



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

March 30, 2015

EA-15-021
EN-50776

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

**SUBJECT: BABCOCK & WILCOX NUCLEAR OPERATIONS GROUP, INC. - NUCLEAR
REGULATORY COMMISSION INSPECTION REPORT NUMBER 70-27/2015-006**

Dear Mr. Burch:

The Nuclear Regulatory Commission (NRC) conducted a routine, announced nuclear criticality safety (NCS) inspection at your facility in Lynchburg, Virginia, from January 26-29, 2015. The purpose of the inspection was to determine whether activities involving special nuclear material were conducted safely and in accordance with your license and regulatory requirements. Throughout the inspection, observations were discussed with your staff. Exit meetings were held on January 29 and February 26, 2015, during which inspection observations and findings were discussed with your management and staff. The enclosed report presents the results of your inspection.

During this inspection, the NRC staff examined activities conducted under your license as they relate to public health and safety to confirm compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of analytical basis review, selective review of related procedures and records, examinations of relevant NCS-related equipment, interviews with NCS engineers and plant personnel, and facility walk-downs to observe plant conditions and activities related to safety basis assumptions and related NCS controls.

Based on the results of this inspection, the NRC has identified two apparent violations (AVs). The first AV is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

The first AV is associated with the failure to properly analyze a credible abnormal condition that could potentially lead to criticality and assure subcriticality of the associated process involving clean-out activities performed in the uranium recovery area.

The second AV involves the failure to submit a required report of an unanalyzed condition discovered during clean-out activities of the low level dissolver catch tray. This AV is not being considered for escalated enforcement.

Before the NRC makes its enforcement decision, we are providing you an opportunity to (1) respond in writing to the apparent violations addressed in this inspection report within 30 days of the date of this letter, (2) request a Pre-decisional Enforcement Conference (PEC), or (3) request Alternative Dispute Resolution (ADR). If a PEC is held, the NRC will issue a press release to announce the time and date of the conference. If you decide to participate in a PEC or pursue ADR, please contact Alan Blamey at 404-997-4415 within 10 days of the date of this letter. A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

If you choose to provide a written response, it should be clearly marked as a "Response to Apparent Violations in NRC Inspection Report 70-027/2015-006" and should include for each apparent violation (1) the reason for the apparent violation or, if contested, the basis for disputing the apparent violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved. To the extent possible, your response should focus on the failure to analyze a credible abnormal condition that could potentially lead to criticality in the uranium recovery area, the improper evaluation of the unanalyzed condition including the incorrect determination that compliance with the performance requirements was maintained, and your extent of condition review including the determination that criticality is not credible for a potentially similar condition in the high level dissolver (HLD). Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a PEC.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC has determined that a violation has occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision. The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned. In presenting your corrective action, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violations.

In lieu of a PEC, you may also request ADR with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a third party neutral. The technique that the NRC has decided to employ is mediation. Mediation is a voluntary, informal process in which a trained neutral (the "mediator") works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of

agreement, and reach a final resolution of the issues. Additional information concerning the NRC's program can be obtained at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>. The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact ICR at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR.

In addition, please be advised that the number and characterization of the AVs described in this inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or classified information so that it can be made available to the Public without redaction.

If you have questions, please call Alan Blamey, Chief, Safety Branch at (404) 997-4415.

Sincerely,

/RA/

Mark S. Lesser, Director
Division of Fuel Facility Inspection

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

Enclosure:
NRC Inspection Report 70-27/2015-006
w/Attachment: Supplementary Information

cc: (See page 4)

agreement, and reach a final resolution of the issues. Additional information concerning the NRC's program can be obtained at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>. The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact ICR at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR.

In addition, please be advised that the number and characterization of the AVs described in this inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or classified information so that it can be made available to the Public without redaction.

If you have questions, please call Alan Blamey, Chief, Safety Branch at (404) 997-4415.

Sincerely,
/RA/

Mark S. Lesser, Director
Division of Fuel Facility Inspection

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

Enclosure:
Inspection Report 70-27/2015-006
w/Attachment: Supplementary Information

cc: (See page 4)

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
ADAMS: Yes ACCESSION NUMBER: ML15089A250 SUNSI REVIEW COMPLETE FORM 665 ATTACHED

OFFICE	FCSE	FCSE	RII:DFFI	RII:DFFI	RII:DFFI	RII:ORA	RII:EICS
SIGNATURE	JMunson	Via email	MThomas	MThomas	ABlamey	SPrice	DGamberoni
NAME	JMunson	GChapman	MThomas	DC	ABlamey	SPrice	DGamberoni
DATE	3/19/2015	3/19/2015	3/19/2015	3/19/2015	3/23/2015	3/24/2015	3/24/2015
E-MAIL COPY?	YES NO						

cc:

Joseph G. Henry
Chief Operating Officer
Babcock & Wilcox Nuclear Operations Group, Inc.
2016 Mount Athos Road
Lynchburg, VA 24505

Charles A. England, Manager
Licensing and Safety Analysis
Babcock and Wilcox
Nuclear Operations Group, Inc.
P.O. Box 785
Lynchburg, VA 24505-0785

Steve Harrison, Director
Division of Radiological Health
Department of Health
109 Governor Street, Room 730
Richmond, VA 23219

Letter to Mr. B. Joel Burch from Mark S. Lesser dated March 30, 2015

SUBJECT: BABCOCK & WILCOX NUCLEAR OPERATIONS GROUP, INC. - NUCLEAR
REGULATORY COMMISSION INSPECTION REPORT NUMBER 70-27/2015-006

DISTRIBUTION:

PUBLIC

M. Sykes, RII
S. Subosits, RII
M. Thomas, RII
R. Johnson, NMSS
M. Baker, NMSS
K. Ramsey, NMSS
T. Naquin, NMSS
T. Marenchin, OE
R. Sun, NMSS
L. Gibson, RII
D. Gamberoni, RII
S. Price, RII

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-27

License No.: SNM-42

Report No.: 70-27/2015-006

Licensee: Babcock and Wilcox Nuclear Operations Group, Inc.

Location: Lynchburg, VA

Inspection Dates: January 26-29, 2015

Inspectors: Greg Chapman, Criticality Safety Inspector
Jeremy Munson, Criticality Safety Inspector

Approved by: Mark Lesser, Director
Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

BABCOCK AND WILCOX NUCLEAR OPERATIONS GROUP, INC. NRC INSPECTION REPORT 70-027/2015-006

Introduction

An inspection was conducted by nuclear criticality safety (NCS) inspectors in the area of Safety Operations. The inspection included an onsite review of the licensee's NCS program, NCS training, NCS evaluations, NCS audits, internal NCS event review and follow-up, and plant operations. The inspection focused on risk-significant fissile material processing activities and areas including fuel fabrication and machining, the uranium recovery area, and the Research Test Reactor and Target area.

Safety Operations

- No safety concerns were identified regarding the licensee's NCS program. (Paragraph A.1)
- Nuclear criticality safety audits appropriately identified non-compliances and resolved the non-compliances in a timely manner. (Paragraph A.2)
- Nuclear criticality safety training program adequately addressed NCS aspects of facility hazards affecting fissile material operations. (Paragraph A.3)
- The inspectors identified one apparent violation for the failure to properly analyze a credible abnormal condition that could potentially lead to criticality and assure subcriticality of the associated process (clean-out activities involving dry waste handling in the uranium recovery area) and one apparent violation for the failure to report an unanalyzed condition. (Paragraph A.4)
- No safety concerns were identified during walk-downs of plant operations. (Paragraph A.5)

Attachment

Key Points of Contact

List of Items Opened, Closed, and Discussed

Inspection Procedures Used

Key Documents Reviewed

REPORT DETAILS

Summary of Plant Status

During the inspection, the licensee conducted routine fuel manufacturing operations and maintenance activities in the fuel fabrication and uranium recovery areas.

A. Safety Operations

1. Nuclear Criticality Safety Program (Inspection Procedures (IPs) 88015 and 88016)

a. Inspection Scope and Observations

The inspectors reviewed the licensee's nuclear criticality safety (NCS) program and analyses. The inspectors evaluated the adequacy of the program and analyses to assure the safety of fissile material operations. The inspectors reviewed selected nuclear criticality safety evaluations (NCSEs) to determine that criticality safety of risk-significant operations was assured through engineered and administrative controls with adequate safety margin as well as prepared and review by qualified staff. The inspectors interviewed licensee managers, engineers, and operators in the safety and production departments. The inspectors reviewed selected NCS-related items relied on for safety (IROFS) to determine that the performance requirements have been met for selected accident sequences. The inspectors accompanied NCS and other technical staff on walk-downs of NCS controls in selected plant areas. Additionally, the inspectors reviewed minor changes to the licensee's validation report. The inspectors reviewed selected portions of the documents listed in Section 4 of the Attachment.

The inspectors verified that the licensee had an NCS program which was independent from production and was implemented through written procedures. The inspectors also verified that the licensee NCS program reviewed process changes affecting criticality safety. The inspectors reviewed selected NCS Approvals, NCSEs, and supporting calculations for new, changed, and other selected operations. For the analyses reviewed, the inspectors confirmed that the analyses were performed by qualified NCS engineers, that independent reviews of the evaluations were completed by qualified NCS engineers, and that the analyses provided for subcriticality of the systems and operations through appropriate limits on controlled parameters.

The inspectors reviewed other selected IROFS supporting NCS controls and determined that the IROFS corresponded to the approved analytical results and designated controls. NCS analyses and supporting calculations demonstrated adequate identification and control of NCS hazards to assure operations within subcritical limits. Additionally, the inspectors reviewed minor changes to the validation report.

b. Conclusion

No findings of significance were identified.

2. Nuclear Criticality Safety Inspections, Audits, and Investigations (IP 88015)

a. Inspection Scope and Observations

The inspectors reviewed the licensee's internal audit procedure, and results of the most recent NCS quarterly audit to assure that appropriate issues were identified and resolved. The inspectors accompanied a licensee NCS engineer on a routine internal audit of Research and Test Reactor (RTR) area. The inspectors reviewed selected portions of the documents listed in Section 4 of the Attachment.

The inspectors observed that the licensee's NCS audit of RTR was conducted in accordance with written procedures. The inspectors noted that the audits were performed by NCS engineers who reviewed open NCS issues from previous audits, new violations that occurred during the audit quarter, and the adequacy of control implementation. The NCS engineers also reviewed plant operations for compliance with license requirements, procedures, and postings; examined equipment and operations to determine that past evaluations remained adequate; and identified NCS-related non-compliances and analyzed non-compliances for potential trends. The inspectors confirmed that non-compliances identified during audits were appropriately captured in the licensee's corrective action program and resolved in a timely manner.

b. Conclusion

No findings of significance were identified.

3. Nuclear Criticality Safety Training and Qualification (IP 88015)

a. Inspection Scope and Observations

The inspectors reviewed the content of training and the training and qualifications procedures for NCS staff, general workers, and fissile material handlers to determine if they met specified qualification requirements. The inspectors evaluated the effectiveness of the NCS training through interviews and a review of qualification records to verify completion of training. The inspectors reviewed selected portions of the documents listed in Section 4 of the Attachment.

The NCS engineers have a series of requirements and tasks that must be completed before being considered a qualified NCS engineer. The inspectors verified that the NCS training program adequately addressed NCS aspects of facility hazards affecting fissile material operations. The inspectors also confirmed that only qualified NCS staff performs safety functions for the establishment of new safety analyses and reviews of new operating procedures.

The inspectors confirmed that NCS staff was actively involved in development, review, presentation, and oversight of NCS training and that NCS training was updated as needed. The inspectors discussed the training of operations personnel with NCS staff and then observed the operations in various areas and discussed NCS controls with operations personnel to assess their understanding of controls for NCS. The inspectors reviewed the training records and content of training for general workers and fissile

material handlers. The inspectors observed that operators complete a general NCS training course with an annual refresher. Only operators that have completed their training requirements handle fissile material or perform safety significant activities.

b. Conclusion

No violations of NRC requirements were identified.

4. Nuclear Criticality Safety Event Review and Follow-up (IPs 88015 and 88016)

a. Inspection Scope and Observations

The inspectors reviewed the licensee's response to a selection of recent internally-reported events. The inspectors reviewed the progress of investigations and interviewed licensee staff regarding immediate and long-term corrective actions. The inspectors reviewed selected portions of the documents listed in Section 4 of the Attachment.

The inspectors reviewed selected licensee internally-reported events. The licensee did not consider any of the events reviewed reportable to the NRC. The inspectors verified that internal events were investigated in accordance with written procedures, appropriate corrective actions were assigned and tracked, and that the licensee adequately evaluated whether these events were reportable to the NRC with the exception of the unanalyzed condition discussed below.

Unanalyzed Condition Regarding Clean-out Activities in the Uranium Recovery Area

Introduction: The inspectors identified an apparent violation (AV) of 10 CFR 70.61(d) in that the licensee failed to properly analyze a credible abnormal condition that could potentially lead to criticality and assure subcriticality of clean-out activities involving dry waste handling in the uranium recovery area, specifically the low level dissolver (LLD). This failure resulted in the facility being in a state that was not analyzed in the licensee's integrated safety analysis (ISA), and where credited IROFS were not sufficiently available and reliable to prevent criticality.

Description: On January 9, 2015, operators performing a clean-out activity on the catch tray beneath the LLDs created an abnormal condition by scraping uranium-bearing material into 4-5 piles contrary to the intent of a requirement to scrape or sponge the material into less than or equal to (\leq) 2.5L bottles. The uranium composition and quantity present in the material is essentially unknown; therefore, the operators are procedurally required to treat the material in accordance with specific dry waste handling IROFS that limit which containers are allowed for collection to limit volume, how much material is allowed in each container to limit mass, and minimum spacing between containers to limit neutron interaction. The piles were spaced at least 15 inches apart; however, some of the piles exceeded the 2.5L volume limit established for handling dry waste. The materials were then left for the next shift to place into \leq 2.5L bottles. When the manager on the next shift observed the situation, he initiated notification to the NCS group that an abnormal situation existed. The NCS group, utilizing process knowledge of the material type and quantity typically processed in the LLD, authorized the

accumulated material to be placed into $\leq 2.5\text{L}$ bottles and weighed. The results of the assay and weight measurements showed that less than a critical mass was present, approximately 74.5g U-235.

According to NCSE-02, the NCS group is required to evaluate abnormal conditions to determine if there is a safety concern. In part, this involves review of the ISA and established controls to determine if compliance with the performance requirements of 10 CFR 70.61 was maintained. The licensee's evaluation of this event, as documented in NCS-2015-008, determined that while volume control was degraded, the event was bounded by the existing analysis and that remaining controls on mass and spacing were sufficient to meet the performance requirements. This was based on an assay and weight measurement of the bottles after clean-up that showed the aggregate U-235 and total mass of each pile continued to meet the established mass limits for dry waste handling. Additionally, the piles, prior to clean-up, were separated from each other by at least 15 inches.

The inspectors reviewed the licensee's evaluation of the event, which included a review of the accident sequence that the licensee identified as bounding, "Dry Waste Handling 7-12," which describes a loss of volume control. Additionally, the inspectors reviewed other accident sequences from the licensee's ISA related to dry waste handling and the LLD catch tray clean-out activity. The inspectors determined that the sequence that the licensee considered bounding for the event, "Dry Waste Handling 7-12," as well as other sequences from the licensee's ISA did not adequately bound the condition encountered. The IROFS implemented to prevent criticality for the sequences in the licensee's ISA were not effective for the encountered condition. This condition, where operators scraped uranium-bearing material into piles instead of collecting in approved containers, presented a situation where multiple controls were rendered ineffective due to a single upset not analyzed by the licensee. No accident sequences in the licensee's ISA evaluated or adequately bounded the condition, and credited IROFS were not sufficiently available and reliable to assure subcriticality in the event that the condition occurred. Therefore, the inspectors determined that the condition was unanalyzed.

The licensee determined that the procedure for clean-out activities lacked sufficient clarity to assure that material would be collected into 2.5L containers and not piled. The licensee suspended clean-out operations in the LLD and has initiated an extent of condition review to evaluate if there are other areas of the facility that could be subject to the same condition. In addition, on February 10, 2015, the licensee identified that this condition could be encountered during clean-out activities of the high level dissolver (HLD) and suspended HLD clean-out activities. On March 16, 2015, the licensee retracted this amendment, stating that a criticality during HLD clean-out activities is not credible.

Analysis: The licensee failed to analyze a credible abnormal condition that could potentially lead to criticality and assure subcriticality of clean-out activities involving dry waste handling in the uranium recovery area, specifically the LLD catch tray. This failure is a violation of 10 CFR 70.61(d), which states, in part, that "the risk of nuclear criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical...." By failing to analyze this condition, the licensee failed to assure that clean-out activities of the LLD catch tray were

subcritical with an approved margin of subcriticality. No accident sequences in the licensee's ISA evaluated or adequately bounded the condition, and credited IROFS were not sufficiently available and reliable to assure subcriticality during clean-out of the LLD catch tray for the condition encountered. This issue was determined to be more than minor because it aligns with IMC 0616 Appendix B screening criteria 12, which states, "[d]oes the noncompliance result in the failure to assure that all nuclear processes are subcritical with an approved margin of subcriticality for all normal and credible abnormal conditions as required by 10 CFR 70.61(d)?"

The actual safety significance of this AV is very low because no criticality or overexposures to radiation occurred. However, the potential safety significance may be high because the licensee failed to analyze a credible abnormal condition that could potentially lead to criticality and assure subcriticality.

Enforcement: Paragraph 70.61(a) states, in part, that the "...licensee shall evaluate, in the ISA performed in accordance with §70.62, its compliance with the performance requirements in paragraphs (b), (c), and (d) of this section." Paragraph 70.61(d) of 10 CFR states, in part, that "the risk of nuclear criticality accidents must be limited by assuring that under normal and credible abnormal conditions, all nuclear processes are subcritical, including use of an approved margin of subcriticality for safety."

Contrary to this requirement, on or before January 9, 2015, the licensee failed to assure that under a credible abnormal condition, all nuclear processes were subcritical in that the licensee's analysis failed to identify and properly analyze a credible abnormal condition that could potentially lead to criticality. By failing to analyze this credible abnormal condition, the licensee failed to assure that the associated process (clean out activities involving dry waste handling in the uranium recovery area) was subcritical with an approved margin of subcriticality. This is an AV of NRC requirements and is documented as AV 70-27/2015-006-01, Unanalyzed Condition in the LLD.

The licensee's immediate corrective actions have been to suspend clean-out activities in the LLD. The licensee has initiated an extent of condition review to evaluate if other areas of the facility are subject to similar conditions.

Failure to Report an Unanalyzed Condition

Introduction: The inspectors identified an apparent violation in that the licensee failed to report the unanalyzed condition in the LLD catch tray as required by 10 CFR Part 70 Appendix A.

Description: On January 9, 2015, operators performing a clean-out operation on the catch tray beneath the LLD scraped uranium-bearing materials into piles which created an abnormal condition. The abnormal condition was identified and reported to the licensee's NCS staff; however, the NCS staff's evaluation of this event, as documented in NCS-2015-008, incorrectly determined that existing analyses and controls adequately bounded the event and that compliance with the performance requirements of 10 CFR 70.61 was maintained. As a result, the licensee did not consider this event to be reportable.

On January 27, 2015, the inspectors determined that the abnormal condition created by the LLD catch tray clean-out activity revealed an unanalyzed condition and that compliance with the performance requirements of 10 CFR 70.61 was not maintained. Cognizant licensee staff were aware of the condition in the LLD catch tray, but failed to properly evaluate the condition and determine that the condition was not bound by any existing analyses. Upon discussing the basis for the unanalyzed condition with the licensee, the licensee submitted a report to the NRC, Event Notice (EN) 50776, within 24 hours.

Analysis: The failure to report a condition that results in the facility being in a state that was not analyzed and which results in failure to meet the performance requirements is a violation of 10 CFR Part 70 Appendix A requirements. Section 2.2.1.c of the Enforcement Policy states, “[t]he Agency will normally cite a licensee for a failure to report a condition or event if the licensee knew of the information to be reported and did not recognize that it was required to make a report.” The licensee knew of a condition that presented a safety concern, but did not properly evaluate the condition to determine it resulted in an unanalyzed condition that would require an EN report.

Although no applicable screening question was identified in Inspection Manual Chapter (IMC) 0616 for this violation, this issue was determined to be more than minor because it aligns with a more than minor example in the Enforcement Policy.

Enforcement: Part 70 Appendix A (b)(1) requires, “[a]ny event or condition that results in the facility being in a state that was not analyzed, was improperly analyzed, or is different from that analyzed in the Integrated Safety Analysis, and which results in failure to meet the performance requirements of §70.61” be reported to the NRC Operations Center within twenty-four hours of discovery.

Contrary to the above, on January 9, 2015, the licensee failed to report an event that resulted in the facility being in a state that was not analyzed, and which resulted in a failure to meet the performance requirements of §70.61. This failure to submit a required report is an apparent violation and is documented as AV 70-27/2015-006-02, Failure to Report an Unanalyzed Condition in the LLD.

The licensee’s immediate corrective action was to submit a report to the NRC, EN 50776, per 10 CFR Part 70 Appendix A (b)(1).

b. Conclusion

The inspectors identified two AVs. The first AV was the failure to properly analyze a credible abnormal condition that could potentially lead to criticality and assure subcriticality of the associated process (clean-out activities involving dry waste handling in the uranium recovery area). The second AV was the failure to report an unanalyzed condition in the LLD.

5. Plant Activities (IPs 88015 and 88016)

a. Inspection Scope and Observations

The inspectors performed plant walk-downs to review activities in progress and to determine whether risk-significant fissile material operations were being conducted safely and in accordance with regulatory requirements. The inspectors interviewed both Operations staff and NCS engineers before and during walk-downs.

The inspectors verified that controls identified in NCS analyses were installed, implemented, and adequate to ensure safety. The inspectors also verified that safety was maintained for observed facility operations. The cognizant, NCS engineers were knowledgeable and interacted regularly with operators on the process floors. The inspectors verified the adequacy of management measures for assuring the continued availability, reliability, and capability of safety-significant controls relied upon by the licensee for controlling criticality risks.

b. Conclusion

No significant findings were identified.

B. Exit Meeting

The inspectors presented the inspection scope and results to members of the licensee's management and staff, including David Ward, Department Manager, Environmental, Safety, Health and Safeguards, during an exit meetings held on January 29 and February 26, 2015. Proprietary information was reviewed during the inspections but not included in the report. The licensee acknowledged the findings as presented.

SUPPLEMENTARY INFORMATION

1. Key Points of Contact

B&W NOG

C. A. England Manager, Licensing and Safety Analysis
D. Faidley Manager, Nuclear Criticality Safety
D. Spangler Section Manager, Nuclear Safety & Licensing
D. Ward Department Manager, Environmental, Safety, Health and Safeguards

NRC

S. Subosits Senior Resident Inspector, NRC RII
G. Chapman Criticality Safety Inspector, NRC HQ
J. Munson Criticality Safety Inspector, NRC HQ

2. List of Items Opened, Closed, and Discussed

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
AV 70-27/2015-006-01	Opened	Unanalyzed Condition in the LLD
AV 70-27/2015-006-02	Opened	Failure to Report an Unanalyzed Condition in the LLD

3. Inspection Procedures Used

IP 88015 Nuclear Criticality Safety Program
IP 88016 Nuclear Criticality Safety Evaluations and Analyses

4. Key Documents Reviewed

Inspectors reviewed selected aspects of the following documents. Documents that apply to multiple sections are listed in the section that is most applicable.

Nuclear Criticality Safety Program

NCS-2012-003, "NCS Safety Analysis," dated March 6, 2012
NCS-2014-013, "NCS Safety Analysis," dated December 3, 2014
NCS-2014-137, "NCS Safety Analysis to Revise SAR 15.19 for the SFF Vacuum System Phase Separator," dated November 13, 2014
NCS-2014-144, "NCS Safety Analysis Revising SAR 15.13 Appendix to Remove Redundant Scenarios per COM-40519 and CR-1043661," dated December 4, 2014
NCS-2014-148, "NCS Review of Potential for Solution Collection in Unfavorable Geometry Electrical Panels via Conduit (CA201401888, COM-50532)," dated December 12, 2014
NCS-2015-003, "NCS Safety Analysis," dated January 26, 2015
NCS-2015-004, "NCS Safety Analysis," dated January 19, 2015
NCS-TR-00007 (Changes to Validation), Revision (Rev.) 2, dated August 20, 2014
SAR 15.5, Rev. 127, "High Level Dissolution Process in Uranium Recovery," dated January 26, 2015

Nuclear Criticality Safety Inspections, Audits, and Investigations

Weekly inspection reports generated for 4th quarter NCS inspections and the 1st 2 NCS inspections of 2015

NCS-2014-133, "NCS Audit/Inspection," dated October 31, 2014

Nuclear Criticality Safety Training and Qualification

NCSE-07, Rev. 14 "Qualifications and Training Requirements for a Nuclear Criticality Safety Engineer."

NCS-2014-080, "Memo: Qualification of Tyler Lovelace as NCS Auditor"

NCS-2008-094, "Reinstatement of Todd Stinson as a NCS Auditor"

NCS-2008-099, "Reinstatement of Todd Stinson as a NCS Evaluator"

NCS-2009-216, "Qualification of Todd Stinson as a QA Reviewer"

QWI 18.1.1, Rev. 8, "Safety Training"

"2014 Nuclear Criticality Safety Training Annual Refresher," dated August 28, 2014

"Initial Nuclear Criticality Safety Training," dated October 10, 2012

"Revised Nuclear Criticality Safety Refresher and New Hire Training," dated November 18, 2010

Nuclear Critically Safety Event Review and Follow-up

CA201500038, dated January 28, 2015

NCS-2014-123, "NCS Safety Concern," dated September 29, 2014

NCS-2014-147, "NCS Safety Concern," dated December 11, 2014

NCS-2014-149, "NCS Safety Concern," dated January 15, 2015

NCS-2015-008, "Safety Concern Analysis for Cleanup Piles in LLD Enclosure that were larger than 2.5L (CA201500038)," dated January 23, 2015

NCSE-02, Rev. 43, "Nuclear Criticality Safety Analysis and Quality Review," dated May 1, 2014

NCS-1999-025, "NCS Evaluation in Support of the Revised (dated January 12, 1999 and January 28, 1999) SER98-029, Phase 3, Rotary Calcine Furnace System," dated April 6, 1999

OP-0061141, Section J (Cleaning LLD Trays, Floor, Windows, and Hood)

95-00108-00, "Process Hazard Analysis PHA-2, Low Level Dissolution and General Purpose Reclamation," dated January 17, 1996