



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

January 27, 2012

Mr. David Precht
Manager, Columbia Plant
Westinghouse Electric Company
Commercial Nuclear Fuel Division
5801 Bluff Road, Drawer R
Columbia, SC 29250

SUBJECT: WESTINGHOUSE ELECTRIC COMPANY- NRC INTEGRATED INSPECTION
REPORT NO. 070-1151/2011-005 AND NOTICE OF VIOLATION

Dear Mr. Precht:

The U.S. Nuclear Regulatory Commission (NRC) conducted announced, routine inspections between October 1 and December 31, 2011, at your Columbia, South Carolina facility. The enclosed report presents the results of the inspections. At the conclusion of the inspections, the results were discussed with members of your staff at exit meetings held on September 29, October 7 and 21, November 18, and December 16, 2011. The enclosed integrated inspection report documents the inspection results.

The purpose of the inspection was to perform a routine review of the implementation of the operations, fire protection, permanent plant modifications, and emergency preparedness. The inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspection consisted of facility walk-downs, selective examinations of relevant procedures and records, interviews with plant personnel, and plant observations. Throughout the inspection, observations were discussed with your managers and staff.

Based on the results of these inspections, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation was evaluated 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 violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited in the Notice because the NRC identified the violation.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and 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, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction

If you have any questions, please call me at (404) 997-4629.

Sincerely,

/RA by M. Thomas for/

Marvin D. Sykes, Chief
Fuel Facility Inspection Branch 3
Division of Fuel Facility Inspection

Docket No. 070-1151
License No. SNM-1107

Enclosure: NRC Inspection Report w/ attachment

cc w/encl:
Marc Rosser
Manager
Environment, Health and Safety
Commercial Nuclear Fuel Division
Electronic Mail Distribution

Susan E. Jenkins
Assistant Director, Division of Waste Management
Bureau of Land and Waste Management
Department of Health and Environmental Control
Electronic Mail Distribution

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***see previous concurrence**

✓ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ✓ NON-SENSITIVE
ADAMS: ✓ Yes ACCESSION NUMBER: ML12027A112 ✓ SUNSI REVIEW COMPLETE ✓ FORM 665 ATTACHED

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Letter to Mr. David Precht from Marvin D. Sykes dated January 27, 2012

Subject: WESTINGHOUSE ELECTRIC COMPANY- NRC INTEGRATED INSPECTION
REPORT NO. 070-1151/2011-005

Distribution w/encl:

M. Sykes, RII
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PUBLIC

NOTICE OF VIOLATION

Westinghouse Electric Company, L.L.C.
Columbia, South Carolina

Docket No. 70-1151
License No. SNM-1107

During an NRC inspection conducted September 26 through 30, 2011, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 70.62 requires, in part, that each licensee shall establish a safety program that demonstrates compliance with the performance requirements. One of the elements of the safety program is management measures.

10 CFR 70.62(d) requires, in part, that each licensee shall establish management measures to ensure compliance with the performance requirements. These measures shall ensure that items relied on for safety (IROFS) will be available and reliable to perform its intended function when needed, to comply with the performance requirements.

Contrary to the above, on and before September 30, 2011, the licensee failed to establish a safety program that would ensure that IROFS ADUHOS-906, a passive engineered control fire barrier, would perform its intended function when needed to comply with the performance requirements. Specifically, the licensee failed to seal multiple penetrations within IROFS ADUHOS-906 fire barrier.

This is a Severity Level IV violation (Section 6.2).

Pursuant to the provisions of 10 CFR 2.201, Westinghouse Electric Company, L.L.C., is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region II, 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, and (4) the date when full compliance will be achieved. Your response may reference or include previous 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.

If you choose to respond, 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>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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

Dated this 27th day of January 2012.

U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 70-1151

License No.: SNM-1107

Report No.: 070-1151/2011-005

Licensee: Westinghouse Electric Company

Location: Columbia, South Carolina

Dates: September 26 through 29, 2011
October 3 through 7, 2011
October 17 through 21, 2011
November 14 through 18, 2011
December 12 through 16, 2011

Inspectors: M.Thomas, Senior Fuel Facility Inspector (Section A.1)
R. Reeves Project Manager (Section A.1 and 2)
O. López, Senior Fuel Facility Inspector (Section A.3)
L. Pitts, Fuel Facility Inspector (Section A.3)
S. Subosits, Senior Resident Inspector (Section B.2)
P. Startz, Fuel Facility Inspector (Section A.3)
J. Downs, Fire Protection Engineer, FCSS (Section A.3)

Approved by: M. Sykes, Chief
Fuel Facility Branch 3
Division of Fuel Facility Inspection

EXECUTIVE SUMMARY

Westinghouse Electric Company
NRC Inspection Report No. 70-1151/2011-005

This is a quarterly integrated inspection report that includes routine, announced inspections that were conducted by NRC regional inspectors in the areas of operations, fire protection, permanent plant modifications, and emergency preparedness. These routine, announced inspections consisted of a selective examination of procedures and representative records, observations of activities, walk-downs of items relied on for safety (IROFS), and interviews with personnel. During the inspection period, normal production activities were ongoing.

Operational Safety

- The inspectors reviewed the implementation of selected IROFS and their management measures to ensure they were able to perform their intended safety function. No findings of significance were identified. (Section A.1)

Quality Control/Quality Assurance

- The inspectors reviewed the implementation of Quality Controls in the receipt inspection of purchased components and the Quality Assurance Program in regards to the conduct of audits. No findings of significance were identified. (Section A.2)

Fire Protection

- The inspectors performed the annual fire protection inspection and the initial triennial fire protection inspection to evaluate the compliance with license conditions and regulatory requirements. One violation was identified for failure to provide adequate management measures associated with IROFS ADUHOS-906, a passive engineered control fire barrier. (Section A.3)

Permanent Plant Modifications

- The inspectors determined that the licensee's configuration control program provided adequate assurance that IROFS were available and reliable when needed and the design changes did not interfere with emergency actions or the control of licensed material. No findings of significance were identified. (Section B.1)

Emergency Preparedness (Section B.2)

- The inspectors opened an Inspector Follow-Up Item to follow up on the licensee's actions to clarify emergency classification guidance regarding situations involving the loss of a nuclear criticality safety-related IROFS. The loss of these IROFS may constitute an uncontrolled deterioration in nuclear criticality safety barriers and may require an Alert declaration.

Attachment

List of Persons Contacted

List of Items Opened, Closed, and Discussed

Inspection Procedures Used

List of Acronyms

Documents Reviewed

REPORT DETAILS

Summary of Plant Status

The Westinghouse Facility converts uranium hexafluoride (UF₆) into uranium dioxide and fabricates fuel assemblies for use in commercial nuclear power reactors. During the inspection period, normal production activities were ongoing.

A. Safety Operations

1. Plant Operations (IP 88020)

a. Inspection Scope and Observations

This inspection focused on operational safety. The area of focus for this operations inspection was the ammonium diruante (ADU) conversion process, from the calciner to bulk powder storage. This included the powder elevator feeding the calciner, the calciner, the discharge screws, the Fitz mill, and various powder containers and storage racks.

The inspectors reviewed applicable portions of the current Integrated Safety Analysis (ISA) Summary to identify the safety controls for the ADU Conversion Process. This included the portions of the process from the calciner to the bulk powder storage area. The inspectors performed area walk-downs, in which process operations were observed and installed IROFS were noted.

The inspectors reviewed the operating procedures and observed implementation of the general safety policies and procedures for select portions of the ADU Conversion Process. The inspectors observed administrative controls and verified that engineered controls are present and capable of performing their intended safety functions. No findings of significance were identified.

The inspectors verified the knowledge and training of several randomly-selected operators working in the ADU Conversion Process. These operators were informally interviewed while the inspectors were conducting walk-downs of the ADU Conversion Process. Each of the operators was asked questions about a specific part of the process, the safety controls (IROFS) associated with that process, and the procedures for performing the process steps. The operators were found to be knowledgeable in their assigned work area.

The inspectors reviewed the training records for these operators and found that the operators were sufficiently trained to properly implement and respond to the selected safety controls.

b. Conclusions

The inspectors found that the IROFS listed in the ISA Summary for the selected process operations were installed, properly identified and fully functional. The management measures were sufficient to provide reasonable assurance that the IROFS would be capable of performing their intended safety function.

2. Quality Control/Quality Assurance (IP 88020)

a. Inspection Scope and Observations

Inspectors reviewed the licensee's quality control (QC) and quality assurance (QA) programs. The current revision of the licensee's QA manual was reviewed. The EH&S QA Lead was interviewed on the implementation of quality methods at the licensee's facility. The inspector was taken to the QC shop where she witnessed a receipt inspection of stainless steel pails, which are designated as IROFS to maintain criticality safety. The receipt inspection included a thorough dimensional inspection of the pails in accordance with a sketch in the procedure. One of the items was found to be out-of-spec and was rejected by QC. The inspector noted that the QA/QC personnel were both knowledgeable and thorough, and followed the receipt inspection procedure.

The inspector also reviewed QA records from a compliance audit performed earlier in the year. These records included a detailed audit checklist and accompanying audit report.

b. Conclusions

The inspector determined that the quality assurance and quality control programs are being implemented in accordance with the licensee requirements. No findings of significance were identified.

3. Fire Protection (IP 88054 and 88055)

a. Inspection Scope and Observations

The inspection evaluated the entire fire protection program but included enhanced evaluations of the solvent extraction process, conversion hot oil system and calciner, incinerator and the UF₆ cylinder handling area. The inspectors reviewed the facility fire hazard analyses to verify that each analysis considered the effects of fires with respect to: safety controls, suppression activities on process areas, malfunction of an automatic fire protection system, the potential for spread of contamination, transient combustibles, and the response of both the offsite fire department and the onsite fire brigade.

The inspectors verified that flammable materials were stored in marked cabinets as specified in approved procedures and that housekeeping and the control of combustible materials (IROFS ADUFIRE-901, URSFIRE-901, UF6FIRE-901, and SOLXFIRE-901) were adequate and consistent with the approved procedures. The inspectors also verified that the cutting, welding, and hot work program was implemented in accordance with approved procedures. No findings of significance were identified.

The inspectors reviewed pre-fire plans and determined that the pre-fire plans contained sufficient information to support the response of the facility's emergency response team and offsite fire department.

The inspectors reviewed the material condition, operational lineup, and design of fire suppression systems equipment relative to the requirements of NFPA 13, "Standard for the Installation of Sprinkler Systems." The inspectors verified that sprinklers were not obstructed, that spacing requirements were adequate, and that the water supply to each

of the systems was operationally available. The inspectors also reviewed the inspection, testing, and maintenance requirements of fire suppression systems to verify that the systems were reliable and available and met the requirements specified in NFPA 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems." The inspectors noted that design specifications and drawings for the fire protection system in the UF₆ bay and the solvent extraction areas were not immediately available to confirm that the system was adequately designed and installed. The licensee staff was able to contact the fire protection subcontractor who had designed and installed the system in 1986, and was able to secure the documentation. The inspectors were able to perform a field verification of the installed system and complete a review the original documentation.

The inspectors verified that portable fire extinguishers were readily available in their correct location and rated for the correct fire scenario. The inspectors noted that the general condition of fire extinguishers was satisfactory with proper operating pressure and unobstructed accessibility. The inspectors determined that fire extinguishers were tested and spaced in accordance with NFPA 10, "Standard for Portable Fire Extinguishers."

The inspectors reviewed Emergency Response Organization drills for the past year and verified the Emergency Response Team members received training and participated in drills on at least an annual basis. The inspectors verified that the offsite fire support organizations were offered an opportunity for site orientation. The inspectors did not note any issues with the communication equipment and verified that the members of the Emergency Response Team had access to their own portable radio communications while they were on duty. The inspectors also verified implementation of the following IROFS ADUFIRE-902, URSFIRE-902, UF6FIRE-902, and SOLXFIRE-902, which involved the use of proper fire fighting techniques to prevent introduction of moderator to fissile material. No significant findings were identified.

The inspectors performed walk-downs of the selected process areas to evaluate the presence, adequacy, and condition of active heat/smoke detection equipment relative to the requirements of NFPA 72, "National Fire Alarm and Signaling Code." The inspectors also evaluated the licensee's performance associated with inspection, testing, and maintenance of the detection systems. The process areas were equipped with a variety of heat/smoke sensors. The inspectors evaluated a large sample of fire detection systems for compliance with NFPA 72 and manufacturer requirements for area coverage, mounting heights, and potential interferences that could inhibit device functionality. No findings of significance were identified.

The inspectors reviewed Redbook and CAP entries associated with fire safety issues to determine if the licensee staff identified and resolved fire safety and IROFS related issues at a proper threshold. No findings of significance were identified.

The inspectors conducted walk-downs of the hot oil room and the incinerator areas to evaluate the presence, condition, and effectiveness of passive fire protection features, including fire barriers designated as IROFS. Passive fire protection features included fire walls, penetrations through fire walls, fire doors, and the presence of fire dampers in ducting that passed through fire barriers. The inspectors also compared installed

protective features to as-built building drawings and component specifications. The inspectors reviewed samples of preventative maintenance activities associated with the periodic inspection and functional testing of passive fire protection systems, features, and equipment.

During the fire barriers walk-down, the inspectors identified multiple unsealed penetrations in the hot oil room and the incinerator areas. The inspectors noted that some of the unsealed penetration went through the fire barriers. The inspectors noted that the fire walls in the hot oil room were designated as IROFS ADUHOS-906. ADUHOS-906 is a passive engineered control fire barrier designed to prevent the spread of a fire from the hot oil room. The inspectors determined that IROFS ADUHOS-906 was in a degraded state due to the observed unsealed penetrations. The licensee initiated Report #11-272-C003 to fix the deficiencies identified with IROFS ADUHOS-906 and investigate the reason that penetrations were created in a fire barrier and not sealed.

10 CFR 70.62(d) requires, in part, that each licensee shall establish management measures to ensure compliance with the performance requirements. These measures shall ensure that administrative IROFS will be available and reliable to perform its intended function when needed, to comply with the performance requirements.

The failure to establish management measures that would ensure that IROFS ADUHOS-906 would perform its intended function when needed to comply with the performance requirements is considered a violation of NRC requirements, VIO 70-1151/2011-005-01.

In addition, the inspectors noted that the impairment of fire barriers, including IROFS, was not controlled as part of the fire protection impairment program. The inspectors noted that EH&S Procedure SYP-306, "Fire Alarm, Criticality System Impairment & Fire Pump Use Reporting," did not include any guidance or requirements for the handling of fire barriers impairments. The licensee acknowledged the observation and initiated Report #11-272-C003 to address the issue.

The inspectors walked down and verified that fire safety IROFS for the calciner, hot oil system, and the incinerator were adequately implemented and maintained. The reviewed IROFS included ADUCAL-401, ADUHOS-906, ADUHOS-907, ADUCAL-402, ADUCAL-905, ADUCAL-907, ADUCAL-908, ADUHOS-908, ADUHOS-901, ADUHOS-902, ADUHOS-909, ADUHOS-407, ADUCAL-409, INCIN-412, and INCIN-413.

During the review of the associated process drawings and surveillance documents for the calciner safety systems, the inspectors observed that a potential for common mode failure existed with the following IROFS: ADUCAL-905, ADUCAL-907, and ADUCAL-908. The inspectors noted that these IROFS utilize the same input card, logic solver, and output card. The IROFS that pertain to various interlocks and protective features which maintain safe-shutdown capability of the calciner are ADUCAL-905, ADUCAL-907, and ADUCAL-908. The inspectors informed the licensee of this issue. The licensee stated that common mode failure analysis was ongoing at the facility and that they were in the process of replacing IROFS with programmable logic controllers with safety related infrastructure controllers. The licensee completed the analysis and controller replacement for criticality safety IROFS. However, the licensee could not identify the number of non-criticality safety IROFS with the potential for common mode failures. The inspectors noted that common mode failure was identified during the NRC's review of

the ISA Summary (ML070960306) and the NRC approved the licensee's migration strategy, however no timeframe for completion was mandated. The licensee committed to perform an extent of condition analysis to determine the non-criticality safety IROFS that are vulnerable to common mode failure. An unresolved item was opened to review the results from the non-criticality safety IROFS common mode failure extent of condition to determine if the licensee is in compliance with the 10 CFR 70.61 performance requirements, URI 70-1151/2011-005-02.

b. Conclusions

One violation was identified for failure to provide adequate management measures associated with IROFS ADUHOS-906, a passive engineered control fire barrier.

B. Facility Support

1. Permanent Plant Modifications (IP 88070)

a. Inspection Scope and Observations

The inspector reviewed several permanent plant modifications to determine if these modifications were implemented in accordance with licensee procedures and license requirements. The following Configuration Control Forms (CCF) were reviewed:

- CCF 10280: Pegs in the Integral Fuel Burnable Absorber (IFBA) filter press were replaced with greater diameter pegs and secured with 1.5" screws to prevent a potential criticality accident.
- CCF 06660: An administrative Safety Significant Control (SSC) was replaced with an active engineered SSC. Specifically, a differential pressure transmitter and alarm card were installed and after successful testing, administrative SSC ADUCAL-909 was deleted and ADUCAL-902 was modified.
- CCF 10632: Individual Uninterruptable Power Supply (UPS) units to criticality alarm stations 14, 15, 16 & 17 were removed and replaced with new power feeds originating from the main building. The new feeds are stated to be more reliable and fed from both normal power and emergency generators.
- CCF 10684: Q-Tanks control valve LCV-116B2 was replaced with a manual valve. The Q-Tanks were referenced in Nuclear Regulatory Commission (NRC) Inspection Report No. 70-1151/2010-001.
- CCF 10129: The cylinder wash V-09 vessel was resized to 4.38 gallons so that the entire water charging system (V-09, pipe, and hose) is less than the Criticality Safety Evaluation requirement of 5.7 gallons.
- CCF 10218: UF₆ block valves for ADU lines 2, 3, and 4, were replaced with XOMOX® valves, which are denoted in the Integrated Safety Analysis (ISA) as ADUVAP-110. The specified XOMOX® valve is preferred for UF₆ block valve actuation.

The inspector's evaluation of these modifications determined that they complied with the license requirements and Columbia Fuel Fabrication Facility (CFFF) procedures RA-104 (Regulatory Review of Configuration Change Authorizations) and RA-108 (Safety Significant Controls). The inspector determined that the licensee's configuration management program required adequate reviews of plant modifications and identified the potential risks associated with these changes.

The inspector evaluated the management measures and preventative maintenance activities that were developed for implementation of the modifications. From this evaluation, the inspector determined that adequate controls had been established to ensure that the IROFS would be available and reliable. The inspector reviewed records of the post modification functional tests, determined that these tests were adequately developed, and verified that the IROFS were available and reliable to perform their functions. Additionally, the inspector found that the post-modification testing adequately tested the functionality of the newly installed equipment and maintained the plant in a safe configuration during the testing.

The inspector verified that the preparation and implementation of the selected modifications did not impair plant emergency or abnormal operating actions, key safety functions, or operator response to a loss of key safety functions. The inspector walked down the selected modifications and found that system configuration matched the revised drawings and all necessary document changes were completed as required.

b. Conclusions

The inspectors determined that the licensee's configuration control program provided adequate assurance that IROFS were available and reliable when needed and the design changes did not interfere with emergency actions or the control of licensed material. No findings of significance were identified.

2. Emergency Preparedness (IP 88050)

a. Inspection Scope and Observations

The inspectors reviewed the licensee's Site Emergency Plan (Plan) and verified that there were no changes since the last inspection that decreased the effectiveness of the Plan. This included the verification of a sample of four recently revised procedures. The inspectors determined that the procedures were appropriately reviewed and approved by licensee management and did not decrease the effectiveness of the Plan. The inspectors reviewed recent plant drills, actual plant events, and the most recent audit of the emergency preparedness program. The inspectors verified that corrective action program (CAP) entries were made to address event and audit findings as necessary.

To assess the effectiveness of emergency response training and procedures, the inspectors interviewed four Emergency Response Team (ERT) members regarding their response actions to hypothetical plant incidents. The individuals demonstrated adequate knowledge of expected actions in response to chemical exposures of site

personnel, and fighting fires involving radioactive materials. The inspectors reviewed the emergency response-related training records for four other members of the emergency response team. Based on the records reviewed, the inspectors verified that the four individuals were current on the ERT training required to be members of the licensee's ERT.

The inspectors reviewed the Letters of Agreement and Memoranda of Understanding documentation for the off-site support agencies and found the agreements were current and consistent with the requirements in the Site Emergency Plan. The inspectors verified that the Columbia Fire Department, one of the licensee's off-site support agencies, was offered site-specific training annually as required in the Emergency Plan. The inspectors reviewed the inventory of firefighting equipment in emergency response vehicles at the site's Emergency Response Facility (ERF) and verified that inspections and inventories of firefighting equipment, emergency communication equipment, and hazardous material response equipment were completed at the required frequency.

The inspectors conducted interviews with two qualified Incident Commanders. The inspectors prepared a hypothetical scenario involving the release of radioactive material from an explosion and, fire resulting in personnel injuries. The inspectors evaluated the actions proposed by the incident commanders to respond to the injured personnel and fight the fire, as well as their recommended protective actions for plant personnel. The inspectors determined that each of the incident commanders demonstrated adequate decision-making in their proposed response action regarding the postulated scenario. The inspectors also conducted interviews with two qualified Emergency Directors. The inspectors prepared a hypothetical nuclear criticality scenario involving the discovery of an unfavorable geometry special nuclear material-bearing container without any IROFS available. The inspectors evaluated the Emergency Directors' proposed responses and decision making actions utilized to classify the scenario. Overall, each of the emergency directors demonstrated adequate performance in decision-making to classify the event, and when necessary requested input from plant technical support personnel to inform their decisions. However, based on the responses of one of the emergency directors, the inspectors noted that the emergency classification guidance in procedure SEP-002 and its accompanying flowchart lacked guidance and examples of what constituted an uncontrolled deterioration of nuclear criticality safety barriers, which requires an Alert declaration in accordance with the Plan. The licensee acknowledged the gap in guidance and Inspector Follow-Up Item (IFI) 70-1151/2011-005-03 will be opened to review the licensee's corrective action to improve guidance in the applicable emergency classification procedure for determining when a loss of IROFS constitutes an uncontrolled deterioration of nuclear criticality safety barriers.

b. Conclusions

The inspectors opened an Inspector Follow-Up Item to follow up on the licensee's actions to clarify emergency classification guidance regarding situations involving the loss of a nuclear criticality safety-related IROFS. The loss of these IROFS may constitute an uncontrolled deterioration in nuclear criticality safety barriers and may require an Alert declaration.

C. Special Topics

1. Follow-up on Previously Identified Issues

- a. (Closed) Licensee Event Report 2010-003-0: OFFSITE NOTIFICATION - Liquid effluent sample higher than NPDES permit, Event Notification (EN) 45919. The inspectors reviewed the corrective actions for this event and determined them to be adequate to prevent recurrence.

Immediate corrective actions included controlling the pH of the East lagoon, ensuring that the isolation valve for the sulfuric acid tote dike is visible and closed, supporting the hose connection to sulfuric acid tote, cleaned and flushing out the EPA sample line, installing a controlled metering system for caustic addition, and inspecting the final discharge tank on a weekly basis and cleaning as necessary.

Long-term corrective actions included installing a controlled metering system for caustic addition.

This item is closed.

- b. (Closed) Violation 2010-10-01, (Enforcement Action 2010-124) Parts I.A.1 and I.B.1: Q-Tank Notice of Violation and Proposed Imposition of Civil Penalty - \$17,500 (NRC Inspection Report Number 70-1151/2010-010). The inspectors followed-up on the corrective actions from violations noted in a previous inspection following an event in the quarantine tank system, specifically the overflow of approximately 200 gallons of uranium bearing ammoniated waste water from Q-Tank V-116A into a diked area.

Part I.A.1: Corrective actions proposed by the licensee were reviewed and verified. The licensee performed a supplemental safety analysis on the event sequence involving an overflow of the Q-Tank and revised the Facility ISA and ISA Summary accordingly. The revised ISA Summary was reviewed to ensure that IROFS to reduce the risk of overflow resulting in an acute chemical exposure to a worker were identified for the Quarantine Tank System. This item is closed.

Part I.B.1: Corrective actions proposed by the licensee were reviewed and verified. According to the revised ISA Summary, the installation of new IROFS for the Q-Tanks system include a Safety Instrumented System high-level interlock that automatically shuts off the power to all 6 Q-tank pumps (active engineered control), and a SIS high level alarm with operator response to ensure that input flows are manually shut off (administrative control). Both IROFS are set to function at the 95% level of the Q-tanks. This item is closed.

- c. (Closed) Violation 2010-10-02, Part II.A: The inspectors followed up on the corrective actions from the above described event in the Q-tank system. As noted in the previous inspection report, this violation resulted when the Criticality Accident Alarm System (CAAS) was out-of-service for greater than one hour without suspending all movements and/or processing of fissile materials. Corrective actions proposed by the licensee were reviewed and verified. Inspectors observed that the old UPS system was replaced with a new UPS system and that plant preventative maintenance procedures were updated to inspect UPS batteries on a weekly basis. In addition, the CAAS was modified by interconnecting alarms throughout the plant to ensure all plant personnel are aware of an alarm condition. Inspectors reviewed documentation of specific training to various plant personnel on the proper response to a CAAS alarm. Inspectors also observed that the CAAS alarm in the control room was properly labeled to avoid confusion with other similar alarms.

The licensee hired a new Incident Commander and Emergency Director at the facility. Inspectors reviewed their credentials and training records. Inspectors also reviewed the revised Site Emergency Procedure with guidance for the classification of emergency events, including a classification logic flow chart for criticality accidents. This item is closed.

- d. (Closed) Violation 2010-10-03, Part II.B: The inspectors followed up on the corrective actions from the above described event in the Q-tank system. As noted in the previous inspection report, this violation occurred when the licensee failed to develop and/or implement alarm procedures for Q-Tank process alarms. In addition to the new level controls discussed under 70-1151/2010-10-01, Part I.B.1, the licensee also installed a new schematic on the “Wonderware®” control panel for the Q-tanks and associated pumps with numerous level indicators and process alarms. Specifically, the operators now have an alarm indicating when significant level changes are occurring, and multiple level alarms with corresponding procedural instructions to avoid overflows. This item is closed.
- e. (Closed) Violation 2010-10-04 Parts II.C, II.D and II.E: The inspectors followed up on the corrective actions from the above Q-tank spill regarding a violation in which the licensee’s Incident Commander failed to classify the spill as a local response event. In addition, the Incident Commander failed to 1) activate the Blue Light Warning System; 2) direct Security to announce an evacuation of the affected area; and 3) communicate with the Emergency Director regarding the airborne ammonia concentrations in the affected area.

Part II.C: Corrective actions proposed by the licensee were reviewed and verified. In addition to meeting the newly hired Incident Commander and Emergency Director, the inspectors reviewed the revised Site Emergency Procedure for the classification of emergency events which includes a classification logic flow chart for criticality accidents, UF₆ releases, and fires, and a command check sheet for ammonia releases. Training for the IC and ED on the new procedure and use of the logic flow chart and check sheet was verified. This item is closed.

Part II.D and E: Corrective actions proposed by the licensee were reviewed and verified. The inspectors reviewed the revisions to the CAAS system as described above under 70-1151/2010-10-02 Part II.A which involved interconnection of the various CAAS stations such that one alarm will automatically trigger all alarms and activate the Blue Light Warning System. The inspectors also verified that the CAAS is now hard-wired to a remote alarm panel mounted in the continuously manned Security station at the facility. Inspectors noted that the updated Site Emergency Procedure for classification of emergency events provides specific responsibilities and directions for the Incident Commander and Emergency Director. The procedure includes a logic flow chart for classification of criticality accidents, as well as UF₆ releases and fires. This item is closed.

D. Exit Meeting

The inspection scope and results were summarized on September 29, October 7 and 21, November 18, and December 16, 2011, with David Precht, Plant Manager, and other members of the licensee staff. Although proprietary information and processes were reviewed during this inspection, proprietary information is not included in this report.

SUPPLEMENTAL INFORMATION

1. List of Persons Contacted

<u>Name</u>	<u>Title</u>
D. Precht	Plant Manager
S. Armstrong	Operations Manager
B. Phillips	Conversion Operations Manager
D. Baustert	Pellet Operations Manager
M. Rosser	EHS Manager
C. Snyder	EHS Engineering Manager
G. Couture	EHS Licensing and Regulatory
D. Graham	EHS Engineering
R. Taylor	EHS Engineering
J. Peterson	Site Maintenance Manager
R. Bates	Maintenance and Equipment Improvement
P. Simmons	Human Resources Manager
L. Brownlee	Organizational Improvement Manager
J. Watkins	Product Assurance Manager
K. Merritt	Product Assurance Chemical Operation
S. Carver	EHS Emergency Preparedness Manager

2. List of Items Opened, Closed, and Discussed

Item Number	Status	Description
VIO 70-1151/2011-005-01	Open	Failure to establish management measures that would ensure that IROFS ADUHOS-906 would perform its intended function when needed to comply with the performance requirements.
URI 70-1151/2011-005-02	Open	Review the results from the non-criticality safety IROFS common mode failure extent of condition to determine if the licensee is in compliance with the 10 CFR 70.61 performance requirements.
IFI 2011-005-03	Open	Follow-up on the licensee's actions to clarify emergency classification guidance regarding situations involving the loss of a nuclear criticality safety-related IROFS, which may constitute an uncontrolled deterioration in nuclear criticality safety barriers and may require an Alert declaration.
LER 2011-003-0	Closed	OFFSITE NOTIFICATION - Liquid effluent sample higher than NPDES permit. EN 45919

VIO 2010-10-01	Closed	<p>The licensee failed to identify that an overflow in the Q-Tank area could lead to an intermediate consequence event involving excessive concentrations of airborne ammonia.</p> <p>The licensee failed to implement items relied of for safety for the quarantine tank system to reduce the risk of an event which results in an acute chemical exposure which could lead to irreversible or serious long-lasting health effects to a worker.</p>
VIO 2010-10-02	Closed	<p>The licensee failed to suspend movement and processing of fissile material in the coverage area of CAAS 15, within one hour of CAAS 15 being out-of-service from 11:21 p.m. on January 23, 2010 through 5:37 a.m. on January 24, 2010.</p> <p>The licensee failed to develop and/or implement alarm procedures to assure safe operations of the quarantine tank system in response to installed process alarms.</p>
VIO 2010-10-03	Closed	<p>On January 24, 2010, following a spill of approximately 200 gallons of ammoniated waste water with maximum airborne concentration measured of 256 parts per million, the Incident Commander failed to classify the spill as a Local Response Event in accordance with Section 6.1.1 of SEP-002.</p> <p>On January 24, 2010, the Incident Commander failed to: 1) activate the Blue Light Visual Warning System; 2) instruct Security to announce all personnel in the area evacuate; and 3) communicate with the Emergency Director in response to the ammonia airborne concentrations that were measured inside the conversion area as required by procedures.</p>
VIO 2010-10-04	Closed	<p>On January 23, 2010, the Incident Commander failed to: 1) activate the Blue Light Visual Warning System; 2) instruct Security to announce all personnel in the area evacuate; and 3) communicate with the Emergency Director, in response to the activation of the criticality accident alarm system, number 15.</p>

3. **Inspection Procedures Used**

IP 88020	Operations
IP 88050	Emergency Preparedness
IP 88054	Tri-ennial Fire Protection
IP 88055	Annual Fire Protection
IP 88070	Permanent Plant Modifications

4. **List of Acronyms Used**

ADAMS	Agency-wide Document Access and Management System
ADU	Ammonium diuranate
CAAS	Criticality Accident Alarm System
ED	Emergency Director
EN	Event Notification
IC	Incident Commander
IFBA	Integral Fuel Burnable Absorber
IROFS	Items Relied on for Safety
ISA	Integrated Safety Analysis
NRC	Nuclear Regulatory Commission
PM	Preventative Maintenance
QA	Quality Assurance
QC	Quality Control
UF ₆	Uranium Hexafluoride
UPS	Uninterruptible Power Supply

5. **Documents Reviewed**

- CN-RRA-98-32, Hot Oil System Fire Hazard Analysis, Revision 0
- PM-81085, November 2010, Hot Oil Room Integrity Inspection
- PM-81085, November 2009, Hot Oil Room Integrity Inspection
- Drawing #347F04P102, Hot Oil Room / Facilities, Hot Oil System 3, Sheet 1, Revision 16
- Drawing #347F04P102, Hot Oil Room / Facilities, Hot Oil System 3, Sheet 2, Revision 16