



U.S. Department of Energy
Office of River Protection

P.O. Box 450
Richland, Washington 99352

04-ESQ-052

Mr. E. S. Aromi, President
and General Manager
CH2M HILL Hanford Group, Inc.
Richland, Washington 99352

Dear Mr. Aromi:

CONTRACT NO. DE-AC27-99RL14047 – RADIOLOGICAL CONTROL (RADCON)
ASSESSMENT REPORT A-04-ESQ-TANKFARM-005 – AS LOW AS REASONABLY
ACHIEVABLE (ALARA) PROGRAM, MAY 10 – 14, 2004

This letter forwards the results of the U.S. Department of Energy, Office of River Protection (ORP) RadCon Assessment of the CH2M HILL Hanford Group, Inc. (CH2M HILL) ALARA Program during the period May 10 – 14, 2004.

The ORP assessors concluded that the CH2M HILL Program exhibited multiple weaknesses. CH2M HILL also had identified weaknesses in this program in its “Independent Assessment of CH2M HILL Hanford Group, Inc. Radiological Controls ALARA Program, Radiological Work Planning, and Field Implementation of Radiological Controls,” FY-2004-CH2M-I-0126, April 2004.

CH2M HILL assessors drew the following conclusion about the condition of the ALARA Program in its aforementioned report:

“Several elements of the ALARA Program are not implemented in a consistent manner to ensure that ALARA concepts are adequately performed and documented. This includes the ALARA Committee, ALARA Program visibility, In-Process and Post-Job ALARA Reviews, and ALARA Joint Review Group.”

ORP assessors confirmed this conclusion in this assessment. To prevent duplication of Findings identified in the CH2M HILL report, ORP Health Physics professionals will review the corrective action plan for the Findings, assign corresponding Assessment Follow-Up Item (AFI) numbers, and track the corrective actions to closure. These Findings (quoted from the Criteria and Review Approach Review forms) are as follows:

1. Elements of the ALARA program are not implemented in a consistent manner that ensures ALARA concepts are adequately performed and documented (A-04-ESQ-TANKFARM-005-A01);

2. The ALARA Joint Review Group implementation and administration should be improved (A-04-ESQ-TANKFARM-005-A02);
3. The ALARA program does not have the necessary visibility and support to ensure effective implementation (A-04-ESQ-TANKFARM-005-A03); and
4. In-process ALARA review documentation is not being completed as required by administrative procedure (A-04-ESQ-TANKFARM-005-A04).

The ORP assessors made four Observations not specifically identified in the CH2M HILL independent assessment: two identified Program Strengths and two described areas needing improvement.

- **A-04-ESQ-TANKFARM-005-001** – The recent addition of an experienced Health Physicist as the incoming ALARA Coordinator strengthened the ALARA Program coordination function. This individual has a demonstrated history of problem solving, with an excellent track record for invigorating ALARA programs at several facilities on the Hanford Site. (Program Strength);
- **A-04-ESQ-TANKFARM-005-002** – A seasoned Health Physics professional, very experienced in both tank farms and CH2M HILL operations, and with a demonstrated history of applying innovative solutions to solve ALARA problems, performed the Design Health Physics function for the Closure Project. (Program Strength);
- **A-04-ESQ-TANKFARM-005-003** – The ALARA training program for Radiological Work Planners and Radiological Workers was not fully developed; and
- **A-04-ESQ-TANKFARM-005-004** – There was insufficient staffing in the RadCon Program organization to effectively support the ALARA function.

CH2M HILL is requested to respond to Observations A-04-ESQ-TANKFARM-005-003 and -004, because actions to correct these weaknesses are critical to assuring a fully functional ALARA program.

The Attachment (Assessment Report A-04-ESQ-TANKFARM-005) documents the details of the assessment.

Mr. E. S. Aromi
04-ESQ-052

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If you have any questions, please contact me, or your staff may call Larry R. McKay,
Radiological Control Manager, (509) 376-7120.

Sincerely,

ESQ:LRM

Roy J. Schepens
Manager

Attachment

cc w/attach:

E. J. Adams, CH2M HILL

J. W. Hobbs, CH2M HILL

R. R. Loeffler, CH2M HILL

K. A. Benguiat, RL

F. M. Roddy, RL

Administrative Record

CH2M Correspondence Control

U. S. DEPARTMENT OF ENERGY
Office of River Protection
Environment Safety and Quality

ASSESSMENT: As Low As Reasonably Achievable Program

REPORT: A-04-ESQ-TANKFARM-005

FACILITY: CH2M HILL Hanford Group, Inc. Tank Farms

LOCATION: Hanford Site

Dates: May 10-14, 2004

ASSESSORS: Larry R. McKay, Lead Assessor
Francis M. Roddy, Assessor

APPROVED BY: Patrick P. Carier, Team Lead
Verification and Confirmation

**As Low As Reasonably Achievable (ALARA) Program
May 10-14, 2004**

Assessment Purpose and Scope

During the period of May 10-14, 2004, the U.S. Department of Energy (DOE), Office of River Protection (ORP), conducted an assessment of CH2M HILL Hanford Group, Inc.'s (CH2M HILL) ALARA Program for the Tank Farms. The assessors evaluated the procedural requirements, interviewed those charged with implementing the Program, and attended ALARA review meetings. Actual tours of the tank farms were precluded due to tank vapor issues and the limited supply of supplied breathing air respiratory equipment.

The assessors compared the Program against these established requirements:

- Code of Federal Regulations, Title 10, Part 835, "Occupational Radiation Protection," November 14, 1998;
- HNF-MP-5184, CH2M HILL – Radiation Protection Program, Revision 2, February 28, 2003;
- "Hanford Radiological Health and Safety Document," Revision 1, December 20, 2001;
- HNF-5183, "Tank Farms Radiological Control Manual (TFRCM)," Revision 1, February 28, 2003; and
- CH2M HILL operating procedures.

Significant Conclusions and Observations

Overall Conclusions

The assessors concluded that the Program exhibited multiple weaknesses, as recently identified in CH2M HILL's "Independent Assessment of CH2M HILL Hanford Group, Inc. Radiological Controls ALARA Program, Radiological Work Planning, and Field Implementation of Radiological Controls," FY-2004-CH2M-I-0126, April 2004. While the ORP assessors did not duplicate the CH2M HILL assessment, they did confirm the following conclusion in the CH2M HILL assessment report:

"Several elements of the ALARA Program are not implemented in a consistent manner to ensure that ALARA concepts are adequately performed and documented. This includes the ALARA Committee, ALARA Program visibility, In-Process and Post-Job ALARA Reviews, and ALARA Joint Review Group."

To prevent duplication of Findings already identified in the CH2M HILL report, ORP Health Physics professionals will review the corrective action plan for the Findings, assign corresponding Assessment Follow-Up Item (AFI) numbers, and track the corrective actions to closure. The CH2M HILL ALARA Program Findings (quoted from the Criteria & Review Approach Review forms), and the associated ORP AFIs appear below:

1. Several elements of the ALARA program are not implemented in a consistent manner to ensure that ALARA concepts are adequately performed and documented (A-04-ESQ-TANKFARM-005-A01);
2. The implementation and administration of the ALARA Joint Review Group (AJRG) needs improvement (A-04-ESQ-TANKFARM-005-A02);
3. The ALARA program does not have the necessary visibility and support to ensure effective implementation (A-04-ESQ-TANKFARM-005-A03); and
4. In-process ALARA review documentation is not being completed as required (A-04-ESQ-TANKFARM-005-A04).

In addition, the assessors made four Observations not specifically identified in the CH2M HILL assessment: two identified Program Strengths and two described areas needing improvement.

A-04-ESQ-TANKFARM-005-O01 – The recent addition of an experienced Health Physicist as the incoming ALARA Coordinator strengthened the ALARA Program coordination function. This individual has a demonstrated history of problem solving, with an excellent track record for invigorating ALARA programs at several facilities on the Hanford Site (Program Strength).

Within the first few weeks on the job, this individual has:

- Revitalized the ALARA Goals Program;
- Identified an action plan to reinstitute ALARA Committee meetings;
- Facilitated rotation of Health Physics Technicians (HPT) through the Hanford Center of Technology on Tuesday and Thursday afternoons;
- Promoted the adoption of the Automated Job Hazard Analysis system to improve work planning; and
- Initiated an ALARA Recognition/Awards Program.

A-04-ESQ-TANKFARM-005-O02 – A seasoned Health Physics professional, very experienced in both tank farms and CH2M HILL operations, and with a demonstrated history of applying innovative solutions to solve ALARA problems, performed the Design Health Physics function for the Closure Project (Program Strength).

This individual has already made innovative ALARA suggestions; has taken field trips to other DOE sites to compare notes and share lessons learned; and provided the assessors with many photographs of actual ALARA ideas in use in the tank farms, such as:

- Rewrapping of contaminated equipment;
- Pump shielding;
- Tank drain shielding;
- “Hose barns” – shielding for surface Hose-In-Hose-Transfer-Lines;
- Lead blanket shielding on piping;
- Steel plate shielding;
- Materials and surfaces which may be readily decontaminated;
- Shielding and sky shine considerations for the bulk vitrification facility; and
- Use of digital photography to record ALARA remedies and concerns.

A-04-ESQ-TANKFARM-005-O03 – The ALARA training program for Radiological Work Planners and Radiological Workers was not fully developed:

- For Radiological Work Planners and HPTs, the current staffing shortage makes time off for seminars, information exchange, and technical training difficult and very infrequent. One exception was the initiative to send the HPTs to the ALARA Center of Technology for refresher training.
- The average Radiological Worker received no useful ALARA training during Radiological Worker Training. Current lesson plans for Radiological Worker Training do not include substantive treatment of ALARA as a focus area. As a result, the worker has little ALARA awareness.

A-04-ESQ-TANKFARM-005-O04 – There was insufficient staffing in the Radiological Control (RadCon) Program organization to effectively support the ALARA function:

- The outgoing ALARA coordinator was over burdened with Problem Evaluation Requests and other secondary work, to the detriment of ALARA work; and
- The Lead Radiological Work Planner resigned effective April 30, 2004.

Because the ALARA function is central to the planning and performance of radiological work in the Tank Farms, increased management attention is required to correct the identified Program weaknesses is needed. The ORP assessors identified the following weaknesses in the ALARA Program:

- The AJRG meetings were not being held in accordance with procedural requirements: some work was being planned during the meetings, instead of being reviewed, as required by procedure;
- Adequate RadCon Program organization staffing did not exist to effectively support the ALARA function;
- Because the Work Planners had not been retrained as Radiological Work Planners, adequate personnel were not available to improve the planning of radiological work;
- The ALARA Committee was not fully functioning, in accordance with the procedural requirements, in that meetings were not being held and the Committee Chair was vacant;
- The ALARA Goals Program was not established, as required by procedure;
- Some meeting minutes, lessons learned, and other valuable ALARA information was not captured in the work records (e.g., Enhanced Work Planning sessions); and
- The ALARA module within Radiological Worker Training had not been strengthened, and continuing training opportunities in ALARA did not exist for Radiological Work Planners.

List of Items Opened, Closed and Discussed

Opened

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| A-04-ESQ-TANKFARM-005-A01 | AFI | Several elements of the ALARA program were not implemented in a consistent manner to ensure that ALARA concepts are adequately performed and documented. |
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|---------------------------|-----|---|
| A-04-ESQ-TANKFARM-005-A02 | AFI | The implementation and administration of the AJRG needed improvement. |
| A-04-ESQ-TANKFARM-005-A03 | AFI | The ALARA program did not have the necessary visibility and support to ensure effective implementation. |
| A-04-ESQ-TANKFARM-005-A04 | AFI | In-process ALARA review documentation was not being completed as required. |

Closed

None

Discussed

None