, preventive maintenance, corrective maintenance, and calibrations were reviewed and observed to verify that the systems, structures, and components involved in the tests satisfied the requirements described in the applicable licensee procedures and work orders (WOs). The inspectors verified that the tests demonstrated that the safety systems and components were capable of performing their intended safety functions. The inspectors also reviewed the 2011 monthly and annual testing records for the criticality alarm system.

The inspectors reviewed the licensee's implementation of maintenance activities in order to verify that the activities were conducted in a safe manner. The inspectors observed that the maintenance personnel adequately consulted operations personnel and their management regarding the status of equipment prior and after conducting the observed test. Also, the inspectors observed that maintenance personnel consulted operations personnel and their management regarding required modifications and enhancements to the procedures. The inspectors observed that the maintenance personnel adequately referenced the procedures for the maintenance activities. The inspectors also observed a maintenance planning organization meeting.

The inspectors verified that the licensee was adequately identifying and tracking IROFS failures by reviewing the records for failures in the first and second quarter of 2011. The licensee's documentation adequately described the nature of the failures, and properly identified corrective actions to prevent recurrence. In addition, the licensee properly evaluated applicable reporting requirements for the failures.

b. Conclusion

Maintenance surveillance tests were performed and met the acceptance criteria established in the applicable procedures and work instructions. No findings of significance were identified.

2. Management Organization and Controls (IP 88135)

a. Inspection Scope and Observations

The inspectors performed a screening and reviewed a sample of items entered into the licensee's CA program. The inspectors reviewed 14 corrective actions in the licensee's CA system to ensure that items with impacts on safety were identified, investigated as necessary and tracked to closure. The inspectors verified that issues affecting safety were properly identified, and reviewed for apparent causes, and that corrective actions to prevent recurrence were identified and tracked to completion in accordance with licensee's CA program implementing procedure.

b. Conclusion

Issues relative to safety were appropriately identified, screened and evaluated in the preventative/corrective action system. No findings of significance were identified.

3. Permanent Plant Modifications (IP 88070)

a. Inspection Scope and Observations

The inspectors performed a review of the integrated safety analysis (ISA) changes and permanent plant modifications (PPMs) that were made during the last year in the UR and fuel manufacturing areas. The inspectors reviewed 12 change request (CR) packages, which included four safety evaluation request (SER) packages. The reviewed changes involved modifications of accident sequences, SARs, IROFS, management measures, procedures, technical basis documents, and temporary operating procedures. The inspection verified that modifications were authorized and performed in accordance with to the applicable procedures, and with the requirements in 10 CFR 70.62 and 70.72.

In addition, the inspectors walked down and reviewed PPMs to verify that the "as built" drawings agreed with the field configuration. For the reviewed PPMs, the inspectors verified that operating procedures were updated to reflect the modifications and that training on the modifications was provided, as necessary. The inspectors verified that the licensee had management measures in place to ensure that IROFS affected by facility changes were capable of performing their intended safety function before approving the modification for operation.

The inspectors verified that SAR 15.9 was revised to specify that a red oil explosion in the recovery system was not a credible accident sequence. The revision to the SAR 15.9 was done under CR 1032904, "Add Test for Red Oil to the SAR Details for the Main Extraction and Drum Dryer." The inspectors reviewed Industrial Health and Safety Technical Work Record HS-2010-024, "Red Oil Formation in Recovery Primary and Tertiary Evaporator Systems," that documented the basis for the determination that this type of accident was not credible. The licensee determined that a red oil event was not credible because of the normal operating parameters of the system, and the fact that the system did not operate under full reflux which would have prevented the accident. However, the inspectors determined that the licensee used a combination of engineered and administrative controls to ensure that the normal operating parameters pertinent to red oil formation (e.g. temperature, acid concentration, organic concentration, and steam pressure) were not exceeded during operation of the system. The licensee acknowledged the inspectors observations and opened corrective action CA201102627 to reassess the conclusion that red oil formation in the recovery system was not credible based on this combination of engineered and administrative controls. Unresolved Item (URI) 70-27/2011-004-01 was opened pending the review of the licensee's reassessment of the conclusion that a red oil accident is not credible in the UR process.

b. Conclusion

The plant modifications reviewed by the inspectors were adequately evaluated for safe operations. The licensee implemented adequate management measures to ensure safety-related changes would be maintained to ensure controls remained available and

reliable. URI 70-27/2011-004-01 was opened pending the review of the licensee's reassessment of the technical work record conclusion that a red oil accident in the UR evaporator process system is not credible.

4. Emergency Preparedness (IP 88135)

a. Inspection Scope and Observations

On August 23, 2011, at approximately 2:00 p.m., the site's emergency operations center (EOC) was activated following detection of motion within the facility from the earthquake centered in Mineral, VA, located approximately 100 miles from the B&W NOG Lynchburg site. Activation of the EOC was by licensee management decision as the licensee's emergency plan has no seismic emergency action levels and another event such as fire or criticality would have had to occur to cause entrance into the emergency plan. The inspectors observed that there was no loss of offsite power or communications from the event. Shortly after activation of the EOC, the licensee entered their storm watch mode for monitoring of the criticality monitoring system and instructed emergency team members to inform personnel outside to go indoors until instructed otherwise. The inspectors observed the licensee's emergency management organization's response from the EOC as they identified items of concern requiring walk downs including outdoor transfer piping, UR vessels and piping, the Bay 5A acid treatment area, the central alarm station and the cask handling pool at the LTC. The inspectors verified that the licensee conducted walk downs of the areas of most concern from a risk significance standpoint as well as plant areas that handle, process, or store special nuclear material. The inspectors also verified that the licensee's walk downs found no damage to plant equipment or product.

The inspectors performed a walk down of the UR area and Specialty Fuels Facility (SFF) during the evening of August 23, 2011, and found no damage to vessels equipment or piping. The licensee placed the majority of plant operations in shutdown until the day shift of August 24, 2011, because of the concern that aftershocks might occur. UR and other operations were started back up on August, 24, 2011, in a deliberate manner to ensure no ill effects to safety-related equipment or product quality had occurred from the event. The inspectors verified that no injuries or hazardous material releases occurred and there were no adverse impacts to the public or environment. The inspectors noted that the licensee plans to incorporate a checklist into their emergency procedures for response to an earthquake as well as add a flowchart branch for earthquake response to their emergency response plan flowchart.

The inspectors observed the licensee's quarterly emergency preparedness drill on the day shift of September 28, 2011. The drill scenario involved a simulated vehicle collision between two trucks at the plant entrance that resulted in a leak of gasoline to the ground from one of the vehicles and incapacitating injuries to both vehicle drivers and a security officer in close proximity to the collision. The inspectors observed that the emergency team response and assessment of the accident victims was prompt. The inspectors also observed that the potential for the gasoline leak to ignite was promptly mitigated by the responders. The inspectors observed that the emergency team exercised appropriate methods and caution in the extrication of the victims from their respective vehicle cabins. The inspectors determined that the overall response of emergency team personnel to

the event was carried out in accordance with the emergency plan and the critique of the incident scene response identified appropriate opportunities for improvement in emergency response.

b. Conclusion

The licensee responded appropriately from an emergency response and operational safety perspective following the earthquake of August 23, 2011. No injuries or hazardous material releases occurred at the facility and there were no adverse impacts to plant equipment, the public or environment. No findings of significance were identified.

D. Special Topics

Follow-up on Previously Identified Issues

EA-08-204: October 12, 2010 Atomic Safety and Licensing Board Order, LBP-10-18

On September 20, 2011, the NRC issued a letter following confirmation that the B&W NOG had satisfactorily completed all applicable commitments of LBP-10-18, "Licensing Board Memorandum and Order (Approving Proposed Settlement Agreement and Dismissing Proceeding)," dated October 12, 2010 (ML102850481). The NRC considers this matter to be completed. The letter documenting the completion of the order's commitments may be found on the ADAMS at accession number ML11264A055.

E. Exit Meeting Summary

On September 15, September 22, and October 3, 2011, the inspectors presented the inspection results to R. Cochrane and other members of his staff. No dissenting comments were received from the licensee. The inspectors confirmed that proprietary information was examined and discussed but not included in the report.

ATTACHMENT

1. **LIST OF PERSONS CONTACTED**

C. Brown, Ventilation Engineer
R. Cochrane, Vice-President and General Manager
B. Cole, Manager, Licensing & Safety Analysis
K. Conway, Manager, Radiation Protection
P. Eden, Ventilation Engineer
T. Eilers, Engineer, IH&S
D. Faidley, Manager, Nuclear Criticality Safety
T. Franklin, Maintenance Supervisor, Ventilation
J. McFadden, Manager, SFF Operations
L. Morrell, Acting Manager, Environmental Protection and Industrial Safety
S. Nagley, Manager, Uranium Processing and Research Reactors
M. Perrow, Health Physicist
G. Pritchett, Health Physicist Instrument Calibration
L. Smith, Health Physicist
T. Smith, Lynchburg Technology Center Radiation Protection Supervisor
D. Spangler, Manager, Nuclear Safety and Licensing
T. Stinson, Manager, Waste Treatment Operations
B. Stratton, Radiation Protection Supervisor
D. Ward, Manager, Environment, Safety, Health and Safeguards
S. Vanaman, Security Training Unit Manager
C. Yates, Manager, Uranium Processing Operations

Other licensee employees contacted included engineers, operators and technicians.

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

Item Number	Status	Description
70-27/2011-004-01	Opened	URI - review of the licensee's reassessment of the "incredible conclusion" for a red oil accident in the recovery process (Paragraph C.3.a)
EA-08-204	Closed	ORDER - October 12, 2010 Atomic Safety and Licensing Board Order, LBP-10-18 (Paragraph D.1.a.)

3. **INSPECTION PROCEDURES USED**

IP 88135	Resident Inspection Program for Category I Fuel Cycle Facilities
IP 88030	Radiation Protection
IP 88025	Maintenance and Surveillance
IP 88045	Effluent Control and Environmental Protection
IP 88070	Permanent Plant Modifications

4. **DOCUMENTS REVIEWED**

Number	Title
CA 201100333	Corrective Action 201100333
CA 201100409	Corrective Action 201100409
CA 201101347	Corrective Action 201101347
CA201102283	Corrective Action 201102283
CA201102294	Corrective Action 201102294
CA201102310	Corrective Action 201102310
CA201102317	Corrective Action 201102317
CA201102325	Corrective Action 201102325
CA201102335	Corrective Action 201102335
CA201102380	Corrective Action 201102380
CA201102457	Corrective Action 201102457
CA201102463	Corrective Action 201102463
CA201102516	Corrective Action 201102516
CA201102526	Corrective Action 201102526
CA201102545	Corrective Action 201102545
CA201102547	Corrective Action 201102547
CA201102624	Corrective Action 201102624
RPTWR 11-012	Service Water Connection Error, March 9, 2011
QWI 14.1.1	Quality Work Instruction for “Preventative / Corrective Action System”, Rev. 19
QWI 5.1.12	Quality Work Instruction for “Change Management,” Rev. 22
QWI 5.1.7	Quality Work Instruction for “Safety Evaluation Requests,” Rev. 26
SER 09-045	Safety Evaluation Request Phase 1 for “Contactor Feed Column Modification”
SER 09-056	Safety Evaluation Request Phase 1 for “Butterfly Drain Valves”
SER 10-029	Safety Evaluation Request Phase 1 for “Through Pass-through Box Safety Analysis &System Modifications”
SER 10-020	Safety Evaluation Request 10-020
SAR 15.20	Safety Analysis Report – U-235 Counting Process in Nuclear Materials Control Operations
SAR 15.34	Safety Analysis Report – Modified Fuel Process
RWP 11-0043	Radiological Work Permit 11-0043
RWP 11-0061	Radiological Work Permit 11-0061
SER 10-014	Safety Evaluation Request 10-014
SER 10-030	Safety Evaluation Request 10-030
CR 1032904	Change Request, “Add Test for Red Oil Review to the SAR Details for the Main Extraction and Drum Dryer”
CR-1032196	Change Request, “Revise E61-016”
CR-1032931	Change Request, “Changes to Workstation 260 in SFF”
CR-1033040	Change Request 1033040
CR-1033566	Change Request 1033566
CR-1033423	Change Request, “Revise UT Tank Safety Basis”

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CR-1033920	Change Request, "Drain Holes in Trough Dissolver Pass-thru Enclosure"
CR-1034057	Change Request, "Remove Top Flange from Primary Product / Recycle Columns"
CR-1034407	Change Request, "Revise SAR and SAR Appendices 15.5/15.6"
CR-1034608	Change Request, "Revise OP-1013020 to Add IROFS Checks"
SPC-EMRTS-OB10	"Technical Specification Bay 5A Area Controls Upgrade"
HS-2010-021	Industrial Health and Safety Technical Work Record HS-2010-021, "Advanced Gas Reactor Compacting/Sintering Development at LTC and B&W NOG-L Technical Work Record
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OP-1018680	Operating Procedure, "High Level Dissolution Operating Procedure," Rev. 22
OP-0061234	Operating Procedure for Maintenance in UPRR (U), Rev. 42
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RP-04	Internal Radiation Control, RP-04, Rev. 13
RP-05	Respiratory Protection, RP-05, Rev. 12
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RPTWR 02-011	Documentation of the Internal Dosimetry Monitoring Program Under SNM-42 at the Mt. Athos Site, RPTWR 02-011
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B&W Record 1	Memorandum to Tammy Belinsky from M. Dale Phillips dated September 7, 1994
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