



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

May 3, 2010

Gregory Smith, Chief Operating Officer
and Chief Nuclear Officer
National Enrichment Facility
P.O. Box 1789
Eunice, NM 88231

SUBJECT: NRC INSPECTION REPORT NO.70-3103/2010-006 AND NOTICE OF VIOLATION

Dear Mr. Smith:

This refers to the operational readiness review team inspections conducted by the U.S. Nuclear Regulatory Commission (NRC) from February 1-11, February 22-25, March 15-18, and March 29- April 1, 2010, at the Louisiana Energy Services, National Enrichment Facility (LES NEF) in Eunice, New Mexico. The purpose of the inspections was to determine whether activities associated with initial plant operation could be conducted safely and in accordance with NRC requirements and your license requirements. The inspections included a review of your proposed activities of plant operations, nuclear criticality safety, fire safety, operator training, radiation protection, and commercial grade dedication of fire protection components to ensure that your facility was ready to operate safely and in compliance with your license.

Areas examined during the inspections are identified in the report. Within these areas, the inspections consisted of a selective examination of procedures, representative records, calculations, and drawings; a review of the new equipment installed for the process; interviews with personnel; and observations of activities in progress.

Based on the results of these inspections, the NRC has determined that five (5) Severity Level IV violations of NRC requirements occurred. Three violations involved your implementation of quality assurance for commercial grade dedication activities of fire protection items relied on for safety (IROFS). Two violations were identified for the failure to request NRC approval prior to implementing changes to the SAR that changed the approved margin of subcriticality for safety, and for failure to perform nuclear criticality safety program analyses for systems other than the Contingency Dump System traps

Unresolved items and inspector follow-up items were identified as documented in the enclosed report. Several of these issues will require resolution prior to our decision making process to authorize plant operations.

These violations were evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is available on the NRC's Web site at www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. These violations are cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding them are described in the subject inspection report. The violations are being cited in the Notice because it was identified by the NRC.

If you contest the violations or the significance, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration in presenting the corrective actions, the guidance from NRC Information Notice 96-28, Suggested Guidance Relating to Development and Implementation of Corrective Action, is available on the NRC website and may be helpful. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of NRC's Rules of Practice, this letter and its enclosures may be accessed through the NRC's public electronic reading room, Agency-Wide Document Access and Management System (ADAMS) on the Internet at <http://www.nrc.gov/reading-rm/adams.html>

Should you have any questions concerning this letter, please contact me at (404) 997-4476.

Sincerely,

/RA/

Deborah A. Seymour, Chief
Construction Projects Branch 1
Division of Construction Projects

Docket No. 70-3103
License No. SNM-2010

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 70-3103/2010-006 w/attachment

cc w/encls: (See next page)

cc w/encls:

Gary Sanford, Quality and Regulatory
Affairs Director
National Enrichment Facility
P.O. Box 1789
Eunice, NM 88231

Perry Robinson, LES General Counsel
National Enrichment Facility
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John Goldstein, Deputy Secretary
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Reinhard Hinterreither, President
Louisiana Energy Services, L.L.C.
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Affairs Director
National Enrichment Facility
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Louisiana Energy Services, L. L. C.
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Brenda Brooks, Director
Community Affairs and Government
Relations
Electronic Mail Distribution

Letter to Gregory Smith from Deborah A. Seymour, dated May 3, 2010

SUBJECT: NRC INSPECTION REPORT NO. 70-3103/2010-006 AND NOTICE OF VIOLATION

Distribution w/encls:

D. Dorman, NMSS
M. Tschiltz, NMSS
B. Smith, NMSS
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R. Croteau, RII
T. Gody, RII
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E. Cobey, RII
D. Seymour, RII
J. Henson, RII
C. Taylor, RII
D. Hartland, RII
PUBLIC

If you contest the violations or the significance, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

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Sincerely,

/RA/

Deborah A. Seymour, Chief
Construction Projects Branch 1
Division of Construction Projects

Docket No. 70-3103
License No. SNM-2010

Enclosures:

1. Notice of Violation
2. NRC Inspection Report 70-3103/2010-006 w/attachment

cc w/encls: (See next page)

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE
ADAMS: X Yes ACCESSION NUMBER: X SUNSI REVIEW COMPLETE _____

| | | | | | | | | |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------|
| OFFICE | HQ:NMSS | HQ:NMSS | HQ:NMSS | RII:DFFI | RII:DFFI | RII:DFFI | RII:DCP | |
| SIGNATURE | /RA via email/ | |
| NAME | TMarenchin | SCleavenger | DArroyo | MMiller | OLopez | DHartland | CTaylor | |
| DATE | 4/30/2010 | 4/30/2010 | 4/30/2010 | 4/30/2010 | 4/30/2010 | 4/30/2010 | 4/30/2010 | |
| E-MAIL | YES NO | YES NO |

NOTICE OF VIOLATION

Louisiana Energy Services, L.L.C.
Eunice, N.M.

Docket No. 70-3103
License No. SNM-2010

During Nuclear Regulatory Commission (NRC) inspections conducted from February 1, 2010 - April 1, 2010, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. Special Nuclear Material (SNM) License Number (No.) 2010 requires, in part, that the licensee shall conduct authorized activities at the Louisiana Energy Services, L.L.C., National Enrichment Facility (LES NEF) in accordance with statements, representations, and conditions, or as revised in accordance with the Safety Analysis Report (SAR) dated December 12, 2003, and supplements thereto.

Section 5.1.1 of the SAR states, in part, that the nuclear criticality safety analyses are performed assuming a uranium-235 (^{235}U) enrichment of 6.0 weight percent ($^{\text{w}}/\text{o}$), except for Contingency Dump System traps which are analyzed assuming a ^{235}U enrichment of 1.5 $^{\text{w}}/\text{o}$.

Contrary to the above, as of February 25, 2010, the licensee failed to perform analyses assuming a ^{235}U enrichment of 6.0 $^{\text{w}}/\text{o}$ for systems other than Contingency Dump System traps. Specifically, in all or part of analyses and calculations, ETC4104887, ETC4107395, ETC4100854, NCS-CSA-011, and NCS-CSE-014, ^{235}U enrichment of 1.5 $^{\text{w}}/\text{o}$ was used for systems other than the Contingency Dump System including the Tails Take-off System.

This is a Severity Level IV Violation (Supplement VI).

- B. 10 CFR 70.72(c) states, in part, that the licensee may make changes to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel, without prior Commission approval, unless the change as stated in 10 CFR 70.72(c)(4), is otherwise prohibited by this section, license condition, or order.

10 CFR 70.61(d) 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.

NRC approved the margin of subcriticality for safety, as documented in the licensee's SAR, Revision 6, with the issuance of SNM-2010.

Contrary to the above, as of April 1, 2010, the licensee made changes to the approved margin of subcriticality for safety without prior NRC approval when implementing the following changes to the SAR:

1. SAR Table 5.1-1, Safe Values for Uniform Aqueous Solutions of Enriched UO_2F_2 , was changed to increase dimensions of process components after the licensee identified an error when calculating the safe values in the table.

2. SAR Section 5.1.1, Management of the Nuclear Criticality Safety Program, stated in part, that the nuclear criticality safety analyses are performed assuming a ^{235}U enrichment of 6.0 w/o, except for Contingency Dump System traps which are analyzed assuming a ^{235}U enrichment of 1.5 w/o. The licensee revised this section to expand the analyses that were performed at 1.5 w/o to include the entire Dump System. The Dump System includes the Tails Take-Off System and the Contingency Dump System.
3. SAR Section 5.1.2, Control Methods for Prevention of Criticality, stated that NEF does not use neutron absorbers as a criticality control parameter. The licensee made a change to the SAR to take credit for neutron absorbers in standard materials used in construction and processes.
4. SAR Section 5.2.1.3.4, Vessel movement Assumption, stated in part that any item in movement must be maintained at 60 centimeters (23.6 inch) edge separation from any other enriched uranium and only one item of each type of vessel may be in movement at one time. This section was changed to state that limits were placed on movement of vessels by procedures or work plans that varied by the type of vessel. For some vessels, the separation distance was reduced from 60 centimeters.

This is a Severity Level IV Violation (Supplement VI).

- C. SNM License No. 2010 requires, in part, that the licensee shall conduct authorized activities at the LES NEF in accordance with statements, representations, and conditions in the approved Quality Assurance Program Description (QAPD), Revision 19a, dated March 24, 2009, and supplements thereto.

The LES NEF QAPD commits to American Society of Mechanical Engineers (ASME) NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications, including supplements as revised by the ASME NQA-1a-1995 Addenda for implementation of 10 CFR 50 Appendix B.

Section 6, Document Control, of the LES NEF QAPD states, "procedures are established which control the preparation, issuance and changes of documents that specify quality requirements or prescribe activities affecting quality. Measures are established to ensure that documents, including revisions are adequately reviewed, approved, and released for use by authorized personnel." The LES NEF QAPD further states, "superseded documents are destroyed or retained only when they have been properly marked."

Contrary to the above, as of April 1, 2010, the licensee failed to control the preparation, issuance, and change of documents that specify quality requirements or prescribe activities affecting quality in that the licensee did not exercise adequate identification and revision control of commercial grade dedication (CGD) plans as evidenced by the following examples:

1. The licensee used Revision 0 of CGD Plan D-2008-054 for fire door dedication. The same plan and revision number was used three times for

partial dedication of doors identified in the plan scope (the plan included 13 doors and was signed separately for 1 door, 2 doors, and 10 doors) instead of initiating revisions to the CGD plan to reflect the appropriate scope of dedication activities performed at each interval.

2. Revision 0 of CGD Plan D-2009-016 for 1½ -hour fire dampers was initially signed as completed on December 22, 2009, with a statement that all critical characteristics (CCs) were found to be acceptable. The same revision of CGD Plan D-2009-016 was subsequently signed as completed on March 1, 2010, with the inclusion of a receipt inspection plan report and a spreadsheet of Method 1 testing results. There was no indication that the first completed plan had been superseded by completion of the second plan.
3. Revision 0 of CGD Plan D-2009-015 was approved on November 20, 2009, and signed as completed on December 22, 2009. However, no dedication activities were performed under Revision 0 of the plan and the licensee never procured the fusible links from the supplier identified in this revision of the plan. Revisions 1 and 2 of CGD Plan D-2009-015 were signed as completed on January 28, 2010, and January 14, 2010, respectively, with a statement indicating that all CCs had been checked and were found to comply with the acceptance criteria. However, the dedication activities described in Revisions 1 and 2 were not successfully completed. The fusible links were eventually dedicated under Revision 3 of the CGD Plan. Also, Revision 2 of CGD Plan D-2009-015 had a completion date that was two weeks earlier than that of Revision 1.
4. Revision 3 of CGD Plan D-2009-015 was initially signed as complete on December 22, 2009. The same revision and plan number was subsequently signed as completed on March 4, 2010, with the inclusion of additional testing and supplier documentation. Additionally, the copy signed on March 4, 2010, did not have a check box indicating that the dedication method used was Method 1 (although it is apparent from the content of the Section that it was Method 1 testing). There was no indication that the first completed plan had been superseded by completion of the second plan.
5. Revision 0 of CGD Plan D-2008-053 for shims was initially signed as completed on December 23, 2008, with a statement that all CCs were found to be acceptable. The same revision of CGD Plan D-2008-053 was subsequently signed as completed on April 14, 2009 with no apparent changes to the dedication plan.
6. Dedication plans D-2009-014 and D-2009-015 were signed as complete before the date on which the plans were initiated.

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

- D. SNM No. 2010 requires, in part, that the licensee shall conduct authorized activities at the LES NEF in accordance with statements, representations, and conditions in the approved QAPD, Revision 19a, dated March 24, 2009, and supplements thereto.

The LES NEF QAPD commits to ASME NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications, including supplements as revised by the ASME NQA-1a-1995 Addenda for implementation of 10 CFR 50 Appendix B.

Section 7, Control of Purchased Material, Equipment, and Services, of the LES NEF QAPD states, "LES procurement of material, equipment and services is controlled to assure conformance with specified requirements."

Section 7 further states that "source inspections and surveillances, evaluation of objective evidence of quality furnished by the supplier, maintaining the ASL, as well as, examination of received items and services are the responsibility of LES QA organization and are performed, as necessary, upon delivery or completion to ensure requirements specified in procurement documents are met. Supplier evaluations, annual evaluations, audits, surveillances, source inspections and receipt inspections shall be documented."

Section 7 further states that, "supplier selection shall be based on an evaluation, performed before the contract and/or purchase order (PO) is awarded, of the supplier's capability to provide items or services in accordance with procurement document (technical and quality) requirements."

Contrary to the above, as of April 1, 2010, the licensee failed to ensure conformance to specified requirements during the procurement of material, equipment and services as evidenced by the following examples:

1. The licensee failed to maintain sufficient documented evidence of Method 1 testing completed in support of dedication of Item Relied on For Safety (IROFS) 35 components (doors, dampers, shims, and fusible links). Specifically, there was insufficient documented evidence (i.e., checklists, data forms, measurement sheets, or other instructions or documents) to demonstrate the successful completion of Method 1 testing for the following dedication plans: D-2008-053 for shims; D-2008-054 for SBM-1001 doors and frames (multiple packages); D-2009-014 for 3-hour fire dampers; D-2009-015 for fusible links; and D-2009-016 for 1½-hour fire dampers. Additionally, the CGD plans did not specify tolerances for measurements or equipment to be used to take measurements.
2. Step 5.4.3 of Procedure EG-3-2100-05 required that each revision to CGD plans be a stand-alone package with the exception of typographical errors and minor changes. However, the licensee used the following nonconformance reports (NCR) to identify and verify CCs without updating the associated CGD Plans:
 - a. Condition Report 2010-0097 and NCR 2010-0685 identified uranium hexafluoride boundary openings that did not meet the requirements of National Fire Protection Association (NFPA) 80 code requirements for gap deviations between doors and frames, doors and thresholds, and double doors. Limitations of gap size were critical to the safety function of the doors in order to limit air flow through the door and to control propagation of a fire and release of hazardous material. As

such, the gap sizes should have been identified as CCs in CGD Plan D-2008-054 for the fire door and frames.

- b. NCR 2010-0043 identified that CGD Plans D-2009-014 and D-2009-016 for fire dampers provided acceptance criteria for the dampers but not for the installation of the dampers, and, as a result, additional inspection attributes were required to ensure that the dampers met code installation requirements. Because the installation attributes were necessary to assure that the dampers were capable of performing their safety function, the attributes should have been included in the CGD plans as CCs.
3. The licensee failed to appropriately translate CCs identified in engineering evaluations into Method 1 testing requirements. Specifically, Section H, Engineering Evaluation, of Revision 1 of CGD Plan D-2009-014 for 3-hour fire dampers and Revision 0 of CGD Plan D-2009-016 for 1½-hour fire rated dampers identified strength of the dampers as a CC, in particular the metal used for damper construction and the gauge of the frame and blades. The Method 1 testing included verification that the damper material was carbon steel, but the testing did not include any verification of frame and blade gauge. The engineering evaluation credited the dampers' Underwriters Laboratory (UL) certification for verification of the gauge of the damper frames and blades; however, UL only performs a pass/fail test of the damper's ability to meet its fire rating.
4. The licensee failed to ensure that suppliers performing safety-related work were appropriately qualified to perform such work.
 - a. The vendor qualified to perform civil activities was contracted to perform destructive tension and temperature testing of fusible links used in IROFS 35 dampers in support of dedication of the fusible links (Dedication Plan D-2009-015); however, the testing performed was outside the scope of supply that the vendor was approved to provide to LES.
 - b. Qualification records for the vendor employee who performed the destructive testing indicated that the individual held no qualifications to support his performance of tension or temperature tests.
5. The licensee failed to establish adequate acceptance criteria and verification instructions for CGD activities:
 - a. Attachment 2, Instructions for Completing the CGD Plan Form, of Procedure EG-3-2100-05 required the acceptance criteria for CCs to be identified in the CGD plan, along with the acceptance method and any applicable tolerances. The Method 1 verification table included in Section J of CGD Plan D-2008-054 for fire doors and frames required "doors and frames height, width, and doors only thickness" to be verified in accordance with a table of values included in the dedication plan. However, the table of values only identified one value for height,

one value for width, and one value for thickness, so there was inadequate information available to measure both the doors and the frames. Also, there were no tools specified for taking the measurements and no tolerances identified for acceptability of the measurements.

- b. Operability testing using NFPA 80-1999 was identified as a CC for fire doors and frames. However, there was no documented instruction or procedure for performance of the operability testing for fire doors and frames, as required by Section 5.2.1(f) of Procedure EG-3-2100-05. The failure to establish instructions for fire door operability testing allowed for an inadequate operability test to be conducted. The test only evaluated door function and not installation, as required by NFPA 80-1999.

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

- E. SNM No. 2010 requires, in part, that the licensee shall conduct authorized activities at the LES NEF in accordance with statements, representations, and conditions in the approved Quality Assurance Program Description, Revision 19a, dated March 24, 2009, and supplements thereto.

The LES NEF QAPD commits to ASME NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications, including supplements as revised by the ASME NQA-1a-1995 Addenda for implementation of 10 CFR 50 Appendix B.

Section 5, Instructions, Procedures, and Drawings, of the LES NEF QAPD states, "Activities affecting quality shall be prescribed by and conducted in accordance with approved procedures and other implementing documents (drawings, specifications, etc.) appropriate to the circumstances."

Contrary to the above, the licensee failed to adequately prescribe activities affecting quality in Procedure EG-3-2100-05 for the performance of commercial grade dedication as evidenced by the following examples:

1. Procedure EG-3-2100-05, which described the LES CGD program and provided instructions for completion of CGD Plans, failed to provide instructions for completion of Section K, Final Approval, of CGD Plans.
2. The CCs identified in failure modes and effects analyses (FMEAs) were not consistent with those identified in the Method 1 CC verification tables of CGD plans and were not consistent with the requirements specified in the LES CGD Procedure for completion of FMEAs. The failure to properly define CCs related to failure modes of an item results in the risk of failing to identify and verify all applicable CCs for an item, which would compromise the validity of the dedication.

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

Pursuant to the provisions of 10 CFR 2.201, Louisiana Energy Services, 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, with a copies to the Chief, Technical Support Group, Division of Fuel Cycle Safety and Safeguards, NMSS, and 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 to avoid further violations, and (4) the date when full compliance will be achieved.

The NRC has concluded that information regarding the reason for the enclosed Notice of Violation D (Example 3 and Example 5(a) only), the corrective actions taken and planned to be taken to correct the violation and prevent recurrence, and the date when full compliance will be achieved, is already adequately addressed on the docket in Inspection Report No. 70-3103/2010-006. Therefore, no response is required for these specific items.

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.

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.

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

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

Dated at Atlanta, Georgia this 30th day of April 2010.

**U.S. NUCLEAR REGULATORY COMMISSION
REGION II**

Docket: 70-3103

License: SNM-2010

Report: 70-3103/2010-006

Licensee: Louisiana Energy Services, L.L.C.

Site: National Enrichment Facility

Location: Eunice, New Mexico

Inspection Dates: February 1-11, 2010
February 22-25, 2010
March 15-18, 2010
March 29-April 1, 2010

Inspectors: D. Hartland, Team Leader, Senior Fuel Facility Inspector, Division of Fuel Facility Inspection, (DFFI), Region II (RII)
O. Lopez, Fuel Facilities Inspector, DFFI, RII
M. Miller, Senior Resident Inspector, DFFI, RII
T. Marenchin, Criticality Safety Inspector, Office of Nuclear Materials Safety and Safeguards (NMSS)
S. Cleavenger, Quality Assurance Engineer, NMSS
D. Arroyo, Quality Assurance Engineer, NMSS

Accompanying Personnel: J. Henson, Chief, Fuel Facility Inspection Branch 2, DFFI
T. Gody, Deputy Director, Division of Construction Projects

Approved: Deborah A. Seymour, Chief
Construction Projects Branch 1
Division of Construction Projects

EXECUTIVE SUMMARY

Louisiana Energy Services, L.L.C., National Enrichment Facility (LES NEF)
NRC Inspection Report 70-3103/2010-006

This report is a summary of the operational readiness review (ORR) team inspections of the licensee's proposed initial plant operation. The ORR inspections were conducted during the weeks of February 1-11, February 25-28, March 15-18, and March 29-April 1, 2010, with specialized inspectors from the Nuclear Regulatory Commission (NRC) Region II (RII) office and the Office of Nuclear Materials Safety and Safeguards (NMSS). The results of the ORR inspections are contained in the details section of this report. The report does not include proprietary information.

The inspection was conducted through a review of selected records, procedures, interviews with personnel, and direct observation of equipment testing and work activities in the following areas: plant operations, nuclear criticality safety, fire safety, operator training, radiation protection, and commercial grade dedication of fire protection components.

Plant Operations

Activities documented by Section 11.4 of the Safety Analysis Report (SAR) were adequately covered in plant procedures. However, resolution regarding equipment necessary for Items Relied on for Safety (IROFS) C6 and 38 to be able to accomplish their safety functions that was not included in the safety boundaries was identified as Unresolved Item (URI) 70-3103/20101-006-01 (Section 2).

Nuclear Criticality Safety

Violation (VIO) 70-3103/2010-006-02 was identified for the failure by the licensee to request NRC approval prior to implementing changes to the SAR that changed the approved margin of subcriticality for safety (Section 3.a).

VIO 70-3103/2010-006-03 was identified for failure to perform analyses assuming a uranium-235 (²³⁵U) enrichment of 6.0 weight percent (^{w/o}) for systems other than Contingency Dump System traps as required by SAR Section 5.1.1 (Section 3.b).

URI 70-3103/2010-006-04 was identified regarding licensee's changes to IROFS 14b (Section 3.b(1)(b)).

Four inspector follow up items (IFIs) were identified: IFI 70-3103/2010-006-05, involving the licensee's review of the impact of the cold trap insulation on a criticality safety calculation; IFI 70-3103/2010-006-06, involving preparation of instructions and procedures that adequately describe all aspects of the safe-by-design (SBD) process; IFI 70-3103/2010-006-07, involving actions to demonstrate that the appropriate data is available to make the pump volumes SBD and meet Quality Level-1 attributes; and IFI 70-3103/2010-006-08, involving completion of nuclear safety releases for all components that contain SBD attributes (Section 3.b(1)(c)).

The Criticality Accident Alarm System was installed and maintained in accordance with regulatory requirements (Section 3.c).

Fire Protection

The licensee adequately implemented fire protection requirements specified in the SAR. The inspectors concluded that the licensee implemented an adequate fire protection program which provided reasonable assurance that it could safely conduct licensed activities (Section 4).

Operator Training

The inspectors determined that the licensee adequately implemented the training program that ensured the facility could be operated safely using qualified personnel (Section 5).

Radiation Protection

URI 70-3103/2010-006-09 was identified regarding the inspectors' further review of the licensee's unauthorized possession of unsealed americium-241 check sources (Section 6).

Commercial Grade Dedication of Fire Protection Components

VIO 70-3103/2010-006-10, with multiple examples was identified for failure to exercise adequate identification and revision control of commercial grade dedication (CGD) plans in accordance with Section 6, Document Control, of the licensee's Quality Assurance Program Description (QADP) (Section 7).

VIO 70-3103/2010-006-11, with multiple examples was identified for failure to exercise adequate activities for CGD activities in accordance with Section 7, Control of Purchased Material, Equipment, and Services, of the licensee's QAPD (Section 7).

VIO 70-3103/2010-006-12, with multiple examples was identified for failure to exercise adequate activities for CGD plans in accordance with Section 5, Instructions, Procedures, and Drawings, of the licensee's QAPD (Section 7).

Attachment:

1. Persons Contacted
2. Inspection Procedures
3. List of Items, Opened, Closed and Discussed
4. List of Acronyms Used
5. List of Documents Reviewed

REPORT DETAILS

1. **Summary of Site Activities**

The Louisiana Energy Services, National Enrichment Facility (LES NEF) was under construction at the time of this inspection. Separation Building Module (SBM)-1001 and other applicable process areas were nearing completion with applicable utilities, services, controls, and instrumentation in the final stages of installation and testing.

2. **Plant Operations (Inspection Procedure (IP) 88020)**

a. **Scope and Observations**

The inspectors reviewed procedures required for initial plant operation including response to abnormal/alarm conditions. The inspectors verified that procedures that implemented administrative items relied on for safety (IROFS) 16a; 39a, b, c, and d; and 50a, b, c, d, e, f, g, and h, provided appropriate guidance for ensuring compliance with regulatory requirements.

The inspectors reviewed administrative procedures related to conduct of operations, equipment control, and watch standing practices. The inspectors verified that the activities documented by Section 11.4 of the Safety Analysis Report (SAR) were adequately covered. The inspectors also observed operators perform a simulated tails cylinder disconnect evolution. The inspectors noted that the operators displayed effective conduct-of operations techniques.

During review of the licensee's Emergency Plan (EP), the inspectors noted that Section 2.2.6 described an automatic seismic trip of ventilation systems in the SBM-1001. The licensee indicated that the trip feature was originally included in the EP in support of the Quality Level (QL)-I function of the seismically-rated SBM-1001. However, the QL-1 boundary had since been changed from the building to the process piping. The licensee performed an evaluation that concluded that the seismic trip was no longer required due to the boundary change, as a seismic event would no longer result in a consequence to public, and removed the description from the EP. The inspectors reviewed the evaluation and had no further issues.

While performing some process valve maintenance, the licensee discovered loose foreign material in the valve housing and on the valve seat. The licensee performed an extent of condition by inspecting additional valves and portions of the product, tails, and feed headers and found more foreign material. The foreign material consisted primarily of metal filings and particulates, cotton lint, a fine coating of dust/dirt, and hydrocarbons. The licensee determined that the foreign material resulted from a lack of cleanliness controls during piping and valve fabrication and assembly. The licensee initiated Condition Report (CR) 2010-521 to clean those valves and sections of piping that were considered significant based on commercial risk.

The licensee's integrated safety analysis (ISA) team also convened to identify any hazards associated with the introduction of foreign material including effects of the foreign material on existing IROFS. The ISA team determined that the foreign material would not increase the risk of different event sequences or degrade the effectiveness of

IROFS. The licensee also determined that passivation, which used small amounts process gas to condition process piping prior to initiating cascade operation, could be conducted safely and would remove residual hydrocarbons. The inspectors reviewed the licensee's actions and had no further issues.

During the review of implementation of IROFS C6 and 38, the inspectors noted that equipment necessary for those IROFS to be able to accomplish their safety functions was not included in the boundaries as defined in the licensee's boundary definition documents and, therefore, was not designated as QL-1. These IROFS involves enrichment controls (IROFS C6), and cylinders overfill and rupture controls (IROFS 38). In addition, the inspectors noted that IROFS C6 and 38, as defined, were inconsistent with License Condition 20 which states that *"currently there are no IROFS that have been specified as using software, firmware, microcode, programmable logic controllers, and/or any digital device, including hardware devices which implement data communication protocols (such as fieldbus devices and Local Area Network controllers), etc. Should the design of any IROFS be change to include any of the preceding features, the licensee shall obtain Commission approval prior to implementing the change(s). The licensee's design changes shall adhere to accepted practices in software and hardware engineering, including software quality assurance controls as discussed in the Quality Assurance Program Description throughout the development process and the applicable guidance of the following industry guidance and regulatory guides as specified in Safety Analysis Report Chapter 3..."*

The function of IROFS C6 was to administratively calculate and set the cascade enrichment control device in accordance with a calculation to ensure uranium-235 (^{235}U) enrichment was less than five percent to ensure subcriticality within the designed process and analyzed activities. The licensee included in the boundary the procedure that implemented the controls for calculating and inputting the setting into the process digital control system (PCS) but did not include verification that the enrichment limits were not being exceeded in the cascade. Therefore, the PCS and mechanical devices that actually controlled the enrichment in the cascade were not designated as QL-1.

The licensee did not include the PCS and mechanical devices within the IROFS C6 boundary because they concluded that it was not credible that failure of those features would result in an exceedance of the enrichment limit. The inspectors noted that SAR Section 3.2.3.2 states, in part, that "the fact that an event is not "credible" must not depend on any facility feature that could credibly fail to function. One cannot claim that a process does not need IROFS because it is "not credible" due to characteristics provided by IROFS." However, the inspectors noted that the licensee's documented conclusion did not appear to be based on an unmitigated or uncontrolled consequence analysis, but instead relied on mechanical stops, assay sampling, alarms, operator action and other controls that should have been credited as IROFS per SAR Section 3.2.3.2.

The function of IROFS 38 was to administratively limit the cylinder fill mass to ensure cylinder integrity at the take-off stations by verifying that cylinder weight was within specified trending limits once per shift during filling of the cylinder. The licensee included in the boundary the procedure that provided requirements for performing the trending but did not include the load cells and PCS that provided the trending information in the control room or the mechanism used to isolate the cylinder when it reached the fill

limit. NRC staff had several discussions with licensee staff to discuss these issues, but the parties had differing views on the actions necessary to resolve them. Resolution of these issues is required for the NRC to complete its evaluation of the readiness of the facility for operations and provide authorization to begin initial operations. Resolution regarding equipment necessary for IROFS C6 and 38 to be able to accomplish their safety functions that was not included in the safety boundaries was identified as Unresolved Item (URI) 70-3103/20101-006-01.

b. Conclusions

The inspectors verified that the activities documented by Section 11.4 of the SAR were adequately covered in plant procedures. However, resolution regarding equipment necessary for IROFS C6 and 38 to be able to accomplish their safety functions that was not included in the safety boundaries was identified as URI 70-3103/20101-006-01.

3. **Nuclear Criticality Safety (NCS)**

a. **NCS Program (IP 88015)**

(1) Scope and Observations

The inspectors reviewed NCS administrative procedures and selected NCS controls to determine whether the procedures adequately implemented the NCS program described in the license application. The inspectors performed plant walk-downs of SBM-1001 to review equipment in the area and to determine whether risk-significant fissile material operations in the SBM-1001 could be conducted safely and in accordance with regulatory requirements. The inspectors reviewed the adequacy of management measures for assuring the continued availability and reliability of safety-significant controls relied upon by the licensee for controlling criticality risks to acceptable levels. The inspectors reviewed selected aspects of procedures.

The inspectors assessed licensee administrative procedures governing the preparation of NCS evaluations and analyses, the generation of NCS postings, the performance of weekly walkthroughs, and response to NCS anomalous conditions to ensure that regulatory requirements were met. The inspectors interviewed NCS staff to verify that supporting documents were prepared and approved by qualified personnel. The inspectors also interviewed operators to ensure understanding of NCS postings and limits in procedures. The licensee staff indicated that enough operators were qualified to use the procedures and were knowledgeable of IROFS and NCS controls to operate the plant.

The inspectors observed a walkthrough performed by licensee staff of the Centrifuge Assembly Building (CAB) in accordance with Procedure CR-3-1000-03, NCS Weekly Walkthroughs and Periodic Assessments, Revision 4, dated February 9, 2010. The CAB was the one area that the licensee had fissile material testing going on at the time of the inspection. No issues were identified.

During a review of the implementation of the NCS program described in the SAR, Revision 25, of the license application, the inspectors noted that the licensee made changes to the NCS program under 10 CFR 70.72(c) using Procedure LS-3-1000-04.

SNM License Condition 10 stated, in part, that the licensee shall conduct authorized activities at the NEF in accordance with the statements, representations, and conditions of the SAR or as revised in accordance with 10 CFR 70.72. Some of the changes included the following:

- SAR Table 5.1-1, Safe Values for Uniform Aqueous Solutions of Enriched UO_2F_2 , was changed to increase dimensions of process components after the licensee identified an error when calculating the safe values in the table.
- SAR Section 5.1.1, Management of the Nuclear Criticality Safety Program, stated, in part, that the nuclear criticality safety analyses were performed assuming a ^{235}U enrichment of 6.0 weight percent (w/o), except for Contingency Dump System traps which were analyzed assuming a ^{235}U enrichment of 1.5 w/o . The licensee revised this section to expand the analyses that were performed at 1.5 w/o to include the entire Dump System. The Dump System included the Tails Take-Off System and the Contingency Dump System.
- SAR Section 5.1.2, Control Methods for Prevention of Criticality, states “that the licensee did not use neutron absorbers as a criticality control parameter. The licensee made a change to the SAR to take credit for neutron absorbers in standard materials used in construction and processes.”
- SAR Section 5.2.1.3.4, Vessel Movement Assumption, states, in part, that any item in movement must be maintained at 60 centimeters (cm) (23.6 inches) edge separation from any other enriched uranium and only one item of each type of vessel may be in movement at one time. This section was changed to state that limits were placed on movement of vessels by procedures or work plans that varied by the type of vessel. For some vessels, the separation distance was reduced from 60 cm.

10 CFR 70.72(c) states, in part, that the licensee may make changes to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel, without prior Commission approval, unless the change as stated in 10 CFR 70.72(c)(4), is otherwise prohibited by this section, license condition, or order.

10 CFR 70.61(d) 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. The NRC approved the margin of subcriticality for safety based on programmatic commitments made in the original SAR. The margin of subcriticality for safety included any administrative margin in k_{eff} as well as margin in system parameters provided by conservative technical practices committed to in the original SAR. The NRC approved the margin of subcriticality for safety, as documented in the licensee’s SAR, Revision 6, with the issuance of SNM-2010.

The changes to Section 5.0, “Nuclear Criticality Safety,” of the SAR mentioned above appeared to change the margin of subcriticality for safety. The failure by the licensee to request NRC approval prior to implementing changes to the SAR that changed the approved margin of subcriticality for safety was identified as Violation (VIO) 70-3103/2010-006-02).

(2) Conclusions

The failure by the licensee to request NRC approval prior to implementing changes to the SAR that changed the approved margin of subcriticality for safety was identified as VIO 70-3103/2010-006-02.

b. **Nuclear Criticality Safety Evaluations and Analyses (IP 88016)**

(1) Scope and Observations

The inspectors reviewed nuclear criticality safety evaluations (NCSEs) and analyses (NCSAs) to determine if criticality safety of risk-significant operations was assured through engineered and human controls with adequate safety margin and preparation and review by qualified staff. The inspectors reviewed selected aspects of the NCSEs, NCSAs, and other documents.

(a) NCSEs and NCSAs

The inspectors determined that the evaluations were performed by qualified NCS engineers, independent reviews were completed for the evaluations by other qualified NCS engineers, and except for the issue identified in VIO 70-3103/2010-006-02, subcriticality of the operations was assured through appropriate limits on controlled parameters, and double contingency was assured for each credible accident sequence leading to inadvertent criticality.

The inspectors noted that some NCSEs and NCSAs were completed using a ^{235}U enrichment of 1.5 w/o as the enrichment limit in all or part of the analyses. Section 5.1.1 of the SAR states in part, that the nuclear criticality safety analyses were performed assuming a ^{235}U enrichment of 6.0 w/o, except for Contingency Dump System traps which were analyzed assuming a ^{235}U enrichment of 1.5 w/o. However, licensee staff stated that the entire Tails Take-Off and Contingency Dump System would be limited to 1.5 w/o ^{235}U and were analyzed at that value.

Regardless, the inspectors determined that the licensee failed to perform analyses assuming a ^{235}U enrichment of 6.0 w/o for systems other than Contingency Dump System traps as required by SAR Section 5.1.1. Specifically, in all or part of analyses and calculations ETC4104887, ETC4107395, ETC4100854, NCS-CSA-011, and NCS-CSE-014, ^{235}U enrichment of 1.5 w/o was used for the rest of the Contingency Dump System and Tails Take-off System. This was identified as VIO 70-3103/2010-006-03.

In response, the licensee issued CR 2010-694 and revised the SAR under 10 CFR 70.72 to indicate that the entire Tails Take-Off and Contingency Dump Systems were analyzed to 1.5 w/o ^{235}U . The inspectors determined that the licensee's corrective action to change the SAR without NRC approval is an issue related to VIO 70-3103/2010-006-02.

(b) IROFS

The inspectors reviewed selected NCS related IROFS to determine if operational safety was assured through engineered and human controls with adequate safety margin. This review included walk-downs, interviews with operators and NCS staff, and review of NCS related documents that established the IROFS. The inspectors determine that the operators had been trained on the IROFS and were knowledgeable of their operation and function.

IROFS 14b was a sole administrative control that restricted the proximity of vessels containing enriched material to be moved within 180 cm of any other vessel that contained enriched material. During the inspection, the licensee implemented some changes to IROFS14b to make it easier to implement. The inspectors' review of the licensee's changes to IROFS 14b was identified as URI 70-3103/2010-006-04.

(c) Safe-By-Design (SBD) Features

The inspectors reviewed the licensee's commitment to use passive design component features (e.g., tanks, piping, cylinders, etc.) at the facility that do not rely on human interface to perform the criticality safety function (i.e., termed "safe-by-design"). Safe-by-design (SBD) components were those components that by their physical size or arrangement had been shown to have a keff of 0.95 (where $keff = k_{calc} + 3\sigma_{calc}$).

Some components or combinations of components required a more detailed criticality analysis. The detailed analyses assumed the components were full of uranic breakdown material at maximum enrichment and that the worst credible moderation and reflection conditions existed. The inspectors verified that the NCSEs and NCSAs were performed using these assumptions and did selected field verifications of the SBD attributes.

At the time of the inspection the licensee was still performing field verifications of some of the equipment that had SBD attributes. The licensee staff found some equipment where the SBD attribute was out of tolerance. As a result, the licensee had to reevaluate the assumptions made in the applicable NCSE and NCSA. During review of one of the calculations, ETC4086371, the licensee identified that some of the insulation material used for a cold trap could act as a reflector or moderator. The licensee's completed review of the impact of the cold trap insulation and revision to the ETC4086371, as applicable, was identified as Inspector Follow-Up Item (IFI) 70-3103/2010-006-05.

The inspectors reviewed the implementation of the QL-1 requirements for components that contained SBD attributes. The inspection assessed compliance of SBD documentation with licensing basis documents and NRC and industry standards. The licensing basis documents reviewed included SNM-2010, U.S. Nuclear Regulatory Commission Materials License; LES SAR; SAR Appendix A, and the Quality Assurance Program Description (QAPD).

The inspectors also reviewed procedures that implemented SBD activities to verify their adequacy. Many of the activities and processes performed on components that contained SBD attributes were performed in accordance with existing facility and quality assurance (QA) procedures. For example, the procurement processes were performed

in accordance with Procedures PR-3-2000-02, Purchase Requisition, and PR-4-2000-02, Purchase Requisition Attachments and Form. However, these procedures did not include specific guidance for procurement of components that contained SBD attributes. In the case of receipt inspections, the licensee had an additional procedure that supplemented the generic receipt inspection procedure to provide requirements specific to SBD components.

Procedure QA-3-3000-18, Receipt Inspection, required additional inspection activities to be performed for components with SBD attributes. Procedure QA-3-3000-18 instructed the user to perform these additional inspection activities in accordance with Procedure EG-3-3200-03, SBD Receipt Inspection. Procedure EG-3-3200-03 explicitly states that it was not a replacement of Procedure QA-3-3000-18. Instead, it served as additional guidance to aid quality control (QC) inspectors during the acceptance activities for these components.

However, the inspectors identified that the procedures provided inadequate guidance for receipt inspection documentation because the procedures did not address the specific procurement requirements applicable to components with SBD attributes procured through different methods. Specifically, for components obtained through the Cascade Supply Agreement (CSA) instead of the standard procurement process, a receipt inspection was not performed. Therefore, there was no procurement documentation available for review for components obtained through the CSA. For example, cascade header pipe and centrifuges were obtained through the CSA and, as such, there was no QA-3-3000-3-F-1, SBD Receipt Inspection Form, completed for these components, as required by QA-3-3000-18.

Instead, the SBD attributes for these components were verified by QA and QC through field verification. The documentation of the field verification was controlled through the work planning process or QA surveillance process. Many of these steps were explained to the inspectors during a briefing of the SBD process and through discussions during the inspection; however, there was no procedural guidance provided to the inspectors that describes many of these aspects. The licensee's preparation of instructions and procedures that adequately describe all aspects of the SBD process was identified as IFI 70-3103/2010-006-06.

During review of records, the licensee identified that, for some of the pumps used in the facility, it may not have the all of the appropriate data needed to make the pump volumes SBD. The pump volumes were modeled explicitly in NCSEs and NCSAs, which required the pump volumes to be a QL-1 attribute. The licensee's actions to demonstrate that the appropriate data is available to make the pump volumes SBD and meet QL-1 attributes was identified as IFI 70-3103/2010-006-07.

At the time of issuance of this report, the licensee had not completed the nuclear safety releases (NSRs) for all the components that contained SBD attributes required for first cascade online. The completion of NSRs for all components that contain SBD attributes was identified as IFI 70-3103/2010-006-08.

(2) Conclusions

VIO 70-3103/2010-006-03 was identified for failure to perform analyses assuming a ²³⁵U enrichment of 6.0 w/o for systems other than Contingency Dump System traps as required by SAR Section 5.1.1.

URI 70-3103/2010-006-04 was identified regarding licensee's changes to IROFS 14b.

Four IFIs were identified: IFI 70-3103/2010-006-05, involving the licensee's review of the impact of the cold trap insulation on a criticality safety calculation; IFI 70-3103/2010-006-06, involving preparation of instructions and procedures that adequately describe all aspects of the SBD process; IFI 70-3103/2010-006-07, involving actions to demonstrate that the appropriate data is available to make the pump volumes SBD and meet quality level-1 attributes; and IFI 70-3103/2010-006-08, involving completion of NSRs for all components that contain SBD attributes.

c. **Criticality Accident Alarm System (CAAS) (IP 88017)**

(1) Scope and Observations

The inspectors reviewed CAAS detector placement analyses to determine the adequacy of models, assumptions, and calculation results used to demonstrate adequate coverage of the SBM-1001. The inspectors visually inspected detector placement configuration to verify coverage of risk significant operations and observed testing of the detectors. The inspectors reviewed selected aspects of CAAS related documents.

The inspectors reviewed the calculated results for the facility and observed that as required by SAR Section 5.3, Criticality Accident Alarm System, that detectors provided adequate coverage of areas where special nuclear material will be handled, used, or stored in amounts at or above the 10 CFR 70.24 mass limits. The CAAS relied on three detector coverage of each area. If one of the three detectors failed or detected a criticality accident, it only took one of the two remaining detectors to detect a criticality accident to initiate the alarm. The detectors were able to detect a criticality that produced an absorbed dose, in soft tissue, of 0.2 Gray (20 rads) of combined neutron and gamma radiation at an unshielded distance of 2 meters (6.6 feet) from the reacting material within 1 minute.

The CAAS was comprised of both horns and visual alarms. The visual alarms were in areas in which the licensee had concern that high noise levels from equipment could cause operators not to hear the horns. American National Standards Institute (ANSI) and American Nuclear Society (ANS)-8.3 allowed the use of alternate means of alerting personnel in areas with high audio background or that required mandatory hearing protection. Horns and visual alarms were also placed near doors into the SBM-1001 to alert workers not to enter in the when in an alarmed condition.

The inspectors discussed the CAAS system with operators in the control room. The operators were knowledgeable of how the CAAS worked and what actions to take if the CAAS alarmed. The inspectors also observed testing of the CAAS and verified that the test adequately ensure that the system would perform its required safety function.

(2) Conclusions

The CAAS was installed and maintained in accordance with regulatory requirements.

4. Fire Safety (IP 88055)

a. Scope and Observations

The inspectors walked down the SBM-1001 and reviewed the SAR to assess the installation and implementation of active, passive, and administrative fire protection controls and to verify their operational lineup and readiness. The inspectors also reviewed the inspection, testing, and maintenance (ITM) of fire protection systems to verify that they were in accordance with the SAR requirements. The fire protection systems reviewed included standpipes, fire pumps and water distribution systems, fire alarm and detection devices, hydrants, fire extinguishers and fire barriers.

(1) IROFS 36a, Limit Transient Combustible Loading in Uranic Areas

The inspectors reviewed the implementation of IROFS 36a in SBM-1001. IROFS 36a administratively limited transient combustible loading in areas containing uranic material to ensure integrity of material components/containers and limit the quantity of uranic material at risk. The inspectors walked down the SBM-1001 to verify that transient combustible loading was controlled in accordance with IROFS 36a. The inspectors also observed a combustible loading surveillance of Fire Zone 1 in SBM-1001. No issues of significance were identified.

(2) Control of Ignition Sources

The inspectors verified that the licensee had in place a program to control ignition sources during hot work activities. The inspectors noted that the implementing procedure explicitly gave the fire watch stop work authority and required that fire extinguishing equipment be readily available to the fire watch. The inspectors also noted that the procedure incorporated all of the applicable provisions of National Fire Protection Association (NFPA) 51b concerning conditions that must exist before a hot work permit was issued. No issues of significance were identified.

(3) IROFS 35, Fire Rated Barriers, and Non-IROFS Fire Rated Barriers

The inspectors reviewed the implementation of IROFS 35 in the SBM-1001. IROFS 35 provided fire rated barriers (e.g. doors, dampers, walls, and penetration seals) to prevent fires from propagating into areas containing uranic material. The inspectors also reviewed the implementation of non-IROFS fire barriers throughout SBM-1001. The inspectors verified that an inspection program was in place to ensure the integrity of fire doors, fire dampers, and through-penetration seal systems were maintained. The inspectors verified that a surveillance program was in place to functionally test doors and dampers with actuation devices. No issues of significance were identified.

The inspectors walked down IROFS 35 and non-IROFS fire barriers. The inspectors verified that compensatory measures were in place for unsealed penetrations due to construction activities. The inspectors noted that compensatory measures included fire

watches and temporary through-penetration seals. No issues of significance were identified.

(4) Fire Detection System

The inspectors walked down the fire detection system and noted that the system was properly installed and detection devices were not obstructed. The inspectors verified that the fire alarm panel had a dual power supply consisting of normal and backup power. The inspectors also verified that the system was capable of monitoring the operation of the fire pumps, tamper switches, and water flow alarms. No issues of significance were identified.

(5) Manual Firefighting Equipment and Capability

The inspectors verified that portable fire extinguishers were provided per NFPA 10 and access to the fire extinguishers was unobstructed by plant equipment or other work related activities. The inspectors noted that the general condition of fire extinguishers was satisfactory. The inspectors also verified that standpipe systems were installed at their designated locations in accordance with SAR requirements and that pump capability was operable and capable of supplying the water flow and pressure demand required. No safety issues were identified.

The inspectors reviewed the fire pre-plan for the SBM-1001. The inspectors verified that the fire pre-plan contained sufficient information to support the response of the facility's fire brigade and offsite fire department. No issues of significance were identified.

(6) ITM of Fire Protection Systems

The inspectors reviewed the results of the integrated fire protection system tests performed by the licensee. The licensee performed the integrated tests to demonstrate that the standpipes and detection system were capable of performing their intended safety function. The inspectors also reviewed records for the inspection and testing of the fire water storage tanks, hydrostatic tests of the fire suppression system, fire pumps flow test, and fire hydrant flow tests. No issues of significance were identified.

The inspectors verified that the licensee had an ITM program in place to ensure that fire protection equipment remained operable. The inspectors noted that the ITM program for the fire alarm and fire suppression systems included the requirements of NFPA 72, NFPA 10, and NFPA 25. No issues of significance were identified.

(7) IROFS 36f and 36g

The inspectors reviewed the implementation of IROFS 36g. IROFS 36g administratively limits onsite vegetation fire sources to ensure integrity of important targets. The inspectors verified that procedures were in place to ensure that all vegetation within 300 feet of buildings containing uranic materials was maintained clear cut less than 12 inches. The inspectors also reviewed the implementation of IROFS 36f to administratively limit designated routes for bulk fueling vehicles to maintain a safe distance from process areas. No issues of significance were identified.

b. Conclusions

The licensee adequately implemented fire protection requirements specified in the SAR. The inspectors concluded that the licensee implemented an adequate fire protection program which provided reasonable assurance that LES NEF could safely conduct licensed activities.

5. Operator Training (IP 88010)

a. Scope and Observations

The inspectors reviewed the licensee's training program development process and determined that the licensee had written procedures in-place to establish a process that complied with license conditions and supported job performance. The inspectors reviewed implementation of training and certification program for the following groups:

- operators
- logistics
- maintenance
- system engineer
- chemistry
- general employee
- nuclear safety worker
- nuclear criticality safety
- material control and accountability
- instructors
- supervisors

The inspectors verified, through document review and interviews, that the procedures adequately addressed job task analysis, training design, lesson plan development, and delivery of training in the classroom and on-the-job, exam development, task performance evaluations, exam security, feedback and evaluation, and control of training records.

The inspectors reviewed selected training records for the groups listed above including completed qualifications cards, lessons plans, and examinations. The inspectors conducted analysis of written exams and determined that the examinations reviewed adequately tested the operators' knowledge of the subject matter. No safety problems were identified.

The inspectors discussed and observed training delivery with selected staff and determined that the training was adequate. The inspectors observed the following training delivery/evaluation sessions that were in progress:

- Hazardous release response for operations and security staff including donning of Level A HazMat suits and respirators
- General employee/industrial safety training for new-hires
- 10 CFR 70.72, Configuration Change Program training for system engineers
- Task performance evaluation of an operator for a fire protection surveillance test

- On the job training for tails cylinder hookup

The inspectors reviewed safety requirements and IROFS training to determine whether the licensee was in compliance with license conditions. The inspectors found that the licensee provided specific training for IROFS and management measures for each of the affected groups. In particular, the inspectors examined the implementation of training for IROFS 39a, b, c, and d. These IROFS required worker evacuation to limit exposure under the conditions of a seismic event, fire, process gas release, or severe weather. This evaluation consisted of interviews with instructors and management, training document reviews, and interviews of randomly selected workers around the plant site. The inspectors found that workers selected for an interview were fully cognizant of their roles in implementation of these IROFS.

The inspectors interviewed operators and supervisors to verify that they understood facility operations and were aware of the safety controls for their respective systems. The inspectors noted that supervisors and operators interviewed had an adequate knowledge of safety controls and recognition of response to anomalous conditions associated with the equipment.

The inspectors also verified that the licensee had established an adequate refresher-qualification training program and a mechanism for students to provide feedback and course evaluation. In a similar manner, the inspectors found that the licensee had a mechanism in place to update the facility's training program and change examinations through the incorporation of management-approved recommendations coming out of changes to IROFS and other nuclear chemical process safety program elements (e.g., hazard identification and assessment, management of change, incident investigation and audits pertaining to employee training).

b. Conclusions

The inspectors determined that the licensee adequately implemented the training program that ensured the facility could be operated safely using qualified personnel.

6. Radiation Protection (IP 88030)

a. Scope and Observations

During the inspection period, the licensee notified the NRC that they were in possession of two low activity, unsealed, americium-241 (^{241}Am) check sources in violation of Amendment 22 of their license which was approved on January 29, 2010. NRC approved Amendment 22 after the licensee had requested that the reference to unsealed sources be eliminated from their license. Any unsealed sources possessed by the licensee would be in the form of exempt quantity sources only. The licensee failed to recognize that regulations did not specify an exempt quantity for ^{241}Am sources. In response, the licensee submitted a License Amendment Request (LAR-10-01) on February 18, 2010, to address the issue which is currently undergoing NRC review. The inspectors' further review of the licensee's unauthorized possession of unsealed ^{241}Am check sources was identified as URI 70-3103/2010-006-09.

b. Conclusions

One URI was identified regarding the inspectors' further review of the licensee's unauthorized possession of unsealed ²⁴¹Am check sources.

7. **Quality Assurance: Dedication of Fire Protection Components under IROFS 35 (IP 88108)**

a. Scope and Observations

The inspectors reviewed the implementation of the licensee's commercial grade dedication (CGD) program, including compliance with licensing basis documents and NRC and industry standards regarding CGD. The inspection focused on the CGD of IROFS 35 components for the uranium hexafluoride (UF₆) fire protection boundary.

The inspectors reviewed licensing basis documents including SNM-2010, NRC Materials License, LES SAR and SAR Appendix A, QAPD to identify licensing commitments regarding CGD including specific commitments associated with design control, procurement, and control of purchased items and services. The inspectors reviewed the CGD Plans D-2008-053 (shims), D-2008-054 (SBM-1001 doors and frames – three separate packages), D-2009-014 (3-hour fire dampers), D-2009-015 (fusible links), and D-2009-016 (1½-hour fire dampers), as well as other implementing procedures to ensure they adequately met the intent of Section 3, Design Control, of the QAPD, as well as applicable NRC and industry guidance regarding CGD, including Electric Power Research Institute NP-5652 and Generic Letters 89-02 and 91-05.

The inspectors reviewed the IROFS 35 CGD plans identified above in conjunction with applicable procedures and various supporting documents to verify the plans adequately identified the critical characteristics (CCs) necessary to ensure that IROFS 35 components (e.g., shims, dampers, fusible links, and fire doors and frames) were capable of performing their intended IROFS function. The inspectors reviewed the acceptance methods selected by the licensee for verification of CCs. The acceptance methods selected by the licensee were Acceptance Method 1, Special Tests/Inspections and Standard Receipt Practices. The inspectors also reviewed applicable QA audit, surveillance, and CGD survey reports to assess the ability of the licensee to verify the capability of suppliers and sub-suppliers to control and verify CCs through the performance of perform safety-related services, such as testing.

Procedure EG-3-2100-05, Commercial Grade Dedication Process, defined personnel responsibilities and gave specific instructions for the completion of dedication activities as documented on Form EG-3-2100-05-F-2, Commercial Grade Dedication Plan. Form EG-3-2100-05-F-2 contained 11 sections, which were alphabetically labeled and included: (A) identification of the item, service, or component being dedicated; (B) application (how the dedicated item will be used); (C) reason for dedication; (D) seismic qualification requirements, if applicable; (E) technical requirements; (F) failure modes and effects analysis; (G) equivalency evaluation, if necessary; (H) engineering evaluation; (I) sampling plan specifications; (J) selection of CCs and acceptance method; and (K) final approval. Procedure EG-3-2100-05 described detailed personnel actions necessary for completion of each section of CGD plans; however, the procedure

did not provide instructions for the completion of Section K, Final Approval, of CGD plans.

Section K contained the following fields:

- *Results of dedication instructions* (followed by 3 blank lines for QC input)
- *Receipt Inspection Complete and Acceptable* (followed by space to mark “Yes” or “Not Applicable”)
- *Comment* (followed by small blank area)
- *QA or QC concurrence* (blanks for name, signature, and date)

The inspectors identified that although all completed CGD plans reviewed during the inspection were marked “Yes” for *Receipt Inspection Complete and Acceptable*, not all of the plans were accompanied by a receipt inspection plan and report. In the absence of procedural guidance, it was unclear of the intended use of that part of Section K and if QA/QC’s positive response indicated an oversight on QA/QC’s part or an interpretation that *Receipt Inspection Complete and Acceptable* was equivalent to Method 1 verification activities performed by QA/QC.

Also, a lack of instructions for completion of Section K allowed personnel to submit inadequate objective evidence as part of the plans because personnel would complete the plan with only a statement to the effect that “all critical characteristics were verified” in Section K but no data to support it. Finally, not providing instructions for completing Section K allowed for incomplete dedication activities to take place, since no limitations to the content of the comments field of Section K were established. As such, partial dedications of sets of items (i.e., doors and frames) were conducted with only a statement that certain commercial grade items were excluded from the plan because their CCs had not yet been verified. Thus, these plans were completed incorrectly by the licensee.

The failure to include sufficiently detailed instructions for the appropriate completion of safety-related work in Procedure EG-3-2100-05 has been identified as Example 1 of VIO 70-3103/2010-006-12. This is Violation E cited in the enclosed Notice of Violation (Notice). The licensee opened CR 2010-716 and 2010-755 to initiate a revision to Procedure EG-3-2100-05 and to clarify requirements for completing CGD Plans.

(1) Fire Doors and Frames

Dedication Plan Number D-2008-054 identified the actions necessary to dedicate steel doors and frames for use in safety related fire protection applications and the technical basis for the dedication activities. Revision 0 of CGD Plan D-2008-054 was issued for the dedication of Fire Doors 1001-1-260, 1001-1-263, 1001-1-264, 1001-1-131, 1001-3-131, 1001-4-131, 1001-5-131, 1002-1-261, 1002-1-131, 1002-1-140, 1002-2-131, 1002-2-261, and 1002-3-131. The plan was signed as completed three times. Specifically, the plan was first signed as complete on December 22, 2009, with a statement that Doors 1001-4-131, 1001-3-131, and 1002-3-131 were not complete at that time and were not inspected under that CGD plan. Revision 0 of CGD Plan D-2008-054 was later signed on February 19, 2010, to indicate the completion of dedication of Fire Door 1001-4-131 and finally, again on February 22, 2010, for Fire Doors 1001-3-131 and 1002-3-131.

The completion of the same dedication package for fire doors and frames three times instead of initiating revisions to the CGD plan to reflect the appropriate scope of dedication activities performed at each interval has been identified as a failure to establish adequate traceability of dedication activities and to exercise appropriate document control and was identified as Example 1 of VIO 70-3103/2010-006-10. This is Violation C cited in the enclosed Notice.

Dedication Plan Number D-2008-054 identified Method 1 (special tests and inspections) as the method of dedication for the doors and frames and required 100% inspection of the fire doors. The CGD plan also included a failure modes and effects analysis (FMEA). Section F of the Procedure EG-3-2100-05 provided instructions for the completion of FMEAs, which were documented in tabular format with the following columns of information: (1) failure mode/mechanism, (2) effect, and (3) critical characteristic. Procedure EG-3-2100-05 referred the user to Attachments 7 and 8 of the procedure for examples of appropriate CCs for the third column of the FMEA.

CGD Plan Number D-2008-054 identified incorrect fit, improper installation, and inadequate performance as failure modes for the doors. The effects of these failure modes were identified as failure to close completely, failure to close/seal, and failure to remain closed, respectively. For each failure mode and effect, the analysis identified a CC. The CCs identified in the FMEA for the fire doors and frames were fire barrier and operability. These CCs were not those identified in the Method 1 CC verification table of the CGD plan and were not consistent with the requirements specified in the procedure for completion of the FMEA. The failure to prepare the FMEA in a manner consistent with the specifications identified in Attachment 2, Instructions for Completing the CGD Plan Form, of Procedure EG-3-2100-05 has been identified as Example 2 of VIO 70-3103/2010-006-12. The licensee initiated CR 2010-760 in response to this issue.

The Method 1 verification table in Section J of the CGD plan identified five CCs for the doors and frames, which included (1) door and frame identification, (2) Underwriters Laboratory (UL)-B label, (3) dimensions, (4) material, and (5) fire door testing. The verification of door and frame identification and UL labeling was to be performed by visual inspection, the dimensions were to be verified via measurement, and the material was to be verified by use of a magnet. Fire door operability testing was to be performed in accordance with NFPA Standard 80-1999 for fire doors and windows.

The Method 1 verification table required "doors and frames height, width, and doors only thickness" to be verified in accordance with a table of values included in the dedication plan. However, the table of values only identified one value for height and one value for width, so there was inadequate information available to measure both the doors and the frames, and it is unclear to which item the dimensions applied to, the doors or the frames. For instance, the dedication plan identified verification criteria for door/frame size for Type F doors as 3 feet x 7 feet with a thickness of 1.75 inches; purchase orders (Pos) for Type F doors sized at 3 feet x 7 feet identified frame size of 3 feet-3.5 inches by 7 feet-3.5 inches.

Also, there were no tools specified for taking the measurements and no tolerances identified for acceptability of the measurements. Attachment 2, Instructions for Completing the CGD Plan Form, of Procedure EG-3-2100-05, identified controls for

developing CGD plans, including acceptance criteria and tolerances. The failure to include adequate acceptance criteria and verification instructions for verification of fire door and frame dimensions has been identified as Example 5.a. of VIO 70-3103/2010-006-11. This is Violation D cited in the enclosed Notice. The licensee initiated CR 2010-1054 in response to this issue.

The discussion in CR 2010-1054 states that the measurement of the door frames as identified in CGD Plan 2008-054 at the time of receipt inspection would have had little significance following installation because of the effect of the grout on the door frame configuration and dimensions. NFPA 80 required verification/validation of the "gap" between the door and the frames following installation. There were minor discrepancies in the gaps, as addressed under Nonconformance Reports (NCRs) 2010-0569 and 2010-0082, which were dispositioned "use-as-is" based on actual measurement taken following installation in the field.

In their resolution of CR 2010-1054, the licensee stated that should CGD Plan 2008-054 be used for the dedication of any other doors, it would be revised to remove the door frame measurement requirements. This disposition was satisfactory given that the functionality of the doors was verified through inspections of the installed doors and frames. These inspections verified the gap size between the doors and frames. Should a door frame have been of an unacceptable size, it was highly probable that the gap sizes found during the inspections would have been unacceptable and the door would not have been deemed suitable for use. The commitment to revise the CGD Plan if it was used again will resolve the inconsistency between the CCs identified for Method 1 testing and the acceptance data provided.

The engineering evaluation and Method 1 testing criteria table included in the CGD plan both required operational fire door testing. The engineering evaluation required that operational fire door testing per the door specification will be performed and documented. This would be performed to NFPA-80. NFPA 80 states, for operational testing, that "after the installation of a fire door, shutter, or fire window is completed, an operational test shall be conducted. This test shall be adequate to determine that the system has been installed and functions as intended." The QC inspector who signed off on the dedication plan completion indicated that his interpretation of operability testing was that the door opened and closed freely without binding, that the door latched shut, etc.

The QC inspector's operability testing did not include any verification of gap size around the fire door boundaries, which had to be limited in order to assure that the door would meet its fire rating. Hence, the testing was not adequate to determine that the doors and frames had been installed and functioned properly. Furthermore, there was no documented instruction or procedure for performance of the operability testing, as required by Section 5.2.1(f) of Procedure EG-3-2100-05. The failure to establish adequate acceptance criteria and verification instructions for the testing of fire door and frame operability has been identified as Example 5.b. of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-760 in response to this issue.

Dedication Plan Number D-2008-054, Revision 0, for Fire Doors 1001-1-131, 1001-5-131, 1002-1-131, 1002-2-131, 1002-1-140, 1001-1-263, 1001-1-264, 1001-1-260, 1002-1-261, and 1002-2-261 was completed on December 22, 2009, with a statement that

Doors 1001-4-131, 1001-3-131, and 1002-3-131 were not complete at that time and were not inspected under that CGD plan. The plan did not include any documented evidence to demonstrate that the requisite Method 1 testing activities were performed to verify the CCs. Specifically, there was no documented evidence of the visual inspection of the door and frame identification and UL labeling, the measurement of door and frame dimensions, material testing with magnets, or operability testing of the doors.

Dedication Plan Number D-2008-054, Revision 0, for Fire Door 1001-4-131 was signed as completed on February 19, 2010, with a statement that the door was inspected and was found to comply with all attributes identified in the CGD plan. The plan did not include any documented evidence to demonstrate that the testing activities were performed to verify the CCs. Specifically, there was no documented evidence of the visual inspection of the door and frame identification and UL labeling, the measurement of door and frame dimensions, material testing with magnets, or operability testing of the doors.

Dedication Plan Number D-2008-054, Revision 0, for Fire Doors 1001-3-131 and 1002-3-131, was signed as completed on February 22, 2010, with a statement that the doors operated and performed as required. The plan included an attachment that described a visual inspection of the door and frame type and description, location, and comments related to visual observation of gaps. The visual inspection did not include verification of UL labeling, and the dedication package did not contain any objective evidence documenting the measurement of dimensions, material testing with magnets, or operability testing of the doors.

The failure of the licensee to include sufficient documented evidence of Method 1 testing completed in support of CGD of fire doors and frames has been identified as part of Example 1 of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-773 to address the inadequacy of objective evidence in dedication packages.

The inspectors reviewed CRs and nonconformance reports related to the fire doors and frames. CR 2010-0097 described that maintenance had identified five fire doors that failed to close and latch properly. The CR was dispositioned with a replacement of the door closures and reinspection to verify unassisted closure of the doors from a full open position and positive latch.

CR 2010-0097 identified several fire doors that had gaps in excess of that allowed by NFPA 80 specifications where the doors met the frame and floor. The CR was closed with a disposition of "use as is," as supported by a justification from engineering. NCR 2010-0685 identified gaps in the fire doors that did not meet code requirements as determined during final inspections of the doors. Consistent with the disposition of CR 2010-0082, the NCR was dispositioned as "use as is" for the minor gaps with a justification from engineering. The NCR also included a disposition of "repair" to allow for caulking around fire doors 101-3-131 and 1002-3-131 due to surface imperfections in the concrete around the doors.

The CR and NCR identified UF₆ boundary openings that did not meet the requirements of NFPA 80 code requirements for gap deviations between doors and frames, doors and thresholds, and double doors. Limitations of gap size were critical to the safety function of the doors in order to limit air flow through the door and control propagation of a fire

and release of hazardous material. As such, the gap sizes should have been identified as CCs in the CGD plan for the fire door and frames.

Step 5.4.3 of Procedure EG-3-2100-05 required that each revision to the CGD plan be a stand-alone package with the exception of typographical errors and minor changes. The failure of the licensee to ensure that CGD Plan D-2008-054 was a stand-alone document by identifying all the appropriate CCs for the fire doors in the CGD plan or revising the CGD plan to include additional criteria upon identification of missing CCs has been identified as Example 2.a. of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-765 as a result of this issue.

The inspectors reviewed a sample of procurement documents related to the fire doors and frames to verify POs issued to vendors for commercial grade items contained the requirements identified in Procedure EG-3-2100-05. Purchase Requisition 4002649 was issued for the purchase of overhead coil doors 1001-3-131 and 1002-3-131 on April 7, 2010. The PO identified the doors as QL-1, included a requirement for a standard receipt inspection, and specified the size, UL label, door type, and associated hardware to be procured. Change Number 1 to the requisition was issued on May 28, 2009 with an explanation that the change was being issued to add the receipt inspection plan (RIP) to the 'purchase package attachments' and to advise QC that placing a hold on the doors was required upon receipt.

Purchase Requisition 4001558 was issued for the purchase of 17 fire doors and frames on January 5, 2009. Change Numbers 1 and 2 to the requisition were issued to revise purchase quantities and change the format. Doors and frames with numbers 1001-1-260, 1001-1-263, 1001-2-263, 1002-1-261, and 1002-2-261 were purchased under the requisition and were identified as Quality Level 3 procurements, requiring no source or receipt inspections. PO 302469 adequately incorporated the specifications identified in Purchase Requisition 4001558 for the fire doors and frames and identified quality assurance and procurement requirements consistent with the requisition. Purchase Change Order 1 was issued to PO 302469 to add hinge shims to the purchase per Purchase Requisition 4003368.

Purchase Requisition 4003368, dated July 2, 2009, included procurement specifications for three line items: (1) 4-1/2 inch hinge shims of 0.028 inch thickness, (2) 4-1/2 inch hinge shims of 0.065 inch thickness, and (3) Type 2F door frame for Fire Door 1001-1-263. The shims and door frame were identified as Quality Level 3 procurements, requiring no source or receipt inspections. Change Order #1 was issued to PO 302469 to add additional line items to the PO. The Change Order referred to Purchase Requisition 4003368 and added the 4-1/2 inch hinge shims, line items (1) and (2), to the PO. However, the Change Order did not add the frame for Fire Door 1001-1-263, which was part of Purchase Requisition 4003368. Although PO 302469, Change Order #1 did not add the fire door frame to the PO, the frame was purchased under the original portion of PO 302469, which referred to Purchase Requisition 4001558.

Purchase Requisition 4001560 was issued for the purchase of nine fire doors and frames on January 5, 2009. The requisition underwent revision to requisition format in Change Number 1 to break the door frames and doors into separate line items and allow frames to be shipped separately from doors. Door Numbers 1001-1-157, 1001-2-157, 1001-3-255, 1002-5-124, 1002-1-252, 101-1-173, 1002-2-154, 1001-1-256, and 1001-1-

356 were purchased under the requisition and were identified as Quality Level 3 procurements, requiring no source or receipt inspections. PO 302453 and Purchase Change Order 1 adequately incorporated the specifications identified in the purchase requisition and identified quality assurance and procurement requirements consistent with the requisition.

(2) Fire Dampers

Dedication Plan Numbers D-2009-014 and D-2009-016 identified the actions necessary to dedicate 3-hour fire rated dampers and 1½-hour rated fire dampers, respectively, for use in safety related fire protection applications and the technical basis for the dedication activities. The CGD plans identified Method 1 (special tests and inspections) as the method of dedication for the dampers and required 100% inspection of the dampers.

The CGD plans also included an FMEA. The plans identified incorrect fit, improper installation, and inadequate performance as failure modes for the dampers. The effects of these failure modes were identified as failure to close completely, failure to close/seal, and failure to remain closed, respectively. For each failure mode and effect, the analysis identified a CC. The CCs identified in the FMEA for the dampers were “fire barrier” and “operability.”

These CCs were not those identified in the Method 1 CC verification table of the CGD plan and were not consistent with the requirements specified in the CGD Procedure for completion of the FMEA. The failure to prepare the FMEA in a manner consistent with the specifications identified in Attachment 2, Instructions for Completing the CGD Plan Form, of Procedure EG-3-2100-05 has been identified as part of Example 2 of VIO 70-3103/2010-006-12. The licensee initiated CR 2010-760 in response to this issue.

The CGD plans identified five CCs for the dampers, which included (1) fire damper identification, (2) UL label, (3) material, (4) dimensions, and (5) spring. The verification of damper identification and UL labeling was to be performed by visual inspection. The material was to be verified by use of a magnet in addition to visual inspection to confirm that the damper surfaces were free of rust and corrosion and the dimensions were to be verified via measurement. The fire damper spring was to be verified via confirmation of satisfactory damper operation and closure.

Revision 1 of CGD Plan D-2009-014 for 3-hour fire dampers was signed as completed on December 22, 2009, with a statement that all CCs were found to be acceptable. The CGD plan included a table of dampers that were dedicated under the plan; however, the inspectors identified that the completed dedication package failed to provide sufficient objective evidence (i.e., visual inspection records, dimension measurement records, etc) to demonstrate that the CCs of each damper had been verified. The failure of the licensee to include sufficient documented evidence of Method 1 testing completed in support of CGD of fire dampers has been identified as part of Example 1 of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-773 to address the inadequacy of objective evidence in dedication packages.

Furthermore, the licensee self-identified that Revision 1 of CGD Plan D-2009-014 was created on January 9, 2010, but was signed as completed on December 22, 2009. The licensee issued CR 2010-906 to document this discrepancy. The failure of the licensee

to exercise appropriate document control with respect to signing and dating CGD packages has been identified as part of Example 6 of VIO 70-3103/2010-006-10.

Revision 0 of CGD Plan D-2009-016 for 1½-hour fire dampers was first signed as completed on December 22, 2009, with a statement that all critical characteristics were found to be acceptable. The inspectors identified that the completed dedication package failed to provide sufficient objective evidence (i.e., visual inspection records, dimension measurement records, etc) to demonstrate that the CCs had been verified. The failure of the licensee to include sufficient documented evidence of Method 1 testing completed in support of CGD of fire dampers has been identified as part of Example 1 of Violation 70-3103/2010-006-11. The licensee initiated CR 2010-773 to address the inadequacy of objective evidence in dedication packages.

An additional copy of Revision 0 of CGD Plan D-2009-016 for 1½-hour fire dampers was subsequently signed as completed on March 1, 2010. The dedication plan was identical to the previous copy with the exception of the content of Section K, Final Approval, of the plan, which included a statement to see an attached spreadsheet for results of the CGD plan inspection. The attached spreadsheet, dated January 22, 2010, identified each of the five CCs from the CGD plan, the acceptance criteria, test or inspection method, and results of the verification activity. The spreadsheet included a column for accept or reject and identified that all the characteristics in the plan were acceptable.

The package also included a receipt inspection plan report dated March 1, 2010, that documented the receipt of the damper, the applicability of CGD Plan D-2009-016 for verification of CCs, and the measuring tool used for measurements performed as part of the dedication. The failure of the licensee to exercise appropriate document control by completing the same dedication package twice without documentation that the original dedication package had been superseded has been identified as Example 2 of VIO 70-3103/2010-006-10. The licensee initiated CR 2010-1050 to address the identification and revision control of CGD plans.

Section H, Engineering Evaluation, of Revision 1 of CGD Plan D-2009-014 for 3-hour fire dampers and Revision 0 of CGD Plan D-2009-016 for 1½ -hour fire dampers identified the CCs of the fire dampers and the engineering basis for their selection. The engineering evaluation of the plans identified strength as a CC. The plans states, "the safety function of the SBM-1001 fire dampers is to act as fire barriers. The critical characteristics are seen as proper gauge of the frame and blade steel to resist warping during a fire." The plans specified two characteristics as important to the damper function. These two characteristics were (1) "the metal used in the damper assembly" and (2) "the gauge of the frame and that of the blades."

The Method 1 testing included verification that the damper material was carbon steel but the testing did not include any verification of frame and blade gauge. The engineering evaluation credited the damper's UL certification for verification of the gauge of the damper frames and blades; however, UL only performs a pass/fail test of the damper's ability to meet its fire rating. The failure of the licensee to properly verify CCs identified in the engineering evaluation was identified as Example 3 of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-762 to address this issue.

In response to CR 2010-762, the licensee revised Section H of CGD Plans D-2009-014 and D-2009-016 to identify that the application of the UL label certified that the fire ratings, 3-hour and 1½-hour, passed fire endurance, hose stream, and other UL tests. The evaluations explained that passing these tests, as demonstrated by the application of the UL certification sticker, was the CC of the dampers. The discussion of the gauge of the damper blades and frames was removed from the CGD plans. This was an acceptable resolution of the issue because (1) the strength of the damper frame and blades was demonstrated through the fire endurance testing and (2) the plans, as revised, presented a consistent link between the engineering evaluation and the CCs verified by Method 1 testing.

Subsequent to the onsite portion of the inspection, the licensee initiated revisions to CGD Plans D-2009-014 and D-2009-016. Revision 2 to CGD Plan D-2009-014 and Revision 1 to CGD Plan D-2009-016 performed the following: (1) the FMEA was revised to change the CCs to “dimensions” and “spring” instead of “fire barrier” and “operability,” (2) the engineering evaluations were revised to remove the discussion of damper frame and blade gauge and revised the discussion of CCs, and (3) objective evidence of CC verification was added to the packages. Revision 2 to CGD Plan D-2009-014 and Revision 1 to CGD Plan D-2009-016 were both signed as complete on March 4, 2010.

The inspectors reviewed a sample of procurement documents related to the fire dampers to verify that POs issued to vendors for commercial grade items contained the requirements identified in Procedure EG-3-2100-05. Purchase Requisition 4004740 was issued for the purchase of one 8 inch x 8 inch Ruskin Model DFD35SS (1½-hour rated) fire damper on November 10, 2009. The PO identified the damper as a commercial grade item, included a requirement for a standard receipt inspection, and specified that an approved supplier and source inspection were not required.

Change Number 1 to the requisition was issued on November 18, 2009, with an explanation that the change was being issued to insert specific requirements that must be met for the damper and to add the Supplier Engineering Document Requirements Form to the package to identify the documentation that must be supplied by the damper vendor. Change Number 2 to the requisition was issued on January 5, 2010, to revise the receipt inspection form to reference the appropriate CGD plan (D-2009-016). PO 302967 and Purchase Change Orders 1 and 2 adequately incorporated the specifications identified in the purchase requisition and identified quality assurance and procurement requirements consistent with the requisition.

The inspectors reviewed NCR 2010-0043, which was issued as a result of IROFS 35 fire dampers being installed in the absence of a QL-1 work plan requiring QC inspections. The NCR identified that CGD Plans D-2009-014 and D-2009-016 for fire dampers provided acceptance criteria for the dampers but not for the installation of the dampers and, as a result, additional inspection attributes were required to ensure that the dampers met code installation requirements.

Because the installation attributes were necessary to assure that the dampers were capable of performing their safety function, the attributes should have been included in the CGD plans as CCs. Step 5.4.3 of Procedure EG-3-2100-05 required that each revision to the CGD plan be a stand-alone package with the exception of typographical errors and minor changes. The failure of the licensee to ensure that CGD Plans D-2009-

014 and D-2009-016 were stand-alone documents by identifying all the appropriate CCs for the fire dampers in the CGD plans or revising the CGD plans to include additional criteria upon identification of missing CCs was identified as an Example of 2.b. of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-760 in response to this issue.

(3) Fusible Links

Dedication Plan Number D-2009-015 identified the actions necessary to dedicate fusible links for use in safety related fire protection applications and the technical basis for the dedication activities. The CGD plan identified Method 1 (special tests and inspections) as the method of dedication for the fusible links. The dedication plan required 100% inspection for identification and dimensions of the fusible links and destructive testing of one link from each lot received.

The CGD plan also included an FMEA. The analysis identified incorrect temperature, improper strength, and inadequate performance as failure modes for the fusible links. The effects of these failure modes were identified as failure to open, open early, and failure to open at any temperature, respectively. For each failure mode and effect, the analysis identified a CC. The CCs identified in the FMEA for the fusible links were fusing temperature and strength.

The CGD plan identified four CCs for the fusible links which included (1) identification, (2) dimensions, (3) tension test, and (4) fusing temperature test. The verification of identification was to be performed by visual inspection, the dimensions were to be verified via measurement, and the tension test and fusing temperature test was to be verified by tension test and fusing temperature test, respectively. The inspectors reviewed all the revisions of the CGD plan that were signed as complete and founded inconsistencies among revisions. A detailed evaluation of the inconsistencies is described below.

Dedication Plan Number D-2009-015, Revision 0, was approved on November 20, 2009, and signed as completed on December 22, 2009. During discussions with licensee staff, the inspectors found that no dedication activities were performed under Revision 0 of the plan. The licensee never procured the fusible links from the supplier identified in the plan. However, the plan was signed as completed with a statement in Section K, Final Approval, indicating that "all critical characteristics were found to be acceptable." The failure of LES to adequately complete dedication activities prior to signing Section K, Final Approval, of the CGD plan has been identified as part of Example 3 of VIO 70-3103/2010-006-10.

Dedication Plan Number D-2009-015, Revision 1, was approved on January 9, 2010, and was signed as completed on January 28, 2010, with a statement indicating that "all critical characteristics were checked and were found to comply with the acceptance criteria." However, the dedication activities described in this revision were not completed due to the failure of fusible links to meet the tolerances specified for the temperature testing.

A NCR 2010-0080, was opened on January 11, 2010, to document that D-2009-015, Revision 1, specified very stringent tolerances for temperature testing and presented a challenge to the acceptance of some of the fusible links. The NCR evaluation states that

the manufacturer of the fusible links was contacted by the licensee regarding the tolerances used for the temperature testing and that the manufacturer recommended the use of UL tolerances.

In Revision 2, CGD plan Number D-2009-015 specified the use of UL tolerances for the fusible links temperature testing. The plan was approved for use on January 13, 2010, and was attached to the NCR 2010-0080. NCR 2010-0080 and Revision 2 of the CGD plan were signed as completed on January 14, 2010. The plan was closed with a statement indicating that "all critical characteristics were checked and were found to comply with the acceptance criteria."

Although Revision 1 and Revision 2 to CGD Plan D-2009-015 were both signed as completed in January, dedication of fusible links was not completed until Revision 3 of the CGD Plan was issued and completed. Thus, the signatures in Section K of CGD Plan D-2009-015, Revisions 1 and 2, were not indicative of the successful completion of dedication activities. Furthermore, Revision 2 to the CGD Plan was signed as complete two weeks prior to the signature on Revision 1. The failure of the licensee to adequately complete dedication activities prior to signing Section K, Final Approval, of the CGD plan has been identified as part of Example 3 of VIO 70-3103/2010-006-10.

The inspectors were supplied with two different copies of Dedication Plan Number D-2009-015, Revision 3. The copies were both approved on February 3, 2010; however, one of the copies was signed as complete in December 22, 2009, and the other copy was signed as complete on March 4, 2010. The copies were almost identical except for the following: (1) the final approval was documented and signed differently for the different copies, and (2) the copy that was signed on March 4, 2010, did not identify the method used for dedication (i.e., the Method 1 indicator box was not selected) and included additional testing and supplier documentation. The failure of LES to exercise appropriate document control by completing the same revision of a dedication package twice without documentation that the original dedication package had been superseded has been identified as Example 4 of VIO 70-3103/2010-006-10.

The licensee identified that Revision 3 of D-2009-015 was created on February 3, 2010, but had a completion signature in Section K that was dated December 22, 2009. The licensee initiated CR 2010-906 to address this issue. The failure of the licensee to exercise appropriate document control with respect to signing and dating CGD packages has been identified as part of Example 6 of VIO 70-3103/2010-006-10.

The inspectors found that none of the reviewed plan revisions included complete documented evidence to demonstrate that verification and testing activities of the fusible links were performed to verify all CCs. Specifically, no documented evidence of visual inspections and measurements of the fusible link were included in the completed plans. The failure of the licensee to include sufficient documented evidence of Method 1 testing completed in support of CGD of fusible links has been identified as part of Example 1 of VIO 70-3103/2010-006-11.

The inspectors reviewed the tension and temperature results attached to one of the copies of D-2009-015, Revision 3. The testing was performed by a vendor on-site that was included on the licensee's approved supplier list (ASL); however, destructive testing was not included in the scope of activities for which the vendor was approved. The

inspectors reviewed the qualifications for the organization and testing personnel and found that neither the organization nor the tester was qualified to perform the destructive temperature and tension testing for the fusible links.

The inspectors reviewed QA Audit 2008-3020-EXT-AUD that evaluated the QA program of the vendor for compliance with the American Society of Mechanical Engineers (ASME) NQA-1 1994 and American Society for Nondestructive Testing (ASNT) document, Recommended Practice No. SNT-TC-1A: Personnel Qualification and Certification in Nondestructive Testing, SNT-TC-1A. The audit report identified that the audit was limited to activities performed by the supplier at their corporate offices, and the report explicitly states that satellite locations of the organization, including the one onsite at the licensee facility, were outside the scope of the audit.

In addition, the inspectors reviewed QA Audit 2008-3095-EXT-AUD that was conducted at the satellite location that performed the tests and found that this audit only qualified this location to perform soil and concrete testing. The failure of the licensee to use qualified suppliers for destructive testing related to dedication activities has been identified as Example 4.a. of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-770 to address the qualification of the organization performing the testing.

In reviewing the qualification records for the tester who performed the tension and temperature tests of the fusible links, the inspectors identified that the tester was only qualified to perform civil testing activities. The failure of the licensee to ensure that the personnel performing testing activities were appropriately qualified to do so has been identified as Example 4.b. of VIO 70-3103/2010-006-11.

The licensee provided Surveillance Report 2010-S-03-068 to the inspectors as documented evidence of the testing activities performed in support of dedication of the fusible links. This surveillance was performed to document that the fusible links passed the tension and fusing temperature tests that were required as part of CGD Plan D-2009-015.

(4) Shims

Dedication Plan Number D-2008-053 identified the actions necessary to dedicate shims for use in safety related fire protection applications and the technical basis for the dedication activities. The CGD plan identified Method 1 (special tests and inspections) as the method of dedication for the shims. The dedication plan required that at least ten shims be inspected for every box of 50 dedicated. The plan identified that a failure of any of the 10 items inspected would require a 100% inspection.

The CGD plan included a FMEA. The plan identified a failure to support the hinge as the only failure mode for the shims. The effect of this failure mode was identified as deformation. The CC identified in the FMEA for the shims was the base material. The table identified that the base material of the shims needed to be carbon steel in order to prevent failure.

The CGD plan identified three CCs for the shims which included (1) part number for each of the models, (2) dimensions, and (3) base material. The verification of identification was to be performed by visual inspection, the dimensions were to be

verified via direct measurement, and the base material was to be verified by performing a test with a magnet to verify that the material was carbon steel.

The inspectors were supplied with three different copies of the Dedication Plan Number D-2008-053, Revision 0. The first copy that was provided to the inspectors had Section K, Final Approval, blank. The licensee initiated CR 2010-772 to document that a signed copy of the CGD plan was not readily retrievable during the inspection. Subsequent to the onsite portion of the inspection, the licensee provided the inspectors two more copies of Dedication Plan Number D-2008-053. The copies were almost identical except for the dates of final approval and the fact that one of the copies had an additional form attached.

The two subsequent copies of the CGD plan included signatures in Section K, dated December 23, 2008, and April 24, 2009, respectively, indicating final approval of the plan. In both cases, Section K included the notation that all critical characteristics were found to be acceptable with the criteria stated in the CGD plan. The failure of the licensee to exercise appropriate document control by completing the same dedication package more than once without documentation that the original dedication package had been superseded has been identified as an Example 5 of VIO 70-3103/2010-006-10.

The inspectors reviewed all the copies of the D-2008-053 and found that the CGD plan that had been approved for use on November 19, 2008, but was never signed as complete included a partially completed copy of the Form EG-3-2100-05-F-3, CGDP Comment Incorporation Validation. This form was used in prior revisions of the CGD process to document the resolution of comments to the CGD Plan and concurrence that all the comments were satisfactorily resolved.

However, the LES QA Director or designee signature line of the form was signed on November 19, 2008, but the form was not complete as it lacked the signature of the Procurement Engineering Supervisor. During conversations with inspectors, licensee staff indicated that the form had been used inadequately as a method to document that a review of the CGD Plan had been completed by QC and that the plan was ready for the QC Manager's review and approval. The licensee initiated CR 2010-708 to document this issue.

The inspectors found that neither copy of the CGD plan that was signed as complete included sufficient documented evidence to demonstrate that verification and testing activities of the shims were performed to verify all CCs. Specifically, no documented evidence of visual inspections and measurements of the shims were included in the completed plans. The failure of the licensee to include sufficient documented evidence of Method 1 testing completed in support of dedication of the shims has been identified as part of Example 1 of VIO 70-3103/2010-006-11. The licensee initiated CR 2010-773 to address the inadequacy of objective evidence in the dedication packages.

b. Conclusions

VIO 70-3103/2010-006-10, with multiple examples was identified for failure to exercise adequate identification and revision control of CGD plans in accordance with Section 6, Document Control, of the licensee's QADP.

VIO 70-3103/2010-006-11, with multiple examples was identified for failure to exercise adequate activities for CGD activities in accordance with Section 7, Control of Purchased Material, Equipment, and Services, of the licensee's QAPD.

VIO 70-3103/2010-006-12, with multiple examples was identified for failure to exercise adequate activities for CGD plans in accordance with Section 5, Instructions, Procedures, and Drawings, of the licensee's QAPD.

8. Follow-up of Previously Identified Issues

- a. (Closed) IFI 70-3103/2010-005-001: The inspectors verified that the proper rigging equipment was available and that the operators had been trained on the use of the equipment prior to the licensee receiving full cylinders. This item is closed.
- b. (Closed) IFI 70-3103/2010-005-002: The inspectors review completed testing and verified that communication of Gaseous Effluent Ventilation System (GEVS) system operational status and indicators was available in the control room. This item is closed.

9. Exit Meeting

The ORR inspection scope and results were summarized on February 4, 11, 25, March 18, and April 1, 2010, with those persons indicated in the Attachment. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes was not included in this report. The licensee acknowledged the observations and findings during the exit meetings noted above.

1. **PARTIAL LIST OF PERSONS CONTACTED**

Licensee Personnel:

M. Boden, Director, Process and Support Systems
S. Cowne, Deputy Director, Operations
D. Dotson, Licensing Manager
T. Knowles, Training Manager
G. Laughlin, Director, Commissioning and Acceptance
C. Markert, Operations Manager
P. McCasland, Licensing Engineer
W. Padgett, Licensing Engineer
D. Poirier, Vice President, Construction
J. Reed, Vice President, Operations
B. Robinson, Vice President, Engineering
G. Sanford, Quality and Regulatory Affairs Manager
G. Sergent, Quality Assurance Manager
G. Smith, LES Chief Operating Officer and Chief Nuclear Officer
A. Sorrell, Plant Support Director
N. Wetherell, Technical Services Director
J. Wisniewski, Procurement Director

2. **Inspection Procedures Used**

IP 88010 Operator Training
IP 88015 Nuclear Criticality Safety Program
IP 88016 Nuclear Criticality Safety Evaluations and Analyses
IP 88017 Criticality Alarm System
IP 88020 Operational Safety
IP 88030 Radiation Protection
IP 88055 Fire Safety
IP 88108 Quality Assurance: Control of Materials, Equipment, and Services

3. **List of Items Opened, Closed, and Discussed**

| <u>Item Number</u> | <u>Status and Description</u> |
|-------------------------|--|
| URI 70-3103/2010-006-01 | Open: Resolution of Safety Equipment not Included in Boundary Documents Necessary for IROFS C6 and 38 to Perform Their Intended Safety Functions (Section 2) |
| VIO 70-3103/2010-006-02 | Open: Failure to request NRC Approval Prior to Implementing Changes to the SAR that Changed the Approved Margin of Subcriticality for Safety (Section 3.a) |

| | |
|-------------------------|---|
| VIO 70-3103/2010-006-03 | Open: Failed to Perform Analyses Assuming a ²³⁵ U Enrichment of 6.0 % for Systems Other than Contingency Dump System traps as Required by SAR Section 5.1.1 (Section 3.b(1)(a)) |
| URI 70-3103/2010-006-04 | Open: Review Licensee's Changes to IROFS 14b (Section 3.b(1)(b)) |
| IFI 70-3103/2010-006-05 | Open: Review Licensee Assessment of the Impact of the Cold Trap Insulation and Revision to the ETC4086371 (Section 3.b(1)(c)) |
| IFI 70-3103/2010-006-06 | Open: Review Licensee's Preparation of Instructions and Procedures that adequately Describe all Aspects of the SBD Process (Section 3.b(1)(c)) |
| IFI 70-3103/2010-006-07 | Open: Review Licensee's Actions to Demonstrate that the Appropriate Data is Available to Make the Pump Volumes SBD and Meet QL-1 Attributes (Section 3.b(1)(c)) |
| IFI 70-3103/2010-006-08 | Open: Review Completion of NSRs for All Components that Contain SBD Attributes (Section 3.b(1)(c)) |
| URI 70-3103/2010-006-09 | Open: Further Review of the Licensee's Unauthorized Possession of the Unsealed ²⁴¹ Am Check Sources (Section 6). |
| VIO 70-3103/2010-006-10 | Open: Multiple Failures to Exercise Adequate Identification and Revision Control of CGD Plans in Accordance with Section 6, Document Control, of the licensee's QAPD. This is VIO C in the enclosed Notice of Violation (Notice). (Sections 7.a(1), 7.a(2), 7.a(3), 7.a(4)) |
| VIO 70-3103/2010-006-11 | Open: Multiple Examples of Failure to Comply with Section 7, Control of Purchased Material, Equipment, and Services, of the Licensee's QAPD. This is VIO D in the enclosed Notice. (Sections 7.a(1), 7.a(2), 7.a(3)) |
| VIO 70-3103/2010-006-12 | Open: Multiple Examples of Failure to Comply with Section 5, Instructions, Procedures, and Drawings, of the Licensee's QAPD. This is VIO E in the enclosed Notice. (Section 7.a, 7.a(1), 7.a(2)) |

| | |
|--------------------------|---|
| IFI 70-3103/2010-005-001 | Closed: Review to Verify that the Proper Rigging Equipment is Available and that Operators were Properly Trained on the Use of the Equipment Prior to the Licensee Receiving Full Cylinders (Section 8) |
| IFI 70-3103/2010-005-002 | Closed: Review of Completed Testing to Demonstrate Communication of GEVS System Operational Status and Indicators in the Control Room (Section 8) |

4. **List of Acronyms Used**

| | |
|-------------------|---|
| ADAMS | Agency-Wide Document Access and Management System |
| ANSI | American Nuclear Standards Institute |
| ANI | American Nuclear Institute |
| ASL | Approved Supplier List |
| ASME | American Society of Mechanical Engineers |
| ASNT | American Society for Nondestructive Testing |
| ²⁴¹ Am | Americium-241 |
| CAAS | Criticality Accident Alarm System |
| CAB | Centrifuge Assembly Building |
| CC | Critical Characteristic |
| CFR | Code of Federal Regulations |
| CGD | Commercial Grade Dedication |
| cm | Centimeter |
| CR | Condition Report |
| CSA | Cascade Supply Agreement |
| DCI | Division of Construction Inspection |
| DFFI | Division of Fuel Facility Inspection |
| EP | Emergency Plan |
| FMEA | Failure Modes and Effects Analysis |
| GEVS | Gaseous Effluent Ventilation System |
| IFI | Inspector Follow-Up Item |
| IP | Inspection Procedure |
| IROFS | Item Relied on for Safety |
| ISA | Integrated Safety Analysis |
| ITM | Inspection, Test, and Maintenance |
| LAR | License Amendment Request |
| LES | Louisiana Energy Services, L.L.C. |
| NCR | Nonconformance Report |
| NCS | Nuclear Criticality Safety |
| NCSA | Nuclear Criticality Safety Analysis |
| NCSE | Nuclear Criticality Safety Evaluation |
| NEF | National Enrichment Facility |
| NFPA | National Fire Protection Association |
| NMSS | Nuclear Materials Safety and Safeguard |
| No. | Number |
| NRC | Nuclear Regulatory Commission |
| NSR | Nuclear Safety Release |

| | |
|------------------|---------------------------------------|
| ORR | Operational Readiness Review |
| PCS | Plant Control System |
| QA | Quality Assurance |
| QAPD | Quality Assurance Program Description |
| QC | Quality Control |
| QL | Quality Level |
| RII | Region II |
| PO | Purchase Order |
| RADS | Radiation Absorbed Dose |
| SAR | Safety Analysis Report |
| SBD | Safe-By-Design |
| SBM | Separation Building Module |
| SNM | Special Nuclear Material |
| ²³⁵ U | Uranium-235 |
| UF ₆ | Uranium Hexafluoride |
| UL | Underwriters Laboratory |
| URI | Unresolved Item |
| VIO | Violation |

5. Documents Reviewed

LES NEF Procedures

AD-3-1000-07, LES Incident Reporting and Response, Revision 4
 CH-3-3000-12, CE440 Elemental Analyzer Operation, Calibration and Maintenance, Revision 0
 CR-3-1000-05-F-2, Evaluation of CAAS Placement in the SBM, Revision 0
 CR-1-1000-01, Nuclear Criticality Safety, Revision 0
 CR-2-1000-01, Nuclear Criticality Safety Program Description, Revision 3
 CR-3-1000-01, Implementation of NCS Evaluations and Analyses, Revision 3
 CR-3-1000-02, Criticality Safety Limit Postings, Revision 2
 CR-3-1000-03, NCS Weekly Walkthroughs and Periodic Assessments, Revision 3
 CR-3-1000-03, NCS Weekly Walkthroughs and Periodic Assessments, Revision 4
 CR-3-1000-04, Response to Nuclear Criticality Safety Anomalous Condition or Criticality Accident, Revision 2
 CR-3-1000-04, Response to Nuclear Criticality Safety Anomalous Condition or Criticality Accident, Revision 3
 EG-3-2100-01, Configuration Change, Revision 10, dated January 20, 2010
 EG-3-2100-02, Owner Acceptance Review of Design Deliverables, Revision 10, dated January 20, 2010
 EG-3-3100-03, Quality Assurance Level Assignments, Revision 3, dated January 5, 2010
 EG-3-4100-02, Plant Modifications, Revision 3, dated March 26, 2010
 EG-3-3200-02, Configuration Change Program, Revision 10
 EG-3-2100-01, Configuration Change
 EG-3-3100-02, IROFS Bound Definition
 EG-3-2100-05, Commercial Grade Dedication Process, Revision 3
 EG-3-3200-03, SBD Receipt Inspection
 FP-1-1000-01, Fire Loss Prevention
 FP-2-1000-01, Fire Protection Program Requirements
 FP-3-1000-02, Flammable and Combustible Materials Control

FP-3-1000-03, Fire Prevention During Welding, Cutting, and Other Hot Work
FP-3-1000-04, Fire System on Feature Impairments
FP-3-1000-05, Pre-Incident Plan Development and Control
FP-3-10001-01, Fire System and Features Testing and Inspection
FP-3-2000-04, Combustible Control Inspection – SBM
FP-3-2000-04, IROFS35 Weekly Fire Door Inspection and IROFS 35/36a Combustibles Control Inspection – SBM
FP-4-1000-01, Fire Protection Safety Inspection
FP-5-1000-01, Pre-Incident Plan
FP-P-3-1000-08, Fire Barrier Inspection
LS-3-1000-09, NRC Posting Requirements, Revision 3
LS-3-1000-04, 10 CFR 70.72(c) Evaluations for Proposed Changes, Revision 6
LS-3-2000-05, Notifications and Event Reporting, Revision 3
MA-3-2670-01, IROFS35 Fire Damper Inspections
MA-3-2826-01, IROFS35 Fire Barrier Penetration Seals Inspection
MA-3-2826-02, IROFS35 Fire Door Inspection
MA-3-2000-01, PFPR Oil Sampling, Revision 0,
MA-3-2000-03, Oil Addition to New Vacuum Pumps, Revision 0
MA-6-0591-01, Annual Initiating Devices Walk test Instruction
MA-6-0591-02, Annual Initiating Devices Inspection and Cleaning
MA-6-0591-03, Annual FACP Battery Test
MA-6-0591-04, Annual Notification Appliance and Battery Load Test
MA-6-0591-05 Annual FACP Interfaced and Power Supply
MA-6-0591-06, Annual FACP Conductor Checks
MA-6-0591-07, Semiannual Tamper and Water flow Switch Inspection and Testing
MA-6-0591-09, Annual FACP Inspection
MA-6-0591-10, Semiannual Notification Appliance Inspection
MA-6-0591-11, Semiannual FACP Battery Inspection
MA-6-0694-02, Quarterly Fire System Inspections and Tests
MA-6-0694-03, Annual Control Valve Lubrication and Cycling Test
MA-6-0694-11, Annual Fire Pump Maintenance
MA-6-0694-15, Weekly Pump House Inspection and Electric Fire Pump Test
MA-6-0694-17, Fire Protection Flow Testing
MA-6-0694-19, Annual Pressure Gauge Calibration
MA-6-0694-20, Monthly Fire Pump Electrical Task Instructions
MA-6-2670-01, Fire Damper Inspection
MA-6-2826-02, Fire Door Inspection
OP-3-0694-01, Fire Water System Operation
OP-3-0420-01, Product System, Revision 0
OP-3-0430-01, Tails System, Revision 1
OP-3-0670-01, Ventilation System, Revision 4
OP-3-0694-01, Fire Water System Operation, Revision 4
OP-3-1000-01, Conduct of Operations, Revision 6
OP-3-1000-02, Equipment Control, Revision 4
OP-3-1000-09, Operability Determination, Revision 1
OP-3-2000-01, Hazardous Release Response, Revision 3
OP-3-2000-02, Fire Response, Revision 4
OP-3-2000-03, Medical Response, Revision 2
OP-3-2000-04, Earthquake Response, Revision 3
OP-3-2000-05, Criticality Accident Response, Revision 1
OP-3-2000-06, Severe Weather, Revision 3

OP-3-2000-07, Flooding, Revision 2
 OP-3-2000-09 Loss of Electrical Power, Revision 1
 OP-3-3300-01, Operations Surveillance Procedure, Revision 0
 OP-3-3300-01, Operations Surveillance Procedure
 OP-3-0420-01, Product System, Revision 0
 OP-3-2000-05, Criticality Accident Response, Revision 1
 ORM 3600-8, Limit Cylinder Fill Mass
 ORM 3700-2, Fire Rated Barriers
 RW-3-1000-09, Waste Container Setup, Handling, and Dispositions, Revision 1
 TQ-3-0100-01, TSD Process Activities, Revision 3
 TQ-3-0100-02, Examination Security and Administration, Revision 2
 TQ-3-0100-03, On-the-Job Training and Task Performance Evaluation, Revision 4
 TQ-3-0100-04, Training Records, Revision 3
 TQ-3-0100-05, Training Committees, Revision 5
 TQ-3-0100-06, Exam Development Process, Revision 3
 TQ-3-0100-07, Job Task Analysis and Design, Revision 3
 TQ-3-0100-08, Lesson Plan Development Phase, Revision 3
 TQ-3-0100-09 Implementation Phase, Revision 4
 TQ-3-0100-10 Feedback and Evaluation Phase, Revision 3
 TQ-3-0100-11 On-the-Job Training Development, Revision 5
 TQ-3-0200-01 LES 10 CFR 70.72(c) Training and Qualification, Revision 4
 TQ-3-0200-02 10 CFR 70.32(c) Evaluator Training and Qualification, Revision 0
 TQ-3-0200-03 Safety Review Committee Training and Qualification, Revision 0
 TQ-3-0300-01 Operator Training Program, Revision 3
 TQ-3-0310-01 Logistics Training, Revision 1
 TQ-3-0400-01 Maintenance Training Program, Revision 3
 TQ-3-0400-02 Plant Control & Energy Systems Training Guide, Revision 0
 TQ-3-0400-03 Mechanical Maintenance Training Guide, Revision 0
 TQ-3-0410-01 Crane, Hoist, and Rigging Equipment Operator Training, Revision 0
 TQ-3-0500-01 Engineering and Support Personnel Training Program, Revision 2
 TQ-3-0700-01 General Employee Training, Revision 8
 TQ-3-0700-02 Nuclear Safety Worker Training, Revision 1
 TQ-3-0710-01 Nuclear Criticality Safety Training, Revision 1
 TQ-3-0720-01 Material Control and Accountability Training and Qualification Program,
 Revision 2
 TQ-3-0810-01 Instructor Evaluation and Qualification Program, Revision 0
 TQ-3-0820-01 Supervisory Training Program, Revision 0
 TQ-3-0100-08-F-4, Fire Watch, Revision 0
 TQ-3-0100-09, Implementation Phase, Revision 4
 TQ-3-0500-01, Engineering and Support Personnel Training Program, Revision 2

LES Condition Reports

2010-492-CR, During discussion with the NRC during the FP ORR it became apparent that the boundaries for IROFS 35, IROFS 36a, and the FHA Fire Area 1 do not all agree
 2010-523-CR, Transient combustibles inspection of Fire Area 1 in the SBM Unsat
 2010-547-CR, Failed Surveillance on IROFS 35 fire doors
 2010-549-CR, No decision made regarding compensatory measures for fire watch
 2010-551-CR, Sole IROFS fire doors and dampers not installed
 2010-552-CR, No procedures to govern non-IROFS fire doors, dampers, fire alarms, and fire extinguishers

2010-958-CR, Boundary definition for IROFS 35 does not list required surveillance procedure
 2010-961-CR, Fire protection equipment impairment log not up to date
 2010-966-CR, Bldg. 1001-694 contractor test certificate for the standpipe main drain valves was not performed as required
 2010-716-CR, Clarification needed in Procedure EG-3-2100-05, Commercial Grade Dedication Process
 2010-0097-CR, IROFS 35 Fire doors do not close properly
 2010-0082-CR, IROFS 35 Fire door gap deviations
 2010-773-CR, Dedication process lacks objective evidence of critical characteristics verification activities
 2010-760-CR, Commercial grade dedication procedure adequacy
 2010-906-CR, Error in commercial grade dedication packages for IROFS35
 2010-762-CR, Commercial grade dedication procedures, D-2009-014, Revision 1 and D-2009-016, Revision 0 procedure adequacy
 2010-080-CR, CGDP not completed for fusible link
 2010-906-CR, Error in commercial grade dedication packages for IROFS 35
 2010-708-CR, Post-dated form
 2010-765-CR, Commercial grade dedication procedure adequacy
 2009-3731-CR, SBD Verification Definition Adequacy
 2009-3795-CR, Technical Issues Regarding ETC4107395, Issue 1, Criticality Safety Analysis of NEF Assay Unit 1001 Process Gas Pipework
 2009-4058-CR, Correction of Boundary Conditions in ETC4107395, Issue 1, Criticality Safety Analysis of NEF assay Unit 1001 Process Gas Pipework
 2010-0111-CR, Issuing of revised procedure Waste Container Setup, Handling and Disposition, RW-3-1000-09 without ORMs being issued yet
 2010-0270-CR, Inadequate Nuclear Criticality Safety Analysis for Product Cold Traps
 2010-0413-CR, Procedure CR-3-1000-03 Severity Level Reporting Protocols
 2010-0416-CR, Completion of OP-3-1000-21 which is required to be approved after the FNMCP is updated per LBDCR
 2010-0441-CR, Additional operator training on criticality safety and postings is needed
 2010-0667-CR, Quality level of NCSEs and NCSAs
 2010-0694-CR, Inconsistent enrichment assumptions in SAR and Criticality Analyses
 2010-1016-CR, Cascade 1 NaF trap diameter greater than established SBD criterion
 2010-1039-CR, Cascade 2 NaF trap diameter greater than established SBD criterion
 2010-1131-CR, SBD in Modification Process
 2010-1137-CR, Re-Verify Enrichment Settings
 2010-1155-CR, Requirements for independent verification of a safety function in SAR 3.4.5 and ANSI/ANS 3.2

Drawings:

Drawing HYT-1001-K-KSK-003-101-2, CAAS System Layout UF₆ Area and Cascade Halls 1 and 2 First Floor Plan, dated June 23, 2009
 Drawing HYT-1001-K-KSK-003-102-2, CAAS System Layout UF₆ Area and Cascade Halls 1 and 2 Second Floor Plan, dated June 23, 2009
 Drawing HYT-1001-K-KSK-003-103-2, CAAS System Layout UF₆ Area and Cascade Halls 1 and 2 Third Floor Plan, dated June 23, 2009
 Drawing 1001 FP-01, Fire Protection Standpipe Plan
 Drawing 1001 FP-02, Fire Protection Standpipe Plan

Drawing 114489-0000-P-PID-694-001-01-0, Piping & Instrumentation Diagram Yard Fire Protection Water System
 Drawing LES-0000-P-PID-694-001-01-0, Piping & Instrumentation Diagram Yard Fire Protection Water System

Miscellaneous:

Assessment Number: 2008-002, Self Assessment for Operational Readiness Review, Training and Qualification, May 16, 2008

CALC-1001-12, NEF2

CALC-1001-3, NEF1

CALC-F-0001, Fire Hazard Analysis Combustible Loading

CALC-S-00112, IROFS38 Cylinder Fill Mass Limit, Revision 0

CC-EG-2009-0431, LBD Updates for Product Roots Pumps/Trap Set, Revision 0,

CC-EG-2009-383, IROFS7, IROFS6a, and IROFS6b Changes, Revision 1

CR-3-1000-05-F-2, Evaluation of CAAS Placement in the SBM, Revision 0, dated February 1, 2010

ECR 4858, Additional Fire Detection Devices Needed in Mass Spec Room

ECR 5430, Modification and Addition of Vesda Units in the UF6 Area

ECR-5503, Keep Out Warning Lights SBM – CAAS

ECR-5503, Keep Out Warning Lights SBM – CAAS

E-NCS-QG, Engineering Support Program Qualification Guide Guideline Position: NCS Criticality Engineer, Revision 2

FPE-REV-001-02, Fire Hazards Analysis for the National Enrichment Facility

GE-19, Fire Doors with Gap Issues

ISA Record Number 51-2400553-01-LES, Assessment of Facility Fire Risk at NEF for ISA and Design Basis

NCR 2010-0080, IROFS 35 Fire Dampers not installed with a QL-1 WP Requiring QC Inspections

NCR 2010-0043, IROFS 35 Fire Dampers not installed with a QL-1 WP requiring QC Inspections

NCR 2010-0082, IROFS 35 Fire Door Gap Deviations

NCR 2010-0569, IROFS 35 Fire Doors with NFPA 80 Gap Limitation Issues

NCR 2010-0685, IROFS 35 Fire Doors with Minor Gap Deviations,

NEF-BD-35, Fire Rated Barriers

NEF-BD-36, Limit Transient Combustible Loading in Uranic Areas.

NEF-BD-36f, Limit Designated Routes for Bulk Fueling Vehicles on Site

NEF-BD-36g, Limiting Onsite Vegetation Fire Sources

NEF-BD-38, Limit Cylinder Fill Mass to Ensure Cylinder Integrity Once per Shift

NEF-BD-14a, Limit Proximity of Vessels in Non-Designed Locations By Use of Safe-By-Design Transfer Cart," Revision 1

NEF-BD-14b, Limit Proximity of Vessels in Non-Designed Location by Verification of Storage Array, Revision 1

NEF-BD-SBD, Safe-By-Design, Revision 4

PO 302543, System 432 - Tails Pumping Train,

Purchase Requisition 4002649, Change Numbers 0 and 1 and associated Purchase Order 302622

Purchase Requisition 4001558, Change Numbers 0, 1, and 2 and associated Purchase Order 302469 and Purchase Change Order 1

Purchase Requisition 4001560, Change Numbers 0 and 1 and associated Purchase Order 302453 and Purchase Change Order 1

Purchase Requisition 4004740, Change Numbers 0, 1, and 2 and associated Purchase Order 302967 and Purchase Change Orders 1 and 2
 Site Acceptance Test Procedure – NEF CIDAS Phase 1, dated January 6, 2010
 Site Acceptance Test Procedure – NEF CIDAS Phase 1, dated January 6, 2010
 SPEC. NO.: 114489-S-M-15864-5, Specification for QA Level 1 Dampers
 SPEC. NO.: 114489-S-S-08110-1, Specification for Steel Doors and Frames
 Surveillance Report 2009-S-09217
 Surveillance Report 2010-S-03-068, Ruskin Fusible Link by QISI
 QA Audit 2008-3095-EXT-AUD [10/20-24/2008]
 QA Audit 2008-3020-EXT-AUD [10/20-23/2008]
 QA Audit 2009-A-03-020, Audit of LES Training at The National Enrichment Facility, May 6, 2009
 QA Audit 2009-A-06-042, Fire Protection Program Audit
 UF6-01, UF₆ Waste Accumulation Area, Revision 0, dated February 24, 2010
 UF6-02, UF₆ Waste Accumulation Area, Revision 0, dated February 24, 2010
 UF6-03, SBM Ventilated Waste Collection Room Storage Area, Revision 0, dated February 24, 2010

Work Orders:

WO 3001086, 6M Ele FR Pp Automatic Start
 WO 3001087, Semi-annual Diesel Fire Pump Automatic Start
 WO 3001267, Quarterly Tamper and Water Flow Switch Inspection and Cleaning
 WO 3001565, Perform Quarterly Fire System Inspections and Tests in Accordance With MA-6-0694-02
 WO 3001684, Quarterly Tank Insp & Test
 WO 3001846, Monthly Valve Inspection
 WO 3002045, Wkly Diesel FR Pp Manual Start
 WO 3002082, Wkly FR Pp Manual Start

Work Plans:

CAT-09-005, Revision 2, Wet Pipe and Standpipe Fire Protection System Commissioning Test

CGD Plans

Dedication Plan Number D-2008-054, Revision 0 for fire doors 1001-3-131 and 1002-3-131
 Dedication Plan Number D-2008-054, Revision 0 for fire door 1001-4-131
 Dedication Plan Number D-2008-054, Revision 0 for fire doors 1001-1-131, 1001-5-131, 1002-1-131, 1002-2-131, 1002-1-140, 1001-1-263, 1001-1-264, 1001-1-260, 1002-1-261, 1002-2-261
 Dedication Plan Number D-2009-014, Revision 1 (dated January 9, 2010) and Revision 2 (dated March 3, 2010) for 3-hour rated fire dampers
 Dedication Plan Number D-2009-016, Revision 0 (2 copies dated (initiated) December 7, 2009 with completion dates December 22, 2009, and March 1, 2010) and Revision 1 (dated March 3, 2010) for 1½-hour rated fire dampers
 Dedication Plan Number D-2009-015, Revision 0 for fusible links Model FL-1 from Tyco
 Dedication Plan Number D-2009-015, Revision 2 for fusible links Model Issue B (Elsie Model B) from Ruskin

(2) Dedication Plan Number D-2009-015, Revision 3 for fusible links Model Issue B (Elsie Model B) from Ruskin
 Dedication Plan Number D-2008-053, Revision 0 for shims

Nuclear Criticality Safety Evaluations and Analyses

Doc #0202631B, CSE of Evacuating an Assay Unit into a Single Tails Cylinder, dated December 10, 2002
 Doc #0203067A, CSE of the Sodium Fluoride Dump Trap, dated December 10, 2002
 ETC4009609, Tails System Criticality Assessment of Passive Safe-By-Design Components, Revision 2, dated December 8, 2004
 ETC4060657, Chemical Trap and Pump Set for Dump Systems, Revision 2, dated May 7, 2009
 ETC4067118, The Nuclear Criticality Safety Distance for Piping Intersections for 6% Enriched Uranyl Fluoride, Revision 2, dated October 7, 2009
 ETC4077747, Determination of Critical and Safe Parameters for Generic Uranyl Fluoride Systems of 5%, 6% and 7% ²³⁵U Enrichment, Revision 1, dated February 16, 2009
 ETC4078617, Criticality Safety of Product Roots Pumps at 6% Enrichment, Revision 3, dated November 11, 2009
 ETC4086371, Criticality Safety Assessment of Product Cold Traps at 6% Enrichment, Revision 3, dated
 ETC4097466, Criticality Calculation for Crashed Tc-12 Machines in Flood –Partially Filled Bores, Revision 1, dated October 7, 2009
 ETC4091135, NCSE of the Tails Evacuation Pump and Trap Set, Revision 1, dated June 26, 2009
 ETC4100854, CSA of the Contingency Dump System, Revision 2, dated November 5, 2009
 ETC4104887, Criticality Safety of an Assay Dump to a Single Tails Cylinder, Revision 1, dated September 29, 2009
 ETC4107395, CSA of NEF Assay Unit 1001 Process Gas Pipework, Revision 2, dated January 15, 2010
 ETC4109123, NCSE of Mobile Cascade Evacuation and Sampling Rig Systems, Revision 1, dated November 3, 2009
 NCS-CSA-004, Parametric Analysis of 6 wt% Uranium in 15 Liters of Oil, Revision 2, dated September 8, 2009
 NCS-CSA-011, NCSA to Increase Tolerances for the Cascade Valve Frame for Field Verification, Revision 2, dated November 20, 2009
 NCS-CSA-012, NCSA to Document Corrected Calculations From ETC4078614, Issue 3, Revision 0, dated December 14, 2009
 NCS-CSA-013, Nuclear Criticality Safety Analysis of 55 Gallon Waste Drums, Revision 0, dated January 4, 2010
 NCS-CSE-010, NCSE for the Pressure Transducer Calibration Wagon, Revision 0, dated October 23, 2009
 NCS-CSE-13, Evaluation of ETC4086371, Criticality Safety of Product Cold Traps at 6% Enrichment, Revision 0, dated October 20, 2009
 NCS-CSE-014-00, Evaluation of ETC410887, NQA-1 Criticality Safety of Assay Dump to a Trails Cylinder, Revision 0, dated October 20, 2009
 NCS-CSE-015, NCSE of the Contingency Dump Pump and Trap Set, Revision 1, dated October 23, 2009

NCS-CSE-017, NCSE of the Gaseous Effluent Ventilation System (GEVS)
Miscellaneous Piping in SBM-1001, Revision 0, dated November 20, 2009
NCS-CSE-018, NCSE for the IMU-200, On-Line Mass Spectrometer, Revision 0, dated
November 3, 2009
NCS-CSE-020, Product and tail Pumping Trains, Revision 2, dated February 1, 2010
UPD/0200530C, CSA Main Separation Plant, Revision 0, dated November 12, 2003