



Department of Energy
Thomas Jefferson Site Office
12000 Jefferson Avenue
Newport News, Virginia 23606

November 21, 2007

Mr. Michael D. Dallas
Chief Operating Officer
Thomas Jefferson National Accelerator Facility
12000 Jefferson Avenue
Newport News, VA 23606

Dear Mr. Dallas:

DOE REVIEW OF THE THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY'S CONTRACTOR ASSURANCE SYSTEM MEMORANDUM

The U.S. Department of Energy (DOE) conducted an assessment of the Thomas Jefferson National Accelerator Facility's (TJNAF) Contractor Assurance System (CAS), pertaining to Environment, Safety and Health, during the week of November 5-9, 2007. The scope of the assessment was verification of implementation of contractor requirements contained in DOE Order 226.1, *Implementation of DOE Oversight Policy*. The drivers for this assessment include expectations stated in a memorandum from G. Malosh, Chief Operating Officer, to Field Elements, subject: *Office of Science Expectations for Review of Contractor Assurance Systems Program Descriptions*, dated August 25, 2006, and DOE field element oversight requirements specified in DOE Order 226.1, Attachment 3.

The purpose of this assessment was to:

- verify that the TJNAF CAS was formalized and effectively implemented, and
- review for adequacy the TJNAF CAS Program Description.

The contractor met all review objectives; however, the team identified six findings (i.e., regulatory or contractual noncompliances) and 10 observations (i.e., concerns that are not regulatory or contractual noncompliances). In addition, two noteworthy practices were mentioned. A copy of the final report is enclosed.

Upon review of the report and discussions with the team leader, via this memorandum, I am approving the TJNAF CAS Program Description. Concerning the weaknesses identified by the DOE team, I request corrective actions plans be submitted to the Thomas Jefferson Site Office, within 30 days of receipt of this letter, for all findings and for Observation CAS.4.1.OBS.7, because of its significance. A similar concern to this observation had been previously identified by the Thomas Jefferson Site Office and transmitted to Jefferson Science Associates, LLC, in May 2007.

If you have any questions, please contact Dave Luke of my staff at 269-7139 or me.

Sincerely,


Scott J. Mallette, Deputy Manager
Thomas Jefferson Site Office

Enclosure

cc w/enclosure:

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**Assessment of the Implementation
of the TJNAF
Contractor Assurance System**

FINAL REPORT



November 2007

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Report Approval



David Carden, Team Member
Oak Ridge Office

November 16, 2007

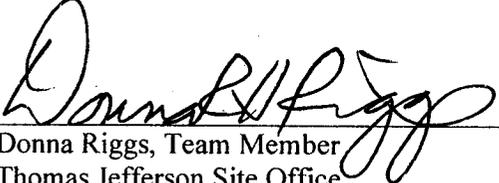
Date



Teresa Perry, Team Member
Oak Ridge Office

November 16, 2007

Date



Donna Riggs, Team Member
Thomas Jefferson Site Office

November 16, 2007

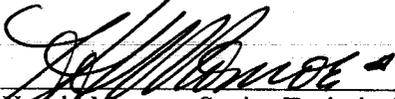
Date



Anthony Takacs, Team Member
Oak Ridge Office

November 16, 2007

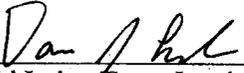
Date



Harold Monroe, Senior Technical Advisor
Oak Ridge Office

November 16, 2007

Date



David Luke, Team Leader
Thomas Jefferson Site Office

November 16, 2007

Date

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Acronyms

ATLis	Accelerator Task List
CAIRS	Computerized Accident/Incident Reporting System
CAS	Contractor Assurance System
CATS	Corrective Action Tracking System
CHL	Central Helium Liquefier
CFR	Code of Federal Regulations
CRAD	Criteria Review and Approach Documents
CY	Calendar Year
DOE	U.S. Department of Energy
ES&H	Environment, Safety, and Health
ESH&Q	Environment, Safety, Health, and Quality
FEL	Free Electron Laser
FEList	Free Electron Laser Task List
FIND	Finding
FY	Fiscal Year
ISM	Integrated Safety Management
ITP	Individual Training Plans
JSA	Jefferson Science Associates, LLC
MSA	Management Self-Assessment
NP	Noteworthy Practice
NTS	Noncompliance Tracking System
OBS	Observation
ORPS	Occurrence Reporting and Processing System
PAAA	Price-Anderson Amendments Act
PEMP	Performance Evaluation and Measurement Plan
QA/CI	Quality Assurance and Continuous Improvement
QAP	Quality Assurance Plan
SAD	Scheduled Accelerator Down
SLAC	Stanford Linear Accelerator Center
SOTR	Subcontracting Officer Technical Representative
STOP	Safety Training and Observation Program
TATL	Physics Division Task List
TJNAF	Thomas Jefferson National Accelerator Facility or Jefferson Lab (also referred to as JLab)
TJSO	Thomas Jefferson Site Office, DOE Office of Science

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Executive Summary

The U.S. Department of Energy (DOE) Thomas Jefferson Site Office conducted an assessment of the Thomas Jefferson National Accelerator Facility's (TJNAF) Contractor Assurance System (CAS), pertaining to Environment, Safety, and Health (ES&H). The scope of the assessment was verification of implementation of contractor requirements contained in DOE Order 226.1, *Implementation of DOE Oversight Policy*. The drivers for this assessment include (1) expectations stated in a memorandum from G. Malosh, Chief Operating Officer, to Field Elements, subject: *Office of Science Expectations for Review of Contractor Assurance Systems Program Descriptions*, dated August 25, 2006, and (2) field element requirements specified in DOE Order 226.1, Attachment 3.

The purpose of this assessment was to

- verify that the TJNAF CAS was formalized and effectively implemented, and
- review for adequacy the TJNAF CAS Program Description.

The contractor met all review objectives; however, the team identified 6 findings (FINDs) and 10 observations (OBSs). In addition, 2 noteworthy practices (NPs) were identified. A complete listing of the FINDs, OBSs, and NPs identified during the assessment is shown below, with detail provided in Appendices A and B.

Findings

- | | |
|-----------------------|---|
| CAS.2.3.FIND.1 | Issues from management assessments are not consistently entered in the Corrective Action Tracking System (CATS) and tracked to closure. |
| CAS.2.3.FIND.2 | CATS and the INSIGHT management dashboard tools indicate that of the 144 open corrective actions in CATS, a significant number (19 percent) are overdue. |
| CAS.3.2.FIND.3 | A structured/formal process for conducting the quarterly trend analysis of events, accidents, and injuries has not been documented. |
| CAS.3.4.FIND.4 | Processes for job hazard walk-downs, pre- and post-job briefings, and toolbox meetings have not been documented. |
| CAS.3.5.FIND.5 | How JLab makes effective use of data to determine performance relative to goals, suggest further improvements, identify good practices and lessons learned, allocate resources, and establish oversight priorities is not documented. |
| CAS.5.3.FIND.6 | Qualification standards have not been established to assure staff, who perform CAS functions, obtain training and maintain the requisite skills to effectively perform their assigned functions. |

Observations

- CAS.1.1.OBS.1** The JLab *Independent Assessment Procedure* or *Management Self-Assessment Procedure* was not utilized for conducting the Respiratory Protection and Lockout/Tagout assessments.
- CAS.1.3.OBS.2** The Laboratory Director's responsibilities described in the *Management Self-Assessment Procedure* and *Independent Assessment Procedure* are not being performed as described.
- CAS.1.3.OBS.3** The Safety Warden Inspection Program is not comprehensively documented in JLab command media.
- CAS.1.3.OBS.4** The Safety Observation Program has not been formally documented in JLab command media.
- CAS.2.3.OBS.5** The review team noted that limited documentation was available for the CATS and Work Observation systems sponsored by Environment, Safety, and Health.
- CAS.2.3.OBS.6** The review team noted that poor linkage exists between the assessment listing and the CATS tracking numbers, which results in difficulty in trying to locate the assessment record and associated issues in CATS.
- CAS.4.1.OBS.7** Jefferson Science Associates, LLC, (JSA) could not demonstrate a spreadsheet or database that ensures mandatory contractor assessments (those required by regulations and Department of Energy directives) occur at the required frequency and that all facilities, systems, and organizational elements, including subcontractors, are periodically assessed.
- CAS.4.1.OBS.8** The CAS Program Description states that an integrated assessment schedule will be developed in accordance with a written procedure. At the time of this review, this procedure was in draft.
- CAS.4.1.OBS.9** Some formal, documented processes are missing from the reference list at the end of Section 7.0 in the CAS Program Description.
- CAS.5.3.OBS.10** A specific assessment of training records has not been planned or conducted.

Noteworthy Practices

- CAS.2.3.NP.1** JSA has developed some noteworthy online resources and practices that enhance communications across the Lab. The JSA INSIGHT management dashboard tool provides a user friendly, easily accessible tool for monitoring trends and CATS status and drill down capability to obtain real-time status of issues. The JSA practice of keeping readily accessible online daily logbooks for line and ES&H staff is a good practice and useful communication tool. These information resource tools have potential for adaptation at other sites.

CAS.3.5.NP.2

JLab has established programs that identify, gather, and verify data measuring the performance of facilities, programs, and organizations and disseminates them through various systems.

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Assessment of the Implementation of the TJNAF Contractor Assurance System

1.0 INTRODUCTION

1.1 Objective

The objective of this assessment was to verify that the Thomas Jefferson National Accelerator Facility (TJNAF) Contractor Assurance System (CAS) was formalized and effectively implemented, in accordance with U.S. Department of Energy (DOE) Order 226.1, *Implementation of DOE Oversight Policy*, and review for adequacy the TJNAF CAS Program Description.

1.2 Background

DOE Order 226.1 was approved September 15, 2005. The order was part of the Jefferson Science Associates, LLC, (JSA) Request for Proposal, which JSA accepted. DOE Order 226.1 was also an existing contract requirement, as it had been originally added to the Southeastern Universities Research Association contract on May 15, 2006. The implementation plan listed areas where TJNAF was not currently in compliance with the directive and a plan and schedule for coming into full compliance. DOE Order 226.1 requires the development of a CAS Program Description, for DOE approval, that documents how existing TJNAF systems fulfill the requirements of DOE Order 226.1.

Drivers for this assessment include:

- A DOE Memorandum from George Malosh, Chief Operating Officer, to DOE Field Elements, dated August 25, 2006, requiring DOE field elements to review and approve/disapprove CAS Program Descriptions and also conduct an assessment of the implementation of the CAS by the end of Calendar Year (CY) 2007, focused on DOE Order 226.1, as applicable to Environment, Safety, and Health (ES&H) programs.
- DOE Order 226.1
 - (5.d(6)), “. . .review, concur and forward contractor assurance system program descriptions. . .”
 - (Att. 3, 1.a(2)), “Ensure the adequacy of contractor assurance systems. DOE line management must review contractor assurance systems periodically to gauge that contractors are assessing site activities adequately, self-identifying deficiencies, and taking timely and effective correction actions.”

2.0 SCOPE

This assessment included the implementation of ES&H assurance processes described in the CAS Program Description. Specific scope elements included in the review included:

- (1) A rigorous and credible assessment program for environment, safety, and health is in place which assures coverage of all facilities, systems, and organizational elements, including subcontractors, on a recurring basis.
- (2) Formal programs are established and effectively implemented to identify issues and report, analyze, and address operational events, accidents, and injuries.
- (3) Formal processes are being implemented that solicit feedback from staff at all levels.
- (4) A comprehensive, structured issues management system is in place that provides for the timely

and effective resolution of deficiencies.

- (5) Formal programs are established that identify, gather, verify, analyze, trend, disseminate, and make use of performance indicators.

The assessment scope is further detailed in the review objectives and criteria.

3.0 OVERALL APPROACH

This assessment was principally a review of TJNAF's ES&H CAS implementation of contractor requirements contained in DOE Order 226.1. The assessment included document reviews, personnel interviews, and field observations.

3.1 Development of Review Plan and CRADs

The assessment was conducted using Criteria and Review Approach Documents (CRADs) that were based on the requirements contained in DOE Order 226.1. The Review Plan was developed using the CRADS. The Review Plan and CRADs were approved by the Thomas Jefferson Site office (TJSO) Manager prior to commencement of the fieldwork portion of the assessment. A copy of the Review Plan was provided to team members prior to beginning the review.

During the assessment, the team members documented their evaluation of the criteria in the "Assessment of the Implementation of the TJNAF Contractor Assurance System Review Form" (see Appendix B) for each objective. These forms contain the basis for the conclusions reached concerning each criterion which were evaluated as being met, partially met, or not met.

The team's results are categorized using the following criteria:

Noteworthy Practice (NP) – A practice that exceeds the normal performance expectations and should be considered for sharing with the rest of the DOE complex.

Finding (FIND) – Noncompliance with regulatory or contractual requirements.

Observation (OBS) – A comment on TJNAF's performance or facility/condition/activity observed that may require resolution or further investigation but which does not link directly to a law, regulation, or contract requirement. An observation can also be a recommendation regarding implementation of a best management practice.

Closure of all findings will be tracked and documented evidence of resolution maintained in accordance with TJNAF's procedures.

All findings and observations identified during the evaluation are clearly identified on the review form.

3.2 Selection of Team

Subsequent to selection and appointment of the Team Leader by the TJSO Manager, the Team Leader identified the necessary functional areas and expertise needed for the assessment. Personnel from the DOE Oak Ridge Office were requested to provide support to the TJSO to staff the team. The Team Roster is provided in Appendix C of this assessment.

The Team Leader developed the review schedule, scope, and the expected level of effort required of the team members.

Interaction among the team members was necessary to ensure an adequate understanding of the TJSO Manager's expectations and the plan and strategy for the assessment. The review began on November 5, 2007. An opening meeting was held in which the objectives and scope of the assessment, as well as assessment logistics, were discussed. Daily briefings were held as needed to advise management of team findings and observations.

The exit brief was conducted on November 9, 2007. At this exit brief, a copy of the draft report was provided to TJNAF for factual accuracy. TJNAF was given until November 14, 2007, to complete the factual accuracy review; and the report was finalized and approved by the TJSO Manager on November 21, 2007.

3.3 Preliminary Activities

Several of the team members participated in a pre-visit held on October 17-18, 2007, and accomplished the following:

- Finalized the CRADs and the Review Plan,
- Identified some of the TJSO interview candidates and activities to observe during the fieldwork portion of the review,
- Determined which team members would support the lines of inquiry in the CRADs,
- Performed some preliminary document reviews, and
- Completed the required training for site access.

TJNAF provided team members a large number of documents in advance of the assessment. These documents included organization charts, integrated assessment schedules, standard operating procedures, the Draft Contractor Assurance Program Description, and other relevant documents.

3.4 Fieldwork Activities

Fieldwork activities began on November 5, 2007, and lasted approximately four days. The team observed field activities, interviewed selected TJNAF personnel, and reviewed documents. During the period of on-site work, the team held daily meetings to review and discuss observations and issues from the day's activities and identify areas requiring follow-up. Both strengths and weaknesses were noted. Where there were program or performance weaknesses identified, the team noted these as findings or observations.

At the conclusion of the review, a close-out briefing was held with TJNAF management and staff.

4.0 SUMMARY

See Appendix A.

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Appendix A – Summary of Findings, Observations, and Noteworthy Practices

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**Summary of Findings, Observations,
and Noteworthy Practices**

CRAD		Identifier	Description
CAS.1			
<u>Criterion</u>	<u>Status</u>		
CAS.1.1	Met	CAS.1.1.OBS.1	The JLab <i>Independent Assessment Procedure</i> or <i>Management Self-Assessment Procedure</i> was not utilized for conducting the Respiratory Protection and Lockout/Tagout assessments.
CAS.1.2	Met		
CAS.1.3	Met	CAS.1.3.OBS.2	The Laboratory Director's responsibilities described in the <i>Management Self-Assessment Procedure</i> and <i>Independent Assessment Procedure</i> are not being performed as described.
CAS.1.4	Met		
CAS.1.5	Met		
CAS.1.6	Met		
CAS.1.7	Met		
		CAS.1.3.OBS.3	The Safety Warden Inspection Program is not comprehensively documented in JLab command media.
		CAS.1.3.OBS.4	The Safety Observation Program has not been formally documented in JLab command media.
CAS.2			
<u>Criterion</u>	<u>Status</u>		
CAS.2.1	Met	CAS.2.3.FIND.1	Issues from management assessments are not consistently entered in the Corrective Action Tracking System (CATS) and tracked to closure.
CAS.2.2	Met		
CAS.2.3	Partially Met	CAS.2.3.FIND.2	CATS and the INSIGHT management dashboard tools indicate that of the 144 open corrective actions in CATS, a significant number (19 percent) are overdue.
CAS.2.4	Met		
CAS.2.5	Met		
CAS.2.6	Met		
CAS.2.7	Met		
		CAS.2.3.OBS.5	The review team noted that limited documentation was available for the CATS and Work Observation systems sponsored by Environment, Safety, and Health (ES&H).

CRAD		Identifier	Description
		CAS.2.3.OBS.6	The review team noted that poor linkage exists between the assessment listing and the CATS tracking numbers, which results in difficulty in trying to locate the assessment record and associated issues in CATS.
		CAS.2.3.NP.1	JSA has developed some noteworthy online resources and practices that enhance communications across the Lab. The JSA INSIGHT management dashboard tool provides a user friendly, easily accessible tool for monitoring trends and CATS status and drill down capability to obtain real-time status of issues. The JSA practice of keeping readily accessible online daily logbooks for line and ES&H staff is a good practice and useful communication tool. These information resource tools have potential for adaptation at other sites.
CAS.3			
<u>Criterion</u>	<u>Status</u>	CAS.3.2.FIND.3	A structured/formal process for conducting the quarterly trend analysis of events, accidents, and injuries has not been documented.
CAS.3.1	Met		
CAS.3.2	Partially Met		
CAS.3.3	Met	CAS.3.4.FIND.4	Processes for job hazard walk-downs, pre- and post-job briefings, and toolbox meetings have not been documented.
CAS.3.4	Partially Met		
CAS.3.5	Partially Met	CAS.3.5.FIND.5	How JLab makes effective use of data to determine performance relative to goals, suggest further improvements, identify good practices and lessons learned, allocate resources, and establish oversight priorities is not documented.
		CAS.3.5.NP.2	JLab has established programs that identify, gather, and verify data measuring the performance of facilities, programs, and organizations and disseminates them through various systems.

CAS.4			
<u>Criterion</u>	<u>Status</u>		
CAS.4.1	Met	CAS.4.1.OBS.7	JSA could not demonstrate a spreadsheet or database that ensures mandatory contractor assessments (those required by regulations and Department of Energy directives) occur at the required frequency and that all facilities, systems, and organizational elements, including subcontractors, are periodically assessed
		CAS.4.1.OBS.8	The CAS Program Description states that an integrated assessment schedule will be developed in accordance with a written procedure. At the time of this review, this procedure was in draft.
		CAS.4.1.OBS.9	Some formal, documented processes are missing from the reference list at the end of Section 7.0 in the CAS Program Description.
CAS.5			
<u>Criterion</u>	<u>Status</u>		
CAS.5.1	Met	CAS.5.3.FIND.6	Qualification standards have not been established to assure staff, who perform CAS functions, obtain training and maintain the requisite skills to effectively perform their assigned functions.
CAS.5.2	Met		
CAS.5.3	Not Met	CAS.5.3.OBS.10	A specific assessment of training records has not been planned or conducted.
CAS.5.4	Met		

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Appendix B – Assessment Forms

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Assessment of the Implementation of the TJNAF
Contractor Assurance System

Functional Area: Contractor Assurance System	Objective ID: CAS.1
Reviewer: Anthony Takacs	Date: November 2007

OBJECTIVE

Objective CAS.1 – A Contractor’s environment, safety, and health Contractor Assurance System has effectively implemented assessments (including self-assessments, management assessments, and internal independent assessments) and other structured operational awareness activities (e.g., management walkthroughs) (DOE Order 226.1 Att. 2, Appendix A, Section 1.b(1)).

Criteria and Discussion of Results

CAS.1.1 The CAS includes and effectively executes self-evaluations of compliance with applicable laws, regulations, national standards, DOE directives, DOE-approved plans and program documents (e.g., Accelerator Safety Envelope, Safety Assessment Document, and Quality Assurance Program), site-specific procedures/manuals, criteria review and approach documents, contractual performance objectives, and other contractually mandated requirements (Att. 2, Section 2.d).

Discussion of Results – JLab effectively executes self-evaluations of compliance with applicable laws and regulations. For example, JLab has conducted Lockout/Tagout Program and Respiratory Protection Program reviews as required by the Occupational Safety and Health Administration, and JLab has conducted independent assessments of compliance with 10 Code of Federal Regulations (CFR) 835. It should be noted that JLab did not utilize their Management Self-Assessment (MSA) or Independent Assessment Procedures for conducting the Respiratory Protection or Lockout/Tagout Program Reviews. In addition, the review for the Respiratory Protection Program was not on the Fiscal Year (FY) 2007 Integrated Assessment Schedule. The development of a multi-year schedule incorporating self-evaluations of compliance with applicable laws and regulations is further discussed in CAS.4. An observation (**CAS.1.1.OBS.1**) is issued because JLab did not utilize its MSA or Independent Assessment Procedures when conducting the Respiratory Protection and Lockout/Tagout assessments.

This criterion has been met.

CAS.1.2 Contractor monitors and evaluates all work performed under its contract (Appendix A, Section 1.f). Contractor has developed and implements/performs comprehensive assessments of all facilities, systems, and organizational elements, on a recurring basis (Appendix A, Section 2).

Discussion of Results – The contractor could not demonstrate a process to ensure that all facilities, systems, and ES&H organizational elements are comprehensively assessed on a

recurring basis. However, no gaps in assessment coverage were identified. Specifically, the random sampling of facilities were reviewed, and those facilities had active safety wardens. Numerous systems and ES&H organizational elements were reviewed, and it was determined that they had been assessed or were scheduled to be assessed (see discussion of results in CAS 1.1, 1.3, and 1.4). This is also discussed in more detail in CAS.4.1 and in Observation **CAS.4.1.OBS.7**.

This criterion has been met.

CAS.1.3 Self-Assessments

- a. Self-assessments focus on hands-on work and the implementation of administrative processes and have worker level involvement. Supervisors and managers encourage identification and resolution of deficiencies at the lowest level (e.g., by implementing workplace inspections and posting job reviews) (Appendix A, Section 2.a(2)).
- b. Support organizations will perform self-assessments of their performance and the adequacy of their processes (Appendix A, Section 2.a(3)).
- c. Self-assessments will be documented (a risk-based graded approach may be used) (Appendix A, Section 2.a(5)).

Discussion of Results – JLab conducts self-assessments by using the MSA Program. JLab has a MSA Procedure which establishes the methodology by which managers will assess their work processes, systems, and programs to define the problem areas and to improve performance. In FY 2007, JLab conducted 16 MSAs, with 4 being conducted in the ES&H program areas. These MSAs dealt with Environment, Safety, Health, and Quality (ESH&Q) oversight, historical unreviewed safety issues, environmental aspects, and lessons learned from the DOE Stanford Linear Accelerator Center (SLAC) Integrated Safety Management (ISM) report. These assessments were documented and are available on the JLab website and were adequate for the areas reviewed.

The Laboratory Director did not approve the annual Integrated Assessment Schedule in accordance with the *Management Self-Assessment Procedure*, Section 3.1.1. In discussions with the Laboratory Director, it appears responsibilities described in the procedure are being delegated rather than being performed by the Laboratory Director. An observation (**CAS.1.3.OBS.2**) is issued because the MSA Procedure is not being followed.

JLab also utilizes safety wardens to conduct workplace safety inspections. There is no comprehensively documented safety warden inspection program that includes frequency of inspections, inspection documentation, tracking/trending, and closure of identified items. An observation (**CAS.1.3.OBS.3**) is issued because the Safety Warden Inspection Program is not comprehensively documented in JLab command media.

JLab has recently instituted the Safety Observation Program. Safety observations are a process in which members of management (at all levels) regularly visit work areas and observe work practices and conditions. This process has not been formally documented in the JLab command media. An observation (**CAS.1.3.OBS.4**) is issued because the Safety Observation Program is not formalized.

This criterion has been met.

CAS.1.4 Internal independent assessments are conducted, have authority and independence separate from line management (Appendix A, Section 2.b), and effectively concentrate on performance and observation of work activities and the results of process implementation (Appendix A, Section 2.b(5)).

Discussion of Results – JLab has an Independent Assessment Procedure which describes steps that must be included during independent assessments. JLab utilizes independent assessments to identify improvement opportunities and provide management and staff with an independent overview of laboratory performance. The JLab FY 2007 Integrated Assessment Schedule details the independent assessments that were planned for FY 2007. In FY 2007, JLab completed five independent assessments. The independent assessments focused on ES&H included two that dealt with sections of 10 CFR 835, one covering ISM, and one involving the accelerator safety order implementation. These independent assessments were conducted by the Quality Assurance and Continuous Improvement Team members, Senior Safety Advisory Committee, or TechnoGeneral Services Company (a JLab subcontractor). These assessments were documented and are available on the JLab website, and these independent assessments were adequate for the areas reviewed.

JLab also conducts independent assessments by utilizing the JSA Internal Audit Department. The Internal Audit Department is an independent organization reporting to the Finance and Audit Committee and the JSA Board of Directors. The scope of the JSA Internal Audit Department is to evaluate the adequacy and effectiveness of JLab's governance, risk-management processes, systems of internal control, and the quality of performance in carrying out assigned responsibilities to achieve the stated goals and objectives. The Internal Audit Department conducts audits using the JSA Internal Audit Manual. In FY 2007 the JSA Internal Audit Department completed eight internal audits. Of these eight audits, there were two internal audits dealing with ES&H. One dealt with subcontractor safety incentives, and the other dealt with ESH&Q systems integration. In November 2006, under the auspices of the DOE Contractor Internal Audit Peer Review Program, a quality assessment of the internal audit activity of Jefferson Laboratory was conducted by the Oak Ridge National Laboratory. The JSA Internal Audit Program received a satisfactory rating, including one noteworthy practice and no findings of noncompliance. These assessments were documented and are available on the JLab website. These independent assessments were adequate for the areas reviewed.

The Laboratory Director did not approve the annual Integrated Assessment Schedule in accordance with the Independent Assessment Procedure Section 3.1.1. In discussions with the Laboratory Director, it appears responsibilities described in the procedure are being delegated and are not being performed by the Laboratory Director. An observation

(CAS.1.3.OBS.2) is issued because the Independent Assessment Procedure is not being followed.

This criterion has been met.

CAS.1.5 Contractor implements robust processes for corporate audits, third-party certifications, or external reviews (excluding those performed by DOE, other regulators) (Appendix A, Section 1.d).

Discussion of Results – JSA formalized the processes for corporate audits, third-party certifications, and external reviews via the Independent Assessment Procedure. This procedure outlines the processes to be conducted in performing these audits. External reviews performed include a quality assessment (discussed above) and a radiation protection assessment.

This criterion has been met.

CAS.1.6 Contractor effectively monitors and evaluates all subcontractor work performed under its contracts (Appendix A, Sections 1.f and 2).

Discussion of Results – JSA effectively monitors and evaluates subcontractor work performed under its contracts by using Subcontracting Officer Technical Representatives (SOTRs). The SOTR with a current active project was a knowledgeable, JLab employee assigned to the subcontract. The SOTR ensured subcontractor conformance with technical specifications, ESH&Q requirements, and served as the primary liaison between the subcontractor and JLab. The SOTR monitored and evaluated subcontractor work by using the Worker Safety Observation Program. The SOTR was also involved in the permit request process (i.e., digging, excavation, floor/wall penetration). The SOTR held regular meetings (monthly) with the personnel involved in the project, including the subcontractor and ESH&Q personnel to discuss the project status, including safety issues.

In addition to the SOTR activities, ESH&Q personnel reviewed and approved the Subcontractor Safety Plan and Construction Activity Hazard Analysis. The ESH&Q personnel also supported the SOTR when subject matter expertise is needed.

This criterion has been met.

CAS.1.7 CAS data, as related to objective CAS.1 (i.e., assessments), is readily available to DOE. Results of assessment processes are reported to DOE (Appendix A, Section 1.c).

Discussion of Results – CAS data are made available to DOE through various mechanisms. Quarterly Performance Evaluation and Measurement Plan (PEMP) reviews, mid-year performance reviews, and fiscal year performance evaluation status reports are sent to DOE for review prior to the status meetings. The TJSO Manager typically provides feedback to JLab after the status meetings. TJSO personnel have access to the Corrective Action Tracking System (CATS) via the JLab intranet. The JLab INSIGHT dashboard extracts data from or links to real-time data from various internal JLab electronic systems. The INSIGHT dashboard is divided into four sections: PEMP, DOE Physics and Accelerator Metrics, Key Performance Indicators, and Projects. The INSIGHT dashboard was implemented during

the FY 2007 cycle. The reviewer accessed the information for PEMP Goal 5: Integrated Safety, Health, and Environmental Protection. The displayed PEMP data were for FY 2007. The FY 2008 PEMP was incorporated into the contract via Amendment M033 on October 5, 2007; however, the associated data are not yet available via the on-line JSA/DOE Contract DE-AC05-06OR23177. Interviews with the Project Controls Manager and the Manager of Public Affairs included discussion of planned improvements to the INSIGHT dashboard based upon feedback from users.

The JLab Quality Assurance and Continuous Improvement (QA/CI) Manager holds weekly staff meetings to discuss accomplishments, status ongoing initiatives, discuss plans, review reportable and non-reportable events, and review CATS performance. The TJSO Industrial/Occupational Health Specialist attends the weekly QA/CI staff meeting approximately every other month and provides input to the TJSO Manager and TJSO Deputy Manager through e-mails or discussions as necessary.

This criterion has been met.

Record Review

- EHS Safety Calendar, August 2007
- List of JSA's Fiscal Year 2007 Audits from DocuShare, printed October 18, 2007
- *ESH&Q Systems Integration: Jefferson Lab Internal Audit*, No. 07-01, February 23, 2007
- *Thomas Jefferson National Accelerator Facility (Jefferson Lab) Internal Audit Report*, No. REV-07-01, Subcontractor Safety Incentives, Follow-up Review to Internal Audit No. 06-01, October 15, 2007
- *Final FY 2008 Jefferson Lab Internal Audit Plan*, September 17, 2007
- Safety Inspection from EHSLOG #1394349, October 17, 2007
- Inspection from EHSLOG #1393440, October 12, 2007
- Work Observation from EHSLOG #1393445, October 12, 2007
- *FY 2008 Integrated Assessment Schedule*, September 27, 2007
- Independent Assessments FY 2007 from DocuShare, printed October 18, 2007
- *Independent Assessment Procedure*, Revision 2.2, November 30, 2006
- *FY 2007 Integrated Assessment Schedule*, updated September 24, 2007
- *Independent Assessment Plan and Report for 10 CFR 835 Subparts F and G*, Assessment No. IA-2007-011, June 15, 2007
- *Independent Assessment Report for 10 CFR 835 Subpart B*, Assessment No. IA-2007-01, March 15, 2007
- *Independent Assessment Report for JLab Accelerator Safety Order Implementation*, Assessment No. IA-2007-012, July 2007
- *Independent Assessment Report JLab Integrated Safety Management System*, Assessment No. IA-2006-07, November 2006
- *Independent Assessment Report Feedback and Improvement*, Assessment No. IA-2006-05, August 30, 2006
- *Draft Independent Assessment Report*, Assessment No. IA-2007-0, September 14, 2007
- MSA for 2007 from DocuShare, printed October 18, 2007
- *Management Self-Assessments Procedure*, Revision 3.1, November 23, 2005

- MSA Report for ESH&Q Division, *Assessment of TJNAP ESH&Q Oversight*, Assessment No. MSA-2007-0012, March 16, 2007
- MSA Report for Site-wide, *MSA of Environmental Aspects*, Assessment No. 07-16, September 26, 2007
- E-mail from Bob Doane to Anthony Takacs, subject: *MSA-07-016*, dated October 18, 2007
- MSA Assessment Plan for Operations Division, *Assessment of TJNAP ESH&Q Oversight*, Assessment No. MSA-2007-0012, March 16, 2007
- MSA Assessment Plan for ESH&Q Division, *Historical Unreviewed Safety Issue (USI) Review-UNSCHEDULED MSA*, Assessment No. MSA-07-017, September 25, 2007
- *MSA Assessment Plan and Report for JSA Assessment of Lessons Learned from DOE SLAC ISM*, Assessment No. MSA-07-0014, June 14, 2007
- Jefferson Science Associates, LLC, Internal Audit Charter, Statement of Authority and Responsibility, printed October 26, 2007
- *Jefferson Science Associates, LLC, Internal Audit Manual*, Version 03, July 1, 2006
- *Final Thomas Jefferson National Accelerator Facility (Jefferson Lab) FY 2007 Internal Audit Plan*, September 21, 2006
- *Final Thomas Jefferson National Accelerator Facility (Jefferson Lab) Internal Audit Report No. 06-01, Subcontractor Safety Incentives*, December 15, 2006
- *JSA Internal Audit Peer Review Report and Response*, January 31, 2007
- *Activity Hazard Analysis Plan for Jefferson Lab Retention Pond*, approved July 31, 2007
- Hudgins Contracting Corporation, *Safety and Hazcom Manual*, approved August 1, 2007
- Digging, Excavating, Floor/Wall Penetration Permit Request for Hudgins Contracting, October 12, 2007
- Safety Observations Report, completed by SOTR, printed November 6, 2007
- Meeting Minutes, Progress Meeting No. 2, East Pond and Ditch Modification I, dated October 9, 2007
- Construction Hazard Analysis, Kitchen Hood and Related Ventilation Modifications, no date
- On-site Subcontractor List from October 1-November 6, 2007, no date
- *Respirator Audit*, December 5, 2006
- *Annual Inspection of Lock, Tag and Try [2006]*, February 14, 2007
- Work Observation entries by Deputy Associate Director of Physics, Chief Scientist for JLab, and EHS&Q staff, for Experimental Hall A, B and C, October 8, 2007
- JLab Safety Observation Protocol, printed from JLab website November 6, 2007

Interviews Conducted

- Internal Auditor
- Lead Assessment Specialist
- DOE TJSO Industrial Hygienist
- Front-line Managers
- Quality Assurance Manager
- ES&H Deputy
- Safety Wardens
- SOTRs
- Subcontracts Group Manager
- Chief Operating Officer

Observations of Work Activities

- Shift Briefing for Building 8
- Shift Briefing for Machine Control Center
- Shift Briefing for Free Electron Laser (FEL)

Findings

None identified.

Observations

- CAS.1.1.OBS.1** The JLab *Independent Assessment Procedure* or *Management Self-Assessment Procedure* was not utilized for conducting the Respiratory Protection and Lockout/Tagout assessments.
- CAS.1.3.OBS.2** The Laboratory Director's responsibilities described in the *Management Self-Assessment Procedure* and *Independent Assessment Procedure* are not being performed as described.
- CAS.1.3.OBS.3** The Safety Warden Inspection Program is not comprehensively documented in JLab command media.
- CAS.1.3.OBS.4** The Safety Observation Program has not been formally documented in JLab command media.

Noteworthy Practices

None identified.

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Assessment of the Implementation of the TJNAF
Contractor Assurance System

Functional Area: Contractor Assurance System	Objective ID: CAS.2
Reviewer: Teresa Perry	Date: November 2007

OBJECTIVE

Objective CAS.2 – Contractor’s ES&H CAS activities include effective issues management that includes causal analysis, identification of corrective actions/recurrence controls, corrective actions tracking and monitoring, closure of effective actions and verification of effectiveness (DOE Order 226.1 Att. 2, Appendix A, Section 1.b(4)).

Criteria and Discussion of Results

CAS.2.1 Issues management data is readily available to DOE. Results of assurance processes (as pertaining to Objective CAS.2) are periodically analyzed, compiled, and reported to DOE (Appendix A, Section 1.c).

Discussion of Results – Issues management data tracked in the Corrective Action Tracking System are readily available to DOE. The TJSO has access to CATS and can review issues management data at any time in summary chart form by viewing the JSA INSIGHT management dashboard or in detail by accessing the CATS. Trending information is also available on the dashboard. Issues of low risk/significance that fall below the threshold of tracking in CATS are not as readily available to DOE. Issues from the Work Observation System are not viewable online for those with general-user access. Each JSA division can view their work observation entries and issues; however, access to all entries is limited to system administrators. Thus, this data is not readily available to the TJSO.

JSA reports the status of safety issues to DOE management and ES&H staff via regular meetings. Discussion with JSA and DOE and review of safety meeting agendas and e-mail correspondence confirm that bimonthly safety meetings are held between TJSO and JSA senior management. The JSA Performance Analysis and Trending Lead reported that JSA and DOE managers meet quarterly to discuss the PEMP and safety commitments. The team reviewed examples of quarterly meeting agendas and materials and confirmed that safety performance was included in the discussion. DOE concerns raised in the meeting are tracked in the CATS through resolution and discussed with DOE. Issues are also communicated to DOE via day-to-day interaction, operational awareness activities, assessments, and notification of occurrences and accident/injury reporting. In addition, JSA line and ES&H staff generate daily online logbooks that provide summaries of work activities. The review team found that several mechanisms are in place to ensure ongoing communication of issues with DOE.

This criterion has been met.

CAS.2.2 The issues management system must be comprehensive, structured, and provide for timely and effective resolution of deficiencies. It must be an integral part of the CAS (Appendix A, Section 5).

Discussion of Results – The *JSA Issues Management Procedure*, Revision 1.6, provides a comprehensive process for managing issues that includes a graded approach. The procedure establishes significance levels for issues based on risk and addresses identification, reporting, correction, closure, tracking, and trending of issues. In addition, the procedure defines responsibilities for handling of issues and corrective actions, extensions to corrective action commitment dates, and review and approval of issues closure, which includes verification of adequacy of the issue resolution. The issues management system provides for handling of issues commensurate with their risk and significance. A common JSA issues management process and tracking system applies to the CAS, the Quality Assurance Plan (QAP), and the ISM System. For issues involving imminent hazards or safety concerns, the issues management procedure invokes the “suspend” and “stop work” process consistent with the ES&H Manual.

This criterion has been met.

CAS.2.3 Issues management includes effectively implemented structured processes for (Appendix A, Section 5.a):

- a. Determining risk, significance, and priority of deficiencies.
- b. Determining reportability (e.g., Occurrence Reporting and Processing System, Price-Anderson Amendments Act [PAAA]).
- c. Evaluating scope and extent of condition.
- d. Identifying root causes, using a graded approach. Formal causal analysis is occasionally used, based on risk and significance.
- e. Tracking progress toward milestones such as that responsive individuals and managers can ensure timely completion of actions and resolution of issues.
- f. Identifying and documenting suitable corrective actions and recurrence controls, based on analyses, to correct the conditions and prevent recurrence.
- g. Identifying individuals/organizations responsible for implementing corrective actions.
- h. Ensuring that individuals and organizations are accountable for performing their assigned responsibilities.

Discussion of Results – The *JSA Issues Management Procedure*, Revision 1.6, provides for a structured and graded process for resolution of issues. The procedure establishes significance levels for issues based on risk and addresses identification, reporting, correction, closure, tracking, and trending of issues. In addition, the procedure defines responsibilities for handling of issues and corrective actions, extensions to corrective action commitment dates, and review and approval of issues closure, which includes verification of adequacy of the issue resolution. Issues management data tracked in CATS are readily

available to DOE. The TJSO has access to CATS and can review issues management data at any time. Interviews with the ES&H Reporting Manager and review of records in the CATS and Noncompliance Tracking System (NTS) systems confirm that issues are routinely screened by the ES&H Reporting Manager for extent, significance, and 10 CFR 851 and 10 CFR 835 applicability. The CATS database indicates the verification and approval status of issues resolution commitments. CATS also provides e-mail notifications to individuals assigned responsibility for resolving issues. E-mail reminders are sent as the due date approaches. Late commitment notifications are made to both the assigned individual and the supervisor. While the issue management process is formalized and actions are underway to continuously improve the implementation of the process, some implementation weaknesses are described below.

The review team looked at both management and independent assessment reports and attempted to retrieve the report and associated issues from CATS. Issues from the independent assessments selected were found in CATS. The review team found that issues from management assessments are not consistently entered in CATS and tracked to closure (**CAS.2.3.FIND.1**). Both the CATS System Developer and the CATS Administrator were unable to locate the issues or corrective actions in the system from two of the sampled management assessments (i.e., MSA-2007-0012 and MSA-2007-014). Personnel interviewed explained that there may have been confusion on the need to track issues from some management assessments in CATS. DOE Order 226.1, Attachment 2, *Contractor Requirements Document*, Appendix A, Section 5, requires that issues are captured in a system that provides for effective analysis, resolution, and tracking. The *JSA Issues Management Procedure*, which implements the Contractor Requirement Document, also requires entry of assessment issues into CATS.

The team reviewed the status of corrective actions tracked by JSA's online tools. The CATS tracking system and the INSIGHT management dashboard tools indicate that of the 144 open corrective actions in CATS, a significant number (19 percent) are overdue (**CAS.2.3.FIND.2**). Twelve percent are greater than 30 days late, and 7 percent are overdue more than 60 days. JSA has self-identified this issue based on review of the Director's Safety Council Report Package from the meeting held on September 10, 2007, and interviews with JSA personnel. The issue of overdue corrective actions has been a topic of management concern for several months. Closure of overdue commitments is improving; however, the continued late corrective actions status is indicative of less than fully effective implementation of the issues management process. DOE Order 226.1, Attachment 2, *Contractor Requirements Document*, Appendix A, Section 5, requires tracking progress such that managers can ensure timely completion of actions and resolution of issues. The *JSA Issues Management Procedure*, Sections 3.3.5, 3.7.1, and 3.8.2, require completion of assigned corrective actions by established due dates for divisions, action owners, and JLab personnel.

Several improvements have been made to CATS in the past year to facilitate better tracking of issues and corrective action commitments; however, the review team noted several observations on inefficiencies in CATS that limit its effectiveness as a comprehensive and integrated issues management tracking system:

The review team noted that limited documentation was available for the CATS and Work Observation systems sponsored by ES&H (**CAS.2.3.OBS.5**). CATS online training material was found to be well presented and readily usable; however, information describing the system requirements, design, and functionality was very limited. The review team found that the *Issues Management Procedure* provides general guidance but does not provide sufficient detail to describe the authorities associated with different user levels or to serve as the system documentation.

The review team noted that poor linkage existed between the assessment listing and the CATS tracking numbers, which resulted in difficulty in trying to locate the assessment records and associated issues in CATS (**CAS.2.3.OBS.6**). CATS assigns a unique identifier to each assessment, which is similar in structure but different from the assessment identifier assigned in the assessment listing and shown on the assessment report. For example, Assessment No. IA-2007-012 in the online assessment listing is identified in CATS as Event No. IA-2007-54. The lack of integration between the assessment listing and CATS adds confusion and reduces efficiency when trying to locate the issues for a given assessment. In addition, assessment report issues lack clear traceability and integration with the CATS tracking system. The review team compared several assessment reports to tracking of the issues in CATS. The reports reviewed did not identify the significance level of issues and used terminology inconsistent with the JSA *Issues Management Procedure* (e.g., “needs improvement” versus “issue significance level 1-4”). Recently, the JSA Lead Assessment Specialist has made improvements in the linkage between assessment reports and CATS; however, clear linkage between the assessments and issues is not fully integrated.

JSA has developed some noteworthy online resources and practices that enhance communications across the Lab (**CAS.2.3.NP.1**). The INSIGHT dashboard tool recently developed provided a user-friendly management tool for readily checking organizational CATS status without requiring the manager to log into CATS. INSIGHT also uses hot links to provide drill down capability and real-time status if more specific information is needed. The management dashboard is a fairly new tool, and new features and trending information are in development. This tool looked very promising for being a key management tool for monitoring CAS performance. The JSA practice of keeping readily accessible online daily logbooks for line and ES&H staff is a good practice and useful communication tool. These tools have potential for adaptation at other sites.

Tracking of work observations and associated issues is a newly developed process based on the success of TJNAF’s previous experience using the DuPont Safety Training and Observation Program (STOP) operational awareness approach. This method looks promising as an informal and effective approach for recognizing and reinforcing safe behavior and good work practices, fostering open communications, and identifying and quickly resolving issues or concerns on the spot if possible. A database system has been initiated, and institution of this method of documenting work observations went into effect in October 2007. The process is too new to evaluate its success or overall effectiveness in this assessment. There is insufficient data in the work observation system to provide meaningful trend information.

The review team concluded that an adequate issues management process is in place. Several promising initiatives are underway; however, fully effective implementation has not been achieved.

This criterion has been partially met.

CAS.2.4 Issues management provides a process for rapidly determining the impact of identified weaknesses and taking timely action to address conditions of immediate concern. For such conditions, interim corrective actions (e.g., stopping work, shutting down activities, or revising a procedure) are taken as soon as a condition is identified and without waiting until a formal report is issued (Appendix A, Section 5.b).

Discussion of Results – The *JSA Issues Management Procedure*, Revision 1.6, Attachment A, provides guidelines for assigning significance levels to issues (0-least significant to 4-high significance and immediate stop work for safety related) and establishes timeframes for abatement of safety-related issues. For safety-related issues, the procedure refers to the ES&H Manual, which provides for both suspending and stopping work if the situation warrants.

This criterion is met.

CAS.2.5 Processes for analyzing deficiencies, individually and collectively, are established to enable the identification of programmatic or systemic issues. Process products are used by management to monitor progress in addressing known systemic issues and to optimize the allocation of assessment resources (Appendix A, Section 5.c).

Discussion of Results – The *JSA Issues Management Procedure*, Revision 1.6, establishes significance levels for issues based on risk and addresses identification, reporting, correction, closure, tracking, and trending of issues. JSA has developed a common tracking system for issues (CATS). Interviews with the ES&H Reporting Manager and review of records in the CATS and NTS systems confirm that issues are routinely screened by the ES&H Reporting Manager for extent, significance, and 10 CFR 851 and 10 CFR 835 applicability. The Quality Assurance and Continuous Improvement organization performs trending, analysis, and reporting of issues in accordance with the *Issues Management Procedure*. Review of the Director's Safety Council Report Package and interviews with JSA managers confirm that Lab management discusses issues status and trends in the Director's Safety Council meeting. The new management dashboard also provides an easily accessible tool for evaluating issues. In addition, evaluation of Occurrence Reporting and Processing System (ORPS) issues for recurrence is performed each quarter. This is further discussed under CAS.3.2. Discussion of using process products to monitor progress, address issues, and optimize resources is discussed in CAS.3.5.

This criterion has been met.

CAS.2.6 Contractor has effective processes for communicating issues up the management chain to senior management, using a graded approach that considers hazards and risks. The processes provide sufficient technical basis to allow managers to make informed decisions and include

provisions for communicating and documenting dissenting opinions. Processes for resolving disputes about oversight findings and other significant issues are implemented. The processes include provisions for independent technical reviews of significant issues (Appendix A, Section 5.d).

Discussion of Results – JSA has documented the management and DOE notification processes for safety incidents, notable event, and injuries in the ES&H Manual Chapters 5200 (incident/event/injury), 5300 (occurrences), 6830 (illnesses/injuries), 3510 (emergencies), and 3330 (stop work). A review of these documents confirmed that these processes provide notification protocols and timeframes. The team confirmed through review of the TJNAF ORPS and NTS reports adequate implementation of reporting requirements.

Review of assessment reports and CATS entries and interviews with JSA personnel confirmed adequate communication of assessment issues found through performing management and independent assessments. In addition, personnel interviewed and a demonstration of CATS confirmed that any JSA personnel may enter an issue into CATS.

The review team observed operations and safety meetings where planned shift activities and safety minutes were discussed. These morning toolbox meetings observed provided an open forum for personnel to discuss concerns and identify potential safety problems with work to be performed. The review team found that each line organization used a work management tool or task list system that identifies each work activity to be done, hazards involved with the work, review by cognizant line and support contacts, and appropriate management approvals before the work can be accomplished. The task list systems (Accelerator Task List [ATLis], Physics Division Task List [TATL], and Free Electron Laser Task List [FELis]) are often pulled up online for the toolbox meetings and used for discussion of the planned activities and identification of any concerns. Daily online logbooks are maintained by line and safety staff to document daily activities and problems that are encountered. These logbooks are available to management and staff via the JLab website. Implementation of the work observation process demonstrated management communication with workers on work activity safety concerns. JSA has Division Safety Officers (generally safety professionals) and Safety Wardens (line employees trained in performing safety observations) who are readily available to division personnel. Imminent hazards can also be communicated via the suspend and stop work processes described in the ES&H Manual.

The review team confirmed that JSA processes include provisions for independent technical reviews of significant issues. The *Issues Management Procedure*, Revision 1.6, and CATS documents a structured process for resolution of differences in opinion regarding the severity of an issue and for management approval of the assigned significance and risk. Interviews with the ES&H Reporting Manager and review of CATS updates confirmed issues and causal codes were screened to ensure uniformity in evaluating their risk and significance. The assessment process included a comment worksheet JSA uses to document reviews and dissenting opinions with assessments or documents. Resolution may require escalation up to senior management. Personnel interviewed reported that the process had been used to resolve a dissenting opinion in which a Level 3 CATS issue was felt to be a Level 2 during screening. Management determined that the elevated severity Level 3 was a

misuse of CATS to escalate a roof leak repair. Review of the ES&H Concern Resolution process documented in ES&H Manual 2310 confirmed that it provides a mechanism for any employee to communicate, escalate, and resolve safety concerns. The review team confirmed that the process includes the route submitting a formal concern directly to DOE.

This criterion has been met.

CAS.2.7

Corrective Actions - A structured process is effectively implemented for:

- a. Identifying and documenting suitable corrective actions.
- b. Establishing appropriate milestones for completion of corrective actions, including consideration of significance and risk (Appendix A, Section 5.a(7)).
- c. Ensuring corrective actions are verified complete. Corrective actions are validated that they are effectively implemented and accomplish their intended purpose (using a risk-based graded approach) (Appendix A, Sections 5.a(9) and (10)).

Discussion of Results – The *JSA Issues Management Procedure*, Revision 1.6, provides for a structured and graded process for resolving issues and tracking of corrective actions to closure. The procedure establishes significance levels for issues based on risk and addresses identification, reporting, correction, closure, tracking, and trending of issues. In addition, the procedure defines responsibilities for handling of issues and corrective actions, extensions to corrective action commitment dates, and review and approval of issues closure, which includes verification of adequacy of the issue resolution. Implementation has been achieved with noted weaknesses described in CAS.2.3.

This criterion has been met.

Record Review

- DOE Letter from Mr. James A. Turi, Manager, TJSO, to Dr. Christoph W. Leemann, President and Laboratory Director, no subject (transmittal of Management Assessment Report), dated May 18, 2007
- MSA Report for ESH&Q Division, *Assessment of TJNAP ESH&Q Oversight*, Assessment No. MSA-2007-0012, March 16, 2007
- Sample, Directors' Safety Council Report Package, September 10, 2007
- Presentation, *QA/CI Department Staff Meeting*, September 20, 2007
- Spreadsheet, Open ESH&Q Division Items from CATS, query dated November 7, 2007
- E-mail from Carter Ficklen to Steve Neilson, subject: *Third Quarter Calendar Year 2007 ORPS Performance Analysis*, dated October 26, 2007
- Contract No. DE-AC05-06OR23177, Section J, Part III, List of Documents, Exhibits and Other Attachments, no date
- JLab Website (<https://mis.jlab.org/ehs/requirements.html>), Requirements for the Corrective Actions Tracking System, printed November 6, 2007
- ES&H Tracking Entity Relationship Diagram (ERD), no date
- JLab Website, ATLI, Task 6914, Acid Flush 2L21 HPA LCW Lines, printed November 6, 2007
- JLab Website, ATLI ([http://devweb.acc.jlab.org/CSUEApps/atlis/...](http://devweb.acc.jlab.org/CSUEApps/atlis/)), Task ID 5500, Crane Inspections, printed November 6, 2007

- JLab Website, Physics Division Task List (TATL), (<http://devweb.acc.jlab.org/CSUEApps/tatl/atlis...>), no date
- JLab Website, Free Electron Laser Task List (FEList), (<http://devweb.acc.jlab.org/CSUEApps/felist/atlis.php>), no date
- JLab Website, AQIS CATS, ES&H Issues (including late items) (<https://mis.jlab.org/ehs/tracking/finding...>), printed November 6, 2007
- JLab Website, ESH&Q, Safety Observations, Report ID 264, Observation No. 3 (Example of Work Observation System) (https://www1.jlab.org/mis.apps/ehs/safety_observations/...), printed November 6, 2007
- JLab Website, ESH&Q, Safety Observations, Report ID 101, Observation No. 1 (Example of Work Observation System) (https://www1.jlab.org/mis.apps/ehs/safety_observations/...), printed November 6, 2007
- Trending Example of Organizational and Work Observation Participation, printed November 7, 2007
- DOE Letter from Mr. James A. Turi, Manager, TJSO, to Mr. Craig R. Ferguson, Associate Director for ESH&Q, no subject (transmittal of National Fire Protection Association surveillance report conducted June 18-20, 2007), dated August 1, 2007
- Memorandum from Linda Wierenga, JSA Performance Management, to Teresa Perry, CAS.2 Reviewer, subject: *Follow-up Documentation for Interview on November 5, 2007*, dated November 6, 2007
- *Issues Management Procedure*, Revision 1.6, November 30, 2006
- *Thomas Jefferson National Accelerator Facility Integrated Safety Management System Program Description*, Revision 10, December 1, 2006
- *Thomas Jefferson National Accelerator Facility, Quality Improvement Plan Schedule*, Revision 8, dated October 16, 2007
- *Jefferson Laboratory Quality Assurance Plan*, January 11, 2007
- *QA/CI Plan for Addressing QAP Gaps*, October 16, 2007
- CATS Training, Corrective Action Tracking System, December 9, 2005
- Jefferson Lab Letter from Dr. Christoph Leemann, JSA President and Laboratory Director, to Mr. James A. Turi, Manager, subject: *TJNAF Assurance System Program Description*, dated November 1, 2007
- Cryogenic Operations Morning Meeting Agenda, no date
- ESR C1 Skid-Removal Lockout/Tagout Procedure, no date
- Temporary Operational Safety Procedure, Cold Pressure Test of the Original CEBAF Cryomodule, no date
- Electrical and Controls Commissioning for the Replacement ESR Compressor C1 (SSC), Revision 1, no date
- Gap Analysis of Current Cyber Security Systems Relative to Requirements of DOE Order 226.1, no date
- Gap Analysis of Emergency Management Relative to Requirements of Order 226.1, no date
- Gap Analysis of Current ES&H Systems Relative to Requirements of DOE Order 226.1, no date
- Gap Analysis of Security & Safeguards Relative to Requirements of Order 226.1, no date
- JLab Injury Statistics, August 6, 2007; August 20, 2007; September 4, 2007; September 17, 2007; October 1, 2007; and October 15, 2007
- Jefferson Lab Standards of Conduct, no date
- Attendance List of Fourth Quarter FY 2007 Mike Dallas Monthly Meetings, no date
- Presentation, *Safety Data Analysis and Work Observation Tools*, Health and Safety Department, ESH&Q Deputy, October 17, 2007

- Presentation, *QA Contractor Assurance System Oversight Program*, Quality Assurance & Continuous Improvement Manager, October 17, 2007
- Examples of Communicating Issues from Contractor to DOE, E-mails dated April 23, 2007; July 18, 2007; and August 29, 2007
- TJSO/JSA Safety Meeting Discussion Topics, dated September 27, 2006; November 8, 2006; February 21, 2007; and June 13, 2007
- Agenda, Jefferson Lab Director's Safety Council, May 21, 2007
- Draft Electrical Review, Thomas Jefferson Lab, June 20, 2007
- Requirement Table, dated June 21, 2007
- Draft Independent Assessment Report, *Personal Property Management Program*, Assessment No. (CATS ID) IA-2007-013
- AQIS CATS Corrective Action Closure Issues, Event: IA-2007-17, printed November 8, 2007
- *MSA Assessment Plan and Report for JSA Assessment of Lessons Learned from DOE SLAC ISM*, Assessment No. MSA-07-0014, June 14, 2007
- ES&H Manual, Chapter 2310, *ES&H Concern Resolution*, April 12, 2005
- ES&H Manual, Chapter 5200, *Incident/Notable Event/Injury Investigation and Causal Analysis*, June 30, 2007
- ES&H Manual, Chapter 5300, *Occurrence Reporting*, September 8, 2004
- Procedure Review & Comments Worksheet, printed November 8, 2007
- Factual Accuracy Review & Comments Worksheet, printed November 8, 2007

Interviews Conducted

- Cryogenics Systems Manager
- Performance Analysis and Trending Lead
- Basic Research Program Manager
- Accelerator Manager
- CATS Systems Developer
- Management Information Systems Manager and Work Observations Systems Developer
- Lead Assessment Specialist, Issues Management Lead, and CATS Administrator
- Manager, Quality Assurance & Continuous Improvement, and QA Program Lead
- ESH&Q Reporting Manager
- Lead Assessment Specialist
- ESH&Q Deputy Associate Director

Observations of Work Activities

- Central Helium Liquefier (CHL) daily operations and safety meeting conducted by Electrical Systems Supervisor on November 6, 2007, EST 0735
- Machine Control Center daily operations and safety meeting conducted November 7, 2007, EST 0800
- FEL morning operations and safety meeting conducted November 7, 2007, EST 0830
- Tour of FEL and discussion of corrective actions for the facility sweep improvements
- Demonstration of AQIS/CATS by System Developer

- Demonstration of Work Observations System and INSIGHT management dashboard by Systems Developer
- Demonstrations of line management work task management tracking systems (ATLis, FEList, TATL)

Findings

CAS.2.3.FIND.1 Issues from management assessments are not consistently entered in CATS and tracked to closure.

CAS.2.3.FIND.2 CATS and the INSIGHT management dashboard tools indicate that of the 144 open corrective actions in CATS, a significant number (19 percent) are overdue.

Observations

CAS.2.3.OBS.5 The review team noted that limited documentation was available for the CATS and Work Observation systems sponsored by ES&H.

CAS.2.3.OBS.6 The review team noted that poor linkage exists between the assessment listing and the CATS tracking numbers, which results in difficulty in trying to locate the assessment record and associated issues in CATS.

Noteworthy Practice

CAS.2.3.NP.1 JSA has developed some noteworthy online resources and practices that enhance communications across the Lab. The JSA INSIGHT management dashboard tool provides a user friendly, easily accessible tool for monitoring trends and CATS status and drill down capability to obtain real-time status of issues. The JSA practice of keeping readily accessible online daily logbooks for line and ES&H staff is a good practice and useful communication tool. These information resource tools have potential for adaptation at other sites.

Assessment of the Implementation of the TJNAF
Contractor Assurance System

Functional Area: Contractor Assurance System	Objective ID: CAS.3
Reviewer: Donna Riggs	Date: November 2007

OBJECTIVE

Objective CAS.3 - Contractors ES&H CAS activities have implemented effective lessons learned programs, effective incident and event reporting processes (DOE Order 226.1 Att. 2, Appendix A, Section 1.b(2)), worker feedback mechanisms (DOE Order 226.1 Att. 2, Appendix A, Section 1.b(3)), performance indicators/measures, and trend analysis (DOE Order 226.1 Att. 2, Appendix A, Section 1.b(4), (5), (6)).

Criteria and Discussion of Results

CAS.3.1 CAS data is readily available to DOE. Results of assurance processes are periodically analyzed, compiled, and reported to DOE in support of the formal contract evaluation (Appendix A, Section 1.c).

Discussion of Results – CAS data are made available to DOE through various mechanisms. Quarterly Performance Evaluation and Measurement Plan reviews, mid-year performance reviews, and fiscal year performance evaluation status reports are sent to DOE for review prior to the status meetings. The TJSO Manager typically provides feedback to JLab after the status meetings. TJSO personnel have access to CATS via the JLab intranet. The JLab INSIGHT dashboard extracts data from or links to real-time data from various internal JLab electronic systems. The INSIGHT dashboard is divided into four sections: PEMP, DOE Physics and Accelerator Metrics, Key Performance Indicators, and Projects. The INSIGHT dashboard was implemented during the FY 2007 cycle. The reviewer accessed the information for PEMP Goal 5: Integrated Safety, Health, and Environmental Protection. The displayed PEMP data were for FY 2007. The FY 2008 PEMP was incorporated into the contract via Amendment M033 on October 5, 2007; however, the associated data are not yet available via the on-line JSA/DOE Contract DE-AC05-06OR23177. Interviews with the Project Controls Manager and the Manager of Public Affairs included discussion of planned improvements to the INSIGHT dashboard based upon feedback from users.

The JLab Quality Assurance and Continuous Improvement Manager holds weekly staff meetings to discuss accomplishments, status ongoing initiatives, discuss plans, review reportable and non-reportable events, and review CATS performance. The TJSO Industrial/Occupational Health Specialist attends the weekly QA/CI staff meeting approximately every other month and provides input to the TJSO Manager and TJSO Deputy Manager through e-mails or discussions, as necessary.

This criterion has been met.

CAS.3.2 Formal programs are established that effectively identify issues and report, analyze, and address operational events, accidents, and injuries (Appendix A, Section 3). Trend analysis of events, accidents, and injuries is effectively performed in accordance with structured/formal processes. (Appendix A, Section 3.c).

Discussion of Results – Responsibilities and formal mechanisms for identification of issues are contained in the JLab *Issues Management Procedure*. (See Section CAS.2.6 for additional information concerning the identification of issues.)

Responsibilities and formal mechanisms for reporting operational events, accidents, and injuries are contained in the ES&H Manual, Chapter 5200, *Incident/Notable Event/Injury Investigation and Causal Analysis*, and ES&H Manual, Chapter 5300, *Occurrence Reporting*. While the requirement to perform quarterly analyses is contained in the Quality Assurance Plan, a structured/formal process for conducting the trend analysis of events, accidents, and injuries has not been developed as required in DOE Order 226.1, Appendix A, Section 3.c (**CAS.3.2.FIND.3**).

A query of the ORPS database for CY 2006 and 2007 to date returned twelve reports (seven Category 4 and five Category 3) from JLab.

A query of the NTS database for CY 2006 and 2007 to date returned two noncompliance reports from JLab:

- NTS—TJSO-JSA-TJNAF-2007-0001, Programmatic Weaknesses in Implementation of the Pressure Systems Safety Program, and
- NTS—TJSO-JSA-TJNAF-2007-002, Management Concern on Radioactive Material Movement.

The JLab injury and illness data for JLab for CY 2006 and the first three quarters of 2007 were readily available via the Computerized Accident/Incident Reporting System (CAIRS) database.

Events, accidents, and injuries discussed during interviews were contained in the respective system: CAIRS, ORPS, or NTS. The upcoming revision of the ES&H Manual is expected to add search features and refinement of content (e.g., deleting 5300-T3 which has been incorporated into 5200-T1).

The ESH&Q Reporting Manager is responsible for screening all Incident/Notable Event/Injury Investigation and Causal Analysis Worksheets for adequacy and consistency. He is the control point for entries to the CAIRS, ORPS, and NTS databases. Injury statistics are regularly reported to JLab management.

Quarterly ORPS performance analysis is provided to the TJSO Industrial/Occupational Health Specialist from the ESH&Q Reporting Manager. The most recent quarterly ORPS performance analysis report covered data from the past 12-month period and included analysis of ORPS reportable events, ESH&Q independent assessments, management self-assessments, internal Radiation Safety Deviation reports, PAAA and 10 CFR 851 reports submitted to the DOE NTS, and event reports submitted for internal and external Lessons

Learned consideration. One of the NTS noncompliance reports mentioned earlier, NTS—TJSO-JSA-TJNAF-2007-002, resulted from a quarterly ORPS performance analysis.

Analysis of first-aid events, injury events, related statistics, CATS cause codes, STOP data, lessons learned, and operational metrics were used for pre-shutdown safety briefings to inform and prepare line managers before the Scheduled Accelerator Downs. These analyses are available on the JLab intranet at <http://www.jlab.org/accel/eng/>.

JLab safety numbers are included in the Jefferson Lab Weekly Briefs sent out electronically by the Manager of Public Affairs. He plans to add the weekly briefs to the intranet home page or INSIGHT dashboard and send the updated link electronically for more efficient use of resources.

The JSA President and Laboratory Director provided a 2007 Comprehensive Laboratory Safety Strategy to the TJSO Manager on March 30, 2007. It resulted from a review of events and injuries, safety initiatives, and feedback over the previous 12-18 months.

This criterion has been partially met.

CAS.3.3

Formal programs are effectively implemented to communicate lessons learned during work activities, process reviews, and event analyses to potential users and applied to future work activities. Contractor identifies, applies, and exchanges lessons learned with the rest of the DOE complex. Contractor reviews, and effectively applies, lessons learned identified by other DOE organizations and external sources to prevent similar occurrences (Appendix A, Section 6).

Discussion of Results – The 5200-T1 Incident/Notable Event/Injury Investigation and Causal Analysis Worksheet and the 5300-T2 Occurrence Documentation and Tracking Procedure include requirements to identify lessons learned. The ESH&Q Reporting Manager is responsible for screening all submitted events and forwarding appropriate lessons learned to the DOE database. Lessons learned not meeting the DOE-wide threshold were to be posted on the JLab intranet at http://www.jlab.org/div_dept/dir_off/oa/notable/index.html. Seven entries for CY 2007 were posted at the above link as of November 5, 2007. The JLab lessons learned procedure, worksheet, and links to related sites were also available at the above link.

The ESH&Q Reporting Manager demonstrated that he routinely screens DOE Lessons Learned for applicability at JLab. Lessons learned were made available to JLab personnel through various mechanisms including toolbox and safety meetings, Jefferson Lab Weekly Briefs, Scheduled Accelerator Down planning, and e-mails. A corrective action from the feedback and improvement independent assessment performed in August 2006 will improve the lessons learned process by ensuring review and action, if needed, is scheduled for completion by November 30, 2007. This should provide assurance that the lessons learned are being effectively applied at JLab.

Three reports from JLab were found by searching the DOE Lessons Learned database for CY 2005-2007:

- Blue – Cryogenic Thermocouple (Bolometer) Rupture Potential (2006-TJNAF-0001) – October 19, 2006
- Yellow – Ineffective Laser Lab Personnel Sweep (Near Miss) (2007-TJNAF-0001) – June 15, 2007
- Yellow – High Voltage Switch Failures (2007-TJNAF-0002) – July 11, 2007

This criterion has been met.

CAS.3.4

Processes are implemented to solicit feedback from workers and work activities. Worker feedback mechanisms are described in site plans/program documents and include pre-job briefs, job hazard walkdowns by workers prior to work, post-job reviews, safety meetings, and worker/staff-level participation in committees/working groups (Appendix A, Section 4).

Discussion of Results – The TJNAF Assurance System Program Description includes various mechanisms for soliciting feedback from workers and work activities such as:

- Discussions with supervisors,
- Stop work orders,
- JLab ES&H Concern Forms,
- DOE Concern Reports,
- Safety Concern Phone Line,
- Worker Safety Committee,
- Job hazard walk-downs,
- Post- and Pre-Job Briefings, and
- Toolbox meetings.

ES&H Manual, Chapter 3330, *Stop-Work Orders*, includes the responsibilities and process to use for suspending or stopping work when appropriate and the steps needed to resume work. Approval by the individual stopping the work, among others, is required prior to resumption.

ES&H Manual, Chapter 2310, *ES&H Concern Resolution*, describes the process and includes the ES&H Concern Report form. It also provides information concerning the location of the DOE concerns forms. DOE Employee Concerns and IG Hotline posters are placed on selected bulletin boards in JLab buildings to inform employees of hotline numbers and points of contact. An example of the use of the ES&H Concern Report was reviewed involving a traffic safety concern raised by a TJNAF contractor. The concern was properly elevated to management and was effectively resolved.

Information concerning various safety committees is posted on the JLab intranet. Some committees post their charter, membership, and/or meeting minutes. Worker/staff-level participation on committees/working groups include:

- Emergency Management Committee,
- Electrical Safety Committee,
- Material Handling Committee,
- Worker Safety Committee,
- Environmental Management System Committee,

- Training Committee, and
- Pressure Systems Committee.

The Worker Safety Committee serves as a communication link for highlighting work force safety issues and concerns and as a means for ensuring improvement actions of interest to the work force are initiated and completed. The committee's first monthly meeting was held on June 16, 2005; the charter was revised on June 21, 2006; team membership was last updated on October 9, 2007; and minutes of meetings held under the new contract (except for Number 4, September 2007) have been posted on the ESH&Q Committee's website. The committee's charter, membership, and minutes are provided via the intranet. Review of the available minutes confirmed worker involvement. The committee chair is invited to the Director's Safety Council meetings.

Opportunities for worker feedback were observed at the Cryogenic Operations Morning Meeting on November 6, 2007; the Machine Control Center Operations Morning Meeting on November 7, 2007; and the Free Electron Laser Operations Morning Meeting on November 7, 2007.

Processes for job hazard walk-downs, pre- and post-job briefings, and toolbox meetings have not been documented as required in DOE Order 226.1, Appendix A, Section 4 (**CAS.3.4.FIND.4**). Interviews with TJNAF ESH&Q staff indicate that pre-job briefings and job hazard walkdowns are occurring; however, they indicated that these are not being documented. Evidence was obtained that post-job feedback is occurring and is being documented. This evidence included ATLI and FELIST communication documentation.

Two stop work orders were reviewed from 2005. These demonstrated appropriate application and documentation of stopping work when unsafe conditions are observed by workers.

This criterion has been partially met.

CAS.3.5

Contractors identify, monitor, and analyze data measuring the performance of facilities, programs, and organizations. The data are used to evaluate performance determining improvement or deterioration relative to identified goals. Contractor has established programs that identify, gather, verify, analyze, trend, disseminate, and make effective use of performance indicators. Using a program to analyze and correlate data, contractors suggest further improvements and identify good practices and lessons learned. Performance measures/indicator data are considered in allocating resources, establishing goals, identifying performance trends, identifying potential problems, and applying lessons learned and good practices. Quantitative performance indicators/measures also may be considered in establishing oversight priorities. Quantitative performance measures (which provide only a partial indication of system effectiveness) are considered in combination with other appraisal and operational awareness results (Appendix A, Section 7).

Discussion of Results – JLab has established programs that identify, gather, and verify data measuring the performance of facilities, programs, and organizations and disseminates them through various systems such as web-based tools, pre-shutdown safety briefings, and lab

communiqués. One example of an established feedback mechanism is the operability manager's request for information on work experience at the end of a scheduled accelerator down (SAD) on all tasks scheduled through ATLis. ATLis is a work scheduling tool for major tasks during a SAD and contains task hazard analysis and work authorization features. The operability manager uses this information to develop lessons learned for the next SAD. These lessons learned, along with other safety experience data and information from other divisions, are presented at the next pre-SAD safety briefing. All organizational units participating in the SAD are represented and participate at some level in the pre-SAD safety briefing (**CAS.3.5.NP.2**).

At least one manager uses his Work Observation System data for analysis and feedback by charting the frequency of observation categories and discussing them with staff at biweekly meetings and with subcontractors at semi-annual meetings.

Although anecdotal evidence of various improvement efforts was provided, the JLab program to make effective use of data to determine performance relative to goals, suggest further improvements, identify good practices and lessons learned, allocate resources, and establish oversight priorities is not documented as required in DOE Order 226.1, Appendix A, Section 7 (**CAS.3.5.FIND.5**).

This criterion has been partially met.

Record Review

- *JSA-JLAB Corrective Action Performance*, September 2007
- *Safety Data Analysis and Work Observation Tools*, undated presentation
- *QA Contractor Assurance System Oversight Program*, October 17, 2007
- *Shutdown Safety Meeting*, agenda and handout, July 12, 2007
- *Quality Assurance & Continuous Improvement Weekly Staff Meeting*, agenda and handout, May 16, 2007
- *Quarterly ORPS Performance Analysis*, October 26, 2007
- ES&H Manual, Chapter 5200, Rev. 0, *Incident/Notable Event/ Injury Investigation and Causal Analysis*, June 30, 2007
- FY 2007 JSA Performance Review, Third Quarter (April-June 2007), July 31, 2007
- FY 2007 (October 1, 2006-March 31, 2007), Mid-Year Performance Evaluation of Jefferson Science Associates, LLC, April 2007
- FY 2007 (October 1, 2006-September 30, 2007), Draft Performance Evaluation of Jefferson Science Associates, LLC, November 5, 2007
- QA/CI Department Staff Meeting, May 16, 2007
- JLab Website (<http://www.jlab.org/intralab/contracts/index.html>), JSA/DOE Contract DE-AC05-06OR23177, printed November 8, 2007
- Amendment of Solicitation/Modification of Contract, October 5, 2007
- Presentation, *QA/CI Department Staff Meeting*, September 20, 2007
- Presentation, *QA Contractor Assurance System Oversight Program*, Quality Assurance & Continuous Improvement Manager, October 17, 2007
- *Issues Management Procedure*, Revision 1.6, November 30, 2006

- TJNAF Injuries, Occurrences and PAAA Noncompliance CY 2006-YTD 2007, printed November 6, 2007
- NTS—TJSO-JSA-TJNAF-2007-0001, Noncompliance Report, NC ID 2722, Programmatic Weaknesses in Implementation of the Pressure Systems Safety program, printed November 6, 2007
- NTS—TJSO-JSA-TJNAF-2007-0002, Noncompliance Report, NC ID 2809, Management Concern on Radioactive Material Movement, printed November 6, 2007
- ORPS Summary Report, Production GUI – New ORPS, SC-TJSO-SURA-TJNAF-2006-0001, SC-TJSO-SURA-TJNAF-2006-0002, SC-TJSO-JSA-TJNAF-2006-0001, SC-TJSO-JSA-TJNAF-2006-0002, SC-TJSO-JSA-TJNAF-2006-0003, SC-TJSO-JSA-TJNAF-2006-0005, SC-TJSO-JSA-TJNAF-2006-0004, SC-TJSO-JSA-TJNAF-2007-0001, SC-TJSO-JSA-TJNAF-2007-0002, SC-TJSO-JSA-TJNAF-2007-0003, SC-TJSO-JSA-TJNAF-2007-0004, printed November 6, 2007
- E-mail from Steve Neilson to James Turi, subject: RE: QA Status Slides, dated October 2, 2007
- E-mail from Carter Ficklen to Steve Neilson, subject: *Third Quarter CY 2007 ORPS Performance Analysis*, dated October 26, 2007
- Draft *Notable Event Worksheet*, MARC1A Power Supply Failure, event dated August 23, 2007
- E-mail from Bruce Lenzer to Donna Riggs, CAS.3 Reviewer, subject: *Scheduled Accelerator Down (SAD) Safety Briefings*, November 7, 2007
- JLab Injury Statistics, August 6, 2007; August 20, 2007; September 4, 2007; September 17, 2007; October 1, 2007; and October 15, 2007
- JSA Letter from Dr. Christoph W. Leemann, JSA President and Laboratory Director, to Mr. James Turi, TJSO Manager, subject: *Jefferson Lab Safety Strategy*, dated March 30, 2007
- ES&H Manual, Chapter 5300, *Occurrence Reporting*, September 8, 2004
- Sample, Directors' Safety Council Report Package, September 10, 2007
- Sample, Directors' Safety Council Report Package, July 9, 2007
- Presentation, *Safety Data Analysis and Work Observation Tools*, Health and Safety Department, ESH&Q Deputy, October 17, 2007
- DOE Office of Health, Safety and Security Website, Lessons Learned Database (<https://www.hss.energy.gov/CSA/Analysis/DOEII/SubmitSearch.asp>), printed November 8, 2007
- ESH&Q Manual, Appendix 5200-T1, *Incident Investigation Worksheet*, March 20, 2006
- ESH&Q Manual, Appendix 5200-T1, *Incident Investigation Worksheet*, IT Division, February 14, 2007
- ESH&Q Manual, Appendix 5200-T1, *Incident Investigation Worksheet*, Subcontractor Worker, January 8, 2007
- JLab Website (http://www.jlab.org/div_dept/dir_off/oa/notable/index.html), Quality Assurance & Continuous Improvement, 2007 Notable Event/Incident Investigation Worksheets, printed November 5, 2007
- Jefferson Lab Weekly Briefs, September 26, 2007; October 3, 2007; October 10, 2007; October 17, 2007; October 24, 2007; November 1, 2007
- JLab Website (<http://www.jlab.org/ehs/committees.html>), ESH&Q, Committees, updated October 25, 2007
- JLab Website (<http://www.jlab.org/ehs/wsc>), Worker Safety Committee (Charter), updated June 21, 2006
- JLab Website (<http://www.jlab.org/ehs/wsc/members.html>), Worker Safety Committee (Membership), updated October 9, 2007
- JLab Website (<http://www.jlab.org/ehs/emss.html>), Environmental Management System Committee, updated June 22, 2007
- Meeting Minutes, Meeting No. 1, Jefferson Lab Worker Safety Committee, dated June 6, 2007

- Meeting Minutes, Meeting No. 2, Jefferson Lab Worker Safety Committee, dated July 11, 2007
- Meeting Minutes, Meeting No. 3, Jefferson Lab Worker Safety Committee, dated August 1, 2007
- Meeting Minutes, Meeting No. 5, Jefferson Lab Worker Safety Committee, dated October 3, 2007
- Jefferson Lab Letter from Dr. Christoph Leemann, JSA President and Laboratory Director, to Mr. James A. Turi, Manager, subject: *TJNAF Assurance System Program Description*, dated November 1, 2007
- ES&H Manual, Chapter 3210, *Hazard Identification and Characterization*, December 20, 2006
- ES&H Manual, Chapter 2310, *ES&H Concern Resolution*, April 12, 2005
- JLab Safety Card, December 2002
- Poster, *You Have a Right to a Safe and Healthful Workplace*, no date
- Cryogenic Operations Morning Meeting Agenda, no date
- ESR C1 Skid-Removal Lockout/Tagout Procedure, no date
- E-mail from Rusty Sprouse to Donna Riggs, subject: *Example Requested* (Example of STOP Feedback), dated November 6, 2007
- JLab Website (<https://misportal.jlab.org/InsightWebProject/InsightPortal.portal...>), INSIGHT, Performance Tab, printed November 8, 2007
- JLab Website (<http://www.jlab.org/news/articles/2006/bill.html>), Jefferson Lab in the News, *Jeff Lab cuts \$33,000 off its electricity bill*, August 30, 2006
- JLab Website (<http://www.jlab.org/news/releases/2006/cooling.html>), 2006 News Release, *Jefferson Lab Innovation Saves \$1,000/Day in Cooling Costs*, August 29, 2006
- JLab Website (http://www.jlab.org/news/news_letter/2007/20070615/index.html), *JLab Newsletter: e-OnTarget*, June 18, 2007
- JLab Website, ATLis (<http://devweb.acc.jlab.org/CSUEApps/atlis/...>), Task ID 5500, Crane Inspections, printed November 6, 2007
- JLab Website, ATLis, Task 6914, Acid Flush 2L21 HPA LCW Lines, printed November 6, 2007
- Presentation, *JSA-JLab Corrective Action Performance*, September 2007
- JLab Website, AQIS CATS, Issues (<https://mis.jlab.org/ehs/tracking/finding...>), printed November 7, 2007
- Independent Assessment Report, *Feedback and Improvement*, Assessment No. IA-2006-05, August 30, 2006
- JLab Website, FEList (<http://devweb.acc.jlab.org/CSUEApps/felist/atlis.php>), Change-out of the Wiggler Chamber, printed November 8, 2007
- JLab Website, FEList (<http://devweb.acc.jlab.org/CSUEApps/felist/atlis.php>), Install Emergency Lighting in Area 51, the OCR and Drive Laser Rooms, printed November 8, 2007
- Completed ES&H Concern Report, August 27, 2007
- Completed Stop Work Orders, February 8, 2005, and February 25, 2005
- E-mail from Bob May to Kelly Dixon, subject: *SCM Shells Lifting Post-Mortem Meeting*, dated June 16, 2006
- Global Post-Job Brief on Scheduled Accelerator Down, July 2007

Interviews Conducted

- Facilities Management and Logistics Director
- Training and Performance Manager
- Project Controls Manager

- Manager of Public Affairs
- ESH&Q Deputy Associate Director
- Quality Assurance and Continuous Improvement Manager
- ESH&Q Reporting Manager
- Lead Assessment Specialist

Observations of Work Activities

- Cryogenic Operations Morning Meeting, November 6, 2007
- Machine Control Center Operations Morning Meeting, November 7, 2007
- Free Electron Laser Operations Morning Meeting, November 7, 2007
- Personnel sweep process improvements at the Free Electron Laser Facility, November 7, 2007

Findings

- CAS.3.2.FIND.3** A structured/formal process for conducting the quarterly trend analysis of events, accidents, and injuries has not been documented.
- CAS.3.4.FIND.4** Processes for job hazard walk-downs, pre- and post-job briefings, and toolbox meetings have not been documented.
- CAS.3.5.FIND.5** How JLab makes effective use of data to determine performance relative to goals, suggest further improvements, identify good practices and lessons learned, allocate resources, and establish oversight priorities is not documented.

Observations

None identified.

Noteworthy Practices

- CAS.3.5.NP.2** JLab has established programs that identify, gather, and verify data measuring the performance of facilities, programs, and organizations and disseminates them through various systems.

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Assessment of the Implementation of the TJNAF
Contractor Assurance System

Functional Area: Contractor Assurance System	Objective ID: CAS.4
Reviewer: Harold Monroe	Date: November 2007

OBJECTIVE

Objective CAS.4 - The contractor has an adequate Contractor Assurance System Program Description to address environment, safety, and health requirements (DOE Order 226.1 Att. 2, Section 2.c).

Criteria and Discussion of Results

CAS.4.1 The contractor has submitted, for DOE annual review and approval, a detailed and adequate Contractor Assurance System Program Description to address environment, safety, and health requirements (DOE Order 226.1 Att. 2, Section 2.c).

Discussion of Results – The contractor (Jefferson Science Associates, LLC) has submitted, for DOE review and approval, an adequate CAS Program Description, in accordance with requirements of DOE Order 226.1. However, there are three observations connected with this CRAD.

JSA could not demonstrate a spreadsheet or database that ensures mandatory contractor assessments (those required by DOE directives and regulations) occur at the required frequency and that all facilities, systems, and organizational elements, including subcontractors, are periodically assessed. A similar observation was identified previously by the Thomas Jefferson Site Office which was transmitted to JSA by James A. Turi on May 18, 2007. Although no gaps in required assessments were identified, an observation (**CAS.4.1.OBS.7**) is issued because it may prove difficult without such a master spreadsheet/database to consistently schedule mandatory assessments and meet the following DOE Order 226.1 requirements:

- “Contractors will be responsible for developing, implementing, and performing comprehensive assessments of all facilities, systems, and organizational elements, including subcontractors, on a recurring basis. The scope and frequency of assessments must be specified in site plans and program documents. . .” (Appendix A, Section 2)
- “A comprehensive and integrated contractor assurance system must be established. . . across all aspects of operations.” (Attachment 2, Section 2.a)

Second, in the CAS Program Description, it is stated that an integrated assessment schedule will be developed in accordance with a written procedure. At the time of this review, this procedure was in draft. As mentioned in the CAS Program Description, several other procedures are in draft stage. An observation (**CAS.4.1.OBS.8**) is issued because procedures have not been finalized.

Third, in Section 7.0 of the CAS Program Description, several formal and informal processes are noted for obtaining feedback from workers and work activities. Some of the formal, documented processes are missing from the reference list at the end of the section (e.g., ES&H Manual, Chapters 2240, 3210, and 3330). Without these references, the CAS Program Description has not adequately described flow down to its implementing procedures and processes. An observation (**CAS.4.1.OBS.9**) is issued because these references are not included in Section 7.0 of the CAS Program Description.

This criterion has been met.

Record Review

- *TJNAF Contractor Assurance System Program Description, Revision 0, October 31, 2007*
- JSA Letter from Dr. Christoph W. Leemann, President and Laboratory Director, to Mr. Jim Turi, Site Manager, TJSO, subject: *Support for the Fiscal Year 2007 Assurance Memorandum*, dated June 7, 2007
- DOE Letter from Mr. James A. Turi, Manager, Site Manager, TJSO, to Dr. Christoph W. Leemann, President and Laboratory Director, no subject (transmittal of Management Assessment Report), dated May 18, 2007

Interviews Conducted

- TJNAF Laboratory Director
- TJNAF Chief Operating Officer
- Deputy Associate Director, ESH&Q
- Quality Assurance and Continuous Improvement Manager
- Compliance Reporting Manager and Lessons Learned Coordinator

Observations of Work Activities

No work activities observed.

Findings

None identified.

Observations

- CAS.4.1.OBS.7** JSA could not demonstrate a spreadsheet or database that ensures mandatory contractor assessments (those required by regulations and Department of Energy directives) occur at the required frequency and that all facilities, systems, and organizational elements, including subcontractors, are periodically assessed.
- CAS.4.1.OBS.8** The Contractor Assurance System Program Description states that an integrated assessment schedule will be developed in accordance with a written procedure. At the time of this review, this procedure was in draft.

CAS.4.1.OBS.9 Some formal, documented processes are missing from the reference list at the end of Section 7.0 in the Contractor Assurance System Program Description.

Noteworthy Practices

None identified.

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Assessment of the Implementation of the TJNAF
Contractor Assurance System

Functional Area: Contractor Assurance System	Objective ID: CAS.5
Reviewer: David Carden	Date: November 2007

OBJECTIVE

Objective CAS.5 – Contractor personnel who manage and perform ES&H CAS functions possess the experience, knowledge, skills, and abilities necessary to perform their assigned responsibilities.

Criteria and Discussion of Results

CAS.5.1 Contractor personnel who manage and perform ES&H assurance functions possess experience, knowledge, skills, and abilities commensurate with their responsibilities (Att. 2, Section 2.e).

Discussion of Results – This criterion was assessed through interviews with staff that perform CAS functions and by evaluation of implementation records. Personnel knowledge, skills, and abilities were evaluated for the following CAS functions:

- Lesson Learned Program Management
- Issues Management
- Occurrence Reporting
- Performance Analysis and Trending
- Assessment Program Management and Implementation

CAS support staff interviews indicated no apparent weaknesses in knowledge, skills, or abilities. All interviewed displayed an expert level understanding of the applicable subject matter and enthusiasm for their work. In addition, review of work products (e.g. assessment reports and lessons learned documentation) indicated no substantial problems with quality of work.

Although no issues were noted with knowledge, skills, and abilities of the current TJNAF ES&H assurance staff, a review of the TJNAF qualification and training program was conducted to verify that systems are in place which will sustain personnel competence and consistently ensure qualification of new staff. This evaluation is reported under the CAS.5.3 criterion.

This criterion has been met.

CAS.5.2 Evaluators performing internal independent ES&H assessments are appropriately trained and qualified and have knowledge of the areas assessed (Appendix A, Section 2.b(2)).

Discussion of Results – This criterion was assessed by interviewing staff who have conducted independent assessments and by reviewing recently completed independent assessment reports.

Interviews with staff that perform independent assessments did not reveal any significant gaps in knowledge, skills, or abilities. Also, review of selected recent TJNAF independent assessments indicated that these reports were well prepared and thorough.

This criterion has been met.

CAS.5.3 Personnel with oversight responsibilities have established and maintained appropriate qualification standards (Att. 2, Section 2.f).

Discussion of Results – This criterion was assessed by evaluating current TJNAF training and qualifications requirements for CAS staff, comparison of these requirements to DOE requirements, and inspection of applicable training and qualification records.

TJNAF site-wide requirements for staff training and qualification are contained in the *Jefferson Laboratory Quality Assurance Plan (QAP)*, Section 2.2. This QAP states “JLab shall establish processes to assure personnel competence, awareness, and training for performing various job functions.” The QAP further states, “A training plan shall be prepared for managing, planning, performing, controlling, and overseeing training activities.” Currently, there is no specific training plan that covers all TJNAF training activities; however, the ESH&Q Manual, Chapter 4000, defines a basic process for training programs related to ESH&Q. Specifically, this chapter requires that supervisors and SOTRs:

- Identify essential skill requirements for all positions and people within their area of responsibility,
- Document skills requirements in Individual Training Plans (ITPs), and
- Ensure that required skills remain current.

The above process, if followed, should be adequate to meet DOE Order 226.1 requirements for establishing and maintaining appropriate qualification standards. To evaluate if this process is being implemented for CAS functions, TJNAF procedures and plans were reviewed to determine if they adequately delineate qualification standards for CAS functions. A review of ITPs was also conducted to determine if training requirements are being specified to meet and maintain qualification status.

Review of the ES&H Manual indicates that it defines training requirements primarily for safe access to facilities and for job specific hazards (oxygen deficiency, radiological control, electrical safety, lockout/tagout, confined space, etc.). There are minimal or no specification of training and qualification requirements for performance of CAS support functions. Review of other CAS related procedures also indicate minimal training and qualification requirements definition. Examples of this issue include:

- The Issues Management Procedure requires that causal analysis be performed by staff that are qualified; however, there is no formal specification of what is required to attain qualification and how qualification is to be maintained.
- Specific training and qualification requirements for staff involved in lessons learned program management, occurrence reporting, and issues trending are not specified in TJNAF procedures or plans.
- The *Independent Assessment Procedure*, Revision 2.2, contains a general requirement statement that assessors must have demonstrable experience in conducting audits *and/or* experience in the area that they are assessing. However, the procedure does not specifically define the level of training required and what constitutes acceptable qualification (e.g., completion of a nationally recognized audit training program [American Society for Quality Control, Nuclear Quality Assurance, International Organization for Standardization, etc.]) and participation in a given number of audits.
- A revision to the Independent Assessment Procedure has been drafted which specifies that independent assessors must be qualified in accordance with a new procedure (also in draft) QA-PR-0006-00, *Auditor/Assessor Qualification Procedure*. This draft procedure specifies that qualification can be obtained by completion of an online training course. Review of this training course indicated that it is a basic overview of the assessment process and can be completed in about 30 minutes. Utilization of such a basic training module does not provide an appropriate level of training detail and does not assure that assessor experience is evaluated as a criterion for qualification.
- The current *Management Self-Assessment Procedure*, Revision 3.1, specifies that assessors must be “trained in the management assessment process and are knowledgeable of the program, system, or process being assessed.” However, there is no defined standard specifying what must be included in the training, how experience will be judged as being acceptable, and if recurrent training and audit participation is needed to keep qualification current.
- A review of training records of randomly selected staff that have performed management self-assessments at TJNAF indicated that records demonstrating assessor qualification are not maintained in the Training Management System and that required training needed to obtain assessor qualification is not listed in Individual Training Plans.
- Safety Wardens and SOTRs are required to conduct important ESH&Q oversight functions. Training modules and lessons plans have been developed for these positions, and training has been provided to affected staff. However, there are no qualification requirements that institutionalize the SOTR and Safety Warden training, specify recurrent training needs, and define prerequisite and continuing experience.

Evaluation of ITPs indicated that CAS related training is either not listed in ITPs or, if listed, is not specified as “required training.” Examples of this issue include:

- An ITP for an employee who conducts performance analysis for the Performance Evaluation and Measurement Plan was reviewed. The ITP listed only site access and hazard awareness courses as being required and contained no required training related to performance analysis skills. While the Position Description for this employee identified prerequisite CAS skills, the ITP did not serve to ensure that these skills remain current.
- The ES&H Manual, Chapter 5200, identifies several staff as Causal Analysis Support Staff and indicates that each has completed causal analysis training. Review of the ITPs for these staff indicate that causal analysis training has been completed, but the training is not shown as being “Required.”
- ITPs for staff that perform occurrence reporting, lessons learned management, and issues trending/analysis do not list any CAS related initial or recurrent training.
- A review of Training Management System records for randomly selected staff that have performed recent independent assessments at TJNAF indicated that records demonstrating assessor qualification are not maintained and that requirements for assessor qualification are not listed in ITPs.

Given these specific issues relating to lack of CAS qualification standards and incomplete inclusion of training requirements in ITPs, it is clear that TJNAF is not meeting DOE Order 226.1 requirements as specified in Attachment 2, Section 2.f. For this reason, it cannot be assured that TJNAF CAS staff consistently obtain and maintain the knowledge, skills, and abilities commensurate with their responsibilities. A finding (**CAS.5.3.FIND.6**) was noted related to this issue.

The assessment team also evaluated the process that is used to develop training programs and materials once a need for training is identified. The ESH&Q Manual, Chapter 4000, defines the process for training course development and conducting job-specific training. The ESH&Q Training Committee has been established to evaluate proposed new training and changes to existing training requirements/materials, to identify and evaluate opportunities for improvement in training, and to ensure that training conforms to internal and regulatory requirements. Recommendations that are developed during committee meetings are carried forward to the Director’s Safety Council for approval. This process appears adequate to ensure that training programs are effectively developed and maintained.

To ensure that training program weaknesses are promptly identified and corrected, the contractor assessment program should include reviews of the training program in their assessment schedule. The TJNAF QAP specifies that quality personnel assess training records “in accordance with the annual assessment schedule.” A review of FY 2007 assessment records and the FY 2008 schedule indicates that a specific assessment of training records has not been conducted and is not planned. An observation (**CAS.5.3.OBS.10**) was noted with respect to this apparent discrepancy.

This criterion has not been met.

CAS.5.4 Personnel performing ES&H oversight have clear, unambiguous lines of authority and responsibility (Att. 2, Section 2.g).

Discussion of Results – This criterion was assessed through interviews with CAS staff, by evaluation of documented roles and responsibilities, and review of organization charts and staff assignments.

Interviews with ES&H staff responsible for oversight indicated that all understood their roles and responsibilities and could clearly describe what functions they performed and the work processes they utilize.

ES&H oversight staff lines of authority and responsibility are defined in the ESH&Q Manual, Chapter 2000. This chapter clearly describes authorities and responsibilities for staff that perform a primary ES&H oversight function (e.g., Division Safety Officers, Safety Wardens, ESH&Q Committees, Division ES&H staff, etc.). Organization charts and staff assignment lists are also available in Chapter 2000 that define who is assigned to specific ES&H oversight roles. Also, the lines of authority and ES&H responsibilities for SOTRs are defined in Chapter 3420.

This criterion has been met.

Record Review

- AQIS/CATS System Functionality Review, no date
- SAF901, *Safety Warden Basics Lesson Plan*, no date
- Safe Out Box Power Supply (BPS) Lesson Plan, no date
- Jefferson Lab Material Handling Training Program Plan, August 12, 2005
- ES&H Manual, Chapter 2000, *Organization and Responsibilities*
- ES&H Manual, Chapter 4000, *Training*
- ESH&Q Training Program Subcommittee Meeting Minutes, October 5, 2006
- FY 2008 Integrated Assessment Schedule, dated October 2, 2007
- Listing of AQIS/CATS Users (Administrators, Division Safety Officers, General Users), no date
- IA-2006-05, *2006 Annual Evaluation of the Environmental Management System for Continued Performance Improvement*, approved November 1, 2006
- IA-2006-119, *Independent Assessment of Feedback and Improvement*, approved September 29, 2006
- MSA-07-002, *2007 Annual External Dosimetry Internal Audit*, performed March 9, 2007

- ESH&Q Training Committee Charter, November 2, 2006
- *Management Self-Assessment Procedure*, Revision 3.1, November 23, 2005
- *Independent Assessment Procedure*, revision 2.2, 11/30/2006
- *Issues Management Procedure*, Revision 1.6, November 30, 2006
- *TJNAF Contractor Assurance System Program Description*, Revision 0, October 31, 2007
- FY 2007 Performance Evaluation and Measurement Plan, October 3, 2007
- Jefferson Lab ESH&Q Individual Training Plan Checklist, no date
- Performance Analyst Job Description, no date
- Individual Training Plans for selected staff with CAS functions, no date
- Draft Procedure, QA-PR-0006, *Auditor/Assessor Qualification Procedure*, no date
- Draft Procedure, *Management Self-Assessment Procedure*, no date
- Draft Procedure, *Independent Assessment Procedure*, no date
- Final Draft Procedure, *Issues Management Procedure*, Revision 2, August 9, 2007
- Procedure Number 11-0, *Quality Assurance Program*, Jefferson Science Associates, LLC, Internal Audit Manual, July 1, 2006
- Presentation, *Safety Data Analysis and Work Observation Tools*, July 2006
- Presentation, *QA Contractor Assurance System Oversight Program*, presented during DOE CAS Assessment Pre-Visit, October 2007
- FY 2008 Supplemental Plan for Additional Procedures, no date
- FY 2007 Supplemental Plan for Additional Procedures, no date
- Status Table, FY07 Q/A Procedures, no date
- Status Table, FY08 Q/A Procedures, no date

Interviews Conducted

- QA/CI Department Manager
- Lead Assessment Specialist
- Training Program Manager
- Performance Analysis and Trending Lead
- Internal Auditing Lead
- Deputy Associate Director for ES&H
- Free Electron Laboratory Manager

Observations of Work Activities

- Cryogenic Operations morning operations meeting, November 6, 2007
- Machine Control Center morning operating meeting, November 7, 2007
- Free Electron Laser morning operations meeting, November 7, 2007

Findings

- CAS.5.3.FIND.6** Qualification standards have not been established to assure staff, who perform CAS functions, obtain training and maintain the requisite skills to effectively perform their assigned functions.

Observations

CAS.5.3.OBS.10 A specific assessment of training records has not been planned or conducted.

Noteworthy Practices

None identified.

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Appendix C – Team Roster

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Team Roster

Assessment of the Implementation of the
TJNAF Contractor Assurance System
November 2007

Name	Organization	Team Position	CRADs
David Luke	TJSO	Team Leader	
Anthony Takacs	Oak Ridge Office	Lead for CRAD	CAS.1
Teresa Perry	Oak Ridge Office	Lead for CRAD	CAS.2
Donna Riggs	Oak Ridge Office	Lead for CRAD	CAS.3
Harold Monroe	Oak Ridge Office	Senior Technical Advisor and Lead for CRAD	CAS.4
David Carden	Oak Ridge Office	Lead for CRAD	CAS.5
Sheila Thornton	Parallax, Inc.	Technical Editor	