HANFORD TANK FARM CONTRACTOR SELF-ASSESSMENT PROGRAM

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2M HILL
Hanford Group, Inc.
Richland, Washington
Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-99RL14047

Approved for Public Release
(Upon receipt of Clearance approval)
Further Dissemination Unlimited
HANFORD TANK FARM CONTRACTOR SELF-ASSESSMENT PROGRAM

E.S. AROMI, Jr., C.E. Anderson
CH2MHILL Hanford Group, Inc.

November 2003

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.
Richland, Washington
Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-99RL14047

Approved for Public Release
(Upon receipt of Clearance approval)
Further Dissemination Unlimited
Hanford Tank Farm Contractor
Self-Assessment Program

DNFSB General Briefing
December 4, 2003

Edward S. Aromi, Jr.
President and General Manager
CH2M HILL Hanford Group, Inc.

Office of River Protection

CH2M HILL
Hanford Group, Inc.
Tank Farm Contractor Scope of Work

- Waste management on 177 tanks
- Manage 222-S Laboratory and 242-A Evaporator
- Stabilize and remove waste from 149 older single-shell tanks
- Close single-shell tanks
- Stage waste and manage 28 newer double-shell tanks
- Manage projects to prepare for transfer of waste to Waste Treatment Plant (WTP)
- Search out technologies to reduce load on WTP
- Close double-shell tanks
## Progress in Managing Tank Farms

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>June 2002</th>
<th>September 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConOps</td>
<td>Events/200K hours worked</td>
<td>8.9</td>
<td>2.5</td>
</tr>
<tr>
<td>TSR violations</td>
<td>12-month rolling average</td>
<td>1.5</td>
<td>.33</td>
</tr>
<tr>
<td>Delinquent PER actions</td>
<td>Percent of total</td>
<td>48%</td>
<td>5%</td>
</tr>
<tr>
<td>ORPS reportable events</td>
<td>Reports/Month</td>
<td>10.2</td>
<td>4.8</td>
</tr>
<tr>
<td>PER/ESTARS CA backlog</td>
<td>Numerical reduction</td>
<td>5,310</td>
<td>1,098</td>
</tr>
<tr>
<td>Work package errors</td>
<td>Per package</td>
<td>11.13</td>
<td>1.18</td>
</tr>
<tr>
<td>Event-free Clock</td>
<td>Days between resets</td>
<td>6</td>
<td>11.1</td>
</tr>
<tr>
<td>NTS reports</td>
<td>Open corrective actions</td>
<td>60</td>
<td>11</td>
</tr>
</tbody>
</table>

**LEGEND:**
- CA - Corrective Action
- ConOps - Conduct of Operations
- ESTARS™ - Commitment Tracking System
- NTS - Noncompliance Tracking System (Price-Anderson Amendments Act Reporting)
- ORPS - Occurrence Reporting and Processing System
- PER - Problem Evaluation Request
- TSR - Technical Safety Requirement
DOE Policy 450.4
DOE Policy 450.5

TFC-POL-005,
Management and
Independent Assessment

TFC-PLN-010,
Assessment Program Plan

TFC-ESHQ-AP-C-01
Management
Assessment Program

TFC-ESHQ-AP-C-02
Independent
Assessment Program

TFC-ESHQ-AP-C-03
Management
Observation Program
Structure of Self-assessment Program

- Independent Assessment
- Management Assessment
- Senior Safety Review Board Assessment
- Management Observation Program Assessments
- Specialty Assessments
- Operational Readiness Reviews/Readiness Assessments
- Surveillances
Assessment Element and Interface Diagram

Management Assessments

Independent Assessments*

Senior Safety Review Board

Mgmt. Observation Program

Specialty Assessments:
- Triennial RadCon Assessment
- Triennial Fire Protection Assessment
- Maintenance Assessment
- Corrective Action Verification Assessments

Surveillances:
- Quality Assurance
- Safety and Health
- Environmental
- Radiological Control
- Corrective Action Closures

Operational Readiness Review Assessments

- Includes QA Program Assessments  Input  Advise  Direction
Independent Assessment

- Four to six "vertical slices" of major product lines/services per year, not counting unscheduled Independent Assessments

- Performed in accordance with procedures and Criteria and Review Approach Documents (CRADs)

- Performance and effectiveness-based with a compliance aspect

- Subcontractors assessed as part of Independent Assessment

- Led by qualified Lead Auditors with NQA-1 Certification

- Results presented in exit meeting, and to senior staff

- FY 2003 Independent Assessments resulted in 63 Problem Evaluation Requests (PERs)
Management Assessment

- Scheduled by Senior Management in each organization segment, and strict compliance to schedule is maintained
- Performed in accordance with procedures to assessment plans
- Forward-looking, and strategic in nature
- Performance- and effective-based, less emphasis on compliance
- Results rolled up into Organization MA Summary Report, addressed to the President and General Manager
- Twenty-seven FY 2003 Management Assessments resulted in 77 Problem Evaluation Requests
- Two were significant PERs, but not NTS reportable
Senior Safety Review Board Assessments

- Senior Safety Review Board consists of senior consultants with significant prior experience at executive levels of management
- Acts on behalf of the CH2M HILL Office of the President
- Focused review in areas of concern, emerging situations, or where special management attention or review is required
- Provide an independent assessment capability including the capability to assess the Assessment Program’s effectiveness
- Results generally presented in a white paper format to senior management, and PERs are generated as appropriate
Management Observation Program

- Management Observation Program Assessments (MOPs) are scheduled by managers

- Performed in accordance with one of five standard checklists

- Used in Projects, ESH&Q, Waste Feed Operations, and Closure Project Operations

- 1108 MOPs in FY 2003 resulted in 460 Problem Evaluation Requests

- In FY 2004, CH2M HILL is integrating a portion of the MOPs with Management Assessment data collection
Specialty Assessments

- Form of management assessment not part of the Management Assessment roll-up process

- Driven by Orders and needs other than DOE O 414.1A, “Quality Assurance,” and performed to specific procedures
  - Radiological control triennial assessments
  - Maintenance Order assessments
  - Triennial fire protection assessments
  - Biennial Safety Management Program assessments
  - Other priority driven assessments

- Heavily compliance-oriented, but evaluate performance and effectiveness

- 51 Specialty Assessments in FY 2003 resulted in 147 PERs
Oversight of Contractors

For off-site, Important-to-Safety items and services
- Evaluated Suppliers List
- Inspection by Fluor Hanford, CH2M HILL Project Delivery, or Quality Assurance as appropriate
- Receipt Inspection through a Quality Assurance Inspection Plan or Commercial Grade Item evaluation

For on-site, Important-to-Safety services
- Evaluated Suppliers List
- Implement a Subcontractor Oversight Plan
- Perform Management Observation Program assessments
- Implement QA independent oversight through Quality Surveillance Reports
Corrective Action Management

In FY 2003, CH2M HILL performed 1190 forms of assessment, not including surveillances or Operational Readiness Review activity, that resulted in 747 Problem Evaluation Requests

Corrective Action Management process follows INPO Guidance
- Broad range of problems sought on a zero-threshold basis
- Prompt screening
- Graded approach to evaluation based on significance
- Trending of problems with lower level of significance
- Structured root cause analysis for significant problems for root, and contributing causes; extent of condition; corrective action to prevent recurrence
Corrective Action Management (cont.)

- Problem Evaluation Requests are screened, evaluated, tracked, and trended

- Graded in seven possible categories

- Significant PERs, many of which are NTS reportable, require:
  - Root Cause Analysis
  - Extent of Condition, Root, and Contributing Causal Analysis
  - Corrective Action Plan (CAP) development
  - End Point Assessment planning and execution

- Significant PERs also require CAP approval by Corrective Action Review Board consisting of senior managers
## MANAGEMENT SYSTEMS

### Quality Assurance

#### Assessment Program - Schedule Performance

*(11/02 through 10/03)*

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Nov-02</th>
<th>Dec-02</th>
<th>Jan-03</th>
<th>Feb-03</th>
<th>Mar-03</th>
<th>Apr-03</th>
<th>May-03</th>
<th>Jun-03</th>
<th>Jul-03</th>
<th>Aug-03</th>
<th>Sep-03</th>
<th>Oct-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Complete</td>
<td>78%</td>
<td>82%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>75%</td>
<td>80%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Goal</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Score</td>
<td>Red</td>
<td>Yellow</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Red</td>
<td>Yellow</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
</tbody>
</table>

### Definition

Assessments are defined as Management Assessments, Independent Assessments, or Quality Assurance Independent Assessments currently reflected on the Integrated Assessment Schedule and in the Integrated Mission Execution Schedule (IMES); it does not include Management Observation Program (MOP) activity or Specialty Assessments.

### Analysis / Action

**Analysis:** Office of General Manager Deputy General Manager (D. Amerine) internal memorandum emphasizing schedule compliance had a positive impact.

No Management Assessments were due in Oct 2003.

**Action:** Assessment Program to continue working with second level managers to ensure adequate support and review of assessment results are available.

### Goal

The goal is perform 100% of scheduled assessments. Color boundary scale is based on management's expectations. Blue: 100%, Green: 90 - 99%, Yellow: 80 - 89%, Red: < 80%.

<table>
<thead>
<tr>
<th>Owner</th>
<th>WT Smoot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Lagging</td>
</tr>
<tr>
<td>Data Owner</td>
<td>LR Penick</td>
</tr>
<tr>
<td>Data Source</td>
<td>Assessment Database</td>
</tr>
<tr>
<td>DOE-ORP Owner</td>
<td>DC Bryson</td>
</tr>
</tbody>
</table>

### Schedule Performance

Last 6 Months

- Waste Feed Ops
- Closure Projects
- Other

CHG0311-10
### Evaluation of Assessment Reports for June 2003

<table>
<thead>
<tr>
<th>Assessment ID Number</th>
<th>Organization</th>
<th>Report Scoring</th>
<th>Assessment Planning and Preparation</th>
<th>Assessment Performance</th>
<th>Assessment Reporting</th>
<th>Assessment Contribution to Process Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2003-OPS-M-0016</td>
<td>WFO</td>
<td>Green</td>
<td>y</td>
<td>y</td>
<td>NA</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-OPS-S-0075</td>
<td>WFO</td>
<td>Green</td>
<td>NA NA</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-MC-S-0139</td>
<td>Mission Control</td>
<td>Green</td>
<td>y y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-MC-S-0140</td>
<td>Mission Control</td>
<td>Green</td>
<td>NA NA</td>
<td>y</td>
<td>NA</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-ENG-M-0003</td>
<td>Engineering</td>
<td>Green</td>
<td>y y y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-ENG-S-0044</td>
<td>Engineering</td>
<td>Green</td>
<td>NA NA</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-ENG-S-0047</td>
<td>Engineering</td>
<td>Green</td>
<td>NA NA</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-PRO-S-0038</td>
<td>PRO</td>
<td>Green</td>
<td>NA NA</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-CP-S-0152</td>
<td>CP</td>
<td>Green</td>
<td>NA NA</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>FY2003-ESHQ-M-0026</td>
<td>ESHQ</td>
<td>Green</td>
<td>y y y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
</tbody>
</table>

**Weakness Totals:** 1 2 3 3 1 3 4 1
MANAGEMENT SYSTEMS
Quality Assurance
Assessment Program - Quality of Assessments
(11/02 through 10/03)

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Nov-02</th>
<th>Dec-02</th>
<th>Jan-03</th>
<th>Feb-03</th>
<th>Mar-03</th>
<th>Apr-03</th>
<th>May-03</th>
<th>Jun-03</th>
<th>Jul-03</th>
<th>Aug-03</th>
<th>Sep-03</th>
<th>Oct-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Grading Score</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Goal</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Score</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
<td>95%</td>
</tr>
</tbody>
</table>

**Definition**
Beginning October 2003: Average grade for Management Assessments graded that month based on quality.
Previously: Percent of Management and Specialty Assessments graded acceptable based on quality.

**Analysis / Action**
Analysis: No Management Assessments were due in October 2003.
Action: Grading criteria has been increased in the grading sheets for Management Assessments.

**Goal**
Perform quality assessments. Color boundary scale is based on management's expectations.
Current: Blue: >95%, Green: 85 - 94%, Yellow: 70 - 84%, Red: <70%.
Prior to October 2003: Blue: 100%, Green: 90 - 99%, Yellow: 80 - 89%, Red: <=70%.

**Comments**
PI Owner: WJ. Smoot
PI Type: Leading
Data Owner: LR Perlick
Data Source: Assessment Database
DOE-ORP Owner: DC Bryson

---

Grades by Organization Last 6 Months

- Waste Feed Ops
- Closure Projects
- Other

---

CHG0311-10
**Management Systems**

**Quality Assurance**

**Action Tracking Data Associated with Problem Evaluation Requests (PERs)**

(10/02 through 09/03)

---

**Graph:**
- **X-axis:** Month/Year
- **Y-axis:** Number of Actions
- **Legend:**
  - New
  - Closed/Canceled
  - Open (In-box)
  - Delinquent
  - Goal

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Oct-02</th>
<th>Nov-02</th>
<th>Dec-02</th>
<th>Jan-03</th>
<th>Feb-03</th>
<th>Mar-03</th>
<th>Apr-03</th>
<th>May-03</th>
<th>Jun-03</th>
<th>Jul-03</th>
<th>Aug-03</th>
<th>Sep-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>1184</td>
<td>991</td>
<td>785</td>
<td>566</td>
<td>653</td>
<td>621</td>
<td>710</td>
<td>416</td>
<td>927</td>
<td>700</td>
<td>886</td>
<td>541</td>
</tr>
<tr>
<td>Closed/Canceled</td>
<td>1677</td>
<td>1773</td>
<td>1251</td>
<td>1343</td>
<td>924</td>
<td>821</td>
<td>829</td>
<td>707</td>
<td>787</td>
<td>737</td>
<td>939</td>
<td>596</td>
</tr>
<tr>
<td>Open (In-box)</td>
<td>2267</td>
<td>2170</td>
<td>2168</td>
<td>1485</td>
<td>1311</td>
<td>1304</td>
<td>1089</td>
<td>1051</td>
<td>1076</td>
<td>1018</td>
<td>1044</td>
<td>1101</td>
</tr>
<tr>
<td>Delinquent</td>
<td>361</td>
<td>227</td>
<td>150</td>
<td>88</td>
<td>47</td>
<td>47</td>
<td>67</td>
<td>44</td>
<td>70</td>
<td>43</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>Percent Delinquent</td>
<td>16%</td>
<td>10%</td>
<td>8%</td>
<td>6%</td>
<td>4%</td>
<td>4%</td>
<td>6%</td>
<td>4%</td>
<td>7%</td>
<td>4%</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Goal</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Score**
- Red: 0%
- Green: 1 - 5%
- Yellow: 6 - 10%
- Red: > 10%

**Definition**
This chart shows the Electronic Suspension Tracking and Routing System (ESTARS) actions that are associated with Problem Evaluation Requests (PERs). The actions are routed and tracked in ESTARS.

**Analysis / Action**
- **Analysis:** The September reduction in force had a negative impact on the company delinquency rate as organizations worked through resource and priority issues.
- **Action:** The goal continues to be 0%. Contacts with responsible managers who own delinquent actions will continue.

**Goal**
The goal is to maintain the total number of open ESTARS tasks associated with PERs at 0% delinquent. An interim goal of < 10% delinquent by 12/31/02 was established and met. A second interim goal of < 5% delinquent by 3/31/03 was also met. Blue: 0%; Green: 1 - 5%; Yellow: 6 - 10%; Red: > 10%.

**Comments**
- PI Owner: SJ Eberlein / RL Higgins
- PI Type: Lagging
- Data Owner: MJ Sorrels
- Data Source: ESTARS / PER
- DOE-ORP Owner: DC Bryson

---

**Percent ESTARS Actions Delinquent June 2002-September 2003**

- June 02: 38%
- July 02: 21%
- Aug 02: 30%
- Sep 02: 35%
- Oct 02: 15%
- Nov 02: 10%
- Dec 02: 6%
- Jan 03: 4%
- Feb 03: 4%
- Mar 03: 4%
- Apr 03: 7%
- May 03: 4%
- Jun 03: 2%
- Jul 03: 5%
- Aug 03: 6%
Summary

- CH2M HILL has an effective Assessment Program in place

- The Assessment Program is multi-faceted, and is identifying numerous opportunities for improvement

- The Program has been subject to assessment internally, by the customer, and by the Office of Enforcement Price-Anderson, and found to be acceptable

- CH2M HILL strives to improve the Assessment Program, and welcomes the opportunity to discuss further with DNFSB those opportunities
<table>
<thead>
<tr>
<th>Chemical Vapors Solution Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old Paradigm</strong></td>
</tr>
<tr>
<td>— Technical problem based on not exceeding NIOSH and ACGIH thresholds</td>
</tr>
<tr>
<td><strong>New Paradigm</strong></td>
</tr>
<tr>
<td>— Minimize employee chemical exposure through optimized ALARA principles</td>
</tr>
<tr>
<td>— Maximize employee involvement and knowledge</td>
</tr>
<tr>
<td>— Strengthen documented technical basis of Industrial Hygiene Program</td>
</tr>
</tbody>
</table>
Chemical Vapors Solution Progress (cont.)

- Completed actions
  - Root cause analysis
  - Enhanced respiratory protection
  - Conservative sampling and monitoring

- In-process actions
  - Rigorous disposition and closure of all inputs
  - Enhanced Engineering Controls
  - Enhanced Chemical Hazard Training
  - Strong worker involvement
  - Enhanced medical support and surveillance
  - Enhanced Industrial Hygiene Program
Chemical Vapors Solution Progress (cont.)

- Independent Assessment of Industrial Hygiene – Vapor Monitoring Program

- Results:
  - Health and Safety Plan does not meet requirements of the DOE for development of a comprehensive personnel monitoring strategy
  - Objective evidence is lacking that personnel sampling and monitoring records were generated for inclusion in personnel medical records
  - Hazard communication to the workforce needs improvement