



U.S. Department of Energy
OFFICE OF RIVER PROTECTION

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MAY 18 2006

06-ESQ-037

Mr. Denny Ferrera
Chief Executive Officer
CH2M HILL Hanford Group, Inc.
Richland, Washington 99352

Dear Mr. Ferrera:

CONTRACT NO. DE-AC27-99RL14047 – ASSESSMENT REPORT A-06-ESQ-TANKFARM-001, ASSESSMENT OF THE CH2M HILL HANFORD GROUP, INC. (CH2M HILL) HOISTING AND RIGGING (H&R) SAFETY MANAGEMENT PROGRAM (SMP)

This letter transmits the results of the U.S. Department of Energy (DOE), Office of River Protection's (ORP), assessment of the CH2M HILL H&R SMP. The assessment was completed on March 20, 2006.

The team evaluated compliance with and implementation of the Hanford Site Hoisting and Rigging Manual, DOE RL-92-36 (H&R Manual) and "Occupational Safety and Health Act of 1970," (29 CFR 1910 or 29 CFR 1926).

The ORP assessment team concluded the CH2M HILL H&R Program is compliant and effectively implemented with some exceptions. The team identified one Finding and four Observations. The finding identified inadequate implementation of critical lift plan technical approver qualifications and a missing jib hoist out-of-service tag as required by the H&R Manual. CH2M HILL is directed to use their Problem Evaluation Request (PER) corrective action process to respond to the finding. The PER should include the following:

- The corrective steps that have been taken and the results achieved;
- The corrective steps that will be taken to avoid further findings; and
- The date when full compliance with the applicable requirements will be achieved. Where good cause is shown, consideration will be given to extending the requested response time.

The direction herein is considered to be within the limitations of the Technical Direction (TD) clause in the Contract and does not meet any of the conditions described in Paragraph (b) (1) through (4) of the TD clause. If, in the opinion of the Contractor, any instruction or direction by the Contracting Officer Representative in this letter falls within one of the categories defined in

Mr. Denny Ferrera
06-ESQ-037

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TD Clause (b)(1) through (b)(4), the Contractor shall not proceed but shall notify the Contracting Officer immediately orally, and in writing within five (5) working days, after receipt of any such instruction or direction and shall request the Contracting Officer to modify the contract accordingly. The Contracting Officer will respond as required by the TD clause.

If you have any questions, please contact me, or your staff may call Robert C. Barr, Director, Office of Environmental Safety and Quality, (509) 376-7851.

Sincerely,



T. Zack Smith
Contracting Officers Representative

ESQ:PRH

Attachment

cc w/attach:

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**U.S. Department of Energy
Office of River Protection**

**Tank Farm Contractor
Hoisting and Rigging Program Assessment**

Final Report
A-06-ESQ-TANKFARM-001

April 2006



Office of River Protection

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EXECUTIVE SUMMARY

An assessment of the U.S. Department of Energy (DOE), Office of River Protection (ORP) Tank Farm Contractor (TFC) Hoisting and Rigging (H&R) Safety Management Program (SMP) was performed by ORP from March 13 through 20, 2006. The assessment evaluated the implementation and execution of the TFC H&R Program as defined in DOE 92-36, "Hanford Site Hoisting and Rigging Manual" as required by the TFC Standards/Requirements Identification Document. The scope of the assessment addressed programmatic and facility implementation elements in the following areas:

- H&R SMP Implementation;
- Critical Lift Process;
- H&R Work Control Process;
- H&R Operations;
- Equipment Inspection and Maintenance;
- Personnel Qualifications; and
- H&R Documentation.

In addition, a review of the TFC Problem Evaluation Requests (PER) issued from January 2005 through January 2006 was performed to identify any potentially systemic areas related to this assessment that required additional focus. The PER review identified no additional focus areas for this assessment. The exit meeting was conducted on March 20, 2006.

Conclusion

The assessment team concluded that the TFC is compliant with the H&R SMP. The assessment team identified some performance based deficiencies in the documentation and administration of the program that requires correction. The assessment team found no evidence that these deficiencies impacted the safe performance of H&R activities. However, the deficiencies represented missing or weakened barriers intended to protect against unsafe H&R performance. The assessment team noted that the TFC fully integrates and implements the safety basis documents in the field. The assessment team determined that the TFC H&R SMP incorporates and implements all program controls identified in safety basis documents.

This assessment resulted in one Finding and four Observations:

Finding

- The TFC did not fully implement requirements of the following two sections in the H&R Manual (A-06-ESQ-TANKFARM-001-F01):
 - Element A - The TFC failed to verify placement of an out-of-service tag on a jib hoist at 272-AW in accordance with H&R Manual Section 2.2.8.c. Note: The assessment team identified this finding to the TFC on March 15, 2006. On March 16, 2006, the TFC re-tagged the jib hoist as out-of-service.
 - Element B – The TFC failed to verify all critical lift plans (CLP) signed by the identified, qualified technical approver in accordance with H&R Manual Section 3.5.1. Note: On March 15, 2006, the assessment team identified this element of the finding. On March 16, 2006, the TFC initiated PER 2006-0621 to track closure of this issue. On March 19, 2006, the TFC made a red-arrow entry to require qualified Technical Approvers sign all critical lifts. Between March 15, 2006, and March 19, 2006, the TFC identified no critical lifts.

Observations

- The TFC did not remove the Lifting Point Program Charter, TFC-CHARTER-24, from the H&R Program in a timely fashion (A-06-ESQ-TANKFARM-001-001);
- The TFC had not maintained all aspects of the lifting point database required under procedure, TFC-ENG-DESIGN-C-22, Revision B-3, “Structural Integrity Verification of Lifting Points,” current. (A-06-ESQ-TANKFARM-001-002);
- A Nylon sling in the TX Farm was used in an inappropriate manner (A-06-ESQ-TANKFARM-001-003); and
- TFC procedure (TFC-ENG-DESIGN-C-22 and TFC-ESHQ-S-IS-C-05) instructions regarding CLPs reflect inconsistencies with TFC position descriptions (A-06-ESQ-TANKFARM-001-004).

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ACRONYMS

BMA	Blanket Master Agreement
CLP	Critical Lift Plans
CRAD	Criteria Review and Approach Documents
DL	Designated Leader
DLE	Engineering Discipline
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
ECN	Engineering Change Notice
FH	Fluor Hanford
H&R	Hoisting and Rigging
ISO	International Standards Organization
MOA	Memorandum of Agreement
MOP	Management Observation Program
MOU	Memorandum of Understanding
OJE	On-the-job Evaluation
OJT	On-the-job Training
OOS	Out-of-Service
ORP	Office of River Protection
OSHA	Occupational Safety and Health Act of 1970
PER	Problem Evaluation Request
PHMC	Project Hanford Management Contractor
PIE/CIM	Performance Improvement Evaluation/Continuous Improvement Management
QA	Quality Assurance
RL	Richland Operations Office
S/RID	Standards/Requirements Identification Document
SMP	Safety Management Program
TFC	Tank Farm Contractor
TSR	Technical Safety Requirements
WFO	Waste Feed Operations

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of River Protection (ORP) performed an assessment of Tank Farm Contractor (TFC) Hoisting and Rigging (H&R) Safety Management Program (SMP) implementation from March 13 through 20, 2006.

2.0 PURPOSE AND SCOPE

This assessment evaluated the TFC H&R Program and its implementation. As required by the DOE approved TFC Standards/Requirements Identification Document (S/RID) the H&R work must comply with the “Occupational Safety and Health Act of 1970,” (OSHA) (29 CFR 1910 or 29 CFR 1926) and DOE Richland Operations Office (RL) DOE-RL-92-36, “Hanford Site Hoisting and Rigging Manual (H&R Manual).” The manual describes the operation, inspection, maintenance, and repair requirements for cranes, hoists, fork trucks, slings, rigging hardware, and hoisting equipment at the Hanford Site.

Assessment objectives included:

- Verifying the TFC defined and implemented a comprehensive H&R Safety Management Program;
- Verifying the TFC fulfilled the Documented Safety Analysis (DSA) and Technical Safety Requirements (TSR) H&R Program commitments;
- Verifying the TFC implementation of Hanford H&R Manual through programs, policies, and procedures; and
- Evaluating the effectiveness of personnel training and qualifications, equipment operation, inspection and maintenance, and the documentation for H&R activities.

3.0 APPROACH AND DELIVERABLES

The assessment team performed the review consistent with ORP M 220.1, “Integrated Assessment Program.” Major elements of the review were developed from the H&R Manual, previous H&R Program assessments, and guidance developed in support of DOE’s Safety System Oversight Program.

Major assessment activities consisted of:

- Preparation of the Criteria Review and Approach Documents (CRAD);
- Selection of the assessment team;

- Pre-review activities;
- Entrance Meeting with the TFC;
- Fieldwork activities;
- Development of the assessment results;
- Exit Meeting with the TFC; and
- Development of a final report, including a factual accuracy review by the TFC.

The assessment team developed the CRADs from the H&R Program requirements in the H&R Manual and TFC procedures. Appendix A provides the CRADs for this assessment.

The ORP selected the assessment team based on technical expertise and experience. Appendix B provides the biographical summaries for each of the team members.

The assessment team conducted the entrance briefing on March 13, 2006. The assessment team performed fieldwork between March 14 and 17, 2006. Fieldwork consisted of TFC staff interviews and facility inspections. Team members discussed assessment activities and results periodically and communicated the issues to the TFC point-of-contact. Communication of program strengths, weaknesses, and TFC feedback related to requested information or resolution of issues occurred in real time. The assessment team held the exit briefing on March 20, 2006.

4.0 ASSESSMENT RESULTS

A summary of the results of the assessment, including findings and observations, by assessment performance objective is provided below. Appendix A provides detailed discussions, references, personnel interviewed, and additional considerations.

4.1 Performance Objective – TFC Problem Evaluation Requests (PER)

The purpose of this objective required determining if any additional focus areas were warranted by performing a search of the PER database using the following keywords:

- Hoist (gets Hoisting);
- Rigging;
- Crane;

- Forklift; and
- Critical Lift.

Assessment Results

A total of 86 PERs met the search criteria. The assessor reviewed each PER to determine applicability to the H&R Program. These PERs can be placed in the following categories: Training, H&R Program, Equipment, Operations, and Procedure.

Based on this review, a total of 38 open and closed PERs apply to the H&R Program from January 1 through 31, 2006, and broken down by topic in the following table.

OPEN	Training	H&R Procedure	H&R Program	Lifting Equipment	Crane Operation
(8)	0	3	0	3	2
CLOSED	2	10	2	10	6
(30)					

This review did not identify any additional focus areas requiring additional CRADs.

4.2 Performance Objective – H&R Operations and Equipment and Personnel Qualification Compliance

The purpose of this objective required determining if appropriate H&R requirements from the H&R Manual and TFC implementing procedures fully implemented H&R requirements in performing H&R activities; equipment inspection, testing, maintenance and documentation, and personnel performing H&R activities met the qualification and training requirements.

The performance criteria for evaluating this objective were:

1. Are applicable H&R Manual operation, maintenance, testing and inspection, and personnel qualification requirements and responsibilities implemented in TFC procedures?

Assessment Results

The H&R Manual requires contractors to have a documented training and qualification program that includes the following elements:

- Classroom or computer-based training;
- Written tests;
- On-the-job training (OJT);
- On-the-job evaluations (OJE); and
- Pass/fail criteria established and documented.

The TFC replicated the H&R Manual requirements into procedure TFC-BSM-TQ-STD-18, "Hoisting and Rigging Training Program Description." The procedure required individuals to become qualified to perform selected H&R activities by completing formal training that includes classroom instruction, written examinations, and practical exercises. Prior to operating equipment individuals are required to complete equipment-specific OJT, and performance evaluations performed by a qualified OJT evaluator on the specific equipment or tasks. The TFC adequately implemented the personnel qualifications requirements and responsibilities from the H&R Manual into their H&R Program. The assessment team identified an issue related to training and qualification of Critical Lift Procedures (CLP) Technical Approvers. This issue is covered under the Critical Lift performance objective.

TFC-OPS-MAINT-C-11, "Maintenance and Administration of Tank Farm Contractor Hoisting and Rigging Equipment," requires that a custodian be established for each crane, hoist, lift truck, below the hook lifting devices, or other H&R equipment that requires maintenance, inspection, and record keeping. Responsibilities of the assigned custodian include verifying that the operating equipment is properly maintained, and that maintenance, inspection, and testing of the equipment remain current. The assessment team interviewed the Equipment Custodian and reviewed the TFC Master Equipment List. The assessor randomly selected several pieces of H&R equipment from the list and reviewed their respective maintenance, testing, and inspection records. The TFC performed all maintenance, testing, and inspections adequately in accordance with procedural requirements with one exception. The assessor found a fiberglass shelter, "doghouse" lying on its side on the southwest side of TX Farm. The assessor found the doghouse rolling in an arc on a tether, nylon sling, by tracks in the dirt which holds it to the fence. Using this sling in its current configuration exposes it to sunlight and abrasion from dragging across the rocks and dirt. As an observation, this type of operating practice does not meet the requirements in the H&R Manual under this section for nylon slings.

The equipment custodian is required to tag equipment with a white tag if the equipment is Out-of-Service (OOS). Using the Master Equipment List, the assessor randomly selected an OOS jib hoist for inspection. The assessor inspected the jib hoist at the 272-AW loading dock and determined the required OOS white tag was missing. The Equipment Custodian informed the assessor that the jib hoist in

question had been tagged several times in the past, but that the tags had blown off in the wind. To prevent inadvertent use of equipment it is important to maintain OOS tags in place. A finding resulted from the TFCs failure to implement requirements of the Hanford H&R Manual, Section 2.2.8, and the Maintenance procedure.

2. Are the procedures implemented and documented in the field instructions (e.g., critical lift plans, work packages)?

Assessment Results

A separate assessment CRAD covered CLPs and work packages (See Critical Lift CRAD).

3. Are training and equipment custodian records appropriately documented and maintained?

Assessment Results

The assessment team interviewed the training supervisor and reviewed craft employee training records. The TFC retained the services of Fluor Hanford (FH) to perform lifts with mobile cranes. The TFC training supervisor had access to training records for FH H&R personnel. The assessor reviewed the training records of the FH field crew working on the 241-C-103 pump size reduction project. The H&R personnel had the complete and current required training.

The assessment team interviewed the TFC equipment custodian and reviewed the equipment history files containing inspection and maintenance records. The sampled TFC equipment history records were complete and met record requirements. The TFC performed inspections and maintenance in accordance with the H&R Program requirements.

4. Was the field equipment appropriately marked and tagged?

Assessment Results

The assessment team observed H&R operations at the 241-C-103 Cut-up Yard. The TFC retained the services of FH to perform lifts with a 70-Ton Grove mobile crane. The assessor verified that the equipment used was inspected and properly tagged. All slings had current inspections within the last year.

One Finding and one Observation was identified:

NOTE: The finding described below includes two elements from different CRAD objectives (operations and critical lifts). This assessment combines two issues into one finding.

Finding A-06-ESQ-TANKFARM-001-F01 (Element A): The TFC failed to verify placement of an OOS tag on a jib hoist at 272-AW in accordance with H&R Manual Section 2.2.8.c. Note: The assessment team identified this finding to the TFC on March 15, 2006. On March 16, 2006, the TFC re-tagged the jib hoist as OOS.

Observation A-06-ESQ-TANKFARM-001-O03: Nylon sling in TX Farm used in an inappropriate manner.

4.3 Performance Objective – Critical Lift Process and H&R Work Control Process

The purpose of this objective required determining if appropriate H&R requirements from the H&R Manual and TFC implementing procedures fully implement the requirements in the work control process and work packages.

The performance criteria for evaluating this objective included:

1. Are applicable H&R Manual work process requirements implemented in procedures?

Assessment Results

The TFC prime contract and TFC S/RID adequately implemented the H&R Manual. To further the flow-down of requirements, the TFC utilizes the following primary procedures to implement the H&R Manual requirements:

- TFC-CHARTER-31, H&R Committee Charter;
- TFC-CHARTER-24, Lifting Point Program Charter (Superseded during assessment);
- TFC-PLN-32, TFC Safety Management Programs;
- TFC-PLN-40, H&R Safety Management Program Plan;
- TFC-BSM-TQ-STD-18, H&R Training Program Description;
- TFC-ESHQ-S-IS-C-05, H&R Safety;
- TFC-ENG-DESIGN-C-22, Structural Integrity Verification of Lifting Points;
- TFC-ENG-DESIGN-C-23, Inspection of Permanent Lifting Points;
- Memorandum of Agreement (MOA), Number CHG-FMOA-2001; and

- Crane & Rigging Blanket Master Agreement (BMA), Requisition Number 102408, Revision 0.

This assessment primarily focused on H&R Manual Chapter 3, Section 3.5.1, Critical Lifts.

The H&R Manual Chapter 3, Section 3.5.1 requires three approvals of CLPs; Technical Approver, Manager of Facility where lift is being performed, and qualified engineer or occupational health and safety representative. The TFC could not provide objective evidence of the identity of the “Technical Approver” or demonstrate a signature on the CLPs met training and qualifications requirements of the Technical Approver required by the H&R Manual.

TFC-CHARTER-24, “Lifting Point Program” was an active procedure at the beginning of the assessment. As the assessment team reviewed the charter to determine implementation adequacy, the TFC determined the charter was no longer needed, and had not been utilized since May 2005. Different TFC procedures (i.e., TFC-CHARTER-31, “Hoisting and Rigging Committee,” TFC-ENG-DESIGN-C-22, “Structural Integrity Verification of Lifting Points,” and TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety,” perform most of the functions described by the charter. The TFC procedures do not cover two functions, the “weekly committee meetings” and “committee approval of critical/special lift plans.” The TFC deemed these functions as not required due to adequacy of the other procedural requirements. The assessor agreed and the TFC removed the charter from the procedure web on March 14, 2006.

TFC-ENG-DESIGN-C-22, “Structural Integrity Verification of Lifting Points” in conjunction with TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety” identifies the actions to initiate and complete H&R critical lifts and special lifts. These procedures assigned actions and responsibilities to job titles that do not exist (i.e., Critical Lift Person in Charge, Lifting Point Program Coordinator, and Field Crane Coordinator). Inconsistencies with company position descriptions could lead to confusion and procedural non-compliance.

2. Are the procedures implemented and documented in the field instructions (work packages)?

Assessment Results

The team reviewed six work packages involving critical lifts. The TFC procedures, TFC-ENG-DESIGN-C-22, “Structural Integrity Verification of Lifting Points,” TFC-DESIGN-C-23, “Inspection of Permanent Lifting Points,” TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety,” and TFC-OPS-MAINT-C-01, “Tank Farm Contractor Work Control,” adequately implement the H&R requirements with one

exception. The assessment team identified one issue where CLPs lacked the signature of a qualified Technical Approver.

3. Are work packages properly implemented and followed in the field?

Assessment Results

The TFC performed no critical lifts during the assessment. The assessment team observed a lift involving the 241-C-103 Pump Reduction. The TFC performed all aspects of the field implementation satisfactorily including the pre-job briefing, crane setup, spotters, knowledge of field work supervisor, and rigging craft.

The assessment team identified one Finding and two Observations:

Finding A-06-ESQ-TANKFARM-001-F01 (Element B): The TFC failed to verify all CLPs signed by the identified, qualified technical approver in accordance with H&R Manual Section 3.5.1. Note: On March 15, 2006, the assessment team identified this element of the finding. On March 16, 2006, the TFC initiated PER 2006-0621 to track closure of this issue. On March 19, 2006, the TFC made a red-arrow entry to require qualified Technical Approvers sign all critical lifts. Between March 15 and 19, 2006, the TFC identified no critical lifts.

Observation A-06-ESQ-TANKFARM-001-O01: The TFC did not remove the Lifting Point Program Charter, TFC-CHARTER-24, from the H&R Program in a timely fashion.

Observation A-06-ESQ-TANKFARM-001-O04: TFC procedure (TFC-ENG-DESIGN-C-22 and TFC-ESHQ-S-IS-C-05) instructions regarding CLPs reflect inconsistencies with TFC position descriptions.

4.4 Performance Objective – H&R SMP

The purpose of this objective required determining if the H&R SMP requirements from the H&R Manual and TFC implementing procedures fully implement the Safety Basis.

The performance criteria for evaluating this objective were:

1. Are the SMP requirements of the H&R Program adequately identified by the DSA?

Assessment Results

The TFC adequately identified the SMP requirements for the H&R Program in the DSA. Specifically, in Chapter 3, Hazard and Accident Analysis for each accident scenario in which the requirements are relied upon and in Chapter 17, Management Organization and Institutional Safety Provisions. The discussion of these

requirements in the DSA is general in nature, i.e., the program provides guidelines for inspection, personnel qualification, training, equipment to be used, and critical lift procedures. Inspection of lifting bails and permanently installed lift points is also addressed under the H&R Program.

2. Are applicable SMP H&R Manual requirements identified in the DSA implemented in procedures?

Assessment Results

The TFC implemented the H&R SMP requirements for the H&R Program through TFC procedures and contractually through the Memorandum of Understanding (MOU) and BMA with the Project Hanford Management Contractor (PHMC).

The assessment team identified an implementation issue with procedure TFC-ENG-DESIGN-C-22, "Structural Integrity Verification of Lifting Points," Section 4.3 states, "Check the Integrated Document Management System Lifting Point database and RPP-16330 to determine bail capacity and cover block weight." The TFC has not maintained the database for lifting points totally current. The TFC responded that the lifting point data base was set up for storage and retrieval of photos and calculations of existing (old) cover blocks. The assessment team found current installation calculations and design media for cover block fabrication in project records. However, the reference to out-of-date database could lead to confusion and erroneous calculations.

3. Are the TFC procedures implemented and documented?

Assessment Results

Item Number 2 (above) documents that the procedures implement the H&R requirements identified in the DSA.

4. Are TFC work packages properly implemented and followed in the field?

Assessment Results

The TFC did not perform any critical lifts during the assessment. The assessment team observed the 241-C-103 Pump Reduction. The TFC complied with the field execution of the work instructions for the 241-C-103 Pump Reduction.

The assessor identified one observation:

Observation A-06-ESQ-TANKFARM-001-002: The TFC failed to maintain all aspects of the lifting point database required under procedure, TFC-ENG-DESIGN-C-22, Revision B-3, "Structural Integrity Verification of Lifting Points," current.

However, the reference to out-of-date database could lead to confusion and erroneous calculations.

5.0 CONCLUSIONS

The assessment team concluded that the TFC was compliant with the H&R SMP. The assessment team identified some performance based deficiencies in the documentation and administration of the program that requires correction. The assessment team found no evidence that these deficiencies impacted the safe performance of H&R activities; however, the deficiencies represent missing or weakened barriers intended to protect against unsafe H&R performance. The assessment team found that the TFC fully integrates and implements the safety basis documents in the field. The assessment team determined that the TFC H&R SMP incorporated and implemented all program controls identified in safety basis documents.

6.0 REFERENCES

References and personnel contacted for each assessment performance objective are listed in Appendix A.

APPENDIX A

CRITERIA REVIEW AND APPROACH DOCUMENTS

**Criteria and Review Approach Document
Hoisting and Rigging 2006**

Functional Area: Hoisting and Rigging	Assessment Element: Open/Closed PERs	Facility or Process: TFC Facilities	Date: March 1, 2006	CRITERIA MET YES: <u> N/A </u> NO: <u> </u>
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OBJECTIVE: Review open/closed PERs on H&R

Performance Criteria or Assessment Elements

Determine if any additional focus areas for the assessment are warranted by performing a search of the PER database during the period January 2005 through January 2006?

Approach:

Perform a search of the PER database using the following keywords:

- Hoist (gets Hoisting);
- Rigging;
- Crane;
- Forklift; and
- Critical Lift.

A total of 86 PERs met the criteria. Each PER was reviewed to determine applicability to the H&R Program. These PERs can be placed in the following categories: Training, H&R Program, Equipment, Operations, and Procedure for trending.

The Training category is self-explanatory.

The H&R Program represents overall problem areas, including management issues.

The Equipment category represents hardware issues. This includes the H&R equipment itself and permanent plant H&R equipment installed in the field.

The Operation category represents events which occurred as actual consequences of operating a crane or H&R equipment.

The Procedure category represents any problem with “paper” products associated with H&R such as work packages, Engineering Change Notices (ECN), associated procedures, etc.

Based on this review, a total of 38 open and closed PERs apply to the H&R Program from January 1, 2005, through January 31, 2006.

Documentation:

Copies of all open and closed PERs and associated corrective actions found on the subjects listed above.

In-Process (Open) Records Reviewed:

The following summarizes the PER, type of PER [significant, trend only, track until fixed, with resolution, or Performance Improvement Evaluation/Continuous Improvement Management (PIE/CIM) and type of category for trending].

- PER-2005-2948 (TUF) – The critical lift procedure for 2E-04-02141, AN-06A steel cover plate and cover block removal and reinstallation needs to be redone because the 90 ton crane called out is not available. Changing the CLP requires seven approvals. This is causing work delays when specified equipment is not available because of scheduling or maintenance reasons. **Procedure**
- PER-2005-2962 (w/resolution) – During a north to south move of the 222-S 11A bridge crane, the festoon power cable snagged either an extended vertical piece of scaffolding or the ladder that is attached to a temporary handrail system mounted on top of the 11A hot cells. The result was that two of the seven cable ties supporting the 208 volt power cable snapped, and that portion of the power cable sagged onto the handrails. The festoon system operated as designed; i.e., the cable did not stress the power source. **Equipment**
- PER-2005-3370 (TUF) – During field observation of the electrical magnet used for lifting shield deck plates in 6241-A, it was determined the test documentation for the original proof test could not be traced back to physical component as required by the site H&R Manual. **Equipment**
- PER-2005-3428 (TUF) – Procedure TFC-ENG-DESIGN-C-10 “Calculation Procedure” Table 2 was recently changed to show that the calculation type determination for a critical lift plan is the responsibility of the Engineering Discipline (DLE) Lead Civil/Structural. The DLE calculation determination also applies to special and normal lifts. Table 2 of TFC-ENG-DESIGN-C-10 still shows the calculation type for “Evaluations of hoisting and rigging except below-the-hook lifting devices” require “Informal Calculations.” There are also at least six instances where Table 2 duplicates the “Calculation Type” and the “Assigned Category.” **Procedure**
- PER-2005-3540 (TUF) – DOE Facility Representative identified several housekeeping issues

at AN Farm. Items identified included:

1. Un-used extension cords inside farm;
2. Ladder not stowed properly;
3. Hoisting gear and air lines left out in the weather;
4. Radiation Control signage on the ground; and
5. Litter on hillside outside of farm.

General housekeeping in the farm needs to be improved. **Operations**

- PER-2005-3960 (TUF) – The following was observed during a walk down of 241-AP. Rigging equipment located by AP valve pit, wire sling with three legs and “T-bar” annual inspection overdue. **Equipment**
- PER-2005-3973 (Trend Only) – The Quality Assurance Surveillance of work packages performed to support S-112 operational readiness to commence the Remote Water Lance operation identified two deficiencies regarding record keeping deficiencies. All of the packages had progressed through the Operations Acceptance review function. The deficiencies reflected a lack of attention-to-detail, and did not impact the technical adequacy of the work or the test results. Deficiency #1 (reference work package CLO-WO-05-002234, Reduce High-pressure transfer interlock setting) resulted from a Routine Work Request incorrectly labeled as “Work Not in Radiological Area,” while deficiency #2 (reference work package CLO-WO-05-001916, Install New Remote Water Lance Assembly in Tank S-112 Riser 7) resulted from a H&R “Lift Instructions Determination Riggers and Operators Field Verifications Checklist” not being filled out. **Procedure**
- 2006-0097 (PIE/CIM) - At the Integrated Disposal Facility, a subcontractor employee inadvertently backed into a parked, unoccupied job pickup truck, inflicting minor cosmetic damage to the rear quarter panel of the truck. The forklift operator had just finished staging reinforcing steel at the Cell 1 Crest building area at approximately 12:45 pm on Friday, January 13, 2006, and was backing up in a congested area at the time of the incident. There was no personal injury, and damage to the older vehicle was estimated to be less than \$500. There was no damage to the forklift. **Operations**

Closed Records Reviewed:

The following summarizes the PER, type of PER (significant, trend only, track until fixed, with resolution, PIE/CIM and type of category for trending).

- 2005-0029 (PIE/CIM) - A person was driving a fork lift to S-Farm and hit a bump and twisted their back. **Equipment**

- 2005-0043 (w/resolution) - While trying to close out an Operations Standing Order CPO-02-019/WFO-02-019 it was discovered that an inappropriate corrective action had been assigned to PER-2003-4384. The corrective action was adequate for development of the design. ECN 721628 was generated, but there was no action to incorporate the design on the T-Bar assemblies. The ECN was released on April 8, 2004, and no one outside of Engineering was aware that it existed.

The ECN is to replace the clevis pin and cotter pin connection between T-Bar sections with shoulder screw, washer, slotted nut and hammer lock type cotter pin. The shoulder screw, nut and cotter pin replace the function of the current clevis pin and cotter pin. The washer is added to prevent the small nut on the shoulder screw from partially entering the existing hole through the strap assembly.

Fluor Hanford H&R has been contacted to accomplish this modification on all of the T-Bars. A notice was sent to all Field Work Supervisors to have them locate the T-Bar assemblies in the field. The spare T-Bar assemblies will be sent to the Rigging loft to have this modification completed and the annual inspection and load tested. **Equipment**

- PER-2005-0083 (w/resolution) - A total of 17 suspect fasteners was found on three forklifts which belong to Tank Farm Waste Operations. They were discovered during inspections by TFC Quality Control. These inspections were performed as a result of the discovery earlier in the week of several suspect bolts on forklifts owned by Fluor. **Equipment**
- PER-2005-0429 (w/resolution) - While moving the crane to exit the farm the crane ran over a corner of a concrete junction box number HH#P5 caving in the lid. **Operations**
- PER-2005-0456 (w/resolution) - The purpose of this PER is to communicate the results of the January 2005 Management Observation Program (MOP).

The purpose of this scheduled MOP is to perform oversight of required reading assigned for the release of TFC-ENG-DESIGN-C-22, Revision B "Structural Integrity Verification of Lifting Points" effective date of January 5, 2005.

During the TFC H&R Committee meetings performed in November of 2004 personnel identified a possible need to review procedure for Conducting Special Lift Plans for process improvements. Subsequent to that meeting revisions have been made to the procedure. The Lift Instructions Determination form may require the following modifications:

- Signature space for Field Work Supervisor and Hanford Crane and Rigging Management;
and
- Detailed Lift Operation instructions.

The procedure was put into effect January 5, 2005. Required reading was assigned to Rigging Engineers, Planners, Managers, and others for completion by January 14, 2004.

Results of a query run for Waste Feed Operations (WFO) required reading completion resulted in 40 were completed on time and 29 are overdue and not yet read.

Further investigation identified that three reasons may be the cause for a lack of compliance with the required reading: personnel no longer work within WFO, a problem may reside with the notification process for required reading and/or personnel did not comply with the request to perform the required reading. **Procedure**

- PER-2005-0532 (PIE/CIM) - During a crane and rigging activity to lift and rotate a cover plate, the crane block began to rotate and twisted the three-part lines (cabling) between the block and the boom tip. **Equipment**
- PER-2005-0557 (Trend Only) - During cover block removal activities in C-Farm on swing shift, the reading on the dynamometer attached to the H&R equipment was almost impossible to read due to the fact that it was dark, the dynamometer was approximately 20 feet in the air, it did not have a bright Light Emitting Diodes readout, and personnel were wearing respiratory equipment. **Equipment**
- PER-2005-0647 (w/resolution) - During a crane and rigging activity to lift and set cover blocks on a tractor trailer, the crane block began to rotate and twisted the three-part lines (referred to as cabling or block spin) between the block and the boom tip. Note: A similar event happened with this same crane on February 2, 2005, and was documented on PER 2005-0532. **Equipment**
- PER-2005-0671 (w/resolution) - While relocating a crane from the AY/AZ Area to C-Farm, a Construction Crane Operator backed over a T-Post. The T-Post damaged a hydraulic line/fitting and approximately one quart of hydraulic fluid was lost to the ground. **Operations**
- PER-2005-0826 (w/resolution) - While retracting the outriggers on the 90-ton crane, the (outrigger) pad got caught on the top of the transfer line hose barn (shielding) and moved it laterally about six to eight inches. **Operations**

PER-2005-0840 (w/resolution) - Discovered that the tags required in procedure TFC-OPS-MAINT-C-11, "Maintenance and Administration of Tank Farm Contractor Hoisting and Rigging Equipment" have not all been installed. Equipment Custodian Labels were installed while validating and doing the walk down of this equipment. The Approved Equipment list was used as a reference to validate whether this equipment was in service or not, Ready-for-use and/or OOS tags were installed during the walk down.

Procedure

- PER-2005-0913 (PIE/CIM) – A MOP was performed to review the procedure TFC-ESHQ-RP-MON-C12, Revision A-3, "Temporary Shielding" and how it interfaces with DOE-RL-92-36, Revision 1, "Hanford Hoisting and Rigging Manual."

During an informal discussion on February 14, 2005, related to equipment being removed from a tank, the Lead Rigging Engineer discovered the possibility of adding Rubber Mat Shielding. This MOP was a follow up to evaluate how temporary shielding is added to equipment being lifted out of tanks, what procedures are followed, and how it complies with the H&R Manual. Interviews were conducted with TFC personnel to determine process execution and how it interfaces with the performance of Lift Plans.

The Temporary Shielding procedure TFC-ESHQ-RP-MON-C12, Revision A-3 does not contain the correct interfaces with other procedures applicable to Lift Plans.

While execution for the Temporary Shielding Procedure may be performed according to procedure, the procedural process does not ensure safe performance of the lifted shielding. **Procedure**

- PER-2005-1003 (w/resolution) - After the 241-AP Tank 102, 02-A cover block removal pre-job the designated lead for the critical lift identified a problem with the CLP. The CLP had been revised to utilize a different crane than originally planned and the changes made to the procedure did not have appropriate approvals for the red line changes that had been made. The only signatures on the document were from the planner and no information was available to know if safety and engineering had approved the changes. **Procedure**
- PER-2005-1083 (w/resolution) - There had been noted in recent months some incidents involving H&R crane activities. The latest series of PERs involving crane events include (2005-0826, 2005-0671, 2005-0647, and 2005-0532). Due to the nature of the incidents there appears to be a need to confirm the integrity of the program as it relates to oversight of subcontractors, training and qualification of personnel assigned to perform H&R crane activities, and clear definition of roles and responsibilities within the program. **H&R Program**
- PER-2005-1186 (w/resolution) - Stopped work due to riggers not being qualified to enter asbestos zone to install rigging. **Training**
- PER-2005-1333 (PIE/CIM) - External DOE Lessons Learned. Title: 120-Ton B-Trolley Crane Failure (Savannah River Site). Originator: Westinghouse Savannah River Company. Statement: Unexpected loss of control functions when operating overhead cranes can potentially damage facility equipment, loads, or result in injury to personnel. Discussion: On December 9, 2003, the 120-ton capacity pendant controlled crane located in the 105-L Facility sustained a holding brake failure on the "B" trolley hoist. The "B" trolley hoist is one of two independently operated 60-ton capacity hoists installed on the 120-ton crane structure. The operator of the crane at the time of the event had lifted an empty International Standards Organization (ISO) container a few inches off the floor. The operator stopped the hoisting motion in order to ensure the crane braking system was operating properly. Upon the completion of this check the operator then proceeded to raise the load to a height of approximately three feet. When the hoist button was released

on the pendant control, the load began to descend toward the floor. The operator pressed the emergency stop button in an attempt to stop the unwanted downward travel of the load. However, this action had no effect upon the slow descent. The ISO container continued its downward motion until it came to rest on the floor. There were no injuries to personnel or damage to equipment. **Procedure**

- PER-2005-1353 (PIE/CIM) - External DOE Lessons Learned. Title: Failure to Analyze Hoisting Hazards Results in Near Miss Incident. Statement: Incorrect usage of H&R equipment can result in equipment tipping over and falling as well as injury to repairmen. Following the equipment manufacturer's guidelines and evaluating the weight, shape and size, maximum height and final position, and center of gravity of the load prior to movement will prevent these events from happening. Discussion: A heavy-duty repairman was repairing a final drive unit on a Caterpillar 980 loader. The repairman was using the hoist to upright the drive unit so it could be placed on a workbench until such time that it could be lifted and moved to a different workbench to affect repairs. Using a one-ton engine hoist, the heavy-duty repairman started lifting the assembly to upright it from a horizontal to a vertical position when it fell from the edge of the workbench causing the hoist to tip over, pinning the worker between the hoist and the loader. Analysis: The Critique and Root Cause Analysis conducted following the incident identified several contributing causes. It was identified that the heavy-duty repairman did not know the weight of the final drive assembly. In addition, the worker was not aware of the lifting capacity of the hoist as it was configured at the time of the lift. Further evaluation determined that the hoist was fully functional at the time of the lift and was within the lifting limits of the final drive assembly (880 pounds). **Procedure**

- PER-2005-1401 (w/resolution) - A review was conducted on the Integrated Training Electronic Matrix report for the H&R crews that support tank farms, and of the supervisors from within TFC. During this review the FH H&R Training Program Description, and TFC-BSM-TQ-STD-18, H&R Training Program Description were used as a reference. The Hanford Site H&R Manual, states that a Designated Leader's (DL) training should cover the following:
 1. Preparation of CLP;
 2. Standards;
 3. Proper approval of critical lift procedures;
 4. Documented pre-lift meeting;
 5. Flagger assignment and identification;
 6. Personnel qualification;
 7. Equipment selection;

8. Equipment setup and positioning;
9. Work area overview;
10. Directing operations; and
11. Elements of this manual for the work and equipment used.

The TFC-BSM-TQ-STD-18 has a couple apparent short falls. In that the training listed for someone serving in this position has only Basic Crane and Rigging training. The problem is that this training isn't applicable to mobile cranes. When a person is a supervisor or DL for a mobile crane that individual requires having in addition, Advance Rigging Techniques Exam, Mobile Crane Operation & Setup, and Load Charts and Load Moment Indicators. In order to know what equipment to select and how that needs to setup the DL needs the above training as a minimum to be able to do the necessary calculations for reach and load charts. **Training**

- PER-2005-1535 (Trend Only) – WFO Maintenance was requested to come to MO-283 to answer some questions for the System Engineer Manager. The forklift at MO-997 was noticed as different from the one that had been at that location previously. It had been reported to Sunbelt Rentals that one at that location was difficult to start. The mechanic came out and decided that a replacement was needed. The replacement forklift did not have any inspection records with it. WFO Maintenance talked with the personnel at MO-997 and was informed that it was replaced last Friday April 8, 2005. Sunbelt was contacted and informed that anytime a forklift is delivered that the equipment custodian must have a copy of the Forklift inspection and a copy of the fork inspection. That it was completely unacceptable to have a replacement on site for any length of time without the proper documentation. The equipment custodian was faxed a copy of the inspection, and a note that the forks were swapped from the previous unit. The equipment custodian copied the inspection data and was ready to tag the forklift as ready-for-use. The equipment custodian looked over the equipment and rear tires are badly cracked. The equipment custodian contacted Sunbelt again and informed them the forklift will be taken OOS until the tires are replaced. The equipment custodian did inform them that this is unsatisfactory performance. **Equipment**
- PER-2005-1621 (w/resolution) - On April 18, 2005, while preparing to attach a choke to the whip-line the load block became 2-blocked. The crane (1984 40-Ton) has an audible 2-block alarm, which (the operator stated) sounded at the same time the 2-blocking occurred. **Operations**
- PER-2005-1670 (w/resolution) - DLs are not being assigned to oversee forklift operations whenever more than one person is involved with fork-lifting operations. Currently TFC-PLN-40, "Hoisting and Rigging Safety," requires compliance with the H&R Manual. Within Sections 2.2.5 and 6.2.1 of the manual, requirements are established which require that a DL be assigned whenever more than one person is performing

forklift operations. **Operations**

- PER-2005-1794 (w/resolution) - It was brought to WFO Projects attention that during a review of two cranes at the FH rigging loft it was revealed that the main hoist load block were smaller in size than what was specified on the crane charts and one of the cranes auxiliary hoist hook ball weights did not match the crane load charts. So an unsafe condition does not necessarily exist but it brings into question if the reverse situation exists on other cranes that support tank farms work. **Equipment**
- PER-2005-1819 (PIE/CIM) – A MOP performed for March 2005 identified a concern that was raised during a Lifting Bail meeting about the a lack of communication from the Event Investigation Team personnel and managers aware of the issue from the first cabling occurrence February 4, 2005, and the second occurrence February 9, 2005, and that some communication could have prevented the second occurrence. There was an additional concern that personnel from the Crane Loft were not notified early enough of the events.

Due to the fact that results of the March MOP indicated no method to reduce the time to communicate the potential issue in a timely manner this MOP was performed against the most relevant document (TFC-PLN-40, Revision B “Hoisting and Rigging Safety Management Program Plan”) to review and identify correct communication processes.

H & R Program

- PER-2005-1862 (PIE/CIM) - During a Preliminary Joint Activity Review performed on February 1, 2005, for work package 2W-04-1576/1577 the following items were identified as Lessons Learned.

During performance of the Low Risk work (stack extension), the chokers used to place the stack base assembly need to be at least 10 feet long to allow measurement device to fit in the opening between the headache ball of crane and stack base. **Procedure**

- PER-2005-1873 (PIE/CIM) - An event identified in PER-2005-1853 where a subcontracted rigger was handling a Self Contained Breathing Apparatus air bottle and inadvertently lost control of it after pressure had been released.

The purpose of this PER is to communicate the concern generated when further fact-finding of this event identifying a lack of communication between the management of Crane and Rigging subcontractors and TFC management.

Procedural guidance should be in place directing events involving subcontracted employees being communicated to the requisite subcontract management. **Procedure**

- PER-2005-2199 (PIE/CIM) - External DOE Lessons Learned. Title: Inattention to Work Environment May Lead to Hazardous Work Conditions. Statement: Observations by a third party on project operations identify an apparent lack of attention to the project's

work environment and lead to a safety pause. Discussion: On March 1, 2005, waste disposition subcontractor employees at the Portsmouth Gaseous Diffusion Plant were staging low level radioactive waste containers (B-25 boxes) for a future shipment. The containers were moved from their storage locations with a forklift, weighed, and placed in one of two staging areas. Each of the two staging areas contained six or seven containers that had already been staged. A DOE employee and a DOE subcontractor employee arrived at the staging area for a project walk down and observed activities for approximately one hour. While at the staging area the DOE and subcontractor employee observed the following conditions:

1. A laborer was observed applying shrink wrap to the upper portion of a B-25 box without hand protection (gloves);
 2. Numerous personnel were in the vicinity of where the boxes were being staged causing a potential safety issue;
 3. Excess scrap shrink wrap material was compacted into a ball and tossed once between two employees;
 4. No supervision was in the immediate work area; and
 5. No designated spotter for the forklift could be identified. **Procedure (See Specific example on 2006-0097)**
- PER-2005-2414 (TUF) - DOE Facility Representative noticed a load cell out of calibration on the 244-A Jumper Change (2E-03-1565) as the crane crew was setting up the crane. The crew stopped, retrieved a calibrated load cell, and the job continued.
Equipment
 - PER-2005-2456 (TUF) - During the performance of the annual H&R Safety Assessment, it was discovered that the maintenance file for crane 17T05675, 40-ton Badger, physically located in C-Farm, did not contain required load test reports. H&R Manual DOE-RL-92-36, Section 14.10, 14.10.1, and 14.10.2b, states, "14.10 - ... It is expected that the maintenance files be retrievable within three work days ... 14.10.1 - Crane maintenance file shall contain, as a minimum, the required current dated periodic inspection records and other documentation to provide the user with evidence of a safe and reliable maintenance program ... 14.10.2 - Crane maintenance files shall contain the following documentation, as applicable, and should be retained as long as the crane is assigned to a Hanford Site DOE contractor: b. Load test reports."

FH equipment custodian indicated that the complete current maintenance records for crane 17T05675 would not be retrievable within three working days. The importance of credible verification of maintenance files is paramount to safe lifting practices at TFC Hanford Company. **Equipment**

PER-2005-2868 (PIE/CIM) - In Fiscal Year 2000 concerns were raised by DOE regarding the integrity of lift points commonly referred to as lifting bails. All H&R activities were discontinued until acceptance of TFC Justification for Continued Operation. During the establishment of H&R criteria, the need for lift point inspections was identified (see TFC Letter 0102315). Procedure TFC-ENG-DESIGN-C-22 was issued requiring five year re-inspection as discussed in letter 0102315. The TFC has a program requiring initial inspection of all cover blocks and cover plates per procedure TFC-ENG-DESIGN-C-22.

The H&R Manual has been updated to require “inspection and evaluation” of all lift points prior to the lift. **Procedure**

- PER-2005-2977 (PIE/CIM) - While moving a fork on a forklift during the caustic addition equipment teardown process an employee experienced discomfort in his lower back and left shoulder. At the end of the shift he noted the area was stiffening up and reported to management. The employee was taken to first aid for evaluation where he was given an ice pack and released to work with no new restrictions. This injury was caused because operators try to manipulate the forks alone. **Operations**

Interviews Conducted:

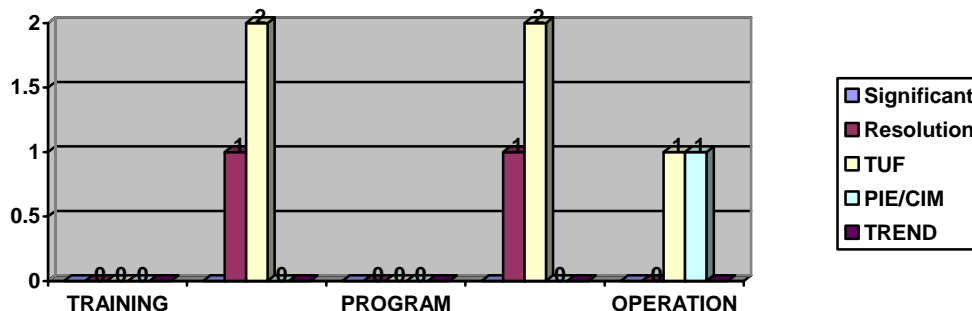
- None

Field Observation:

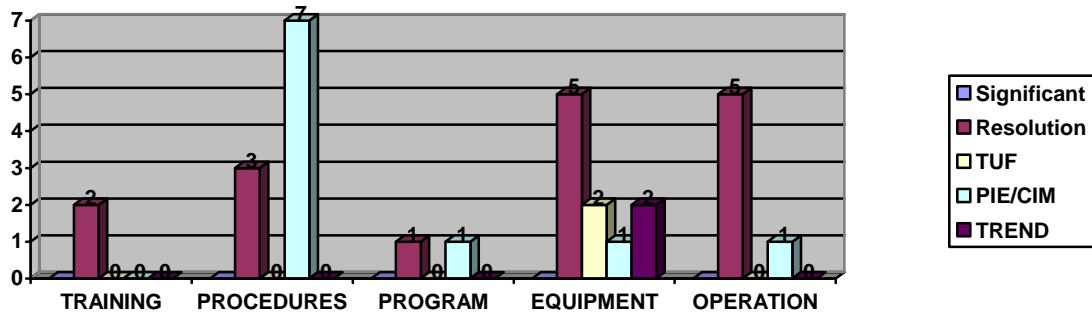
- None

Discussion of Results:

Performed a review of all open and closed PERs associated with the H&R Program, training, procedures, and events in the field from January 2005 through January 2006. There are eight open or in-process PERs on these subjects as of January 31, 2006. There are 30 PERs which were closed on these subjects as of January 31, 2006. These PERs were placed in the following categories: Training, H&R Program, Equipment, Operations, and Procedure.



OPEN PERs - JANUARY 2005 THROUGH JANUARY 2006



CLOSED PERs – JANUARY 2005 THROUGH JANUARY 2006

OPEN	Training	H&R Procedure	H&R Program	Lifting Equipment	Crane Operation
(8)	0	3	0	3	2
CLOSED	2	10	2	10	6
(30)					

Conclusion:

During the last year, areas of problem identification involved procedures, equipment, and operation categories. Therefore, no additional focus areas are necessary for the ORP H&R assessment.

Issue(s):

There are no findings or observations associated with this CRAD.

Assessor: _____ Gregory L. Jones	Approved: _____ Team Lead
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**Criteria and Review Approach Document
Hoisting and Rigging 2006**

Functional Area: Hoisting and Rigging	Assessment Element: H&R Operations and Equipment and Personnel Qualification Compliance	Facility or Process: Tank Farms	Date: March 13 through 17, 2006	PERFORMANCE CRITERIA MET YES: ____ NO: <u>X</u>
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OBJECTIVE: Determine if appropriate H&R requirements from the H&R Manual (DOE-RL-92-36) and TFC implementing procedures are fully implemented in performing H&R activities; equipment is inspected, tested, maintained, and documentation complete; and personnel performing H&R activities meet the qualification and training requirements.

Performance Criteria or Assessment Elements:

1. Are applicable H&R Manual operation, maintenance, testing and inspection, and personnel qualification requirements and responsibilities implemented in TFC procedures?
2. Are TFC procedures implemented and documented in the field instructions (e.g., critical lift plans, work packages,)?
3. Are training records and equipment custodian records appropriately documented and maintained?
4. Is H&R field equipment appropriately marked and tagged?

Approach:

- Review the H&R Manual for requirements pertaining to operation, maintenance, testing, inspection, and personnel qualification/training requirements;
- Identify H&R requirements and develop Lines of Inquiry;
- Review TFC procedures and identify implementing procedures for H&R operations, maintenance, testing, inspection, and personnel qualification/training;
- Identify the “shall” requirements from the TFC procedures and document; and
- Verify the “shall” requirements are being implemented for at least 10% of work packages involving critical lifts, maintenance, testing and inspection records, and personnel

qualifications.

Documentation:

See Records Reviewed below.

Records Reviewed:

- DOE-RL 92-36, H&R Manual, Chapter 3.0, “Critical Lifts;”
- DOE-RL 92-36, H&R Manual, Chapter 8.0, “Wire Rope;”
- DOE-RL-92-36, H&R Manual, Chapter 4.0, “Personnel Qualifications and Training Requirements;”
- TFC-BSM-TQ-STD-18, Revision B, “Hoisting And Rigging Training Program Description,” dated July 6, 2005;
- TFC-OPS-MAINT-C-11, Revision B, “Maintenance and Administration Of Tank Farm Contractor Hoisting And Rigging Equipment,” dated April 14, 2005
- TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety;”
- TFC-PLN-40, Revision B-2, “Hoisting and Rigging Safety Management Program Plan;”
- TFC-PLN-32, Revision B-5, “Tank Farm Contractor Safety Management Programs;”
- Work Package No. CLO-WO-05-2467, 241-C-103, “Adjustable Slurry Pump Special Lift Instructions,” dated December 22, 2005;
- Work Package No. CLO-WO-05-002561, 241-C-103, “Transfer Pump Cut-up and Packaging;”
- RWP No. CO-233, for the 241-C-103, “Pump Size Reduction Job;”
- TFC H&R Master Equipment List, dated March 14, 2006, and March 16, 2006;
- Individual Training Plan Report for HO 0042666, printed March 15, 2006;
- Individual Training Plan Report for HO 6267585, printed March 15, 2006;
- Individual Training Plan Report for HO 0034480, printed March 15, 2006;
- Individual Training Plan Report for HO 0051052, printed March 15, 2006;

- Individual Training Plan Report for HO 0036180, printed March 15, 2006;
- Individual Training Plan Report for HO 0094872, printed March 15, 2006;
- Individual Training Plan Report for HO 0087260, printed March 15, 2006;
- Individual Training Plan Report for HO 0008784, printed March 15, 2006;
- Completed Course List for Class 04467D, Class 5 Internal Combustion Engines;
- Completed Course List for Class 04467B, Class 3 Electric Motor, Hand Trucks;
- Completed Course List for Class 044470, Forklift Operational Safety;
- Student Text, Forklift Operator Safety, Course 044470, revised June 2004;
- Work Order WFO-WO-05-00209, “5-Ton Hook Extension Load Test,” dated January 25, 2006;
- Corrective Maintenance Work Order 2D-05-431065/P, “Annual Below Hook Lifting Device Inspection for T-Bar Assembly TF-24,” dated December 22, 2005;
- “Fluor Hanford Vehicle Fleet Maintenance Annual Inspection for Grove RT640E, # 05681,” dated October 4, 2005;
- “Fluor Hanford Vehicle Fleet Maintenance Annual Inspection for Grove RT870, # 05682,” dated September 20, 2005; and
- “Fluor Hanford Vehicle Fleet Maintenance Annual Inspection for Grove AT100, # 05691,” dated April 4, 2005.

Interviews Conducted:

- SSW for the 241-C-103 Pump Size Reduction Job;
- PIC for the 241-C-103 Pump Size Reduction Job;
- RWP Preparer for the 241-C-103 Pump Size Reduction Job;
- 222S H&R Equipment Custodian;
- 222S Forklift Equipment Custodian;
- TFC H&R Equipment Custodian;

- TFC H&R Program Manager;
- H&R Consultant;
- FH Crane and Rigging supervisor;
- FH Riggers (2);
- FH Fieldwork Supervisor;
- FH Heavy Equipment Supervisor;
- NCO 242-A Evaporator; and
- TFC Training Supervisor.

Field Observation:

- 241-C-103 Pump Size Reduction Job Prejob Briefing;
- 241-C-103 Pump Size Reduction Job;
- 241-C-103 Pump Size Reduction Job In Process As Low As Reasonably Achievable Review Meeting;
- C, TX SY and S Farm Walkdowns;
- 222S H&R Inspection of records and equipment spot-checks;
- 242-A Evaporator Cell A 5 Ton Crane;
- FH Rigging Loft;
- 272 AW Loading Dock Jib Hoist; and
- Forklift Training classroom session.

Discussion of Results:

- 1. Are applicable H&R Manual operation, maintenance, testing and inspection and personnel qualification requirements and responsibilities implemented in TFC procedures?**

The H&R Manual requires contractors to have a documented training and qualification program that includes the following elements:

- Classroom or computer-based training;
- Written tests;
- OJT;
- OJE; and
- Pass/fail criteria established and documented.

The TFC replicated the H&R Manual requirements into procedure TFC-BSM-TQ-STD-18, Revision B, "Hoisting and Rigging Training Program Description," dated July 6, 2005. The procedure required individuals to become qualified to perform selected H&R activities by completing formal training that includes classroom instruction, written examinations, and practical exercises. Prior to operating equipment, individuals are required to complete equipment-specific OJT, and performance evaluations performed by a qualified OJT evaluator on the specific equipment or tasks. TFC adequately implemented the personnel qualifications requirements and responsibilities from the H&R Manual into their H&R Program. An issue was identified related to training and qualification of CLPs Technical Approvers. This issue is covered under the Critical Lift CRAD.

TFC-OPS-MAINT-C-11, Revision B, "Maintenance and Administration Of Tank Farm Contractor Hoisting And Rigging Equipment," dated April 14, 2005, required that a custodian be established for each crane, hoist, lift truck, below the hook lifting devices, or other H&R equipment that requires maintenance, inspection, and record keeping. The assigned custodian shall verify that the operating equipment is properly maintained and maintenance, inspection, and testing of the equipment remain current. The assessment team interviewed the Equipment Custodian and reviewed the TFC Master Equipment List. The assessor randomly selected several pieces of H&R equipment from the list and reviewed their respective maintenance, testing, and inspection records. All maintenance, testing, and inspections were adequately performed in accordance with procedural requirements with one exception. On the southwest side of TX Farm, the fiberglass shelter, "doghouse," is lying on its side. There are tracks in the dirt that show how the doghouse is rolling in an arc on the tether, a nylon sling, which holds it to the fence.



There are no requirements that prevent using a nylon sling in this manner. However the H&R Manual has requirements for the use of nylon slings. The slings require periodic inspections on at least an annual basis. The tag attached to this sling is dated 1997 showing that the annual inspections are not being performed.

Also slings are required to be used in a manner that prevents damage to the sling. Using this sling in its current configuration exposes it to sunlight and abrasion from being dragged across the rocks and dirt. This does not meet the requirements in the H&R Manual under operating practices for nylon slings, and was determined to be an Observation. Requirements for use of nylon slings are provided below:



H&R Manual: 9.2.5.6.3 - Periodic Inspection. A periodic inspection shall be performed by a qualified inspector on a regular basis with frequency of inspection based on the following criteria:

1. Frequency of sling use;
2. Severity of service conditions;
3. Nature of lifts being made; and
4. Experience gained on the service life of slings used in similar circumstances.

The periodic inspection shall be made at least annually and shall be documented by any one of the following methods:

1. Marking a serial number on the sling and maintaining inspection records by serial numbers;
2. Instituting a comprehensive marking program (such as color coding) to indicate when the next periodic inspection is required; and
3. Marking each sling with a tag that shows when the next periodic inspection is required. This tag becomes the record.

H&R Manual: 9.2.5.9 - Operating Practices. The following operating practices are applicable to the use of synthetic web slings:

1. Slings should be stored in a cool, dry, and dark place to prevent environmental damage;
2. Slings should not be dragged on the floor or over an abrasive surface; and
3. Nylon and polyester web slings lose strength from extensive exposure to sunlight or ultraviolet light. Possible strength loss may be indicated by loss of color in the pick threads or outer jacket. If the user suspects sunlight or ultraviolet light damage the sling shall be taken OOS pending inspection by a qualified person.

Regarding tagging of H&R equipment, the equipment custodian is required to tag equipment with a white tag if the equipment is OOS. Using the Master Equipment List, the assessor selected an OOS jib hoist for inspection. The jib hoist at the 272-AW Loading Dock was inspected and determined to be missing a white OOS tag. The TFC told the assessment team that the jib hoist in question had been tagged several times in the past, but that the tags had blown off in the wind. It is important to maintain OOS tags in place to prevent inadvertent use of equipment that has not been inspected, tested, and maintained. The TFCs failure to implement requirements of the H&R Manual, Section 2.2.8, and TFC-OPS-MAINT-C-11, "Maintenance and Administration of Tank Farm Contractor Hoisting and Rigging Equipment" procedure were determined to be a Finding.

2. Are the procedures implemented and documented in the field instructions (e.g., critical lift plans, work packages)?

CLPs and work packages were reviewed by other assessment team member (See Critical Lift CRAD).

3. Are training records and equipment custodian records appropriately documented and maintained?

The assessment team interviewed the TFC training supervisor and reviewed craft employee training records. The TFC retained the services of FH to perform lifts with mobile cranes. The TFC training supervisor had access to training records for FH H&R personnel. The assessor reviewed the training records of the FH field crew working on the 241-C-103 pump size reduction project. The required training was completed and current. No issues were identified.

The assessment team interviewed the TFC equipment custodian and reviewed the equipment history files containing inspection and maintenance records. The records for the following H&R equipment were reviewed:

- T-24 Hook Assembly, inspected December 2005;
- Five-Ton overhead crane at the 242A Evaporator, inspected January 2006;

- Pig Truck hoist HO-68B-04301; and
- 272 AW Loading Dock Jib Hoist.

The records sampled were complete. Inspections and maintenance were performed in accordance with the H&R Program requirements. No issues identified.

4. Is the field equipment appropriately marked and tagged?

The assessment team observed H&R operations at the 241-C-103 Cut-up Yard. The TFC retained the services of FH to perform lifts with a 70-Ton Grove mobile crane. (HO-17T-5682). The assessor verified that the equipment used was inspected and properly tagged. All slings were current and inspected within the last year. One issue was identified as a finding, and is discussed above. The jib hoist at the 272AW Loading Dock was found without an OOS tag attached, although it was OOS. As a corrective action, the tag was replaced by the TFC equipment custodian.

All applicable H&R Manual operation, maintenance, testing and inspection, and personnel qualification requirements and responsibilities are implemented in TFC procedures, and field equipment appropriately is marked and tagged.

There were no critical lifts during this assessment.

There is one instance of a nylon sling being used improperly.

Conclusion:

The TFC meets the H&R requirements in the areas of operations, equipment, and personnel qualification, with two exceptions; one determined to be a finding, and one an observation.

Issue(s):

Finding A-06-ESQ-TANKFARM-001-F01 (Element A): The TFC failed to verify placement of an OOS tag on jib hoist at 272-AW in accordance with H&R Manual Section 2.2.8.c.

Observation A-06-ESQ-TANKFARM-001-O03: Nylon sling in TX Farm used in an inappropriate manner

Assessor: _____ Jack B. George _____ Paul Hernandez	Approved: _____ Team Lead
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**Criteria and Review Approach Document
Hoisting and Rigging 2006**

Functional Area: Hoisting and Rigging	Assessment Element: H&R Work Control Process/Critical Lifts	Facility or Process: Tank Farms	Date: March 13 through 17, 2006	PERFROMANCE CRITERIA MET YES: _____ NO: <u> X </u>
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OBJECTIVE: Determine if appropriate H&R requirements from the H&R Manual (DOE-RL-92-36) and TFC implementing procedures are fully implemented in the work control process and work packages.

Performance Criteria or Assessment Elements:

1. Are applicable H&R Manual work process requirements implemented in procedures?
2. Are TFC procedures implemented and documented in the field instructions (work packages)?
3. Are work packages involving CLP or Special Lifts properly implemented and followed in the field?

Approach:

- Review the H&R Manual for requirements pertaining to proper work control process;
- Identify H&R requirements and develop Lines of Inquiry;
- Review TFC procedures and identify implementing procedures for H&R work control process;
- Identify the “shall” work process control requirements from the TFC procedures and document; and
- Verify the “shall” requirements are being implemented in work control documents for at least 10% of work packages involving critical lifts.

Documentation:

See Records Reviewed below.

Records Reviewed:

- H&R Manual, 92-36, Chapter 3.0, “Critical Lifts;”

- TFC-ENG-DESIGN-C-22, Revision B-3, “Structural Integrity Verification of Lifting Points;”
- TFC-ENG-DESIGN-C-23, Revision A-2, “Inspections of Permanent Lifting Points;”
- TFC-CHARTER-24, “Lifting Point Program Charter;”
- TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety;”
- TFC-PLN-40, Revision B-2, “Hoisting and Rigging Safety Management Program Plan;”
- TFC-PLN-32, Revision B-5, “Tank Farm Contractor Safety Management Programs;”
- TFC-BSM-TQ-STD-18, Revision B & C, “Hoisting and Rigging Training Program Description;”
- TFC-ESHQ-ENV-FS-C-01, Revision D, “Environmental Notification;”
- TFC-OPS-Maint-C-01, Revision K, “Tank Farm Contractor Work Control;”
- RPP-10975, Revision 0, “Simplified Lifting Bails Evaluation Process;”
- RPP-8360, Revision 3, “Lifting Point Evaluation Process;”
- RPP-16330, Revision 1, “Standard Lifting Point Rated Load Capacities;”
- H-2-830454, Revision 2, “Spacers For Lifting Bails;”
- 06-1-D02, “Engineering Management Observation Checklist;”
- 350847, Revision 0c, “Qualification Card and Guide for Hoisting and Rigging Engineer;”
- Engineering Signature Authorizations as of February 7, 2006, Revision 80;
- Course Description Report, 044900 Critical and Special Lifts;
- RPP-13033, Tank Farms Documented Safety Analysis;
- HNF-SD-WM-TSR-006 Tank Farms Technical Safety requirements;
- 350887, Revision 4, “Qualification Card and Guide for Nuclear Facility Project Manager;”
- Form A-6003-884(08/05), “Hoisting and Rigging: Lift Instructions Determination;”

- “Management Assessment of FH Hoisting and Rigging Operations,” FH-04011680A R2;
- MOA, Number CHG-FMOA-2001;
- “Crane & Rigging Blanket Master Agreement (BMA),” Requisition Number 102408, Revision 0;
- DOE-STD-1090-2004, H&R Standard, Chapter 2, “Critical Lift;”
- DOE-RL-92-36, Revision 1, H&R Manual, Chapter 4, “Personnel Qualifications;”
- 10 CFR 830, Subpart A, “Quality Assurance Requirements;”
- 29 CFR 1926.32, “Competent Persons;”
- OSHA, “Mobile Crane Inspection Guidelines;”
- OSHA, Steel Chain, Wire Rope, and Metal Mesh, Sling Inspection Checklist;
- Critical Lift Procedure, Concrete Cover Block Removal and Re-Installation, 241-AP-02D, Revision 0, WO-05-0140, February 28, 2006;
- Critical Lift Procedure, Concrete Cover Block Removal and Re-Installation, 241-AP-02D, Revision 0, October 19, 2005;
- Critical Lift Procedure, Concrete Cover Block Removal, Relocation and Re-Installation, 241-AP-05A, Revision 0, ES-03-00133, March 19, 2004;
- Critical Lift Procedure, Concrete Cover Block Removal and Re-Installation, 241-AW-B Valve Pit, Revision 0, WFO-WO-05-000861, October 4, 2005;
- Critical Lift Procedure, Steel Cover Plate and Concrete Cover Block Removal and Re-Installation, 241-AN-06A Pit, Revision 0, 2E-04-02141, August 10, 2005; and
- Critical Lift Procedure, Concrete Cover Block Removal, Relocation and Re-Installation, 241-AP-02A, Revision 0, ES-03-00167, November 4, 2003.

Interviews Conducted:

- TFC H&R Program Manager;
- H&R Consultant;
- TFC H&R Engineer;

- Lift Program Engineering Lead;
- FH Crane and Rigging supervisor; and
- FH Rigging loft riggers.

Field Observation:

- 241-C-103 Pump Size Reduction Job Pre-job Briefing;
- 241-C-C-103 Pump Size Reduction Job;
- AW-105 Core Drill String Pull Set Up; and
- 242-A Bridge Crane Observation.

Discussion of Results:

1. Are applicable H&R Manual work process requirements implemented in procedures?

The H&R Manual is implemented by the TFC prime contract and TFC S/RID. To further the flow-down of requirements, the TFC utilizes the following primary procedures to implement the H&R Manual requirements:

- TFC-CHARTER-31, "H&R Committee Charter;"
- TFC-CHARTER-24, "Lifting Point Program Charter (Superseded during assessment);"
- TFC-PLN-32, "TFC Safety Management Programs;"
- TFC-PLN-40, "H&R Safety Management Program Plan;"
- TFC-BSM-TQ-STD-18, "H&R Training Program Description;"
- TFC-ESHQ-S-IS-C-05, "H&R Safety;"
- TFC-ENG-DESIGN-C-22, "Structural Integrity Verification of Lifting Points;"
- TFC-ENG-DESIGN-C-23, "Inspection of Permanent Lifting Points;"
- "Memorandum of Agreement," Number CHG-FMOA-2001; and
- "Crane & Rigging Blanket Master Agreement (BMA)," Requisition Number 102408, Revision 0.

H&R Manual Chapter 3, Section 3.5.1, Critical Lifts was the primary focus of this CRAD.

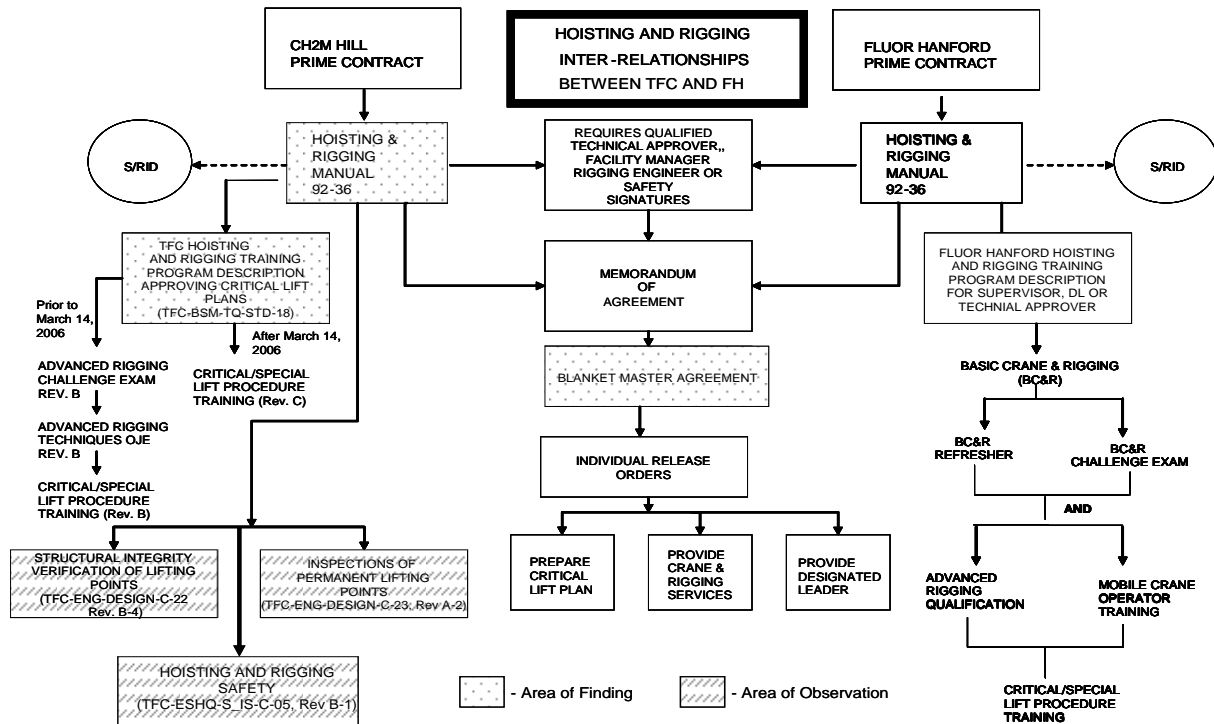
The H&R Manual Chapter 3, Section 3.5.1, requires three approvals of CLPs, Technical Approver, Manager of Facility where lift is being performed, and qualified engineer or occupational health and safety representative. The TFC could not provide objective evidence of who the “Technical Approver” was or demonstrate training qualifications were met. After the issue was identified by the assessment team, the TFC indicated that the “preparer” of the previous lift procedures was the “Technical Approver.” At the beginning of the assessment, TFC-BSM-TQ-STD-18 was Revision B. Section 3.16.1 of this procedure defined the training for a Rigging Supervisor, Designated Leader, and Technical Approver. During the assessment, this procedure was revised to remove these specific training requirements. Revision C requires only the critical/special lift course 044900 to approve CLP. The assessment team specifically asked the TFC to identify the “Technical Approver” and the TFC initially could not provide a discrete answer. On March 17, 2006, the TFC identified two individuals from FH as the CLP Technical Approvers. These individuals had previously signed the six CLP the team reviewed. After the assessment team checked training records, it was determined that neither have completed the necessary training nor retraining requirements. The TFC could not provide objective evidence of who the “Technical Approver” was and demonstrate training qualifications met.

At the beginning of the assessment, TFC-CHARTER-24, “Lifting Point Program” was an active procedure. As the assessment team reviewed the charter to determine implementation adequacy, the TFC determined that the charter was no longer needed and in fact had not been utilized since May 2005. Most of the functions described by the charter were being performed under different procedures (i.e., TFC-CHARTER-31, “Hoisting and Rigging Committee,” TFC-ENG-DESIGN-C-22, “Structural Integrity Verification of Lifting Points,” and TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety”). The only two functions not being performed were the “weekly committee meetings” and “committee approval of critical/special lift plans.” These were deemed not required due to adequacy of the other procedural requirements.

TFC-ENG-DESIGN-C-22, “Structural Integrity Verification of Lifting Points” in conjunction with TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety” identifies the actions to initiate and complete H&R critical lifts and special lifts. There were assigned actions and responsibilities to job titles that do not exist (i.e., Critical Lift Person in Charge, Lifting Point Program Coordinator, and Field Crane Coordinator) and are inconsistent with company position descriptions.

Figure 1 is a simplified flow diagram of the overall H&R critical lift process demonstrating how inconsistencies and responsibilities could have occurred.

Figure 1 – H&R Critical Lift Process Flow Diagram



2. Are the procedures implemented and documented in the field instructions (work packages)?

The team reviewed six work packages involving critical lifts. The TFC procedures, TFC-ENG-DESIGN-C-22, TFC-DESIGN-C-23, TFC-ESHQ-S-IS-C-05, and TFC-OPS-MAINT-C-01 were all implemented. An issue was identified regarding lack of signature of a qualified Technical Reviewer on CLPs.

3. Are work packages properly implemented and followed in the field?

There were no critical lifts performed during the assessment. A lift involving the 241-C-103 Pump Reduction was observed. All aspects of the field implementation was performed satisfactorily from the pre-job briefing, crane setup, spotters, knowledge of field work supervisor, and rigging craft.

Conclusion:

The TFC has implemented all applicable H&R Manual critical lift requirements and responsibilities in applicable procedures.

In one area, the TFC was not able to provide objective evidence that a qualified “Technical Approver” required by H&R Manual Chapter 3, Section 3.5.1, Critical Lifts, had signed any of the six CLPs examined. Field execution of the work instructions involving H&R activities was found to be compliant. The assessment team identified TFC procedural inconsistencies in some areas of the H&R Program, including out-of-date, duplicative and conflicting procedures, and assigned roles and responsibilities which could lead to confusion and procedural non-compliances.

Issue(s):

One Finding and two Observations were identified in the review:

Finding A-06-ESQ-TANKFARM-001-F01 (Element B): The TFC failed to verify all CLPs signed by the identified, qualified technical approver in accordance with H&R Manual Section 3.5.1.

Observation A-06-ESQ-TANKFARM-001-O01: The TFC did not remove the Lifting Point Program Charter, TFC-CHARTER-24 from the H&R Program in a timely fashion.

Observation A-06-ESQ-TANKFARM-001-O04: TFC procedure (TFC-ENG-DESIGN-C-22 and TFC-ESHQ-S-IS-C-05) instructions regarding CLPs reflect inconsistencies with TFC position descriptions.

Assessor: _____ Gregory L. Jones	Approved: _____ Team Lead
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**Criteria and Review Approach Document
Hoisting and Rigging 2006**

Functional Area: Hoisting and Rigging	Assessment Element: H&R SMP Implementation	Facility or Process: Tank Farms	Date: March 13 through 17, 2006	CRITERIA MET YES: <u> X </u> NO: <u> </u>
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OBJECTIVE: Determine if the SMP of H&R requirements from the H&R Manual (DOE-RL-92-36) and TFC implementing procedures are fully implementing the Safety Basis.

Performance Criteria or Assessment Elements:

1. Are the SMP requirements of the H&R Program adequately identified by the DSA?
2. Are applicable SMP H&R Manual requirements identified in the DSA implemented in procedures?
3. Are TFC procedures implemented and documented?
4. Are work packages involving H&R activities properly implemented and followed in the field?

Approach:

- Review the DSA and identify the applicable accidents and H&R safety functions being credited;
- Review the H&R Manual for requirements pertaining to proper DSA implementation;
- Identify H&R requirements and develop Lines of Inquiry;
- Review TFC procedures and identify implementing procedures;
- Identify the “shall” process control requirements from the TFC procedures and document; and
- Verify the “shall” requirements are properly implemented for at least 10% of applicable work packages involving critical lifts.

Documentation:

- RPP-13033, Revision 1-N, “Tank Farms Documented Safety Analysis;”
- HNF-SD-WM-TSR-006, Revision 4-O, “Tank Farms Technical Safety Requirements;” and
- DOE RL 92-36, “Hanford Site Hoisting and Rigging Manual.”

Records Reviewed:

- Hanford Site H&R Manual, 92-36, Chapter 3.0, “Critical Lifts;”
- TFC-ENG-DESIGN-C-22, Revision B-3, “Structural Integrity Verification of Lifting Points;”
- TFC-ENG-DESIGN-C-23, Revision A-2, “Inspections of Permanent Lifting Points;”
- TFC-CHARTER-24, “Lifting Point Program Charter;”
- TFC-ESHQ-S-IS-C-05, “Hoisting and Rigging Safety;”
- TFC-PLN-40, Revision B-2, “Hoisting and Rigging Safety Management Program Plan;”
- TFC-PLN-32, Revision B-5, “Tank Farm Contractor Safety Management Programs;”
- TFC-BSM-TQ-STD-18, Revision B & C, “Hoisting and Rigging Training Program Description;”
- TFC-ESHQ-ENV-FS-C-01, Revision D, “Environmental Notification;”
- TFC-OPS-Maint-C-01, Revision K, “Tank Farm Contractor Work Control;”
- RPP-10975, Revision 0, “Simplified Lifting Bails Evaluation Process;”
- RPP-8360, Revision 3, “Lifting Point Evaluation Process;”
- RPP-16330, Revision 1, “Standard Lifting Point Rated Load Capacities;”
- H-2-830454, Revision 2, “Spacers For Lifting Bails;”
- 06-1-D02, Engineering Management Observation Checklist;
- 350847, Revision 0c, “Qualification Card and Guide for Hoisting and Rigging Engineer;”

- Engineering Signature Authorizations as of February 7, 2006, Revision 80;
- Course Description Report, 044900, “Critical and Special Lifts;”
- RPP-13033, “Tank Farms Documented Safety Analysis;”
- HNF-SD-WM-TSR-006 “Tank Farms Technical Safety requirements;”
- 350887, Revision 4, “Qualification Card and Guide for Nuclear Facility Project Manager;”
- Form A-6003-884(08/05), “Hoisting and Rigging: Lift Instructions Determination;”
- “Management Assessment of FH Hoisting and Rigging Operations,” FH-04011680A R2
- “Memorandum of Agreement,” Number CHG-FMOA-2001;
- “Crane & Rigging Blanket Master Agreement (BMA),” Requirement # 102408, Revision 0;
- DOE-STD-1090-2004, Hoisting and Rigging Standard, Chapter 2, “Critical Lift;”
- DOE-RL-92-36, Revision 1, H&R Manual, Chapter 4, “Personnel Qualifications;”
- 10 CFR 830, Subpart A, “Quality Assurance Requirements;”
- 29 CFR 1926.32, “Competent Persons;”
- OSHA, “Mobile Crane Inspection Guidelines;”
- OSHA, “Steel Chain, Wire Rope, and Metal Mesh, Sling Inspection Checklist;”
- “Critical Lift Procedure, Concrete Cover Block Removal and Re-Installation,” 241-AP-02D, Revision 0, WO-05-0140, February 28, 2006;
- “Critical Lift Procedure, Concrete Cover Block Removal and Re-Installation,” 241-AP-02D, Revision 0, October 19, 2005;
- “Critical Lift Procedure, Concrete Cover Block Removal, Relocation and Re-Installation,” 241-AP-05A, Revision 0, ES-03-00133, March 19, 2004;
- “Critical Lift Procedure, Concrete Cover Block Removal and Re-Installation,” 241-AW-B Valve Pit, Revision 0, WFO-WO-05-000861, October 4, 2005;
- “Critical Lift Procedure, Steel Cover Plate and Concrete Cover Block Removal and Re-Installation,” 241-AN-06A Pit, Revision 0, 2E-04-02141, August 10, 2005; and

- “Critical Lift Procedure, Concrete Cover Block Removal, Relocation and Re-Installation,” 241-AP-02A, Revision 0, ES-03-00167, November 4, 2003.

Interviews Conducted:

- TFC H&R Program Manager;
- H&R Consultant;
- TFC H&R Engineer;
- Lift Program Engineering Lead; and
- FH Crane and Rigging supervisor.

Field Observation:

- C-103 pump cut up;
- AW-105 Core Drill String Pull Set Up; and
- 242-A Bridge Crane Observation;

Discussion of Results:

1. Are the SMP requirements of the H&R Program adequately identified by the DSA?

The TFC identified the SMP requirements for the H&R Program in the DSA Chapter, Hazard and Accident Analysis, for each accident scenario in which H&R requirements are relied upon and in Chapter 17, Management, Organization and Institutional Safety Provisions, where the program is discussed. The discussion of these requirements in the DSA is general in nature, i.e., “the program provides guidelines for inspection, personnel qualification, training, equipment to be used, and critical lift procedures. Inspection of lifting bails and permanently installed lift points is also addressed under the H&R Program.” As such, specific program elements beyond these were assessed as being appropriately invoked by adherence to the H&R Manual.

2. Are applicable SMP H&R Manual requirements identified in the DSA implemented in procedures?

The SMP requirements for the H&R Program were implemented in the TFC procedures and contractually through the MOA and BMA with the PHMC (i.e., TFC-ENG-DESIGN-C-22, Revision B-3, “Structural Integrity Verification of Lifting Points,” TFC-ENG-DESIGN-C-

23, Revision A-2, "Inspections of Permanent Lifting Points," TFC-CHARTER-24, "Lifting Point Program Charter," TFC-ESHQ-S-IS-C-05, "Hoisting and Rigging Safety," TFC-PLN-40, Revision B-2, "Hoisting and Rigging Safety Management Program Plan," TFC-PLN-32, Revision B-5, "Tank Farm Contractor Safety Management Programs," TFC-BSM-TQ-STD-18, Revision B & C, "Hoisting and Rigging Training Program Description," MOA, Number CHG-FMOA-2001, Crane & Rigging BMA, Requisition Number 102408, Revision 0).

3. Are the procedures implemented and documented?

The procedures that implement the H&R requirements identified in the DSA were documented in the listing above.

Procedure TFC-ENG-DESIGN-C-22, Revision B-3, "Structural Integrity Verification of Lifting Points," Section 4.3 states, "Check the Integrated Document Management System (IDMS) Lifting Point database and RPP-16330, Standard Lifting Point Rated Load Capacities to determine bail capacity and cover block weight." The assessor found the lifting point database outdated. The TFC responded that the lifting point data base was set up for storage and retrieval of photos and calculations of existing (old) cover blocks. When fabricating and installing new cover blocks the calculations and design media is current and can be found in the project records. The assessor reviewed a current verification of lifting points calculation and found design media and cover block calculations current. However, the reference to out-of-date database could lead to confusion and erroneous calculations. This potential resulted in an observation.

4. Are work packages properly implemented and followed in the field?

There were no critical lifts performed during this assessment. The 241-C-103 Pump Removal work package was observed and implemented properly. The specific Technical Approver of record in each CLP is under scrutiny (See CRAD covering Critical Lifts) due to the vagueness of the wording in the MOA and BMA in defining this individual.

Conclusion:

The four criteria listed above have been met by the TFC H&R Program through TFC procedures and the MOU/BMA between the TFC and the PHMC. During the assessment, it was identified that the TFC had not fully updated a database utilized by TFC-ENG-DESIGN-C-22 resulting in one observation.

Issue(s):

The assessor identified one Observation:

A-06-ESQ-TANKFARM-002 - The TFC failed to maintain all aspects of the lifting point database required under procedure, TFC-ENG-DESIGN-C-22, Revision B-3, "Structural Integrity Verification of Lifting Points," current.

Assessor: _____	Approved: _____
Dennis H. Irby	Team Lead

APPENDIX B

TEAM MEMBER

BIOGRAPHIES

Team Member Qualification Summary

Team Member Name: Paul R. Hernandez, Assessment Team Leader

Title and Organization: Engineer
Office of Environmental Safety and Quality
Office of River Protection

Areas Assigned: TFC H&R Operations, Equipment and Personnel Qualification Compliance

Summary of Education and Technical Qualifications and Experience:

- Washington State University, Richland, Washington
Graduate Level courses, Environmental Engineering.
- Rutgers State University of New Jersey, Newark, New Jersey
M.B.A., Business Administration, January 1987.
- Northeastern University, Boston, Massachusetts
B.S., Civil Engineering, June 1980.

Summary of Experience:

Skills:

- Nine years in Construction Project Management;
- Five years Program Management;
- Three years Team Leader; and
- Five years Quality Assurance (QA) and Safety program oversight.

Led and performed assessments of two separate government contractor operations located at the Hanford Site, a major DOE environmental cleanup project. Certified as a Lead Assessor/Auditor/Inspector. Lead and participate in inspections, investigations, audits and surveillance of the contractor and DOE in order to evaluate compliance with program requirements and program effectiveness. Assessments of contractor operations included: work processes, document control and records management, quality control, procurement, injury/illness reporting, environmental compliance, construction safety and quality, procurement, receipt inspection, training, QA, independent assessment, and corrective action management.

As a member of the QA Division performed independent surveillances, audits, assessments, and reviews on various nuclear and non-nuclear contractor programs to evaluate implementation of DOE Orders, Federal regulations, and industry QA requirements. Interfaced with Federal and contractor senior management, staff, and employees performing work for the line departments. As Lead Auditor, routinely managed the tasks performed by contractor QA staff, reviewed their work products, and took responsibility for their work as the Federal client.

Team Member Qualification Summary

Team Member Name: Jack B. George

Title and Organization: Facility Representative
Tank Farms Operations Division
Office of the Assistant Manager Tank Farms Project
Office of River Protection

Areas Assigned: TFC H&R Operations, Equipment and Personnel Qualification
Compliance

Summary of Education and Technical Qualifications and Experience:

- Registered Professional Engineer.

Summary of Experience:

- 25 years of experience in the nuclear field, including over 14 years experience in the Navy in the operation and maintenance of naval reactor plants;
- Lead Electrician for the Trident submarine fleet on the west coast and as Engineering Watch Supervisor on two different Trident submarines;
- Worked as a Start Up Engineer at the 200 East Area Effluent Treatment Facility performing acceptance testing and computer logic programming; and
- Joined DOE in 1995 and was in charge of the Hanford sitewide Lock & Tag, Electrical Safety, Electrical Codes, and Conduct of Maintenance Programs.

Team Member Qualification Summary

Team Member Name: Dennis H. Irby

Title and Organization: Authorization Basis Engineer
Tank Farm Engineering Division
Office of Assistant Manager Tank Farms Project
Office of River Protection

Areas Assigned: TFC Hoisting and Rigging Safety Management Program Implementation

Summary of Education and Technical Qualifications and Experience:

- Bachelor of Science in Mining Engineering, South Dakota School of Mines & Technology; and
- Master of Science in Mining Engineering, South Dakota School of Mines & Technology.

Summary of Experience:

- Over 30 years of experience in the areas of: nuclear safety authorization basis management, nuclear waste safety issue resolution, technology development, radioactive solid waste management, management of design of nuclear waste repository facilities, construction of high security facilities (including structures, utilities, and safety support systems), project management, manufacturing and marketing of remotely actuated machinery, and conducting field and laboratory research programs related to worker health and safety in mines with flammable gas and respirable dust issues.
- experience and training in:
 - conducting audits, assessments and surveillances related to the DOE Nuclear Safety and Waste Management Orders and the DOE Safety Management System Policy; and
 - application of Management Oversight Risk Tree analysis techniques and DOE Accident Investigation techniques.
- Since coming to the Hanford Tank Farms in 1995 as a Program Manager, he has overseen the resolution of the four priority one safety issues related to tank waste. Since becoming a Tank Farms Authorization Basis Engineer for the ORP in 1999, he has overseen over 120 Authorization Basis actions, over 40 of which have been completed since the approval of the DSA.
- He has completed qualifications for Waste Management, Mechanical Systems, and Safety System Oversight Qualifications for Double-Shell Tank Primary Ventilation Systems and Double Contained Receiver Tank Purge Air Systems.

Team Member Qualification Summary

Team Member Name: Gregory L. Jones

Title and Organization: Senior Engineer
YAHSGS, LLC.

Areas Assigned: Tank Farm H&R Critical Lift and Work Control Process

Summary of Education and Technical Qualifications and Experience:

- Bachelor of Science in Nuclear Engineering Technology, Oregon State University, 1976;
- Qualified Unreviewed Safety Question Evaluator; and
- Professional Member, American Society of Safety Engineers

Summary of Experience:

- Over 29 years experience in the commercial and government environment, safety and health industry;
- Over 25 years experience at Hanford, over 20 in tank farms;
- Safety Basis Compliance Activities in accordance with 10 CFR 830, Nuclear Safety Rule;
- Safety Analysis, Hazard Analysis (HAZOP, PHA, WHAT IF), TSR, Final Safety Analysis Report;
- Provided the lead in implementing over 25 safety basis amendments at the Hanford Tank Farms;
- Developed and assisted in preparing a strategy for implementing the Tank Farms DSA in accordance with 10 CFR 830;
- Development of Safety Management Program assessment guidance, and performing assessments to ensure compliance with DSA in accordance with 10 CFR 830 requirements and 29 CFR 1910 and 1926, OSHA for worker safety protection features;
- Developed implementation plan for DRAFT rule 10 CFR 851, Worker Safety and Health Program;

- Performed root cause analysis, common cause analysis, provided support on TSR violations and recommendations to management to minimize TSR violation potential; and
- Technical Safety and QA Appraisals at the PANTEX Plant and the Analytical Laboratory and Savannah River Technology Center at the Savannah River Site for DOE Headquarters.