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AUDIT
REPORT

HANFORD SITE RADIATION AND
HAZARDOUS WASTE TRAINING



SEPTEMBER 2000

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES

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MEMORANDUM FOR THE MANAGER, RICHLAND OPERATIONS OFFICE AND MANAGER,
OFFICE OF RIVER PROTECTION

FROM: Lawrence R. Ackerly, Regional Manager (Signed)
Western Regional Audit Office
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "Hanford Site Radiation and Hazardous Waste
Training"

BACKGROUND

The Hanford Site (Site) has numerous radiological and hazardous waste areas. To ensure worker safety and health, the Richland Operations Office (Richland) and the Office of River Protection (ORP) require radiation and/or hazardous waste training for employees who enter contaminated areas. Site records showed that many employees received radiation training even though there was no record of their entry into contaminated areas. This indicated that employees may have received training that was not required. The objective of the audit was to determine if employees received training in radiation and/or hazardous waste that was not required.

RESULTS OF AUDIT

For the audit period, 1,630 employees received training in radiation and/or hazardous waste that was not required. For example, employees other than those involved in fire, rescue, and security functions received radiation training even though they never entered radiological areas, never entered unescorted, and/or never intended to enter such areas unescorted. The training occurred because line managers and employees misunderstood the training requirements even though senior officials had identified the problem prior to the start of the audit. The non-required training cost about \$1.2 million annually.

In his March 1999 memo on training, the Secretary of Energy stated that the Department of Energy (DOE) was challenged with making the best use of limited resources. Richland and ORP have the opportunity to eliminate radiation and hazardous waste training that is not required. By doing so, they can reduce training costs by about \$6 million over the next five years.

We recommended that Richland and ORP ensure that all DOE and contractor Site managers and employees understand the training requirements for radiation and hazardous waste training and that employees be trained only when required.

MANAGEMENT REACTION

Management generally concurred with the overall conclusion and recommendation.

HANFORD SITE RADIATION AND HAZARDOUS WASTE TRAINING

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Overview

INTRODUCTION AND OBJECTIVE

The Hanford Site (Site) contains numerous radiological areas and hazardous waste areas. To ensure worker safety and health, the Richland Operations Office (Richland) and the Office of River Protection (ORP) require everyone to receive General Employee Radiological Training and certain employees to receive additional training in radiation and/or hazardous waste. Site records showed that several hundred employees received this additional radiation training even though there was no record of their entry into a contaminated area during a two-year period. This indicated that employees may have received training that was not required. Therefore, the objective of the audit was to determine if employees received training in radiation and/or hazardous waste that was not required.

CONCLUSIONS AND OBSERVATIONS

For the two-year audit period, 1,630 Site employees received additional training in radiation and/or hazardous waste that was not required. This occurred because managers and employees misunderstood training requirements. For example, radiation training was required for employees who planned to enter radiological areas unescorted. Managers, however, approved radiation training for employees who never intended to enter such areas or if they were required to enter such an area, they would do so escorted. Non-required radiation and hazardous waste training cost the Department of Energy (DOE) about \$1.2 million annually.

In his March 1999 memorandum on effectively using training resources, the Secretary of Energy cited past criticism by the General Accounting Office (GAO) and the Congress of DOE spending levels. The Secretary stated that DOE had reduced its expenditures for training and development by nearly one-third from Fiscal Year (FY) 1995 to FY 1997. He stated that DOE was now challenged with making the best use of limited resources and directed that funding of non-required training be eliminated. Richland began a self-assessment of Site radiation zone entry in March 1999 and tentative corrective actions were begun at that time. However, these actions did not result in reducing radiation and/or hazardous waste training.

Richland and ORP have the opportunity to eliminate training in radiation and hazardous waste that is not required. By doing so, they can reduce expenditures for radiation training and hazardous waste training by about \$6 million over five years.

In our opinion, the matters discussed in this report represent internal control weaknesses that Richland and ORP should consider when preparing the yearend assurance memorandum on internal controls.

_____(Signed)_____
Office of Inspector General

Radiation And Hazardous Waste Training

Training Not Required

Although all employees at the Site receive General Employee Radiological Training, some employees are required to have additional training in radiation and/or hazardous waste. This additional training is more extensive and includes procedures that if not frequently used may be overlooked. The audit revealed that 1,630 Site employees, excluding those involved in fire, rescue, and security functions, received training in radiation and/or hazardous waste that was not required. The reason that it was not required is that such employees entered radiological and/or hazardous waste areas infrequently, if at all. If and when such employees visited radiological areas, they were escorted.

Radiation Training

Employees received radiation training even though they never entered radiological areas, never entered unescorted, and/or never intended to enter such areas unescorted. For example,

- A manager for a non-technical program had never entered a radiological area and had no intention of entering one in the future.
- A technical procedure writer had one entry during the audit period. The employee was escorted during this entry and it was the individual's stated intent never to enter a radiological area unescorted.
- A manager had eight recorded entries into radiological areas during the audit period and was escorted each time. This manager entered radiological areas for observation and felt that there should be less training required in such cases because, "if we are observing, we clearly will be escorted by the real workers," such as operators and health physics technicians.
- A laboratory instrument technician had one entry into a radiological area during the audit period. This technician stated that he/she was always escorted and it was unlikely that there would be a need to enter without an escort in the future. This individual stated a preference for escorted entry because the radiation training was used infrequently and procedures were so complicated that there was no way to remember it all unless it was a daily routine.

Based on a statistical evaluation of 4,612 employees who received radiation training during the audit period, an estimated 850 (18 percent) received radiation training that was not required (see Appendix 2 for sampling methodology and results).

Hazardous Waste Training

Likewise, employees received hazardous waste training even though they never entered hazardous waste areas. For example,

- An electrician had been in his/her position for ten years and had not entered a hazardous waste site. It was this individual's intent never to enter such a site.
- An environmental scientist had never entered a hazardous waste site but received training on the assumption that future work would be in a waste site facility scheduled to be built in three years.
- A first-line supervisor did not enter hazardous waste sites and his/her subordinates did not enter such sites.

Based on a statistical evaluation of 3,768 employees who received hazardous waste training during the audit period, approximately 780 (21 percent) received training that was not required (see Appendix 2 for sampling methodology and results).

Challenge Is To Make Best Use Of Limited Training Resources

Training employees when it was not required was inconsistent with the Secretary's direction that such training be eliminated. In his March 1999 memorandum, the Secretary stated that DOE was challenged with making the best use of limited training resources. He directed the elimination of training that was not required by law or DOE directive, did not address a mission-related objective, or did not contribute to maintaining a highly skilled, versatile, and diverse workforce.

The *Hanford Site Radiological Control Manual* and the Project Hanford Procedures, *Radiological Worker Training*, require radiation training for unescorted entry into radiological areas ranging from buffer areas to radiation areas. Some areas, such as airborne contaminate areas, require training for any entry. This training prepares the employee for potential contact with radioactive material. It teaches specialized skills

such as frisking for personnel contamination and verifying instrument responses. The training was not required, however, for escorted entry into most radiological areas.

Hazardous waste training was required by the Occupational Safety and Health Administration and covered under Project Hanford Procedures, *Training Requirements and Instructions*, for entry into sites containing harmful wastes but not containing radioactive material. The training was required whether entry to a site was escorted or unescorted. In addition, the training was required for anyone who supervised employees who entered hazardous waste sites. Thus, the training was not required for employees who did not enter hazardous waste areas or for their managers.

Training Requirements Misunderstood

Generally, non-required training was provided because managers and employees misunderstood the training requirements. For example, these requirements stipulated that training was necessary only for unescorted entry into radiological areas but managers stated that they approved training because they thought it was needed for any entry. Similarly, hazardous waste training was sometimes approved because the manager mistakenly thought that this training was a general requirement applicable to anyone who worked at the Site. Some employees who received the non-required training had the same misunderstanding as their managers.

Managers also stated that they approved training that was not required because the employee might have a future need for it. Training for unidentifiable future needs was unnecessary, however, because two training departments continuously provided the training at the Site. Thus, employees could receive training at the time it was needed.

Better Use Of Funds

The non-required training identified in this report cost about \$1.2 million annually, an amount comprised of about \$610,000 in payroll costs for the nonproductive time the employees spent in training and about \$550,000 in tuition and other costs. By eliminating radiation and hazardous waste training that are not required, Richland and ORP have the opportunity to better use these funds.

RECOMMENDATION

We recommend that the Managers of Richland and ORP ensure that all DOE and contractor Site managers and employees understand the requirements for radiation and hazardous waste training and that employees be trained only when required.

**MANAGEMENT
REACTION**

Management's June 27, 2000, response to the Draft Report generally concurred with the overall conclusion and recommendation. The Richland Office of Training Services and Asset Transition has taken the lead to ensure that all Site contractors reexamine their records to determine the necessity of refresher training courses for those individuals who do not enter, or infrequently enter, radiation zones. Management will also be reeducated regarding site training requirements and how they are to be applied. The following corrective actions are either in progress or are planned to be complete by September 30, 2001:

1. Management, using access control entry data generated in March 1999, April 2000, and May 2000, is reviewing how many radiological zone entries were made in the last two years for each person trained in Radiation Worker I and II.
2. An annual Business Management Oversight Process performance measure is planned for FY 2001 requiring Fluor Hanford, Inc., to analyze personnel training requirements to reduce unnecessary training. Richland also intends to ensure that Pacific Northwest National Laboratory and Bechtel Hanford, Inc., (Bechtel) analyze their personnel training requirements in this area.
3. Discussions will be held with ORP to ensure that it is provided assistance in analyzing the training requirements for its contractor.
4. Access entry information was distributed to Richland and ORP Division Directors with the reminder to ensure that further consideration be given to determining which employees need the training. Additional radiological zone entry data will be distributed to both offices as it becomes available.
5. Hazardous Waste Operations training will be looked at separately, and clarification will be given to all Site employees detailing when this training is required.

Management took exception to not being given credit for identifying the problem and taking action in March 1999 to reduce the amount of training by contractor employees. Richland training personnel had proposed to correct the condition through the use of performance expectations. Further, Richland criticized the Draft Report for not

associating a cost with the use of escorts. In addition, Richland said the Draft did not consider the Occupational Safety and Health Act (OSHA) requirements. Finally, Richland said that four entries per month (96 over two years) should not be considered infrequent.

AUDITOR COMMENTS

Management comments and plans of action are responsive to our recommendation. With respect to its March 1999 actions, Richland was aware that unneeded radioactive and hazardous training may be occurring. However, its proposed corrective actions were not included in the contractor's performance plans and Richland had no other corrective actions planned to reduce radiation and/or hazardous waste training. Further, the report did not consider the costs of escorts because the Office of Inspector General (OIG) did not second-guess an employee's decision to use an escort. In addition, the OIG did consider OSHA requirements; training associated with those requirements was not questioned. Finally, the OIG arbitrarily decided to use four or fewer entries per month as a selection criteria. Employees who chose to enter unescorted were excluded from the sample.

Appendix 1

SCOPE

We performed the audit from June 22, 1999 through May 31, 2000, at Richland, Washington, and the Site. The scope included DOE and contractor Site employees and training offices at Fluor Hanford, Inc., the managing and integrating contractor for the Project Hanford Management Contract; Bechtel, the environmental restoration contractor; Battelle, the management and operating contractor for the Pacific Northwest National Laboratory; and Richland. In performing the audit, we reviewed records of employees who received radiation training (that is, Radiological Worker I and/or Radiological Worker II training) and/or hazardous waste training (that is, Hazardous Waste Operations and Emergency Response and/or Hazardous Waste Refresher training) during the audit periods shown below in Methodology. General Employee Radiological Training was excluded from the scope of the audit because it was required for all Site employees. We limited the universe for radiation training to employees who had 96 or less recorded entries into radiological areas during the audit period. This was based on the assumption that infrequent entry into radiological areas (that is, four or fewer recorded entries per month) did not provide sufficient familiarity with radiological area procedures for employees to enter unescorted.

METHODOLOGY

To accomplish the audit objective, we:

- randomly selected employees who received radiation training and had 96 or less recorded entries into radiological areas from October 2, 1997 through October 14, 1999 (see Appendix 2);
- randomly selected employees who received hazardous waste training from August 4, 1998 through July 29, 1999 (see Appendix 2);
- reviewed training budgets and expenditures;
- evaluated employee training plans, needs analyses, and facility access databases;
- electronically mailed training/job requirement questionnaires to selected employees and evaluated responses;
- conducted interviews with Richland officials, contractor management, and employees;

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- visited employee work sites, facilities and offices, radiological and hazardous waste sites; and,
 - reviewed contract provisions for Government Performance and Results Act of 1993 performance measures related to the audit objective.

The audit was performed in accordance with generally accepted government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Internal controls reviewed included DOE and contractor policies and procedures and Federal regulations related to management and control of radiation and hazardous waste training. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We assessed the reliability of computer generated data and found it to be reliable for the purposes of this audit. Finally, we reviewed Richland's, ORP's, and the major Site contractors' performance goals. Training and safety performance goals existed; however, the goals were not relevant to the audit objective.

We discussed the finding in this report with the Director, Analysis and Evaluation Division on July 18, 2000.

Appendix 2

STATISTICAL SAMPLING OBJECTIVES, TECHNIQUE, AND EVALUATION

Objectives

The sampling objectives were to estimate the number of Site employees who:

- received non-required radiation training from October 2, 1997 through October 14, 1999; or,
- received non-required hazardous waste training from August 4, 1998 through July 29, 1999.

Technique

We used the U.S. Army Audit Agency statistical sampling software for unrestricted attributes sampling to determine sample sizes and generate random number listings. The sampling universes, sample sizes, and sampling units were:

- Radiation Training. The universe consisted of 4,612 employees who received such training from October 2, 1997 through October 14, 1999, and entered radiological areas 96 times or less during the same time period. The sample size was 38. The sampling units were employee names that appeared in the Access Control Entry System.
- Hazardous Waste Training. The universe consisted of 3,768 employees who received hazardous waste training from August 4, 1998 through July 29, 1999. The sample size was 29. The sampling units were employee names that appeared in the Access Control Entry System.

The sample plans' confidence levels were 95 percent with an expected error rate of 11 percent for radiation training and 12 percent for hazardous waste training. The attribute tested was whether an employee received non-required training. A sampling error was an employee who received non-required training. We considered radiation training to be non-required if the employee never entered radiological areas, never entered unescorted, and/or never intended to enter such areas unescorted. We considered hazardous waste training to be non-required if the employee never entered hazardous waste areas and/or did not supervise employees who worked in such areas. Employees involved in fire, rescue, and security functions were excluded.

Evaluation

Of the 38 sample employees who received radiation training, 7 received non-required training. Therefore, the frequency of error lies between 283 (6 percent) and 1,415 (31 percent) of the universe at a 95 percent confidence level. For purposes of this report, we used the midpoint of 850 employees (18 percent) as the estimate of the number of employees who received radiation training that was not required.

Of the 29 employees who received hazardous waste training, 6 received non-required training. Therefore, the frequency of error lies between 226 (6 percent) and 1,332 (35 percent) of the universe at a 95 percent confidence level. We used the midpoint of 780 employees (21 percent) as the estimate of the number of employees who received non-required hazardous waste training.

Appendix 3

RELATED OFFICE OF INSPECTOR GENERAL AND GENERAL ACCOUNTING OFFICE REPORTS

- *Environmental Training at the Department of Energy*, DOE/IG-294, December 1990

Individuals were involved in hazardous waste operations at DOE facilities without receiving the required environmental training. Contractors at DOE facilities did not have adequate systems to identify employees requiring training, ensure that the training was received, and effectively document compliance.

- *Actions Necessary to Improve DOE's Training Program*, GAO/RCED-99-56, February 1999

Opportunities to reduce the costs associated with DOE's training program were identified by GAO. GAO noted that: (1) DOE employees had generally not completed individual development plans, and DOE offices had generally not prepared annual training plans; and (2) DOE could reduce its training costs by eliminating certain non-mandatory training.

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