UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-1257

July 23, 2010

Mr. David B. Amerine
President
Nuclear Fuel Services, Inc.
P. O. Box 337, MS 123
Erwin, TN 37650

SUBJECT: NRC URANIUM METAL/OXIDE PROCESS LINE RESTART READINESS ASSESSMENT TEAM REPORT NO. 70-143/2010-006

Dear Mr. Amerine:

On January 7, 2010, the Nuclear Regulatory Commission (NRC) issued Confirmatory Action Letter 2-2010-001 in response to your letter dated December 30, 2009. Your letter contained additional actions (commitments) to ensure that the root causes of the October 13, 2009, process upset had been adequately evaluated and appropriate corrective actions have been implemented for all potentially affected processes before you resumed operations of those processes.

The Restart Readiness Assessment Team was established to assure that the "Actions Prior to Restart of Operations" which you identified in your December 30, 2009, letter were satisfactorily completed. The team also evaluated whether your actions adequately addressed the four management issues identified in the Confirmatory Action Letter. These issues involved the adequacy of Nuclear Fuel Services' (NFS') management oversight of facility process changes, perceived production pressures, lack of questioning attitude by workers and management, and poor communications. Additionally, the team assessed your readiness to restart the uranium-metal/oxide process line through a detailed review of procedures, maintenance, design bases of select accident sequences, the corrective action program, and management oversight initiatives. The team conducted its inspection activities from May 3 through May 19, 2010. The enclosed report documents the inspection results which were discussed with you and other members of your staff in a public exit meeting on June 24, 2010, in Erwin, TN.

The team determined that the fifteen "Actions Prior to Restart of Operations" contained in the Confirmatory Action Letter were satisfactorily completed as they pertained to the uranium-metal/oxide process line. However, the team identified a non-compliance involving an Integrated Safety Analysis accident sequence consequence evaluation. Subsequently, NFS corrected the evaluation and identified existing safety controls as items relied on for safety consistent with NFS' Integrated Safety Analysis methodology. During this assessment, the team did not identify any safety or risk significant issues that would preclude a safe startup of the uranium-metal/oxide process line. Therefore, by letter dated May 19, 2010, the Region II Regional Administrator authorized restart of the uranium-metal/oxide process line.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure not otherwise withheld from public disclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Steven Vias at 404-997-4560.

Sincerely,

/RA/ E. Cobey for

Joseph W. Shea, Director
Division of Fuel Facility Inspection

Docket No. 70-143
License No. SNM-124

Enclosure:
NRC Inspection Report No. 70-143/2010-006

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E-MAIL	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

RESTART READINESS ASSESSMENT TEAM

Docket No.: 70-143

License No.: SNM-124

Report No.: 70-143/2010-006

Licensee: Nuclear Fuel Services, Inc.

Location: Erwin, Tennessee 37650

Dates: May 3 - 19, 2010

Inspectors: M. Ernstes, Chief, Plant Support Branch 2, Division of Reactor Safety (Team Leader)
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Approved by: Joseph W. Shea, Director, DFFI

Enclosure

EXECUTIVE SUMMARY

NRC Inspection Report No. 70-143/2010-006

The purpose of the Restart Readiness Assessment Team was to evaluate the completion of Nuclear Fuel Services' (NFS') actions associated with the January 7, 2010, Confirmatory Action Letter and assesses NFS' readiness to restart the uranium-metal/oxide process line. The team also inspected the effectiveness of NFS' corrective actions for management oversight of facility process changes, perceived production pressures, lack of questioning attitude by workers and management, and poor communication with a focus on the readiness to restart the uranium-metal/oxide process line. In addition, the team reviewed procedures, maintenance records, design bases of select accident sequences, corrective action program (CAP), and management oversight initiatives. The Restart Readiness Assessment Team conducted these reviews from May 3 through May 19, 2010.

The team determined that NFS had adequately completed the fifteen "Actions Prior to Restart of Operations" contained in the Confirmatory Action Letter as they pertained to the uranium-metal/oxide process line. The team also concluded that NFS' corrective actions related to management oversight, perceived production pressure, lack of questioning attitude, and poor communication were reasonable and had a sufficient likelihood of being effective to support a determination that NFS could safely startup and operate the uranium-metal/oxide process line. However, the team identified a non-compliance involving an Integrated Safety Analysis accident sequence consequence evaluation, in which, NFS had improperly calculated the consequence of a potential nitrogen compound gas release in the uranium-oxide dissolution system as a low safety consequence event. Nuclear Fuel Services subsequently corrected the evaluation, which increased the safety consequence to intermediate and identified existing safety controls as items relied on for safety consistent with NFS' Integrated Safety Analysis methodology. During this assessment, the team did not identify any safety or risk significant issues that would preclude a safe startup of the uranium-metal/oxide process line.

REPORT DETAILS

BACKGROUND

On October 13, 2009, an unexpected exothermic reaction (Event number 45446) occurred within the Uranium Aluminum (UAl) processing portion of the Blended Low Enriched Uranium (BLEU) Prep Facility (BPF) at NFS in Erwin, TN. The NRC chartered an Augmented Inspection Team (AIT) in October 2009, to review the circumstances of the event. In December 2009, based on preliminary results from the AIT, the NRC undertook a review of NFS' operations and performance dating back to the issuance of a Confirmatory Order in February 2007. On the basis of the interim review of NFS performance, the NRC determined that additional actions needed to be taken by NFS to provide reasonable assurance that the NFS facility could be operated safely.

The NRC engaged the management of NFS with the results of this assessment and obtained a commitment from NFS to maintain the facility process lines shutdown until certain specific actions were completed. The licensee submitted its commitments in writing by letter dated December 30, 2009. The NRC confirmed these commitments in CAL No. 2-2010-001, dated January 7, 2010. On March 22, 2010, the NRC completed an inspection of the licensee's readiness to restart the Navy Fuel line and the NRC Region II Administrator authorized start up of that line on March 23, 2010.

By letter dated April 26, 2010, NFS notified the NRC of its readiness to restart the BPF uranium-metal/oxide process line and supporting systems. This line consists of the uranium-oxide dissolution system, Building 304 support systems, Building 333 solvent extraction system, the downblending system, and the 440 Building. The RRAT conducted inspection activities at NFS May 3-7, 2010, and additional in-office follow-up. On May 19, 2010, the NRC completed its inspection of the licensee's readiness to restart the uranium-metal/oxide process line and the NRC authorized start up of that line.

Inspection Scope

On May 3, 2010, the NRC commenced inspection of NFS readiness to restart production of the uranium-metal/oxide process line. The NRC dispatched a team of five inspectors. The objectives of the inspection were to:

- Assure that the "Actions Prior to Restart of Operations" were satisfactorily completed.
- Verify that the licensee's assessment and corrective actions adequately addressed the concerns involving the adequacy of NFS' management oversight of facility process changes, perceived production pressures, lack of questioning attitude by workers and management and poor communication.
- Assess the licensee's readiness to restart the uranium-metal/oxide process line.

A. ACTIONS PRIOR TO RESTART OF OPERATIONS

1. The restriction NFS management put in place following the Bowl Cleaning Station Incident prohibiting the processing of granular metallic "fines" in the Uranium-Aluminum process will be institutionalized.

This corrective action was reviewed during the Navy Fuel line RRAT inspection. The team determined that the restriction NFS management put in place prohibiting the processing of granular metallic "fines" in the UAl process was properly institutionalized. This item was not applicable to the uranium-metal/oxide process line.

2. NFS will institutionalize improvements to the change control process, which was delineated in a temporary procedure. Training on the process will be provided to appropriate operations, technical, oversight and management staff.

During the Navy Fuel line RRAT inspection, the team reviewed the licensee's corrective actions to improve the change control process to address the problems identified from the Bowl Cleaning Station (BCS) event and concluded that the licensee had adequately identified and institutionalized improvements into their plant-wide change control process procedure.

During the uranium-metal/oxide process line RRAT inspection, the team reviewed documentation of work activities and modifications associated with the uranium-metal/oxide process line that were completed while the facility was shutdown to ensure the work was completed in accordance with recently enhanced modification process procedures. The team determined that Enterprise Change Requests (ECRs) and Technology Review (TR) documents selected for review associated with the BPF uranium-metal/oxide process line were prepared in accordance with the newly enhanced process change procedures and contained the appropriate level of detail and technical basis documentation to allow for thorough licensee reviews.

The team identified one instance of poor process change control for an electrical conduit alteration to the BPF uranium oxide dissolution system loading enclosures. There was no immediate safety concern, however the team was concerned with the poor change process control that allowed the electrical conduit to be modified and could have adversely impacted the integrity of the enclosure ventilation boundary. This issue is discussed in Section C.2 of this report.

3. The incident investigation, including detailed causal analysis, of the BCS Incident will be completed.

During the Navy Fuel line RRAT inspection, the team reviewed the licensee's initial Root Cause Analysis (RCA) investigation report of the BCS event and interviewed several members of the investigation team. The team evaluated whether the level of detail of the investigation was commensurate with the significance of the problem, included consideration of prior occurrences of the problem and knowledge of prior operating experience, addressed the extent of condition and extent of cause, and appropriately considered the safety culture components of the problem. The team concluded that the licensee completed an adequate root cause analysis of the BCS event that involved techniques and methodologies generally consistent with expected investigation practices. No new observations were made during the uranium-metal/oxide process line inspection to alter the conclusions.

4. <u>The near-term corrective actions needed to address the causal factors identified by the investigation of the BCS incident will be determined and implemented.</u>

During the Navy Fuel line RRAT inspection, the team reviewed the licensee's corrective actions identified from the RCA investigation of the BCS event. The team verified that appropriate near-term corrective actions were specified for each causal factor with due dates commensurate with the significance of the issue. The team concluded that the licensee determined and implemented near-term corrective actions to address the causal factors identified by the investigation of the BCS incident.

During the uranium-metal/oxide process line inspection the team made observations of the effectiveness of the implementation of corrective actions associated with that line. One of the corrective actions reviewed was the implementation of the revised Configuration Management Program which provides for a technical basis with sufficient detail for hazards analysis. The team conducted a detailed review, of six recent TR documents involving modifications associated with the BPF uranium-metal/oxide process line to ensure they were conducted in accordance with the guidance in procedures NFS-CM-004 and NFS-TS-009, "Configuration Management of Process Change," Revision (Rev.) 2. The team determined that the TR documents were completed in accordance with licensee procedures and each provided adequate technical basis documentation to allow for a thorough review of the process changes by licensee personnel.

No new observations were made during the uranium-metal/oxide process line inspection to alter the conclusions from the Navy Fuel line RRAT inspection.

5. <u>The extent of condition reviews of process area safety basis conducted after the BCS incident will be expanded to include the BPF Uranium-oxide Dissolution Process.</u>

This item was evaluated in detail during the Navy Fuel line RRAT inspection by reviewing the revised extent of condition analysis described in NFS Investigation Problem Identification, Resolution, and Correction System (PIRCS) #I10389. The team verified that any associated safety assumptions and controls matched the field conditions and current operations. Additionally, the team assessed the licensee's review of the associated criticality, radiological, chemical and fire safety basis documents (including setpoints and periodic tests) for the uranium-oxide system.

The team concluded that the extent of condition was very detailed and evaluated many of the vulnerabilities of the uranium-oxide system. The team determined that the licensee adequately completed an extent of condition review to include the uranium-oxide dissolution process. No new observations were made during the uranium-metal/oxide process line inspection to alter the conclusions from the Navy Fuel line RRAT inspection.

6. <u>An extent of cause analysis for each causal factor will be completed and specific interim corrective actions will be identified and implemented as appropriate.</u>

The licensee completed an extent of cause analysis for each causal factor. The Navy Fuel line RRAT inspection determined that the extent of cause was applied to all processes which included those systems in uranium-metal/oxide process line. The team concluded that the licensee effectively conducted an extent of cause analysis for each causal factor and identified and implemented appropriate interim corrective actions. During the uranium-metal/oxide

process line inspection, the team made further evaluations of the identified causal factors as they related to the uranium-metal/oxide process line including implementation of NFS-TS-009 (Configuration Management of Process Change) and rigor of Technical Basis documentation. No new observations were made during the uranium-metal/oxide process line inspection to alter these conclusions.

7. Each facility accident scenario involving nitrogen compound gas (NOx) generation will be re-evaluated to ensure appropriate IROFS have been identified and implemented to provide adequate protection and that management measures for those IROFS are sufficient to ensure these IROFS are available and reliable to perform their intended safety function when needed.

During the Navy Fuel line RRAT inspection, the team performed a review of all NOx accident scenarios and verified that adequate IROFS and associated management measures were in place to ensure compliance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 70.61, Performance Requirements. The team concluded that the licensee had effectively conducted a review of NOx generating scenarios and identified appropriate IROFS with associated management measures.

During the uranium-metal/oxide process line inspection, the team reviewed accident sequences associated with risk significant uranium-metal/oxide process line systems. The team evaluated the licensee's methodology for accident sequence evaluation. An issue was noted regarding the consequence evaluation calculation for an accident sequence involving the uranium-oxide dissolution system. The details are discussed in Section C.4 of this report. The team verified that adequate management measures were implemented to ensure the designated IROFS could perform their intended safety function. The team also performed walkdowns in the field to verify the presence of the IROFS and that they were clearly marked as IROFS by their safety related equipment (SRE) tags.

8. Following completion of restart actions, NFS will have an independent review conducted to verify implementation of the restart actions. Personnel participating in these reviews will have no responsibility for the conduct or oversight of NFS operations.

This item was reviewed comprehensively during the Navy Fuel line RRAT inspection. NFS conducted an independent review to verify the implementation of the restart actions. The NRC team concluded that the Independent Review Team had a good approach to sample the items but the review lacked the depth needed to ensure that the corrective actions taken were well above the minimum. The team made no observations during the uranium-metal/oxide process line inspection to alter the conclusions.

9. NFS will allow sufficient time for NRC to perform inspections of restart actions. The NRC will be provided with a two-week notice prior to the time NFS management would like for the NRC team to arrive at the NFS site.

On April 26, 2010, David Amerine, President NFS, issued a letter to Luis A. Reyes, NRC Region II Administrator requesting NRC review of BPF the uranium-metal/oxide process line and associated support systems.

10. <u>Implement a Senior Engineering Watch (SEW), to provide additional technical coverage on the process floor. The SEW will have the sole duty of providing independent technical oversight of process operations to promote the identification, adjudication and resolution of potential safety concerns. The SEW will functionally report to the Vice President (VP) of Operations. NFS will maintain this watch for a minimum period of 6-months after restart of all operations</u>.

During the Navy Fuel line RRAT inspection, the team reviewed the licensee's procedures for implementation of the SEW, which were contained in licensee standing order, NFS-SO-09-006, "Enhanced Operations, Management and Communications," and interviewed the SEWs, operating staff and management. The team concluded that the licensee had put in place appropriate processes, procedures, and personnel to effectively implement the SEW.

During the uranium-metal/oxide process line inspection, the team interviewed 4 of 5 SEWs, key senior managers and first line supervisors to assess the effectiveness of the SEW after having been implemented for two months. Interviews indicated that the SEW was now more accepted and working as designed, providing independent technical oversight of operations. The SEWs were spending time on BPF in addition to the Navy Fuel line and effectively meeting the expectations for both processing lines. The VP Operations indicated that SEWs were meeting his expectations for the SEW's roles, responsibilities, and authorities. He also noted that the line organization had been effectively communicating the technical issues independently of the SEW. Way Point Evaluations by the licensee provided confidence that the SEW would continue to be effective with BPF start up being conducted simultaneously with operation of the Navy Fuel line.

11. <u>Implement an initiative to increase management presence and engagement on the process floor that will better enable open and timely communication of potential safety concerns. This initiative will be structured around a series of daily meetings held by management with processing personnel.</u>

During the Navy Fuel line RRAT inspection, the team reviewed the licensee's procedures for implementation of an initiative to increase management presence and engagement on the process floor. This guidance was contained in licensee standing order, NFS-SO-09-006. The team determined that the licensee had put in place appropriate processes, procedures, and personnel to increase management presence and engagement on the process floor to better enable open and timely communication of potential safety concerns.

During the uranium-metal/oxide process line inspection, the team observed daily meetings and shift turnover meetings between management and processing staff at the Navy Fuel line and BPF. The team determined that the meetings continued to be effective at increasing management engagement on the process floor.

The team discussed and reviewed the watch bill schedules for managers, engineers and safety representatives on the floor as well as roaming senior managers throughout the plant. The team concluded that the increased management presence enabled open and timely communications of potential safety concerns.

12. <u>Develop updated programmatic guidance to provide specific criteria to invoke Corrective Action Review Board (CARB) review of investigations, corrective actions and effectiveness reviews to help ensure appropriately broad investigations and effective corrective actions.</u>

This item was completed comprehensively during the Navy Fuel inspection. The team concluded that, in general, the licensee had put in place appropriate processes, procedures, and personnel to effectively provide criteria to invoke CARB reviews to ensure appropriately broad investigations and effective corrective actions. The CARB is now chaired by the President. No new observations were made during the uranium-metal/oxide process line inspection to alter the conclusions.

13. <u>Revise and implement the procedure that requires processes, process parameters and process inputs be clearly defined prior to implementation. This program is designed to prevent changes such as a change in the composition and physical characteristics of the feed material that may result in abnormal occurrences during processing.</u>

This item was comprehensively reviewed during the Navy Fuel line RRAT inspection. That inspection reviewed NFS-CM-004, "Change Control Process," Rev. 3 which addresses increased management oversight in the change process and NFS-TS-009, "Configuration Management of Process Change," which required a TR for a subset of those changes. NFS-TS-009 stated that all changes either due to new processes or changes to existing processes must be documented by an approved Technical Basis in accordance with NFS-CM-004. The team concluded that the licensee effectively implemented the procedure that requires processes parameters and process inputs to be clearly defined prior to implementation.

During the uranium-metal/oxide process line inspection, the team discussed the upcoming changes and associated TRs prior to release to production by the NFS President. Technology Reviews for Uranyl Nitrate Crystals, the Ferrous Sulfamate Process, and the Size Reduction of UAl elements are currently in progress. Examples of how the revised process was implemented were observed extensively during the review of the uranium-metal/oxide process line design basis for this inspection. The team determined that ECRs and Technology Review documents selected for review associated with the BPF uranium-metal/oxide process line were prepared in accordance with the newly enhanced process change procedures and contained the appropriate level of detail and technical basis documentation to allow for thorough licensee reviews.

14. <u>Conduct an independent review of NFS' investigation processes. This review will be conducted by a subject matter expert (SME) to establish a plan to implement enhancements necessary to ensure adequate breadth and depth of investigations.</u>

This item was completed comprehensively during the Navy Fuel Inspection. The team concluded that the licensee had put in place appropriate processes, procedures, and personnel to effectively conduct an independent review of their investigation processes and establish a plan to implement enhancements necessary to ensure adequate breadth and depth of investigations. No new observations were made during the uranium-metal/oxide process line inspection to alter the conclusions.

15. Revise the procedure that provides guidance for preparation of set-point analysis documentation to enhance the basis of evaluation, specifically to provide guidelines for justifying the basis for critical parameters.

During the Navy Fuel line RRAT inspection, the team reviewed ENG-EPS-A-003, "Setpoint Verification and Design Parameter Documentation," Rev. 1, dated January 1, 2010, and its preceding 2006 version. The team concluded that the licensee has put in place the appropriate procedure to provide guidance for setpoint analysis documentation, including a new worksheet for critical parameter documentation.

During the design basis portion of the uranium-metal/oxide process line RRAT inspection, the team verified that setpoint calculations associated with IROFS for Uranium-Oxide, 4-burner, Solvent Extraction, and downblending. Selected SRE tests were examined to verify that the IROFS safety function was being appropriately tested. The team examined various setpoint calculations to ensure the design basis as described in the ACE was constructed in an accurate and logical fashion. The team determined that the setpoints were being developed in accordance with ENG-EPS-A-003, "Setpoint Verification and Design Parameter Documentation," Rev. 1, dated January 1, 2010.

During the uranium-metal/oxide process line RRAT inspection, the licensee identified an error in a calculation for a setpoint involving addition of an oxidizer solution. The licensee initiated an investigation on May 10, 2010, to evaluate the extent of condition. The licensee's Extent of Condition review found that other setpoint analyses for NOx control used the proper assumption for the oxidizer solution and did not contain similar errors. In addition, the licensee initiated a Human Performance Evaluation to determine the cause for the error.

B. MANAGEMENT ISSUES

During review of the above items, the team evaluated whether the licensee's assessment and corrective actions adequately addressed the management issues listed in the CAL. Those issues involved the adequacy of NFS' management oversight of facility process changes, perceived production pressures, lack of questioning attitude by workers and management and poor communications. NFS completed a broad set of corrective actions to address the four issues.

1. Management Oversight of Facility Process Changes

Inspection Scope:

The RRAT for the Navy Fuel line concluded that the process change enhancements provided for adequate management oversight of the change process. The team determined that these enhancements were effective in addressing the causal factors identified from the licensee's investigation of the BCS event. During the uranium-metal/oxide process line RRAT inspection, the team evaluated several modifications to determine if the processes for management of changes had been followed.

Observations:

As discussed in Section C.2 of this report, the team reviewed nine Major work requests to ensure they were developed in accordance with the recent enhancements to the change process incorporated into procedure NFS-CM-004, "NFS Change Control Process," Rev. 6.

The team verified that the change process enhancements directed at ensuring adequate technical basis reviews were completed and documented with appropriate management oversight and approvals. Based on this review, the team determined that the ECRs were prepared in accordance with NFS-CM-004 and the technical basis documentation contained appropriate information to allow a thorough review by licensee personnel.

The team assessed the management oversight of process changes at the facility. The team interviewed the Principle Scientist and discussed the recent process changes since January, 2010, and the implementation of the NFS-TS-009, "Configuration Management of Process Change", Rev. 2. The team noted the recent change for a more stringent requirement for expediting any change to a process. The team reviewed the recent TR for the release of uranium-metal/oxide process line starting materials for BPF. The team noted that the licensee conducted appropriate TRs with knowledgeable staff and authorized the release of the materials by the President. The team also discussed the new process in solvent extraction including the use of ferrous sulfamate and the associated TRs, but those were in progress during the inspection. The team discussed this with the licensee and informed them those reviews and the relative management oversight would be inspected further upon completion.

Conclusions:

No findings of significance were identified. The team concluded that the process change enhancements developed to improve management oversight of facility change processes were being adequately implemented.

2. Perceived Production Pressures

Inspection Scope:

The RRAT for the Navy Fuel line concluded that the licensee had instituted sufficient measures to provide a reasonable assurance that production pressures would be reduced during future operations. During the uranium-metal/oxide process line RRAT inspection, the team observed management presence on the floor during planning meetings and during actual operations. The team interviewed staff and management to determine the effectiveness of the initiatives designed to reduce production pressure.

Observations:

The team observed field and management meetings and interactions on the process floor during operation of the Navy Fuel line and preparations for start up of the BPF. There was a continued emphasis on putting safety over production. The team noted an event that effectively illustrated management's message of putting safety before production. The Director of Operations had observed repeated instances of failure to follow procedures in the 800 area. He shutdown the area to ensure that procedures were being followed. Subsequently, the area operators were mentored by managers who emphasized the importance of procedural adherence. Interviews with operating staff indicated that management had been promoting safety over production.

Conclusions:

No findings of significance were identified. The team concluded that the initiatives developed to prevent the perception of placing production over safety were being adequately implemented by the licensee's management team.

3. Questioning Attitude by Workers and Management.

Inspection Scope:

The RRAT for the Navy Fuel line concluded that in general, the licensee had put in place appropriate processes, procedures, and personnel to effectively address the lack of questioning attitude that was previously prevalent in the organization. During the uranium-metal/oxide process line RRAT inspection, the team observed daily management meetings on the process floor, PIRCS screening meetings and the Three Week Look Ahead meetings. The team interviewed staff and management to determine the effectiveness of the initiatives designed to cultivate a questioning attitude in their employees.

Observations:

The team reviewed the PIRCS database to determine if there was an appropriate threshold for identification of issues. The review showed that the staff was frequently using the corrective action program to identify issues. Review of the SEW logs showed an improved questioning attitude by the process workers and line management.

Conclusions:
The team concluded that the processes and procedures developed to effectively address the lack of questioning attitude that was previously prevalent in the organization were being effectively implemented. The team noted that there were several indications of an improved questioning attitude.

4. Communications

Inspection Scope:

The RRAT for the Navy Fuel line concluded that the licensee had put in place appropriate processes, procedures, and personnel to effectively address the poor communications that were previously present within the organization. During the uranium-metal/oxide process line inspection, the team observed daily management meetings on the process floor, PIRCS screening meetings and the three-week look-ahead meeting.

Observations:

The team reviewed the recent implementation of the new work management organization and determined that, once fully implemented, it could potentially facilitate communication between operation and maintenance to better ensure maintenance was completed in a timely and accurate manner. The team noted an improved level of communication on the process floor. Various levels of management were present on the process floor for meetings to communicate expectations.

Conclusions:

The team concluded that the initiatives developed to improve communications were being adequately implemented. The licensee acknowledged that there was a continued need for improving communications, particularly between departments.

C. READINESS TO RESTART URANIUM-METAL/OXIDE PROCSS LINE

To evaluate whether the issues identified by the NRC in late 2009, which led the issuance of the CAL have been sufficiently addressed, the staff further evaluated the uranium-metal/oxide process line in the areas of procedures, maintenance, corrective actions, design basis and management oversight.

1. Procedures

Inspection Scope:

The team performed a detailed review of various procedures applicable to the uranium-metal/oxide process line. The team verified that required actions identified in the Integrated Safety Analysis (ISA) Summary were correctly transcribed into written operating procedures and that these were available to operators. The team verified that IROFS were clearly identified within operational procedures. The team verified that limits needed to assure safety for selected controlled parameters were adequately described in the procedures. The team evaluated the procedures' content with respect to process operating limits, operator responses for upset conditions, safety systems and functions, precautions, and warnings. The team also evaluated procedures with respect to various operational aspects, including startup, temporary operation, and shutdown as required by license condition.

Observations:

The team's review showed that IROFS were clearly identified in the procedures. Walkdown of procedures on the process floor showed that they could be conducted as written. Procedure revisions adequately addressed issues that had been identified by the operations staff. There were no outstanding procedure changes which the team assessed as having an impact on start up of the uranium-metal/oxide process line.

Conclusions:

No findings of significance were identified. The team concluded that the operating procedures for the uranium-metal/oxide process line would support safe operations.

2. Maintenance/Modifications

Inspection Scope:

The team reviewed the licensee's maintenance work control and facility change process (i.e., modification) programs and procedures to determine if appropriate and effective guidance existed for prioritizing and completing maintenance activities necessary to ensure the safe restart and operation of the BPF uranium-metal/oxide process line and associated support systems. The team reviewed the uranium-metal/oxide process Restart Recovery Plan associated with maintenance work activities and modifications that the licensee determined to

be necessary for restart and interviewed selected maintenance, engineering, and operations personnel involved with the decision-making. The team conducted an independent review of selected open work requests associated with the uranium-metal/oxide process to ensure that plant issues necessary for the safe restart and operation of the process line were properly identified as part of the licensee's restart recovery plan. The team reviewed documentation of work activities and modifications associated with the uranium-metal/oxide process line that were completed while the facility was shutdown to ensure the work was completed in accordance with recently enhanced modification process procedures. In addition, the team verified that adequate post-maintenance testing of safety related equipment was conducted following the implementation of related work activities. The team conducted field walk downs of the uranium-metal/oxide processing areas and verified the proper implementation of selected modifications recently completed and verified the status of open modification and work activities was consistent with the licensee's understanding.

Observations:

The team determined that the licensee's BPF Restart Recovery Plan provided detailed information of maintenance work and modification activities necessary to be completed for the safe restart and operation of the BPF uranium-metal/oxide processes. The restart plan included outstanding maintenance activities for each process area, grouped according to the three types of work requests: Major, Minor 2, and Minor 1. In accordance with the licensee's work request standard operating procedure (SOP) -392, "Work Request Procedure," Rev. 22, Major work requests are used to make modifications to existing structures, systems, or components (SSC) that involve potential impact to process functions. Minor 2 work requests involve SSC that are to be repaired or replaced with a non-approved equivalent, or involve minor modifications to SSC that do not impact a process function. Minor 1 work requests are limited to the return of SSC to their "as-was" condition and cannot involve changes or modifications. The restart plan included each work request number, a description of the work item, and provided the projected start/finish dates, as well as the physical percentage of the work that was completed.

In addition to the restart plan, the team reviewed the licensee's recently developed work request management review process initiative. This initiative was developed in response to NRC identified weaknesses of the licensee's evaluation of open work activities during preparations for restart of the Navy Fuel line in March 2010. During this Navy Fuel line restart readiness assessment inspection (documented in NRC inspection report number 70-143/2010-005), the NRC found that a rigorous and formally structured open work request evaluation process had not been implemented resulting in work items not being identified as necessary for restart that should have been. In response to this, the licensee implemented a formal work request management review initiative in which all open work requests were reviewed against specific criteria for determining if the work item should be completed before startup of each process line. The eleven criteria developed for determining whether work items should be completed prior to process line restart included the following:

- Safety significant;
- Significant for safe/effective operation;
- A nuclear criticality concern;
- Potentially hazardous to personnel;
- A concern related to the safety basis of operations;
- Required for regulatory compliance;

- An environmental risk;
- Operationally critical;
- A significant negative impact on quality;
- Procedurally required; and
- Work orders in process that required finishing.

Personnel from operations, process engineering, nuclear criticality safety, integrated safety analysis, and maintenance were included as members on the work request management review group. As new work requests were initiated following the initial screening review, these additional work requests were evaluated under the process.

The team independently reviewed in detail a sample of 21 open or recently completed work request packages associated with the BPF uranium-metal/oxide process, including nine Major work requests, four Minor 2 work requests, and eight Minor 1 work requests. The team verified that, the work requests were completed in accordance with SOP-392, included appropriate work authorization/completion approvals and reviews, identified necessary retests for SRE affected, and associated retest acceptance criterion was met. The team determined that the licensee had adequately assessed whether the work activities were necessary for BPF uranium-metal/oxide process line restart and thoroughly documented the associated decision-making. The team did not identify any significant problems with the work requests reviewed; however, several minor issues were identified with the accuracy and completeness of actual work conducted associated with several Minor 1 work documents. For example, Minor 1 work request M141633, documented troubleshooting to investigate/repair the cause of a failed air flow measurement test associated with the uranium-metal process ventilation drain column N333XVDRAIN6G03. This SRE test failed on February 15, 2010, due to the inability to obtain the minimum 275 feet/minute flow requirement as measured at the discharge of the ventilation column overflow pipe. The work repair instructions involved cutting the top uppermost horizontal section of the 0.5 inch ventilation drain piping and checking for an obstruction. The work request documentation stated simply “cut 0.5 inch line, not plugged” in the work completion section. Following the completion of this work, the subsequent post-maintenance air flow test conducted February 17, 2010, passed with 305 feet/minute being measured. The team reviewed PIRCS #23318 which documented the original SRE failure and noted similar poor documentation of the actions taken to address this issue. There was no further investigation conducted, nor any subsequent corrective actions identified even though the work request stated that there was no obstruction identified. In the Screener Notes section of PIRCS #23318, it was stated simply that “this issue was not reportable and has been addressed with a fix.” Upon subsequent questioning by the team, it was learned that contrary to the statements in the work document, technicians involved with the actual work, took more actions than was documented. Specifically, the technicians indicated that the drain had been disassembled, blown out with air on one end and rodded out in the other direction to remove any obstructions. The technician’s supervisor recalled seeing an unknown black object that was removed during the rodding process. Due to the questions raised and the lack of adequate documentation, the licensee decided to conduct another SRE airflow test to ensure operability of the drain column. The measured airflow obtained during this test was 320 feet/minute, which was above the minimum test acceptance criterion. The team determined that the results adequately addressed any operability concerns.

During a tour of the BPF uranium-oxide dissolution system to verify the proper implementation of selected modifications, the team observed a small piece of duct tape was covering a hole, approximately one inch in diameter, in the side of uranium-oxide dissolution loading enclosure

3A18. At the same location on the adjacent uranium-oxide dissolution loading enclosure 3B18, a similar opening existed, although an electrical conduit connection was attached. The opposite end of the conduit outside enclosure 3B18 led to an electrical outlet termination box. The conduit attached to enclosure 3B18 did not have any visible electrical wiring leading from the conduit connection into the enclosure and did not appear to have any sealing mechanism to separate the enclosure atmosphere from the conduit system. The electrical connection appeared to have once provided power to some device inside the enclosure that was no longer in service. Unlike enclosure 3B18, the conduit and connection assembly into enclosure 3A18 had been removed leaving the opening that was covered with the small piece of duct tape. The area process engineer, who accompanied the team member on the tour of the area, was unaware of any outstanding work activities that could explain the conditions observed, nor aware of when the electrical conduit to the enclosures had been modified. The enclosures are required to be maintained with at least 0.5 inch vacuum pressure via the filtered ventilation system to ensure the atmosphere in the enclosure does not communicate with the outside environment. The team noted that, in the current configuration, the local pressure gauges associated with both enclosures indicated that a negative pressure was still being maintained greater than 0.5 inch; therefore, there was no immediate safety concern. However, the team was concerned with the poor change process control that allowed the electrical conduit to be modified and could have adversely impacted the integrity of the enclosure ventilation boundary. The licensee initiated PIRCS #24492 to address the issue and identified it as a restart action item, to be resolved prior to restart of the BPF uranium-oxide process. For the nine Major work requests selected for a detailed review, the team reviewed the modification change process documentation (the ECRs) to ensure they were developed in accordance with recent enhancements to the change process incorporated into procedure NFS-CM-004, “NFS Change Control Process,” Rev. 6. The team focused attention on the change process enhancements directed at ensuring adequate technical basis reviews were completed and documented with appropriate management oversight and approvals. Based on this review, the team determined that the ECRs were prepared in accordance with NFS-CM-004 and the technical basis documentation contained appropriate information to allow a thorough review by licensee personnel.

The team also selected for detailed review, six recent TR documents involving modifications associated with the BPF uranium-metal/oxide process line to ensure they were conducted in accordance with the guidance in procedures NFS-CM-004 and NFS-TS-009, “Configuration Management of Process Change,” Rev. 2. In accordance with these procedures, if a modification (i.e., process change) involves a new process or change to an existing process that is not bounded by the existing process parameters, process inputs or process designs, the modification is required to have an enhanced technical basis review conducted using procedure NFS-TS-009. For the six TR documents reviewed, three were determined by the licensee to require an enhanced TR performed. The team determined that the TR documents were completed in accordance with licensee procedures and each provided adequate technical basis documentation to allow for a thorough review of the process changes by licensee personnel.

Conclusions:

The team determined that adequate maintenance work controls and management oversight existed to ensure the proper priority and attention was placed on maintaining important equipment necessary for the safe restart and operation of the BPF uranium-metal/oxide process line. Significant improvements were noted in the assessment of open work requests via the development of a new work management review process which was implemented following NRC observed weaknesses during the Navy Fuel line readiness assessment in March 2010.

Minor weaknesses were identified in the accuracy and completeness of work implementation documentation associated with several Minor 1 work requests. Poor process change control was identified for an electrical conduit alteration to both BPF uranium-oxide dissolution system loading enclosures that could have adversely impacted the integrity of the enclosures' ventilation boundary. Technology Review and ECR documents selected for review associated with the BPF uranium-metal/oxide process line were prepared in accordance with the newly enhanced process change procedures and contained the appropriate level of detail and technical basis documentation to allow for thorough licensee reviews.

3. Corrective Action Program

Inspection Scope:

To evaluate the adequacy with which the licensee prioritized open items, specific to the uranium-metal/oxide process line, within their CAP, the team reviewed multiple PIRCS items. Specifically, the team reviewed 93 open PIRCS entries, dating from January 1, 2009, of which 13 warranted further evaluation. For the 13 items requiring further evaluation, the team assessed the adequacy of the problem description, assigned priority, assigned risk(s), proposed or completed investigations, proposed or completed corrective actions, and associated due dates. The team also assessed the licensee's review of open CAP items, specific to the uranium-oxide process line, and their evaluation of the assigned prioritization. The team noted that this review encompassed open PIRCS entries dating from March 2000. Additionally, the team evaluated the licensee's processing of two open PIRCS entries, P22851 and C11379, which were identified as directly affecting startup of the uranium-metal/oxide process line. The team assessed the adequacy of the problem description, assigned priority, assigned risk(s), proposed or completed investigation, proposed or completed corrective action, and associated due dates.

Observations:

The effectiveness of the PIRCS screening meetings had been enhanced since the Navy Fuel line RRAT inspection. Observations made by the inspection team had been addressed. The team observed improved accountability and clearer communications at the meetings.

Conclusions:

The team determined that the licensee had properly prioritized all open items, specific to the uranium-metal/oxide process line, within their CAP. The team concluded that the items requiring further evaluation were adequate in their problem description, assigned priority, assigned risk(s), proposed or completed investigations, proposed or completed corrective actions, and associated due dates. The team determined that the licensee's review of open CAP items, specific to the uranium-metal/oxide process line, and their evaluation of the assigned prioritization were adequate.

4. Design Basis

Inspection Scope:

The team performed a vertical slice review of the facility's ISA with a particular focus on the uranium-oxide, uranium-metal, solvent extraction (SX), and downblending systems associated with the BPF. As part of this vertical slice review, the team selected several accident

sequences that included a sampling of the above four systems located in the BPF. The selected sequences also included the four noted accident risk areas of criticality, radiation, chemical, and fire. The selected sequences and their functional areas are listed below:

Sequence 4.1.8.4 (Uranium-Oxide/Criticality);
Sequence 4.1.5.2.3 (SX/Criticality);
Sequence UMD 1.7 (Uranium-Oxide/Chemical);
Sequence UMD1.200 (Uranium-Oxide/Chemical);
Sequence Fire-27 (Uranium-Metal/Fire);
Sequence Red Oil Scenario 8 (SX/Fire);
Scenario 4.1.1.6 (Downblending/Criticality);
Scenario BPF-RWC-64 (Uranium-Metal/Radiation);
Scenario 1PRS17.18B (SX/Chemical);
Scenario 4.1.7.4.1 (Uranium-Metal/Criticality);
Scenario 1UALBC49.068 (Building 333/Chemical);
Scenario 4.1.2.6 (Building 333/Criticality); and
Scenario UND6.39 (Uranium-Oxide/Chemical).

The team verified that the above accident sequences were properly classified as either intermediate or high consequence. The team evaluated the licensee's methodology for accident sequence evaluation and noted that it was consistent with the methodology described in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility." The team verified that adequate IROFS were designated as a result the accident sequence evaluation. The team examined various IROFS to verify that adequate and appropriate management measures were implemented to ensure the IROFS could perform their intended safety function if called upon. The team also performed walkdowns in the field to verify the presence of the IROFS and that they were clearly marked as IROFS by their SRE tags. Selected SRE tests were examined to verify that the IROFS safety function was being appropriately tested. Finally, the team examined various setpoint calculations to ensure the design basis as described in the ACE was constructed in an accurate and logical fashion.

Observations:

The Augmented Inspection Team Report 70-143/2009-011, which evaluated the BCS event from October 13, 2009, identified an issue (currently being tracked as Apparent Violation (AV) 70-143/2010-007-05) regarding the failure to designate controls as IROFS for accident sequences. One of the accident sequences involved the uranium-oxide dissolution system. As part of the inspection effort for the review of this issue, the team reviewed memo 21T-10-0531, dated May 14, 2010. This memo documented that a multiple failure event associated with the uranium-oxide system would result in a low consequence event in regards to NO_X exposure to the worker. The memo included a calculation that showed that the NO_X generated in the room would remain below the temporary emergency exposure level (TEEL) threshold of 22.6 milligrams per cubic meter (mg/m^3). The team noted that the NFS ISA summary described a leak path factor (LPF) for gaseous releases. The LPF is defined as the fraction of airborne material of concern that leaves the confinement/containment. The ISA Summary indicated that for gaseous releases, if the release event occurs inside a process enclosure, the generation rate is assumed to be released to the room, with a LPF of 0.1. However, the calculation in the memo used a LPF of 0.01. The team notified NFS of this discrepancy, which prompted NFS to implement corrective actions. As documented in memo 21T-10-0545, dated May 18, the revised calculation indicated that this particular NO_X generation event would exceed the low

consequence threshold under certain conditions. Therefore, NFS designated existing safety controls as IROFS as required by 10 CFR 70.61 to meet the performance requirements for an intermediate consequence event.

The team noted that NFS had already implemented "good practice" IROFS for this system in response the NRC Augmented Inspection of the October 13, 2009 event. These "good practice" IROFS had been handled differently from required IROFS in that they were classified as good practice IROFS. The team identified this unique classification, while conservative, was inconsistent with the ISA methodology and was noted as a potential weakness in the ISA program.

Conclusions:

The team identified a non-compliance in an accident sequence consequence evaluation, which was described as an example of the apparent violation issued in Inspection Report 70-143/2010-007. The team subsequently reviewed NFS' corrective actions and found that sufficient controls were designated as IROFS to ensure the accident sequence would remain unlikely. However, the practice of identifying IROFS inconsistent with the ISA methodology was noted as an ISA program weakness.

5. Management Oversight

Inspection Scope:

The team independently assessed the effectiveness of several recent management initiatives, including the implementation of the SEW role and their feedback, the increased management presence on the floor, the evaluation of the management feedback, the functionality of several new meetings, the resolution of safety related corrective action items, the appropriate oversight of safety related changes and anomalies, and changes in the organizational structure of the facility. The team observed shift turnover meetings, daily area stand-up meetings on the floor, daily Three Week Look Ahead meetings, and PIRCS screening meetings. The team interviewed four of the five SEWs, covering all three shifts, and discussed and assessed their latest summary reports. The majority of the senior management team was interviewed as well as several first line supervisors. The team discussed their observations from the floor walk-downs, areas that have shown improvement, and those in need of improvement.

The team reviewed NFS-SO-10-009, the NFS "Revised Restart Plan" and all related documentation, to evaluate if the licensee had proactively looked ahead at the expanding challenges of continuing the Navy Fuel line operations while starting up a new line in BPF uranium-metal/oxide process line and other lines in the future. The licensee's Management Readiness Assessment Board performed a "Way Point Evaluation" (WPE) in which they assessed the progress of the BPF start up activities and lessons learned from Navy Fuel line start up for the period of March 27 through April 9, 2010. The team reviewed this WPE for breadth and depth of its scope, resource considerations, and conclusions reached. The team assessed the organizational changes the licensee made which were to be effective May 17, 2010. The culmination of these assessments allowed the team to independently determine the adequacy of the approach the licensee made to the restart of the uranium-metal oxide process line, while continuing an appropriate level of management oversight for the Navy Fuel line.

Observations:

The team evaluated the efficacy of the SEW role to: 1) support and enhance management oversight, 2) provide independent, unfiltered information to senior management, and 3) increase effective communication of safety related issues both up and down the chain of command. The SEW had been in effect approximately three months when the team did this assessment. Through interviews with four of the five SEWs, the team learned that the roles, responsibilities, and authorities of the SEWs were not initially consistent with expectations. In the first few weeks, several first line supervisors felt that establishing the SEW indicated a lack of trust by senior management. However, the team determined that is no longer the mainstream view on the floor. The roles, responsibilities, and authorities (three months into the program) were working effectively as stated in the Standing Order, NFS-SO-10-008, "Enhanced Operations, Management and Communications."

The team reviewed a sample of the individual SEW daily reports of their observations on the floor which rated accountability, conservative decision making, communications, and questioning attitude. The SEWs noted a marked improvement in staff having the appropriate questioning attitude, but observed continuing challenges in the area of effective communications, especially between departments. These conclusions were also evident in the SEW summary letter to the Vice President of Operations for the WPE. The Vice President of Operations noted that the information being supplied by the SEWs was also being supplied in a parallel path from the line organization through the Director of Operations. The team noted the value of the SEW feedback. For example, the purpose and format of the 8:15 Daily Stand Up meetings were changed based on suggestions from the SEWs.

The team attended several meetings including the Three Week Look Ahead, PIRCS Screening, Shift Turnovers, Daily Stand Up, Daily BPF Restart Status Meetings. The team assessed the adequacy of management oversight and communication through these meetings. The team interviewed most of the senior management team to evaluate their roles in the continuing Navy Fuel line operations and the startup of the uranium-metal/oxide process line. The team noted a marked increase of managers' presence on the floor, at shift turnover meetings and walk-downs on shift. The team interviewed the scheduling manager and reviewed the schedules for management presence on the floor and concluded that the licensee had a deliberate path forward. When scheduled, a senior manager will be on the floor no less than three hours of the eight hour shift. The senior management presence is in addition to the SEW, engineering, and safety presence on the floor.

The team independently reviewed each component of the WPE. It included both a look back and a look forward to ensure safe operations would continue in the Navy Fuel line while the start up of the uranium-metal/oxide process line occurs. Specifically, it addressed the management oversight with respect to the start-up of the Navy Fuel line, ongoing operations, and BPF startup in the areas of: 1) Recovery Plan Metrics, including event management, SEW and senior management observational feedback and decision making, 2) notification to senior management of unusual events, 3) meeting the requirements of the Conduct of Operations procedure, 4) PIRCS issues being appropriately addressed, 5) employee survey results, 6) conclusions from a collegial Senior Management discussion, 7) SEW individual summary reports, and 8) the Safety Culture Board of Advisors (SCuBA) team's informal verbal input. In addition, the WPE assessed the improvements made in the areas of management oversight, communications, questioning attitude, and safety over production. The team concluded that the employee self-surveys were not a representative self-assessment, as they were only available for a few days and which only half the employees completed. The WPE showed that communications

continued to be an area in need of improvement, as discussed in both senior management feedback and SEW feedback. The team also noted that the workload for the white collar staff, particularly the Process Engineers, was very high. The licensee had a commitment due July 30, 2010, to ensure schedule compression actions consider the impact on white-collar as well as blue-collar resources and workload. This commitment will utilize the Three Week Look Ahead schedule and resource load the schedule to ensure appropriate distribution of work. Improvements noted by the team included: 1) the increased questioning attitude as demonstrated by workers questioning procedure steps and writing PIRCS to resolve issues; 2) the continuous improvement in briefings and meetings as demonstrated by changes in structure, location, chairman, and content; and 3) the increased presence on the floor by both engineers and management. The team noted that an additional engineer would be staffed on the floor in addition to the management and safety representatives for the start up of BPF uranium-metal/oxide to ensure adequate coverage of both Navy Fuel line and BPF during this time.

In discussing the Senior Management Observation Feedback from the licensee's WPE, the team noted that the managers rated several components of operations during his/her shift, including, but not limited to: contacting at least five operators, evaluating daily turnover and pre-job briefs, ensuring no inordinate production pressure exists, and evaluating event/anomaly management. The team observed the operators and managers in discussions following the daily turnovers as well. The team noted that both the results of the SEW Observation Feedback and the Senior Management Observation Feedback were tracked by the licensee for concerns, trends, and for reevaluation by the MRA Board at the next WPE.

The team reviewed the recent modifications of the organizational structure which went into effect May 17, 2010. The team independently examined the changes and discussed the basis for which they were made with the licensee. The team interviewed staff at all levels with respect to the recent changes. Through interviews, some SEWs felt that the new Work Management organization was creating a work request bottleneck and that there was confusion over ownership and approvals of work requests. However, it should be noted that the department was newly formed and that implementation and changes were still in progress. Conversely, the team noted improvements in the following areas: 1) independence of the Engineering organization from Operations, 2) elevation of the Safety organization to report directly to the President, and 3) creation of the Assurance department which also reports to the Board of Directors to ensure appropriate oversight. The team noted these recent changes, in general, have created checks and balances to underscore the focus on safety.

Conclusions:

No findings of significance were identified. The team concluded that the licensee had a deliberate and methodical approach to ensuring adequate management oversight of the restart of the uranium-metal/oxide process line while continuing the appropriate level of management oversight of the Navy Fuel line. Two areas for improvement, as documented in both the licensee's WPE and as concluded by the inspection team, were communications and the resource loading of the schedule to reflect associated manpower. Licensee initiatives to address these issues are ongoing. The team observed significant improvement in the level of management engagement with operators on the floor but noted the importance of maintaining this after start up activities are completed. The team concluded that the SEW and senior management field observation feedback was candid and insightful and may yield further progress in the early identification of issues.

D. EXIT MEETING

During the course of the inspection, the team provided members of the plant staff and management with summaries of inspection observations on a daily basis. During these discussions, licensee representatives identified some material examined during the inspection relating to as proprietary. All proprietary information was returned to the licensee. The team presented the inspection results to members of the plant staff and management at a public meeting conducted on June 24, 2010, in Erwin, TN. The plant staff acknowledged the findings presented.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Amerine, President, Nuclear Fuel Services
E. Athon, Director Applied Technology/Principle Scientist
R. Dailey, Director, Engineering
M. Elliott. Director, Quality, Safety, and Security Department
T. Lindstrom, Vice President of Operations
M. McKinnon, Director of Operations
M. Moore, Director, Safety and Regulatory Affairs
J. Nagy, Chief Nuclear Safety Officer
D. Ward, Interim Director, Safety and Regulatory
J. Wheeler, Licensing and ISA Manager

LIST OF ITEMS OPEN CLOSED AND DISCUSSED

Discussed

70-143/2010-007-05	AV	Failure to identify engineered or administrative controls as IROFS required by 10 CFR 70.61(e) (Section C.4)

LIST OF DOCUMENTS REVIEWED

Procedures
SOP 409 Section 1, General Requirements for BLEU Prep.and Associated Facilities, Rev. 26
SOP 409 Section 8, Uranium-Oxide Dissolution, Revs. 30 and 31
SOP 409 Section 12, First Pass Solvent Extraction, Rev. 16
SOP 409 Section 13, Second Pass Solvent Extraction, Rev. 12
SOP 409 Section 15, HEU Downblending Operations, Rev. 16
SOP 409 Section 16, LEU Downblending Operations, Rev. 20
SOP 409 Section 22, Movement of BPF Nuclear Materials, Rev. 15
SOP 409 Section 40, Uranium-Metal Button Shearing, Rev. 6
SOP 409 Section 42, 304 Processing System, Rev. 6
NFS-CM-004, NFS Change Control Process, Rev. 6
NFS-GH-56, Management Measures Identification and Implementation for IROFS, Rev 6
NFS-GH-901, Configuration Management Program, Rev. 14
NFS-GH-911, Integrated Safety Analysis (ISA) Program, Rev. 4
NFS-GH-922, NFS Problem Identification, Resolution, and Correction System (PIRCS), Rev. 9
NFS-HS-A-67, Documenting the Safety and Regulatory Review of Facility Changes, Rev. 6
NFS-HS-A-68, ISA Risk Assessment Procedure, Rev. 4
NFS-OPS-001, Conduct of Operations, Rev. 1
NFS-SO-09-006, Enhanced Operations, Management, and Communications
NFS-SO-10-003, NFS Restart Plan (Navy Fuels Line)
NFS-SO-10-008, Enhanced Operations, Management, and Communications

NFS-SO-10-009, Revised Restart Plan (BPF Uranium-Metal/Oxide)
NFS-TS-009, Configuration Management of Process Change, Rev. 2
NFS TS-012, Status and Release of Process Starting Materials
SOP-392, Work Request Procedure, Rev. 22
SRE Tests: AM1 (8-7-1981), IROFS 304-CONV, IROFS-333-NATRL, IROFS 333-UMETAL
LOA-MISC-10-025, Inactive Equipment Requirements and Tracking

Miscellaneous Documents
NFS Site ISA Summary, Rev. 7
NFS BPF ISA Summary, Rev. 7
NFS Chemical Analysis Methodology and Calculations, Rev. 3
Memo 21T-10-0531 from E. Senter to R. Shackelford dated May 14, 2010
Memo 21T-10-0545 from J. Wheeler to R. Shackelford dated May 18, 2010
Fire Hazards Analysis L Process, Rev. B dated May 3, 2006
Nuclear Criticality Safety Evaluation (NCSE) BLEU Preparation Facility Downblending, Rev. 8
NCSE BLEU Preparation Facility Solvent Extraction, Rev. 8
NCSE BLEU Preparation Facility Uranium-Oxide, Rev. 13
Control Flowdown and Field Verification For Bldg 333 Uranium-Oxide Dissolution Non-Criticality IROFS, Rev. 0
Technology Review of BPF Uranium-Metal/ Uranium-Oxide Starting Materials (U), CEA-10-005
Technology Review Status Log
333 Raffinate Inline Monitor SRE Setpoint Analysis
Building 304, BPF Metal Oxidizers, Set Point Analysis Nitrogen ORIFCE-3X01/PSV-3X01 and Plant Air ORIFCE-3X02/PSV-3X01
Building 304, BPF Metal Oxidizers, Set Point Analysis Nitrogen PCV-3x03/PI-3X03 and Plant Air PCV-3X04/PI-3X04
DOE Handbook 3010-94
Column-3E01 POG Line Loss of Ventilation Setpoint Analysis
BPF Solvent Extraction Dike Capacity Set Point Analysis
Uranium-Oxide Dissolution System Feed Rate and Purge Set Point Analysis
Memo DEB-10-001
Final Report: Purification of Uranyl Nitrate Solutions to Meet Transuranic Impurities Specifications

Problem Identification, Resolution, and Correction System Reports (Identification No.)
P20307, P20518, P21448, P21695, P22152, P23257, P24492, P24520, P23005, P23058, P23318, P23572, P23903, P23925, P23941, P24005, P24048, P24117, P24242, I10505, I10610, I10758, C8224, C8387, C11243, C11616, C11617, C12399, C12400, and C12403

Enterprise Change Requests (ECRs)
201000005, 201000011, 20100032, 20100233, 20100242, 201000287, 20100423, and 20100504

Technology Review (TR) Documents
TR-10-17, TR-10-19, TR-10-20, TR-10-23, TR-10-25, and TR-10-30

Work Requests
(Major) – M134991, M136067, M136068, M136069, M138475, M140190, M140191, M141676, and M141677
(Minor 2) – M134994, M136069, M141678, and M141854
(Minor 1) – M141162, M141172, M141633, M141641, M141646, M141859, M142947, and M143478

LIST OF ACRONYMS

ACE	Accident Consequence Evaluation
AIT	Augmented Inspection Team
AV	Apparent Violation
BCS	Bowl Cleaning Station
BLEU	Blended Low Enriched Uranium
BPF	BLEU Preparation Facility
CAL	Confirmatory Action Letter
CAP	Corrective Action Program
CARB	Corrective Action Review Board
DFFI	Division of Fuel Facility Inspection
ECR	Enterprise Change Request
IROFS	Items Relied On For Safety
ISA	Integrated Safety Analysis
LPF	Leak Path Factor
mg/m^3	Milligrams per Cubic Meter
MRA	Management Readiness Assessment
NOx	Nitrogen Compound Gas
NRC	Nuclear Regulatory Commission
NFS	Nuclear Fuel Services
PIRCS	Problem Identification, Resolution, and Correction System
RCA	Root Cause Analysis
RRAT	Restart Readiness Assessment Team
Rev.	Revision
SCuBA	Safety Culture Board of Advisors
SEW	Senior Engineering Watch
SOP	Standard Operating Procedure
SRE	Safety Related Equipment
SSC	Structures, Systems and Components
SX	Solvent Extraction
TEEL	Temporary Emergency Exposure Level
TR	Technology Review
U	Uranium
UAl	Uranium-Aluminum
VP	Vice President
WPE	Way Point Evaluation