



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

September 9, 2008

Ms. B. Marie Moore  
Vice President, Safety and Regulatory  
Nuclear Fuel Services, Inc.  
P.O. Box 337, MS 123  
Erwin, TN 37650

**SUBJECT: NUCLEAR FUEL SERVICES, INC (NFS) SAFETY CULTURE ASSESSMENT AND  
IMPROVEMENT PLAN**

Dear Ms. Moore:

This refers to your letter dated May 15, 2008, in which you submitted the Information to Fulfill Section V, Paragraph 3.c of the February 21, 2007 Confirmatory Order. The NFS-Erwin Site 2007 Independent Safety Culture Assessment Results Report (ISCARR) and the Comprehensive Safety Culture Improvement Initiative (CSCII) were reviewed by NRC's Configuration Management and Safety Culture Improvement Oversight Panel (Panel). Following their review, the Panel developed a list of informational items needed in order to understand the ISCARR and the CSCII. Response to these items will help inform the Panel on the reasonableness of NFS' actions in improving safety culture, will help focus NRC's inspection effort for verifying completion of corrective actions, and will provide input for evaluation of the second safety culture assessment required by the Confirmatory Order to be conducted in 2010. The list of items is enclosed.

Within 30 days of issuance of this letter, please provide a written response to the items listed in the enclosure for NRC review.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

B. Moore

2

Should you have any questions concerning this letter, please contact me.

Sincerely,

*/RA/*

David A. Ayres  
Configuration Management and Safety Culture  
Improvement Oversight Panel

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

Enclosure: As stated

cc w/encl:  
Timothy Lindstrom  
General Manager  
Nuclear Fuel Services, Inc.  
Electronic Mail Distribution

Lawrence E. Nanney  
Director  
TN Dept. of Environment & Conservation  
Electronic Mail Distribution

William D. Lewis  
Mayor  
Town of Erwin  
211 N. Main Avenue  
P.O. Box 59  
Erwin, TN 37650

Gregg Lynch  
Mayor  
Unicoi County  
P.O. Box 169  
Erwin, TN 37650

Johnny Lynch  
Mayor  
Town of Unicoi  
Unicoi, TN 37692

Distribution w/encl: (See page 3)

Distribution w/encl:

- D. Ayres, RII
- P. Silva, NMSS
- I. Schoenfeld, OE
- M. Ernstes, RII
- J. Marshall, NMSS
- P. Habighorst, NMSS
- J. Shea, RII
- D. Dorman, NMSS
- M. Tschiltz, NMSS
- R. Caldwell, NSIR
- S. Magruder, OE
- M. Crespo, RII
- S. Burris, RII
- D. Payne, RII
- C. Evans, RII
- K. Ramsey, NMSS
- O. Bukharin, NSIR

PUBLICLY AVAILABLE  
  NON-PUBLICLY AVAILABLE  
  SENSITIVE  
  NON-SENSITIVE  
 ADAMS:  Yes  
 ACCESSION NUMBER: \_\_\_\_\_  
  SUNSI REVIEW COMPLETE

OFFICE	RII:DFFI					
SIGNATURE	Dam 9/9/08					
NAME	DAyres					
DATE	9/ /2008	9/ /2008	9/ /2008	9/ /2008	9/ /2008	9/ /2008
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY  
 DOCUMENT NAME: G:\FFBI\SAFETY CULTURE\NFS\COVER LETTER FOR ISCA AND CSCII COMMENTS.DOC

**QUESTIONS REGARDING THE  
2007 INDEPENDENT SAFETY CULTURE ASSESSMENT RESULTS REPORT  
AND  
NFS' COMPREHENSIVE SAFETY CULTURE IMPROVEMENT INITIATIVE  
(CSCII) PLAN**

SAFETY CULTURE BOARD OF ADVISORS (SCUBA) REPORT

1. Provide details of why the SCUBA did not perform an assessment of chemical safety at NFS (i.e. justify its exclusion).

The SCUBA report (p. 4) stated that chemical safety was not assessed, but observations and suggestions in this area were provided to NFS separately. Chemical hazards and controls are some of the most prevalent issues at most fuel cycle facilities, including NFS. Observations by the SCUBA team of chemical safety concerns could factor significantly into a number of safety culture components depending upon the nature and repetitiveness of the concerns.

2. Explain why the security findings were not addressed in accordance with the 13 attributes of safety culture found in RIS 2006-013.

Due to the sensitive nature of the information involved, the evaluation of the security departments and programs was conducted by an individual separate from the rest of the SCUBA team. The resultant report was not in accordance with the format specified in the SCUBA report in that it did not address security issues with regard to the 13 components of safety culture found in RIS 2006-013, and its findings were not categorized using the Area for Improvement (AFI)/ Area in Need of Attention (ANA)/ Opportunity for Improvement (OFI) designators. Thus, they were not used as part of the listing of "most significant" findings, and common themes in the findings may not have been considered between the security department and the rest of NFS.

3. Provide information on why the SCUBA team did not recommend actions for the High Enriched Uranium (HEU) organization and why there were no recommended actions to address the identified issues related to the other Priority 2 Outlier Organizations.

The SCUBA report (p. 104) identified an ANA for the Outlier Organizations and included recommendations for four of the seven organizations, but not the other three. The report stated that no independent corrective action was required for three of the Outlier Organizations and that NFS management needed to take remedial action for the other four organizations. However, one of the three organizations where there is no recommended action, the HEU Fuel Production facility, is designated Priority 1 in that it had a potential need to take remedial action in the immediate future. An understanding is needed of how the SCUBA team determined that this Priority 1 organization (and the other Priority 2 organizations) did not need remedial action.

Enclosure

4. Provide information on why the SCUBA did not develop recommendations for the Safety Culture Leadership Team based on their evaluation of the NFS Safety Culture Self-Assessment.

The SCUBA team evaluated the Safety Culture Self-Assessment (SCSA) conducted by the NFS Safety Culture Leadership Team in terms of sufficiency of self-criticalness (Att. D). Results of this analysis are provided and there are indications of weaknesses in the SCSA, however, there are no accompanying recommendations even though the Action Plan indicates that they will continue to conduct SCSAs.

5. Provide information on how the SCUBA team compensated for the differences and limitations in workforce representation in the Phase 1 and Phase 2 interviews.

Phase 1 interviews, conducted prior to administering the survey, were heavily drawn from management/executive director level and significantly less so from the workforce level. Phase 2 interviews focused on survey follow-up with outlier organizations. Since it is important to gain sufficient information from all organizational levels to determine extent of alignment in perceptions/attitudes of “how things work around here,” a description of how the SCUBA team compensated for the limited Phase I and Phase 2 interviews of the workforce to help with an understanding of the context of the team’s conclusions of the interview results.

6. Provide information on how the SCUBA team addressed comments received through survey responses that were not items specifically addressed in the survey questions.

Approximately 48% of survey respondents provided comments (1114 comments; 64% were negative). Some of the write-in comments identified issues in areas that were not specifically addressed by the survey questions. The SCUBA report indicates that follow-up interviews were targeted to personnel in the Outlier Organizations or organizations with low survey results. It is not clear if the SCUBA team conducted any follow-up interviews due to “identified issues not specifically addressed in the survey” that were not necessarily linked to Outlier Organizations or low survey results.

7. Provide the source(s) of “industry best practices” other than those in the Industry Best Practices reference list, if any, and also the sources for “industry norms.”

The SCUBA team report (pg. 5) states that “Application of these challenging evaluation criteria led to the identification of a significant number of identified ‘Areas for Improvement’ and ‘Areas in Need of Attention’ in the NFS Safety Culture.” However, it is important to recognize that the application of somewhat less challenging criteria (e.g., industry norms) would also have led to the identification of a significant number of areas needing improvement.”

8. Provide information on which specific aspects of the Work Control Safety Culture Component descriptions the SCUBA team determined does not directly apply to fuel cycle facilities and which do. What is the source(s) for the fuel cycle facility industry best practices in this area and how does it differ from the nuclear reactor industry best practices?

The SCUBA team report (p. 36) states that the Work Control safety culture component is not directly applicable to fuel cycle facilities and makes a comparison of the types of risks and risk assessments between nuclear reactors and fuel cycle facilities. This component is described in the enclosure to RIS-2006-13 is not necessarily reactor specific as it explains Work Control as planning and coordinating work activities consistent with nuclear safety. The description goes on to generically mention that Work Control includes appropriately planning and coordinating work activities by incorporating risk insights, job site conditions, the need for planned contingencies and compensatory actions, addressing impacts of changes to work scope, coordination of work groups, keeping personnel apprised of work status, and planning work to support long-term equipment reliability. It is not clear why the SCUBA team determined that most of this component, as described in RIS-2006-13, would not apply to fuel cycle facilities.

9. Provide information as to how the over-arching themes and their groupings were determined. Detail the criteria that were used to determine the “most significant” findings of the over-arching themes.

The SCUBA report (p.10) discusses that the SCUBA team developed a set of nine major over-arching themes to organize, categorize and cross-correlate the individual findings from the assessment. It further discusses that using such an approach will help ensure that assigned corrective action issue owners are aligned and can effectively coordinate their efforts with co-workers who are working on similar broad themes within different Safety Culture Components.

The designation of an item as a “most significant” finding can be misleading since each of the over-arching themes has at least one “most significant” finding and the most significant finding under one theme may be less important than a finding under another theme that was not designated as “most significant”. A better understanding of what a “most significant” finding means is needed in determining the adequacy of the NFS prioritization plan.

10. Provide the basis for not addressing issues identified in the supplemental evaluations within the overall safety culture assessment.

The SCUBA conducted supplemental evaluations of a number of areas as specified in their assessment plan. These additional reviews included: Adequacy of Corrective Actions in Response to violations listed in the Confirmatory Order (Att. A); Outlier Organization Interview Results (p. 103); Adequacy of Actions Related to Commitments made during a meeting with NRC (Att. B); Adequacy of Corrective Actions associated with Configuration Management (Att. C); In-Process Recommendations (Att. E). In

many cases, the SCUBA team assigned AFI/ANA/OFI criteria to these reviews. Since these supplemental evaluations identified issues dealing with safety culture, an understanding is needed as to why they were not specifically addressed in the safety culture component write-ups, the AFI/ANA/OFI designations, and the nine over-arching themes and associated “most significant” determinations.

11. Provide an explanation as to how the results of the evaluation of “Outlier Organizations” were incorporated (or reasons why they were not incorporated) into the overall Independent Safety Culture Assessment.

The SCUBA team report (p. 103) discusses the Outlier Organizations as identified by low numerical ratings for key cultural metrics in the survey results. The SCUBA team designated them as either Priority 1 or Priority 2 in terms of recommended action levels (i.e., potential need for remedial action in the immediate future [Priority 1] or near-term [Priority 2]). The SCUBA team recommended that NFS management take remedial action with four of the Outlier Organizations to resolve the issues identified, and provided separate reports detailing its findings to NFS management. It is not evident how these findings were considered in the overall safety culture assessment, the safety culture component supporting information, the nine over-arching themes, and the “most significant” findings determination. Since the results were linked to low ratings on key cultural metrics, it is not clear why these results would not be incorporated into the safety culture assessment, but would be dealt with separately.

#### **QUESTIONS REGARDING THE COMPREHENSIVE SAFETY CULTURE IMPROVEMENT INITIATIVE (CSCII)**

12. Explain why NFS did not provide an evaluation of the findings from the SCUBA member’s review of the security program. Explain how NFS considered the security findings in the overall assessment of NFS’ CSCII.

Although recommendations were developed and placed in the Crosswalk for these security findings, information is needed on how NFS considered these findings within the overall context of the NFS’ CSCII.

13. Provide information on how NFS is meeting the most significant challenges as identified by the SCUBA team.

The SCUBA report (p. 9) states that the most significant challenges for NFS are “(1) convince the organization of the need to change; (2) develop and implement an effective action plan; (3) ensure that the appropriate resources are made available, effectively deployed, and steadfastly reinforced by NFS management.” Since these are high-level, over-arching conclusions, it is of utmost importance that NFS ensures it does not lose sight of these challenges when working on the individual pieces of the safety culture

improvement program. Information is needed on which specific CSCII Plan actions or activities address challenges #1 and #3, and on the process used in developing the NFS CSCII Plan and its associated activities.

14. Provide information on all the differences and their bases between the SCUBA recommendations and CSCII Plan activities, priorities, and/or schedule (e.g., AFI-CAP-01, OFI-CLE-01, AFI-OCM-01).

NFS' CSCII plan differs from the SCUBA recommendations in several places. Since the SCUBA recommendations were a result of their ISCA, the basis for the differences is not clear.

15. Describe the process, criteria, and justification that NFS used for defining priority levels (VH, H, M, and L) and assigning priorities and completion dates to items in the Crosswalk.

A review of the Crosswalk items showed that the listed priorities are not always aligned with the "most significant" and other designations of the findings in the SCUBA report. The SCUBA team's designations are based on comparisons to industry best practices (per NFS' direction). A review of the definitions of the various priority levels shows that priorities are based first on an item's impact on improving the Configuration Management and/or Procedural Compliance Programs, and secondarily to other Safety Culture components. The definitions also include targeted completion or implementation dates associated with each level (VH targeted for 2008, H for 2009, M for 2010 and L for 2011).

16. Describe how the three recommendations in the Crosswalk related to SCUBA Report Attachment G, were determined to have an OFI designation, and how their priority was determined.

The recommendations in Attachment G of the SCUBA report, "Reference List for Industry Best Practices" were not given AFI/ANA/OFI designations by the SCUBA team. The NFS CSCII Crosswalk rolls up the findings in Attachment G of the SCUBA Report into three recommendations related to; information collection, benchmarking, and training. The Crosswalk gives each of these three recommendations an OFI designator. One of these (OFI-REF-01) is listed as Very High priority. The other two (OFI-REF-02 and OFI-REF-03) are listed in the Crosswalk as Medium priority and they relate to SCUBA findings designated as AFIs (AFI-DEC-01-003 and AFI-CAP-03 respectively) . Hence, it is not clear why the three recommendations were given an OFI designation or how their priority was determined.

17. Explain how the prioritization process determined that all nine recommendations associated with the Corrective Action Program Effectiveness and Quality (AFI-CAP-03) were Medium priority and all six recommendations associated with the Operating Experience (AFI-OE-01, and 02) safety culture component were Low (4 ea.) or Medium (2 ea.) priority.

Nine recommendations from a SCUBA team finding was in the area of the effectiveness and quality of the Corrective Action Program. Although this finding was rated as an AFI and a “most significant” finding, all nine recommendations (split into 10 recommendations in the Crosswalk) associated with this finding were given a Medium priority. These recommendations center on improving the timeliness and quality of both event investigations and identified corrective actions which has been a significant problem in the past and was recognized by the SCUBA team to need a lot of attention.

Further, the OE recommendations are tied to the CAP issue in that they are addressing learning from and acting on internal and external operating experience.

18. Provide a description of NFS’ plans for addressing items in the Crosswalk that were not identified as “most significant” in the SCUBA report.

Section 4.3.5 of the NFS CSCII provides NFS’ Progress and 2008 Plans Related to “Most Significant Findings” and states that NFS has focused near-term action on the 21 findings designated as “most significant.” These descriptions give NRC a more complete understanding of NFS’ direction in improving safety culture. However, some of the recommendations that were not designated as “most significant” were listed with VH or H priority in the NFS Crosswalk, thus indicating their relative importance from NFS’ perspective. The items listed with M or L priorities are also of importance because they may help provide long-term sustainability of the safety culture improvement initiative. Information on how NFS plans to address all of the findings and recommendations not listed as “most significant” is needed beyond the limited information given in the Crosswalk.

19. Because of the interrelatedness of many of the safety culture component findings and recommendations, provide details on how NFS will ensure coordination and communication with regard to their corrective actions.
20. Provide information on how NFS will address specific program weaknesses described in each safety culture component write-up under “Supporting Information” in the SCUBA report that are not specifically addressed in the AFI, ANA, or OFI roll-up.

The SCUBA report systematically goes through each of the 13 safety culture components providing observations and examples of individual programmatic deficiencies, rolling them up to reach conclusions and recommendations. NFS provides

commitments to implement these general recommendations, but does not always address the individual programmatic deficiencies. Information is needed on how NFS will address the individual programmatic deficiencies.

Examples include but are not limited to:

- The SCUBA report (pg. 34) states a number of observations and other process related documents revealed: that the current procedures are too detailed and clumsy to use in the field, and that it is difficult to make timely changes to procedures...the deficiencies in the procedure change process contributed to inconsistent procedure use. ...the resultant procedures were frequently impossible to implement without operator work-arounds or manual compensation.. This indicates that there are organizational contributors in addition to individual contributors to procedure non-compliance. Yet the focus appears to be on the individual procedure compliance (WP2) issue.
  - The stated need/desire for additional training focused on the recognition and mitigation of criticality and radiation hazards. (SCUBA pg 31, last bullet)
  - Consideration of a reliability-centered approach to preventive maintenance. (SCUBA pg 33)
  - "...root cause analysis training has not been systematically administered in the past ten years; and there are no...re-qualification requirements for analysts or reviewers. No formal training is offered relative to the conduct of apparent cause evaluations." (SCUBA report, pg. 55);
  - "Common cause investigations are inconsistent and not available yet in PIRCS options. (SCUBA report, pg. 60)
  - Attachment B of the SCUBA report evaluates NFS' responses and efforts to close/complete the commitments made in the meeting at NRC HQ on 9/18/06.
  - The SCUBA team found the NFS effort to develop and implement a common cause analysis for CAP was inadequate. (SCUBA report, Att. B)
21. Provide information on how the 2008 Safety Culture Strategic Plan objectives, strategies, and action plans were identified and how they relate to the findings in the SCUBA report. Provide what metrics such as "increase," "decrease," "improve," represent, i.e., what are the criteria? Provide information on how each of the performance-based metrics is tied to the SCUBA team findings or other identified deficiencies.

22. Provide information on how the NFS CSCII considered the nine over-arching themes in developing activities, priority and schedule to address the SCUBA report's findings.

The SCUBA report grouped findings under nine over-arching themes. Information is needed on how the NFS CSCII considered these groupings in terms of their connectedness relative to activities, priority and schedule. Or, if NFS used a different approach in handling related findings, provide information on that approach.

23. The NFS activities related to the results of the third party safety culture assessment and the action plan activities represent extensive organizational change. The SCUBA report designated an AFI in the Organizational Change Management safety culture component. Provide information on how NFS is using an improved change management process to address the activities resulting from the safety culture assessment.
24. Provide information on how NFS is tracking all the activities to address the safety culture weaknesses (i.e., those in the crosswalk and others that are not specifically called out in the crosswalk).
25. Provide any available documents referenced in the NFS CSCII. This would include the documents listed on page 14 of the CSCII and in the Action Plan column of the Crosswalk and NFS's classified response to the classified Scuba report on the NFS nuclear material security program. Provide any sub-tier documents that have been developed from those listed in the CSCII (e.g., those referenced in the one page plans). Also provide a copy of the last year's NFS Quarterly Safety index (NFS Consolidated Plan).

In order to conduct a thorough review of the adequacy of the safety culture program, NRC must have available documents that have been referenced as being relevant to the program. The NFS Comprehensive Safety Culture Improvement Initiative (p. 14) lists 21 documents that exist, are being considered for implementation, or are being planned relevant to safety culture improvements. The Action Plan column of the Crosswalk also lists a series of One Page Plans (one for each responsible manager) that would include a strategy for implementing the SCUBA team's recommendations. The Action Plan column of the Crosswalk also lists other documents that would be pertinent to NRC's review of the NFS Safety Culture program. Any other documents with the objective of implementing the NFS Safety Culture Improvement program or the recommendations of the SCUBA team that are developed from or referenced by those listed in the CSCII are also needed.

26. Provide an update of the information in the Action Plan column of the Crosswalk and provide information on how items that do not cite an Action Plan document will be implemented. Also update any other changes to the Crosswalk.

A number of items in the Crosswalk had either no entry in the Action Plan column or had incomplete document references.

27. Provide information on how NFS will ensure metrics listed in Table C-1 will not have unintended consequences. For example, the metric to reduce reportable safeguards events needs to factor self-identification and security/safeguards significance to the metric to prevent penalizing guards with questioning attitudes for reporting events.