DOE/EH-0108

87601

Tiger Team Assessment of the Oak Ridge Y-12 Plant Oak Ridge, Tennessee

February 1990

U.S. Department of Energy

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United States Government **Department of Energy**

memorandum

DATE: April 20, 1990

REPLY TO ATTN OF: EH-1

SUBJECT: Preparation of the final Action Plan for the Oak Ridge Y-12 Plant Tiger Team Assessment

TO: John C. Tuck
Acting Assistant Secretary
for Defense Programs

Attached are the final Oak Ridge Y-12 Plant Tiger Team Assessment Report and the EH-1 Summary to me on major problem areas. Please prepare, within 4 weeks of the date of this memorandum, a final Action Plan addressing the findings and root causes in the report. Please pay particular attention to the areas highlighted in the EH-1 Summary. The plan shall be forwarded to me, after receiving the concurrence of the Assistant Secretary for Environment, Safety and Health, whereupon I will authorize you to implement the response actions.

The final Action Plan will include a strategy for meeting with regulators to review and address areas of noncompliance. The final Action Plan shall also include the planned or current response action proposed or underway, the schedule for implementation and completion of each action, and resource requirements. You should highlight those actions which are not currently accounted for in the Five-Year Plan. If you are unable to determine an appropriate response action for a particular finding, clearly indicate the reasons.

James D. Watkins
Admiral, U.S. Navy (Retired)

Attachment

cc: Leo Duffy, EM-1
Peter N. Brush, EH-1

87601

DOE/EH-0108

Tiger Team Assessment of the Oak Ridge Y-12 Plant Oak Ridge, Tennessee



February 1990

U.S. Department of Energy
Washington, DC 20585

PREFACE

This document contains findings identified during the Tiger Team Compliance Assessment of the Department of Energy's (DOE's) Y-12 Plant in Oak Ridge, Tennessee. The assessment was directed by the Department's Office of Environment, Safety and Health (ES&H) from September 25 to October 20, 1989.

The Y-12 Plant Tiger Team Compliance Assessment is comprehensive in scope. It covers the Environmental, Safety, and Health [including Occupational Safety and Health Administration (OSHA) compliance], and Management areas and determines the plant's compliance with applicable Federal (including DOE), state, and local regulations and requirements.

The preliminary assessment findings were submitted to the Office of Defense Programs, the Oak Ridge Operations Office, the site contractor [Martin Marietta Energy Systems, Inc. (Energy Systems)], and state and Federal regulatory agencies at the conclusion of the on-site assessment activities for review and comment on technical accuracy. Changes and any other appropriate modifications are incorporated herein.

The Y-12 Plant Tiger Team Compliance Assessment is one component of a larger, comprehensive DOE Tiger Team Compliance Assessment program planned for more than 100 of the Department's operating facilities. This assessment is part of a ten-point initiative announced on June 27, 1989, by the Secretary of Energy, Admiral James D. Watkins, Ret., to conduct independent oversight compliance and management assessments of the ES&H programs at DOE facilities. The objective of the initiative is to provide the Secretary with information on the current ES&H compliance status of DOE facilities, root causes for noncompliance, adequacy of DOE and site contractor ES&H management programs, response actions to address the identified problem areas, and DOE-wide ES&H compliance trends and root causes.

February 1990
Washington, D.C.

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This final report provides an overall environmental, safety, and health (ES&H) compliance assessment of the Y-12 Plant at Oak Ridge, Tennessee. The Y-12 Plant is operated for the DOE by Martin Marietta Energy Systems, Inc. (Energy Systems). This assessment was conducted in response to a June 27, 1989 Secretarial initiative to evaluate ES&H programs at DOE facilities. In addition to an ES&H review conducted by DOE managers and specialists, a team of Occupational Safety and Health Administration (OSHA) compliance officers from the Department of Labor assessed the facility's compliance with OSHA regulations.

Generally, the environmental findings represent a tabulation of existing problems for which corrective actions are planned or already under way. The safety findings reflect a slower-than-expected progress in correcting procedural and training problems at the facility, a finding confirmed by the large number of findings by the OSHA inspectors. While DOE site and contractor management at Y-12 reflected a high degree of commitment to health and safety concerns, the inability to obtain and retain qualified, competent staff due to limited resources and competing programs limits their ability to fully implement necessary corrective action programs. The management assessment identified the need to implement management systems and controls necessary to ensure penetration of ES&H objectives throughout the line organization.

A brief summary of environmental, safety, OSHA, and management concerns follows. The reader is referred to Section 2 and subsequent sections of the report for a full description.

Environment

The environmental assessment identified findings of potential noncompliance with Federal and state regulations, DOE orders, and nonconformance with acceptable best management practices. However, none were of a nature that indicated undue risk to public health or the environment with continued operation of the Y-12 Plant.

Areas of principal concern were the indefinite storage of Land-Disposal-Restricted or mixed (hazardous and radioactive) wastes and the lack of permits for all wastewater discharges into East Fork Poplar Creek.

To remedy these areas of concern, the Y-12 Plant needs to (1) continue efforts to reduce the amount of mixed waste in storage through waste minimization, solvent substitution, and pursue off-site treatment options; and (2) continue to identify, eliminate, divert, or collect and treat all of its wastewater discharges and obtain a National Pollutant Discharge Elimination System permit for the remaining discharges.

Health and Safety

The Health and Safety-related activities in operations and training, maintenance and technical support, engineering, and major modifications were generally satisfactory and are improving. In these areas, however, the status and the pace of improvement indicate that more effort should be made. The key areas where greater effort is needed are in increasing the use and control of operating procedures, ensuring comprehensive on-the-job training, establishing current safety analysis documentation, and maintaining as-built drawings. Deficiencies were identified in the radiation protection program during the assessment related to the performance and adequacy of surveys of all significant radiological areas and operations and in the adequacy of Safety Work Permits and procedural controls. Also, widespread deficiencies identified in a recent (July/August 1989) Radiological Protection Program Appraisal will require significant management attention.

Occupational Safety and Health Administration

A significant number of OSHA violations (500) were discovered, with many involving failure to follow basic safety guidance. This was thought to be reflective of a recent shift in the site contractor's management policy from one of trying to meet the intent of DOE Orders to a policy of compliance. The effectiveness of contractor management and DOE oversight is not adequate.

Management and Organization

A positive ES&H culture, openly supported by MMES top management, now exists at the Y-12 Plant. However, this culture has not fully penetrated the plant's line organization to the floor level.

A major weakness with the ES&H program is the lack of internal management controls and systems that are necessary to ensure that management commitments are fully implemented. This weakness is exemplified by deficiencies in ES&H procedures and in inadequate training and self-assessment programs. The probable root cause for the delay in the development of these management systems particularly in the area of safety and health, was the management assumption, prior to 1988, that new requirements were not cost-effective or necessary to protect worker health and safety. Management believed that substantial compliance, but not necessarily strict compliance to DOE health and safety regulations was all that was expected. Factors that contributed to the persistence of this condition included inadequate DOE oversight, insufficient budget outlays and an antiquated physical plant. Given the limited resource environment and a large number of outstanding audit and appraisal findings, it is essential that the Y-12 Plant institute an organizational, risk-based system for prioritizing ES&H concerns.

While adequate improvements to ES&H management systems are already under way, their implementation needs to be accelerated and closely monitored by DOE.

1 INTRODUCTION

1. INTRODUCTION

On June 27, 1989, the Secretary of Energy announced a ten-point initiative to strengthen environmental protection and waste management activities in the U.S. Department of Energy (DOE). One part of the initiative involves conducting Tiger Team Compliance Assessments at the Department's operating facilities. This report presents the assessment of the Y-12 Plant on the Oak Ridge Reservation (ORR) in Oak Ridge, Tennessee.

1.1 Purpose

The purpose of the Y-12 Tiger Team Compliance Assessment is to provide the Secretary of Energy with concise information on

- current environment, safety, and health (ES&H) compliance status of each facility and associated vulnerabilities;
- root causes for noncompliance;
- adequacy of DOE and site contractor ES&H management programs;
- response actions to address identified problem areas; and
- input to DOE-wide ES&H compliance trends and root causes.

1.2 Scope

The scope of the Y-12 Plant Tiger Team Compliance Assessment is comprehensive and includes, but is not limited to, the following ES&H areas:

- compliance with applicable Federal, state, and local regulations, permits, agreements, and enforcement actions;
- compliance with DOE order requirements;
- adequacy of DOE and site contractor ES&H management programs, including planning, organization, resources, training, and relationships with regulatory agencies;
- conformance with applicable Occupational Health and Safety Administration (OSHA) requirements;
- conformance with applicable best and accepted industry practices; and
- identification of root causes.

1.3 Approach

The Y-12 Plant Tiger Team Compliance Assessment was conducted by a team of specialists managed by a Team Leader and three Subteam Leaders, one for each of

the three disciplines of Environment, Safety and Health, and Management. Each of the Teams was made up of technical specialists from other DOE offices and support contractors. The Safety and Health team also included three compliance officers from the Department of Labor's OSHA Office. These compliance officers detailed to DOE from OSHA performed an independent inspection of nonradiological workplaces and worker health and safety at a selected sample of site buildings and at most construction activities on the site. The inspection was conducted using OSHA procedures, as specified in their Field Operations Manual, and reported on OSHA Form 1B, as would be done in any OSHA workplace inspection. An assessment report prepared by OSHA, and OSHA 1B summaries are contained in Appendix B. The agreement between OSHA and DOE under which OSHA participation was obtained is in Appendix C. Team member names, areas of responsibility on the Tiger Team, and work-related experience are provided in Biographical Information sheets included as Appendix A.

The assessment at the Y-12 Plant was conducted in accordance with the September 1989 Draft Tiger Team Guidance Manual and recognized audit techniques. A pyramid approach was designed and implemented to perform the root cause analyses. This methodology, depicted in Figure 1-1, begins with (1) background information and assessment data that are used by (2) the Subteams to develop findings; these findings are integrated by (3) the Management and Organization Subteam for analysis and development of management findings. As the fourth and last step in the process, Team leaders and subteam leaders determine the root cause(s) for the findings identified by the Subteams.

1.3.1 Pre-Assessment Site Planning

Planning for the Y-12 Plant Tiger Team Compliance Assessment included the issuance of an introduction and information request memorandum, a pre-assessment site visit by team management and OSHA representatives, and initial review of available documentation.

The pre-assessment site visit was conducted on September 14-15, 1989. The Oak Ridge Operations Office (ORO) and the site operating contractor Martin Marietta Energy Systems, Inc. provided overviews of site operations and the ES&H program. Discussions were held to inform the site representatives about the scope and purpose of the Tiger Team assessment program and necessary support requirements (office space, materials and office equipment, administrative support, etc.) for the actual assessment. Federal and state regulators were invited but chose not to attend or participate in the pre-assessment meeting.

1.3.2 On-Site Activities

The on-site activities for the assessment took place from September 25 to October 20, 1989. On-site activities included field observations; document reviews; and interviews with DOE, contractor, and subcontractor site personnel and with Federal, state, and local representatives.

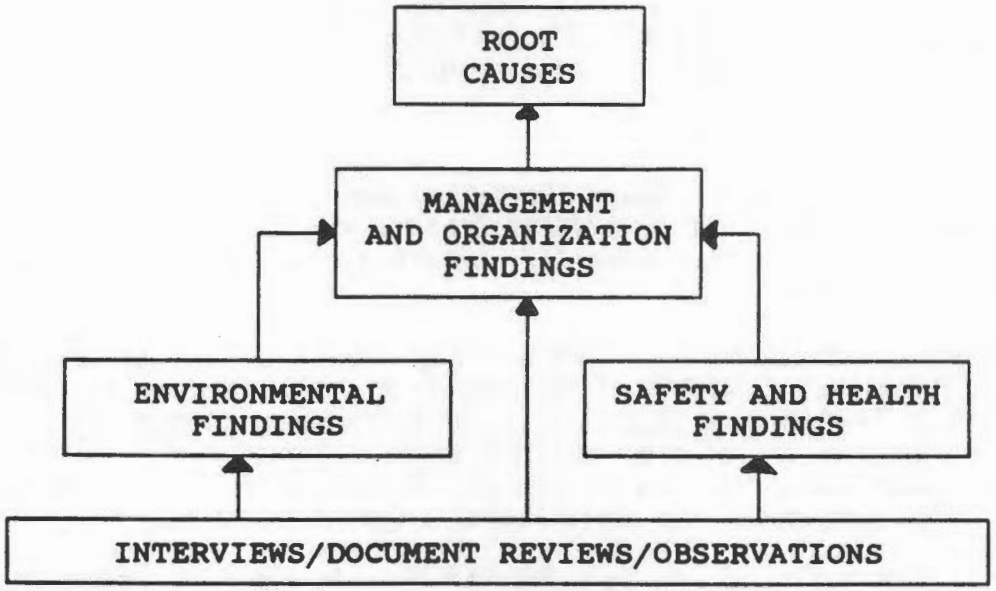


Figure 1-1. Tiger Team Compliance Assessment Methodology.

Using these sources of information, Team members developed findings. These findings fall into three general categories: compliance findings, best management practice (BMP) findings, and noteworthy practices. Compliance findings are conditions that, in the judgment of the assessment team, may not satisfy applicable environmental or safety and health regulations, DOE orders (including internal DOE memoranda, where referenced), enforcement actions, agreements with regulatory agencies, or permit conditions. BMP findings are derived from regulatory agency guidance, DOE draft orders, accepted industry practices, and professional judgment. In addition to these two types of findings, the assessment team could identify practices that, in their judgment, may be noteworthy and have general application to DOE facilities and should be documented for the purposes of information transfer.

1.3.3 Reporting

Section 2 is an overall summary of the key compliance assessment findings and noteworthy practices that were identified by the three Subteams. Sections 3 through 6 contain the Environmental, Safety and Health, OSHA, and Management findings, respectively.

Each finding is categorized as either Compliance Findings or Best Management Practice Findings. Within these categories, the finding is prefaced by a statement of Performance Objectives. The Performance Objectives are the bases on which findings are binding to enforceable actions or, in the case of BMPs, minimum requirements for a particular practice or activity that does not exist, apply, or go far enough and professional judgment prevails.

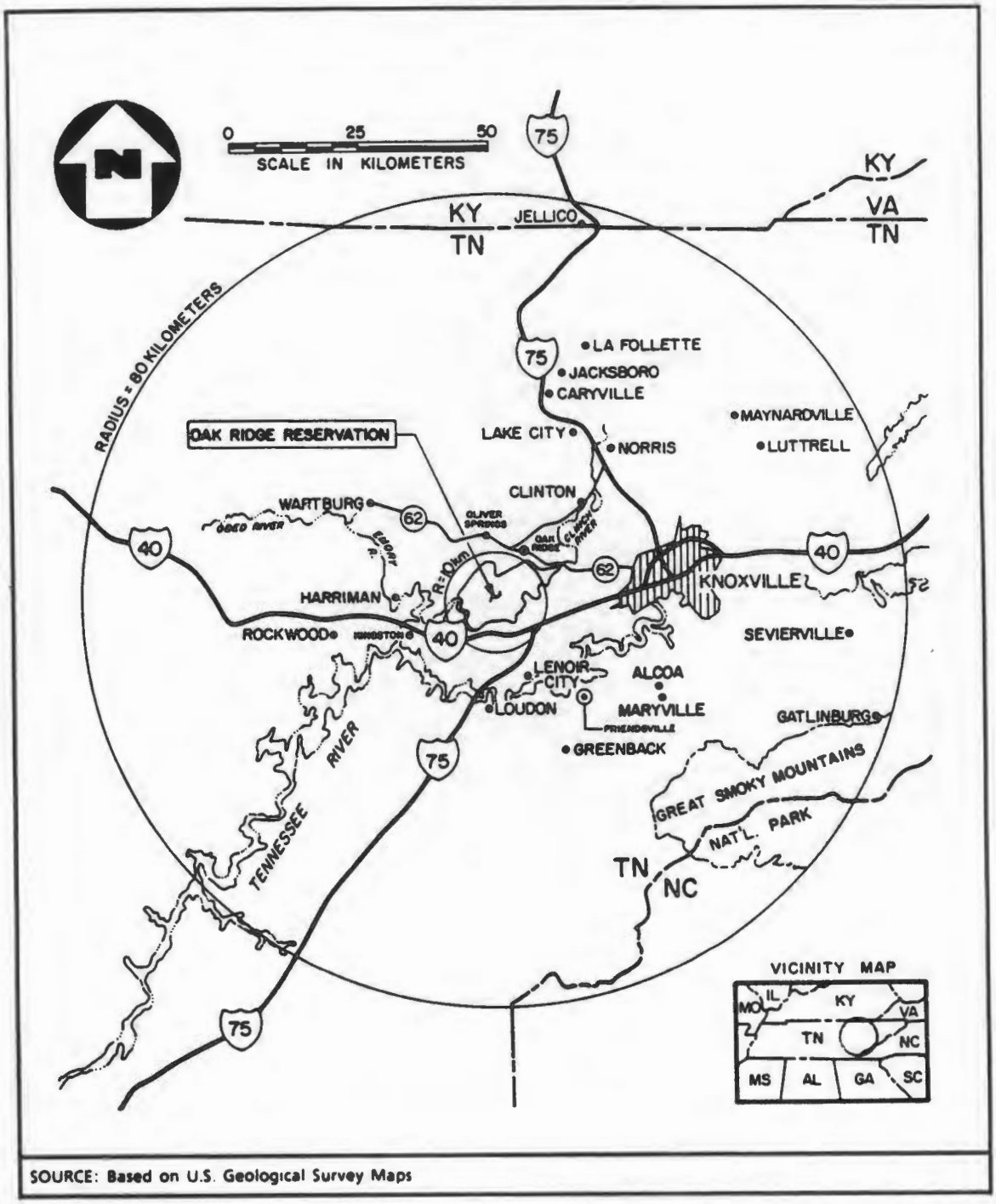
The assessment reflects a fixed point in time. As a result, improvements in the environmental area that were planned, but were not completed at the time of the assessment, are identified as findings if the Team determined them to be necessary to satisfy environmental requirements or BMPs.

The process taken to complete the assessment report included submission of preliminary findings in a Draft Report to the Program Senior Officer, ORO, and the site contractor at the conclusion of the on-site assessment. These groups reviewed the report for technical accuracy, and their review comments, suggested changes, and modifications were then incorporated as appropriate into this final Compliance Assessment Report.

In addition, the Y-12 Plant has prepared a draft action plan that addresses the findings identified during the Tiger Team Assessment. The draft action plan has been submitted by the site through the Program Office to ES&H for their review and comment. The Secretary will approve the final action plan and direct the implementation of the plan.

1.4 Facility Description

The ORR is located in eastern Tennessee, about 20 miles west of Knoxville and within the corporate limits of the City of Oak Ridge (see Figure 1-2). The Y-12 Plant is one of three major facilities located on the 37,000-acre ORR; the other two facilities are Oak Ridge National Laboratory (ORNL) and Oak Ridge



SOURCE: Based on U.S. Geological Survey Maps

Figure 1-2. Location of Oak Ridge Reservation, Oak Ridge, Tennessee.

Gaseous Diffusion Plant (ORGDP) (Figure 1-3). The Y-12 Plant is situated at the eastern end of the ORR in Bear Creek Valley. The plant occupies an area about 0.67 mile wide and 3.2 miles long. About 450 buildings are situated in that area (see Figure 1-4 in the sleeve on the inside back cover).

The three major facilities at the ORR are managed by Martin Marietta Energy Systems, Inc., under a contract administered by DOE-ORO. This assessment report deals only with activities at the Y-12 Plant and five ORNL divisions [Biology, Engineering Technology, Fusion Energy, Operations (Stable Isotope Enrichment Group), and Analytical Chemistry] located at Y-12.

The Y-12 Plant was originally constructed in 1943 as part of the Manhattan Project. Its initial mission was the separation of fissionable isotopes of uranium (U-235) by the electromagnetic process. Uranium-235 was the fissionable material used in the world's first atomic bomb, which was detonated on August 5, 1945. Over the ensuing years, Y-12 has become a highly sophisticated nuclear weapons component manufacturing and development engineering organization.

The production portion of the Y-12 Plant is a heavily developed area with a high density of buildings and roads. The work force at the Y-12 Plant is composed of about 7000 people in the engineering, skilled and semi-skilled crafts, technical, and administrative support areas.

The Y-12 Plant has four principal missions: (1) defense responsibilities related to the production of nuclear weapons components and support to the DOE weapons design laboratories, (2) processing of source and special nuclear materials, (3) providing support to other Energy Systems installations, and (4) providing support to other governmental agencies. Activities associated with these missions include recovery of enriched uranium from obsolete weapons and scrap materials, processing of enriched uranium from other DOE sites, production of lithium compounds, and fabrication of uranium (enriched and depleted) and other materials into finished parts and assemblies.

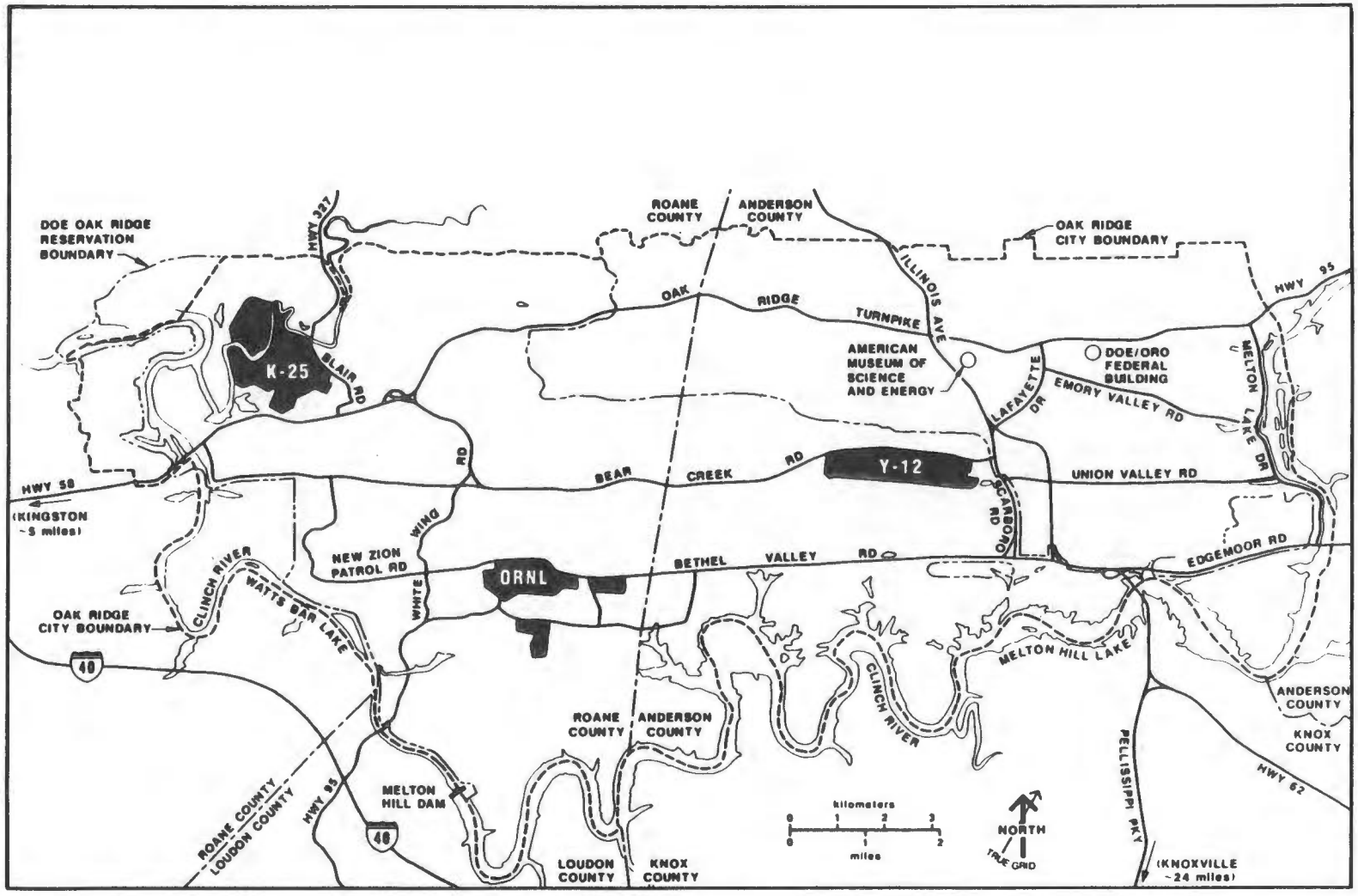


Figure 1-3. Location of the Y-12 Plant, Oak Ridge Reservation.

2 KEY FINDINGS AND NOTEWORTHY PRACTICES

2. KEY FINDINGS AND NOTEWORTHY PRACTICES

2.1 Environment

2.1.1 Key Findings

The most significant compliance findings identified during the assessment were in the areas of waste management and surface water. Specifically,

- the site needs to continue its efforts to reduce the amount of mixed waste in storage through waste minimization, solvent substitution, and pursuing off-site treatment options; and
- the site needs to continue its efforts to identify, eliminate, divert, or collect and treat all of its wastewater discharges and obtain a National Pollutant Discharge Elimination System (NPDES) permit for the remaining discharges.

The most notable best management practice finding identified the need to devote greater effort to verifying compliance with air permit limitations for minor sources.

2.1.2 Noteworthy Practices

Four practices at the Y-12 Plant were considered exceptional and warranted documentation for the purposes of information transfer among other DOE facilities.

- Continuous monitors throughout the Plant will be tied into one command center. Alarms will signify problems and dramatically increase the Plant's capability for early detection and response.
- An innovative method was developed, and equipment was fabricated to test radiological monitoring systems to ensure the integrity and representativeness of the system.
- Results of internal Resource Conservation and Recovery Act (RCRA) audits are posted in a control room in a manner that facilitates management review and response.
- A comprehensive groundwater monitoring plan was developed to address intermingling of plumes from several waste sites.

2.2 Safety and Health

2.2.1 Key Findings

Two key findings concerned operating procedures. (1) Up-to-date, officially approved operating procedures were not prepared and available to operating personnel in many operating areas. (2) No documented independent safety and health review was routinely obtained for Y-12 operating procedures, either when initially issued or when revised.

One key finding in the training area was that not all workers at the Y-12 Plant were given comprehensive technical and on-the-job training and that a rigorous system for documentation of training was not in place in all areas.

Two key findings concerned engineering. (1) The configuration of the Y-12 Plant is not fully reflected in the drawings. (2) The safety analysis baseline for the plant is not clear. (This safety baseline consists of pre-1985 Safety Analysis Reports and subsequent interim approvals for operations based on either a safety review or a safety assessment.)

Two key findings concerned radiation protection. (1) The Health Physics staff at the Y-12 Plant does not survey all significant radiological areas and operations. (2) Safety Work Permits and maintenance/operating procedures do not adequately document and control the radiological conditions at the Y-12 Plant.

2.2.2 Noteworthy Practice

One noteworthy practice was observed in the training area. Since 1985, a notable training accomplishment has existed at the Fabrication Division Training Facility, where many workers have received comprehensive, high-quality training in over a dozen specific aspects of safety and in the effective operation of complex machines.

2.3 Occupational Safety and Health Administration

2.3.1 Key Findings

The OSHA Assessment Team reached the following conclusions and determinations regarding Y-12's industrial and construction safety and health programs:

1) Written safety and health procedures are generally adequate, but a number of traditional safety hazards are not covered by any written programs and some written programs have deficiencies. This is evidenced by lack of written procedures for machine safeguarding, walking and working surfaces and maintenance of fixed electrical equipment. Also, while asbestos, lockout and hazardous communication programs have been established and implemented, these procedures contain deficiencies which prevent Y-12 from being in total compliance with OSHA regulations. However, inspection programs for hoists, slings and forklift trucks were found to be in good order and effectively implemented throughout Y-12.

2) Insufficient resources are available for implementation and enforcement of Y-12's safety and health programs. While line organizations are given the responsibility for policing safety and health matters, supervisors are not provided with appropriate training to effectively recognize and evaluate these hazards. Moreover, the industrial safety, industrial hygiene and fire protection engineering departments are focusing their efforts on evaluating plant-wide injury, illness and property damage trends rather than detailed assessment of individual operations. Also, a significant portion of their time is spent responding to complaints and

accident investigations, making these departments reactive rather than proactive.

3) The numbers and types of OSHA violations discovered during the course of the assessment are significant in that they point to the areas where Y-12's written safety and health programs contain deficiencies. In general, lack of formal implemented policies for, or deficiencies in, particular safety or health matters resulted in these areas being overlooked by those responsible for maintaining safety and health in the workplace.

4) Effective oversight of safety and health on construction worksites at Y-12 cannot be achieved as long as confusion exists over which of the three prime contractors is to exert overall responsibility in this area.

5) The numbers and types of construction violations discovered by the assessment team reflect the lack of safety and health oversight on construction worksites at Y-12.

2.4 Management

2.4.1 Key Findings

It is evident that a positive culture has existed in the Environmental Program area at the Y-12 Plant since 1984. This is reflected in an environmental remediation program that has been well received by the U.S. Environmental Protection Agency (EPA) and the state. However, there has only recently been a corresponding commitment in the health and safety (H&S) arena. Over the past year, this increased emphasis on H&S has been clearly communicated by Y-12's top management and reaffirmed in a number of forums.

A major weakness with the environmental, safety, and health (ES&H) program is apparent in the lack of sufficient internal management controls and systems that would ensure that management's commitments would be carried through to the line organizations. This weakness is exemplified by deficiencies in the system of ES&H procedures and in inadequate training and self-assessment programs. Although mechanisms are in place to track appraisal and audit findings, there is no mechanism in place to prioritize findings based upon risk, and the present organizational approach has not been effective in closing out these findings.

The Subteam found that Y-12 Plant management already has under way or under consideration a number of initiatives that, if fully implemented, will help to ensure adequate management control of the ES&H program. Among other things, these system improvements include the development of

- a comprehensive and controlled system of ES&H procedures,
- an internal technical evaluation program,

- a risk-based system of prioritizing H&S concerns, and
- a performance-based ES&H training program.

Since these improvements were recognized by Energy Systems as having benefit systemwide, a plan has been developed for their application at the other Martin Marietta installations.

2.5 Probable Root Causes

The reasons or probable root causes responsible for the delay in upgrading the Y-12 H&S program include the following predominant beliefs that, until recently, were held by management:

- existing programs were sufficient to protect the H&S of employees,
- changing H&S expectations were not necessary or cost effective,
- substantial compliance, but not necessarily strict compliance, to DOE H&S regulations was what was expected,
- managers and workers are insufficiently trained to recognize and prevent lapses in commonly understood safety practices,
- absence of an effective program to inspect for safety hazards that would require either timely variances or funding for abatement.

Although these probable root causes apply to H&S, they were reinforced by conditions applicable to both H&S and Environment, including the following:

- the recency of DOE's transition to emphasizing the importance of ES&H concerns,
- historically inadequate DOE oversight,
- confusion within DOE over what entity was to provide oversight,
- inadequate DOE staff resources,
- insufficient budgeted outlays, and
- an antiquated physical plant.

3 ENVIRONMENTAL ASSESSMENT

3. ENVIRONMENTAL ASSESSMENT

3.1 Purpose

This report presents the environmental assessment findings identified during the Tiger Team Compliance Assessment of the Y-12 Plant conducted from September 25 to October 20, 1989.

The purpose of the environmental assessment was to provide an independent environmental, safety, and health (ES&H) audit of DOE's Y-12 Plant. The assessment further sought to validate the Y-12 Plant's monthly reporting on their compliance status, commonly referred to as the Secretary of Energy Notice 7 (SEN.7) Report. By identifying areas of noncompliance, efforts can be initiated to implement corrective measures to remedy problems and ensure a sound environmental program. The findings also serve a greater purpose by providing site-specific input to DOE-wide ES&H concerns on compliance trends and root causes.

3.2 Scope

The Y-12 Plant environmental assessment was a comprehensive, facility-wide evaluation of all environmental media and adherence to all applicable Federal and state regulations, requirements, and best management practices. The environmental areas covered by the assessment included air, soils, surface water, hydrogeology, waste management, toxic and chemical materials, quality assurance, radiation, inactive waste sites, and the National Environmental Policy Act (NEPA). Team specialists in each of the disciplines evaluated their respective concerns facility-wide through extensive reviews of Y-12 Plant production processes, training, record keeping, and procedures.

3.3 Approach

The environmental assessment of the Y-12 Plant was conducted in three phases: pre-assessment planning, on-site audit, and report writing and verification.

The first phase, pre-assessment planning, included a pre-assessment site visit conducted by the Environmental Subteam Leader. During this visit, the Subteam Leader was able to acquaint the facility and DOE representatives with the scope of the environmental assessment. Reports and other essential documents (earlier identified in a Memorandum to Joe La Grone from William Brumley, September 12, 1989) were obtained from the Y-12 Plant for distribution to each Team specialist for a pre-assessment review. In addition, the pre-assessment meeting facilitated planning of the proposed assessment by touring the process areas and seeing what space was available for needed office quarters and logistical support.

In addition, Team members were required to (1) become familiar with the site layout, plant mission and operations, and locations of processes related to their areas of concern; (2) review pertinent site documents, environmental reports, and previous audits; and (3) become familiar with all applicable environmental statutes and standards. On the first two days at the Y-12 Plant, Oak Ridge

Operations (ORO) and Martin Marietta Energy Systems (Energy Systems) provided an orientation and briefings on facility operations and safety procedures. Also, specially arranged tours of the plant area were conducted for all Team members.

The second phase of the assessment was to conduct the on-site audit. Each Team specialist had a Y-12 Plant counterpart as an escort to assist in arrangement and visits to site operations, buildings, or locations that had activities pertaining to his/her areas of interest. Interviews were also arranged with DOE, contractor and subcontractor site personnel, and Federal and state regulatory representatives. At the end of each day at a site debriefing, the Team specialists presented to DOE and Energy Systems personnel any areas of concern or observations of on-site activities for that day.

The third phase of the audit assessment was the preparation of findings. These findings, identified in Sections 3.5.1 through 3.5.10, were based on nonconformance with applicable environmental statutes and standards. Where possible and as input to the overall Management findings, the Environmental compliance and best management practice (BMP) findings were evaluated to determine root causes for the noncompliances identified. In addition, where the Y-12 Plant demonstrated practices, activities, or programs that were so exceptional that they warranted documentation for purposes of information transfer among other DOE facilities, these were noted and identified as Noteworthy Practices.

3.4 Environmental Assessment Summary

The environmental assessment identified 60 findings. None of the problems identified were of a nature that indicated that continued operation of the facility would present an undue risk to public health or the environment. The findings do, however, identify areas of potential noncompliance with Federal and state regulations, DOE Orders, and nonattainment with acceptable BMPs. No threshold of significance was established or implied by which a finding was determined to be reportable. This assessment contains all findings identified, regardless of the potential environmental relevance.

As part of the assessment, available reports on environmental compliance generated by the Y-12 Plant, ORO, and DOE-HQ were reviewed. In particular, the Y-12 Plant's monthly reports on their compliance status and SEN.7 were closely reviewed to determine the accuracy and thoroughness of the Plant's self-evaluation and follow-up corrective actions. The Team concluded that the Y-12 Plant's SEN.7 report appropriately identified known compliance problems and has initiated corrective actions in collaboration with the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Health and Environment (TDHE). If corrective actions were not completed, the finding was considered as open and included in this assessment.

Meetings were held with both the EPA and the TDHE to identify any concerns that the regulators had with the Y-12 Plant's overall environmental program (Appendix D, Meeting Minutes). Both regulatory agencies expressed their confidence in the technical abilities of the Y-12 Plant staff and stated that environmental problems at Y-12 were being addressed in accordance with their direction. The

EPA and TDHE representatives stated that their access to the Plant and to required information has not been impeded because of the classified operations at the Y-12 Plant.

If the Y-12 Plant had developed plans to address a finding, it was noted. In addition, if the Y-12 Plant corrected a finding during the assessment and the corrective action was confirmed by the team, it was noted.

Of the 60 findings, 18 were related to possible noncompliance with Federal or state regulations and 6 were not in compliance with DOE order requirements. The remaining 36 findings were related to BMPs. Prior to the conclusion of the assessment, the Plant corrected 5 findings and initiated corrective actions on 27.

The most significant compliance findings identified during the assessment include the following:

- Not all of the discharges into the East Fork Poplar Creek are specifically listed in the existing National Pollutant Discharge Elimination System (NPDES) Permit (Section 3.5.3.2.4); and

- Indefinite storage of Land-Disposal-Restricted (LDR) wastes due to a lack of treatment alternatives (Section 3.5.3.2.4).

The Y-12 Plant identified a number of discharges in their permit application that were not specifically listed in the NPDES permit issued by the EPA. Furthermore, Y-12 Plant investigations have identified additional discharges that were not included in the permit application. The Plant had previously recognized this problem and had initiated a program to identify, eliminate, divert, or collect and treat all discharges. The 1990 NPDES Permit Application will include all remaining discharges.

The lack of treatment and disposal options for mixed wastes is an issue for most DOE facilities and, as noted in this assessment, a problem for the Y-12 Plant. Commercial waste management options for mixed wastes are not available, and DOE is presently developing in-house capabilities. For example, a Toxic Substances Control Act/Resource Conservation and Recovery Act (TSCA/RCRA) incinerator is nearing operational status at the Oak Ridge Gaseous Diffusion Plant (ORGDP). However, the current backlog of mixed wastes will take years to incinerate. This situation is further exacerbated by the LDRs, which allow the storage of LDR wastes over 1 year only for the purpose of accumulating enough wastes to facilitate treatment. DOE may be required to meet with RCRA regulators to discuss a solution for the storage of mixed wastes at the Y-12 Plant until the ORGDP incinerator is on-line.

The most notable BMP finding identified was the lack of documentation to verify compliance with air permit conditions or emissions standards (Section 3.5.1.3.1). While documentation and proof of compliance was available for major Y-12 sources of air contaminants such as the Steam Plant, it was not possible to determine readily that the conditions of some air permits for minor sources were being met. Although this demonstration of compliance is not required by the permit and has

not been requested by regulatory agencies, it is nevertheless a good practice to routinely ensure and document compliance with permit conditions.

The majority of the remaining findings reflect the absence or inadequacy of established procedures, failure to properly implement procedures that do exist, and a lack of task-specific training. Generally, these findings can be addressed through procedural modifications and increased attention to detail.

One issue, formerly acknowledged by the Y-12 Plant and a finding in this assessment (Section 3.5.5.3.5), is that DOE and the RCRA regulatory agencies must decide if the uranium-contaminated materials that are processed for uranium recovery meet the definition of a solid waste and are subject to RCRA. Currently, the uranium recovery furnace is not in operation pending a decision by the regulatory agency. If it is decided that RCRA is applicable, then the storage, processing, and resultant by-products must be controlled in a manner consistent with applicable RCRA requirements. The Y-12 Plant is exploring options such as altering waste-producing processes (i.e., solvent substitution) to avoid producing RCRA regulated substances. Discussion with the regulators has been initiated.

Another issue confronting the Y-12 Plant is the magnitude of the effort to address the environmental effects of past waste disposal actions, decontamination and decommissioning, and environmental restoration at the Y-12 Plant. These efforts are considerable in scope ($300 million through 1995); must be conducted in compliance with RCRA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Environmental Policy Act (NEPA); and must meet the approval of EPA and TDHE. Progress to date has been appropriate, but to maintain the momentum at the Y-12 Plant, major resources must be obligated and administered without compromising the effectiveness of other environmental programs.

The Team identified four practices at the Y-12 Plant that were considered exceptional and warranted documentation for the purposes of information transfer among other DOE facilities. These noteworthy practices included the following:

- Continuous water quality monitors throughout the Plant will be tied into one command center. Alarms will signify problems and dramatically increase the Plant's capability for early detection and response (Section 3.5.3.4).

- An innovative method was developed and equipment was fabricated to test radiological monitoring systems to ensure the integrity and representativeness of the system (Section 3.5.5.4).

- Results of internal RCRA audits are posted in a control room in a manner that facilitates management review and response (Section 3.5.5.4).

- A comprehensive groundwater monitoring plan was developed to address intermingling of plumes from several waste sites (Section 3.5.4.4).

3.5 Environmental Assessment Findings and Noteworthy Practices

The environmental assessment findings are reported in Sections 3.5.1 through 3.5.10. All findings are preceded by a Performance Objective, which states criteria by which the facility was evaluated and found deficient. All findings are identified under either "Compliance Findings" or "Best Management Practices." "Compliance Findings" are derived from enforceable regulations and/or DOE orders. "Best Management Practice Findings" are derived from regulatory agency guidance, draft DOE orders, accepted industry practices, and professional judgment. Findings of exceptional practices, activities, or programs are recognized under "Noteworthy Practices."

3.5.1 Air

3.5.1.1 Overview

The assessment of the air discipline at the Y-12 Plant included the following activities: (1) a physical examination of major facilities and major sources, including emission control systems; (2) interviews with Health, Safety, Environment, and Accountability (HSEA) Division staff and other personnel from Energy Systems operating divisions; (3) a review of Tennessee Department of Health and Environment (TDHE) air permits and National Emission Standards for Hazardous Air Pollutants (NESHAP) permits; (4) an examination of ambient air quality monitoring and nonradiological stack monitoring; and (5) a review of site documents and files. Table 3.1 lists applicable regulations and DOE orders used to evaluate the air discipline.

Plant fabrication operations comprise the majority of air pollution sources at the Y-12 Plant. The facility has over 700 TDHE-permitted air pollution sources. Of the exhausts serving areas where depleted or enriched uranium is processed, 85 are sampled continuously for radioactive emissions.

The major air-quality issue affecting the Y-12 Plant involves air permitting to meet TDHE requirements. The large number of sources requiring air permits and the difficulty in interpreting the TDHE air permitting regulations have led to a considerable paperwork burden on involved Energy Systems staff. Staff involved in permitting, especially HSEA Division personnel, have made conscientious efforts to meet requirements and to identify and correct administrative problems. However, there has not been sufficient focus on ensuring that Y-12 sources are in compliance with TDHE permit conditions. Except for the steam plant, verifying documentation is generally not available to demonstrate that sources are meeting permit conditions. The Tennessee Division of Air Pollution Control does not require a demonstration of compliance with permit conditions at this time. Nevertheless, the Audit Team believes that this is an important issue and is concerned over the absence of documentation that shows that Y-12 sources are in compliance with their permits.

Table 3.1

Applicable Air Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
Tennessee Air Pollution Control Regulations	Chapter 1200-3-1, General Provisions	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-2, Definitions	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-3, Ambient Air Quality Standards	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-4, Open Burning	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-5, Visible Emissions	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-6, Nonprocess Emission Standards	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-7, Process Emission Standards	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-8, Fugitive Dust	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-9, Construction and Operating Permits	Tennessee

Table 3.1 (continued)

Applicable Air Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
Tennessee Air Pollution Control Regulations	Chapter 1200-3-10, Required Sampling Recording and Reporting	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-11, Hazardous Air Contaminants	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-12, Methods of Sampling and Analysis	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-13, Violations	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-14, Control of SO_2 Emissions	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-15, Emergency Episode Requirements	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-16, New Source Performance Standards	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-17, Administrative Procedures	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-18, Volatile Organic Compounds	Tennessee

Table 3.1 (continued)

Applicable Air Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
Tennessee Air Pollution Control Regulations	Chapter 1200-3-19, Emission Standards and Monitoring Requirements for Particulate and Sulfur Dioxide Noncontainment Areas	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-20, Limits on Emissions Due to Malfunctions, Start-Ups, and Shutdowns	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-21, General Alternate Emission Standards	Tennessee
Tennessee Air Pollution Control Regulations	Chapter 1200-3-22, Lead Emission Standards	Tennessee
Clean Air Act	40 CFR Part 61, Subpart H, NESHAPS for Radionuclide Emissions from DOE Facilities	EPA
DOE Order 5400.1	General Environmental Protection Program	DOE
DOE Order 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE Order 5500.3	Reactor and Nonreactor Nuclear Facility Emergency Planning, Preparedness and Response Program for Department of Energy Operations	DOE
DOE Order 5400.xx (Draft)	Radiation Protection of the Public and the Environment	DOE
DOE Order 5400.xy (Draft)	Radiological Effluent Monitoring and Environmental Surveillance	DOE

The Y-12 coal- and gas-fired steam plant, previously out of compliance with TDHE opacity regulations and a major source of complaints from local residents, is currently meeting state air regulations as a result of an effective air pollution control program. A dispersion modeling study is needed, however, to evaluate whether the steam plant threatens sulfur dioxide ambient air quality standards on off-site elevated terrain.

There are several other issues of concern. The absence of objective, written criteria for the selection of high efficiency particulate air (HEPA) filters and other filters may have led to the installation of some inappropriate filtration systems. A review of the Y-12 ambient air monitoring program indicated that the program needs to be upgraded. Also, there continue to be a number of open findings from the 1986 Environmental Survey.

Another major issue related to future air compliance concerns is the potential for mercury emissions from the decontamination and decommissioning (D&D) of Building 9201-4. This facility contains large quantities of mercury in the process equipment, piping, and structure. The lack of a technically feasible and environmentally acceptable alternative to accomplish the D&D resulted in a decision to place the facility in controlled standby in 1986. Controlled standby reduces the present potential for release of mercury to the environment. However, any future project plans will have the potential to exceed the mercury Prevention of Significant Deterioration (PSD) de minimis emission value of 200 lb per year. Prior to the initiation of the D&D efforts, an environmental assessment and a PSD analysis will be performed to evaluate and minimize the associated mercury emissions.

The air discipline findings included both regulatory and DOE order requirements and BMP-type findings. Most of the findings were administrative in nature.

3.5.1.2 Compliance Findings

3.5.1.2.1 Vehicular Fuel Dispensing Requirements

Performance Objective: 40 CFR Part 80.22 requires gasoline stations to have appropriate signs concerning unleaded and leaded gasoline usage posted.

Finding: The temporary gasoline pump at the gasoline filling station does not have an "Unleaded Gasoline" label posted on the pump. Also, there is no sign in the vicinity of the gasoline pumps stating the Federal law prohibiting the introduction of leaded gas into vehicles requiring unleaded fuel.

An audit team member verified that these signs were posted after the finding had been made.

3.5.1.3 Best Management Practice Findings

3.5.1.3.1 Lack of Verifying Documentation to Demonstrate Compliance with Air Permit Conditions/Emission Standards

Performance Objective: Air pollution sources must be operated in accordance with the conditions of their operating permits or in accordance with their emission standards.

Finding: It cannot be shown that some Y-12 sources are operated in accordance with their air operating permits or TDHE emission standards because supporting documentation to demonstrate compliance is not available.

Many of the approximately 700 air emission sources at the Y-12 Plant have conditions in their air permits that serve to limit their air pollutant emissions. These conditions typically entail emission rate limitations, opacity limitations, restrictions on throughput, or some combination of these. Operating managers who are responsible for meeting these permit conditions are generally not cognizant of the permit conditions. In fact, some believed that HSEA had overall responsibilities for the permits and permit conditions.

It is likely that, for many of these sources, emissions and throughput are small enough that the sources are well within compliance. However, materials balance documentation and calculations to support this are not on file. For some sources, compliance cannot be convincingly demonstrated from engineering considerations. For these sources, a source emissions test is needed to show that the permit emission limitation is being met. However, source emission tests have not been carried out. It should be noted that there is no information available that indicates that any Y-12 source is in violation of its permit conditions.

Also, HSEA does not perform audits on operating organizations to ensure that permit conditions are being complied with. However, HSEA does inspect facilities to try to verify that permit information is accurate, when renewal applications are pending (at 2- to 5-year intervals), or when processes are scheduled for modifications.

In addition, no data are available to demonstrate that the paper scrap incinerator at Building 9811 is in compliance with the Tennessee emission standard for incinerators. Based on information provided in the operating permit, the paper scrap incinerator must meet a particulate emission limitation of 0.87 lb/h. The permit states that the estimated maximum particulate emission rate for this source is 0.4 lb/h, based on an engineering estimate. However, there are no calculations or data available to support this figure. Furthermore, source emission tests have not been carried out to demonstrate that the source is in compliance with the particulate emission limitation. Also, a visible plume that may not be in compliance with the State opacity regulation was observed from the incinerator during the environmental audit. The presence of a visible plume from the incinerator was also identified as a problem during the 1986 environmental survey.

Energy Systems staff have indicated that replacement facilities for the incinerator should be operational in 1990; construction has not yet started.

3.5.1.3.2 Fugitive Emissions from Paper Shredder

Performance Objective: Reasonable precautions should be taken to prevent particulate matter from fugitive dust sources from becoming airborne.

Finding: Fugitive particulate emissions from the paper shredder at Building 9811 were observed during the environmental assessment.

At the paper shredder, a large pile of paper (approximately 3 x 2 x 2 ft) was observed on the ground during the environmental assessment because the dumpster that receives the shredded paper was not properly positioned with the stationary packer. The pile was wetted down as a result of heavy rainfall; however, some airborne particulate releases were observed. Energy Systems staff have indicated that fugitive releases emitted from gaps in the dumpster box have been a recurring problem. This source was also observed to release fugitive particulate matter during the 1986 Environmental Survey.

Energy Systems staff here indicated that replacement facilities for the shredder should be operational in 1990; construction has not yet started.

3.5.1.3.3 Air Monitoring Program

Performance Objective: DOE Order 5400.1, Chapter IV, 4 (to be implemented by 11/9/91), specifies that an overall environmental monitoring plan be prepared for each site that uses, generates, releases, or manages significant pollutants or hazardous materials. DOE Order 5400.1, Chapter IV, 5.b, requires ambient air monitoring to be conducted on-site and off-site to monitor for the effects of DOE operations. Draft DOE Order 5400.xy, Chapter V, 4.a, specifies that the environmental monitoring program comply with the objectives of the order. Draft DOE Order 5400.xy, Chapter V, 8, specifies that air samples should be collected at approximately 1.5 m.

Finding: A number of deficiencies have been noted in connection with the ambient monitoring program. The noted deficiencies below relate to the absence of an overall air monitoring program plan, the siting of a number of samplers, the vertical probe height for the uranium samplers, operations that deviated from written procedures, and the use of a sampling methodology for fluoride that is not a standard or approved method.

- No overall air monitoring program plan is available that provides an overview of the program and meets the Performance Objective. (This plan is required by November 9, 1991.) Such a plan is a core document from which other elements of the program should be derived. Information on many elements of the air monitoring program (e.g., calibration procedures and quality assurance requirements) is found in a number of environmental monitoring procedures and standard operating procedures. However, the following elements do not appear to be addressed in current documentation: (1) objectives of the

ambient air monitoring and effluent monitoring program; (2) criteria for siting the ambient air monitoring network; and (3) specification of equipment or equipment upgrades.

- Three ambient air samplers (numbers 3, 4, and 8) are sited in the vicinity of buildings or vegetation, which could affect the validity of the data collected.

- None of the uranium air samples are collected at the recommended breathing zone height of 1.5 meters (m).

- Ambient air sampler flow rates for most of the fluoride and uranium monitors were not at the sample flow specified in the written procedures. Energy Systems field staff attempted to adjust the flow rate by turning the flow control valve; this did not affect the flow rate.

- The sampling methodology for fluoride is not a standard or approved method, and the data would not be comparable to results from U.S. Environmental Protection Agency (EPA)- or American Society for Testing and Materials (ASTM)-approved methods or other DOE facilities.

Parts of this finding have been identified by Y-12 and Energy Systems Central Staff. It is currently being addressed by the Five Plants Committee for implementation of DOE Orders 5400.1, 5400.xx, and 5400.xy. The ambient system will be upgraded as part of this effort.

3.5.1.3.4 High Efficiency Particulate Air Filters

Performance Objective: Suitable HEPA design criteria, including the installation of pressure differential monitors across final downstream HEPA filters and routine operational testing of all HEPA filters, need to be established.

Finding: No written criteria are available for the selection of HEPA and other filters, which could lead to the installation of inadequate filtration systems. A number of final downstream HEPA filters without pressure differential monitors were identified at the Y-12 Plant. Annual testing of approximately 10% of the HEPA filters at the Y-12 Plant is not being carried out because the ductwork configuration serving some of the filters does not allow representative tests to be conducted or because of dioctylphthalate contamination concerns at Lithium Production. Procedure 50-39-UD-042, HEPA Filter Replacement and DOP Test, was not followed during the performance of a HEPA filter system test and filter changeout.

Up to now, decisions concerning filtration have been made on the basis of past experience and on the basis of evaluating the safety assessment of the project. In some cases, less-than-adequate filtration systems have been installed on some uranium process exhausts. These situations were readily identified because high emission rates were measured by continuous monitors, and HEPA filters were retrofitted. However, a similar safeguard does not exist for nonuranium stacks.

It may be warranted to re-examine past filtration decisions for these stacks. Also, there should be criteria available that would allow filtration efficiency to be downgraded to a lower level to reflect a process change, lowered emissions, etc.

If the pressure differential across a HEPA filter becomes too high, the filter could become overloaded and fail without the operator being aware of the failure. If the pressure differential falls too low, a rupture in the filter could have occurred. The following last line of defense HEPA filters do not have pressure differential monitors:

- a number of HEPAs in Building 9212, A-Wing Machine Shop,
- Building 9998, cleaning hood for uranium oxide rod cleaning,
- Building 9206, a classified process, and
- Building 9204-2, some lithium operations.

It is likely that other such HEPA filter systems at the Y-12 Plant do not have pressure differential monitors.

Energy Systems has been addressing the absence of annual testing of some of the Y-12 HEPA filters by making some changes to the ductwork to allow tests to be made and by revising Y-12 Plant Procedure 70-910, High Efficiency Particulate Air Filter Testing, where appropriate. This portion of the finding has been identified and reported by Energy Systems.

The following were noted during the performance of a HEPA filter system test and filter changeout:

- During Stack No. 100 filter changeout on the roof of 9204-2E, the filter frames and fan compartments were not vacuumed to ensure air-tight seal of new filters as required by Appendix A, page 7, step 5 of Procedure 50-39-UD-042.
- The DOP test of AJ-3372 HEPA filter system was not performed in accordance with Appendix B, page 10, step 6. The procedure states that if the downstream side of the HEPA filters (i.e., the clean side of the filter after contaminated air has passed through the filter) is accessible, then HEPA filters should be individually tested by scanning the filters for leaks. It was observed that the downstream filters on the AJ-3372 filter system were accessible but were not tested as required by procedure.

The apparent cause of this finding is that procedures were out of date, and that the procedures are not required to be at the location and in the hands of responsible personnel during performance.

3.5.1.3.5 Steam Plant Sulfur Dioxide Impact on Elevated Terrain

Performance Objective: The steam plant must not cause or contribute to ambient concentrations of sulfur dioxide that would exceed ambient air quality standards.

Finding: A dispersion modeling study using up-to-date complex terrain dispersion models has not been carried out to assess the sulfur dioxide ambient impact of the Y-12 Steam Plant on offsite elevated terrain.

Dispersion modeling is the principal means for demonstrating attainment of ambient air quality standards because ambient air monitoring data are usually collected at too few sites to demonstrate that the entire surrounding area is meeting standards. In terrain configurations where the nearby ridgeline is above the height of the stacks, as at the Y-12 Plant, high pollutant concentrations can occur on the nearby ridgeline and hilltops. A definitive study has not been carried out to demonstrate that the steam plant will not exceed sulfur dioxide standards at offsite elevated receptors when burning coal at the allowable sulfur dioxide emission rate.

3.5.1.3.6 Smoke from Open Burning

Performance Objective: The open burning of wood waste is allowed by the State Open Burning Regulation if air quality standards are not threatened and no public nuisance is created.

Finding: Excessive smoke, which prompted worker complaints, was generated by the clearing of brush and trees south of the Y-12 Plant on October 5. This burn may not have conformed with the open burning plan submitted to the TDHE.

An audit team member counted at least ten large fires burning on October 5. The quantity of smoke generated could have caused potential excesses of the particulate ambient standard, particularly since the fires smoldered during nighttime hours during the week when dispersion conditions are usually poor.

Although a permit is not required for this burn, it is the policy of Energy Systems to provide notification to TDHE of the burn by submitting an open burning plan. One of the provisions of the burn plan was that fueling and ignition be performed between 9:00 a.m. and 3:30 p.m. An audit team member observed a bulldozer adding logs to one of the fires at 4:25 p.m. on October 5.

Because of worker complaints and the quantity of smoke generated, the HSEA Division asked the responsible organization to put out the fires on October 5. The fires were not burning nor were the wood piles smoldering on the morning of October 6.

3.5.1.3.7 Beryllium Stack Monitoring

Performance Objective: A reliable beryllium stack monitoring system that provides measurements of daily beryllium emission rates needs to be operational.

Finding: Continuous beryllium stack monitoring on several Y-12 stacks used is outdated and needs upgrading.

Beryllium stack emissions have been continually monitored for several years at the Y-12 Plant. Although the equipment is outdated, the data indicate that beryllium emission levels over the last few years have been well below the Tennessee emission standard. Energy Systems has planned a Beryllium Stack Monitoring Upgrades Project to improve the monitoring system. This project is scheduled to be completed in September 1992.

This finding has been identified and reported by Energy Systems.

3.5.1.3.8 Absence of Control Equipment Maintenance Documentation and Logs

Performance Objective: As part of a sound air management program to ensure that air pollution control equipment is operating effectively, written documentation on maintaining the equipment, including maintenance logs, should be available.

Finding: There is no written documentation or criteria used to trigger HEPA filter replacement for a number of facilities. Also, records of maintenance for a number of air pollution control systems are not available. In addition, at the steam plant, no standard operating procedures are available that specify maintenance activities for the opacity monitor and operator procedures in case of high opacity readings.

The Filter Service Group in Utilities Maintenance is responsible for all filter changeouts at Y-12 exhaust vents except those in Buildings 9206 and 9212. This group has written maintenance procedures for HEPA filter changeout, but the criteria used to trigger changeout are not documented. Also, written HEPA filter changeout criteria were lacking at the following facilities:

- Building 9212, E-Wing Casting,
- Building 9998, Metal Preparation,
- Building 9201-5, East Shop,
- Building 9204-2E, Assembly Area, and
- Building 9204-2, Lithium Operations.

In addition, maintenance logs were not available to indicate when the baghouse at the Building 9998 Foundry was serviced. Also, a maintenance operation procedure that specifies the maintenance frequency for the scrubber servicing the paint spray booth in Building 9204-2E was not available. It is likely that other sources at the Y-12 Plant are lacking this documentation.

3.5.1.3.9 Perchloroethylene Degreasers

Performance Objective: Less toxic solvents than perchloroethylene that do not contribute to the formation of ozone should be used for degreasing.

Finding: Perchloroethylene, which contributes to the formation of ozone, continues to be used in several degreasers at the Y-12 Plant, notably the two large degreasers in Building 9204-2E.

Perchloroethylene has been listed as a potential air pollutant under the NESHAP Program because it has direct health-related effects and is a potential contributor to ozone formation. This is an open item from the 1986 DOE Environmental Survey.

The Y-12 Plant has made substantial progress in reducing emissions of perchloroethylene and other chlorinated solvents. From 1985 to 1988, total plant emissions of perchloroethylene and other chlorinated solvents have been reduced from 89,000 gallons to 46,000 gallons per year. This reduction is due in part to the substitution of aqueous-based detergent cleaners for chlorinated solvents used in vapor degreasers, solvent cleaning operations, and machining coolants. Substitution of solvents used in cleaning critical components must be extensively proof-tested, qualified, and approved by weapons design agencies before being accomplished. While this requirement makes substitutions difficult to achieve, further reductions are being pursued as part of a Y-12 Waste Minimization Program and a DOE-wide effort to reduce the use of chlorinated solvents.

3.5.1.3.10 Scrubbers to Reduce Hydrogen Fluoride Emissions Are Not Operational

Performance Objective: Scrubbers to reduce hydrogen fluoride releases should be made operational to prevent health and environmental impacts.

Finding: There have been delays in getting two scrubbers in Buildings 9206 and 9212 operational.

Emissions of hydrogen fluoride have potential to cause increased health and environmental impacts through respiratory tract irritation, vegetation damage, and subsequent food pathway accumulation. Presently, the process which emits hydrogen fluoride in Building 9206 is not operating because a permit condition will not allow operations without the scrubber functioning. The scrubber in Building 9212 was scheduled to begin operation in September 1989, with stack tests being carried out in November 1989. The scrubber is scheduled to be fully operational by January 1990. This is an open item from the 1986 DOE Environmental Survey.

3.5.1.3.11 Air Permitting Procedures

Performance Objective: Procedures need to be in place to ensure that organizational responsibilities for the permitting of air sources are delineated and to ensure that permit applications are submitted on schedule.

Finding: Some air permits have recently been submitted late to the State, and some minor sources requiring permits have been overlooked. Procedures to designate organizational responsibilities and to describe the recommended approach to permit new or modified sources have not been finalized.

Energy Systems has developed a draft air permitting procedure that is currently undergoing Y-12 Plant review. Also, Energy Systems has revamped a computer data base so that expiration dates will not be missed in the future.

This finding has been identified and reported by Energy Systems.

3.5.1.3.12 Industrial Hygiene Asbestos Audit Responsibilities

Performance Objective: Interim Health and Safety Procedure: 70 Series (April 1989) states that Industrial Hygiene will carry out audits of operating organizations and contractors involved in asbestos removal activities to ensure that these activities are carried out in conformance with regulations.

Finding: Although the Industrial Hygiene staff does audit operating organizations and contractors involved in asbestos removal to ensure that regulatory agency notification requirements are being met, it does not carry out field audits to ensure that established asbestos removal procedures are being followed.

Industrial Hygiene staff have indicated that field audits are not carried out because of a shortage of personnel.

3.5.1.3.13 Cold Cleaning Facilities and Degreasers

Performance Objective: Cold cleaners and vapor degreasers should be covered and should have the operating procedures specified in Tennessee Air Pollution Control Regulation Chapter 1200-3-18-.18 (Solvent Metal Cleaning) posted.

Finding: A number of cold cleaning facilities and vapor degreasers did not have covers and did not have the appropriate operating procedures posted:

- Methyl chloroform wash tank in Building Y-9201-5-G (Arc Melt) - no procedures posted.
- Degreaser in Building Y-9201-5-G (number Y 238110) - no cover or procedures posted.
- Two cold cleaning facilities in Building 9204-2 - no cover or procedures posted.

These cold cleaners and vapor degreasers use methyl chloroform, which, although it is a volatile organic compound, is exempted from the provisions of Regulation 1200-3-18-.18. The objective of this regulation is to reduce the release of volatile organic compounds, which contribute to ozone formation. There may be other vapor degreasers and cold cleaners at the Y-12 Plant that do not meet the performance objective.

3.5.1.3.14 Siting of Meteorological Towers

Performance Objective: DOE Order 5400.xy (Draft), Chapter IV, 6, states that a meteorological tower should be sited away from obstructions that may affect the wind flow measurements.

Finding: Both the East and West Meteorological Towers are within the area of potential aerodynamic influence of nearby trees and buildings. This could affect the validity of some of the monitored wind data.

Current EPA and Nuclear Regulatory Commission technical guidance indicates that a meteorological tower should not be located closer than 10 times the height of nearby trees and buildings. At the East Meteorological Tower, a grove of trees to the northwest of the tower has trees that are about 25 to 35 ft high; these trees are about 200 ft from the tower. At the West Tower, a small building about 15 ft high is within 50 ft of the tower. These obstructions could affect the 10-m wind data collected when the meteorological tower is downwind of the obstructions.

3.5.1.3.15 Coal Dust Emissions

Performance Objective: Reasonable precautions should be taken to prevent particulate matter from fugitive dust sources from becoming airborne.

Finding: Uncontrolled, unquantified emissions of coal dust to the atmosphere occur at the steam plant when crushed coal is dropped from the conveyor into open-top hoppers. The ventilating fan in the surrounding structure moves air containing suspended particles to the outside, causing a fugitive dust release.

Because the conveyor was not in operation during the audit (the steam plant has been burning natural gas as its primary fuel since November 1988), fugitive dust releases were not observed. Energy Systems plans to sample the ventilating fan exhaust this winter to quantify emissions. However, this is an open item from the 1986 DOE Environmental Survey. Energy Systems also plans to cover the hoppers to eliminate the emission of dust; this has been identified as a 1995 upgrade activity.

3.5.1.4 Noteworthy Practices

None.

3.5.2 Soils/Sediments/Biota

3.5.2.1 Overview

This assessment involved a review of the results of previous investigations and studies, current monitoring programs, soil sampling procedures, and planned investigations.

A list of applicable regulations, requirements, and guidelines used to evaluate Y-12 Plant activities related to these areas is summarized in Table 3.2.

Primary contaminants of concern in the soils at the facility are mercury and, to a lesser extent, uranium. Isolated areas of soil contamination have been remediated. Typically, such activities have taken place in concert with new construction or upgrading of plant facilities.

Currently, no routine compliance monitoring of soil contamination is performed at the Y-12 Plant. Instead, soil sampling and analysis are conducted in support of construction and waste disposal activities. The objectives of these programs are to protect worker health, monitor for impacts of previous spills and waste disposal activities, and ensure the proper use and disposal of construction spoils.

Future investigations and remedial activities of contaminated soils at the plant will be conducted under the auspices of the Hazardous and Solid Waste Amendments. To date, the Y-12 Plant has identified 187 Solid Waste Management Units (SWMUs). Each unit has been inspected for evidence of past spills. Y-12 personnel have also reviewed plant records to determine whether hazardous chemicals were used or stored at these units. In some cases where no evidence of spills was present but the potential for soil contamination could not be ruled out, a preliminary assessment involving the collection of a small number of soil samples was conducted. The purpose of these activities was to ascertain whether a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) of the unit was needed. Based on the findings to date, 21 RFIs are planned. Work plans have been submitted for most of these. The rest will be submitted in CY 1989. Any additional RFI plans that are identified by the assessments being completed will be submitted in CY 1990.

Extensive sediment sampling has been conducted in both Bear Creek and East Fork Poplar Creek (EFPC). Elevated levels of polychlorinated biphenyls (PCBs) and uranium are present in the sediments and floodplain of Bear Creek, whereas the primary contaminant in the EFPC sediments and floodplain is mercury. RFI plans have been drafted to further study the nature and extent of sediment contamination in these areas. Furthermore, Environmental Impact Statements (EISs) will also be required for each area.

Aside from efforts to assess and remediate contaminated soils, the Y-12 Plant has implemented erosion and/or sediment control measures at borrow sites, wash disposal units, and areas being capped. These measures involve the installation of silt fences, placement of hay bales, revegetation of bare areas, and the construction of detention basins to reduce peak flows in ditches.

Table 3.2

Applicable Soil Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
DOE Order 5400.xy (Draft)	Radiological Effluent Monitoring and Environmental Surveillance	DOE
DOE Guidelines	Residual Radioactivity Guidelines	DOE

A biological monitoring program has been conducted by Oak Ridge National Laboratory (ORNL) for the Y-12 Plant since 1984. The elements of this program include the following:

- In Bear Creek, the population structure of the benthic invertebrate community is assessed quarterly, whereas fish are sampled semiannually. Bioassays, which were conducted during the first few years of the monitoring program, are no longer performed on a routine basis.

- As stipulated in the National Pollution Discharge Elimination System (NPDES) permit for the Y-12 Plant (issued on May 24, 1985), a biological monitoring and abatement program was developed for EFPC. Its objectives are to (1) demonstrate that the current effluent limitations protect the classified uses of the creek, as designated by the TDHE; and (2) document the ecological effects resulting from implementation of a water pollution control program that includes the construction of several large wastewater treatment facilities. The program includes four components: ambient toxicity testing, bioaccumulation studies, biological indicator studies, and ecological surveys of stream communities, including periphyton (attached algae), benthic macroinvertebrates, and fish.

- Radiological monitoring of deer killed by hunters within the boundaries of the Oak Ridge Reservation.

The studies conducted by the Y-12 Plant have been particularly useful in several respects. They have shown that the primary impact on Bear Creek is due to releases from the S-3 ponds. In contrast, the burial grounds have had only a minor impact on the creek. Population studies conducted in EFPC have enabled the site to ascertain the impact of some recent fish kills (none directly attributable to plant activities) on the resident fish population. Because the plant began collecting data before required to do so by their NPDES permit, a sufficient data base was in place at the time of the first fish kill. These data allowed the Y-12 Plant to predict that recovery of the depleted population would be rapid and no long-term impacts would be observed.

The long-term focus of the biological monitoring program in EFPC is to identify the factors associated with plant activities that are impacting aquatic life in this waterway. Identification of such factors is a necessary precursor to designing appropriate measures to reduce the toxicity of the water above New Hope Pond (NHP), reduce contaminant residues in fish below NHP, and accelerate the recovery of stream communities.

3.5.2.2 Compliance Findings

None.

3.5.2.3 Best Management Practice Findings

None.

3.5.2.4 Noteworthy Practices

None.

3.5.3 Surface Water

3.5.3.1 Overview

The issues reviewed relate to compliance with regulations promulgated in response to the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA). This includes a review of the adequacy of the water treatment plant and the various effluent treatment facilities to perform their intended functions. There was also a review of the Spill Prevention Control and Countermeasures Plan for protection of surface waters from contamination due to unplanned releases. Table 3.3 lists applicable regulations and/or requirements used to evaluate the surface water discipline. The water treatment plant at the Y-12 Plant clarifies and filters surface water for use at the Y-12 Plant, ORNL, and the City of Oak Ridge. The treatment plant is operated by Rust Engineering Company for DOE. The effluent treatment facilities at the Y-12 Plant are operated by Energy Systems as part of their overall responsibility for operation at the site.

Effluents from the Y-12 Plant are the result of surface-water runoff, cooling-water discharge, treatment of water streams from the various manufacturing operations, and sanitary wastes. The sanitary wastes are discharged to the City of Oak Ridge sanitary sewer system for treatment.

All effluents from treatment facilities and most other discharges have discharge limits set by the NPDES permit and are monitored as required. The discharges to the City of Oak Ridge sewer system are limited by a permit issued by the City. During the 13-month period from June 1988 through June 1989, 336 noncompliances were reported on the NPDES Discharge Monitoring Reports (DMRs). Approximately 127 of these 336 noncompliances were due to closure activities associated with NHP and the Oil Retention Ponds, and another 89 were due to pH and free available-chlorine discharges from cooling towers. Oil Retention Pond No. 2 and NHP have been taken out of service and are undergoing closure. Oil Retention Pond No. 1 has been taken out of service and will undergo closure activities as soon as weather conditions allow dewatering to be completed. Reformulation of the cooling-tower corrosion inhibitor has recently brought the pH from the cooling towers under control.

The Y-12 Plant generally has a good program to comply with the intent of the SDWA and the CWA. The trend at the site is toward better control of those parameters, which have an effect on the surface water. Even though certification of industrial wastewater treatment plant and wastewater collection system operators is not required by the State of Tennessee, several individuals at the Y-12 Plant are in the process of obtaining voluntary certification. Several individuals hold the required certification for public water distribution system operators. Continuous, unattended monitoring stations are being installed to help protect against unauthorized releases. An ongoing program is in place to identify and correct discharges that may affect the environment.

Table 3.3

Applicable Surface Water Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Titles	Authority
Clean Water Act	40 CFR 112, Oil Pollution Prevention	EPA
Clean Water Act	40 CFR 122/123, The National Pollutant Discharge Elimination System	EPA
Clean Water Act	NPDES Permit TN0002968	TDHE
Clean Water Act	EPA Form 3320-1, Discharge Monitoring Report	EPA/TDHE
Clean Water Act	Tennessee Water Quality Act of 1977	TDHE
Safe Drinking Water Act	40 CFR 141/142, National Primary Drinking Water Regulations	EPA
Safe Drinking Water Act	40 CFR 143, National Secondary Drinking Water Regulations	EPA
Safe Drinking Water Act	Chapter 1200-5-1 of Rules of the Tennessee Department of Health and Environment, Public Water System	TDHE

The majority of the surface water findings represent noncompliance with administrative regulatory requirements. The most serious of the findings includes discharges that are not specified in the NPDES permit and excursions outside the limits set in the permit. The Y-12 Plant was aware of both these situations and is in the process of addressing them.

3.5.3.2 Compliance Findings

3.5.3.2.1 Retention of Analytical Results

Performance Objective: TDHE Rule 1200-5-1-.20 requires owners or operators of public water systems to retain records of chemical analyses for 10 years.

Finding: Records maintenance by the Industrial Hygiene Department for the analysis of total residual chlorine in the distribution system is only available back to July 1985. Records for tests prior to that date could not be located.

3.5.3.2.2 Discharge Monitoring Report Preparation

Performance Objective: Instructions for filling out the DMR require that entries be made identifying the type of sample required and the type of sample collected. Additionally, the instructions direct the user to enter "No Discharge" across the form in place of data entry when no discharge occurs.

Finding: The DMRs submitted by the Y-12 Plant have not had an entry in the Sample Measurement blank on the form and only have the "No Discharge" entry on the line for flow measurement.

The "Sample Measurement" entry identifies the actual sample type used during the monitoring period. The "Permit Requirement" entry identifies the type required by the permit. Both entries must be made to attest to the fact that the sample was taken according to permit requirements.

Many of the outfalls at the Y-12 Plant require more than one page in the DMR because of the number of parameters for which monitoring is required. The forms supplied by the TDHE often do not have the flow parameter on the first page. Although the instructions are unclear as to whether the "No Discharge" entry should be made for each parameter (neither the EPA nor TDHE has commented on this aspect of the reports), the "No Discharge" entry should be made at least once on each page in order to avoid confusion as to why there is no data entered for the parameter on that page of the DMR.

The DMRs being prepared for submission later in October were observed to have these entries included.

3.5.3.2.3 NPDES Excursions

Performance Objective: NPDES Permit TN0002968 issued to the Y-12 Plant sets limits on the discharges of various parameters from the site.

Finding: The Y-12 Plant experienced a dramatic increase in the number of permit limit excursions.

Excursions outside of the discharge limits at the Y-12 Plant averaged approximately ten per month during 1987 through May 1988. In the 13 months from June 1988 through June 1989, only 4 months had less than 20 excursions.

Excursions by calendar quarter were as follows:

	1988	1989
1st Quarter	29	136
2nd Quarter	44	62
3rd Quarter	43	17* (2 months' data)
4th Quarter	71	---

*Results for September 1989 are not yet available.

This increase in the number of excursions is attributable in part to remediation efforts at NHP and Oil Retention Ponds 1 and 2. For example, of the 58 excursions in January 1989, 26 were attributable to NHP and 23 to the oil ponds. Likewise, 21 of the 48 excursions in February were due to NHP and 7 to the oil ponds. These excurisons were the result of dewatering and earth-moving activities associated with the pond closures and security upgrades.

The pH and Free Available Chlorine (FAC) from cooling tower discharges account for 15 excursions in February 1989, 26 of the 32 excursions in June 1989, 19 of the 25 excursions in August 1988, and 13 of 23 excursions in October 1988. A recent change in composition of the cooling tower water-treatment chemical appears to have made substantial progress to remedy the pH problem. There were no pH or FAC excursions in the latest sampling round. Solutions to the FAC problem are being investigated.

These FAC discharges and the FAC in the once-through cooling water are resulting in concentrations of total residual chlorine (TRC) in EFPC above the ambient water quality criteria of 0.011 mg/L. To ensure a chlorine residual in all parts of the distribution system that meets the requirements for a public water system, an average chlorine residual of 1.4 mg/L was maintained in the finished water at the water treatment plant during FY 1988. The site is investigating the use of alternative disinfection practices for the cooling towers and means to treat once-through cooling waters to reduce the TRC in EFPC.

Part III.C.4.a of the NPDES permit prohibits the discharge of any PCBs to EFPC, Bear Creek, or the Clinch River. The Water Management Plan (WMP) for the Oil Retention Ponds Closure sets a limit of <0.001 mg/L for discharges of PCBs during draining of the ponds for closure. The laboratory's detection limit is 0.0005 mg/L; therefore, discharges that meet the WMP limit can still be excursions to the basic NPDES limit of no discharge of PCBs. They are not included on the regular DMR form for the oil retention ponds, and excursions above the permit limits are not included in the summary of noncompliances included as enclosure 2 of the monthly DMR submittal because they are not part of the NPDES monitoring

parameters for this outfall. However, results of all PCB and volatile organic analyses are included in the attachments to the DMR submitted to TDHE as required by the WMP.

3.5.3.2.4 Some Discharges into EFPC Not Specifically Listed on the NPDES Permit

Performance Objective: Section 69-3-108 of the Tennessee Water Quality Control Act of 1977 requires any person who discharges wastes into State waters to have a permit for those discharges.

Finding: Not all of the discharges into EFPC are identified in the existing NPDES Permit.

A number of discharges that were included in the permit application were not included in the NPDES permit issued by the TDHE. Furthermore, field investigations by the operating contractor and others has led to the identification of additional discharges that were not specifically itemized in the permit application. A program for the identification, elimination, diversion, or collection and treatment of such discharges is in place. It is expected that all discharges to EFPC will be identified in the permit renewal application submitted in November 1989.

3.5.3.3 Best Management Practice Findings

3.5.3.3.1 Potential for Accidental Discharges to East Fork Poplar Creek and/or the Publicly Owned Treatment Works

Performance Objective: Administrative and/or other controls to prevent accidental discharge to surface waters should be utilized.

Finding: Discharges of oil and other substances from uncontrolled sources are occurring.

- On January 19, 1989, Y-12 Environmental Management personnel detected the presence of xylene in the Y-12 Plant sanitary sewer discharge, which emptied into the City of Oak Ridge sanitary sewer system. Chemical analyses and flow calculations determined that approximately 1 gal of xylene had been discharged. The source of the xylene was not identified.

- On August 29, 1989, oil containing PCBs was released to EFPC. The oil had accumulated in a floor drainage trench in Building 9202 and was washed into storm sewers leading to EFPC. Floor drains in this building have subsequently been plugged or diked to prevent a similar occurrence.

- Procedures for the precious metal recovery operation in Building 9201-5N do not have posted instructions concerning the types of liquid material that may be discharged into sink drains. Operators

are given only verbal instructions not to pour acids or other hazardous materials into sink drains.

- Spills or leaks around the undiked lithium chloride recirculation systems in Building 9204-2E are being absorbed by oil-dry, which is spread around the base of the tanks. Stains on the floor indicate that past leaks have entered floor drains that discharge to a storm sewer emptying into EFPC.

- Paint-stained sand on the ground between the northeast corner of the paint shop (Building 9404-5) and EFPC indicates the possibility of this material being washed into the creek during heavy rains.

The proper agencies are notified of all discharges that require reporting. The Y-12 Plant has an ongoing program to identify drains that need to be plugged or diverted in order to prevent discharges to the environment.

3.5.3.4 Noteworthy Practice

3.5.3.4.1 Real-Time Stream Monitoring

The Y-12 Plant is in the process of installing continuous monitors for flow, temperature, pH, and conductivity at 17 locations throughout the plant, including two EFPC locations. These monitors will be linked to a dedicated computer in the Environmental Monitoring Laboratory. Alarm panels to indicate upset conditions will be located at the laboratory and with the Plant Shift Superintendent. This is a noteworthy practice for the Y-12 Plant and other DOE facilities with a variety of treatment plants and extensive storm sewer systems, which may become contaminated from accidental releases. Such a system will significantly increase a site's capability for early detection and response to releases.

3.5.4 Hydrogeology

3.5.4.1 Overview

The scope of the hydrology assessment involved a review of the following:

- the current monitoring system, including details of well construction, the condition of wells, and well locations;

- the current sampling program, including sampling procedures and sample analyses;

- studies of the hydrogeologic regime and the nature and extent of contamination; and

- planned investigations.

A list of the applicable regulations, requirements, and/or guidelines used to evaluate the groundwater program is given in Table 3.4.

Table 3.4

Applicable Hydrogeology Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
40 CFR Part 265, Subpart F	Ground Water Monitoring	EPA
DOE Order 5480.2	Hazardous and Radioactive Mixed Waste Management	DOE
DOE Order 5484.1	General Environmental Protection Program	DOE
EPA Guidance	Technical Enforcement Guidance Document	EPA
TDHE Divison of Solid Waste Management Rule 1200-1-11.05	Interim Status Standards for Owners and Operators of Existing Hazardous Waste Treatment, Storage, and Disposal Facilities	TDHE

There are approximately 500 monitoring wells installed at the Y-12 Plant. These are used to monitor piezometric levels, assess background conditions, and/or evaluate the nature and extent of groundwater contamination.

Groundwater quality assessment monitoring under RCRA is currently being conducted for five waste management units at which releases to the groundwater have occurred. These five are the Bear Creek Burial Grounds (BCBG) Waste Management Area (WMA), the Oil Landfarm WMA, the S-3 WMA, the Chestnut Ridge Security Pits (CRSP) Hazardous Waste Disposal Unit, and NHP. Two other RCRA units, the Chestnut Ridge Sediment Disposal Basin (CRSDB) and Kerr Hollow Quarry, are in detection monitoring. Closure plans have been approved for all of these units. Post-closure permit applications have been submitted for all units except Kerr Hollow Quarry, which will be a clean closure and therefore does not require a post-closure permit. The Y-12 Plant has received approval of the CRSDB application. The remaining applications are still under review by TDHE.

Progress in characterization of the hydrogeologic conditions at the facility is nearly complete in some areas (e.g., the Bear Creek Valley). Elsewhere (for example, beneath the central plant buildings), investigations are in the planning stages. A draft document has been prepared summarizing the current status of the groundwater monitoring program and outlining its future direction. This document is entitled "Comprehensive Groundwater Monitoring Plan for the Department of Energy Y-12 Plant, Oak Ridge, Tennessee." The approach presented in this report has much to offer and, if implemented, should bring more focus to the program and result in a more efficient use of resources. Adoption of the conceptual approach presented in this plan would be of great assistance to other DOE facilities.

The monitoring well sample collection program is performed for the Y-12 Plant by Oak Ridge Gaseous Diffusion Plant (ORGDP) personnel. The technicians responsible for collecting samples are well trained and, with one exception as noted in the findings, follow proper sampling protocols.

A review of a cross section of existing documents and plans for additional investigations indicates the groundwater monitoring program is in compliance with all applicable Federal and state regulations and DOE orders. Efforts to accelerate the monitoring program and begin corrective action are currently hampered by several factors, including the following:

1. The Y-12 Plant is experiencing substantial delays in the review and post-closure permitting process.

2. The issue of whether future remediation efforts must meet background conditions, Primary Drinking Water Standards [i.e., Maximum Contaminant Levels (MCLs)], or Alternate Concentration Limits (ACLs) has not been resolved. Representatives of Energy Systems and DOE concur that the site will not be able to meet either background levels or MCLs. Energy Systems has submitted a demonstration ACL program to allow TDHE and EPA the opportunity to comment on the general approach before a comprehensive program is implemented. To date, neither agency has given its approval of the concept.

3. No agreement has been reached among the EPA, TDHE, DOE, and Energy Systems regarding how to determine when a plume has been adequately characterized. Currently, some disagreement exists regarding the plume beneath the BCBG. DOE, TDHE, and Energy Systems contend enough data have been gathered and would like to move into the remedial phase. Discussions are underway with the EPA to resolve this issue.

3.5.4.2 Compliance Findings

3.5.4.2.1 Access to Wells

Performance Objective: Adequate access should be provided to all wells that are part of an annual and/or quarterly RCRA compliance monitoring well network (40 CFR Part 265, Subpart F).

Finding: Access to approximately 20 wells is difficult or nonexistent. As a result, on several occasions, Energy Systems has failed to sample a well that is part of the RCRA assessment network.

The construction of haul roads, capping of inactive waste sites, and installation of new fencing have restricted or prevented access to some wells. Among the wells impacted are those listed in the following table. All these wells are part of the RCRA monitoring well network. The column on the right gives the number of quarterly sampling rounds that were missed.

Site	Well Number	No. of Quarters Missed
Oil Landfarm	GW-43	3
	GW-67	2
	GW-87	2
BCBG	GW-342	2
CRSDB	GW-156	2
CRSP	GW-179	2

The fact that some sampling rounds have been missed is not likely to affect the assessment process because most monitoring well networks have more than the minimum required number of upgradient and/or downgradient wells.

Meetings have taken place between Central Engineering (which is responsible for Capping and Post Closure activities) and the Health, Safety, Environment, and Accountability (HSEA) Division (which is responsible for the groundwater sampling

program) to resolve some outstanding issues related to wells impacted by new roads or caps. Steps still have to be taken to ensure that the HSEA Division is consulted whenever plans call for new fencing in areas where monitoring wells are located.

3.5.4.3 Best Management Practice Findings

3.5.4.3.1 Monitoring Well Conditions

Performance Objective: The EPA Technical Enforcement Guidance Document (1986) recommends that well casings be locked to prevent tampering or inadvertent damage.

Finding: A number of wells at the site have no locks.

Groundwater monitoring wells 1085, 1086, GW-090, GW-109, GW-125, GW-312, GW-370, GW-372, and GW-373 had no locks when inspected at the beginning of the assessment. The problem of unlocked wells was also noted by EPA Region IV during its comprehensive groundwater monitoring evaluation of the Y-12 Plant on March 7 and 8, 1989. Public access to the wells is restricted; however, the possibility exists that contaminants could be purposefully or inadvertently introduced to the wells.

This problem was corrected before the end of the assessment.

3.5.4.3.2 Groundwater Level Measurement Procedures

Performance Objective: Groundwater levels should be measured several times for consistency (Environmental Surveillance Procedures 302-1).

Finding: Members of the groundwater sampling team were observed measuring water levels at two wells. Water level measurements were taken only once prior to sampling at each well.

Best sampling practices dictate that multiple measurements be taken when measuring water levels in wells. This is necessary because the devices used to measure water levels can give false readings.

Before the end of the assessment, this problem was corrected.

3.5.4.3.3 Alternate Concentration Limits Program

Performance Objective: To develop an effective groundwater cleanup program, an agreement should be in place concerning the use of an ACL program at the Y-12 Plant.

Finding: The groundwater monitoring program is currently being conducted with no agreement among DOE, Energy Systems, TDHE, and the EPA regarding the cleanup levels that will be required at the plant.

There is a general consensus between Energy Systems and DOE personnel that contaminated groundwater beneath the facility cannot be remediated to background conditions or below MCL limits. The only alternative is to gain state and Federal approval for meeting ACLs that provide for adequate protection of human health and the environment. Reaching agreement on such a program among all parties involved will enable DOE and Energy Systems to begin cleanup actions in certain areas of the site and provide a more scientific basis for determining when the nature and extent of a plume has been adequately determined. In the absence of such an agreement, efforts to characterize the groundwater contamination problem may exceed what is necessary to institute corrective measures.

3.5.4.4 Noteworthy Practices

The Y-12 Plant is confronted by a groundwater contamination problem that is apt to be encountered at other DOE facilities around the country, that is, the intermingling of plumes from several waste management units. When this occurs, attempts to continue to monitor individual units are likely to prove unsuccessful and/or result in the inefficient use of resources.

Y-12 personnel, together with representatives of ORNL, have developed a comprehensive groundwater monitoring plan for the entire Y-12 facility.

The noteworthy aspects of the Y-12 Plant's comprehensive plan include the following:

1. Because plumes from various units have intermingled, the site is divided into hydrogeologic regimes rather than individual waste management units.

2. A conceptual approach is developed for assessing what is known and what information is lacking concerning the source, the nature and extent, and the fate of contaminants in the groundwater in different hydrogeologic regimes.

3. The previously mentioned conceptual approach is used to prioritize how resources should be used in different hydrogeologic regimes to reduce or eliminate existing data gaps.

4. The plan has a central focus. Data gaps are only identified as such if the missing information is necessary to assess the need for corrective actions and/or to design a remedial action program.

5. The ultimate objective of all monitoring is the protection of human health and the environment. Accordingly, a key component of the plan is regular monitoring at exit points at the groundwater and surface water pathways for each regime.

By developing similar plans, other facilities will be compelled to look at the overall status of their groundwater monitoring programs. This will help them correct deficiencies in their monitoring programs, redirect resources so that

they are used more efficiently, and bring a more goal-directed focus to groundwater remediation efforts.

3.5.5 Waste Management

3.5.5.1 Overview

The major waste management issues confronting the Y-12 Plant are the following:

- lack of treatment and disposal options for mixed wastes leading to long-term storage of mixed wastes;
- needed improvements in waste management programs; and
- a resolution on the regulatory status of enriched uranium recovery processes.

A list of applicable regulations, requirements, and/or guidelines used to evaluate the waste management program is given in Table 3.5.

The lack of treatment and disposal options for mixed wastes is a problem for most DOE facilities. Commercial waste management options available for nonradioactive hazardous wastes are not available for mixed wastes. Because of the lack of commercial alternatives, DOE is developing treatment and disposal options for mixed wastes. The most viable option for the Y-12 Plant's mixed wastes is destruction in the Oak Ridge Gaseous Diffusion Plant (ORGDP) Toxic Substances Control Act (TSCA)/RCRA incinerator. However, the ORGDP TSCA/RCRA incinerator is not yet on-line. The backlog of wastes, not including newly generated wastes, will take several years to incinerate. As a consequence, additional long-term storage facilities are needed at both the Y-12 Plant and at ORGDP, where some Y-12 Plant-generated wastes are stored. The long-term storage of mixed wastes subject to the land ban may also require DOE to negotiate a compliance agreement with the EPA to allow storage for more than one year.

The overall waste management program at the Y-12 Plant generally meets basic regulatory requirements. However, improvements can be made that would enhance the quality and efficiency of the waste management program. Areas identified during the environmental audit that need to be improved include

- development of procedures that provide for facility- and task-specific performance-based training programs for operators of waste management facilities,
- a comprehensive waste tracking system that tracks facility-wide waste from cradle to grave, and
- improved turnaround time to receive analytical results of hazardous waste samples.

Table 3.5

Applicable Work Management Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
DOE Order 5820.2A	Radioactive Waste Management	Department of Energy
DOE Order 5400.3	Hazardous and Radioactive Mixed Waste Program	Department of Energy
Tennessee Solid Waste Disposal Act	Part 1	Tennessee
Tennessee Hazardous Waste Management Act	Parts 1 and 2	Tennessee
Tennessee Sanitary Landfill Areas Act	In Its Entirety	Tennessee
Tennessee Petroleum Underground Storage Tank Act	In Its Entirety	Tennessee
Tennessee Solid Waste Regulations	In Its Entirety	Tennessee Department of Health and Environment
U.S. EPA General Regulations for Hazardous Waste	Parts 261, 262, 263, 264, 265, 266, 268, and 280	Environmental Protection Agency
Tennessee Hazardous Waste Management Rules	Chapters 1200-1-11.01, 1200-1-11.02, 1200-1-11.03, 1200-1-11.04, 1200-1-11.05, 1200-1-11.06, and 1200-1-11.07	Tennessee Department of Health and Environment

Currently, the treatment and storage facilities used for treated combustible and residue materials utilized in the recovery of enriched uranium have questionable RCRA regulatory status. The Y-12 Plant is presently working with DOE and the State of Tennessee to get a determination on the regulatory status of these facilities.

3.5.5.2 Compliance Findings

3.5.5.2.1 Indefinite Storage of Land Disposal Restricted Wastes

Performance Objective: 40 CFR Part 268.50 of EPA's regulations on Land Disposal Restrictions (LDR) establishes limitations on the storage of wastes subject to land disposal restrictions. 40 CFR Part 268.30 places restrictions on solvent-containing wastes (Waste Category F001-F005) and plating waste sludge (Waste Category F006) from land disposal, unless treated.

Finding: Some 188,799 gal of mixed solvent (Waste Category F001-F005) and 700,000 gal of sludge containing mixed plating waste (Waste Category F006) must be stored indefinitely because of a lack of any treatment option. Five drums of nonradioactive Waste Category F006 plating wastes have been in storage at the Cyanide Treatment Facility for longer than one year.

The LDR regulations state that wastes may be stored longer than one year only for the purpose of the accumulation of such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal. Containers holding restricted wastes must be clearly marked to identify their contents and the date each period of accumulation begins.

Treatment and/or disposal options are currently not available for hazardous wastes contaminated with radionuclides. This situation has resulted in the need to store these mixed wastes indefinitely. The Y-12 Plant has identified the following inventory of land-disposal-restricted materials currently in storage.

Facility	Amount	Waste Type or Category
Building 9720-9 Storage Facility	20,520 gal	(D001 - D011) (F002 - F003)
Interim Drum Yard	32,195 gal	F-listed solvents; heavy metals
Building 9811-1 (containers)	39,710 gal	F-listed solvents; heavy metals
Building 9811-1 (tanks)	40,850 gal	F-listed solvents; heavy metals
West Tank Farm	700,000 gal	(F006)
Waste Oil Solvent Storage Facility	84,500 gal	(F001) (F003) (F005)
Oil Landfarm Soils Containment Pad	300 yd^3	F-listed solvents; heavy metals
Disposal Area Remedial Action (DARA) Solids Storage Facility	1,000 yd^3	F-listed solvents; heavy metals
East Chestnut Ridge Waste Pile	3,500 yd^3	(D006); F-listed solvents

Much of this waste has been in storage for longer than one year. As additional land-disposal-restricted mixed wastes are generated and put into storage, the quantity of restricted wastes in storage will be increased. This continued generation will result in the need for additional permitted RCRA storage capacity because existing capacity is becoming full. The plant has previously identified this problem and is participating in DOE-wide activities regarding this problem.

The five drums of plating waste sludges at the Cyanide Treatment Facility are nonradioactive, and treatment capacity is currently in place and operational. The site has not operated the existing treatment process because a new state-of-the-art facility was being built. However, delays in bringing the new unit on-line have resulted in the waste being stored for over 1 year. The five drums containing plating waste sludge also were not clearly marked to identify their contents and dates of initial accumulation. Plant records had to be reviewed to determine the status of each drum. Prior to the conclusion of this audit, the site had initiated treatment of the five drums utilizing the old treatment process.

3.5.5.2.2 Inadequate Storage of Low-Level Waste

Performance Objective: DOE Order 5820.2A establishes that low-level waste operations shall be managed to protect the health and safety of the public, preserve the environment of the waste management facilities, and ensure that no legacy requiring remedial action remains after operations have been terminated.

Finding: The 29,001 drums of low-level nitrate-containing wastes at the United Nuclear Corporation site present the potential for releases of nitrate to the environment.

The 29,001 drums of waste contain stabilized waste, contaminated soils, and boxes of contaminated equipment. According to site data, these wastes are nonhazardous. The waste containers are stored directly on the ground and are covered by a plastic liner. However, the plastic liner is deteriorating and is split in several areas, exposing the containers to precipitation. Many of the containers that could be observed were rusted, and some were splitting. The splitting was caused by swelling of the solidified contents. Many of the drums contain wastes with high concentrations of nitrate. Contaminants could be released to the environment even from stabilized wastes, particularly where swelling results in cracking of the solidified product.

The site has developed a closure plan and provided the plan to DOE on July 25, 1989. DOE submitted the plan to EPA on July 27, 1989. EPA has approved the closure plan.

3.5.5.2.3 Questionable Structural Integrity of Diking at the 9409-5 Tank Storage

Performance Objective: 40 CFR Part 265.193 requires secondary containment for tanks holding hazardous waste to prevent the release of hazardous waste to the environment in the event of a spill.

Finding: Cracks in the dikes at the 9409-5 storage facility could allow the release of hazardous wastes to the environment in the event of a release from the tanks.

The 9409-5 storage facility provided storage capacity for waste oils contaminated with chlorinated solvents, low concentrations of PCBs (<50 ppm), nonchlorinated solvents, uranium, and beryllium. The unit consists of a pad and dike enclosing four tanks with a cumulative storage capacity of 80,000 gal. One 10,000-gal tank is dedicated to the storage of mixed solvent wastes containing uranium and/or beryllium.

The structural integrity of the dikes is in question because of cracks observed in the dike walls. These cracks appeared to penetrate from the inner to the outer walls. The site had recognized the problem prior to the audit and had removed all wastes from the tanks in July. The tanks will be deleted from the Part A notification by the site and are no longer to be used for hazardous waste storage. Tennessee has revoked interim status for this facility.

3.5.5.2.4 Inadequate Interim Drum Yard Aisle Space

Performance Objective: Section 1200-1-11-.05(9) of Tennessee Hazardous Waste Regulations requires that areas where containers are stored are to be inspected at least weekly.

Finding: The aisle space at the interim drum storage yard is inadequate to allow unimpeded access for inspections.

Required weekly inspections of all containers at the interim drum yard can only be conducted if there is sufficient aisle space to allow free movement of personnel conducting inspections. During the audit, it was observed that pallets of drums were stacked so close together in certain areas that moving between the pallets was difficult. Recently, TDHE has been requiring in permits 3 ft of aisle space for secondary aisles and 5 ft for primary aisles.

The team observed that drums were subsequently rearranged to provide adequate aisle space.

3.5.5.2.5 Sanitary Landfill Deficiencies

Performance Objective: The TDHE permit requires that a sign be posted at the entrance to the landfill and that adequate rip-rap be placed at the discharge end of stormwater culvert pipes.

Finding: A sign was not placed at the entrance to the sanitary landfill, and rip-rap was not in place at the end of the stormwater culvert pipe discharging into the sedimentation basin.

The State of Tennessee has issued an operating permit to the Y-12 Plant for the sanitary landfill. The permit incorporates the operating procedures that are approved by the state as part of the permit. The operating procedures contain

a number of requirements, including those described in the performance objective. These deficiencies were corrected by the site during the audit, as verified by the team.

3.5.5.2.6 Nonconformance with Regulated Substance Underground Storage Tanks (USTs)

Performance Objective: 40 CFR Part 280 describes regulatory requirements for Underground Storage Tanks (USTs) containing regulated substances, including chemicals and petroleum-based products.

Finding: The Y-12 Plant UST program is not operating in conformance with various regulatory requirements and BMPs associated with regulatory compliance. These deficiencies in requirements and practices are described as follows:

- Notification to the designated state agency of all USTs brought into operation after May 8, 1986, is required by 40 CFR Part 280.22. The Y-12 Plant notified DOE of tanks brought into operation in late 1986 (five tanks) and 1988 (two tanks) in a notification dated August 15, 1989. DOE submitted the notification to the state on August 31, 1989.

- Prevention of releases from USTs caused by spills and overfills is required by 40 CFR Part 280.30. Written procedures were not in place directing operators in adhering to these requirements.

- UST systems equipped with cathodic protection must be inspected within 6 months of installation and every 3 years thereafter, as required by 40 CFR Part 230.31. Cathodic protection operation records must be maintained. Documentation was not in place demonstrating compliance with the inspection requirements 280.70 (b)(2).

- Permanent closure of substandard UST systems, including associated piping, is required by 40 CFR. The closure of tank 2099-U did not include all associated piping (see Report Y/TS-571).

Several instances of deviations from BMPs for USTs were noted. These instances include the following:

- Secondary containment should be provided for UST inflow pipes where if releases were to occur the probability of releases gaining access to sewers would be high. The inflow piping associated with the UST at the new Guard Headquarters is located within several feet of a storm drain. In the event of a discharge, releases would easily reach the storm drain.

- Training of personnel in regard to statutes and regulations applicable to USTs is not adequate. Y-12 personnel were not aware of some requirements such as (1) 15-day notification requirements in the Tennessee Solid Waste Disposal Act (SWDA) and (2) requirements

that Y-12's USTs are subject to Sector 280 of EPA regulations and the Tennessee SWDA.

- Correspondence between DOE and TDHE regarding a variety of UST issues is not being received by Y-12 personnel responsible for tracking UST issues.

- In cases where Y-12's response to TDHE compliance dates was late and new compliance dates negotiated no correspondence exists from TDHE confirming the new compliance dates.

- Conflicts exist between TDHE's standard and response policy and the RCRA 280 standard, which Y-12 is using to respond to TDHE requirements.

- The tickler system that existed in one of the two UST file systems did not include all key correspondence and reports required by 40 CFR Part 280.

3.5.5.3 Best Management Practice Findings

3.5.5.3.1 Undiked Organic Acid Treatment and Storage Area

Performance Objective: DOE Order 5820.2A establishes that low-level waste operations shall be managed to protect the health and safety of the public, to preserve the environment of the waste management facilities, and to ensure that no legacy requiring remedial actions remains after operations have been terminated. 40 CFR Part 264.175 requires that permitted RCRA facilities have secondary containment for container storage facilities.

Finding: The organic acid treatment and storage area located outdoors at the east end of Building 9206, and recently relocated from the Salvage Yard is not diked, leading to a potential for releases of hazardous/radioactive constituents to nearby storm drains if a release were to occur.

Various organic materials containing hazardous waste solvents and enriched uranium are generated at the Y-12 Plant. Criticality and security concerns require that the enriched uranium levels be reduced to a concentration that would preclude recovery of enriched uranium from these materials. This is accomplished by doping or adding sufficient depleted uranium to dilute the enriched uranium to a low level. The process takes place in tanks at the east end of 9206. Containers with contents awaiting treatment are also stored in this area. No wastes have yet been treated at this area since the equipment has been relocated from the east end of the salvage yard. However, full containers were stored in this area.

Site personnel have stated that they intend to provide portable diking and a canopy for this area. Since the wastes handled are RCRA mixed wastes, the new location of this facility will be included on a revised Part A notification.

3.5.5.3.2 Lack of a Centralized Waste Tracking System

Performance Objective: A centralized waste tracking system should be used to enable efficient and compliant management of wastes generated at the Y-12 Plant.

Finding: The Y-12 Plant currently does not have a centralized, plantwide waste tracking system for all wastes.

Several personal-computer-based systems are currently used to track wastes at the Y-12 Plant. These waste tracking systems were developed for use by particular departments. It is not certain whether all wastes generated by the Y-12 Plant are included on one of the these data bases. The generation and management of plantwide data required for various reports and cost projections are often made more difficult because of the need to use more than one data base. Compliance with regulatory restrictions, such as 90-day accumulation time limits and the 1-year storage limits for RCRA land ban restricted wastes (e.g., cyanide wastes) and PCB wastes, is difficult to accomplish with the existing systems.

Waste Treatment Storage and Disposal (WTSD) is currently pilot testing a centralized waste tracking data base for their operations. However, the WTSD waste tracking data base is not yet a routinely used system. The Y-12 Plant is currently developing a plantwide centralized waste tracking system that would include all wastes from cradle to grave. The design of this system is ongoing. However, deployment of this system is not scheduled to take place until March 1991.

3.5.5.3.3 Untimely Analytical Data Reporting Time

Performance Objective: Timely reporting of analytical results helps to ensure the management of wastes within regulatory time frames.

Finding: Analytical data reporting times of up to 60 days may result in future noncompliances with regulatory time limits and impede the efficient movement of wastes from generation to ultimate disposition.

Unknown wastes must be handled as hazardous wastes while samples are being analyzed according to a recent EPA regulatory interpretation. Thus, for purposes of the 90-day accumulation time limit for waste accumulation areas, the 90-day clock starts when the container is initially put into the accumulation area and the sample is taken. If analytical results are not available within 90 days, containers must be moved to a permitted storage area until waste characterization results are available. Thus, in some cases, permitted storage capacity will be used for non-RCRA wastes, and RCRA wastes may be in storage longer than necessary while awaiting analytical results to determine proper disposition.

WTSD is currently taking several steps to reduce problems caused by long analytical data reporting times. In areas where containers of wastes with known compositions are routinely generated, portable tanks capable of containing up to six drums are being utilized. These tanks are locked and in a cage with access limited to specific generators. Thus, one analysis would be required rather than six. In other cases, WTSD is reviewing historical data to determine

where long-term data or process knowledge can be used to characterize wastes in place of sampling and analysis. These steps will serve to reduce analytical data reporting time by reducing sample backlog and also significantly reduce sampling and analysis costs.

3.5.5.3.4 Lack of Facility- and Task-Specific Training

Performance Objective: Facility- and task-specific training for operators of waste management facilities ensures proper handling of wastes.

Finding: Current training programs for operators of waste management facilities are not always facility and task specific.

Training programs for operators of RCRA waste management facilities and hazardous waste generating facilities meet RCRA requirements. However, the training is general and is not oriented toward facility- and task-specific training. For waste management operators, facility- and task-specific training with performance-based evaluations based on facility procedures is not in place.

The Y-12 Plant has recognized the value of facility- and site-specific training with performance-based evaluations. A plantwide effort is under way to evaluate jobs and facilities to determine which elements require specific training and the particular training requirements.

3.5.5.3.5 Undetermined RCRA Status of Enriched Uranium Recovery Operations

Performance Objective: Solid wastes that are hazardous must be managed in accordance with 40 CFR Parts 262 through 265 and Parts 268, 270, 271, and 124 including notification, interim status, and permitting requirements and Tennessee hazardous waste management rules 1200-1-11-.01 to 1200-1-11-.09.

Finding: Several thermal treatment/processing units and storage areas would be considered unpermitted RCRA units if the managed materials are determined to be hazardous wastes. Enriched uranium recovery operations are conducted in Buildings 9206 and 9212 to recover U-235. Thermal devices involved in the recovery operations are described as follows:

- 9206 Uranium Recovery Furnace: Used to burn combustible materials containing U-235 and contaminated with freon, trichloroethylene, pump oil and perchloroethylene.
- 9212 Gas Furnace: Used to burn small batches of combustible materials containing large quantities of U-235 and contaminated with freon, trichloroethylene, pump oil, and perchloroethylene.
- 9206 Muffle Furnaces: Used to dry ash that has been leached and that contains small quantities of U-235. Ash may be recovered or disposed of depending on U-235 content. Free liquids such as nitric acid and water may be present.

- 9212 Muffle Ovens: Used to dry leached ash for further recovery or disposal. Ash may contain free liquids such as nitric acid and water.

- 9212 Destructive Distillation Unit and Carbon Burners: Used to thermally decompose large bulky items. Off-gases are condensed and collected for uranium recovery along with ash.

- Enriched Uranium Oxidizers: Used to oxidize uranium metal to U_3O_8. Material is received submerged in Varsol or freon to prevent metal from prematurely igniting. Coolant is decanted prior to chip oxidation.

Ashes obtained from these devices along with alloyed metals are dissolved and with other solutions containing U-235 taken through a process consisting of evaporation, extraction denitration, UF_4 conversion, and subsequent reduction to uranium metal.

Until recently, the Y-12 Plant considered waste materials processed for U-235 recovery to be exempt from RCRA regulations. Since the materials contained concentrations of U-235 that are economically valuable and of a concern from a security standpoint, they are not discarded and would not be disposed of without recovery of U-235. However, as a result of recent events at another DOE facility involving a similar recovery operation, this interpretation has been brought into question for those units previously described and particularly for the 9206 Uranium Recovery Furnace. Questions have arisen about whether the materials processed would be considered solid wastes and, since some are contaminated with listed solvents, whether associated processing and storage areas would be subject to RCRA regulations. In addition, under the derived from rule, the question arises about whether any residues derived from treatment (such as the 9206 Uranium Recovery Furnace Ashes) would be considered hazardous wastes, thus potentially subjecting associated residue storage areas and recovery processes to RCRA regulation, and whether land-disposal restriction, storage, and treatment standards would have to be met.

A determination as to whether any or all of the materials processed for uranium recovery are solid wastes and subject to RCRA regulation cannot be made at this time. This determination is the subject of ongoing discussions between DOE and RCRA regulatory agencies.

In the interim, the site is actively investigating the possibility of eliminating the use of RCRA solvents. However, it will take several months to determine the appropriate substitute solvents and make the necessary procedural changes. Even if this program is successful, there will be a backlog of materials potentially subject to RCRA regulations that will have to be processed.

3.5.5.3.6 Trash Monitoring Station Deficiencies

Performance Objective: The TDHE permit for the sanitary landfill requires that no radioactive materials be disposed into the landfill. Calibration standards

for radionuclide monitoring devices should be traceable to National Institute of Standards and Technology (NIST) standards.

Finding: Written trash monitoring procedures specifying allowable limits for releasing sanitary solid waste to the landfill are not in place. The calibration of monitoring equipment is not conducted with standards traceable to NIST.

A trash monitoring system to monitor trash dumpsters for uranium content is used to determine if uranium content meets release limits for the sanitary landfill. However, the procedure used by the technician has not been formally reviewed and approved by the Y-12 Plant. The trash monitor is calibrated with radioactive source standards that are not traceable to NIST standards.

3.5.5.3.7 Secondary Containment Deficiencies at Interim Drum Yard

Performance Objective: Hazardous waste container storage areas should have adequate secondary containment.

Finding: Secondary containment at the Interim Drum Yard was not adequate.

The Y-12 Plant has provided secondary containment for the Interim Drum Yard by means of a plastic liner overlain on one-half sections of pipes to provide dikes. During the inspection, it was observed that at one corner the secondary containment was not continuous, thus creating a low point in the containment from which leaks could have been released.

The low point in the secondary containment was corrected during the audit.

3.5.5.4 Noteworthy Practices

3.5.5.4.1 RCRA Internal Audit Team and Daily Compliance Report

The Y-12 Plant has formed an internal RCRA audit team to inspect on a weekly basis all RCRA satellite accumulation areas, waste accumulation and storage areas, and all TSCA/PCB storage areas. Individual inspection checklists including both regulatory and plant standards have been created for each unit inspected. The inspection checklists and audit results are entered into a data file. A daily RCRA/TSCA compliance report highlighting noncompliances is sent by electronic mail to plant and divisional management and divisional environmental officers. Audit team members stay aware of each noncompliance and when one is resolved verify the corrective action on the reverse side of the noncompliance corrective action verification sheet. The daily compliance report also communicates regulatory development relevant to the Y-12 Plant facilities.

Results of the weekly inspections are posted daily on boards in the RCRA War Room located in the plant administrative headquarters. The compliance status of each unit is shown by a color-code system whereby green dots represent compliance, yellow dots represent noncompliance with plant standards, and red dots represent noncompliance with environmental regulations. Plant management can readily note where facilities are out of compliance. This high visibility of non-compliances to plant management serves as a powerful incentive for

operators to maintain their facilities in compliance. The program has resulted in a change of attitude induced by constant communication and visibility to management.

The Y-12 Plant is exploring methods of expanding their internal auditing practice to include other media such as air, water, and health and safety.

3.5.6 Toxic and Chemical Materials

3.5.6.1 Overview

The toxic and chemical materials assessment evaluated the status of the Y-12 Plant with regard to applicable TSCA, FIFRA, SARA Title III, Hazardous Material Transportation Act, and DOE order requirements. The materials covered in this assessment include PCBs, asbestos, pesticides, and various chemicals used in bulk quantities (acids, bases, solvents, water treatment chemicals, and fuels). TSCA and FIFRA cover the handling, use, storage, and disposal of PCBs and pesticides, respectively.

SARA Title III is intended to encourage and support emergency planning efforts at the state and local level, and provide citizens and local governments with information concerning chemical hazards present in the community. The act establishes four major requirements for facilities: (1) emergency planning notification, (2) emergency release notification, (3) reporting on hazardous chemicals present at the facility, and (4) toxic chemical release reporting.

The facility was also audited for compliance with the hazardous material transportation regulations promulgated by the U.S. Department of Transportation (DOT). DOE Order 5480.3 Section 7a states When offered to the carrier, each shipment of hazardous materials, hazardous substances, or hazardous wastes shall be in compliance with this Order and the applicable safety regulations of the DOT.

The specific regulatory requirements against which the Y-12 Plant was assessed are presented in Table 3.6.

Under the Y-12 Environmental Hazard Elimination Project all PCB transformers have been removed from the site. The major TSCA issue confronting the site is the long-term storage of PCB wastes contaminated with radionuclides.

Asbestos was widely used during original facility construction, but it has not been used in the construction of new installations. The site currently has an active program to identify asbestos containing materials present in facility buildings and prioritize removal operations. All asbestos removed from site buildings is buried in the Y-12 Plant sanitary landfill, which is permitted by the State of Tennessee. There were no problems found with the asbestos program.

All the pesticides used at the site are general-use materials; no restricted-use chemicals are applied. Deficiencies were observed in site pesticide storage practices, but corrective actions were initiated immediately by the site.

Table 3.6

Applicable Toxic Substances Regulations, Requirements, and Guidelines and Applicable Hazardous and Chemical Materials

Regulation/ Requirement/ Guideline	Section/Title	Authority
Toxic Substances Control Act	40 CFR Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	EPA
Federal Insecticide, Fungicide, and Rodenticide Act	40 CFR Part 165, Pesticide Storage/Disposal Regulations	EPA
Clean Water Act	40 CFR Part 112, Oil Pollution	EPA
DOE Order 5480	Prevention Regulations	DOE
DOE Order 5482.1	Environmental Safety & Health	DOE
SARA Title III	302/303, Designation, Reportable 304, Emergency Release Notification 311/312, Hazardous Chemical Reporting 313, Toxic Chemical Release Reporting	Statute
SARA Title III Provisions	40 CFR Part 335, Emergency Planning and Notification	EPA
	40 CFR Part 370, Hazardous Chemical Reporting: Community Right-To-Know	
	40 CFR Part 372, Toxic Chemical Release Reporting: Community Right-To-Know	

Table 3.6 (continued)

Applicable Toxic Substances Regulations, Requirements, and Guidelines and Applicable Hazardous and Chemical Materials

Regulation/ Requirement/ Guideline	Section/Title	Authority
HMTA Provisions	49 CFR Part 171, General Information, Spills: Incident Reporting Subpart B, Tabulation Listing Subpart C, Shipping Papers Subpart D, Container Marking Subpart E, Container Labeling Subpart F, Placarding	DOT
	49 CFR Part 173, General Shipping Requirements	
	49 CFR Part 174, Transporter Requirements: Carriage by Rail	
	49 CFR Part 175, Transporter Requirements: Carriage by Aircraft	
	49 CFR Part 177, Transporter Requirements: Carriage by Highway	
	49 CFR Part 178, Container Specification	
	49 CFR Part 179, Tank Car Specifications	
	49 CFR Part 397, Transportation Hazardous Materials: Driving and Parking Rules	
DOE Order 5500.2A	Emergency Notification, Reporting, and Response Levels	DOE
DOE Order 5480.3	Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes	DOE

Various chemicals used in bulk quantities are stored in above-ground storage tanks and in 55-gal drums. The deficiencies noted involve inadequate secondary containment and inadequate segregation of incompatible materials.

The most significant finding in Toxic and Hazardous Materials involves the storage of radionuclide-contaminated PCB waste beyond the 1-year limit allowed by TSCA. The site must store these wastes beyond the 1-year limit because currently there is no disposal facility permitted to handle such wastes. The remaining findings dealt with a lack of administrative control over regulatory issues or BMPs.

3.5.6.2 Compliance Findings

3.5.6.2.1 Radioactively Contaminated PCB Wastes Stored Longer Than One Year

Performance Objective: 40 CFR Part 761.65 requires that PCB wastes with concentrations of 50 ppm or greater be disposed of within 1 year from the date when they are first placed into storage.

Finding: Radioactively contaminated PCB wastes are being stored in excess of 1 year.

Storage drums with entry dates 1982, 1983, 1986, and 1987 were observed in Buildings 9720-9 and 9404-7. The Y-12 Plant cannot ship these wastes off-site because there are no disposal facilities licensed to handle radioactively contaminated PCB wastes. The site has identified this problem and sent a letter (July 5, 1989) to DOE requesting that EPA issue a consent order to address the noncompliance with the 1-year storage limit. Waste disposal will be initiated when the Oak Ridge Gaseous Diffusion Plant's TSCA incinerator, which is designed to handle mixed wastes, comes on line.

3.5.6.2.2 Lack of an Updated Large Capacitor Inventory

Performance Objective: 40 CFR Part 761.180 requires that the total quantity of PCBs and PCB items remaining in service at the end of a calendar year be included in the annual report.

Finding: Large capacitors from the ORNL facilities at the Y-12 Plant are a potential source of PCB liquids that must be included in the annual report. To accurately report the quantity of PCBs on-site, the large capacitor inventory must be updated. Currently there is no plan to update this inventory.

Although not required by TSCA, it would be a good management practice to also inventory the pole transformers to identify any that may contain PCBs.

3.5.6.2.3 Deficiencies in Pesticide Storage Practices

Performance Objective: FIFRA-40 CFR Part 165 Subparts C and D establish pesticide storage and disposal regulations.

Finding: There are deficiencies in the Y-12 Plant pesticide storage practices.

The following deficiencies were observed at the Building 9219 (Y-12 Plant maintenance department) pesticide storage area:

- A 500-gal herbicide sprayer was not marked with a Contaminated with Pesticides label;
- 55-gal drums in the labor (ground crew) storage room are stored so closely together that there is no aisle space, and the drum labels are not visible; and,
- Pesticides are being stored that are not going to be used, specifically, eight 1-gal containers of chlordane and thirty 40-lb bags of algicide.

The site took immediate action to address the deficiencies. Signs were placed on the sprayer; the 55-gal drums were rearranged so that aisle space was created and drum labels made visible; and disposal requisitions for the chlordane (9-28-89) and algicides (9-27-89) were submitted to the WTSD Division.

3.5.6.3 Best Management Practice Findings

3.5.6.3.1 No Documented Training of Transformer Maintenance Personnel

Performance Objective: The Y-12 Plant Procedure 70-905 requires that each employee involved with PCBs be taught the nature and hazards of PCBs and be trained in the approved practices for handling PCB wastes.

Finding: There is no training on PCB handling for Maintenance Department Personnel who service electrical equipment that may contain PCB-contaminated liquids. There is no plan in place to address the issue.

3.5.6.3.2 Transformers Not Consistently Marked

Performance Objective: 40 CFR Part 761 requires PCB labels only for transformers with 500 ppm or greater of PCB.

Finding: The Y-12 Plant is not consistently marking its PCB-containing transformers.

Examples of inconsistent transformer marking include, but are not limited to, the following:

- A PCB-contaminated transformer (135 ppm) is marked with a PCB label at Station 300;
- Non-PCB transformers (<50 ppm) are marked with PCB labels at Stations 124B (31 ppm), 301 (13 ppm), 302 (16 ppm), 655 (24 ppm), 656 (27 ppm), 683 (25 ppm), and 684 (27 ppm);
- A non-PCB transformer (23 ppm) has no label at station 304;

- The PCB content of the transformer at Stations 423 and 424 is not known, yet these are marked with blue non-PCB labels.

PCB labels on transformers that are known by analysis to contain <500 ppm PCBs may confuse spill response and fire response personnel.

The site has initiated a plan for labeling transformers with the actual PCB concentration. In September 1989, all pad transformers were sampled, and the samples will be analyzed for PCBs. Transformers with <2 ppm PCBs will be labeled with a blue non-PCB label (Energy Systems policy), while other transformers will be marked with a PCB label on which the PCB content will be marked.

3.5.6.3.4 No Secondary Containment for Some of the Drum Hazardous Materials Storage Areas

Performance Objective: 40 CFR Part 112.7 requires that facilities storing petroleum or petroleum-based products employ secondary containment structures to prevent spilled or released materials from entering the navigable waters of the United States. Secondary containment for facilities in which hazardous materials (other than petroleum-based products) are stored would prevent a release of materials into EFPC in the event of a storage container failure.

Finding: Petroleum-based chemicals and hazardous materials are being stored in undiked areas. The storage areas are near storm drains that discharge to EFPC, which is considered a navigable waterway of the United States.

The undiked storage areas identified include, but may not be limited to, the following:

- thirty-two 55-gal drums of petroleum products at Building 9201-1;
- two 55-gal drums of mineral spirits at Building 9720-13;
- three 55-gal drums of Belguard at Cooling Tower 9409-18; and
- four 55-gal drums of Belsperse at Cooling Tower 9409-28.

Because the storage areas are undiked and near storm drains, an accidental release of chemicals could potentially reach the EFPC. The site already has a corrective action plan for the petroleum product storage area, which includes the fabrication and placement of catch pans. The site also plans to relocate the cooling tower chemicals to areas away from the storm drains.

3.5.6.3.5 Incompatible Material Storage

Performance Objective: Incompatible materials should be prevented from mixing in the event of a spill or release.

Finding: Incompatible chemicals such as acids and caustic soda are being stored in the same storage or containment area.

Examples of incompatible chemical storage include, but may not be limited to, the following:

- in Building 9720-2, caustic soda and sulfuric acid laboratory bulk chemicals (packaged in 4-L bottles) are being stored adjacent to each other; and

- a nitric acid storage tank and a caustic soda storage tank are located, without a separating berm, within dike area 9500-005.

Neither storage area has a berm or other means of preventing the incompatible chemicals from mixing in the event of a catastrophic release, which may result in the generation of hydrogen, a highly flammable gas. Dike 9500-005 failed a leak test and is scheduled for renovation. The dike surface will be treated with sealant, but a berm, which would isolate the nitric acid tank from the caustic soda tank, is not planned.

3.5.7 Quality Assurance

3.5.7.1 Overview

The Y-12 Plant has an extensive environmental monitoring program in effect to obtain the data required to demonstrate compliance with Federal and state regulations as well as DOE orders. Quality Assurance (QA) programs for sample collection and analysis have been established to help ensure the generation of high-quality environmental data. Table 3.7 lists Applicable Regulations and/or Requirements used to evaluate the QA discipline.

The Y-12 Plant Environmental Laboratory (Building 9769) is responsible for the analysis of nonradiological environmental samples. These include water samples required under the NPDES permit, SDWA, and RCRA. In addition, stack samples and soil and sediment samples are also analyzed. Radiological analyses associated with the environmental monitoring program are performed in the Environmental Radiochemistry Laboratory (Building 9720-6).

The Y-12 Plant also extensively uses the ORGDP Laboratory to collect and analyze groundwater samples. The ORGDP Laboratory is a participant in the EPA Contract Lab Program (CLP) and has implemented the rigorous QA program required by CLP. The Y-12 Plant's Environmental Monitoring Group (EMG) has audited the ORGDP Laboratory. The ORGDP Laboratory facilities and QA program were reviewed during the assessment, and no problems were observed.

The Y-12 Plant Environmental Laboratory and Environmental Radiochemistry Laboratory were evaluated during this assessment. This evaluation consisted of reviewing analytical methods, QA procedures, training requirements, and corrective actions for upgrading quality control programs. In addition, the data management procedures of the Y-12 Plant EMG were reviewed. The EMG is responsible for evaluating the data generated by the Y-12 Plant and ORGDP laboratories; the data are incorporated in the site's annual Environmental Monitoring Report.

Table 3.7

Applicable Quality Assurance Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
DOE Order 5400.1	General Environmental Protection Program	DOE
DOE Order 5400.xx (Draft)	Radiation Protection of the Public and the Environment, March 1988	DOE
DOE Order 5400.xy (Draft)	Guide for Environmental Radiological Surveillance at DOE Installations	DOE
DOE Order 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE/EP-0023	A Guide for Environmental Radiation Surveillance at DOE Installations	DOE
DOE Order 5481.4	Quality Assurance	DOE
U.S. EPA QAMS-001/80	Strategy for the Implementation of the EPA's Mandatory Quality Assurance Program	EPA
40 CFR Part 136	Guidelines Establishing Test Procedures for the Analysis of Pollutants	EPA
EPA Guidance	Principles for Sampling and Analytical Methods for Radionuclides Emitted from EPA Facilities, October 1987	EPA
National Emission Standards for Hazardous Air Pollutants (NESHAP)	NESHAP Analytical Requirements	EPA

Three BMP findings were identified. First, the site has no written Environmental Monitoring Plan. Second, the Y-12 Plant's Administrative Procedures are not always followed by the plant's Environmental Laboratory. Third, data anomalies were not sufficiently addressed in the environmental report.

3.5.7.2 Compliance Findings

None.

3.5.7.3 Best Management Practice Findings

3.5.7.3.1 No Written Environmental Monitoring Plan

Performance Objective: In accordance with DOE 5400.1, a written Environmental Monitoring Plan should be prepared for each facility that uses, generates, releases, or manages significant pollutants or hazardous materials.

Finding: There is no written Y-12 Plant Environmental Monitoring Plan

The Y-12 Plant EMG uses the ORGDP Laboratory and the site Environmental Laboratory to generate data for the annual environmental monitoring report. The EMG has written instructions for the ORGDP Laboratory specifying the quality level that data must meet in order to be acceptable; however, there is no equivalent document for the Y-12 Plant Environmental Laboratory. Currently, verifications of the Y-12 Environmental Laboratory data are not as thorough as the ORGDP-generated data. This situation may cause the environmental monitoring results to be suspect.

The EMG has recognized this deficiency and has developed an outline for an Environmental Monitoring Plan. The plan will specify the quality levels that environmental monitoring data must meet in order to be acceptable. The plan is scheduled for completion by September 1990.

3.5.7.3.2 Deficiencies in the Y-12 Plant Environmental Laboratory Practices

Performance Objective: The Plant Laboratory Department's Administrative Procedures establish QA and operating guidelines for the Environmental Laboratory.

Finding: There are deficiencies in the Y-12 Plant Environmental Laboratory practices.

Deficiencies observed in the Environmental Laboratory practices are, but may not be limited to, the following:

- Verbal changes have been incorporated into the dishwashing procedure but have not been incorporated into the written, posted procedure.
- Holding times may be exceeded for residual chlorine analyses which must be delivered to the laboratory and analyzed within 15 min of sampling.

- There are no acceptance criteria for the analytical balance checkweight procedure, the Hach check standard solution used in the nitrate procedure, the biological oxygen demand procedure, or the total organic carbon procedure.

- The nitrate/nitrite procedure is not dated or approved; also corrections are not dated and initialed.

- For colorimetric procedures (phosphates, fluorides, phenols), check standard samples are prepared from the same stock solution used to develop the standardization curve.

- The Biochemical Oxygen Demand incubator is not routinely checked against a National Institute of Standards and Technology calibrated and certified thermometer.

- Expired chemicals found were a 0.1N standard sodium hydroxide solution in Room 308 and a silver standard in Room 311.

- Base-neutral/acid organic extract sample vials and semivolatile organics standards are stored together in the same refrigerator.

- In Room 204 (Inductively Coupled Plasma Laboratory), an old analytical procedure was included with the current version. When this was discovered, the supervisor immediately removed the old procedure. Also, standard solutions prepared in 1985 do not have expiration dates on the labels.

- The analytical procedures in the Environmental Radiochemical Laboratory are outdated (1979 and 1980). Sections of the procedures that have been revised are included as attachments. The procedures should be updated.

If not corrected, the above deficiencies could adversely affect the quality and defensibility of the environmental monitoring data generated by the laboratory.

The Environmental Laboratory management was aware of all of the above deficiencies with the exception of the expired chemicals and the inclusion of an outdated procedure and its current counterpart in the same manual. The following program of corrective action has been implemented:

- A statistical methods course, Quality Improvement Tools for the Plant Lab, will be given to all supervisors and analysts.

- Internal analytical procedure audits are being conducted by the Environmental Laboratory Quality Assurance Coordinator; currently eight procedures have been audited.

- External audits of all the analytical procedures (approximately 100) will be conducted every 5 years by the Plant Laboratory Quality Assurance Office.

- The Environmental Laboratory management is planning to revise all of its analytical procedures to conform with the guidelines presented in the Plant Laboratory's Administrative Procedures.

3.5.7.3.3 Data Anomaly Treatment in the Environmental Report

Performance Objective: DOE Order 5400.1 requires that all environmental monitoring data generated for DOE sites must be accurate.

Finding: There are data anomalies in the Y-12 annual environmental report that are not properly addressed.

Data anomalies were not sufficiently addressed in the environmental report. In Table 2.2.1 of that report, the reported Alpha and Beta results do not agree with the specific radionuclide data. The Alpha and Beta results are significantly higher by greater than a factor of 100. It was determined from Y-12 Plant personnel that the anomaly was the result of analytical problems. Environmental samples had been diluted prior to measurement, which increased the minimum detectable activity and subsequently resulted in higher reported activity.

3.5.8 Radiation

3.5.8.1 Overview

The Y-12 Plant environmental and effluent radiological monitoring program was assessed to determine compliance with applicable Federal and state regulations and Department of Energy (DOE) order requirements. Table 3.8 lists Applicable Regulations and/or Requirements used to evaluate the radiation discipline. The radiation compliance assessment evaluated the various elements of the Y-12 Plant environmental and effluent monitoring program including sample collection and analysis, equipment selection and operation, procedures, reporting, dose assessment, source terms and pathways, and instrumentation calibration and maintenance. The team found no activity or operation that poses an immediate and unacceptable radiation safety risk to the environment and public.

With noted exceptions, the general assessment is that the Y-12 Plant environmental and surveillance program is sound, however, the effort to implement planned improvements should continue. The Oak Ridge Reservation Environmental Report for 1988 provides a comprehensive description of the environmental and effluent monitoring activities that are performed at the Y-12 Plant. The Y-12 Plant Long-Range Environmental and Waste Management Plan, Fiscal Years 1989-1995, another document that provides a structured plan for environmental compliance, describes the program issues and activities that are being pursued to achieve environmental objectives and compliance with applicable Federal and state requirements.

Table 3.8

Applicable Radiation Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
NESHAPS	40 CFR Part 61, National Emission Standard for Hazardous Air Pollutants	EPA
DOE Order 1324.2	Records Disposition (November 1982)	DOE
DOE Order 5400.1	General Environmental Protection Program	DOE
DOE Order 5400.xx (Draft)	Protection of the Public and the Environment (March 1988)	DOE
DOE Order 5400.xy (Draft)	Radiological Effluent Monitoring and Environmental Surveillance (September 1988)	DOE
DOE Order 5480.1B	Environmental, Safety, and Health Program for Department of Energy Operations	DOE
DOE Order 5482.1B	Environmental, Safety, and Health Appraisal Program (September 1986)	DOE
DOE Order 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE Order 5000.3	Unusual Occurrence Reporting System	DOE
DOE Order 5480.4	Environmental Protection, Safety, and Health Protection Standards	DOE
DOE Order 5500.3	Reactor and Nonreactor Nuclear Facility Emergency Planning, Preparedness, and Response Program for Department of Energy Operations	DOE

Table 3.8 (continued)

Applicable Radiation Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
DOE Order 5820.2A	Radioactive Waste Management (September 1988)	DOE
DOE/EH-0071	Internal Dose Conversion Factors for Calculation of Dose to the Public (July 1988)	DOE
DOE/EH-0070	External Dose-Rate Conversion Factors for Calculation of Dose to the Public	DOE
ANSI-N510	High Efficiency Particulate Filter (HEPA) Testing	ANSI
DOE/EV-1830-T5	A Guide to Reducing Exposure to As Low as Reasonably Achievable (April 1980)	DOE
WIPP/DOE-176	Internal and External Dose Conversion Factors	DOE
10 CFR 20	Radiological Controls	NRC
40 CFR 61	National Emission Standard for Hazardous Air Pollutants-NESHAP	DOE

The program has been in a state of evolution and improvement for several years. Many of the findings identified in the radiation section are the result of program activities that have not been fully evaluated or are areas where improvements have not been implemented. The most significant findings are that (1) program activities and changes are not well documented; and (2) procedures do not exist for some key activities: outdated procedures were used and procedures were not followed; several activities resulted in unmonitored emissions or nonrepresentative monitoring of emissions; and reports were not completed and issued as required.

The Y-12 Plant has initiated upgrade activities that will meet the requirements of the draft DOE Order 5400.xy. The Y-12 Plant has developed test equipment to provide a periodic leak test of the stack sampling and monitoring system to insure integrity and representativeness. This is a noteworthy practice that should be considered by other DOE facilities.

3.5.8.2 Regulatory or DOE Order Requirement Findings

3.5.8.2.1 Dose Assessment

Performance Objective: 40 CFR 61, NESHAP, and DOE Orders 5480.1B, 5400.1, and 5500.3 require that dose assessments should be performed in a manner that ensures compliance with DOE and Federal requirements.

Finding: The dose model parameters and the validation of the dose assessment methodology are not sufficiently documented to demonstrate compliance with DOE orders and Federal requirements.

Documentation does not exist to demonstrate that the AIRDOS-EPA computer dose model for the Y-12 Plant provides a representative, accurate, or conservative assessment of the off-site dose for the meteorological and topographical conditions at the Y-12 Plant. Changes have been made to the AIRDOS-EPA computer model parameters, and these changes and the technical bases have not been documented. The AIRDOS-EPA code, which is based on a simple straight-line gaussian dispersion, does not allow for site-specific and local-terrain parameter considerations (i.e., building wake and valley effects, respectively). The concern is that the current model has not been adequately evaluated and validated for the topography and meteorological conditions at the Y-12 Plant. Other computer models (e.g., NRC-RASCAL) have been used to provide comparison with AIRDOS-EPA, but these evaluations were not documented.

The documentation of the off-site radiation emergency dose calculation method used for the Y-12 Plant is not up-to-date and is not reflective of the methodology in place as required by DOE Order 5500.3, attachment 1, 2.h.

Currently, the assessment of dose from Y-12 Plant stack emissions is performed on the assumption that all of the emissions are from a single release point at a height of 20 m at the center of the Y-12 Plant. Documentation of technical bases, justification, and approval for this assumption does not exist. A single discharge point is used so that emission data can be handled as unclassified;

however, other methods could have been used to calculate off-site dose and maintain the unclassified status of the data.

Dose assessments to demonstrate compliance with the DOE dose limit of 100 mrem/year to the maximum individual are not performed using the values of DOE/EH/-0071, Internal Dose Conversion Factors for Calculation of Dose to the Public. Currently, dose assessments are only performed using Environmental Protection Agency (EPA) dose conversion factors and methodology. Although the DOE-approved dose conversion factors were published in July 1988, the site did not document an evaluation of their use. (The use of these factors will be required upon issuance of draft DOE Order 5400.xy, Chapter VII, paragraph 3.) As stated in draft DOE Order 5400.xy, Attachment 3, paragraph 4.h, before any model is deemed appropriate for a specific application, the assumptions upon which the model is based shall be evaluated and the evaluation results documented. This documentation is considered necessary to demonstrate compliance with DOE orders and Federal regulations.

A land use census has not been routinely performed for the purpose of identifying all critical dose pathways for assessing compliance with the DOE dose limit of 100-mrem/year. Changes in land use around the Y-12 Plant and the Oak Ridge Reservation need to be periodically reviewed to ensure that appropriate dose pathways are used in performing dose assessments. The last land use census was performed and reported in DOE/EA-0182, Environmental Assessment Y-12 Plant Site, Oak Ridge, Tennessee (December 1982). No formal procedure exists to provide documentation and assurance that appropriate census data are used in the performance of dose assessment calculations.

Written procedures for dose assessment computer programs do not exist. The assessment of off-site dose from Y-12 Plant operations is performed by Oak Ridge National Laboratory (ORNL) personnel. The Y-12 Plant currently relies on the personal knowledge and the experience of the ORNL technical staff members to properly operate these programs. The ORNL personnel stated that procedures are currently being developed or are planned for this activity. No documentation for the development of procedures was found.

In December 1986, DOE-HQ conducted an Environmental Survey of the Y-12 Plant at Oak Ridge. The findings of this survey are reported in DOE/EH/OEV-07-P, U.S. Department of Energy, Environmental, Safety, and Health Office of Environmental Audit, Environmental Survey Preliminary Report, Y-12 Plant, Oak Ridge, Tennessee. A finding on dose assessment (Finding 4.3.4.4) reported that the same parameters used as input to the EPA-AIRDOS computer code may not accurately reflect the characteristics of Y-12 Plant emissions. A July 18, 1989, status report update to DOE-ORO, stated that this finding was complete. This status report update does not accurately address the survey report's finding and does not provide adequate information to justify its status as complete. This finding is considered open until the program to fully characterize radionuclide emissions at the Y-12 Plant is completed.

3.5.8.2.2 Effluent Monitoring

Performance Objective: DOE Order 5480.1, Chapter XI, Requirements for Radiation Protection, paragraph 4.b.(2), requires that effluent to the environment and other parameters shall be monitored and documented in accordance with DOE Order 5484.1. DOE Order 5400.1, General Environmental Protection Program, Chapter IV paragraph 5, specifies that effluents shall be monitored to demonstrate compliance with the requirements of draft DOE Order 5400.xx.

Finding: Effluent monitoring and reporting of radioactive emissions at the Y-12 Plant are not performed in full compliance with the DOE order requirements.

Liquid and gaseous radioactive effluent emissions from Y-12 Plant buildings containing processes operated by ORNL personnel are not monitored and reported in accordance with the requirements of the DOE orders. The Y-12 Plant is aware of this compliance deficiency and is currently evaluating these operations and developing an action plan. The action plan will address the permitting of these effluents and the upgrade of and installation of effluent monitoring equipment. Furthermore, the landlord agreement will be revised to clearly specify the responsibilities of the owner and operator of these buildings' emission control and monitoring systems.

The accuracy of stack flow data used for determining the quantity of radioactivity discharged from the Y-12 Plant stacks is questionable. During this assessment, operations and maintenance personnel were observed making ventilation exhaust flow adjustments without consideration of the effect on emissions reporting. Stack flow rates and subsequent volume of airborne emissions are not determined by installed stack-flow monitoring instrumentation. Currently, the quantity of radioactive airborne emissions is calculated based on stack discharge flow measurements performed annually by using approved EPA methodology and the assumption of no variability. There is no system at the Y-12 Plant to ensure that exhaust flow rates are maintained at specified flow rates or that changes in flows are reported to the environmental monitoring group. The Y-12 Plant is aware of and tracking this deficiency on the Regulatory Deficiency and Audit Recommendation Tracking System Priority Report.

Some sources of radioactive airborne emissions to the environment from the Y-12 Plant are not monitored as required by DOE Order 5480.1, Chapter XI, paragraph 4.b.(2), and DOE Order 5400.1, Chapter IV, paragraph 5. Several unmonitored airborne release pathways from ventilation exhaust systems (i.e., open inspection ports, deteriorated rubber duct couplings, rusted duct joints, vent and fan drains, unseal penetrations, etc.) are located on the roof of Building 9206. There is a lack of an effective plant-wide inspection and maintenance program to identify and correct these deficiencies. It should be noted that corrective actions were promptly initiated by Energy Systems to repair the leaks found on Building 9206.

An unmonitored discharge from a recently installed ventilation system and exhaust stack was found on the roof of Building 9206. A formal control system does not exist to ensure that the implementation of project upgrades and modifications (i.e., process and ventilation) affecting monitoring and emission controls is performed in a manner that complies with DOE and Federal requirements for

monitoring. At the time of this assessment, the exhaust stack had been operating for approximately 5 weeks. The process that feeds this stack was shut down. The Y-12 Plant environmental group responsible for sample collection and reporting stack emissions had no knowledge of this system's operation. Monitoring equipment for this stack is available for installation.

Unmonitored, uncontrolled releases of uranium to the ambient environment can occur in the event of an accident. In the uranium processing buildings, both enriched and depleted uranium are handled and transported in nonprocess areas with ventilation systems that are not equipped with either emission control devices or radiological emissions monitors. If an accident such as a uranium chip fire or criticality were to occur in such an area, radioactive materials could be released to the environment. A uranium chip fire occurred in the enriched-uranium chip washing area of Building 9212 in December 1985. This is an open item from the 1986 DOE Environmental Survey. Energy Systems staff have indicated that follow-up activities associated with this finding have been partially completed. A fiscal year 1992 project on upgrading the enriched uranium process area will partially address this finding.

Releases of radioactive materials to the environment from maintenance activities on radioactively contaminated systems are not monitored or controlled. There are no procedures to ensure control or monitoring of releases of radioactive contamination to the environment from work performed on contaminated equipment located outside plant buildings. A HEPA filter changeout on Stack No. 100 was observed on the roof of Building 9204-2E. The changeout consisted of the removal of two prefilters and two HEPAs by three service personnel. The following is a listing of some areas of concern and poor practices observed.

- The filter system and ducting was not surveyed for radioactive contamination or dose rate levels prior to, during, or after completion of filter changeout.

- The work area, filter-box access area, and service personnel were not surveyed for contamination upon completion of the filter changeout. The area under the filter box, which was not covered, may have become contaminated during the filter changeout. The filter-box access cover was handled with contaminated gloves and was not surveyed.

- Maintenance procedures do not specify radiological requirements or conditions that are to be performed. A plant wide procedure does not exist that ensures that appropriate radiological requirements (e.g., requirements that specify criteria for use of containments, or limits on contamination and wind levels at which contaminated ventilation systems or equipment may be worked) are incorporated into maintenance and operating activities with the potential for release of radioactive material to the environment.

Stack sampling and monitoring systems were found to be operating in a manner that did not ensure representative sampling as required by DOE order. Several stack samplers were found to have loose sample line connections and fittings, and numerous sampler and monitor filter holders had not been properly installed

(i.e., thumb screws had not been tightened). One stack monitor was found with the detector not properly installed. It was also noted that numerous stack monitor tygon sample lines were internally coated with oily material, which adversely affects the capability of the system to obtain a representative particulate sample. The Y-12 Plant has subsequently replaced the tygon sample lines and installed hose clamps. The apparent cause of these deficiencies is lack of maintenance, procedural direction and personnel awareness.

Effluent sampling procedures are not treated as controlled documents and are not updated in a timely manner to reflect changes in the effluent monitoring program. The Y-12 Plant has removed all outdated procedures from the stack monitor cabinets. Two outdated procedures were found in a stack monitor cabinet. Changes in sample filter handling and analysis have not been incorporated into the appropriate procedures to reflect current practice.

3.5.8.2.3 Radioactive Effluent/On-site Discharge/Unplanned Releases Report

Performance Objective: DOE Order 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements specifies the requirements for the radioactive effluent/on-site discharge/unplanned releases report.

Finding: Annual radioactive effluent and on-site discharge data reports for the Y-12 Plant have not been properly prepared and submitted to the Waste Information Systems Branch, EG&G Idaho, Inc., as required by DOE Order 5484.1, Chapter IV, paragraph 4.c.(1).

The Y-12 Plant has routinely prepared the radioactive effluent report for submittal by DOE-ORO. Prior to calendar year (CY) 1986, these reports were submitted to the DOE-ORO Environmental Protection Division, currently these reports are submitted to the DOE Y-12 Site Manager. These reports are maintained by the DOE Y-12 Program Management Branch and made available to other DOE-ORO organizations. Interviews with DOE personnel indicated that the reports have not been submitted to the Waste Information System Branch, EG&G Idaho as required by the DOE order. The Y-12 Plant and DOE-ORO personnel indicated that the report was not submitted because of security classification. Documentation of an exemption from this reporting requirement could not be found during the performance of this assessment.

The Y-12 Plant Radioactive Effluent Reports for CY 1986 through 1988 were reviewed, and the following deficiencies were noted:

- None of the report data forms DOE F 5821.1, Radioactive Effluent/On-Site Discharges/Unplanned Releases had an approval signature next to the typed name of the individual designated to perform the approval.

- From apparent data anomalies (e.g., unclear data from double strike) on copies of DOE F 5821.1 forms, it was learned that white out had been used to correct data entries on the original forms. In the future, data revision should be appropriately indicated.

- Maps showing the location of new or deleted effluent streams and on-site discharge points from the previous year have not been included as required by DOE Orders 5484.1.

- A discussion of unplanned releases of radioactive materials in effluent (e.g., the Uranium Oxide Storage Vault Emissions Incident as reported in the Oak Ridge Reservation Environmental Report for 1988) was not included as required by DOE Orders 5484.1.

- The Y-12 Plant reports do not contain a summary of pertinent and interpretative information to adequately describe reported data as required by DOE Orders 5484.1.

- The Y-12 Plant reports do not report specific radionuclides released from each emission point as required by DOE Orders 5484.1. Currently, U-234 is the only airborne radionuclide reported with a comment that assay range depleted to enriched and U-234 and Th-232 are reported for liquid releases.

DOE-ORO has requested that the Y-12 Plant update the effluent information system to meet the requirements of Chapter 2 of the DOE Order 5400.1. This update was requested to be completed by October 13, 1989. DOE-ORO also stated in the memo that it was incorrect to report releases as U-234 only and requested correction.

It appears that the lack of DOE and Energy Systems procedures for this activity, lack of knowledge as to the order requirements, as well as organizational and responsibility changes within DOE-ORO divisions are the contributing factors resulting in this finding.

3.5.8.2.4 Annual Site Environmental Report

Performance Objective: DOE Order 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements, and DOE Order 5400.1, General Environmental Protection Program, specify the reporting requirements for the annual site environmental report.

Finding: The annual Oak Ridge Reservation Environmental Report for 1988 was not distributed in accordance with the requirements of DOE Order 5484.1, Chapter IV, paragraph 4.c.(2), and DOE Order 5400.1, Chapter II, paragraph 4.

An exemption for this reporting requirement was not obtained in accordance with the exemption procedures of DOE Order 5400.1, Chapter I. Partial distribution was made to internal DOE organizations. Based upon direction for DOE-HQ, complete distribution as required by the order was not performed (i.e., external agencies and organizations, and the public). The circumstances surrounding this finding were beyond the site's control. This finding should be presented to DOE-HQ for resolution.

3.5.8.3 Best Management Practice Findings

3.5.8.3.1 Protocol for Modifying the Environmental Monitoring Program

Performance Objective: DOE Order 5400.1, General Environmental Protection Program, Chapter IV, paragraph 1.a, specifies that the environmental monitoring program and its components shall be determined by the DOE field organization.

Finding: The lack of a formal protocol for modifying the environmental program is not in concert with DOE Order 5400.1 and may result in changes that are contrary to DOE policy or requirements.

3.5.8.3.2 Maintenance and Operating Procedures

Performance Objective: Procedures must provide appropriate direction to ensure the safety and protection of the environment and proper equipment operation.

Finding: Maintenance and operating procedures do not contain detailed safety instructions and do not reference appropriate documentation containing safety requirements. A coordinated program whereby appropriate safety groups (i.e., Health Physics and Environment, Health, and Safety) review procedures to ensure that appropriate safety requirements practices are incorporated does not exist.

As an example, the procedure for high-efficiency particulate air (HEPA) filter replacement and dioctylphthalate (DOP) testing, 50-39-UD-042, was reviewed with the following concern. This procedure does not specify or reference requirements for radiological control requirements (e.g., contamination containment and surveys). In Appendix B of the procedure for performing efficiency DOP testing, personnel and test equipment are exposed to contaminated ventilation ducting/systems that are opened to perform the test. The procedure does not require a contamination survey of the area, equipment, or personnel to ensure control of contamination.

3.5.8.4 Noteworthy Practices

3.5.8.4.1 Leak Testing of Stack Monitoring Systems

As a result of an EPA condition for operation of the Uranium Chip Oxidizer Facility, the Y-12 Plant has developed a method for routinely assessing the integrity of the stack-emission sampling and monitoring systems. Equipment and procedures have been developed and successfully tested in the laboratory. Field testing is currently scheduled to be performed for a one-calendar-quarter period. Upon completion of this test period, all Y-12 Plant stack emission monitors will be modified, and leak tests will be routinely conducted as part of the routine quarterly monitor maintenance and at any other time that stack sample line connections are opened.

The implementation of this leak-testing program will provide the assurance that there is no in-leakage of ambient air that would affect the representativeness of the emission sample. This testing program also meets the new requirements of Chapter V, paragraph 2.c, of draft DOE Order 5400.xy.

3.5.9 Inactive Waste Sites

3.5.9.1 Overview

The inactive waste site assessment at the Y-12 Plant evaluated the status of the site with regard to applicable CERCLA, RCRA, and DOE order requirements. The specific regulatory requirements against which the Y-12 Plant was assessed are presented in Table 3.9. To accomplish the assessment, investigations were conducted at the facility consisting of the following steps:

- Examination of available operating records and files to determine and verify, when possible, the facility's compliance status.
- Visual inspection of the facility and associated inactive waste sites; interviews with facility personnel to identify past or current materials and waste management practices.
- Review of production operations, chemical handling processes, waste management systems and policies, and prior waste handling practices.
- Analysis of the information obtained and identification of specific regulatory or DOE order requirement findings and best management practice findings.

A significant level of activity has occurred and continues to occur in an effort to address the environmental effects of past waste disposal practices at the Y-12 Plant. Twenty-one sites at the Y-12 Plant were proposed as CERCLA sites in the initial CERCLA Facility Assessment report prepared in 1986.

The authority having the greatest impact on corrective action at the Y-12 Plant is Section 3004(u) of RCRA - Corrective Action for Continuing Releases. This section stipulates that any RCRA permit issued after November 8, 1984, requires corrective action for releases from solid waste management units at the facility. This expanded jurisdiction dictated the shift of corrective action/remediation for a number of the Y-12 Plant's inactive waste disposal sites from CERCLA to RCRA.

In 1987 and 1988, 15 of the proposed CERCLA sites were transferred to the RCRA program when EPA Region IV determined that most of the inactive waste sites at the facility will be dealt with under the Corrective Action Program of RCRA. Draft investigation plans for 4 of the remaining sites were prepared, and currently these 4 sites, along with approximately 17 inactive underground tank sites, are proposed by the site for inclusion in the site's CERCLA program.

At present, approximately 187 SWMUs have been identified in the Y-12 Plant RCRA Facility Assessment. Twenty-four RFI plans were identified as being required to evaluate those SWMUs warranting further investigation. These plans are to be submitted according to a schedule in the RCRA permit issued for the Oak Ridge Reservation in September 1986. The site is currently on schedule with submittal of these deliverables.

Table 3.9

Applicable Inactive Waste Site Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
CERCLA	103 Notifications 104 Response Authority 113(k) Administrative Record 117 Public Participations 118 Drinking Water Supply Priority 120 Federal Facilities 120(h) Federal Property Transfers 121 Cleanup Standards	Statute
CERCLA Provisions	40 CFR Part 302, Designation, Reportable Quantities, and Notification 40 CFR Part 300, National Contingency Plan 40 CFR Part 373, Reporting Hazardous Substance Activity When Transferring Federal Real Property	EPA
RCRA Provisions	40 CFR Part 264 Subpart F, Releases from Solid Waste Management Units	EPA
DOE Order 5400.yy	CERCLA Requirements	DOE
DOE Order 5400.4	Integration of Environmental Compliance Processes	DOE
Executive Order 12580	Superfund Implementation	President
Federal Facility Agreement	Environmental Restoration Agreement for the Oak Ridge Reservation State of Tennesssee	DOE, EPA

Activities at the Y-12 Plant that are being conducted under CERCLA and RCRA requirements described above have been organized into the Y-12 Plant Remedial Action Program. The Remedial Action Program includes the following projects:

RCRA Closure and Post-Closure Activities (CAPCA) - CAPCA includes the RCRA closures and associated post-closure monitoring and/or remediation of eight land-based units requiring initiation of closure by November 1988.

East Fork Poplar Creek RI-FS/EIS - This project involves procuring a DOE technical support contractor for the preparation of a Remedial Investigation/Feasibility Study and Environmental Impact Statement (RI/FS-EIS) for the most heavily mercury-contaminated soils and sediments in the EFPC floodplain.

30004(u) RCRA/CERCLA Remedial Investigation Plans - This project includes the development of the required RFIs previously discussed and the development of CERCLA Remedial Investigation (RI) plans as required.

Site Investigations and Assessments - This project involves the implementation of the RFI plans and CERCLA RI plans to be developed.

RCRA Corrective Measures - As RFIs and Corrective Measure Studies are conducted, this project will provide for the design and implementation of the selected corrective measures.

RCRA/CERCLA Closures - This project includes the RCRA nonland unit closures as well as remedial actions in non-RCRA areas at the plant.

Presently, the most significant activity in relation to complying with regulations concerning inactive hazardous waste sites at the Y-12 Plant is the negotiation of a Federal Facility Agreement (FFA) for environmental restoration at the Oak Ridge Reservation between DOE, EPA, and the State of Tennessee. The agreement is in the final stages of development and is scheduled to be in place in early CY 1990.

The general purposes of the agreement are to ensure that the environmental impacts associated with past and present activities at the site are thoroughly investigated and remediated, and to establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the site in accordance with CERCLA, the National Contingency Plan (NCP), RCRA, NEPA, and Tennessee state law.

The status of the Y-12 CERCLA program is in a state of transition. Currently, DOE orders dealing with CERCLA program policy have either been rescinded or exist in draft form. In addition, DOE and the site contractor management are reorganizing to form the necessary structure to accomplish the investigations

and remediations required under the proposed FFA. DOE is in the final stages of procuring a technical support contractor whose primary mission will be to establish required CERCLA program elements such as the Administrative Record and start the EFPC RI/FS.

Of primary importance is the timely execution of the FFA. The procedural framework and schedule established in the FFA to accomplish appropriate remedial actions must be in place in early CY 1990 for the facility and the state to stay on a regulatory compliant track. The site has anticipated their remedial action commitments and have complied with the schedule of RFI/RI plans proposed in the FFA. A major concern for the negotiators of the agreement is the State of Tennessee's ability to review, comment, and provide technical oversight in a timely manner.

Timely execution of the FFA is also particularly important in relation to the EFPC RI/FS. Because this project involves the presence of mercury contamination off-site in the EFPC floodplain, there is a high public interest. For the public to have meaningful participation in this remedial action as required by CERCLA, a community relations plan and formal notifications to the natural resource trustees and their responses must be placed by DOE in the administrative record for the site.

3.5.9.2 Compliance Findings

None.

3.5.9.3 Best Management Practice Findings

3.5.9.3.1 A CERCLA program is not fully implemented at the Y-12 Plant.

Performance Objective: Draft DOE Order 5400.yy and the proposed FFA require that the facility establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the site in accordance with CERCLA and the NCP (40 CFR Part 300) whether or not the site is listed on the National Priorities List (NPL).

Finding: Implementation of a CERCLA compliant program and integration of CERCLA provisions into the RCRA Corrective Action Program at the site have not been adequate to ensure compliance with CERCLA requirements.

Required elements of a CERCLA program that are not in place at the Y-12 Plant are (1) establishment of an Administrative Record, (2) establishment of a Community Relations Plan, and (3) meeting the natural resource trustee notification responsibilities in past or current CERCLA-related negotiations. It should be noted that the appropriate steps to implement a compliant CERCLA program at the site will be in place once DOE executes the FFA and procures the Technical Support Contractor to establish the administrative record and begin work on the EFPC RI/FS-EIS.

3.5.10 National Environmental Policy Act

3.5.10.1 Overview

The purpose of the NEPA review was to evaluate the adequacy of (1) management of the NEPA decision-making process for project activities, (2) NEPA review for ongoing activities, and (3) current plans for NEPA review for proposed actions. Table 3.10 lists applicable regulations and/or requirements used to evaluate NEPA compliance.

The scope of this review included discussions with Energy Systems and ORO staff responsible for NEPA compliance, an evaluation of written NEPA policies and procedures, and a review of the scope of documentation prepared for NEPA compliance relating to ongoing activities. Documents were not reviewed for their technical adequacy.

Support for the NEPA review process for the Y-12 Plant is provided by Energy Systems, which reports to and is overseen by ORO. ORO receives its programmatic direction from Defense Programs (DP) at DOE HQ. Policies and procedures for NEPA compliance have been proposed by Energy Systems for their operations at the Y-12 Plant.

The intent of NEPA to factor environmental considerations into the programmatic decision-making process has not been systematically integrated for Y-12 operations. NEPA has been in effect for 20 years (January 1, 1970); however, there is no record of compliance at the Y-12 Plant that involves the full scope of the NEPA process. The documented history of NEPA compliance at the Y-12 Plant indicates several problems with programmatic decision making:

1. Emphasis has been placed on site remediation and plant construction needs with the completion of Memoranda to File (MTF) rather than on developing the management strategy to ensure compliance with the procedural requirements of NEPA.

2. A draft Environmental Assessment (EA) for the Y-12 site was prepared in 1982, but no NEPA determination [Finding of No Significant Impact (FONSI) or EIS] was made.

3. An Oak Ridge Reservation-wide EIS, which encompasses management of Y-12 Plant low-level radioactive waste, is currently in preparation; however, the EIS is behind schedule for a planned mid-1990 completion.

4. The first EA of Y-12 Plant projects to receive an FONSI (CAPCA EA), dated July 11, 1988, covered projects that had already been initiated. There is no documentation in Y-12 Plant NEPA files that indicates the EA was made available to the local public in compliance with Council on Environmental Quality (CEQ) procedures and direction from EH-HQ.

Table 3.10

Applicable National Environmental Policy Act Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
Public Law 91-190	National Environmental Policy Act (NEPA)	U.S. Congress
40 CFR 1500-1508	Regulations for Implementing the Procedural Requirements of NEPA	Council on Environmental Quality
DOE Order 5440.1C	NEPA	DOE
52 CFR 47662-47670	DOE NEPA Guidelines	DOE
DOE Order 4700.1	Project Management System	DOE
DOE Notice 5400.4	Integration of Environmental Compliance Processes (CERCLA and NEPA)	DOE
10 CFR 1022	Compliance with Floodplain/Wetlands Environmental Review Requirements	DOE
Not applicable	DOE Environmental Compliance Guide (1981)	DOE
Not applicable	DOE NEPA Compliance Guide (Draft) (1988)	DOE

Table 3.10 (continued)

Applicable National Environmental Policy Act
Regulations, Requirements, and Guidelines

Regulation/ Requirement/ Guideline	Section/Title	Authority
Not applicable	NEPA Guidance Related to Memorandum to File and Categorical Exclusion (March 25, 1988)	DOE

In addition, NEPA decisions are organizationally fragmented at ORO. This situation will be exacerbated by the October 1, 1989, reorganization of the Waste, Environmental, and Emergency Management Division unless specific assignments of NEPA compliance responsibility are given to a single authority. The responsibility for NEPA document preparation and review at the Y-12 Plant resides with the Y-12 Site Office. However, this responsibility is fragmented because projects that address waste management for the reservation (i.e., three EISs: Oak Ridge Reservation Waste Management, Bear Creek Valley Remedial Action Project, and East Fork Poplar Creek Remedial Action Projects) are the responsibility of ORO.

Both ORO and DOE-HQ share in the failure to develop and implement a coordinated compliance strategy. At ORO, resources dedicated to NEPA compliance have been severely limited at all organizational levels; at the contractor level there is no priority on training in NEPA and its procedural requirements. The Y-12 Plant NEPA files indicate that DP-HQ has provided untimely and inconsistent guidance on the level of NEPA documentation required for the Enriched Uranium Conversion Facility Modifications. DP-HQ's inaction on the Bear Creek EIS Notice of Intent (NOI) has resulted in piecemeal assessment of subsequent remedial actions and the start of projects without any NEPA documentation.

The history of beginning and terminating the preparation of EAs and EISs is of concern because it indicates a lack of programmatic guidance and strategy at both the ORO and DP-HQ levels. It is difficult to assess if the current organization will perform better than in the past and if the effect of further fragmenting NEPA compliance responsibilities will require additional coordination at all organizational levels. Consequently, concern continues to exist regarding (1) delays in preparing and issuing NEPA documents; (2) the absence of a valid cumulative impact assessment of the many past, present, and planned activities; (3) the potential legal vulnerability for projects occurring without appropriate NEPA documentation; and (4) the lack of NEPA integration into the programmatic decision making at ORO and at the Y-12 Site Office.

3.5.10.2 Compliance Findings

3.5.10.2.1 NEPA Process Not Appropriately Applied to EAs and EISs

Performance Objective: CEQ regulations require that procedures be established to provide a sound basis for making decisions with respect to proposed actions that facilitate restoration and protection of the environment, as required by NEPA [40 CFR §§§ 1500.1, 1500.2(b), and 1500.2(f)]. DOE requires that Responsible Supervisory Officials make decisions with respect to the need for NEPA actions [DOE Order 5440.1C (6)(c)(2)].

Finding: Decisions including start of construction activities have been made before the required NEPA documents are prepared; EAs and EISs have been initiated and terminated without written records of these decisions.

NEPA actions intended to result in an EA or an EIS have been properly initiated early in the planning process for projects. Nine such actions have been

identified. The documents associated with these actions and key dates are listed in Tables 3.11 and 3.12. The earliest of the nine is a site-wide EA dated December 1982. The most recent of these documents are determinations of the need for an EA for Y-12 Steam Plant Ash Disposal and two EISs to be prepared subsequent to action taken under an EA that assesses RCRA closure of waste management units in the Bear Creek and EFPC watersheds (Revised Final Environmental Assessment, Y-12 RCRA Closure Initiation Projects). This EA is usually referred to by the acronym used for one of the projects covered by the EA, the Closure and Post-Closure Activities (CAPCA) project.

Of the nine EAs and EISs identified, three have been terminated. The three are the Y-12 Plant Site EA, the Enriched Uranium Conversion Facility Modifications (EUCFM) EA, and the Central Waste Disposal Facility for Low-Level Radioactive Waste EIS. A written record could not be found of the status of two of the three actions or a record of the decisions that were made with respect to terminations of the NEPA process. The three terminated NEPA documents are as follows:

1. A draft EIS for the Central Waste Disposal Facility for Low-Level Radioactive Waste was publicly released in September 1984. The NEPA process for the document was terminated in June 1986 by a Federal Register Notice of Cancellation. This project has been included within the scope of the Oak Ridge Reservation Waste Management EIS.

2. An EA for the Y-12 Plant Site was prepared in December 1982; however, neither ORO, the Y-12 Site Office, nor Energy Systems can demonstrate that the EA received a determination from from EH-HQ or a predecessor office appropriate for the document.

3. An EA for EUCFM was prepared in December 1986. A written record of the termination of the EUCFM EA was not evident in the Y-12 Plant NEPA files. A September 20, 1982, MTF (containing classified information) stated that the project clearly would not have significant environmental effects; however, a memo from ORO to DP-HQ dated March 9, 1987, transmitting an environmental analysis for the project, stated that DP-HQ had requested the environmental analysis. Y-12 NEPA files do not contain any records of a response from DP-HQ. Construction activities associated with the project have proceeded, and plant operations with the modified systems are planned to start as early as March 1990.

The remaining six actions are the CAPCA EA, an EA for disassembly and decommissioning of Colex equipment in Building 9401-4, the ash disposal EA, and three EISs for (1) treatment and storage of hazardous and mixed waste and disposal of low-level radioactive waste, (2) remedial investigation of waste management units in the Bear Creek watershed, and (3) remedial investigation of waste management units in the EFPC watershed. The Bear Creek and EFPC EISs assess plans for permanent closure under CERCLA of waste management units that were described in the CAPCA EA. The waste management EIS is referred to by the acronym for the design research program that supports the project the Low-Level Waste Disposal, Development, and Demonstration (LLWDDD) program.

Table 3.11. Document Activity: Environmental Impact Statements

Document	Date Need Determined	NOI Date	Implementation Plan	DEIS	Notice Of Availability	FEIS	Notice of Availability	Record Of Decision
1. Central Waste Disposal Facility Waste Disposal Facility for Low-Level Radioactive Waste, Oak Ridge Reservation	September 1983	November 15, 1983	November 1983	September 1984	September 1984	NA - Project cancelled November 24, 1986	Not Applicable	Not Applicable
2. Oak Ridge Reservation Waste Management	Not documented	October 25, 1988	June 30, 1989	? Under preparation				
3. Bear Creek Valley Remedial Action Project	August 20, 1985	Not yet published						
4. East Fork Poplar Creek Remedial Action Project	Not documented	November 14, 1988	? Under preparation					

Table 3.12. Document Activity: Environmental Assessments

Document	Date Need Determined	Publication Date	Decision/Date
1. Y-12 Plant Site, Oak Ridge, Tennessee	Undocumented	December 1982	No determination made
2. Enriched Uranium Conversion Facility Modifications	Undocumented	December 1986	No determination made
3. RCRA Closure Initiation Projects	June 14, 1988	June 28, 1988	July 11, 1988 (FONSI)
4. Decommissioning of Colex Equipment from Building 9401-4	April 14, 1986	Scheduled for 1990	Not applicable
5. Disposal of Ash from the Y-12 Steam Plant Y-12 Steam Plant	Undocumented	Scheduled for 1990	Not applicable

Of the six active EAs and EISs, the CAPCA EA has been formally approved by EH-HQ, and an FONSI has been issued. An NOI to prepare the Oak Ridge Reservation Waste Management EIS has been published in the Federal Register, a scoping meeting has been held, and an Implementation Plan has been prepared. An NOI to prepare the EFPC EIS has been published in the Federal Register, a scoping meeting has been held, and a draft Implementation Plan has been prepared.

An EIS has not yet been prepared for the Bear Creek Valley remedial action. A draft NOI to prepare an EIS and conduct a public EIS scoping meeting on the Bear Creek Valley Remedial Action Project was prepared in February 1986. The NOI has not been issued, and a record of authoritative termination of the project cannot be found in Y-12 Plant files. ORO and Energy Systems personnel stated that the project is active and that NOI preparation will proceed following compilation and assessment of existing environmental data.

The need for an EA was recognized by the Y-12 Site Office for the disassembly and decommissioning on Colex equipment in Building 9401-4 and for the Y-12 Steam Plant Ash Disposal project. The Y-12 NEPA records indicate that a determination by EH-HQ was made on April 14, 1986, to prepare an EA for the Colex equipment project. EA completion is scheduled for 1990. Energy Systems staff report that the decision to prepare an EA for the Steam Plant Ash Disposal project was based on verbal guidance from ORO and the Office of NEPA Project Assistance.

Finally, decisions to begin construction have been made before the appropriate NEPA assessments were available for consideration. For example, work was initiated for RCRA closure of the S-3 Ponds, West Borrow Area, and the Chestnut Ridge Sediment Disposal Basin prior to issuance of a FONSI for the CAPCA EA. The action was driven by regulatory compliance dates that were established by EPA and the Tennessee Department of Health and Environment.

3.5.10.2.2 EA for CAPCA Deficient in Technical and Procedural Areas

Performance Objective: An EA is required to contain a list of agencies and persons consulted [40 CFR § 1508.9(b)] and to identify the presence or absence of certain items that would prompt specific concerns [e.g., floodplains (Executive Order 11988), wetlands (Executive Order 11990), and endangered species (16 USC 1531-1543)]. A FONSI is to be made available to the public [40 CFR § 1501.4 (e)(1)].

Finding: The CAPCA EA does not provide a listing of agencies and persons consulted nor identify the presence or absence of wetlands or floodplains. The FONSI has not been made available to the public.

The subject EA is intended to support decisions with respect to implementing remedial action at several waste disposal areas. The remedial action is necessary because the soil is contaminated with various hazardous chemicals. The EA contains little quantitative data and no maps that identify the magnitude and extent of contamination, nor does it contain quantitative analyses describing the hazards to workers or the public associated with the proposed corrective action.

3.5.10.2.3 Use of MTF when Potential for Environmental Impacts Is Uncertain

Performance Objective: Notify EH-HQ at the earliest possible time in the planning process of actions under consideration that may potentially have a significant effect upon the quality of the human environment [DOE Order 5440.1C(6)(c)(1].

Finding: Actions have been taken at the Y-12 Plant without a NEPA decision-making process when it was unclear whether environmental impacts would be insignificant.

MTF have been prepared for Y-12 Plant projects when it was not clear that insignificant environmental impacts would occur. As a result, decisions were made without considering alternative courses of action; probable impacts of the action, including direct and indirect effects; and cumulative and long-term environmental effects. The risks of accidents associated with the projects are unknown. Further, the public was not informed of DOE's decisions as required by CEQ regulations (40 CFR § Section 1506.6).

A classified MTF was prepared September 20, 1982, for the EUCFM project. Project construction is nearly complete. The Y-12 Plant NEPA records indicate that an environmental analysis of the project has been prepared and sent to DP-HQ; however, a decision to prepare a NEPA document has not been made. Further NEPA review may be necessary considering the concern expressed by a need to prepare an environmental analysis and the potential impacts to workers and the public that could result from accidental releases of UF_6 that could occur through transport and handling accidents.

In addition, an MTF was prepared May 18, 1984, for an extensive program of construction and operation of environmental improvements and waste management facilities (e.g., general environmental control measures, solid waste disposal facility, liquid waste disposal facility, and decontamination and decommissioning facility). Project Description Memoranda prepared for the 1984 program did not report an assessment of potential cumulative impacts from the collective actions nor assess the risks of accidents. The program included the following actions:

1. handling, storage, and disposal of PCB transformers;

2. separation of beryllium oxide sludge from waste oil coolant, and associated storage and on-site disposal of collected sludges;

3. construction and operation of an 8000 ft^2 RCRA waste storage and staging area;

4. construction and operation of a steam plant wastewater treatment facility, a plating rinse water treatment facility, the west end treatment facility, a source collection and treatment facility, and an NPDES monitoring/sampling station (project plans included provisions for disposal of treated wastes into EFPC or disposal in unconstructed on-site facilities);

5. decontamination and decommissioning of a mercury-contaminated Lithium Isotope Facility (Building 9201-4), with discharge of treated wastewater into EFPC;

6. stabilization and closure of disposal sites in Bear Creek Valley;

7. radioactive trash and scrap monitoring system/facility;

8. central disposal facility for low-level radioactive solid wastes;

9. thermal oxidizers for uranium chip stabilization and storage; and

10. long-term storage of uranium metal and uranium oxide in concrete vaults on Chestnut Ridge.

Finally, an MTF was prepared March 10, 1987, for the Hazardous Waste Storage Facilities. It is apparent from the nature of this project as described in the Action Description Memorandum (ADM) and from the project's complexity and size, that the impact potential is not clearly insignificant, and that an MTF was not the appropriate level of NEPA documentation. The ADM prepared for the project describes the following actions:

1. storage for 5 years of mixed and hazardous waste from Y-12 and ORGDP;

2. one 10-acre site in Bear Creek Valley consisting of a diked tank farm with eight 500,000-gal aboveground tanks for Y-12 generated sludge;

3. one 4.5-acre site at Y-12 that has two warehouse buildings for security classified hazardous waste; one of the buildings will be classified as a RCRA storage area;

4. a total of approximately 640,000 ft^3 of low-level radioactive and mixed waste from Y-12 for interim storage;

5. site preparation and grading, including removal of surface vegetation and trees, for these new facilities;

6. the possible excavation of contaminated soils for the Y-12 sludge tanks; and

7. the need for RCRA storage and operating permits and for air pollution permits.

3.5.10.2.4 NEPA Compliance Policies and Procedures

Performance Objective: Energy Systems' Y-12 policies and procedures should comply with CEQ Regulations for Implementing NEPA (40 CFR 1500-1508), DOE NEPA Order 5440.1C, and DOE NEPA Guidelines (52 FR 47662).

Finding: Energy Systems' draft NEPA Review and Compliance Procedure 70-915 does not accurately reflect DOE's NEPA compliance policy and procedures.

Although DOE NEPA Guidelines and DOE Order 5440.1C do not require Operations Offices or Site Offices to establish separate written policies or procedures for compliance with NEPA, policies and procedures may be established. An ORO NEPA Order that will apply to the Y-12 Plant, as well as to other ORO-managed facilities, is being prepared by ORO staff; however, preparation of the policy is not considered a priority. Energy Systems has recognized the need for a NEPA policy at Y-12 and is currently developing a NEPA compliance procedure, Health and Safety Procedure 70-915. This procedure was developed in consultation with ORO and reflects Energy Systems corporate Environmental, Safety, and Health Standards NEPA Review and Compliance Procedure policy (draft dated April 27, 1989). In general, both Energy Systems draft procedures reflect CEQ and DOE policy and procedure; however, they incorrectly interpret some CEQ regulations and DOE NEPA policies pertaining to the use of ADM and MTF. The following specific findings reference sections of Procedure 70-915, but also apply to the corporate NEPA Procedure.

First, Section I of the procedure, Purpose, does not state that the purposes of Y-12 NEPA policy are to foster informed environmental decision making for the Y-12 Plant, to facilitate public awareness of the NEPA process, and to provide for determinations on the appropriate level of NEPA documentation early in the planning process.

Second, Section II, Scope, incorrectly states that the procedure does not apply to emergency situations. The procedure does not state that Energy Systems will comply with 40 CFR § 1506.11 when an emergency occurs.

Third, Section III incorrectly defines the purpose of DOE's ADM process. The ADM is not a NEPA document per se. It is used in the DOE NEPA process to facilitate a determination of the appropriate level of NEPA documentation for a proposed action. If a proposed action does not fit clearly into a class of action listed in Section D of the DOE NEPA guideline, and if it fails the test of clearly insignificant, then an ADM should be prepared and submitted by the Responsible Supervisory Official (RSO) to EH-HQ for a determination of the appropriate level of NEPA documentation. The ADM should contain a concise description of the proposed action and a brief discussion of potential environmental issues. It need only contain information sufficient to permit a reasonable determination of the required level of NEPA documentation.

The ADM as defined in the draft procedure is currently used at the Y-12 Plant. This is not consistent with DOE Order 5440.1C and may create legal vulnerabilities at the Y-12 Plant if an inappropriate NEPA determination is made. The RSO for the Y-12 Plant has the authority to make the NEPA determination only for those proposed actions at the Y-12 Plant that are specified in Section D of DOE NEPA guidelines or those that have clearly insignificant impacts. The need for extensive analysis to assess impacts or protective measures to ensure the health and safety of personnel and protection of the environment are indications that an EA is probably required.

Fourth, Section III incorrectly defines the purpose and use of MTF. The draft procedure incorrectly states that MTF are used in connection with an ADM to document a decision that the effects of a proposed project are considered to be insignificant.

According to EH-HQ guidance, MTF are intended for use only in circumstances where it is immediately clear that a proposed action will have no significant environmental impacts. MTF should state the basis for the conclusion that a proposed action will clearly have no significant environmental impacts. Because the conclusion that impacts will not be significant should be self-evident, documentation supporting the conclusion normally should be minimal.

Fifth, Section III identifies several documents that are not needed for DOE to demonstrate compliance with NEPA. Activities Description Memoranda, Action Commitment Plans, Letters to File, and Oversight Assurance Memoranda are used as HSEA management tools at the Y-12 Plant and should be clearly distinguished from NEPA-related compliance documents if they are discussed in the procedure.

Sixth, several problems were noted in Section V, Procedures:

1. There are no provisions for the consideration of potential cumulative impacts or for the evaluation of connected actions.

2. There are no provisions for applying Section D classes of action, for which neither an EA nor EIS are required (categorical exclusions). Failure to apply Section D criteria to routine construction and maintenance activities and general plant projects, when possible, represents a missed opportunity to simplify NEPA compliance.

Energy Systems has begun to correct the procedural deficiencies in Procedure 70-915 that were identified in this finding. A correction plan is being developed in consultation with ORO.

3.5.10.2.5 Compliance with Floodplain/Wetland Environmental Review Requirements

Performance Objective: DOE must comply with 10 CFR 1022, Compliance with Floodplain/Wetland Environmental Review Requirements.

Finding: A determination on the applicability of DOE floodplain and wetland review requirements, as stated in 10 CFR §§ 1022.5 and 1022.11, for Y-12 Plant areas adjacent to Bear Creek and EFPC is not evident in Y-12 NEPA files.

Two Executive Orders issued in 1977 (E.O. 11988 and E.O. 11990) require Federal agencies to consider the effects of proposed actions on floodplains and wetlands. The Orders require Federal agencies to avoid, to the extent possible, adverse impacts associated with the occupancy and modifications of floodplains and the destruction and modifications of wetlands and to avoid direct and indirect support of floodplain and wetland development wherever there is a practical alternative. Agencies must determine whether a floodplain or wetland is present that may be affected by an action, assess the impacts on such floodplains or

wetlands, and consider alternatives to the action. The Executive Orders require that provisions for early public review and measures for minimizing harm be included in any plans for actions that might occur in a floodplain or wetland.

Concurrent with its review of a proposed action to determine appropriate NEPA requirements, DOE shall determine the applicability of the floodplain management and wetlands protection requirements of 10 CFR 1022 [10 CFR § 1022.11(a)].

3.5.10.3 Best Management Practice Findings

3.5.10.3.1 Training and Information Available to Energy Systems and ORO Y-12 Site Staff

Performance Objective: Staff members including project engineers responsible for initiating actions and associated NEPA reviews should be adequately trained in NEPA compliance requirements. Similarly, ORO and Y-12 NEPA staff responsible for oversight should have knowledge of the most recent guidance from EH-HQ.

Finding: There is a lack of formal training in the DOE NEPA review process and compliance procedures for ORO, Y-12 Site Office, and Energy Systems staff responsible for NEPA compliance. ORO NEPA staff responsible for oversight are relatively well versed in NEPA compliance, as are senior Energy Systems corporate personnel, but Site Office and Energy Systems HSEA personnel responsible for documenting NEPA compliance have received little or no training.

As a result of a NEPA workshop provided by EH-HQ in October 1988, it became apparent to ORO staff that MTF procedures at ORO were inconsistent with EH guidance. The problem was resolved at ORO, but guidance to the Y-12 Site Office and Energy Systems apparently has not been provided, and draft Energy Systems procedures inaccurately describe DOE's NEPA documentation process.

ORO, Y-12 Plant, and Energy Systems management encourage all NEPA staff personnel to attend short courses and seminars, but resources and priorities for training in NEPA compliance have not been provided by DOE or Energy Systems. Further, NEPA activities at ORO, the Y-12 Site Office, and within Energy Systems HSEA Division are understaffed; workloads are often too great for staff to attend the training programs. Interviews showed that staff would welcome training such as hands-on workshops, formal training from EH-HQ, and informal exchanges with EH-HQ on technical issues.

3.5.10.3.2 Management of NEPA Function by DP-HQ and EH-HQ

Performance Objective: Timely guidance and interface with DOE-HQ is needed for an effective NEPA compliance process.

Finding: A lack of timely response and effective guidance from DP-HQ and lack of guidance from EH-HQ has adversely affected the NEPA compliance process at the Y-12 Plant.

Interviews with Y-12 Site Office and ORO staff and a review of project files for specific completed and planned projects indicate NEPA guidance and support from

DP-HQ in the past have lacked timeliness and have failed to promote an effective atmosphere for solving complex issues regarding a NEPA compliance strategy. ORO and Y-12 staff repeatedly have attempted to develop an approach to preparing NEPA documentation for the Y-12 Plant during the last ten years. However, lack of support from DP-HQ has left the issue unresolved. This failure to address the procedural requirements of CEQ regulations (40 CFR § 1501.2) and DOE project management requirements (DOE Order 4700.1) has resulted in (1) projects proceeding without any or adequate NEPA documentation, (2) piecemeal assessment of environmental effects, (3) failure to adequately assess alternatives and cumulative effects, and (4) failure to involve the public in decision making.

Recent discussions with EH-HQ regarding the integration process for NEPA, CERCLA, and RCRA documents indicate a similar trend, as repeated discussions have also failed to reach a consensus. In this case, ORO, driven by the regulatory requirement of CERCLA and RCRA, is proceeding on its own initiative to implement a strategy to integrate NEPA and CERCLA documents.

4 SAFETY AND HEALTH ASSESSMENT

4. SAFETY AND HEALTH ASSESSMENT

4.1 Purpose

The purpose of the Safety and Health Subteam was to assess the effectiveness of safety and health programs at the Y-12 Plant through the assessment of activities in selected functional areas.

4.2 Scope

The Safety and Health assessment was performed in two parts. The first part was conducted by a four-member team during the two-week period of September 25 through October 6, 1989. During this part, assessments were made in the areas of operations, training, maintenance, technical support, engineering, and major modifications. The second part was conducted by a different three-member team on October 5 through 13, 1989. During this part, a radiation protection assessment was performed.

Both parts assessed compliance with DOE order requirements and conformance with applicable "best" and "accepted" industry practices.

Because Buildings 9206 and 9212 were appraised in two Technical Safety Appraisals (TSAs) in August 1986 and July 1988, other facilities were emphasized in this assessment. These facilities were:

- Building 9215, highly enriched uranium metal rolling, forming, and machining
- Building 9204-4, recycle weapons disassembly
- Building 9204-2E, parts assembly
- Building 9204-2, lithium operations

Additional selected radiological activities were observed in Buildings 9201-5, 9202, 9203-A, 9204-4, 9212, and 9981.

4.3 Approach

The Safety and Health assessment at the Y-12 Plant focused on the identification of substantive findings relative to compliance with DOE orders and applicable best and accepted industry practices.

Limited assessments of the activities were conducted in all of the aforementioned selected areas. In addition, the radiation protection assessment includes a review of the contractors' corrective actions in response to the special EH Radiological Protection Program appraisal of the Oak Ridge complex, which was conducted on July 11 through 14 and July 24 through August 4, 1989.

4.4 Safety and Health Assessment Summary

The effectiveness of safety and health programs at the Y-12 Plant, as demonstrated by the conditions found by the assessment team in operations, training, maintenance, technical support, engineering, and major modifications, was generally satisfactory. However, there were 12 findings where improvements are warranted. Most of these findings relate to a lack of rigor in performance and documentation of safety- and health-related activities as discussed in the summaries below.

An extensive EH Radiological Protection Program Appraisal was conducted at the Oak Ridge complex (including the Y-12 Plant) in July and August 1989. That appraisal concluded that it was unclear whether the contractor had provided adequate direction, guidance, or commitment of qualified resources to ensure an adequate level of radiological safety. Findings and observations made during the current appraisal were consistent with findings made during the earlier appraisal. Four specific findings were identified in this review where improvements are warranted.

4.4.1 Operations

Operations at the Y-12 Plant appear to emphasize safety. However, many of the operations are being performed without rigorous control and documentation. This assessment concentrated on these aspects with respect to operating procedures. Although a number of improvements have been made in this area in recent years, the current system is not achieving expectations. It was found that up-to-date, officially approved operating procedures are not prepared and available to operating personnel in many of the operating areas. No comprehensive independent health and safety review is currently performed and documented for most operating procedures. In some cases, the need to classify some operating procedures, and even some procedure titles, interferes with the timely availability of some procedures to operators. Y-12 Plant management has recognized deficiencies in its operating procedures. Therefore, the management is in the process of reexamining the operating procedures system with the objective of making needed upgrades to provide uniformity, rigor, and comprehensive safety review for all plant operating procedures.

4.4.2 Training

Training at the Y-12 Plant is the responsibility of some 28 different groups reporting to the various line organizations. A small central training organization coordinates and monitors the activities of these line organization training groups. Many of these training organizations are close to fulfilling their responsibilities for documented training in particular types of training required by DOE orders, such as criticality safety, emergency preparedness, hazard communication, and industrial hygiene. However, rigorous, effective, documented on-the-job training and retraining is far from satisfactory in every division and non-existent in some. A new computerized Training Management System is being established at the Y-12 Plant, as well as at the other Energy Systems sites. When implemented, this system will have the capability to solve virtually

all of the training records problems currently apparent at the Y-12 Plant. However, it is expected that three years will be required to implement this system fully. In the interim, additional efforts are needed to ensure that on-the-job training is performed in a timely manner for all workers. A notable training accomplishment exists at the Fabrication Division Training Facility where, since 1985, many workers have received comprehensive high-quality training in over a dozen specific aspects of safely and effectively operating complex machines. Several other DOE contractors have sent workers to this facility and have sent letters praising the excellence of the training received. This training program has been accredited by a local college, and attendees receive college credit for the training received.

4.4.3 Maintenance

The following problems were noted in the maintenance program at the Y-12 Plant. The overall maintenance backlog is continuing to increase. The backlog of repairs to programmatic equipment has quadrupled over the last four years. A program to prioritize and categorize new work was implemented in the middle of FY 1989. The characterization of the backlog then has not been documented, and the backlog has been neither prioritized nor monitored. In general, there are very few maintenance procedures. The work package usually consists of the Maintenance Work Request only. The scheduling of maintenance work is the responsibility of the maintenance supervisors, in coordination with operations; however, no formal maintenance schedules are issued. The implementation of a computer-based data storage and retrieval system for equipment maintenance history is behind schedule and is now projected to be operational in January 1990.

4.4.4 Technical Support

The Safety Analysis Report (SAR) and Operational Safety Requirements (OSR) updating effort continues to be a problem. A change in the approach has been made to scope the safety analyses on a facility basis instead of preparing a number of mini-SARs covering individual operations. A program was initiated at the Y-12 Plant in August 1989 to address the overall implementation of safety systems configuration control. The Y-12 Plant procedures addressing annual independent review and appraisals of the safety assessments was revised in October 1989 to comply with DOE Order 5480.5 and is being used for the 1989 appraisals. Surveillance procedures have been prepared and are in use to perform periodic visual or operational checks on safety systems in accordance with safety assessment requirements.

4.4.5 Engineering

Central Engineering performs most of the engineering design work at the Y-12 Plant in a matrix organization using standards and codes, engineering specialists, and sophisticated tools to perform its work. Engineering at the Y-12 Plant is managed by Engineering Project Managers located at the facilities. Special project teams are assigned to individual design tasks. In the matrix organization, the Y-12 staff sets requirements for engineering designs. This assessment concentrated on the interfaces of Engineering with the facility staff

and on the baseline for design and analysis. There were three major findings: (1) Project teams can be effective, but a large number of changes were found in one moderate-sized design job. (2) The baseline for configuration of the plant, the as-built drawings, requires tens of millions of dollars of updating, but the updating is being done at a level of $1 million per year. (3) The baseline for safety analysis and operational safety requirements is not clear. It consists of pre-1985 SARs and subsequent interim approvals for operation while new-format SARs are being prepared. In one case, a Safety Assessment had not been prepared for a modification that was put into operation on an interim approval.

4.4.6 Major Modifications

A high level of modification activity is occurring at the Y-12 Plant. It is complicated by the large number of contractors and contracting arrangements. DOE will begin to streamline this process by contracting with a single construction contractor on October 1, 1990. Design changes during the design and construction process of a recently completed major modification were a large part of the total job, indicating shortcomings in control of the design process.

4.4.7 Radiation Protection

Specific deficiencies were noted associated with the adequacy of safety work permits, the performance and documentation of radiological surveys, and the adequacy of radiological procedures. It was observed that Health Physics (HP) technicians are typically not actively involved in ongoing work activities (i.e., HP technicians spend the majority of their time performing routine contamination surveys and collecting air sampler filters). Little technician effort is directed toward the performance of direct job coverage or job support surveys. HP technicians do not routinely verify proper implementation of Safety Work Permit (SWP) requirements. Additionally, the observations of this appraisal were consistent with, and substantiated findings made during, the Radiological Protection Program Appraisal conducted during July 11 through 14 and July 24 through August 4, 1989. This earlier appraisal found significant technical deficiencies in the areas of instrument calibration, contamination control, internal and external dosimetry, and emergency response. Y-12 Plant progress in the development of initial corrective actions for Category II items identified in the earlier appraisal was adequate.

4.5 Safety and Health Assessment Findings and Noteworthy Practices

Detailed results of the Safety and Health assessment are given below.

4.5.1 Operations

4.5.1.1 Overview

Operations activities at the Y-12 Plant are generally achieving production goals and are continuing to place a significant emphasis on safety and health aspects of the operations. Continuing improvement of sustained low levels of radiation exposures and injury rates are indicative of the beneficial effects of this emphasis.

Housekeeping in all operating areas visited was very satisfactory and visibly improved compared with that observed on previous TSAs. This, along with an extensive repainting program still in progress, gives an overall visual improvement, which has benefits related to improving safety of operations.

Interviews conducted with several hourly union operating personnel indicate that they believe they are given adequate instructions to permit them to perform their tasks safely. They stated unanimously that they had never been asked to perform any task that they felt was unsafe or that they felt insecure in performing.

In both the 1986 and 1988 TSAs, findings and concerns in the operations area were almost entirely related to the development and use of adequate operating procedures. This continues to be the most important need in the operations area.

During the past three years, a number of improvements have been made in the area of creating standardized, rigorous operating procedures for the wide variety of operational activities at the Y-12 Plant. However, none of the divisions has succeeded in developing a complete set of operating procedures accompanied by documentation of a thorough review and concurrence by the various technical safety disciplines. One of the closest approaches to the goals, based upon a revised procedure preparation and revision system undertaken in April 1987, was made in the Metal Preparation Division. However, this effort fell short of its objectives in that a thorough, documented safety review was not implemented because of the high work load it would have placed on the Health, Safety, Environment, and Accountability (HSEA) staff. Also, an intended system of starring the procedures that had the greatest relevance to safe and efficient operation in the Metal Preparation Division and requiring more frequent review of these starred procedures was never implemented. Meanwhile, many other divisions continue to function with incomplete and outdated sets of operating procedures, and some divisions have only recently begun to prepare updated operating procedures.

Complicating the problem of preparing effective operating procedures at the Y-12 Plant is the necessity of adhering to other documentation during the conduct of operations, including classified Production Procedures and Criticality Safety Analyses. In many operations, these rigorous documents have been used as the operating procedures. This practice, however, is inadequate in that many aspects important to the safety of the operations are not covered by these documents.

Recognizing that the current situation was not meeting expectations and was not likely to do so, the Y-12 Plant Manager on July 17, 1989, appointed a Procedures Steering Committee to provide guidance to the plant regarding the needed upgrades in the procedure system. The membership of this committee includes both Assistant Plant Managers and several Division Managers, which is indicative of the importance attributed to this problem area. This committee has held several meetings and had reached consensus on many points at the time of this assessment, but it was still deliberating about many major aspects, including the method of documentation of a thorough review of all safety-related matters. The vast majority of DOE contractors and private nuclear industry organizations do this

by requiring an independent health and safety concurrence signature on all operating procedures.

All of the findings in this assessment of the operations activities relate to deficiencies in the current practices of preparing, reviewing, distributing, and updating operating procedures at the Y-12 Plant.

4.5.1.2 Regulatory or DOE Order Requirement Findings

None observed.

4.5.1.3 Best Management Practice Findings

4.5.1.3.1 Operating Procedure Preparation and Revision System

Performance Objective: Up-to-date operating procedures should be prepared and readily available to all operating personnel.

Finding: Up-to-date officially approved operating procedures were not prepared and available to operating personnel in many of the operating areas.

While the Metal Preparation Division did have operating procedures in place and updated within the last two years (as required by the Y-12 system), other divisions did not. For example, the Assembly Operation Department of the Assembly Division expects to have 25 or more facility operating procedures when their operations are completely covered by procedures. Twenty-two such procedures have been produced, but only three were in one floor copy of the procedure book at the time of the assessment. Another 11 were in the Training Coordinator's book, but these were only in draft form in an unofficial file folder in the operating area. This is indicative of a deficiency in the effectiveness of the procedure distribution system.

The Building 9215 M-Wing operations organization expects to have about 20 operating procedures, but currently only 7 have been issued.

Two procedural deficiencies were observed in the Lithium Operations Division operations area. First, the revised copies of Procedure 50-37-51-002, Mold Loading Operations, in the operating areas did not have an official approval signature, even though the revisions (made to require use of respirators in a particular operation) had been made (and were being followed) many months earlier. Second, Procedure No. 50-37-53-035, Fabrication of Urethane Rubber Shipping Buttons, was included in the procedure manual and had a latest revision date of October 2, 1980, greatly exceeding the Y-12 two-year revision requirement. This operation is considered outdated and may never be performed again. The procedure was cancelled December 16, 1988, and should have been removed from the tables of contents and from the books.

A number of other procedure deficiencies were noted. It appears to take several weeks for a completely typed, reviewed, and approved procedure to be officially issued and distributed by the Y-12 procedure coordinating group. This seems an excessively long time and leads to some other problems such as field use of

an unofficial procedure. Also, the method of updating tables of contents in procedure manuals is not rigorous. Such tables of contents can be as much as ten months out of date, as they were at the Lithium Operations Division at the time of this assessment. In addition, these tables do not indicate when a given procedure is classified. Thus, a reader finding a particular procedure copy missing from an unclassified procedure manual does not know to look for it in a safe but may assume it has been cancelled or merely improperly removed from the book.

4.5.1.3.2 Operating Procedure Review and Approval

Performance Objective: Operating procedures should receive a comprehensive, independent safety and health review, and this review and the resulting concurrence should be documented.

Finding: No documented independent safety and health review is routinely obtained for operating procedures at the Y-12 Plant, either when initially issued or when revised.

Virtually no documentation was found that verified that operating procedures had received any safety and health review. A notable exception is in connection with criticality safety, where Criticality Safety Analyses are rigorously obtained and are officially approved by the appropriate HSEA expert for every operation. Usually, operating procedures do not repeat all of the requirements in a Criticality Safety Analysis document but merely refer to the document. For safety disciplines other than criticality safety, no verifiable review documentation was available. In some cases, such a review was reportedly made at the request of the operations organization, but it was not documented. The procedure copies themselves have never carried a review and concurrence signature from the HSEA Division.

The usual situation at the Y-12 Plant is that review by HSEA is obtained only when the responsible operations supervisor elects to do so, usually because he or she is uncertain about some safety aspect of the operation. This applies to initial procedure issuance and to subsequent revisions.

4.5.1.3.3 Handling of Classified Information in Procedures

Performance Objective: Copies of operating procedures should be readily available to operators during the performance of each activity.

Finding: Under some circumstances, the required handling of classified operating procedures interferes with timely availability of the procedure to an operator.

There are three types of situations at Y-12 operating areas with respect to classification of operating procedures, and they present different problems. Some areas deal exclusively with unclassified procedures, and there is no problem. In some areas, nearly all operating procedures are classified; in most of these areas, all are kept in the same classified manuals, which are permitted to be open in the operating areas as long as cleared operators are present. This also presents no problem.

However, in some areas (such as the Lithium Operations Division) only a fraction of the operating procedures are classified, and these are the areas where the greatest difficulty exists in making classified procedures readily available to operators. The usual practice in such areas is to keep the classified procedures in a locked safe and the unclassified ones in manuals in the foreman's office and in operating areas. As indicated earlier, the tables of contents in unclassified manuals do not currently indicate that missing procedures are classified. In the one instance of this type covered during this assessment, it took 20 minutes to locate the missing (classified) procedures.

A different problem exists when the title of a procedure is itself classified. In that case, the table of contents merely lists classified title and therefore does not help a worker locate some specific procedures. It would be preferable to create an unclassified title for all procedures, even if some had to be quite vague or generalized.

Many procedures themselves are classified only because they contain a single specific word or make a single, sometimes gratuitous, statement. It would seem desirable to attempt to produce unclassified but still effective procedures in such cases, especially in areas where only a small fraction of the operating procedures is currently classified.

4.5.1.4 Noteworthy Practices

None observed.

4.5.2 Training

4.5.2.1 Overview

Responsibility at the Y-12 Plant for accomplishing and documenting effective training, both classroom technical training and on-the-job training and retraining (OJT), has been assigned to the various line managers. This has resulted in the establishment of 28 separate training organizations at the Y-12 Plant, serving not only the Y-12 divisions but also the outside organizations (such as ORNL) that have resident activities at the Y-12 Plant. A central Y-12 organization has been established to provide guidance and oversight to these 28 training organizations. The central Y-12 organization is currently staffed by a manager, five training administrators, and a secretary. The various line management training organizations each have a manager and as many as six additional employees dedicated exclusively to performing, coordinating, and documenting training. Many of these line training organizations are currently understaffed to fulfill their assigned responsibilities.

Many of the training organizations are close to fulfilling their responsibilities for training and documentation for particular types of training specifically required by DOE orders such as criticality safety, emergency preparedness, hazard communications, Resource Conservation and Recovery Act (RCRA) training, industrial hygiene, and safeguards and security. However, there are still steps to be taken to ensure that every employee receives the required retraining

annually or biennially as required, and this aspect varies considerably from division to division.

On the other hand, rigorous, effective, documented OJT is far from satisfactory in every division and is nonexistent in some. OJT is specifically required by DOE 5480.5 for nuclear facility workers. This has been interpreted at the Y-12 Plant as applying only to workers involved in handling enriched uranium, and OJT is consequently further along in those areas. Since no DOE orders specifically require OJT for other workers, its application at the Y-12 Plant has been much slower for those workers. The basis for OJT is the existence of rigorous complete operating procedures, and because these are not completely in place (see Section 4.5.1), this situation is not surprising.

The general system at the Y-12 Plant for conducting OJT is to perform a job task analysis for each specific operation (based largely on the operating procedure) and then to prepare Performance Documentation Checklists (PDCs) for each of those activities. These PDCs are used by the foreman (trainer) and operator (student) to verify that each operator knows how to and can perform each task. Copies of the PDCs are signed by both trainer and student and are recorded and maintained by the division training organization. This system is furthest along in the areas involving use of fissile materials but is far from rigorous or thorough even in those areas. For example, PDCs in the Metal Preparation Division generally exist but are up to five years old, and many are outdated. The Assembly Division is only now beginning to develop PDCs. Most other divisions are much further behind these two.

Energy Systems management has recognized the need for a significant upgrading of the training activities and record keeping on a company-wide basis. A committee has been established to provide uniform guidelines for and to coordinate training at the Y-12 Plant and the other four Energy Systems sites. The Y-12 Training Manager believes that this committee will help the needed upgrade at the Y-12 Plant, both in rate and quality, more than it hinders it, even though the Y-12 Plant is probably further along than the other four sites.

The core of the Energy Systems-wide upgrading in training will be the establishment and implementation of a computerized Training Management System (TMS). Based on a brief explanation, it appears that effective application of the TMS has the capability of solving virtually all of the problems currently apparent in training at the Y-12 Plant. For example, TMS will make the training status of every employee available to every supervisor by computer inquiry at his or her own workstation. This will include OJT and will incorporate such features as requiring documented retraining on a procedure each time it is revised before an employee is listed as qualified to perform that operation. Such a system is probably necessary to ensure that this important aspect is accomplished rigorously and in a timely manner in all Y-12 organizations.

Y-12 management plans to replace the various computerized and other training documentation systems now in use with the much more thorough and rigorous TMS. This appears to be a very sound plan, but it is expected to take three years to implement fully. Therefore, it appears that there will remain shortfalls in the Y-12 Plant training for another three years, especially in the OJT function.

4.5.2.2 Regulatory or DOE Order Requirement Findings

4.5.2.2.1 On-The-Job Training for Nuclear Facility Workers

Performance Objective: DOE 5480.5, Section 10, requires OJT to ensure that nuclear facility personnel are familiar with all aspects of their positions, including documented verification of training and periodic retraining.

Finding: Documentation of OJT does not exist for all nuclear facility workers, and no method exists to ensure prompt retraining when a procedure is revised.

The Metal Preparation Division is perhaps closest to meeting this objective. However, it only recently began implementing rigorous OJT and is handicapped by having PDCs that are up to 5 years old for fissile material handling areas. The Assembly Division is only starting to develop PDCs, so rigorous, documented OJT is not in place there.

Documentation of prompt retraining of all affected nuclear facility workers when a procedure revision is issued is not yet performed for any Y-12 activity. Clearly, a procedure revision means that all operators have been either incompletely or improperly trained and must be retrained in some aspect of their job performance. The only method planned at the Y-12 Plant to provide for this type of retraining appears to be through the computerized TMS, which is certainly the most rigorous method possible. In the interim, additional efforts are needed to ensure that foremen actually accomplish this important function in a timely manner for each of the workers assigned to them.

4.5.2.3 Best Management Practice Findings

4.5.2.3.1 Comprehensive Documented Training

Performance Objective: Comprehensive training and periodic retraining should be given and documented for all workers covering all safety-related and other aspects of their positions.

Finding: Not all workers at Y-12 are given comprehensive technical and on-the-job training, and a rigorous system for documentation of the training is not in place in all areas.

To date, training activities at Y-12 have largely concentrated on technical classroom training and retraining of workers in specific technical aspects such as criticality safety, radiological protection, hazard communication, emergency preparedness, industrial hygiene, safeguards and security, and RCRA. This has been done largely because of requirements in DOE orders and other regulations. However, rigorous OJT in execution of operations either has not yet been undertaken or only recently was undertaken in the various divisions.

Lack of complete up-to-date and rigorous operating procedures as discussed in Section 4.5.1 is the fundamental reason for this situation. PDCs, which are the basis for OJT at Y-12, are intended to be prepared at Y-12 based on a job task

analysis performed in connection with operating procedures. PDCs are nonexistent, only partially prepared, or outdated in the various Y-12 divisions.

Most divisions are understaffed and thus unable to implement and document effective OJT. Some divisions have only a single training manager with no supporting staff. Divisions such as Metal Preparation, Assembly, and Fabrication that have five or six persons assigned to training are much closer to achieving this performance objective than are those that are understaffed.

Generally, training managers are planning on implementation of the computerized TMS as the means of ensuring effective implementation and documentation of training of their workers, both technical and OJT. Although this is a good approach, all possible efforts should be made to implement this system in a more timely manner and to implement effective interim measures.

4.5.2.4 Noteworthy Practices

4.5.2.4.1 Fabrication Division Training Facility

Recognizing a need for specialized training in several areas of maintenance and operation of complex machinery employed in fabrication activities and finding that such training was not available anywhere in the United States, the Y-12 Plant established a Fabrication Division Training Facility in Building 9204-4 in 1984. This facility consists of two classrooms containing mock-ups of some equipment and several laboratory areas containing many pieces of equipment used in fabrication activities. All equipment services workers and many operations personnel have been given specific job-related training at this facility since 1985. There are currently 11 courses in Phase I at this facility covering such topics as basic computerized control programming, basic and advanced scraping, and bearings; the courses range from 8 to 80 hours in duration. In FY 1989, 122 Y-12 employees were trained at this facility for a total of 3664 hours in Phase I courses. All training given at this facility has been thoroughly documented. Several new courses have recently been added as a Phase II of this program, and a Phase III is being planned to cover such new areas as robotics, in-process gauging, lubrication, and laser operation and safety.

Because of its uniqueness and the high quality of this training, students have included, upon request, workers from other DOE facilities such as the Rocky Flats Plant, Pinellas, Paducah, and ORGDP, as well as workers in other Y-12 divisions. Letters of appreciation and commendation have been received from these other contractor organizations praising the excellence of the training received by their employees.

The program has been accredited by Roane State Community College in Harriman, Tennessee, and students receiving 500 hours of training at the facility are given 18 semester hours of credit at that institution toward an Associate Degree in Applied Science and General Technology. Similar accreditation is in progress at Pellissippi State Community College in Knoxville, Tennessee. These credits are transferrable to the University of Tennessee if a student elects to further his or her education at that institution.

This training program has not only significantly upgraded the quality of much of the work performed in the Fabrication Division but is reported to have resulted in significant productivity benefits.

4.5.3 Maintenance

4.5.3.1 Overview

The major maintenance issues confronting the Y-12 Plant involve

- maintenance work backlog, prioritization, and scheduling;
- implementation of requirements for work activities related to safety systems; and
- documentation of completed maintenance jobs.

The maintenance backlog is divided into three categories: real property, real property capital replacement, and programmatic equipment. Specifically, the maintenance repair of programmatic equipment has shown an alarming increase in backlog over the last four years. The backlog was $0.5 million at the end of FY 1986 and has increased to $2 million at the end of FY 1989. The continuing annual increases of $0.5 million in programmatic equipment repair backlog reflect a management choice in allocation of resources to reduce this backlog.

The Y-12 maintenance organization implemented a program to prioritize and categorize new work in the middle of FY 1989. Priority codes and category codes were defined and are now part of the input on the Maintenance Work Request forms. The computerized work tracking system was modified to reflect these codes in the data fields. This information is being used to prioritize and categorize the new work items that have been input since May 1989. The characterization of the backlog, which resulted from analysis of the priorities and categories of the backlog that existed as of that date, has not been documented. Also, subsequent monitoring of the backlog priorities has not been performed. Another aspect of the prioritization process now in use is that the originating organization inputs the priority code. There is no mechanism for using a uniform process to evaluate overall priorities for all Y-12 organizations relying on a specific maintenance group.

The scheduling of maintenance work is currently achieved through an informal process that does not generate a formal schedule of events. Each week, the maintenance supervisors for the respective Y-12 Work Control Centers hold a planning meeting with the operations groups at which they decide what work will be pursued during the next week. A handwritten list of jobs is then generated and used by the maintenance supervisor to schedule work assignments on a daily basis. No schedules are issued, and the only way to determine what work is being performed on a specific day is to check with the maintenance supervisors.

Safety assessments of the Y-12 facilities have resulted in specific Y-12 Plant systems being identified as safety systems. A configuration control process for

these safety systems has been initiated for the Y-12 Plant. However, there are inconsistencies in the maintenance control for these safety systems. Maintenance programs for safety systems in the commercial nuclear industry incorporate key maintenance principles, which include the use of controlled maintenance procedures and other work-related documents (i.e., vendor manuals), the use of controlled as-built drawings, and the use of controlled spare parts. This philosophy concerning maintenance programs is reflected in the draft DOE Order 5480.MAINT.

The Y-12 configuration control process addresses the above-mentioned areas except for maintenance procedures. In general, there are maintenance procedures for the performance of calibrations and surveillances, but there are very few repair and preventive maintenance procedures for Y-12 systems and equipment. The status of as-built drawings is being addressed under Engineering in Section 4.5.5.3.1. The use of controlled spare parts is part of the Y-12 program to implement NQA-1 requirements as well as part of the configuration control management system being developed.

With regard to maintenance procedures, maintenance work at the Y-12 Plant is usually performed under documentation that consists of the Maintenance Work Request only. Preventive maintenance (Recall C) work is performed using a time breakdown listing of the maintenance evolutions normally conducted for that activity. The only consistent exception to not having written maintenance procedures is in the area of instrument calibration and surveillances, for which the work group does have a set of procedures. Without repair and preventive maintenance procedures that have been reviewed and approved by maintenance, engineering, safety, and quality, there is no disciplined mechanism to ensure that work on safety systems is consistently done in accordance with manufacturers' recommendations and other pertinent requirements.

The 1986 TSA recommended that the Y-12 Plant ensure that documentation of completed maintenance jobs be standardized, available, and traceable. Procurement action for a computer-based equipment maintenance history data storage and retrieval system was begun in 1988. This effort would have led to the purchase and beneficial use of the system before October 1989. Subsequently, this purchase requisition was canceled because of unacceptable responses to the bid request, and a decision was made to use an events tracking system (COMETS) for this purpose. Implementation of this system for preventive work and equipment history is now scheduled for January 1990.

A diagnostic maintenance program has been initiated at the Y-12 Plant. Approximately 400 pieces of equipment are currently being monitored, and the projected scope will encompass approximately 700 items. In addition, the system has enabled the Y-12 Plant to do some acceptance runs of new equipment with greater assurance of satisfactory performance.

Initial qualification and training of maintenance personnel for the performance of surveillances (Recall A) on safety systems were found to be generally satisfactory. In one instance, an individual who had signed off on a quarterly surveillance check sheet for two different safety systems was not on the training certification list as having been trained on those systems.

4.5.3.2 Regulatory or DOE Order Requirement Findings

None observed.

4.5.3.3 Best Management Practice Findings

4.5.3.3.1 Maintenance Work Backlog, Prioritization, and Scheduling

Performance Objective: The management systems used to control maintenance activities should monitor the work priorities of the backlog to evaluate the effectiveness in managing the backlog as it relates to safety.

Finding: The backlog of work for programmatic equipment repair increased from $0.5 million at the end of FY 1986 to $2 million at the end of FY 1989. A work priority system was initiated in May 1989. The characterization of the backlog that existed as of that date has not been documented, and subsequent monitoring of the backlog priorities has not been performed.

The maintenance backlog has not been monitored to ensure that critical priority jobs have not been unnecessarily delayed. Without this input, scheduling of work may be inadvertently reducing the effectiveness of the programmatic equipment maintenance activities.

4.5.3.3.2 Implementation of Requirements for Work Activities Related to Safety Systems

Performance Objective: Structures, components, and systems (active and passive) that are important to safety should be subject to regular preventive and predictive maintenance, including diagnostics, inspection, surveillance, testing, and servicing, to ensure that they remain capable of meeting the design requirements throughout the life of the facility. These activities should be carried out in close coordination among operations, maintenance, and engineering and should be supported by written procedures.

Finding: The use of written procedures for maintenance activities on safety systems has not been implemented in a consistent manner at the Y-12 Plant. Procedures have been developed for performing the surveillances on these systems, and a set of instrument calibration procedures is in use. However, there are very few maintenance repair and preventive maintenance procedures of a general or specific nature.

Craft personnel hired at the Y-12 Plant are certified journeymen in their respective craft fields. A general philosophy at the Plant is that, because the craft personnel are qualified journeymen, procedures are not necessary because the work is craft capability. When preventive maintenance work is performed, the scope of the work is usually based on the time breakdown of the evolutions normally conducted for that activity, and no procedures are used.

In conjunction with the procedure concern, vendor manuals used in support of maintenance of safety system equipment are not reviewed, approved for use by

engineering, and controlled to ensure that the documents are current with manufacturers' revisions.

4.5.3.4 Noteworthy Practices

None observed.

4.5.4 Technical Support

4.5.4.1 Overview

The major technical support issues for the Y-12 Plant involve

- safety analysis efforts involving SAR and OSR preparation and
- safety system configuration control development and implementation.

At the time of the 1988 TSA, the SAR and OSR updating effort was on an unsatisfactory schedule and needed to be expedited. The safety analyses were being developed by writing a number of mini-SARs covering individual operations, rather than an SAR covering an entire facility. This approach was identified as a concern in the 1988 TSA. Subsequently, the Y-12 management changed the philosophy for the development of SARs to be based on a facility approach. Safety analyses are now being developed in line with this philosophy. The overall consequence is that no SAR and OSR updates have been completed by the Y-12 Plant and approved by ORO since the 1988 TSA. A revised schedule for the SAR and OSR update program has been prepared. Further discussion of this matter is contained in Section 4.5.5.3.3.

Once the SAR and the OSR are approved, any related safety systems are integrated into a configuration control process. In the 1988 TSA, weaknesses in this process were noted in hardware configuration and procedure approvals. Information had been obtained on the plant configuration control system used at Paducah and was being evaluated for application to the Y-12 Plant. The decision was made to proceed with the implementation of a similar configuration control for safety systems at the Y-12 Plant.

A configuration control pilot program for Building 9212 was defined for initiation in August 1989 and is currently being implemented. As-built drawings and related engineering data sheets have been prepared for all 16 designated safety systems in Building 9212 for the pilot program. A new Y-12 Plant Procedure (Number 70-061) on Safety System Configuration Management has been prepared. In reviewing this configuration control management system, a finding was made with respect to the use of written procedures for maintenance activities on the equipment in the safety systems. Details of this finding are provided in Section 4.5.3.3.2.

A 1986 TSA recommendation was made to expand the independent internal safety review and appraisal process for annual and triennial appraisals to fully address the items specified in DOE 5480.5. The Y-12 Plant procedure addressing annual appraisals was revised in June 1987, but that revision did not fully comply with

the subject DOE requirement. Another revision to this procedure, issued in October 1988, does fully address the required elements. This procedure is currently in use for the 1989 annual appraisals being conducted. The Energy Systems Policy Procedure addressing the triennial appraisals was previously noted in the 1988 TSA to have been revised to fully address the items specified by DOE 5480.5.

The surveillance procedures for the safety systems have been issued, and the periodic performance of these surveillances has been implemented in the Y-12 Maintenance Recall A program.

4.5.4.2 Regulatory or DOE Order Requirement Findings

None observed.

4.5.4.3 Best Management Practice Findings

Refer to Sections 4.5.3.3.2 and 4.5.5.3.3.

4.5.4.4 Noteworthy Practices

None observed.

4.5.5 Engineering

4.5.5.1 Overview

This assessment was performed to verify the general objective that the engineering process in support of safety-related operations produces safe equipment that can be safely operated. This should be accomplished through a disciplined process that

- proceeds from sound requirements,
- involves the ultimate users of the designs,
- uses accepted safety design codes and standards,
- adequately analyzes the designs for safety and uses the analysis results in the design process,
- tests the designs, and
- provides the basis for training and operational feedback for post-operational design improvement.

The engineering process at the Y-12 Plant is conducted almost wholly by the Central Engineering organization, which performs designs and safety analyses in a matrix organization. Organizationally, Engineering reports through the Vice President of Technical Operations, and the Y-12 Plant Manager reports through

the Senior Vice President. Thus, the two organizations, which must be close team players, are joined only at the President's office.

A strong central engineering organization should have standardized codes, standards, and practices; should use sophisticated engineering tools; and should retain specialists who can provide national quality internal expertise. Central Engineering has done these things for non-site-specific issues. The inherent weakness of such an organization is the potential for inadequate communications with users of engineering products. In the case of design work, this could result in designs that do not work when turned over to operations and in operating facilities that are poorly designed because they are the product of an inadequate design plus a large number of design changes.

The Central Engineering organization has attempted to work closely with the Y-12 Plant by maintaining a Y-12 Site Project Engineering staff of 70 persons and by placing engineers in each facility. For large, line item projects the project team approach such as that now being used on the Lithium Project Replacement Project appears to be working well and has the enthusiastic support of both Engineering and Operations.

A simplified version of the project team approach used on small jobs, while well organized, has had variable success. The team found evidence of excessive design changes just before and after acceptance.

The Engineering organization is responsible for the Safety Analysis function. SARs, OSRs, and analysis for safety design are performed with the design activity, and the Safety Analysis Engineer is a part of the Project Team.

The fundamental problem facing the operations and engineering functions in an old facility such as the Y-12 Plant is the knowledge of the safety and design bases for the plant. The Y-12 Plant has a serious problem in this respect the drawings of the facility are not current, and the safety basis is unclear. It is not evident when these deficiencies in baselines will be completely rectified.

The newer methods of safety analysis such as probabilistic risk assessment (PRA) are being incorporated into the design and analysis process. However, there does not appear to be a long-range plan that achieves complete adoption of such methods.

4.5.5.2 Regulatory or DOE Order Requirement Findings

None observed.

4.5.5.3 Best Management Practice Findings

4.5.5.3.1 Configuration Control

Performance Objective: The design process for existing facilities is based on correct drawings.

Finding: The configuration of the Y-12 Plant is not fully reflected in the drawings.

The degree to which the drawings reflect the actual configuration of the plant is indicated by the fact that a program to update drawings expends about $1 million per year, but the backlog of drawings to be updated is still in the tens of millions of dollars.

The drawing updating program, the as-built program, is operating at a level relative to its backlog, which requires prioritization. The first priority should be safety systems. The safety basis for classifying systems should be derived from safety analysis, ideally from a complete SAR. This requirement is not clear, as described in Section 4.5.5.3.3. ORO direction given in 1980 required construction updating of buried or embedded systems but was permissive with respect to electrical and mechanical systems that are necessary to support the safe operation of the facility. Energy Systems Engineering procedures require drawings for such safety-related systems to be as-built. Maintenance organizations, which must know the plant, may operate from marked-up copies of the drawings. An effort to update drawings is under way in Buildings 9206 and 9212 as discussed in Section 4.5.4.1.

4.5.5.3.2 User Design Input

Performance Objective: The operating organization that will use the design should be directly involved in the design process.

Finding: The project team concept now being strengthened appears to satisfy this objective on line item jobs. For small jobs, the team concept is in place, but its effectiveness is variable.

General Plant Projects and Capital Equipment Projects, which use a limited project team, were examined. These projects are conducted in a responsive, active, organized way. One project, a machine tool installation of a procured item, was completed with minimum changes. However, another, a hypochlorite loading station, which involves substantial operator activity, required pre-acceptance design changes to improve operator access and operability and also post-acceptance design changes, which are still in progress, to handle rainwater accumulation, revise sight glass vulnerability, and provide for adequate label attachment. Some of these changes may inhibit operator access to the equipment. The number of changes suggests that, on jobs such as this with many human-factor design considerations, operator input to the design could be enhanced.

4.5.5.3.3 Design for Safety

Performance Objective: Appropriate levels of engineering and safety analysis should be performed on all the projects.

Finding: The safety analysis baseline for the plant is not clear.

A set of SARs produced before 1985 is approved. None has been approved by ORO since 1985, although ORO is reviewing several. Operations are authorized for

modifications on the basis of interim approval, which is based either on a safety review that concludes that there is not a nuclear safety risk or on the basis of a safety assessment of operations. Some of these are operations that are covered by unapproved post-1985 SARs.

Until recently, mini-SARs were performed on small hazardous operations and were found to inadequately reflect interactions with adjoining activities. DOE and the contractor have agreed that new SARs will be produced with a redefined scope, that is, building by building rather than according to some other boundary definition. Some of the existing set of mini-SARs have been invalidated by this redefinition, and some are not being pursued.

The process for granting interim approvals to operate modified facilities lacks clear procedures. One project, the Chip Drying Oven and Briquetting Facility, received interim approval in 1988. The safety of the facility was judged by comparing it with a Safety Assessment document for a very similar existing facility. A safety assessment for the new facility was promised after the interim approval but was not produced. When this was discovered, a committee reviewed the facility and concluded that it was safe to operate the facility until an FSAR and OSRs were written. This conclusion appears to be true, but an orderly process was needed to ensure safety.

Energy Systems engineering procedures require safety analyses and PRAs early in the design effort. The objectives and standards for such analyses have yet to be fully developed. Energy Systems currently lacks sufficient expertise to implement these procedures in a timely fashion but is increasing its staff. However, the magnitude of the required effort will be large. Implementation of the procedures will require management attention and resources on the part of both Energy Systems and ORO.

4.5.5.4 Noteworthy Practices

None observed.

4.5.6 Major Modifications

4.5.6.1 Overview

There has been a very large increase in the level of modifications to the Y-12 Plant, which peaked in 1987 at about $120 million and is presently about $100 million per year in field construction costs. The DOE modernization program may increase that level in the future. This is a very substantial level of activity in a changing environment, and the Energy Systems Central Engineering organization has done well in coping with it.

The number of construction contractors presents a major management challenge; this is complicated by the fact that construction can be managed by ORO, Energy Systems, or the Cost Plus Award Fee (CPAF) site construction contractor. ORO plans to consolidate this management function within one contractor in the next year.

Some projects experience unusually large numbers of changes from DOE requirements as well as changes in the design. Better control of requirements or design should be studied.

4.5.6.2 Regulatory or DOE Order Requirement Findings

None observed.

4.5.6.3 Best Management Practice Findings

4.5.6.3.1 Planning

Performance Objective: Major modifications should (1) be adequately planned and funded to permit a good design, (2) follow the principles of the engineering performance objectives, and (3) be properly integrated into the plant systems with proper consideration of adverse safety impacts.

Finding: The change history of major modifications varies.

One surveyed project had changes of a few percent, exclusive of those produced by production scheduling. Another, Trident II, had cost-increasing project design changes of over 25 percent of the project, attributable to changes in automation, environmental, and robotics requirements. These substantial changes may have resulted from DOE's desires to enhance the project after the conceptual design phase. The net project cost decreased; it was completed for three-fourths of the original cost supplied to Congress, reflecting substantial negative cost changes. Such significant changes must be due to large changes in the requirements or deficiencies in planning or design. Both on-line requirements and design practices should be examined.

4.5.6.3.2 Modification Work

Performance Objective: The construction of modifications should be performed by skilled contractors and controlled by the prime contractor and the user if it is not the prime contractor.

Finding: The variety of contracting arrangements and the great number of subcontractors create a potential for poor work and lessen control by Energy Systems.

Any one of three entities, Energy Systems, ORO, or the CPAF contractor (Rust Engineering), may contract work. The control of Energy Systems as the final operator of the equipment is limited. Dozens of subcontractors are working on the construction jobs in progress. The customer of the work is remote from it; less-operable systems are likely to result from this arrangement.

This system will be tightened up by the single contracting arrangement to be adopted within the year. The large number of subcontractors will continue to complicate control.

4.5.6.4 Noteworthy Practices

None observed.

4.5.7 Radiation Protection

4.5.7.1 Overview

Efforts during the current appraisal included a review of the Y-12 Plant's corrective actions for selected concerns identified during a Radiological Protection Program Appraisal conducted during July 11 through 14 and July 24 through August 4, 1989. The July appraisal was performed to assess overall implementation of the Radiation Protection Program across the Oak Ridge complex. The Y-12 Plant was one of three sites appraised. The appraisal identified approximately 300 findings, 6 of which were identified as Category II. Overall, the appraisal identified deficiencies related to program consistency among the three Oak Ridge sites, lack of Energy Systems central policy and procedures related to radiation protection, and DOE ORO program oversight. Significant technical deficiencies in the areas of instrument calibration, contamination control, internal and external dosimetry, and emergency response were identified at all sites, including the Y-12 Plant. Efforts during the current appraisal also included a review of specific radiation protection program elements not extensively reviewed during the July appraisal. These included adequacy of SWPs and work coverage, control of radiation generating devices, radiological survey programs, and adequacy of procedures.

Observations of program implementation during the current review were generally consistent with and substantiated findings made during the previous appraisal. Specific deficiencies were associated with adequacy of SWPs, performance of and documentation of radiological surveys, and adequacy of radiological procedures. It was observed that HP technicians are typically not actively involved in ongoing work activities (i.e., HP technicians spend the majority of their time performing routine radiological surveys). Little technician effort is directed toward the performance of direct job coverage or job support surveys. HP technicians do not routinely verify proper implementation of SWP requirements.

4.5.7.2 Response to the Radiological Protection Program Appraisal

In response to the Radiological Protection Program Appraisal conducted in July through August 1989, the contractor designated specific teams, typically headed by a Division Manager level individual, to develop implementation plans for the items. Overall corrective action effort is being overseen by the Senior Vice President of Energy Systems, who has been specifically detailed to oversee the project. DOE ORO has designated a task force to review Energy Systems implementation plans and to develop action plans for concerns identified in the appraisal related to ORO. Interviews of involved personnel revealed that the effort is directed towards root cause resolution of identified concerns.

Because development of Energy Systems action plans was ongoing during the current appraisal, this review focused on initial compensatory actions at the Y-12 Plant for the Category II items identified during the previous appraisal. Specific

items reviewed related to the criticality accident alarm system, radioactive source control, and emergency preparedness and accountability. Reviewed initial actions were found to be generally adequate and often comprehensive; for example, in response to an identified deficiency with the criticality alarm/public address (PA) system, Y-12 staff immediately initiated testing and maintenance to certify evacuation system operability in all Material Access Areas and surrounding areas. Plantwide testing of PA monitors has since been completed to ensure audibility in all plant areas.

Inconsistencies were noted related to the Oak Ridge site-wide implementation of initial compensatory actions for the selected concerns. For example, in response to an appraisal-identified concern related to radioactive source control, Y-12 staff performed a verification of their source inventory; the ORNL and ORGDP sites did not. In response to an appraisal-identified concern related to audibility of the criticality alarm system, each site developed different testing criteria and/or surveillance frequencies to demonstrate alarm audibility. The above inconsistencies indicate that not all initial corrective actions demonstrated by the sites were centrally reviewed and coordinated. Long-term corrective actions should resolve inconsistencies or, when intentional, clearly demonstrate a rationale for any variations in program implementation.

4.5.7.3 Regulatory or DOE Order Requirement Finding

4.5.7.3.1 Radiation Surveys and Job Coverage

Performance Objective: DOE Order 5480.11, Section 9.g, requires that workplaces shall be routinely monitored, as appropriate, for identification and control of potential exposure sources. Section 9.m of the order requires the keeping of records that establish the conditions under which individuals were exposed (such as facility radiological conditions).

Finding: The HP staff at the Y-12 Plant does not survey all significant radiological areas/operations. Documentation of surveys is often inadequate. Routine radiation surveys are not performed on radiation generating devices.

The bulk of routine radiation surveys conducted at the Y-12 Plant falls into three categories: air monitoring, removable contamination (swipe) surveys, and area dose rate characterization. Overall, the conduct of the first two types of routine surveys is satisfactory. The information obtained is used to track and trend contamination and airborne activity levels in the plant. However, the forms used to document these surveys do not contain information on the type of survey instrument used and its calibration date. Routine beta-gamma surveys examined in Building 9201-5 were lacking important details: surveyor's name, instrument used, and units of the dose rate measurement. Surveys for some areas in this building with significant beta dose rates were apparently performed but are not documented and available for inspection. In other areas, including Building 9212, routine dose rate surveys are no longer performed because historically the results measured were low. Furthermore, routine dose rate measurements in Building 9202 are not being performed.

HP job coverage and performance of job-related surveys are minimal. HP presence in the workplace at all facilities visited was essentially limited to routine survey functions. The removal of air filters from the roof of Building 9204-2E was observed by an assessment team member. This job was not monitored by HP, despite the potential for spreading contamination on the roof and also for an unmonitored release of airborne radioactivity.

Y-12 Procedure 70-102, X-Ray Equipment and Radioactive Sources, requires that the HP Department periodically audit radiation generating devices. Of the 25 devices reviewed during this appraisal, 22 were audited by the HP Department; however, the audit did not include a routine radiation survey nor did the audit check to see if radiation surveys were performed by the operators. Subsequent review identified that neither the operators nor radiation safety personnel were performing routine radiation surveys. Radiation surveys are performed only after modifications to radiation generating devices. There is no procedural requirement for routine radiation surveys of radiation generating devices. The three radiation devices not audited by HP Department are discussed in Section 4.5.7.4.3.

4.5.7.4 Best Management Practice Findings

4.5.7.4.1 Radiological Procedures

Performance Objective: Approved radiation protection procedures that address all fundamental aspects of the radiation protection program are in place.

Finding: Approved procedures that address all fundamental aspects of the radiation protection program are not in place.

Y-12 procedures related to radiation protection are contained in the 70-100 to -149 series and the 50-66-RS-100 to -199 series. Review of these procedures during the earlier Radiological Protection Program Appraisal identified numerous procedural deficiencies in several areas, including radiological records, the nonroutine bioassay program, and instrument calibration. Additional review during the current appraisal identified the following fundamental radiation protection functions that are not addressed in the Y-12 procedures:

- guidance related to the assignment of various types of respiratory protection equipment for various contamination levels and work activities,
- survey documentation requirements,
- required frequencies for radiation and air radioactivity monitoring in radiological areas, and
- requirements for neutron badging and monitoring.

Additionally, no approved procedure is currently in place that defines radiation area, high radiation area, and airborne radioactivity area and specifies

radiological area posting and labeling requirements. A draft procedure addressing these areas has been developed but is still in the review cycle.

The contractor stated that the need for upgrading the radiation protection procedures has been recognized and that staff have been actively visiting other facilities to identify the scope of procedures used at other sites. A preliminary list has been developed to identify needed procedures; however, the exact number and scope of required procedures have not been finalized.

Specific deficiencies related to the adequacy of radiological controls contained in SWPs and maintenance and operating procedures were identified and are discussed in Section 4.5.7.4.2.

4.5.7.4.2 Radiological Workplace Controls

Performance Objective: Radiation work permits/procedures are adequate to control exposures for all radiological area work. These permits/procedures are reviewed and approved by HP staff and describe radiological conditions at the job site and those control measures required.

Finding: SWPs and maintenance/operating procedures are not adequately documenting and controlling radiological conditions at the Y-12 Plant.

During the Radiological Protection Program Appraisal conducted at the Y-12 Plant this past summer, the concern was expressed that the pre-job review of SWPs by the HP staff is not mandated. The Y-12 Plant uses an SWP to request HP review of a job. To investigate the effectiveness of this system, the SWPs generated during the month of September were reviewed. Many of the reviewed SWPs covered jobs that had potential for both external and internal radiation exposure. HP staff provided rather cursory instructions on the SWP, basically limited to any respiratory protection required and detailing if an area needed to be roped off. The radiological conditions in the area, including dose rates, contamination levels, and the potential for airborne activity, are not listed on the SWP. The SWP, therefore, is not an effective means of informing workers of the radiological conditions that may be encountered at the job site. Verification of proper implementation of SWP requirements is not performed by the HP staff. Procedures required for performing a particular job are not listed on the SWP. Additionally, workers and HP staff in Building 9202 were unfamiliar with SWPs.

Maintenance and operating procedures, which cover most routine operations, do not contain adequate information on the HP requirements of a particular task. For example, the procedure for replacing and testing high-efficiency particulate air filters on the roofs of buildings (No. 50-39-UD-042) was reviewed. This procedure did not specify or reference adequate radiological control requirements for contamination control and job monitoring. In general, HP staff do not review new and revised operational and maintenance procedures. Consequently, radiological concerns may not be properly addressed.

4.5.7.4.3 Radiation Generating Devices

Performance Objective: Specialized inspections of radiation generating devices are periodically performed and documented.

Finding: Electron beam welders are not routinely inspected.

Procedure 70-102 defines X-ray equipment as any electrical system which produces X-rays of radiation hazard significance. Procedure 70-102 also requires that routine inspections of required physical safeguards (i.e., safety interlocks, warning devices, shielding, etc.) be performed. Electron beam welders produce radiation fields comparable to if not higher than X-ray machines or radiography sources. If the shielding is modified, the operator could be subject to high radiation fields. However, neither the operators nor the health physicist responsible for X-ray machines felt that Procedure 70-102 applied to the three Y-12 electron beam welders, and, therefore, routine specialized inspections of the electron beam welders were not being performed.

4.5.7.5 Noteworthy Practices

None observed.

5 OCCUPATIONAL SAFETY AND HEALTH

5. OCCUPATIONAL SAFETY AND HEALTH

5.1 Introduction

In private industry, the health and safety of workers is protected, in part, by periodic workplace inspections by the Department of Labor's Occupational Safety and Health Administration (OSHA). Under the 1970 Act that established OSHA, most DOE facilities are exempted from OSHA inspections. That Act, however, requires DOE to enforce all standards comparable to or more severe than OSHA regulations at its facilities. OSHA regulations fill several volumes of the Code of Federal Regulations and contain standards and requirements for health and safety at workplaces that range from the most traditional forms of manual labor to the most modern technological skills. Included are such topics as electrical safety, construction safety, hazard identification and communication, and control of equipment during maintenance to prevent inadvertent operation.

5.2 Purpose

DOE policy is to achieve and maintain compliance with OSHA regulations at all DOE facilities. To assist in meeting this goal, an agreement was reached between DOE and OSHA under which OSHA compliance officers have inspected portions of the Y-12 Plant site and identified violations of OSHA standards related to nonradiological topics. Other defense nuclear facilities are also being inspected by OSHA personnel.

5.3 Scope

Under the 1970 Act that established OSHA, federally owned facilities are exempted from OSHA inspections when the responsible federal agency agrees to enforce standards that are at least comparable to OSHA regulations. DOE has such an agreement and in its orders explicitly adopts OSHA occupational safety and health standards for general industry (29 CFR Part 1910) and construction (29 CFR Part 1926). For this Tiger Team, nonradiological worker health and safety topics were appraised by OSHA compliance officers. Their final appraisal is appended to this report.

Initial scoping of the number of buildings and operations at the Y-12 Plant indicated that a detailed inspection of construction activities and the almost 500 buildings would likely produce relatively large numbers of similar findings and would require extensive resources to complete. It was jointly agreed that inspections of most construction activities and a small number of buildings would provide an adequate sample of workplaces. The small sample of buildings and most construction activities were considered to include many potentially hazardous workplaces and took into account suggestions by union representatives. It is necessary to note, however, that inspection of all workplaces is necessary to ensure that all hazards are identified.

5.4 Major Findings

The OSHA Assessment Team reached the following conclusions and determinations regarding Y-12's industrial and construction safety and health programs:

1. Written safety and health procedures are generally adequate, but a number of traditional safety hazards are not covered by any written programs and some written programs have deficiencies. This is evidenced by lack of written procedures for machine safeguarding, walking and working surfaces and maintenance of fixed electrical equipment. Also, while asbestos, lockout and hazard communication programs have been established and implemented, these procedures contain deficiencies which prevent Y-12 from being in total compliance with OSHA regulations. However, inspection programs for hoists, slings and forklift trucks were found to be in good order and effectively implemented throughout Y-12.

2. Insufficient resources are available for implementation and enforcement of Y-12's safety and health programs. While line organizations are given the responsibility for policing safety and health matters, supervisors are not provided with appropriate training to effectively recognize and evaluate these hazards. Moreover, the industrial safety, industrial hygiene and fire protection engineering departments are focusing their efforts on evaluating plant-wide injury, illness and property damage trends rather than detailed assessment of individual operations. Also, a significant portion of their time is spent responding to complaints and accident investigations, making these departments reactive rather than proactive.

3. The numbers and types of OSHA violations discovered during the course of the assessment are significant in that they point to the areas where Y-12's written safety and health programs contain deficiencies. In general, lack of formal implemented policies for, or deficiencies in, particular safety or health matters resulted in these areas being overlooked by those responsible for maintaining safety and health in the workplace.

4. Effective oversight of safety and health on construction worksites at Y-12 cannot be achieved as long as confusion exists over which of the three prime contractors is to exert overall responsibility in this area.

5. The numbers and types of construction violations discovered by the assessment team reflect the lack of safety and health oversight on construction worksites at Y-12.

6 MANAGEMENT ASSESSMENT

6. MANAGEMENT ASSESSMENT

6.1 Purpose

The assignment of the Management and Organization Subteam was to conduct an assessment of DOE's and Martin Marietta Energy Systems' administration of environmental, safety, and health (ES&H) programs at the Y-12 Plant. The objective of this assessment was to evaluate existing management systems and to identify probable root causes for persistent or repetitive ES&H concerns.

6.2 Scope

As part of its evaluation, the Subteam reviewed DOE staff capabilities and DOE and contractor organizational structures and management configuration for clear lines of oversight and accountability. Interviews were held with top- to mid-level managers and support staff from both the DOE Site Office and the Oak Ridge Operations (ORO) Office. Top-to mid-level managers from the Y-12 Plant were also interviewed, and meetings were held with representatives of Energy Systems' Board of Directors. These managers represented a wide variety of program interests. DOE-Headquarters (HQ) personnel and the HQ site inspector were also interviewed. The Subteam examined a number of key management control systems including the award-fee process, internal operating procedures, training programs, assessment programs, and ES&H tracking and follow-up mechanisms. Documents reviewed included policies, procedures, roles and responsibility statements, implementation plans, Technical Safety Appraisals (TSAs), and environmental audits and appraisals.

6.3 Approach

The findings of the Subteam were based on an approach that included structured interviews with DOE and contractor senior and mid-level management, support staff, and union representatives. The Subteam visited with the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Health and Environment (TDHE). A large number of ES&H documents were examined, and daily debriefings and consultations with the other Subteams were made regarding their findings on site. Preliminary data and stated accomplishments were validated through document review, consultation with the regulatory agencies, and discussion with managers and supervisors. Organizationally, conclusions were validated from the top down and laterally across lines of responsibility. In many cases, individuals were contacted repeatedly to reaffirm or change earlier conclusions.

6.4 Management Assessment

The positive culture that supports the environmental program at the Y-12 Plant today was adopted by Energy Systems in 1984. That cultural change was in response to external scrutiny over historical releases of mercury and followed resolution of Resource Conservation and Recovery Act (RCRA) applicability under the Atomic Energy Act. However, the Y-12 Plant has only recently come to recognize and accept the need to upgrade its health and safety (H&S) program to conform to current requirements and practices. Until recently, the Y-12 Plant

did not view strict compliance to new regulatory requirements as cost-effective or necessary to protect the health and safety of its workers. The perception that existing H&S procedures were sufficient was reinforced by past experience pointing to an excellent safety record. Only in response to recent increases in departmental expectations, as reflected in Secretarial directives, did the Y-12 Plant adopt a culture fully supportive of DOE's H&S objectives. However, over the past year, the Y-12 Plant has strongly and repeatedly communicated its commitment to H&S, even at the expense of production. Although there is still some skepticism at the floor level, this message has begun to take hold.

The Subteam identified a number of serious weaknesses in Y-12's management of their H&S program. These weaknesses included the absence of

- a systematized, controlled, and enforced set of ES&H operating procedures;
- a documented, performance-based training program that ensures awareness of ES&H factors;
- a risk-based system of prioritizing all ES&H appraisal and audit findings; and
- a fully implemented, plant-level, internal assessment program that ensures that ES&H requirements are met, root causes are identified, and corrective action is taken.

The Y-12 Plant recognizes that, to alter the current cycle of repeated audits identifying the same issues, it needs to institute long-term preventive action by effectively applying necessary management systems.

For each of the above weaknesses, the Y-12 Plant is in the process of developing specific remedies. One organizational weakness that Y-12 management has not addressed is the need to clearly integrate management accountability for ES&H into the design process. The design process is defined by procedures; however, ES&H participation is not mandatory. Another area of uncertainty involves authority to stop work being performed by other DOE prime contractors at the Y-12 Plant.

Due to inadequate management commitment and organizational approach, H&S deficiencies identified by DOE-HQ in a 1986 TSA were not fully addressed until after they were later reviewed by the Y-12 Plant in March 1988. Consequently, there now exists a large backlog of ES&H findings from previous audits and appraisals that have not been closed out.

Energy Systems is aware that a fundamental hurdle to resolving H&S concerns lies in the development of Safety Analysis Reports. This is a major task, especially at the Y-12 Plant because of (1) the antiquated physical facility that was not designed for present operations and (2) lack of DOE guidance on analysis criteria for retrofits.

Although we were not able to assess the personnel resources of the contractor, it was apparent that the DOE Site Office was not adequately staffed or trained to uphold its ES&H responsibilities. On a day-to-day program management basis, their workload is excessive and the mode of operation is reactionary. Even with support from ORO, the Site Office is not now able to exercise technical oversight of the contractor, a role which they believe needs clarification.

Both EPA and the state gave a good report on Y-12's environmental program, stating that it addressed all of their concerns and that it was proceeding at a satisfactory pace.

A major obstacle that threatens the success of Y-12's ES&H programs is the lack of resources, which is in direct conflict with rising ES&H and production expectations. A major problem facing DOE's ES&H capabilities is the national shortage of qualified and Q-cleared specialists, along with uncompetitive federal pay scales.

In sum, the Subteam found that, although the contractor is late in developing the management and programmatic provisions necessary to ensure worker health and safety, they are now headed in that direction. Clearly, the major task confronting Energy Systems and the Y-12 Plant is the implementation of management systems that represent a long-term solution to repetitive audit findings. At this point, the time required to respond to additional external assessments would only seem to distract the Y-12 Plant from achieving that objective. While adequate improvements to ES&H management systems are already under way, their implementation needs to be closely monitored by DOE.

6.5 Specific Findings

Performance Objective: Sufficient staffing and resources are available to properly oversee, manage, and conduct ES&H program activities.

Finding: Available resources are insufficient to effectively manage the ES&H programmatic activities.

Because of the complexities and time limitations, the Subteam was not able to assess the staffing level of the contractor. However, interviews were conducted with DOE's Y-12 Site Office and DOE-ORO management. It was evident that existing resources are insufficient to effectively monitor the overall Y-12 operations. Because of this insufficiency, DOE has not been able to properly discharge its oversight function for the site. For example, the Site Office is operating in a reactive mode to everyday problems and therefore has difficulty in discharging its program management responsibilities. Because of limited expertise, Site Office personnel are not qualified to exercise technical oversight. Continued reliance on similarly limited resources at ORO, which also has an oversight role, has put a strain on working relationships. Discussions with Y-12 Site Office management revealed that training of Site Office personnel to enhance their technical skills has not been accomplished because of the heavy workload and demand to handle day-to-day crises.

Discussions with top-level Y-12 management revealed that their greatest issue is the lack of resources required to meet current and proposed DOE orders and expectations. Production requirements continue to increase, placing an even greater strain on the limited resources available to the contractor. Furthermore, because the DOE budgetary process is not coupled with the new DOE orders and requirements as they are promulgated, the ability of both the contractor and ORO to allocate resources necessary to meet these demands is impacted further.

Performance Objective: An overall management plan exists that defines and integrates the key elements required to manage and implement an effective ES&H program.

Finding: Energy Systems has drafted an approach that integrates a number of management system improvements and applies them to all five sites, providing uniformity in the management of its ES&H program activities.

Energy Systems, in response to a recent Radiation Protection TSA at the Oak Ridge sites, has initiated an integrated and comprehensive management systems approach toward resolving the deficiencies noted in this appraisal. This initiative is directed by Energy Systems' Senior Vice President. This effort includes all five Energy Systems sites and is oriented at identifying the necessary management systems that will (1) provide solutions to the deficiencies noted in this TSA and (2) provide for a harmonious integration of these systems across the five sites. A root-cause analysis was used to identify the seven management systems being developed, along with individual action plans describing their implementation. This information is being transmitted to ORO for their review and approval. As a part of the action plans, the required funding necessary to complete this activity will be identified. As this initiative moves forward, it should incorporate efforts already under way in some areas at the Y-12 Plant (see below).

Finding: Although Y-12 management has begun the development and implementation of several management initiatives and systems oriented at eliminating ES&H deficiencies, an overall plan describing them and their integration does not exist.

Y-12 management has actively pursued the identification and/or implementation of several initiatives for example, the Technical Evaluation Program (TEP), chartering of the Procedures Steering Committee, and establishing the risk-based priority systems. Although these initiatives are moving the Y-12 Plant in the proper direction of resolving many of its ES&H deficiencies, the overall approach appears to be fragmented. No plan was found that unifies management's approach and integrates the various components toward resolving many of the currently identified ES&H problems.

Performance Objective: A system based on priorities established by site management is in place to provide a ranking of ES&H considerations.

Finding: No system exists to assess and prioritize corrective actions according to relative risk and urgency for ES&H deficiencies.

In light of a very large and growing number of outstanding ES&H findings (approximately 1500) and only a limited amount of resources available to correct them, a system is needed to assess and prioritize these deficiencies so that management can more effectively apply its available resources.

Y-12 management has established a risk-based priority methodology on a pilot basis to evaluate and classify potential risks in the H&S areas only. This is being done to assist management in the allocation of resources to more effectively deal with these risks (Memo from J. Garber to Distribution, April 27, 1989, Subject: Risk-Based Priority Panels). Furthermore, as part of the TEP, corrective actions related to ES&H and quality assurance (QA) commitments from audits, appraisals, and other internal and external sources are being monitored and assigned to accountable managers for follow-up; however, no risk assessment or prioritization is being made. A significant number of corrective actions are already being tracked in this system, but only a limited amount of resources can be applied to effectively deal with them. However, an overall integrated system using a risk-based approach (similar to the pilot approach mentioned above) to prioritize all ES&H deficiencies and initiatives is needed to assist management in allocating its resources.

Performance Objective: Management is proactive in addressing ES&H issues and in implementing systems in a timely manner to assist in the effective management of activities in this area.

Finding: Although Y-12 management has recently implemented or is in the process of implementing appropriate management systems and programs to direct the ES&H matters of the site, these systems and programs have not been initiated in a timely manner.

In August 1986, a TSA of the Y-12 Plant was conducted by DOE-HQ; 59 recommendations to Y-12 management resulted from the TSA. A second TSA was conducted at the Y-12 Plant in 1988. The 1988 TSA report noted that "much of the progress in dealing with the concerns found in the 1986 TSA was achieved over the 6 months preceding this 1988 appraisal. Furthermore, almost two-thirds of the original 59 concerns were judged, at the time of the 1988 appraisal, to be still unresolved." Note, however, that nine of the unresolved concerns cited in the 1988 TSA report were reopened by the Y-12 Plant as part of a follow-on validation process. Other appraisals conducted by the Y-12 Plant Critical Facilities Review Team in 1987 and another TSA of the Y-12 Plant in 1988 by ORO continued to point out the need to correct deficiencies identified in earlier appraisals. The need to address plans to reissue the Safety Analysis Reports (SARs) to meet current standards was identified as a recommendation in the 1986 DOE-HQ TSA and surfaced as a concern during the 1988 DOE-HQ TSA. Over the past several months, Energy Systems and DOE management have intensified their efforts toward resolving this issue. Y-12 management has made a substantial commitment to a comprehensive program to update the site SARs. Over the past year, many other management systems have been initiated that are directed toward a more effective ES&H program. These initiatives include the TEP directed at establishing a framework to help facilitate effective communication of ES&H and QA requirements between line and staff organizations. More recent initiatives

just begun include the establishment of risk-based priority systems (April 1989), establishment of a program management system to handle H&S recommendations (May 1989), and chartering of a Procedures Steering Committee to address policy for site procedures (excluding product procedures) (July 1989). These actions demonstrate that Y-12 management is beginning to implement the necessary management systems required to direct its ES&H activities. Top management is obviously committed to making the necessary changes to ensure the safety, health, and environment of the Y-12 Plant and its employees.

Performance Objective: The organizational structure is well defined, and facility personnel understand their authority, responsibilities, accountabilities, and interfaces with supporting groups.

Finding: Energy Systems personnel are unclear about the authority and responsibilities they have over DOE's prime contractors at the Y-12 Plant.

DOE's construction program at the Y-12 Plant is executed through contracts with Energy Systems, Rust Engineering, and other fixed-priced contractors; therefore, in May 1988, ORO issued Construction Health and Safety Roles and Responsibilities. "The intended purpose of this document was to clarify any confusion that may exist relative to health and safety issues. This safety mission is accomplished through the various Energy Systems internal organizations working in cooperation with the DOE Construction Division and other on-site construction recognizing that contractual responsibility lies between DOE and its prime contractor." Prime contractors have contractual responsibility for ES&H issues assigned to them by DOE orders, laws, and contracts. However, DOE has assigned full accountability for ES&H issues to Energy Systems.

Y-12 construction engineers indicated that they have shutdown authority for ES&H issues associated with work performed under the Energy Systems contract; however, they were unsure and equivocable about their authority to stop work being performed by other DOE prime contractors.

Performance Objective: Design documents undergo a formal, technical, interdisciplinary review and approval. The bases for these reviews are clearly documented.

Finding: The current system does not ensure mandatory review of design documents by the ES&H organization.

Existing engineering procedures (EP-A-06 and EP-C-17) identify the organizations responsible for providing design review team support. Team members are requested (not required) to attend periodic coordination meetings with the design organization to provide technical and safety comments. Review teams are structured along the traditional engineering matrix approach and managed by a project manager (PM) or project engineer (PE).

There was no evidence of consistent participation by ES&H team members in giving assurance that oversight was conducted or documented. Energy Systems is aware of this deficiency because they performed a design review audit. (See Self Audit Report, cover letter, E. H. Bryant to Distribution, July 27, 1989.)

Performance Objective: The facilities SARs are current, and mechanisms are in place for updating them whenever additional analyses or facilities changes occur.

Finding: SARs have not been updated to reflect current operating conditions.

ORO's Safety Analysis review committee is currently scheduled to issue screening criteria to Energy Systems during the first quarter of FY 1990. The screening criteria further delineate the requirements associated with existing or modified facilities. Energy Systems in turn has elevated organizational status of the Safety Analysis Division to review, update, and generate safety analysis documentation. Outdated SARs at the Y-12 Plant are not a new problem; in fact, numerous TSAs and performance evaluations document this concern. The process to resolve this SAR issue between DOE and Energy Systems has not been effective and has not resulted in a timely solution.

Performance Objective: A safety performance information feedback system is operated to keep facility management, supervision, and employees apprised of progress toward achieving objectives.

Finding: Management and bargaining unit representatives are working together to achieve a safety-conscious attitude at the Y-12 Plant.

Those interviewed stated that they had received indoctrination and training about the importance of ES&H issues. We were also told that philosophical attitudes placing safety before production take time to accept because they go against long-standing traditions. However, some people indicated that they have first-hand knowledge that certain plant operations had been shut down due to ES&H concerns.

Energy Systems has established an oversight committee consisting of three managers and three full-time bargaining unit representatives. The purpose of this committee is to help resolve open safety findings, disseminate safety information, and ascertain safety concerns of employees. The makeup of this committee and its association with union employees, shop stewards, line supervision, business agents, training coordinators, mid-level managers, and senior managers ensure site-wide employee participation.

Performance Objective: Timely action is taken by management to anticipate and fill all facility positions that affect the safe and reliable operation of the facility.

Finding: Critical positions related to ES&H activities are not being filled in a timely manner at the Y-12 site or within ORO.

Interviews with Energy Systems, Y-12 Site Office, and ORO personnel indicated that critical positions are not being filled in a timely manner. The main reason for this situation is a scarcity of people with the appropriate skills. Competition with outside employers further reduces the available pool of critical skills available to ORO and Energy Systems. This situation is further

exacerbated by the extended wait for Q-clearances and the universally low salaries in the Federal service system.

Performance Objective: A system is in place to ensure timely resolution of ES&H considerations by line management.

Finding: There has been a lack of progress in correcting ES&H deficiencies.

As part of the developing TEP, corrective actions related to ES&H matters are assigned to program managers who are responsible for their management and resolution. Accountable managers in various organizations throughout the plant assist the program manager by obtaining the necessary resources to close out the concern. Tracking, reporting, and validating of concerns for each program manager are performed as part of the TEP. The program manager for H&S concerns is the Health and Safety Oversight Special Coordinator, a single staff position reporting to the Y-12 Plant Manager. The program manager for environmental concerns is assigned to the Environmental Management position, a second-level management position with the Health, Safety, Environment, and Accountability (HSEA) Division. The TEP administrative support resides in the Y-12 Quality Division. This multilevel organizational approach is likely a factor in the lack of progress in resolving audit findings.

Performance Objective: A documented training program exists to qualify personnel for their assigned duties.

Finding: Insufficient training programs exist to qualify DOE and Energy Systems personnel for their assigned duties.

No training program exists for the DOE Site Office ES&H personnel. Training opportunities are sought out by staff who, because of workload, are frequently not able to attend scheduled training. Consequently, DOE site personnel are not adequately trained to administer their program management responsibilities. If it is determined that their role is to provide technical oversight, then their training needs would be even greater.

An overall coordinated training program for Y-12 employees is just now under development. Historically, training was highly decentralized, with each of 28 divisions having its own training coordinator. As a result, training was not standardized or well documented and could not be quantified.

In response to repeated TSA findings, Y-12 management published their Health and Safety Management Philosophy for all employees on April 1, 1988. The philosophy states, in part, "The Y-12 Plant will strive to maintain safe and healthful working conditions and practices...." It also describes seven standards, including effective H&S training programs for all employees. Although the training and other self-imposed standards have not been fully achieved, Y-12 site management has committed to their achievement as part of their H&S long range plan (Y-12 Plant Long Range Health and Safety Management Plan, Y/TS-377, Rev.1). To implement this policy, a training officer was hired in January 1989, and a performance-based training system is in the process of being developed from the ground up. The proposed system will take 2 to 3 years to implement. The

resources necessary to implement this program are substantial and have yet to be approved.

Performance Objective: Policies and procedures specifying adequate controls over site operations, including ES&H activities, are in place and followed.

Finding: Many of the Y-12 site operating procedures, excluding product procedures, are inadequately prepared, controlled, or reviewed.

The development and use of adequate procedures continue to be a problem in the operations area. These deficiencies were referenced in the 1986 and 1988 TSAs of the Y-12 Plant. (For additional specific findings of this Tiger Team review related to procedures, refer to the Safety and Health section of this report.) In a memo from G. G. Fee to Distribution (July 17, 1989, Subject: Procedures Steering Committee), a Procedures Steering Committee was appointed to address the policy for procedures for all plant operations, except product procedures. This policy is to provide guidance on those activities that require procedures, the level of detail for various procedures, application of configuration management, change authority, and review and approval requirements. The intent and scope of these initiatives appear to be appropriate but late and, as such, will require significant time to implement.

APPENDIX A
BIOGRAPHICAL SKETCHES OF ASSESSMENT PERSONNEL

NAME: Steven M. Baker

POSITION ON TIGER TEAM: NEPA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Oregon State University	Mathematics, B.S.	1962
Oregon State University	Nuclear Engineering, M.S.	1977
Oregon State University	Mathematics, Ph.D.	1973

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Project Manager (Environmental Compliance Assessment)	ICF Kaiser Engineering Richland, Washington	2
Manager, BWIP Hydrology (High-Level Nuclear Waste Disposal Investigation)	Rockwell Hanford Company Richland, Washington	6
Manager, Nuclear Safety Standards and Technology (Commercial Reactor Safety)	Washington Public Power Supply System Richland, Washington	1
FFTF Project Office Staff (Fast Reactor Safety and Operations)	U.S. Department of Energy Richland, Washington	4
Instructor (Nuclear Engineering)	Oregon State University	2
Assistant Professor (Mathematics)	University of Alaska	1
U.S. Naval Officer (Nuclear Submarines)	U.S. Navy	7

NAME: Ralph R. Basinski

POSITION ON TIGER TEAM: Waste Management Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Pittsburgh	Chemistry, B.S.	1968

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Consulting Environmental Scientist	NUS Corporation Pittsburgh, Pennsylvania	3 1/2
Environmental Engineer	LTV Steel Pittsburgh, Pennsylvania	9
Environmental Analytical Chemist	LTV Steel Pittsburgh, Pennsylvania	4

NAME: Bruce C. Beelman

POSITION ON TIGER TEAM: Field Coordinator
OSHA Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Southeastern Iowa College	Associate of Arts	1967

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Safety Inspector and Safety Engineer	Mason and Hangar Silas Mason Co., Inc., at the Iowa Army Ammunition Plant and the Atomic Energy Commission Plant Burlington, Iowa	5
	U.S. Department of Labor	16
OSHA Safety Compliance Officer	Omaha Area Office	
OSHA Safety Compliance Officer and Supervisor	Wichita Area Office	
OSHA Area Director	Bismarck Area Office	

NAME: Leigh Alvarado Benson

POSITION ON TIGER TEAM: NEPA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Duke University	Zoology and Physical Anthropology, B.S.	1988

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Science Editor	Smithsonian Institution Press Washington, D.C.	1
Environmental Analyst	Labat-Anderson, Inc. Arlington, Virginia	1/2

NAME: William J. Brumley

POSITION ON TIGER TEAM: Team Leader
Y-12 Plant Tiger Team Assessment

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
North Carolina State University	Nuclear Engineering, B.S.	1970

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Director, Facility Safety Division	U.S. DOE-Savannah River Operations Office Aiken, South Carolina	1
Deputy Director, Environmental Division	U.S. DOE-Savannah River Operations Office Aiken, South Carolina	1
Chief, Technology: Operations Branch - Defense Waste Processing, Facility Project Office	U.S. DOE-Savannah River Operations Office Aiken, South Carolina	4
Project Engineer	U.S. DOE-Savannah River Operations Office Aiken, South Carolina	7
Radiological Engineer	Charleston Naval Shipyard Charleston, South Carolina	6

NAME: James A. Buckham

POSITION ON TIGER TEAM: Operations and Training Specialist
Environmental Assessment Safety and Health Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Washington	Chemical Engineering, B.S.	1945
University of Washington	Chemical Engineering, M.S.	1948
University of Washington	Chemical Engineering, Ph.D	1953

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Consultant	Self-employed Aiken, South Carolina	5
Oversight Team Leader for Sequoyah Facility Restart	Pickard, Lowe and Garrick, Inc. Gore, Oklahoma	2
Executive Vice President and President	Allied-General Nuclear Services Barnwell, South Carolina	8
Assistant General Manager	INEL (ICPP) Idaho Falls, Idaho	7
Division Manager for Development and Production	INEL (ICPP) Idaho Falls, Idaho	4
Research Engineer to Branch Manager in Research and Development	INEL (ICPP) Idaho Falls, Idaho	10

NAME: Gregory R. Buckle

POSITION ON TIGER TEAM: Groundwater Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Stanford University	Geology, B.A.	1973
Kansas University	Biology, Ph.D.	1981
University of Wisconsin at Milwaukee	Civil Engineering, M.S.	1986

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Project Manager	NUS Wilmington, Massachusetts	1
Project Supervisor	IT Corporation Milwaukee, Wisconsin	6

NAME: Walt Cienaski, Jr.

POSITION ON TIGER TEAM: Construction Engineer
OSHA Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Western New England College	Mechanical Engineering, B.S.	1965

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Superintendent for Cranes, Structural Steel, and Rebars	Steel Erection Company Springfield, Massachusetts	4
Union Construction Worker	New England Companies	5

CERTIFICATIONS/LICENSES:

Crane Certification Bureau	Mobile and Overhead Cranes	1980

NAME: Ben Evans

POSITION ON TIGER TEAM: Management Specialist
Management Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Youngstown State University	Electrical Engineering, B.S.	1971
University of New Mexico	Business Administration, M.B.A.	Pending

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Vice President and Oversight Operations Manager for the Southwest Region	ICF Kaiser Engineering Los Alamos, New Mexico	6
Project Manager Responsible for Electrical Construction and ASME NQA-1 Welding Program	Foothill Electric Corporation Cincinnati, Ohio	9

NAME: Helen F. Gram

POSITION ON TIGER TEAM: NEPA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Stanford University	Organic Chemistry, M.S.	1957
Whitman College	Chemistry, B.S.	1956

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Vice President Environment, Safety, and Health	ICF Kaiser Engineers, Inc. Los Alamos, New Mexico	1
Dept. Manager, Environment, Safety, Health and Quality Assurance	Los Alamos Technical Associates, Inc. Los Alamos, New Mexico	2
Program Manager and Section Manager, Environment and Safety Programs	Los Alamos Technical Associates, Inc. Los Alamos, New Mexico	9
Program Manager National Pollutant Discharge Elimination System (NPDES)	NM Environmental Improvement Agency Santa Fe, New Mexico	3
Research Organic Chemist	Stanford Research Institute Menlo Park, California	3

NAME: Lyle E. Harris

POSITION ON TIGER TEAM: NEPA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
E. Michigan University	Geology, B.S.	1977

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
NEPA Specialist	U.S. Department of Energy Washington, D.C.	2
Geologist	U.S. Bureau of Mines Pittsburgh, Pennsylvania	9

NAME: Andrea J. Heintzelman

POSITION ON TIGER TEAM: Assistant Subteam Leader
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Kansas State University	Anthropology, B.A.	1971
American University	Applied Anthropology, M.A.	1985

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Assistant Team Leader for Prioritization, Office Environmental Audit	U.S. Department of Energy Washington, D.C.	1 1/3
Environmental Protection Specialist and Team Coordinator	Federal Energy Regulatory Commission Washington, D.C.	3
On-Site Director for Cultural Resources Management	Deleuw, Cather/Parsons Washington, D.C.	5
Consultant, Environmental and Cultural Resources Management	Historical Enterprises Alexandria, Virginia	2
Project Coordinator and On-Site Director for Cultural Resources Management	James F. MacLaren, Ltd. Toronto, Ontario (Canada)	5

NAME: Clarence R. Hickey

POSITION ON TIGER TEAM: NEPA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Grove City College	Biology, B.S.	1966
Long Island University	Marine Science, M.S.	1971

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Environmental Protection Specialist (NEPA Coordinator)	U.S. Department of Energy Washington, D.C.	2
Marine/Fishery Biologist (marine research and power plant impact studies)	New York Ocean Science Laboratory Montauk, New York	5
Section Leader and Research Biologist (power plant impact studies)	Ichthyological Associates, Inc. Ithaca, New York	1
Fishery Biologist and EIS Project Manager	U.S. Nuclear Regulatory Commission Washington, D.C.	11

NAME: B. R. Hughes

POSITION ON TIGER TEAM: Surface Water Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Massachusetts Institute of Technology	Chemical Engineering, B.S.	1983

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Principal in developing effluent guidelines for organic chemicals, polymers, synthetics fibers industry	Science Applications International Corporation LaJolla, California	5
Associate Engineer in the design of waste water treatment plants	RCL Industries Beverly, Massachusetts	1

NAME: Gerry L. Jones

POSITION ON TIGER TEAM: Maintenance and Technical Support Specialist
Health and Safety Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Broome Community College	Engineering Physics, A.S.	1962
University of Oklahoma	Engineering Physics, B.S.	1964
University of Oklahoma	Nuclear Engineering, M.S.	1966
Carnegie Mellon University	Mechanical Engineering, Graduate Studies	1969-1975

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Oversight Project Manager for Nuclear Regulatory Commission Technical Assistance	Department of Energy Idaho Operations Office Idaho Falls, Idaho	3
Senior Start-up Engineer	Bechtel Power Corporation Gaithersburg, Maryland	5
Project Engineer on Department of Energy Light Water Reactor Safety Program	EG&G Idaho, Inc. Idaho Falls, Idaho	3
Supervisor at the S1W Prototype Plant	Westinghouse Naval Reactors Facility Idaho Falls, Idaho	3
Senior Engineer in Support for Naval Reactors	Bettis Atomic Power Laboratory Pittsburgh, Pennsylvania	6
Nuclear Plant Engineer at S1W Prototype Plant	Westinghouse Naval Reactors Facility Idaho Falls, Idaho	3

NAME: Mark Kaszniak

POSITION ON TIGER TEAM: Safety Engineer
OSHA Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Illinois at Chicago	Chemical Engineering, B.S.	1983

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Safety Engineer	U.S. Department of Labor OSHA Chicago, Illinois	6

CERTIFICATIONS/LICENSES:

EIT License, State of Illinois, 1987.

NAME: William W. Kinney

POSITION ON TIGER TEAM: Subteam Leader
Safety and Health Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Idaho	Chemical Engineering, B.S.	1954

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Project Manager	DOE/Office of Safety Compliance Washington, D.C.	1
Branch Chief	DOE/Office of Nuclear Safety Washington, D.C.	2
Nuclear Engineer	DOE/Office of Nuclear Safety Washington, D.C.	3
Project Inspection	NRC/Region I Philadelphia, Pennsylvania	11
Manager	Hanford Plutonium and Separations Operations Richland, Washington	5
Supervisor	Hanford Plutonium and Separations Operations Richland, Washington	5
Engineer	Hanford Plutonium and Separations Operations Richland, Washington	5

NAME: Bernard R. Kokenge

POSITION ON TIGER TEAM: Management Specialist
Management Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Dayton	Chemistry, B.S.	1961
Ohio University	Inorganic Chemistry, Ph.D.	1966

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Consultant to DOE/HQS-EH	Oak Ridge Associated Universities Oak Ridge, Tennessee	3
Vice-President, Strategic Planning and Program Development	Kentucky Christian College Grayson, Kentucky	3
Associate Director, Mound Plant	Monsanto Research Corporation - Mound Miamisburg, Ohio	2
Director, Nuclear Weapon Component Development and Production	Monsanto Research Corporation - Mound Miamisburg, Ohio	4
Manager, Nuclear Fuels Fabrication Programs	Monsanto Research Corporation - Mound Miamisburg, Ohio	10
Supervisor, Plutonium Fuels Development	Monsanto Research Corporation - Mound Miamisburg, Ohio	7

NAME: Theodore C. Koss

POSITION ON TIGER TEAM: Air Quality Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Iona College	Physics, B.S.	1967
New York University	Meteorology, M.S. (Minor, Air Resources Engineering)	1969

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Atmospheric Scientist	NUS Corporation Gaithersburg, Maryland	8
Supervisor, Project Manager	Tennessee Valley Authority Muscle Shoals, Alabama	11
Environmental Scientist	York Research Corporation Stanford, Connecticut	1.5

NAME: John A. Leonowich

POSITION ON TIGER TEAM: Health Physics Specialist
Safety and Health Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Rensselaer Polytechnic Institute	Physics, B.S.	1974
Rensselaer Polytechnic Institute	Nuclear Engineering, M.S.	1976
Rensselaer Polytechnic Institute	Radiological Engineering, Ph.D.	1985

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Senior Research Scientist in the Dosimetry Technology Group	Battelle, Pacific NW Laboratory Richland, Washington	2
Senior Radiological Engineer	Hope Creek Nuclear Generating Station, Artificial Island, New York	1
Radiation Protection Officer and Alternate Industrial Hygienist in the USAF	Eastern Space and Missile Center Cape Canaveral, Florida	5
Chief, Radiation Instrument Calibrations in the USAF	Occupational Environmental Health Laboratory Brooks AFB, Texas	2

NAME: John L. Liebenthal

POSITION ON TIGER TEAM: Engineering and Major Modifications Specialist
Safety and Health Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Purdue University	Chemistry, B.S.	1953
	Chemistry, M.S.	1958

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Manager, ES&H Reviews	Idaho National Engineering Laboratory Idaho Falls, Idaho	2
Manager, Process Engineering	Idaho National Engineering Laboratory Idaho Falls, Idaho	3
Manager, Thermal Analysis	Idaho National Engineering Laboratory Idaho Falls, Idaho	10
Manager, Nuclear Engineering	Idaho National Engineering Laboratory Idaho Falls, Idaho	3
Manager, Plant Engineering	Idaho National Engineering Laboratory Idaho Falls, Idaho	8
Plant Engineer	Idaho National Engineering Laboratory Idaho Falls, Idaho	9

NAME: John P. McCann

POSITION ON TIGER TEAM: CERCLA/SARA Title III Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Colorado State University	Environmental Health, B.S.	1979
University of Pittsburgh	Environmental Chemical Hazard Assessment, M.S.	Anticipated 1991

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Project Manager/ Environmental Scientist	NUS Corporation Pittsburgh, Pennsylvania	6
Project Manager	ICF Kaiser Engineers Pittsburgh, Pennsylvania	4

NAME: Anthony R. Morrell

POSITION ON TIGER TEAM: Leader
Management Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Marist College	English Literature, B.A.	1968
Oregon State University	2 years graduate school (Wildlife Biology)	1971-73

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Environmental Manager	Bonneville Power Portland, Oregon	16

NAME: Mark D. Notich

POSITION ON TIGER TEAM: Coordinator
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Maryland	Chemistry, B.S.	1978

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Principal Chemist	NUS Corporation Gaithersburg, Maryland	2 1/2
Section Manager, Special Projects and Field Operations	Hittman-Ebasco Associates, Inc. Columbia, Maryland	3
Senior Chemist	Hittman-Ebasco Associates, Inc. Columbia, Maryland	6

NAME: David G. Olson

POSITION ON TIGER TEAM: QA/TSCA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Duquesne University	Chemical Engineering, B.S.	1963

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Staff Environmental Specialist	NUS Corporation Gaithersburg, Maryland	4
Analytical Chemist	Swindell-Dressler Corporation Pittsburgh, Pennsylvania	20

NAME: Bruce Potoka

POSITION ON TIGER TEAM: Leader
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Pennsylvania State University	Biology, B.S.	1975

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Team Leader, Office of Environmental Audit	U.S. Department of Energy Washington, D.C.	1
Supervisory Environmental Scientist, RCRA Enforcement Division	U.S. Environmental Protection Agency Washington, D.C.	4
On-Scene Coordinator Emergency Response Branch	Environmental Protection Agency Region III Philadelphia, Pennsylvania	3
Compliance Inspector Western Field Office	Environmental Protection Agency Region III Wheeling, West Virginia	3

NAME: Marshal Philip Prater

POSITION ON TIGER TEAM: RCRA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of South Carolina	Biology, B.S.	1977
University of South Carolina	Public Health, M.P.H.	1982

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
South Carolina Inspection Coordinator and Chief Auditor	Bureau of Solid and Hazardous Waste, State Department of Health and Environmental Control, Columbia, South Carolina	4.5
Senior Environmentalist for Solid, Hazardous, and Mixed Waste Management	NUS - Savannah River Center Aiken, South Carolina	2

NAME: R. Dickinson Roop

POSITION ON TIGER TEAM: NEPA Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Hiram College	Biology, B.A.	1971
SUNY at Stony Brook	Ecology, M.A.	1975

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Project Director	Labat-Anderson, Inc. Oak Ridge, Tennessee	1 month
Research Associate	ORNL Oak Ridge, Tennessee	13
Staff Ecologist	Institute of Ecology Washington, D.C.	2

NAME: Charles J. Shields

POSITION ON TIGER TEAM: Supervisory - Industrial Hygienist
OSHA Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
DePauw University	Biology, B.A.	1975
University of Michigan	Industrial Hygiene, M.S.	1976

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Industrial Hygienist	U.S. Department of Labor OSHA Des Plaines, Illinois	12
Supervisory, Industrial Hygienist	U.S. Department of Labor OSHA Des Plaines, Illinois	1

CERTIFICATIONS/LICENSES:

Certified in the Comprehensive Practice of Industrial Hygiene by the ABIH

NAME: Richard E. Tarbert

POSITION ON TIGER TEAM: Surface Water Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
University of Pittsburgh	Chemistry, B.S.	1953

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Environmental Consultant	NUS Corporation Pittsburgh, Pennsylvania	5
Environmental Auditor	U.S. Steel Corporation Pittsburgh, Pennsylvania	3
Senior Environmental Engineer	U.S. Steel Corporation Pittsburgh, Pennsylvania	10
Wastewater Consulting Engineer	Calgon Corporation Pittsburgh, Pennsylvania	2
Water Treatment Polymer Application Specialist	Calgon Corporation Pittsburgh, Pennsylvania	7
Water Treatment Consulting Engineer	Calgon Corporation Pittsburgh, Pennsylvania	3

NAME: Steve Velen

POSITION ON TIGER TEAM: Health Physics Specialist
Safety and Health Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Roosevelt University	Chemistry and Math, B.S.	1969
Northwestern University	Health Physics (M.S. work)	1971

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Principal Associate, providing technical safety services to government and government contractors	M. H. Chew & Associates, Inc. Livermore, California	1
Safety Team Leader, managing safety aspects of R&D with plutonium, uranium, and tritium	Lawrence Livermore National Laboratory Livermore, California	4
Health Physicist, providing health physics support to numerous facility programs	Lawrence Livermore National Laboratory Livermore, California	4
Radiation Safety Officer, providing operational health physics for high energy physics accelerator	FermiLab Batavia, Illinois	10

CERTIFICATIONS/LICENSES:

Certified Health Physicist, 1984

NAME: Anthony Weadock

POSITION ON TIGER TEAM: Health Physics Specialist
Safety and Health Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
MacMurray College	Biology, B.S.	1978
University of Maryland	Zoology, M.S.	1980

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Health Physicist	Department of Energy Washington, D.C.	7 months
Radiation Specialist	Nuclear Regulatory Commission King of Prussia, Pennsylvania	5
Health Physics Technician	Department of Defense Mare Island Shipyard Vallejo, California	1.5
Information Specialist	Information Management Systems, Inc. Bethesda, Maryland	1
Biologist	National Institutes of Health Bethesda, Maryland	1

NAME: Daniel N. Zweifel

POSITION ON TIGER TEAM: Radiation Specialist
Environmental Assessment Subteam

EDUCATIONAL EXPERIENCE:

School	Discipline and Degree Earned	Year
Oklahoma State University	Radiation and Health Physics, B.S.	1974

WORK-RELATED EXPERIENCE:

Position	Affiliation	No. of Years
Environmental Radiological Analyst	NUS Corporation Aiken, South Carolina	1 1/2
Radiological Engineer	General Dynamics Electric Boat Division New London, Connecticut	4 1/2
Effluent/Environmental Engineer, and Manager PUREX Power and Effluents	Rockwell Hanford Operations Richland, Washington	7 1/2
Radiological Project Engineer	Illinois Power Company Clinton Power Station Clinton, Illinois	2

APPENDIX B
OSHA ASSESSMENT REPORT AND FORM 1B SUMMARIES

U.S. Department of Labor

Occupational Safety and Health Administration
Washington, D.C. 20210

Reply to the Attention of:

DEC -8 89

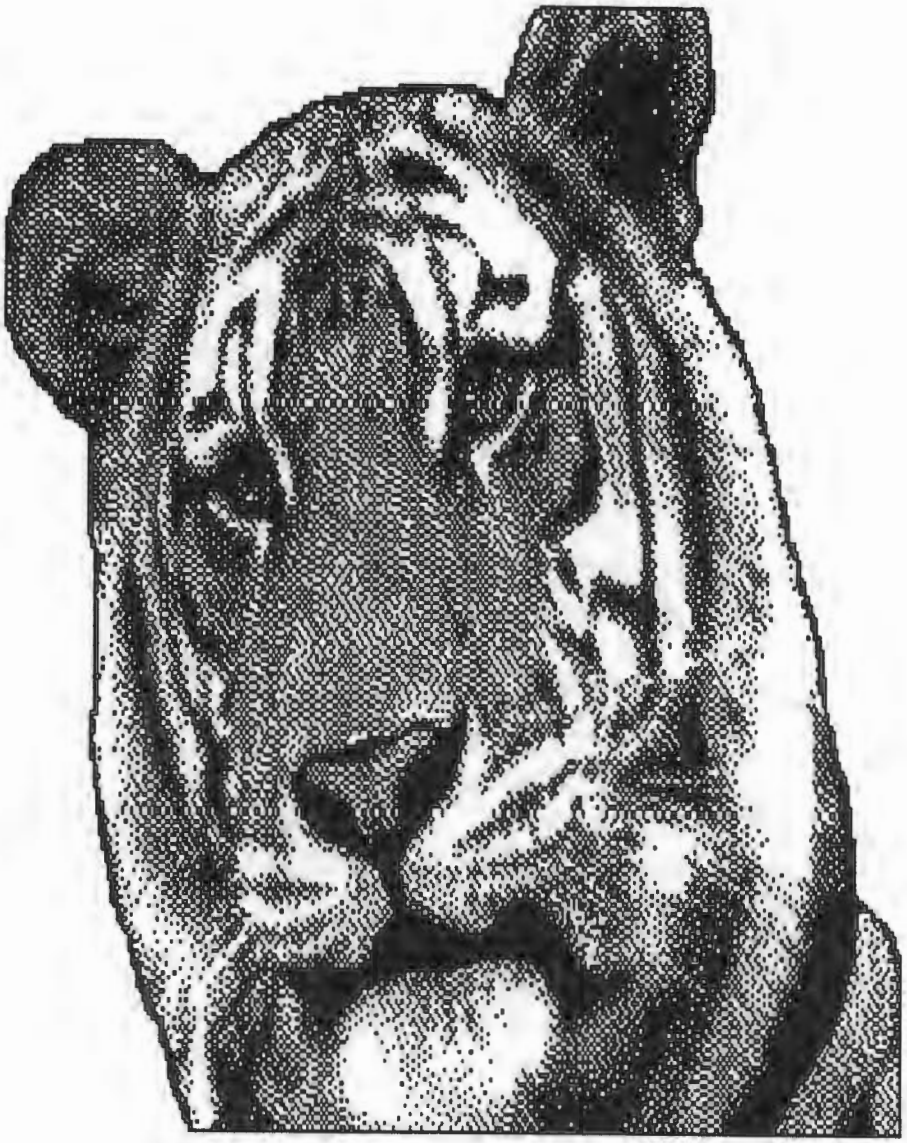
MEMORANDUM FOR: Jerry Hulman, Director
Office of Quality Programs
U.S. Department of Energy

FROM: Bruce Beelman,
OSHA/DOE Tiger Team Field Coordinator

SUBJECT: OSHA Safety and Health Narrative Evaluations

Please find attached the evaluation reports for the Y-12, Pantex, and Mound inspections. It is my understanding that you will be forwarding the reports to each individual DOE Tiger Team leader. If you have any questions or need further clarification do not hesitate to call.

Attachments



DOE TIGER TEAM
OSHA ASSESSMENT REPORT
Y-12 PLANT, OAK RIDGE, TENNESSEE

Bruce Beelman, OSHA Coordinator

Inspection Team

Charles Shields, Industrial Hygiene (Team Leader)
Mark Kaszniak, Industrial Safety
Walter Cienaski, Construction Safety

5.0 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

5.1 Purpose

The purpose of OSHA participation in this assessment was to assist DOE in the evaluation of contractor responsibilities for occupational safety and health at the Y-12 Plant. OSHA has not made previous inspections of Y-12, or other DOE contractor facilities, because the Atomic Energy Act and the Occupational Safety and Health Act preclude OSHA enforcement in these facilities. However, every employer that is covered by the Occupational Safety and Health Act of 1970 has a general duty to maintain a safe and healthful workplace free from recognized hazards capable of causing serious physical harm or death to employees, and a specific duty to comply with the standards promulgated by OSHA under this Act. DOE Order No. 5483.1A states that contractors of government owned contractor operated (GOCO) DOE facilities shall comply with all OSHA standards. At the request of DOE, the Secretary of Labor agreed to provide OSHA personnel as consultants for the purpose of performing a compliance-type evaluation of the Y-12 facility. DOE and OSHA entered into an agreement specifying the role and performance of the OSHA assessment team. This agreement is attached as Appendix C.

5.2 Scope

The role of the OSHA Assessment Team was to identify occupational safety and health hazards (excluding radiological hazards) observed at the Y-12 plant. Due to the large size of the facility, a walkthrough of all areas of the plant was not feasible in the three weeks allotted for the inspection. At the time of this assessment, the Y-12 operation, managed for DOE by Martin Marietta Energy Systems with Rust Engineering as the on-site construction contractor, included approximately 500 buildings built on 811 acres, 8700 employees, and 36 construction subcontractors. Walkthroughs were conducted in areas prioritized by DOE, with concurrence by OSHA, as representative of various process streams, hazards and operations. A list of these areas is included in Tables I and II.

However,it should be noted that the five Oak Ridge National Laboratory (ORNL) divisions located at Y-12 were <u>not</u> part of the OSHA team's assessment. Also, some of the major processing areas could not be fully inspected because they were not in operation due to extensive retrofits. This included significant portions of the Lithium focused factory (Buildings 9204-2 and 9204-2E) and parts of the enriched uranium chemical processing operations (Buildings 9212 and 9206). While the physical facilities containing these operations were inspected and hazards resulting in violations of OSHA standards were noted when apparent, the hazards associated with actual processing could <u>not</u> be properly evaluated due to lack of activity. Similarly, any hazards presented by installation of new equipment, which were not yet in operation, could not be determined.

In addition to the physical inspection of the facilities, a review of the effectiveness of Martin Marietta Energy Systems' industrial safety and health program was performed based on the OSHA assessment team's observations in the areas that were inspected. This is an element of OSHA's normal inspection protocol as set forth in agency's Field Operations Manual. In January of 1989, OSHA published voluntary guidelines in the Federal Register (54 FR 3904-3916) outlining the major elements of an effective safety and health program which OSHA compliance officers utilize in their evaluation of employers' programs. It should be noted that these guidelines are not mandatory, but the development and implementation of an effective safety and health program, containing systematic management policies and practices, is fundamental to reduction of work related injuries and illnesses along with their attendant economic costs.

5.3 Approach

OSHA representatives utilized standard OSHA inspection procedures in the performance of this assessment. This included provision for an opening conference, union representation, and walkthrough inspection. The inspection team was composed of specialists in three areas: construction safety, general industry safety, and industrial hygiene. Team members documented hazards by means of observations, photographs, exposure measurements, review of records, and employee interviews.

Contractor representatives always accompanied OSHA team members on the walkthroughs. Members of Martin Marietta's industrial safety department accompanied the construction and industrial safety team members, while members of Martin Marietta's industrial hygiene department accompanied the industrial hygiene team member. Individual department and/or worksite supervisors then joined the OSHA assessment team when a walkthrough of their areas was being conducted.

Representatives of the Atomic Trades and Labor Council (ATLC) - the employees' recognized collective bargaining unit - also accompanied OSHA assessment team members on the walkthroughs at various times during this assessment. In addition, DOE employees, from either the Germantown or Oak Ridge offices, accompanied OSHA team members at various times in order to gain a better understanding of how OSHA compliance officers conduct walkthroughs.

OSHA walkthrough inspections differ depending on the discipline involved. Construction walkthroughs are made by particular job site where the general contractor and all sub-contractors are inspected. Although one OSHA team member was assigned to inspect all the construction activities at Y-12, he switched to industrial safety in the third week so that the OSHA assessment team would be able to cover all the different types of industrial operations at this facility. Even though this switch was made, a majority of the construction activities at Y-12 were inspected during the first two weeks of this assessment. Industrial

safety walkthroughs are done on a building and/or area basis where all activities and facilities are inspected. Industrial hygiene walkthroughs involve a survey of work areas where potential chemical and physical hazards exist, including monitoring of employee exposures either by short-term screening or full-shift personal sampling.

During the course of the OSHA assessment, eighteen (18) full-shift personal samples were taken for mercury, asbestos, beryllium, uranium and lithium compounds. All OSHA samples were duplicated with side-by-side sampling conducted by Y-12, and these samples were analyzed by the Y-12 laboratory. The majority of the OSHA samples were sent to OSHA's Analytical Laboratory in Salt Lake City, Utah for analysis, However, classified samples were sent to Lawrence Livermore National Laboratory (a Q-cleared facility) in California. Employee breathing zone sampling results are contained in Table III.

Normally, OSHA compliance officers utilize their own equipment for documentation of hazards; however, Martin Marietta's equipment and photographers were used by the OSHA assessment team due to radiological and security concerns. Prior to use, team members evaluated each piece of equipment to assure it was functioning as intended and properly calibrated. Photography support was made available whenever an OSHA team member requested this assistance for documentation of hazards. Photographers frequently accompanied OSHA team members as they conducted their walkthroughs, especially during the construction inspection activities due to the transitory nature of the hazards observed. Over 400 photographs were taken to aid in documentation of the hazards discovered by the OSHA team during the course of this assessment.

In addition, OSHA inspections are almost always made without providing advance notice to the employer. The Department of Energy advised Y-12 management that OSHA would be participating as part of the Tiger Team approximately four weeks prior to the beginning of the on-site evaluation. During this period, Y-12 personnel expended considerable effort in an attempt to clean up the facility and eliminate hazards. Specific areas included general housekeeping plus labeling of pipes and containers.

Violations of OSHA standards were written and classified in accordance with OSHA's Field Operations Manual using OSHA forms, except that penalty calculations were not made. Since OSHA does not have enforcement authority on DOE contractor sites, citations were <u>not</u> issued and penalties were <u>not</u> assessed. Apparent violations of OSHA standards and obligations of the OS&H Act, as well as other safety and health hazards, were communicated to contractor representatives at time of finding during the walkthroughs. Then at the end of each day, with a few exceptions, a summary of findings was presented by all DOE Tiger Team members at a debriefing attended by 50 to 100 of Y-12's contractor managers.

At DOE's request, apparent violations of OSHA standards found during this assessment were classified by the OSHA team members as to type. A "serious" violation is defined by OSHA as one in which there is substantial probability that death or serious physical harm could result, and the employer knew or could have known of the hazard. OSHA defines a "willful" violation as one in which an employer either knew that a condition constituted a violation, or was aware that a hazardous condition existed and made no reasonable effort to correct it. An "other-than-serious" violation is defined by OSHA as one where the accident or illness that would most likely result from the hazardous condition would probably not cause death or serious physical harm, but would have a direct and immediate relationship to the safety and health of employees.

Martin Marietta's Industrial Safety Department displayed initiative by developing a database for tracking all violations discovered by the OSHA assessment team. Features of this database include dates by when the violation is to be corrected and the person responsible for assuring the violation is properly abated. A modified version of this database was used by the DOE Tiger Team to compile all violations in OSHA citation format (see Appendix B of this report). Y-12 management took considerable efforts in immediately correcting numerous hazards identified by the OSHA assessment team members at the time they were discovered. In these cases, OSHA team members verified that abatement of these hazards was properly accomplished.

Inspection activities were supplemented with a series of meetings with Martin Marietta's safety, industrial hygiene and fire protection engineering departments on a variety of safety and health topics. The purpose of these meetings was to help Martin Marietta personnel understand the requirements contained in various OSHA standards and to provide clarifications where necessary. Issues discussed included: hazard communication, asbestos, means of egress, handling of flammable and combustible liquids, fire brigades, HAZMAT teams, fall protection, machine safeguarding, assured equipment grounding programs, and control of hazardous energy sources (lockout/tagout). Copies of OSHA program directives were also provided on these subjects, where available, to aid in further clarification. Martin Marietta used the information obtained at these meetings to project cost estimates for coming into compliance with the OSHA standards discussed.

5.4 INDUSTRIAL SAFETY AND HEALTH PROGRAM EVALUATION

The OSHA assessment team's evaluation of Martin Marietta's industrial safety and health program is based on the voluntary guidelines published in the Federal Register by OSHA in January of 1989. In that document, OSHA identified the major elements of an effective program to be:

1) Management Commitment and Employee Involvement
2) Worksite Analysis

3) Hazard Prevention and Control
4) Safety and Health Training

Each of the above referenced areas will be addressed separately. Comparisons will then be drawn between the voluntary guidelines and Y-12's program. Specific examples will be used to highlight effective and ineffective areas, as determined by the OSHA assessment team's observations in the areas visited during the walkthroughs.

5.4.1. Management Commitment and Employee Involvement

An effective management program includes worker safety and health as a fundamental part of the organizational structure and utilizes employee involvement to help identify and correct hazardous conditions and practices. Areas that must be addressed include: 1) A clearly stated worksite safety and health policy; 2) Communication of safety and health program goals; 3) Involvement of top management; 4) Involvement of employees; 5) Assignment of program responsibilities; 6) Provision for adequate program resources; 7) Accountability of the responsible persons; 8) Review of the program.

5.4.1.1. Clearly Stated Worksite Safety and Health Policy

Y-12 has a clearly stated worksite safety and health policy entitled Health and Safety Management Philosophy which consists of a policy statement, standards and responsibilities for plant safety and health. Martin Marietta's stated policy is to: 1) Perform all jobs only when the risk of sustaining injury or illness is as low as reasonably achievable; 2) Establish and maintain conditions and practices in accordance with applicable health and safety standards and regulations and 3) Seek continuous improvement in our health and safety program.

5.4.1.2. Communication of Safety and Program Goals

The plant manager, with input from the industrial safety, industrial hygiene and fire protection engineering departments, develops an annual action plan which sets goals for reduction of plant injuries and illnesses along with areas that need increased concentration. A five year plan is also updated on an annual basis for safety and health projects involving large capital expenditures. Each operating division at Y-12 is then held responsible for preparation of an annual safety action plan which describes how that division intends to reduce its injuries and illnesses for the coming year. These plans are distributed to all affected managers and supervisors within each division.

However, review of some of these plans showed that they failed to incorporate specific performance criteria to gauge their effectiveness. This is clearly illustrated by some of the elements contained in the Fabrication Division Safety Action Plan for CY 1989. General statements, such as supervisors encouraging

employee participation in order to sustain awareness and interest, contain no criteria for performance to determine if they have been successfully met. Achievable goals must be set and then evaluated to determine a program's effectiveness.

The annual "Accident Summary, Analysis, And Loss Report", prepared by the Industrial Safety Department, which identifies specific plant-wide safety and health goals for the upcoming year suffers from the same problem. The objectives for some goals are very general and do not describe the level of performance expected for their successful accomplishment. In addition, specific time frames for all the objectives are non-specific in regards to completion.

For example, the third primary safety objective for 1989 deals with "timely" closure of corrective actions associated with safety suggestions, inspections and near-miss investigations, but no criteria are provided to gauge timeliness. The sixth primary safety goal for 1989 is improvement of construction safety through "an effective preplanning surveillance and enforcement program." However, there are no objectives listed as to who is responsible for doing this (i.e. Industrial Safety Department, Construction Engineering Department) or how this will be accomplished, such as specific numbers of inspections conducted, or particular hazard areas to be emphasized based on previous accident trends.

Furthermore, most departments are conducting a weekly twenty minute safety meeting for their employees. Topics discussed include accidents and injuries that are of interest of the department. This meeting also provides an opportunity for employees to bring up safety and health concerns to foremen and supervisors.

5.4.1.3. Involvement of Top Management

The Plant Manager's concern for safety and health issues is reflected in the establishment of a special health and safety oversight committee. This committee consists of a special in-plant coordinator who reports directly to the plant manager plus an external review committee comprised of outside safety and health experts from around the country. However, neither ATLC representatives nor Y-12 employees are represented on this committee, although committee meeting minutes are shared at the monthly Central Safety, Health and Environmental Committee meetings (discussed further below) which ATLC representatives and various other employees do attend.

This committee discusses permanent, long term solutions for many of the identified safety and health concerns at Y-12.The format of these two day meetings include discussion of the agenda followed by workplace investigation and then discussion of findings with recommendations. Since the inception of this committee in mid-1988, four meetings have been held and matters discussed have included: asbestos, carcinogens, residual mercury contamination, uranium

handling, injuries due to falls, possible cross connections in potable water and breathing air supplies, and emergency notification of employees.

The special in-plant coordinator, in conjunction with forty top managers, developed a Health and Safety Management Philosophy containing fourteen points which describe the responsibilities of Y-12 supervisors which was issued and discussed in December of 1988 and finally published in booklet form in early 1989. One unique feature of this policy is that it requires Y-12 employees to discontinue a job or operation if they determine there is a significant concern for their own safety and health. In March of 1989, the Plant Manager and Assistant Manager gave a series of management forums on this new health and safety philosophy to approximately one thousand Y-12 employees.

An interview with the Atomic Trades and Labor Council (ATLC) safety representative revealed that the plant manager has established an "open door" policy with regard to safety and health issues brought to his attention by the ATLC. The joint labor/management safety committee holds a weekly meeting with the assistant plant manager concerning safety and health matters at Y-12.

The Plant Manager also chairs the monthly Central Safety, Health, and Environmental Committee meeting which is attended by all division managers and safety, health, fire protection, and environmental disciplines. The industrial safety department is responsible for preparing the agenda of the meeting as well as disseminating the minutes afterward. The format of these meetings varies, but certain topics are always discussed: summary of recordable injuries and illnesses that have occurred in the plant since the last meeting; review of any fire incidents; review of any safety and health complaints filed with DOE; radiation protection issues; spill trend reports; motor vehicle concerns; industrial hygiene, safety, fire protection, criticality, and environmental management concerns. In addition, a division is normally invited to speak about some element of their safety action plan plus recent safety accomplishments are reviewed.

During the OSHA assessment teams' physical inspection of the workplace, management officials from department heads to line supervisors demonstrated some awareness for safety and health. This was illustrated by their attention to the use of personal protective equipment by employees and by the OSHA assessment team. Other examples observed include supervisors warning vehicle operators to obey plant speed limits, the closing of open electrical disconnect boxes, and instructing construction contractors on the proper procedures for respirator care and hearing protection.

5.4.1.4. Involvement of Employees

In 1984, the ATLC had a safety and health article inserted into the collective bargaining agreement. This article established a joint labor/management

committee to handle safety and health complaints that did not come through normal channels. Due to DOE's recent concerns in safety and health matters, there have been three union officials serving as full-time safety and health representatives since July of this year. These representatives have been performing workplace inspections, resolving safety and health complaints as well as assisting with employee training.

Moreover, individual employees have direct involvement in conditions they believe may be detrimental to their safety and health. Employee responsibilities include discontinuing an operation if there is significant concern for safety and health. Interviews with employees revealed that work has been discontinued when safety and health concerns have been brought to the attention of management. For example, an electroplater in the main plating shop stated that when malfunctions occurred in the plating tank ventilation systems, supervision shut down the plating line until the system could be repaired. Another example concerned an employee who questioned whether an explosive atmosphere existed in an underground storage tank on which cutting was about to be performed. In this case, the job was delayed until industrial hygiene personnel could arrive to monitor the tank for flammable vapor levels.

5.4.1.5. Assignment of Program Responsibilities

The Y-12 Health and Safety Management Philosophy assigns full responsibility for safety and health including engineering, work practice and administrative control measures to each line organization. This also includes assuring employees are supplied with appropriate personal protective equipment for their job, work practices training, safety and health inspections, safety meetings, accident investigations, and complaint investigations. Each department is responsible for correction of their deficiencies in each of these areas.

The safety, fire protection and industrial hygiene departments at Y-12 are staff functions and are not represented in the line organization. As a result, these professionals act as consultants and are called upon only when requested by individual departments. While their expertise is used frequently, it is often only for specific situations, problems, accidents and complaints which do not allow time for investigation of entire departments or divisions on a regular basis. Thus Y-12 safety, fire protection and health expertise is not being used to its full advantage where it is needed the most, on the plant floor.

5.4.1.6. Provision for Adequate Program Resources

Although the line organizations have the authority to correct safety and health deficiencies, they are not always supplied with the appropriate resources to do so. This is clearly reflected by the lack of training provided to the members of the emergency squad for the structural fire fighting duties assigned them. Although the need for this training was recognized by both the fire department

and Y-12 management as documented in internal memorandums from the fire training/EMT officer to his superiors, it was not provided. In addition, a budget allocation to improve the Y-12's fire training field was cut back thus preventing the needed emergency squad training from being done in-house.

Moreover, individual line organizations do not have sufficiently trained people with safety and health expertise to identify, evaluate, control, and /or eliminate the variety of hazards present in the Y-12 facility, although they have been given the authority to do so. A review of various division action plans revealed that a couple of divisions are considering a new position to handle and coordinate safety and health matters at this level.

5.4.1.7. Accountability of Responsible Persons

The Martin Marietta Performance Planning and Review System includes environment, safety and health as one of twenty performance factors on which managers, supervisors and employees are annually appraised. One of three ratings is given - Exceeds, Meets, or Below - for actively practicing and promoting safe work practices in support of company environmental, safety and health policies. Managers and employees are being held accountable for following established safety and health plant procedures and can expect to be disciplined if these procedures are not followed.

For instance, as a result of this OSHA assessment, the plant manager created a safety and health war room where all the OSHA team's findings were posted along with the department responsible for their abatement and the date by which they would be corrected. The plant manager makes a practice to visit this room every day to determine the status of various departments in achieving compliance.

5.4.1.8. Review of Program

Although specific goals for reducing worksite injuries and illnesses are identified in the annual "Accident Summary, Analysis, And Loss Report", evaluation is difficult or impossible when specific benchmarks and time frames are not established for accomplishing them. Many of the divisional safety action plans also suffer from this same deficiency. Performance criteria are not established to gauge effectiveness and thus evaluation is difficult.

5.4.2. **Worksite Analysis**

Worksite analysis is needed not only to identify existing hazards, but also for conditions and operations in which changes might occur to create hazards. Unawareness of a hazard which stems from failure to examine the worksite is a sure sign that safety and health policies and/or practices are ineffective. A proper worksite analysis includes the following: 1) Baseline worksite surveys; 2) Analysis of new and planned operations; 3) Analysis of routine job hazards;

4) Regular site safety and health inspections; 5) A system for reporting of hazards by employees; 6) Investigation of accidents and near-misses; 7) Analysis of injuries and illnesses.

5.4.2.1. Baseline Worksite Surveys

Periodic safety and health surveys are required to be conducted by both the safety and the industrial hygiene staff. Each building is required to undergo a comprehensive industrial hygiene inspection every two years. The industrial hygiene staff has not been able conduct wall-to-wall inspections on this frequency due to an inadequate number of Q-cleared personnel. For instance, the industrial hygienist assigned responsibilities for monitoring hazardous waste sites can only perform field work when accompanied by an escort due to lack of a Q-clearance. The limitations placed on this employee's mobility hampers routine oversight of hazardous waste operations.

Yet during routine monitoring surveys and special calls, those industrial hygienists with proper clearances cover a majority of the worksites in the plant. For example, Lithium compounds and 1,1,1-trichloroethane are monitored on a monthly basis in the Lithium focused factory. Beryllium exposures are monitored quarterly in Building 9201-5 and graphite exposures are monitored quarterly in Building 9201-1.

The industrial safety department accompanies department inspection teams on quarterly walkthroughs. However, this has not been a priority item due to time constraints placed on the safety staff in responding to various DOE audits at this facility. Individual operating departments have also been conducting walkthrough inspections of their facilities using checklists since early 1989.

One facility, Building 9401-3, had a binder containing past inspection results, which consisted primarily of housekeeping, labeling, electrical violations, and other concerns. This department had not devised a checklist containing baseline hazards to assist in the frequent routine inspections and to serve as a mechanism to focus more intensive analysis on less obvious hazards.

In the area of fire protection, thirty-two appraisals by an independent outside contractor were conducted in early 1989 as required by DOE Order 5480.7. These reports contained a general description of building operations, summary of fire protection, facility and process findings plus accident analysis for credible fire situations. Martin Marietta is in the process of updating those facilities where deficiencies were found. Yet as some of these corrections involve large capital expenditures for fire protection systems, this work is being spread out over a number of years.

5.4.2.2. Analysis of New and Planned Operations

Y-12 has a safety and health readiness review program, described in written procedures, for operations that do not receive formal Safety Analysis Reviews (SAR) required by DOE orders. Departments are required to notify a standing review committee composed of industrial safety, industrial hygiene, fire protection, emergency preparedness, quality assurance, criticality and Equipment, Testing and Inspection (ET&I) disciplines prior to making major changes or operating new installations.

This standing review committee first attends a overview presentation regarding the changes to be made to the facility. This is followed by an on-site inspection and a report of findings. The committee works as a team during these assessments and team members are allowed to raise questions pertaining to any discipline. All disciplines use checklists for this evaluation, some checklists are written while others depend on the expertise of the team member. All findings must be addressed and those which must be corrected prior to start-up are identified by the committee. All these reviews are assigned a number and formal documentation of the assessment, findings, follow-ups and corrections are placed in a permanent file. This was verified by examining the reviews for various projects in Building 9212, which is currently undergoing an extensive retrofit of its chemical processing operations. The industrial safety department's checklist was reviewed and found to be quite complete as it covered nearly all areas in the general industry standards, including machine safeguarding, walking and working surfaces and fixed electrical equipment.

5.4.2.3. Routine Job Hazard Analyses

Job Safety Analyses for industrial safety and construction hazards are not being adequately performed as part of other reviews, such as part of Technical Safety Appraisals (TSA) and Safety Analysis Reviews (SAR). This is evidenced by the large number of unguarded and inadequately guarded machines discovered during the course of the OSHA team's assessment. For chemical health hazards, routine area, personal and wipe monitoring is being conducted for the following chemical hazards at Y-12: asbestos, lithium compounds, beryllium, methylene chloride, mercury, and legionella.

For example, in Building 9204-2, Area and personal samples for lithium compounds are being done on a monthly or quarterly basis depending on the level of exposure. Biological monitoring is being conducted at Y-12 for uranium and mercury on a monthly basis for exposed individuals. Noise dosimetry has not been routinely done at the plant, but the industrial hygiene department is planning to increase their noise monitoring activities in the near future.

Sampling frequencies have been determined by the toxicity of the material, the quantities used, effectiveness of engineering controls, changes in operations, and regulatory requirements. Sampling frequencies are not periodically

evaluated, and the frequency of monitoring has not changed in a long time, according to the industrial hygiene staff.

In one area, monitoring for airborne beryllium was on a quarterly basis, but excursions above the OSHA's Permissible Exposure Limit have been observed at this operation at least once in the past two years by independent DOE monitoring. Although periodic monitoring of beryllium is not required by OSHA regulations, an increase in the frequency of breathing zone sampling should be considered.

Exposures for lithium hydride are monitored monthly in the Lithium focused factory, but excursions above OSHA's PEL have been noted several times a year on a mold loading machine. This problem has been recognized by Martin Marietta and a new mold loading machine is in the process of being installed.

The industrial hygiene department reports all sampling results to the department where the samples were taken. In the event that an excessive contaminant level is found, industrial hygiene will follow up with more samples at the operation. Engineering controls such as glove boxes are examined, and a clean up of the area is initiated by the operating department.

Although personal sampling is being done, when an excessive exposure is found there is no way to determine the probable cause due to insufficient surveillance of employee activities during the monitoring. However, re-sampling with proper surveillance of employee activities can easily be done.

Full shift sampling is also being done on asbestos removal jobs conducted at the Y-12 plant, but 30 minute samples are not being taken as required by OSHA's asbestos construction standard, The results of subcontractor asbestos monitoring are not being routinely forwarded to the Martin Marietta industrial hygiene department. Subcontractors are providing sampling data to the Martin Marietta construction engineering department, but only about 30% of this information is being passed on to the industrial hygiene department from the construction engineering department for review and action.

The OSHA assessment team believes too much reliance is being placed on area samples over personal monitoring for some chemical hazards. Personal breathing zone samples are the best indicator of actual employee exposure and are therefore preferred over area samples.

5.4.2.4. Regular Site Safety and Health Inspections

In January of 1989, the industrial safety department introduced a multi-discipline inspection checklist at the Central Safety, Health and Environmental Affairs Committee meeting for use by all departments. The plant manager stated that this inspection checklist was developed by the safety department to assist

the departments in developing their own internal evaluation programs. He also stated that each operation must be examined for compliance with appropriate regulatory standards and that documentation of this examination needed to be maintained.

At the March Central Safety meeting, the Production Machining Division described its Internal Appraisal Program which included inspection guidelines and checklists for hazards covered by OSHA standards. In August, results of a joint DOE-MMES "Tiger Team" OSHA inspection of Building 9720-6 as well as 45 construction job sites were described at the Central Safety meeting. The September meeting involved a discussion with problems encountered with the use of these self-inspection checklists. Identified areas of concern included: lack of specific checklists for most areas; not using the checklists; use of generic checklists for all areas; areas being inspected by oversight groups instead of employees; and lack of employee familiarity with the inspection criteria for proper use of these checklists.

A review of the multi-disciplinary inspection checklist prepared by the Industrial Safety Department found it to be lacking in a number of traditional safety areas, most notably machine safeguarding. Also, while some checklist items referenced in the plant's written safety and health procedures for guidance in determining the adequacy of the item being checked, many others did not. Some extensive areas of the OSHA standards, such as walking and working surfaces, were represented merely by a few key words with no point of reference for further clarification. As a result, those using the checklist were limited to the information on it for the assessment. This resulted in superficial evaluation of a number of areas covered by detailed OSHA standards.

The industrial hygiene department has also developed a three page checklist which is used to conduct comprehensive inspections. This checklist covers asbestos, hazard communication, respirators, noise, confined space, and a number of additional health topics. It does not directly address air contaminant exposure determinations, nor does it provide detailed evaluation criteria for the above elements.

Furthermore, the DOE Oak Ridge site office has oversight authority over Y-12, plus eight other DOE facilities. This office has a staff of two industrial hygienists, two safety specialists, one safety engineer and one construction engineer. On-site OSHA-type compliance inspections are conducted at Y-12 on at least an annual basis. These are limited scope inspections confined to certain areas, buildings and/or construction activities. A report of findings is prepared outlining the areas inspected plus the specific OSHA standards violated which is issued to the plant manager. Deadlines are set for correction of these violations by DOE. A written response from the plant on how these violations were corrected is required and on-site verification of abatement is performed by DOE.

For example, between January 22 and 23, 1989, DOE representatives from the Oak Ridge Operations safety and health division conducted an OSHA-type inspection of 12 major buildings and several on-site contractors. Ninety-four violations of OSHA standards were identified and communicated to the plant manager. Many of the same standard violations found during this OSHA team assessment were also identified in the January DOE inspection, but in different areas. The results of this January DOE inspection were provided on October 16, 1989 after OSHA assessment team members inquired as to the existence of reports of DOE oversight activities. If the OSHA assessment team had been provided this information at an earlier date, further analysis in regard to the potential willfulness of the standard violations would have been conducted.

5.4.2.5. Employee System for Hazard Reporting

Employees have a number of ways to report hazards at Y-12. They can bring the problem to the attention of their supervisor for corrective action, fill out a safety work order, file a grievance with the union, call an independent Martin Marietta "hot line", or file a formal DOE complaint. During the course of the inspection, the OSHA assessment team discovered that all of these methods are viable alternatives for employees.

In addition to actions taken by supervisors when informed of hazards by employees as discussed previously, discussions held with ATLC safety and health chairman revealed that safety and health concerns brought to Martin Marietta's attention are resolved on a timely basis. Of the 590 safety work orders submitted in the last eighteen months, 81% have been implemented and/or resolved at Y-12. Anonymous hot line calls are promptly investigated by the Y-12 staff to determine their validity. Areas of dispute over safety and health concerns are settled via formal contract grievance procedures which include arbitration hearings, if necessary.

5.4.2.6. Investigation of Accidents and Near-misses

Y-12 investigates accidents meeting the following criteria: 1) All recordable occupational injuries and illnesses; 2) Significant property damage; 3) All electrical hazard accidents and 4) Situations where there is substantial potential for serious results. Review of the occupational injury and illness records at Y-12 revealed that these investigations were being performed, causes were identified and corrective action taken when necessary.Recordable accidents are investigated by a committee composed of at least one member of the operating division plus assistance from the industrial safety, industrial hygiene, or fire protection engineering departments and union when necessary. In many cases where specific recommendations are made for corrective action, specific individuals are held accountable for completing the work.

For example, over the past several years, a couple of injuries have resulted in crushed hands while closing combination freight/ passenger elevators in various processing buildings at Y-12. Investigation of these accidents revealed that they occurred primarily to employees who were unfamiliar with this type of elevator, seeing as they did not use them on a regular basis. Although the doors of these elevators look heavy, they are counterbalanced to aid in closing. Closing is accomplished by pulling on a synthetic cord attached to the upper door. This cord, due to the materials used in its construction, can become slippery at times and hard to hold on to. Thus unknowing employees use excessive force in an attempt to close the doors, lose their grip on the cord and subsequently their balance, ending up with a hand, or hands, between the closing doors resulting in crushing injuries.

The Martin Marietta's industrial safety department has performed an extensive analysis of this type of accident to determine its root causes. They have found a need for identification of potentially exposed employees, a need for training in elevator use and a need for substitutes for the door cord. A program is currently underway to implement all these findings.

5.4.2.7. Analysis of Injuries and Illnesses

The Department of Energy has not adopted OSHA's requirements for recording occupational injuries and illnesses contained in 29 CFR 1904. DOE order No. 5484.1 outlines recordkeeping requirements for GOCO sites. This order requires preparation of an Individual Accident/Incident Report (DOE F 5484.X) for each recordable injury or illness. The criteria for recordability are outlined in the DOE-76-45/7A. Comparison of this DOE order with the OSHA regulations revealed that the DOE form is functionally equivalent to the OSHA 101, First Report of Injury or Illness. Furthermore, the criteria for recordability used by DOE follow the same Bureau of Labor Statistics (BLS) guidelines as used by OSHA. DOE Order 5484.1 also requires that the OSHA 200 and/or OSHA 100F logs be maintained at DOE contractor sites.

The Industrial Safety Department at Y-12 is maintaining the DOE form as well as OSHA 200 logs for all occupationally related injuries and illnesses. An extensive review, by either the Industrial Safety or Industrial Hygiene Departments depending on the nature of the injury, is conducted to determine if any reported injury or illness is occupationally related. This activity involves a considerable amount of time and manpower by both departments as evidenced by the detail of the written documentation accompanying the injury and illness records.

A review of all first reports of injuries and illnesses for 1987, 1988 and 1989 revealed that these cases were being evaluated and recorded correctly. In 1987, sixty-six (66) recordable cases were entered on the OSHA 200 log. In 1988, sixty-three (63) recordable cases were entered. Each case contained a DOE

F5484.X form, doctor report, and accident investigation report, with documented corrective action when appropriate. Restricted work activity cases contained both the doctor's initial restrictions and the date the employee was certified by the doctor to return to work without restrictions.

In 1987, the Martin Marietta had six lost time accidents against 12,837,468 working hours. In 1988, eighteen lost time accidents were reported against 14,101,454 working hours. The Lost Work Day Injury (LWDI) Rate was computed to be 0.2 in accordance with the formula and procedures contained in OSHA's Field Operations Manual.

However, a couple of minor problems were noted with the upkeep of the OSHA logs. One involved incomplete entries for duration of lost time and/or restricted work activity, the other involved failure to certify the logs at the end of the year for accuracy. Both of these problems were quickly corrected prior to calculation of the LWDI rate.

First aid logs were also reviewed by the OSHA assessment team to assure that all recordable cases were being entered on the log. A total of 656 first aid cases were recorded in 1987 and 710 first aid cases in 1988. Random spot checks of these cases revealed that the BLS guidelines for differentiating between first aid and recordable injuries are being properly followed at Y-12. Each case contained a doctor's report from the clinic noting the extent of treatment required and whether or not there were any work restrictions which prevented the employee from doing all his/her normal job functions. After reviewing several dozen records, this check was terminated when no apparent inconsistencies were found.

In early 1989, DOE conducted an audit of recordable injuries and illnesses at the Y-12 facility. At that time, five cases were found among the first aid records that in DOE's opinion should have been recorded on the OSHA logs. Martin Marietta added these five cases to the logs. The ATLC safety representative was also consulted regarding Y-12's recordkeeping practices, he stated that he was not aware of any injuries or illnesses at Y-12 which were not being properly reported on the OSHA logs. The ATLC representative stated that he is aware of nearly all of the workplace injuries and illnesses occurring at Y-12 due to his involvement on the joint management-labor safety committee.

The Industrial Safety Department at the Y-12 plant prepares an annual "Accident Summary, Analysis and Loss Report" which includes objectives for the upcoming year and analysis of the past year's accident history. This analysis includes breakdown by operating division, accident types, nature of injury and illnesses, parts of the body injured, and material/equipment involved. Information is also provided on plant fires, explosions and vehicle accidents. Incidence and frequency rates are computed and compared to Martin Marietta Corporation, the chemical and allied products industry and the fabricated metal products

industry. This data is used to set safety objectives for injury and illness reduction in the following year.

For instance, slips and falls outdoors are a major problem at Y-12 due to the hilly terrain on which the plant was built and need for employees to travel from the parking lot, through security, to the changehouses and then to their worksite. Thus in 1989, each operating division was required to address slip and fall hazards in their annual action plan. Most decided to devote at least one safety meeting to the subject. Also, the industrial safety department conducted a slips and falls contest during October with prizes to see who could come up with the best poster to be placed around the plant to increase employee awareness of slips and fall hazards.

Martin Marietta's 1988 statistics show that the Fabrication Division has the highest incidence rate at the Y-12 facility with twenty-two (22) injuries per 200,000 employee hours worked. This is followed by the Personnel Division (20 injuries per 200,000 hours), Safeguards and Security Division (18 injuries per 200,000 hours), Metal Preparation Division (13.8 injuries per 200,000 hours) and the Assembly Division (13.8 injuries per 200,000 hours). These statistics also show that Y-12's total first aid cases have been decreasing slightly over the past five years, although recordable injuries and illnesses have been rising slightly.

In the opinion of the OSHA assessment team, injury and illnesses records for Y-12's industrial activities are well documented and properly kept. All supporting information needed to determine the recordability and duration of lost time, or restricted activity, was contained with the DOE form thus making verification of this information easy.

5.4.3. Hazard Prevention and Control

Hazard prevention and control is the ultimate goal of the safety and health program. An effective program includes provisions for the systematic identification, evaluation and prevention or control of general workplace hazards, specific job hazards and potential hazards which may arise from foreseeable conditions. An effective program relies on means for prevention or control which provides the best feasible protection of employee safety and health. Although compliance with the law, including specific OSHA standards, is an important objective, an effective program looks beyond specific requirements of the law to address all hazards. It will seek to prevent injuries and illnesses whether or not compliance is at issue.

A program need not be reduced to writing to be effectively implemented, but as the size of the worksite and/or complexity of the hazardous operation increases, so does the need for written guidance. A written program ensures clear communication or policies and priorities plus constant and fair application of

rules. Areas that need to be addressed in this program include: 1) Engineering controls, 2) Work practice controls, 3) Personal protective equipment, 4) Administrative controls, 5) Preventive maintenance, 6) Emergency planning and preparedness and 7) Medical and first aid.

5.4.3.1. Written Safety Policies and Procedures

Martin Marietta has established, clearly stated, written policies and procedures for various plant operations which are divided into different series by number. Safety and health policies and procedures are contained in what is known as the 70-series, while the plant's emergency evacuation procedures are contained in the 40-series. Other series deal with administration, nuclear criticality issues, etc.

The 70-series plant safety and health procedures are administered by the industrial safety department. Comprehensive written policies and procedures have been developed by the industrial safety, fire protection engineering, and the industrial hygiene departments for some safety and health hazards, such as use of personal protective equipment, inspection of hoists, operation of forklift trucks, types and identification of fire extinguishing agents, potable water supplies, operations safety work permits, mechanical hold-off, electrical lockout, working on high voltage electrical equipment, confined space entry, working with beryllium, etc.

Yet the OSHA team`s review of these procedures revealed a lack of established programs in a number of traditional industrial safety areas, such as machine safeguarding, walking and working surfaces and maintenance of fixed electrical equipment. The lack of established policy in these areas is clearly reflected by the type and number of OSHA violations discovered during the course of the assessment.

Each department is responsible for maintaining a copy of the 70-series binders, and random spot checks were performed during the course of the inspection to assure the presence of these binders in each department. In every area checked, the 70-series safety and health procedures were present and up-to-date.

Furthermore, due to the line management structure used at Y-12, each operating department was required to prepare its own written hazard communication program which outlined how it intended to comply with the standard. A 70-series procedure detailing the requirements of complying with OSHA's Hazard Communication Standard was prepared by the Industrial Hygiene Department to aid the various departments in preparing their own written programs. While this procedure contained detailed requirements in how to comply with the OSHA standard including suggested language for a written program, an explanation of the plant's in-house labeling system, proper handling of Material Safety Data Sheets (MSDS's) and the in-house training sources available, it also contained

some deficiencies pertaining to: hazard assessment of chemicals; informing employees of hazards of chemicals contained in unlabeled pipes; and responsibilities for informing outside contractors of hazardous chemicals they may encounter in the workplace. Consequently, the written hazard communication programs prepared by designated individuals in each department contained these deficiencies as well.

Moreover, review of the written hazard communication programs prepared by several departments revealed several other programmatic deficiencies. In some departments, a copy of the written program and lists of hazardous chemicals were unavailable to employees. Some written programs failed to explain the plant's in-house labeling system. In areas where MSDS's are classified, the common names used to describe these chemicals were not listed on the MSDS; they did not appear on the list of hazardous chemicals; nor did the written hazard communication program contain procedures as to how they could be accessed. In fact, some departments were missing MSDS's for hazardous chemicals and numerous instances of unlabeled or improperly labeled in-plant containers were noted during the course of the walkthroughs.

In short, while written hazard communication programs, including labeling of in-plant containers, binders containing MSDS's plus employee training, were developed by various operating departments at Y-12, there was no review or oversight to assure these programs were properly and consistently instituted. Nor did anyone monitor to assure that the proper information in how to set up a good program was disseminated amongst the various operating divisions and that the persons responsible for setting up these programs understood what was required.

5.4.3.2. Engineering Controls

Martin Marietta plant policy, as described in the 70-series safety and health procedures, is to provide engineering controls whenever practical to protect employees against safety and health hazards. There is extensive use of glove boxes, unpurged and purged with inert gas, around machining equipment in several areas of the plant due to the safety and health hazards (i.e. pyrophoric and radiation emitting materials) posed by the materials being processed. The use of these glove boxes contains the material within the box presenting little exposure to the health hazards posed by the material (Note: The OSHA assessment team did not assess hazards posed by radiation), or the point of operation of the machinery. Local exhaust ventilation is also provided for plating operations, spray finishing, beryllium machining, grinding, welding and many other operations. Lab hoods are also used extensively when powdered materials are being weighed, transferred, mixed and sized.

During the assessment of the facility, most of the OSHA air contaminant sampling revealed employee exposures to be within the Permissible Exposure Limits set

forth in the OSHA air contaminant standards (29 CFR 1910.1000). OSHA air sampling data is summarized in Table III of this report. However, samples taken in Building 9204-4 for uranium dust and in Building 9201-5 for beryllium revealed potential air contaminant problems.

In the forming department of Building 9204-4, one excessive exposure to uranium dust was observed. An employee, designated as a "cleaner", was exposed to uranium in excess of the short term exposure limit (STEL) for insoluble uranium. The uranium in this area is "depleted", that is, it is considered to be basically non-radioactive. The uranium in this area is not processed inside enclosures or glove boxes, but instead is worked in the open air similar to iron and steel machining operations. As part of the forming department processes, employees have some exposure to the uranium oxide dusts which are created.

Of the five employees who were sampled for uranium via personal air monitoring during the course of this assessment, two employees had measurable exposure to the metal. Both of these uranium dust exposures were detected in the vicinity of a grit blasting machine at the west end of the building. The grit blasting machine operator was exposed to approximately 25% of the Permissible Exposure Limit of 0.2 milligrams per cubic meter of air (mg/m3) for insoluble uranium dust. An employee designated as a cleaner was exposed to 2.2 times the short term (15 minute) exposure limit of 0.6 mg/m3 for uranium dust while dry sweeping dust around the grit blasting machine. Exposure to airborne uranium particulates presents a significant risk of kidney or blood disorders. The OSHA assessment team recommends the use of a high efficiency vacuum cleaning system, in lieu of dry sweeping, to reduce the exposure to uranium dust for this clean-up operation.

It should be emphasized that all responsibility for uranium exposure monitoring has been assigned to Martin Marietta's Health Physics Department; the Industrial Hygiene Department has no responsibility for monitoring or protecting against uranium exposures. Until recently, Health Physics has relied on radiation measurements to determine uranium exposure instead of particulate metal sampling. This practice may be extremely protective for an employee working with radioactive uranium, but is questionable for depleted uranium exposures. The OSHA assessment team recommends that operations with potential exposure to particulate uranium be evaluated and monitored with personal air monitoring devices to ensure that exposures are kept within OSHA's Permissible Exposure Limits. Other cleaning operations may also present the potential for exposure, as well as maintenance and possibly inventory job tasks.

At the 5E2 shop of Building 9201-5, Martin Marietta noted an excessive exposure to beryllium on the breathing zone sample collected adjacent to the OSHA air sample. Exposure to airborne beryllium can result in a cumulative lung damage disease, known as Berylliosis. Beryllium is also a suspect carcinogen. Due to the classified nature of the material being sampled, the duplicate OSHA sample

was sent to Lawrence Livermore National Laboratory (a Q-cleared facility) for analysis. Through a misunderstanding, the incorrect analytical procedure was used by the Livermore lab for the analysis. Instead of using the analytical method appropriate for high-fired beryllium oxide, the method for pure beryllium was used. The method for pure beryllium does not ensure that complete recovery and detection of beryllium oxide occurs. The Livermore analysis did not detect any beryllium on the sample, while the Martin Marietta analysis of the parallel air sample detected 2.54 micrograms of total beryllium. Both the OSHA and the Y-12 analytical laboratories use procedures which are validated for recovery of all forms of beryllium. At OSHA's request, the Livermore lab has returned the sample solution to Y-12 for an attempt at high-fired beryllium oxide analysis of the remaining analyte. Tests conducted at Y-12 on this remaining analyte were inconclusive.

Upon notification of a beryllium exposure which was approximately 25% above the 8-hour Permissible Exposure Limit, Martin Marietta took immediate action to investigate the operation and the source of contamination. The process was temporarily discontinued, and the numerous engineering controls in the area were checked for efficacy. Daily air samples were taken upon resumption of the operation, and Martin Marietta reported that excessive exposures were not observed at the particular operation which OSHA had sampled. However, Martin Marietta air samples taken at a second similar beryllium operation showed a daily beryllium exposure problem. The second area of beryllium overexposure was examined by the company and potential sources of exposure were evaluated. Martin Marietta indicated that a different exposure source was implicated in each days' air sampling. For example, a pinhole leak in a glove in the glove box caused a problem one day, and on the following day the exposure occurred when the defective glove was replaced. For all operations conducted in this shop, employees were wearing approved respiratory protection while working with beryllium parts.

Positive results have accrued from the recent attention given to the 5E2 shop. Engineering and work practice controls have been in place in this shop for a number of years and have not undergone evaluation save for continuous area air monitoring, quarterly breathing zone sampling and periodic wipe sampling of surfaces. Martin Marietta reports that the detailed scrutiny given to 5E2 shop operations has resulted in the collection of new information and the improvement of work practices. Applying this experience more broadly, a detailed evaluation of other Y-12 operations may be in order.

In the Lithium focused factory, Building 9204-2, OSHA breathing zone samples for lithium hydride were taken at a number of locations. However, the operation believed to have the highest exposure, a mold unloading operation, was not in operation during this assessment. The highest exposure obtained was 0.012 milligrams per cubic meter (mg/m3), approximately half of OSHA's Permissible Exposure Limit, at a machine dust unloading operation. Even though these

exposure levels were not excessive, Martin Marietta is installing additional engineering controls to control dust exposures due to the irritation (i.e. sneezing and coughing) experienced by employees at this operation.

However, the systematic identification, evaluation and control of hazards posed by unguarded machinery, walking and working surfaces, elevated work platforms and fixed electrical equipment has not received the attention is should. The OSHA assessment team found numerous problems in these areas during the course of the walkthroughs throughout the facility. The Y-12 plant has failed to develop a comprehensive policy for dealing with these types of hazards and those responsible for assuring that this equipment meets OSHA standards are unaware of what is expected of them in this regard.

Asbestos removal projects conducted at Y-12 were not utilizing negative pressure enclosures in all instances and problems were experienced with one enclosure. Deficiencies included holes in the reinforced plastic containment walls and poor maintenance of negative pressure air machines. Although large removal projects used negative pressure containments to keep asbestos fibers from escaping, glove bag asbestos removal operations did not use negative pressure throughout the duration of the job.

5.4.3.3. Work Practice Controls

The Y-12 plant has developed written procedures for assuring that proper work practice controls have been developed for the maintenance and servicing of plant equipment. All of these procedures are centered around a single form called the Operations Safety Work Permit. This form is used as a checklist for supervisors to assess the hazards posed by welding and cutting, confined space entry, excavation and trenching, working in proximity to high voltage, and lockout of machinery prior to performing maintenance. Written detailed 70-series procedures have been developed for each of these activities explaining how they are to be conducted.

Yet, in spite of these written procedures, some deficiencies were noted with regard to confined space entry practices under the work permit system. During a confined space entry at Building 9401-3, continuous ventilation and frequent air monitoring were not required under the work permit. In addition, steam lines leading into the space were not locked out (Note: These steam lines were double valved - where possible - and tagged out). Martin Marietta's confined space program does not require continuous mechanical ventilation and/or frequent atmospheric monitoring of above ground tanks. Although monitoring for oxygen deficiency and flammable gases is done for all confined space entry projects, the time period between atmospheric readings and the actual confined space entry can be as long as eight hours, the time frame for which a signed permit is valid. The confined space procedure also appears to permit entry into atmospheres immediately dangerous to life or health (IDLH), for it does not

contain a statement prohibiting this as such. In practice, Martin Marietta's policy is to downgrade all spaces to the least hazardous situation. This practice was verified by the personnel involved in the confined space entry at Building 9401-3.

Problems were also noted with Y-12's mechanical hold-off and electrical lockout programs as well. For instance, computer controlled equipment in the QE Department of Building 9204-4 was de-energized - but not locked out - while a defective load cell was being replaced. In Building 9201-1 at the waste chip area, a disposal pit, with a raised pneumatically operated cover, was not locked - or blocked - prior to allowing employees to enter to repair louver doors.

The mechanical maintenance departments at Y-12 rely on a tagout procedure for energy sources other than electrical. Electrical sources are both locked and tagged by electricians when they exceed 600 volts; however, most departments use a common key which every electrician in that department carries. Under 600 volts, electrical sources are normally only tagged out. During the walkthroughs, those maintenance activities observed, with the exception of the above examples, were found to be properly tagged and/or locked out.

These work practice procedures need to be upgraded to meet OSHA's Final Rule on Control of Hazardous Energy Sources (Lockout/Tagout), 29 CFR 1910.147, which goes into effect on October 31, 1989 [NOTE: The effective date of this standard has recently been admini- stratively stayed by OSHA until 1/2/90] as well as proposed rules on Electrical Safety-Related Work Practices (52 FR 45530) and Permit Entry Confined Spaces (54 FR 24080). National consensus standards, such as NFPA 70E and ANSI 117.1-1977, as well as NIOSH documents should also be consulted for background information when these programs are revised.

Due to the changing conditions that can be encountered in confined space entry work, the OSHA assessment team recommends that continuous monitoring, mechanical ventilation, or both should be done depending on the potential hazards involved. In addition, positive lockout and/or other means of control will need to be instituted for mechanical, hydraulic, pneumatic and electrical energy sources while maintenance work is being performed.

As failure to perform both maintenance and confined space entry work without the proper safeguards in the form of appropriate work practice controls has resulted in many fatalities and serious injuries to employees, general duty clause violations (Section 5(a)(1) of the OS&H Act) were prepared for the deficiencies contained in these programs as no OSHA standards were in effect at the time of this assessment.

5.4.3.4. Personal Protective Equipment

The basic personal protective equipment used in the plant consists of safety glasses, safety shoes, and work uniforms. A variety of other gear is used in specific operations, and all protective equipment was observed to be present in abundance and maintained in good working order. Although personal protection violations were noted in a few areas, the use of appropriate personal protection was almost universal.

Respirators are used for protection in cleaning and maintenance operations, as well as for additional protection where air contaminant excursions have been noted. All respirator users undergo a quantitative face fit test annually, and asbestos workers are fit tested every six months. The company has a one time use respirator policy, under which the respirator must be turned in for cleaning each time it is removed from the employee's person. A respirator user may use a number of different face pieces in one shift under this policy.

However, certain operations have been granted variances from this respirator policy in past years, although the current respirator coordinator does not have a complete record of approved variances. These variances need to be examined retroactively, for one unrecorded respirator variance was in a beryllium area in which occasional exposures above OSHA's Permissible Exposure Limit (PEL) have been noted by a DOE special study conducted in 1987.

5.4.3.5. Administrative Controls

Martin Marietta Energy Systems has experienced success in programs aimed at administratively reducing chemical exposures through elimination of materials. There is an active chlorinated solvent reduction program which has been effective in reducing the amount of solvents used. In addition, the company has recently been able to eliminate the use of methylene dianiline (MDA) in a particular plastic product manufactured within the complex. The elimination of MDA was the result of a coordinated effort to manufacture this type of plastic without using MDA.

5.4.3.6. Preventive Maintenance

Y-12 has an written preventive maintenance programs, conducted by the ET&I department, for forklift trucks, overhead hoists and slings throughout the facility. This equipment is tagged, maintained and inspected on a regular basis. The effectiveness of this program can be seen by the lack violations written for hazards encountered with this equipment during the course of the walkthroughs. The OSHA assessment team believes that these programs are very effective in controlling the hazards posed by this type of equipment and encourages their continued use.

There is also a written program for inspection and maintenance of fixed electrical wiring at the plant provided by the Electrical Maintenance department. An extensive survey for checking electrical wiring and receptacles for grounding wire continuity was begun several years ago, but was not completed. Consequently, while the majority of fixed wiring in the plant was found to be in good condition and properly maintained, several deficiencies were noted in various areas. Many of the problems seemed to be centered in areas that had been recently redesigned for new and/or different operations. It was here that portable cords were being used in lieu of fixed wiring and unsupported lengths of conduit were found. The OSHA assessment team feels the reactivation of the inspection and maintenance program will go a long way in solving the electrical problems noted during the walkthroughs.

Another area of concern is inspection of portable electrical power tools, cord sets and lamps. While an assured equipment grounding program is not required for industrial plants, it is required when construction work is being performed. OSHA defines "construction work" as work for construction, alteration, and/or repair, including painting and decorating. Thus when construction work is being performed, OSHA requires the use of either ground fault circuit interrupters (GFCI's), or an assured equipment grounding program, to properly protect employees from electrical hazards. Martin Marietta's employees are involved in various alteration and repair projects that are properly classified as construction work where GFCI protection is not always used.

The Electrical Maintenance department has a written procedure which requires checks of all Martin Marietta's portable electrical power tools, cord sets and lamps twice a year. After being inspected, the cord is tagged with the date of inspection and the next planned inspection date. Martin Marietta has within the past few months attempted to expand this program to include subcontractors on Martin controlled construction jobs. Although all the other elements of the assured equipment grounding program are in place, the inspection frequency does not meet OSHA's requirements for assured equipment grounding programs which require quarterly inspections.

5.4.3.7. Emergency Planning and Preparedness

The Y-12 fire department (Building 9710-2), located in the middle of the plant, provides 24 hour service, 7 days per week. This department is responsible for providing ambulance service for plant injuries and illnesses and, in conjunction with the plant emergency squad, full fire fighting and HAZMAT spill response capabilities. The Y-12 plant emergency squad responds to approximately 1300 calls per year. Review of fire call-out logs revealed response time to calls averages three to five minutes and that the emergency squad satisfies most calls within 30 minutes. Yet only 10-12% of these calls are fire related, about 30% are for emergency medical services, 19% for water surges and 10% for drills.

The fire department has forty-four (44) full time employees divided into four rotating shifts (A through D), plus a relief shift, consisting of: a fire captain, lieutenant, fire protection inspector and two fire truck operators. In addition, the 7:00 to 3:30 shift has a staff of five administrative personnel, a training/EMT coordinator plus 13 fire protection inspectors.

The plant volunteer (on a seniority basis) emergency squad also has four rotating shifts, plus a relief shift, and is comprised of the maintenance shift superintendent, an outside maintenance mechanic, an electrician, a pipefitter and an instrument mechanic. In addition, some 43 maintenance employees have been identified (again on a seniority basis) as shift relief personnel who may serve as emergency squad members when the designated shift member is absent due to vacation or extended illness.

The emergency squad is the major fire fighting force in the plant while the Fire Department provides equipment, supervisors, fire truck operators and key fire line leaders. According to Y-12's Initial Fire Attack procedure, emergency squad members are responsible for performing structural fire fighting duties which include search and rescue, fire extinguishment and hazard control under the direction of fire department personnel.

The fire department is part of a mutual aid network which is comprised of fire departments at the Oak Ridge National Lab, Oak Ridge K-25 Gaseous Diffusion Plant and the city of Oak Ridge. The fire department also maintains an alarm dispatch center which monitors emergency calls and alarms in the plant. In addition to monitored sprinkler systems and water supplies, notification of emergencies in the plant can be accomplished by activating various Gamewell boxes, calling 911, or the plant shift superintendent, on the plant telephone system.

Fire Department equipment consists of three ambulances, three pumpers, a 3-ton Cardox truck, a light duty rescue vehicle and a HAZMAT truck. Fixed plant facilities include many sprinklered buildings plus distributed fire hydrants supplied from storage tanks having a reserve of over two million gallons. Initial emergency squad response consists of two ambulances, the light duty rescue vehicle, a pumper plus the individual vehicles assigned to emergency squad members for their normal job duties.

Fire Department vehicles are fully and adequately equipped for the duties they are likely to encounter. For example, Engine No. 1 carries 5 inch hose, 2-1/2 inch hose and 1-1/2 and 2-inch ready line. This truck is equipped with a water pump, a dry chemical system and a foam tank. The HAZMAT truck contains: a HAZMAT spill control box; pigs; skimming booms,take-up drums and adsorbents; respiratory protection equipment; patch, plug and leak sealing kits; various types of protective suits and other personal protective equipment; non-sparking

and regular tools, a portable generator and extra emergency communications equipment.

Sufficient positive pressure self-contained breathing apparatus (SCBA) and turnout coats, boots, gloves and firefighter helmets are provided to fire department personnel and emergency squad members. Review of written records plus interviews with fire department employees revealed that the SCBA's are being checked on a weekly basis. The fire department has an air compressor and back-up cascade system with sufficient reserve bottles and face pieces for extended fire situations.

DOE requires that property damage in excess of one thousand dollars be reported. In 1988, Y-12 had three reportable fires with damages of $34,821. Most of this damage occurred when a fire destroyed the electrical wiring inside an old elevator which Martin Marietta decided to replace rather than rebuild. In 1987, there were four reportable fires with damages of $7,847 and in 1986, there were five reportable fires with damages of $17,107.

Most of the remaining fire calls relate to small fires resulting from welding and cutting. However, these incidents have been steadily decreasing over the past four years. For instance, in 1986 there were 19 cases resulting in $960 damage. In 1987, there were 14 cases resulting in $2,226 dollars damage. In 1988, there were 16 cases resulting in $906 dollars damage. So far as of October 1, 1989, there have been only 3 welding and cutting fires resulting in damages of only $10 dollars. This is due to extensive training provided to Y-12 personnel in the fire hazards associated with welding and cutting operations.

Fire incidents are also discussed regularly during the monthly Central Safety, Health and Environment Committee meetings. In May, two fire incidents were discussed. One involved a mixture of uranium oxide and mineral oil residues in a hood and the other concerned a failed microswitch in a water bath that caused the water to evaporate and the heating element to burn up. Both of these fires were minor and easily extinguished. Methods were discussed at the meeting as to how fires of a similar nature could be avoided in the future.

5.4.3.8. Medical and First Aid Programs

There is a health care services building at Y-12 which is staffed by four licensed physicians, two physician assistants and eight registered nurses. Physicians work the day shift from Monday through Friday, but one is always on call. At least one nurse is on duty for all shifts except on the weekends.

Y-12 health care service performs routine physical exams (height, weight, eye exams, EKG) and laboratory work, such as blood analysis, urinalysis, spirometry, audiograms, for employees. Audiometric testing facilities located at the health

care services building are calibrated and maintained on a schedule which exceeds the requirements of the OSHA hearing conservation amendment.

As part of the evaluation of Y-12's medical and first aid programs, infection control policies and programs were reviewed. Currently, Martin Marietta is in the process of developing written procedures for the control of Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV) for clinic, laboratory and EMT employees. In the interim, the company has informally implemented a blood-borne disease program which partially complies with current OSHA requirements. Deficiencies were noted in the use of eye/face protection when exposed to blood and body fluids, training, and provisions for offering HBV vaccinations.

Y-12 health care services also provides exams for Martin Marietta asbestos workers on an annual basis which include the Appendix D questionnaire, appropriate spirometry and X-rays. The X-rays are read by board certified radiologist. If pulmonary abnormalities are observed, a B-reader then evaluates the X-ray. In addition, physical exams are provided for fire department personnel and emergency squad members.

A random review of the medical records of a number of emergency squad members revealed that employees were receiving medical examinations every one to one and a half years and that all of them were found to be fit for duty. No instances of known heart disease, epilepsy or emphysema were discovered and all were found to be fit to wear a respirator. According to the plant medical director, medical factors considered for disqualification for respirator use would include a pulmonary function result which is 60% or less of the predicted value, signs and symptoms of heart disease and/or breathing difficulties.

The Y-12 Fire Department maintains three fully equipped ambulances which are licensed by the state of Tennessee. Major medical cases are normally taken via fire department ambulance to Methodist Medical which is located approximately three miles from the Y-12 facility. Most of the permanent fire department employees are certified by the state of Tennessee as Emergency Medical Technicians (EMT's).

Each shift has no fewer than four fully trained EMT's on duty. The department has a state certified continuing education program for regular EMT training. A review of 1988 and 1989 training records revealed that these employees are being trained on a monthly basis for a total of 20 to 30 hours per year. Training topics have included: vehicle rescue, confined space rescue, helicopter safety, CPR, and American Red Cross first aid training

5.4.4. Safety and Health Training

Education and training are needed for communicating practical understanding of the requirements of effective safety and health protection to all personnel. Without this understanding, managers, supervisors and employees will fail to perform their responsibilities for effective safety and health protection. Hazard information that needs to be communicated to employees includes: general hazards and safety rules of the worksite; specific hazards, safety rules and practices related to particular work assignments and the employees' role in emergency situations.

Effective training of supervisors will address their safety and health management responsibilities as well as information on hazards, hazard prevention, and response to emergencies. Managers must understand both the way and extent to which effective safety and health protection impacts on the overall effectiveness of the business.

However training in and by itself is <u>not</u> sufficient to ensure practical comprehension. Some means of verification is also required. Formal testing, oral questioning, observation and other means are useful in determining whether required training is understood.

5.4.4.1. <u>Employee Training</u>

There are a number of formal employee training programs in effect at Y-12. Those which are required under OSHA standards are discussed below:

5.4.4.1.1. Hazard Communication

Employees have received training in the requirements of OSHA`s Hazard Communication Standard. This training consists of series of videotapes, classroom discussions and proficiency exams conducted on an annual basis. Interviews with employees in various areas of the plant revealed that they knew where the written program, list of chemicals and MSDS's were kept. They were knowledgeable as to the hazardous chemicals to which they are being exposed, the physical and chemical hazards associated with them and measures that they can take, or Y-12 has taken, to prevent excessive exposures. Some employees could even recite the target organ effects to the hazardous chemicals to which they were exposed.

Yet several employees interviewed could not recall the details of the plant's in-house labeling system. Some employees thought the numerical ratings went from zero to ten, when ratings are only assigned from zero to four. Some employees could not remember the hazard class divisions (e.g. health, flammability, reactivity, special hazards).

The OSHA assessment team considers the training for OSHA's Hazard Communication Standard to be comprehensive and complete for the areas that were covered. However, due to various programmatic deficiencies in Martin Marietta's program, additional training will need to be provided. Placards explaining the plant's in-house labeling system should also be placed in various departments to aid employees in remembering the hazard divisions and severity numbers.

5.4.4.1.2. Respirator Training

Anyone who is required to wear a respirator at any time in the Y-12 plant is included in the respiratory protection program. At present, 3700 employees are participating in this program on an annual basis. This program includes a videotape, classroom discussion and opportunity to try on various respirators. The training covers the types of hazards for which respirators can be used, types and limitations of respirators and cartridges, how to inspect respirators, how to wear respirators properly, and the negative pressure test.

In the plant, employees who were interviewed demonstrated a good working knowledge of the respirators they were using. In one shop, an employee presented a detailed discussion on the effectiveness of the Type H high efficiency cartridges he was using. In the fire department, employees and emergency squad members receive annual training in the use of self-contained breathing apparatus (SCBA). This is normally conducted at the annual fire school by the fire department training\EMT officer.

5.4.4.1.3. Multi- and Single Piece Rims

In the garage, employees receive annual training in the hazards associated with servicing multi-piece rims. Topics covered include proper deflating, demounting and mounting of tires; how to use the rim manuals; use of restraining devices and the need to stay out of the trajectory during inflation of the tire and inspection afterward.

5.4.4.1.4. Fire Brigade (Y-12 Fire Dept. and Emergency Squad)

Martin Marietta's policy is to hire only experienced fire fighters who have been trained equivalent to a Level III fire fighter in Tennessee and who have practical fire fighting experience in previous employment. A review of fire department training records revealed that the fire chief, training/EMT officer, captains and lieutenants have had additional training in leadership skills and fire management techniques so as to enable them to properly direct fire fighting operations.

Y-12 has a permanent fire training field on the plant site. It currently consists of a small classroom plus two training structures, but a capital improvement program is currently underway to enhance these structures and build

a third structure which will contain special props for simulating the various sprinkler systems and fire hazards present at Y-12. On April 28, 1989, Y-12 received a certification from the state of Tennessee qualifying this facility to train employees to Level III fire fighters. State certification requires that the employer's education and training program meet certain specified written rules issued by the Tennessee Commission on Fire Fighting and Relief.

Regular and relief shift emergency squad members attend an annual fire school developed by the Fire Department's training/EMT coordinator and taught by him and the fire captains. This school provides 18 to 20 hours of training per year over a two or three day period. The 1989 school was devoted to training the emergency squad in the department's recently adopted Incident Command System. The 1988 fire school included two days of instruction and training in the plant's Initial Fire Attack procedure, turnout gear, SCBA use and hose handling techniques followed by two wet drills on the third day.

The quality and duration of the training provided at Y-12's annual fire school is not equivalent to that provided by courses at other recognized fire training schools such as Louisiana State University. Moreover, the necessary training was not provided prior to assigning employees duties on the emergency squad. Also, since Y-12 did not become certified by the state of Tennessee until April 28, 1989, it is difficult to judge the quality of training provided to emergency squad members prior to that as it was not being compared against a set standard. A review of training records found them to be incomplete plus they are not being kept in a manner which shows the specific training each emergency squad member has received. The result is improperly and inadequately trained employees responsible for interior structural fire fighting duties.

Regular shift emergency squad members also attend monthly training sessions. Review of these monthly training sessions revealed that many practical plant related topics are being covered, such as confined space entry rescue, vehicle rescue, trench rescue. Assessments of various processing buildings that present unusual fire fighting hazards are being performed by the fire department and emergency squad on a regular basis.

However, shift relief emergency squad members attend only the annual fire school. Yet as these employees may be called upon to serve as emergency squad members at any time due to the absence of a regular emergency squad member, they need to be provided with training four times per year in accordance with OSHA's Fire Brigade standard. Also, due to the high call volume at the Y-12 plant, monthly training sessions are often disrupted. This results in either disjointed or missed training by fire department and emergency squad members. For instance, when OSHA assessment team members visited the fire training field to observe a hands-on vehicle rescue course conducted by the fire department training/EMT officer for the fire department personnel, an emergency alarm sounded requiring some members to leave in order to answer the call.

The deficiencies in the training of Y-12's emergency squad have been brought to the attention of management on several occasions by the fire department's training/EMT coordinator. Violations of OSHA standards for the non-specific policy statement and training deficiencies of the emergency squad are categorized as "willful" because the need for additional training was brought to the attention of Y-12 management in mid-1988, but no additional training had been given, or even scheduled, up to the time of the OSHA assessment. Furthermore, delays in upgrading the fire training field - due primarily to budget constraints - prevented this training from being done in-house.

Fire fighting is one of the most dangerous occupations in the United States and must be performed only by properly trained employees. Placing untrained, or improperly trained, employees in fire situations exposes them to grave risk. Also, as fire training is by its nature hazardous, inadequately designed training facilities expose employees to risk of injury.

Martin Marietta's management must make some crucial decisions in regard to the role that shift personnel will play on the emergency squad before actual training needs can be assessed. If the emergency squad is to function as described in Y-12's Initial Fire Attack procedure, all emergency squad members - including those relief squad members who are likely to serve on the emergency squad when designated members are absent - will need to be trained to the equivalent of a journeyman firefighter as described by the requirements set forth by the Tennessee Commission On Fire Fighting and Relief. Yet if Emergency Squad members are restricted from performing some functions, such as search and rescue, a lesser amount of training will be needed to satisfy the standard. However, until the proper training can be provided, the OSHA Assessment Team recommends that plant shift personnel be removed from the emergency squad and replaced with fire department inspectors who have had the requisite fire fighting training and experience.

5.4.4.1.5. **HAZMAT Training (Fire Department and Emergency Squad)**

In addition to its fire fighting duties, the emergency squad is also response for initial containment of hazardous material spills which occur at Y-12. While a number of practical spill training exercises have been held in 1989 with the various emergency squad shifts, neither regular fire fighters nor regular or relief shift emergency squad members have received the required monthly training, totalling 24 hours annually, for dealing with hazardous material spill (HAZMAT) situations. This training is required under OSHA's interim standard, 29 CFR 1910.120, for Hazardous Waste Operations and Emergency Response.

However, it should be noted that on March 6, 1990, OSHA's final rule on Hazardous Waste Operations and Emergency Response takes effect. This standard requires different levels of training for HAZMAT team members depending on the

role they play in the emergency response. The Y-12 fire department should review this standard to assure these training requirements are being met when HAZMAT training is conducted. The OSHA assessment team recommends that only a portion of the fire department and/or emergency squad be trained in HAZMAT activities due to the need to provide both fire and spill response capability.

5.4.4.1.6. Hearing Conservation

Employees exposed to noise levels averaging 85 decibels at least one day a year are included in noise training programs at Y-12. Training is conducted at the divisional level through the use of videotapes and quizzes, and covers the effects of noise on hearing, ear protectors, and audiometric testing as set forth in the OSHA hearing conservation amendment.

5.4.4.1.7. Forklift Truck Operations

Y-12 employees who operate powered industrial trucks are required to be trained and licensed according to written procedures contained in the 70-series. The training program, administered by the ET&I division, consists of a videotape which covers the safe operation of forklifts plus operation around an obstacle course where the operator demonstrates his/her mastery of the truck. This program also includes provisions for temporary permits if an operator is found to need additional training so as to allow practice sessions in the operator's work area prior to being re-evaluated by ET&I.

Numerous forklift trucks were checked by the OSHA assessment team members during the walkthroughs and a variety of forklift truck operations were observed. With the exception of a couple of forklift trucks in one building with defective horns, all others checked were found to be in good operating order and properly maintained. All forklift drivers interviewed during the course of the walkthroughs were found to be properly trained and licensed. Areas where forklift trucks routinely travel, such as among storage racks and loading docks, were found to be in good condition and exhibited no structural damage from being struck by forklift trucks. When a forklift truck needs to operate outside, the industrial safety department first reviews the area to assure it is safe for the type of truck being used.

5.4.4.1.8. Fire Extinguishers - Incipient Stage Fire Fighting

Martin Marietta policy regarding use of fire extinguishers for incipient stage fire fighting at the Y-12 plant is an informal one which permits any employee to pick up an extinguisher to put out an incipient stage fire. The facility has some 10,000 fire extinguishers. Those observed on the walkthroughs were found to be properly mounted, maintained and identified. In addition, where pyrophoric materials are machined, barrels of coke are stationed in designated areas. A formal policy in regard to the use of portable fire extinguishers by employees

for incipient stage fire fighting should be developed by Martin Marietta so there is no confusion regarding their use.

The stated Martin Marietta policy for fire is to call for help and evacuate the building in accordance with written procedures contained in the 40-series plant procedures. Interviews with employees revealed that they all knew how to use a fire extinguisher and were generally knowledgeable in the limitations of fire fighting with portable fire extinguishers. Some employees stated that they would attempt to extinguish an incipient stage fire if they saw one - always after informing their supervisor first - while others would merely report it to their supervisor. Many employees also had been trained in proper use of fire extinguishers previously.

However, several employees had not received annual instruction in use of fire extinguishers for several years. OSHA standards require annual instruction in use of fire extinguishers when any employee can pick up an extinguisher to put out an incipient stage fire. Y-12 has taken immediate action to correct these deficiency by scheduling fire extinguisher instruction during the month of October in conjunction with Fire Prevention Week. The NFPA videotape program "Fight or Flight" is being utilized with an exam.

5.4.4.1.9. **Emergency Evacuation Procedures**

As mentioned above, written procedures contained in the 40-series plant procedures describe the plant's emergency evacuation plan and employee training is conducted to assure its proper implementation. While this plan was developed mainly for nuclear criticality concerns, it also serves for fire emergencies and releases of toxic chemicals. Basically the procedure involves evacuation of work areas upon hearing various alarms, different types are used depending on the nature of the emergency, followed by assembly at various designated places. These are marked with large numbered circular orange signs around the plant. Head counts are then made and further instructions are received from the Plant Shift Superintendent via telephones located at assembly stations.

Martin Marietta uses a videotape to explain the emergency evacuation plan to employees which includes examples of the various types of alarms used in the plant. A telephone number can also be dialed which plays a recording of the various alarms with messages as to their meaning. Periodic drills are conducted to reinforce this training. Interviews with employees revealed that all knew their designated assembly stations and at least the location of one alternate station if they could not reach their designated one. Employees also knew the sounds and meanings of the various alarms used in the plant.

5.4.4.1.10. **Mechanical Power Presses**

Operators were unaware of the type press they were using, i.e., full revolution or part revolution. In addition, they were unaware of the type of guarding, the capacity of the machine in use, and they had not received any training from qualified personnel. Maintenance personnel and supervisors were not knowledgeable in the functioning of the power presses. Die setters had received erroneous information via the die setting procedures in that safety blocks were not being used.

5.4.4.2. Supervisor Training

At the Y-12 plant, supervisors receive safety and health training in the form of one module in their basic supervisory training course as well as the operations safety work permit training. In the basic training course, the organizational structure of the safety and environmental departments is outlined, as well as the variety of safety review programs available. General risk analysis is also covered in this module.

Training of supervisors in Y-12's Operations Safety Work Permit system is extensive. An eight hour training program, with a reference manual, was developed which explains the general principles of why permits are needed and the responsibilities the supervisor must assume in order to make the job safe. Areas where permits are required are also covered in detail. Detailed information is provided for evaluating exceptional exposure hazards and what to do if you don't know how to properly evaluate the situation. The requirements of the permit are explained as are how to properly describe the work and prepare the work area. Proper release of the area after the work is performed is explained. Case studies of actual plant situations are used and production and maintenance personnel are paired together to work through these cases so that they learn the value of cooperation. A detailed final case study is given followed by a written exam with a 70% criteria for passing. All exam questions are thoroughly discussed afterward to clear up any misconceptions about the program.

So far 700 employees, mostly supervisors in the Maintenance and Metal Prep departments have been trained. The target audience is supervisors, planners, estimators and technical support personnel who are involved in issuing permits. Plant procedures prohibit supervisors from issuing this permit before going through this training. An audit is scheduled for this November to verify compliance with the program. Also, questionnaires are currently used to get feedback from the training participants on its value and quality.

Although supervisors are given the primary responsibility for providing a safe and healthy workplace, supervisory training does not cover basic hazard recognition and hazard prevention in regard to OSHA regulations. Therefore,

supervisors at Y-12 are not prepared to identify and evaluate the variety of safety and health hazards they encounter on a daily basis in their facilities.

5.4.4.3. Management Training

At the Y-12 plant, managers have been repeatedly advised of their responsibilities for safety and health protection. Since June 1988, a series of seminars and written materials have been given to all managers emphasizing a commitment and involvement in safety and health. During the inspection process, managers and supervisors in the individual facilities expressed a genuine concern for the OSHA findings and safety and health in general. At each day's debriefing session, approximately 50 to 100 managers were present to listen to the investigation findings for the day.

5.5 Construction Safety and Health Program Evaluation

OSHA has defined the term "construction work" to mean that work for construction, alteration and/or repair, including painting and decorating. Further definitions of these terms can be found in 29 CFR 1926.13. Inspections of employers engaged in construction activities are not easily separable into distinct worksites. The worksite is generally the site where the construction is being performed and will normally include several subcontractors responsible for doing portions of the work under the direction of a prime, or general, contractor.

In addition, OSHA's policy on multi-employer (construction) worksites is to issue citations to employers with employees exposed to, or to employers who have control over, hazards unless an employer meets all the conditions for a legitimate defense as set forth in OSHA's Field Operations Manual. The criteria for a legitimate defense are:

1) The employer did not create the hazard;
2) The employer did not have the authority or ability to correct the hazard;
3) The employer specifically requested the controlling employer and/or the hazard-creating employer to correct the hazard to which his/her employees were exposed and made a reasonable effort to persuade the responsible employer to correct the hazard;
4) The employer has instructed and, where necessary, informed employees how to avoid or minimize the dangers associated with hazardous conditions and, where feasible, has taken alternative means of protecting employees from the hazard short of walking off the job (except when special circumstances require such extreme care).

5.5.1. Control Over Construction Activities

Control of construction sites at the Y-12 facility was divided into three areas of supervision: DOE, Martin Marietta Energy Systems, and Rust Engineering Company. Each of these prime contractors exercised control over separate subcontractors, and yet each subcontractor could be working under all three prime contractors on various individual worksites at the facility. Due to this relationship, overlap of individual prime contractor policies occurred. This created questions over who was in charge and whose policies were in effect at a particular worksite and time. Although this was resolved by the OSHA assessment team on a worksite by worksite basis, the confusion generated amongst the construction contractors revealed a need for a single prime contractor responsible for overall safety and health matters.

Each of the three prime contractors had designated construction engineers for each active construction worksite. These construction engineers had responsibility for overseeing the completion of the job according to the contract, which includes safety and health protection provisions. However, the construction engineers were looking for proper completion of work in the allotted contract period, rather than paying attention to safety and health on the worksite. These engineers did not appear to have knowledge of safety and health violations pointed out during the inspection.

For instance, contractors under their control utilized cranes that did not comply with OSHA construction standards in numerous areas. Electrical hazards found throughout the construction sites on the Y-12 facility exposed subcontractor and prime contractor personnel. A subcontractor of a Rust Engineering Company job at Building 9401-3 had not written and implemented a hazard communication program, and neither the superintendent of the subcontractor nor their employees had received training in hazardous chemicals as specified by DOE orders and OSHA requirements.

5.5.2. Evaluation of Construction Safety and Health Programs

Specific OSHA standards have been promulgated for safety and health programs plus employee training on construction sites. These are contained in 29 CFR 1926.20 through 1926.24 and cover: accident prevention programs; employee safety training and education; first aid and medical attention; plus fire protection and prevention. Thus when construction activities were being evaluated by the OSHA team, compliance with these standards was assessed rather than using the safety and health program management guidelines published in the Federal Register.

5.5.2.1. Rust Engineering

During the series of construction inspections, reviews of safety programs and injury/illness records, when available, were conducted. Rust Engineering Company has a well-developed written safety program, which covers all aspects of the OSHA 1926 construction standards. For instance, an assured equipment grounding program is being used on all Rust jobs. Rust takes responsibility for checking all portable power tools, cord sets and lampsets on its jobs, including subcontractors. This program was reviewed and no deficiencies were found. Yet implementation and enforcement of their programs is lacking in several other areas such as crane crew training; crane rigging inspection personnel training; hearing protection use; easily controlled electrical hazards; and hazard communication programs.

5.5.2.2. Martin Marietta Energy Systems

Martin Marietta Energy Systems also has a written construction safety program, but there are errors in the written procedures. One example involved Martin Marietta's crane rigging manual. The criteria used for removal of a mobile crane from service with defective rigging were not as stringent as the requirements contained in OSHA's construction standards (29 CFR 1926), which were adopted from American National Standards Institute (ANSI) standards by reference.

A second example involves crane hook inspection procedures. These procedures do not call for initial documentation of the hook manufacturers' throat dimensions which are to be compared to actual use measurements to determine if the hooks have exceeded the 15% maximum elongation requirement. This allowed the use of a hook whose elongation could not be determined thus making proper crane hook inspections impossible. Use of an elongated hook could cause it to fail catastrophically under load. Furthermore, the construction division of Martin Marietta could not produce a properly designed hazard communication program in that it did not contain provisions for exchange of hazard information on multi-employer worksites.

In the areas inspected during the construction phase of the inspection, substantial deficiencies in crane operator training were noted. For example, an interview conducted with a Lorain 9115 crane operator revealed that he lacked specific knowledge essential for the safe operation of the crane. This operator did not know the crane's capacity, the number of feet on the main boom and on the jib, weights of the objects lifted, and the size and length of running ropes on the crane. In conjunction with other deficiencies such as defective lifting lugs and the lack of load charts, the lack of crane operator training created a very dangerous situation.

Construction safety inspections are scheduled to be performed by Martin Marietta safety personnel on a comprehensive basis every six months. Martin Marietta

performs crane inspections on Rust Engineering and Martin Marietta cranes, while DOE simply requires that their subcontractors maintain and inspect their own equipment. Crane inspections performed by the contractors do not conform to the requirements set forth in OSHA's 1926 standards. Moreover, it did not appear that daily worksite analysis was being performed by competent persons. In one case, employees were exposed to potential contact with energized overhead electrical wires while unloading large, cumbersome, stainless steel elbows using a truck crane.

Another example of the lack of worksite inspection concerned the inappropriate storage of spoil piles up to the edge of an excavation, creating an increased risk of trench wall collapse. In a third case, a subcontractor was using a scaffold which was supported by two legs on casters, another leg on a fixed baseplate, and the fourth leg 10 inches above the turf on which the scaffold rested. Results of inspections by Martin Marietta safety personnel did not appear to be followed up to ensure that hazards were corrected.

5.5.2.3. Department of Energy

The Department of Energy has no actual construction employees, as they only act as a construction manager/prime contractor. At the time of the inspection, a hazard communication program was not available on site. A discussion of oversight inspection activities performed by DOE was discussed previously in Section 5.4.2.4.

5.5.2.4. Asbestos Removal Projects

During the term of the OSHA assessment, three asbestos removal projects were visited by the OSHA assessment team. These included a glove bag asbestos removal job performed by a Martin Marietta crew, a glove bag removal operation performed by Great Barrier Insulation Company on a steam line outdoors, and an asbestos removal containment built around a boiler in the steam plant by AZCON, Inc. Asbestos removal companies operating at Y-12 are required to follow a Martin Marietta procedure containing 47 required items for the removal of asbestos containing materials. Martin Marietta has a written safety and health procedure for their own employees asbestos work and exposure. Each of the three employers inspected maintained records of asbestos training, air monitoring, medical examinations, and respirator fit testing. All were familiar with the asbestos construction standard and its requirements.

Site supervisors at the three asbestos removal sites inspected were trained as "competent persons", as defined by OSHA's construction asbestos construction standard. On subcontractor operated sites, employees have received asbestos training which was documented by sign-off sheets. Martin Marietta employees have received a three day course covering asbestos and respirator use, as well as annual updates of this training. The Martin Marietta reported that

approximately 20 employees had received training qualifying them as "competent persons".

Each employer is performing his/her own monitoring for airborne asbestos on a daily basis. Although each employer is monitoring for eight hour time weighted average employee breathing zone exposures, none are conducting the thirty (30) minute excursion sampling for asbestos. Excursion sampling has been required for approximately one year under an amendment to OSHA's asbestos standard. One subcontractor, Great Barrier, noted that although they had been performing excursion monitoring on jobs outside of the Y-12 plant, they were not conducting excursion monitoring at Y-12 because it was not called for in the Martin Marietta procedures. The apparent violation for lack of excursion monitoring was classified as "willful" for this reason. This same subcontractor also was not calibrating his air sampling equipment before and after each use as required by the standard. Both Martin Marietta and AZCON, Inc. were found to be calibrating their sampling equipment at the required frequency.

A review of available medical records was made for each of the three asbestos removal employers evaluated. Each of the two subcontractors had information available showing that employees had received a physician's examination prior to initiating asbestos removal work. The actual physical examination record for subcontractor employees was not examined as these records were located at various physicians' offices in Tennessee. Contact was made with one of these physicians' offices to find out the content of the exams given to Great Barrier employees. Although appropriate spirometry, x-rays, and x-ray diagnosis was performed, Great Barrier had not specified that the asbestos questionnaire contained in Appendix D of the OSHA asbestos standard for construction be used. Instead of the detailed questionnaire, an abbreviated history form was supplied by the Great Barrier to the physician. Exam records for Martin Marietta asbestos workers were discussed in Section 5.4.3.8. of this report.

Respirator fit testing is being performed when necessary by the three companies inspected during this assessment. Martin Marietta is conducting quantitative fit testing for all its asbestos workers every six months, and has instituted a computer tracking system to notify supervision when employees are due for fit testing. Details of Martin Marietta's fit testing procedure were discussed in Section 5.4.4.1.2. of this report. AZCON, Inc. was using only powered air purifying respirators, which are not required to be fit tested. Great Barrier performed qualitative fit testing for the half-mask, negative pressure respirators his employees were using.

A physical inspection of each of the three asbestos removal worksites revealed deficiencies in both engineering controls and work practices. For the glove bag asbestos removal operations, negative pressure enclosures were not in use. OSHA's asbestos construction standard requires that negative pressure enclosures be used for any asbestos removal other than short term maintenance operations.

Upon notification of this requirement, Martin Marietta shut down all glove bag asbestos removal operations - their own and all subcontractors - at the Y-12 facility until a negative pressure glove bagging method could be devised. The Martin Marietta industrial hygiene staff reported progress in developing such a method prior to the completion of the OSHA assessment.

In addition, the asbestos removal negative pressure containment being used by AZCON, Inc. at the steam plant was deficient in that it was not well maintained. Holes were noted in the containment walls and one of the negative pressure air machines had a defective filter in use. Inside the containment, problems were observed in respirator and disposable coverall use despite employer knowledge of air sampling results showing excessive fiber exposure inside the containment. Although AZCON, Inc. felt that the excessive fiber concentrations were due to non-asbestos fibers, such as mineral wool, they could not verify this. In absence of verification of the presence of non-asbestos fiber concentrations, increased surveillance of work practice and engineering controls is necessary. Transmission electron microscopy of these same samples revealed that 75% of the material on the filters was asbestos.

Until recently, Martin Marietta has not had the industrial hygiene manpower with which to inspect subcontractor and their own crews' asbestos removal jobs. Although it appears that industrial hygiene technicians are now monitoring all Martin Marietta asbestos removal operations, the company has not been able to consistently evaluate subcontractor removal operations. Oversight of subcontractor asbestos removal operations appears to be needed.

5.5.2.5. Hazardous Waste Site Activities

During the period of the OSHA team assessment, activities at one hazardous waste site were evaluated for compliance with 29 CFR 1910.120, OSHA's interim standard on Hazardous Waste Operations and Emergency Response. At the Bear Creek Burial Ground RCRA remedial action site, PCB contaminated soil is being removed from the ground and moved by truck to a specially built storage facility at the Y-12 facility. The work is being overseen by B&D Equipment Company, a Rust Engineering subcontractor.

B&D Equipment Company has a site safety and health plan which addresses the majority of the required elements required under 1910.120. The major deficiency in the plan was the lack of task-specific safety and health risk analysis, although a general risk analysis was included as part of this plan. The plan is being implemented by the B&D Site Safety and Health Officer, who has assumed safety and health responsibilities for all personnel on the site, including B&D employees, other employees, and visitors.

The Site Safety and Health Officer has assured that all individuals on the site have received the appropriate training, medical examinations, and are provided

with personal protective equipment. A record of training and medical examinations is maintained with the site safety and health plan which is available in the office trailer at the site. Training for all site workers included at least the minimum 24 hours of training currently required for RCRA remedial operations, and eight hours of site specific training which was conducted just prior to the project's initiation in July of 1989. Many of the workers have also completed a 40-hour hazardous waste training course. With the exception of the B&D Site Safety and Health Officer, B&D site managers had completed the required eight additional hours of specialized manager training. The medical records maintained on site included the physician's assessment of each employees' ability to wear a respirator.

As a result of B&D assuming all safety and health responsibility at the Bear Creek Burial Ground, this operation was probably the best controlled construction-type project at Y-12. However, a few problems with control of subcontractors were still noted. For example, one of B&D's subcontractors was not complying with site rules concerning street clothing. Employees of Lackey and Associates were permitted to wear personal clothing into the contaminated exclusion zone (street clothing was worn underneath disposable coveralls by Lackey employees), and then wear the personal clothing off-site to their homes. This practice was prohibited by B&D's site safety and health plan and posed a risk of increased contaminant exposure by bringing contamination into the home.

5.6. Major Findings and Recommendations

5.6.1. Major Findings

The OSHA Assessment Team has reached the following conclusions and determinations regarding Y-12's industrial and construction safety and health programs:

1) Written safety and health procedures are generally adequate, but a number of traditional safety hazards are not covered by any written programs and some written programs have deficiencies. This is evidenced by lack of written procedures for machine safeguarding, walking and working surfaces and maintenance of fixed electrical equipment. Also, while asbestos, lockout and hazard communication programs have been established and implemented, these procedures contain deficiencies which prevent Y-12 from being in total compliance with OSHA regulations. However, inspection programs for hoists, slings and forklift trucks were found to be in good order and effectively implemented throughout Y-12.

2. Insufficient resources are available for implementation and enforcement of Y-12's safety and health programs. While line organizations are given the responsibility for policing safety and health matters, supervisors are not provided with appropriate training to effectively recognize and

evaluate these hazards. Moreover, the industrial safety, industrial hygiene and fire protection engineering departments are focusing their efforts on evaluating plant-wide injury, illness and property damage trends rather than detailed assessment of individual operations. Also, a significant portion of their time is spent responding to complaints and accident investigations making these departments reactive rather than proactive.

3. The numbers and types of OSHA violations discovered during the course of the assessment are significant in that they point to the areas where Y-12's written safety and health programs contain deficiencies. In general, lack of formal implemented policies for , or deficiencies in, particular safety or health matters resulted in these areas being overlooked by those responsible for maintaining safety and health in the workplace.

4. Effective oversight of safety and health on construction worksites at Y-12 cannot be achieved as long as confusion exists over which of the three prime contractors is to exert overall responsibility in this area.

5. The numbers and types of construction violations discovered by the assessment team reflect the lack of safety and health oversight on construction worksites at Y-12.

5.6.2. Recommendations

Based on the OSHA Assessment Team's evaluation of Y-12's industrial and construction safety and health programs, the following recommendations are being offered for consideration:

1. Conduct unannounced inspections of construction and manufacturing worksites on a regular basis.

2. Establish an effective system to follow up on hazards noted during the inspection process.

3. Provide a system of rewards and penalties for positive and negative compliance efforts, respectively.

4. Due to the number of special audits conducted at Y-12 over the past two years, allow sufficient time for Martin Marietta and DOE personnel to perform the needed inspections, evaluate the conditions found and determine the root causes involved so that permanent solutions can be achieved.

5. Develop safety and health program goals which have specific objectives and time frames for completion that allow for evaluation of performance.

6. Provide for a single construction manager who has oversight over all construction activities on the Y-12 site.

7. Utilize safety and health staff on the construction sites and in the manufacturing areas to the maximum extent possible. Due to the size, magnitude, and complexity of the establishment, it is recommended that each division be provided with line safety and health professionals physically located within the operating departments.

8. Conduct detailed job hazard analyses for all industrial and construction activity to establish written procedures for the evaluation and control of hazards.

9. Periodically evaluate and adjust the frequencies of industrial hygiene monitoring.

10. Evaluate departmental implemented programs, such as hazard communication, to ensure consistency and compliance.

11. Provide line supervision with hazard recognition training, particularly in regard to OSHA regulations, so that they are equipped to meet their responsibilities for safety and health.

12. Ensure that asbestos abatement subcontractors undergo appropriate oversight by DOE and Martin Marietta.

13. Assign independent oversight responsibilities for fire department and emergency squad training to either the industrial safety or fire protection engineering department to assure it is being conducted in accordance with the requirements contained in the OSHA standards.

14. Operations with potential exposure to particulate uranium should be identified and extent of exposure characterized through breathing zone sampling for particulate uranium.

15. Detailed evaluations of the effectiveness of existing engineering and work practice controls should be performed periodically. Past variances granted for one-time respirator use should be examined for appropriateness.

Table I. General Industry Activities Evaluated at Y-12

Building Number	Operation	Approx. # Employees	Ind. Safety	Industrial Hygiene Survey	Industrial Hygiene Sampling
9201-1	Machining Maint/Repair	257	X	X	--
9201-4	Isotope Sep.	4	-	X	Mercury
9201-5 E-W	Machining Maint/Repair	319	X	X	Beryllium Uranium
9201-5N	Machining Plating Operation Scrap Reclamation	35	X	X	Beryllium
9204-2	Lithium Focused Factory	571	X	X	Lithium Hydride
9204-4	Metal Forming Plating Operation Scrap Reclamation	74	X	X	Uranium Asbestos
9206	Chemical Recovery	36	X	X	--
9212	Machining Metal Casting Chemical Recovery Maint/Repair	450	X	X	--
9215	Metal Forming Machining Third Mill	99	x	x	--
9401-1	Near Old Steam Plant (Asbestos)	8	-	X	--
9401-2	Plating Operation	9	X	X	--
9401-3	Steam Plant	37	-	X	--
9404-5	Paint Shop	13	X	-	--
9404-9	Rubber Shop	8	X	-	--
9616-7	West-End Treatment	20	X	-	--
9706-2	Clinic	25	-	X	--

(continued next page)

Building Number	Operation	Approx. # Employees	Ind. Safety	Industrial Hygiene Survey	Industrial Hygiene Sampling
9710-2	Fire Department Fire Protection	51	X	-	--
9712	Vehicle Garage	24	X	-	--
9714	TSD Maintenance	30	X	-	--
9720-6	Woodworking Metal Working Iron Working	250	X	-	--
9723-19	Change House	300	-	X	--
9737	Electrical Maintenance	219	X	-	--
9808	Carpenter Paint Shop	30	X	-	--
9818	Chemical Waste	8	X	-	--
9998	Metal Casting	25	X	-	--
----	Bear Creek Burial Ground RCRA Site	40	-	X	--
	Totals	2942	20	14	

Table II. Construction Activities Evaluated at the Y-12 Plant

	Contractor	Employees	Trade
1.	Martin Marietta Energy Systems	800	General Contractor
2.	Department of Energy	20	General Contractor
3.	Rust Engineering Company	1100	General Contractor
4.	Brock & Blevins, Inc.	15	Mechanical Contractor
5.	AZCON, Inc.	34	Asbestos Removal
6.	Hicks & Ingle	25	Mechanical Contractor
7.	G&S Construction Company, Inc.	4	Carpentry
8.	East Tennesee Mechanical Contractors	6	Mechanical Contractor
9.	R&D Development, Inc.	11	Mechanical Contractor
10.	Roehl Construction Company, Inc.	15	Grading Contractor
11.	Cothem Construction Company	8	General Contractor
12.	Blaine-Hayes Construction Company	15	General Contractor
13.	Broadway Electrical Services	12	Electrical Contractor
14.	Cousins Construction Company	2	General Contractor
15.	Industrial Contractors, Inc.	20	Mechanical Contractor
16.	CMC Construction Company, Inc.	20	General Contractor
17.	B&D Equipment Company, Inc.	15	General Contractor
18.	Temperature Controls, Inc.	12	Mechanical Contractor
19.	Protection Fence Company	8	Fence Installation
20.	Long Engineering Company, Inc.	10	Asbestos Removal
21.	Jamerson Construction Company, Inc.	10	General Contractor
22.	Tennessee Roofing Corporation	18	Roofing Contractor
23.	AVISCO, Inc.	15	Site Work
24.	Charles Hobson Company, Inc.	7	General Contractor
25.	K & N Painting Company	8	Painting Contractor
26.	Phoenix Engineering, Inc.	4	General Contractor
27.	Formco of Tennessee, Inc.	4	Concrete Forms
28.	Watson Erection Company, Inc.	5	Steel Erection-Rebars
29.	Ridge Leasing	2	Site Work
30.	Tennessee Associated Electric, Inc.	3	Electrical Contractor
31.	Del-Air Service Company, Inc.	10	Mechanical Contractor
32.	Great Barrier Insulation Company	15	Steam Pipe Insulation
	Total	2253	

TABLE III. OSHA Sampling Results

Substance	Building	Operation	OSHA PEL (mg/M3)	Sample Result (mg/M3)	Comment
Beryllium	9201-5E2	Process Operator	0.002	non-valid analysis	Company sample showed overexposure
		Process Operator (desk)	---	0.276 ug	wipe sample
	9201-5	Machinist	0.002	N.D.	
		adjacent machine	---	0.15 ug	wipe sample
		break room table	---	N.D.	wipe sample
		lunch room table	--	N.D.	wipe sample
Uranium	9201-5W	Machine Cleaner	0.2 (TWA)	N.D.	
		Machinist	0.2	N.D.	
	9204-4	Draw Ring Operator	0.2	N.D.	
		Preheat Fur. Door Oper.	0.2	N.D.	
		Draw Ring/ Haul Back Operator	0.2	N.D.	
		Wheelabrator Operator	0.2	N.D.	
		Cleaner	0.2	0.054	
		Cleaner	0.6 (STEL)	1.3	Violation

Substance	Building	Operation	OSHA PEL (mg/M3)	Sample Result (mg/M3)	Comment
Lithium Hydride	9204-2	Machine Dust Oper.	0.025	0.012	
		Machine Cleaner	0.025	0.002	
		Materials Clerk	0.025	0.0019	
		Machinist	0.025	0.0006	
Mercury (vapor)	9201-4	Supervisor	0.050	N.D.	
		Process Operator	0.050	0.0065	
Asbestos	9204-4	Asbestos Remover	0.2 F/cc	N.D.	glove bag removal
		Asbestos Remover	0.2 F/cc	N.D.	glove bag removal
		Asbestos Area Sample	---	N.D.	glove bag removal
		Asbestos Area Sample	---	N.D.	glove bag removal

Key to Abbreviations:

mg/M3	=	milligrams per cubic meter of air
F/cc	=	fibers per cubic centimeter of air
ug	=	micrograms
PEL	=	Permissible Exposure Limit
STEL	=	Short Term Exposure Limit (15 minutes)
TWA	=	Time-Weighted Average (8 hours)
N.D.	=	None Detected

Samples are breathing zone samples unless otherwise noted

OSHA - 1B

VIOLATION SUMMARIES

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(B) Runs of open conductors used as temporary wiring branch circuits were located where the conductors would be subject to physical damage, or the conductors were fastened at intervals exceeding 10 feet.

Location: Steam plant Boiler Room 2, ground floor.

Hazard: A McGill open conductor temporary light string was strung such that supports were 13 ft. 6 in. apart and only 5 ft. 2 in. off the concrete floor (wet).

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(J) Extension cord sets used for temporary wiring with portable electric tools and appliances were not designed for hard or extra-hard usage.

Location: Steam power plant Boiler Room 2, ground floor

Hazard: One energized flat yellow extension cord used to power temporary light strings was not designated for hard or extra-hard usage.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof.

Location: Steam Plant - ground floor

Hazard: A non-waterproof type 2x4-2 outlet box was lying on the concrete floor in a puddle of water while in an energized state.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.416(e)(2) Extension cords were fastened with staples, hung from nails, or suspended by wire.

Location: Inside Boiler Room 2, lower North Dead Zone - steam plant

Hazard: Open conductors used for temporary light strings were wrapped around nail-like projections from the boiler wall surface.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59 (e)(2) Employer who produces, uses, or stores hazardous chemicals at a workplace such that employees of other employers may be exposed shall ensure that the hazard communication programs developed and implement under this paragraph(s) include the following: (i), (ii), (iii)

Location: 9401-3 steam plant boiler #2

Hazard: The written Company hazardous communications program developed did not address (1) methods of providing other employers with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken to protect employees during the workplace normal operating conditions and in foreseeable emergencies, and (3) the methods the employer will use to inform the other employers of the labeling system used in the workplace.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(h)(1)(i) Employer did not provide respirators, or did not ensure their use,during the interval necessary to install or implement feasible engineering and work practice controls.

Location: 9401-3 steam plant boiler #2

Hazard: Inside the asbestos containment set up at boiler #2 in the steam plant respirator use was not ensured. Excessive asbestos levels had been measured by Azcon, yet employees were observed lifting the respirator facepiece for purpose of talking and scratching.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(j)(2)(ii) The clean room was not equipped with a locker or appropriate storage container for each employee's use.

Location: 9401-3 boiler #2 steam plant

Hazard: In Building 9401-3, the clean room of the asbestos removal containment was not provided with lockers or storage containers for employees' street clothing.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(m)(4)(iii) The employer did not provide a copy of the physician's written opinion to the affected employee within 30 days of its receipt.

Location: 9401-3 steam plant boiler #2

Hazard: Results of asbestos physical exams were only provided upon request or if a medical problem was detected.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(f)(1)(iii) Determinations of employee exposure to asbestos were not made from breathing zone air samples that were representative of the 30-minute short term exposures of each employee.

Location: Building 9401-3, Steam Plant

Hazard: During asbestos removal operations at boiler #2 in the steam plant (Building 9401-3) 30-minute excursion samples were not taken.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(i)(4)(ii) Rips or tears in protective clothing were not immediately mended or the worksuit replaced for employees working in negative pressure enclosures.

Location: Building 9401-3, Steam Plant

Hazard: In the asbestos removal containment on the west side of the steam plant, Building 9401-3, an employee on the third floor penthouse worked with a ripped shoulder in the disposable coverall.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(e)(6)(ii)(b) The integrity of the negative pressure enclosure was not ensured.

Location: Building 9401-3, Steam Plant

Hazard: In the asbestos containment at boiler #2 in the steam plant, Building 9401-3, holes were observed in the walls of the containment by the west stairway.

AZCON, INC.

Type of Violation	Inspection Number	Inspection Site
Serious	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(e)(6)(ii)(e) The proper functioning of engineering controls in the negative pressure enclosure was not ensured

Location: Building 9401-3, Steam Plant

Hazard: In the asbestos containment at boiler #2 in the steam plant, Builiding 9401-3, the negative air machine on the east side ground floor had a dirty and misshapen gross filter.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(e)(3) On-site management and supervisors did not receive at least 8 additional hours of specialized training on managing hazardous waste operations at the time of job assignment:

Location: Bear Creek Burial Ground

Hazard: At the Bear Creek Burial Ground RCRA site, the site Health and Safety officer had not received 8 additional hours of specialized training.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(g)(3)(i) Personal protective equipment was not selected and used to protect employees from the hazards and potential hazards they are likely to encounter:

Location: Bear Creek Burial Grounds- RCRA Site

Hazard: At the Bear Creek Burial Ground RCRA site, gloves were not used by an employee when using a long-handle scraper to remove PCB-contaminated soil from the end of the dump truck into the soil storage facility.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(i)(2)(i)(b) The site safety and health plan did not include a safety and health risk analysis for each site task and operation:

Location: Bear Creek Burial Grounds - Y-12 Oil Retention Ponds Closure

Hazard: (a) The plan developed for the Y-12 Oil Retention Ponds Closure Project (Bear Creek Burial Grounds) did not contain a specific hazard evaluation for tasks such as excavator operators, sampling employees, or the soil storage area bulldozer operator. A task-specific analysis is necessary because the chemical and physical hazards vary by task. (b) Section 6.0 and Tables I-III of the site safety and health plan did not address soil contamination levels. Although water contamination levels were noted, the relative risk of soil contamination for each task is unknown.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(k)(4) Clothing and equipment leaving a contaminated area was not appropriately disposed of or decontaminated:

Location: Bear Creek Burial Grounds

Hazard: At the Bear Creek Burial Grounds RCRA site, street clothing worn into the exclusion zone by surveyors was worn home.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(n)(1)(i) An adequate supply of potable water was not provided on the site:

Location: Bear Creek Burial Grounds

Hazard: At the Bear Creek Burial Grounds RCRA site, potable water was not provided by the employer.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Other	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.151(c) Where employees were exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body were not provided within the work area for immediate emergency use:

Location: Bear Creek Burial Grounds

Hazard: On the Bear Creek Burial Grounds site, eyewash solution was provided in the form of a one-quart bottle and a one-gallon bottle, neither of which provided a 15 minute supply of flushing solution.

B & D EQUIPMENT

Type of Violation	Inspection Number	Inspection Site
Other	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(i)(2)(i)(k)	The site safety and health plan did not include confined space entry procedures;

Location: Bear Creek Burial Grounds

Hazard: The plan developed for the Bear Creek Burial Grounds RCRA site did not include provisions for confined space entry procedures. Entry into the confined spaces on-site was accomplished through the Martin Marietta work permit system, however.

B & D Equipment

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(E)	Lamps used in temporary wiring for general illumination were not protected from accidental contact or breakage

Location: B & D Equipment Trailer Storage Area

Hazard: Overhead light bulb (lamp) was not guarded from accidental contact

B & D Equipment

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(j)(1)(iii)(A) Metal shell, paperlined lampholders were used in portable handlamps

Location: B & D Storage Trailer

Hazard: A metal shelled, paper lined lampholder was available for use in storage area

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B & D Equipment

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(J)(1)(iii)(d) Metallic guards for portable handlamps were not grounded by the means of an equipment grounding conductor run within the power supply cord

Location: B & D Equipment Storage Trailer

Hazard: The metal guard of the portable lamp, available for use, was not grounded

B & D Equipment

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1926.59(f), (g), and (h) will be met

Location: Jobsite

Hazard: The employer did not develop a hazard communication program as set forth in that no mention of any topics addressed in the standard were covered

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B & D Equipment

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1926.601(b)(14) All defects were not corrected before motor vehicle(s) were placed in service

Location: DARA Facility

Hazard: The Ford 800 water truck had an aluminum coca-cola can for a gasoline tank cap

B & D Equipment

Type of Violation	Inspection Number	Inspection Site
Serious	107458705	Oak Ridge Y-12 Plant

Description

29 CFR 1926.602(a)(9)(i)	Bidirectional machine(s) were not equipped with an operable horn, distinguishable from the surrounding noise level

Location: DARA Facility Bear Creek Road

Hazard: The Ford 755 Tractor with front body bucket and backhoe attached had no forward alarm installed

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BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(h)	Each service, feeder, and branch circuit was not legibly marked at its disconnecting means or overcurrent device to indicate its purpose, nor located and arranged so that the purpose is evident

Location: Blaine-Hayes Office Trailer

Hazard: CB distribution panel had circuit breakers installed and were unlabeled

BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(6) The path to ground from circuits, equipment, or enclosures was not permanent and continuous

Location: Blaine-Hayes Office Trailer

Hazard: Black & Decker 7 1/4-in. worm drive saw, S/N 44491, available for use, did not have a path to ground that was permanent or continuous

BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(1) The employer did not comply with the manufacturer's specifications and limitations applicable to the operation of crane(s) or derrick(s)

Location: Blaine-Hayes Yard

Hazard: The Becket & Wedge assembly on the Bantam 18-ton hydraulic crane had an improperly seated wedge

BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(10) All exhaust pipes were not guarded or insulated in areas where contact by employee was possible in the performance of normal duties

Location: Bantam Hydraulic Crane, S/N 856

Hazard: The exhaust pipe end and curved section from manifold were not protected by either a guard or insulation

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BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(17) The employer shall comply with Power Crane and Shovel Association Mobile Crane Standard No. 2. Wire rope will be replaced when evidence of any heat damage from a torch is noted

Location: Blaine-Hayes Yard

Hazard: The Bantam Telekruiser Hydraulic Crane hoist line had been cut at the end by a torch

BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(2) Crawler, truck, or locomotive cranes in use did not meet the applicable requirements for operation as prescribed in the ANSI B 30.5-1968 Safety Code for Crawler, Locomotive and Truck Cranes

Location: Blaine-Hayes Yard

Hazard: The Cab of the Bantam 18-ton Hydraulic Crane was cluttered with heavy accumulations of dirty soda cans and bottles, and an oil can

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BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(2) There were no written, dated, and signed inspection reports and records being kept on a monthly basis concerning critical items such as brakes, crane hooks, and ropes

Location: Blaine-Hayes Yard

Hazard: The Koehring Bantam Telekruiser Crane did not have records on brakes, crane hooks, and ropes being kept

BLAINE-HAYES

Type of Violation	Inspection Number	Inspection Site
Serious	107458424	Oak Ridge Y-12 Plant

Description

29 CFR 1926.551(e)(1) The employer did not have each Synthetic Sling marked with name of manufacturer rated capacity per hitch and type of material used

Location: Blaine-Hayes Yard

Hazard: A 6-in.-wide, 20-ft.-long nylon-type sling was not identified with a tag stating the required information

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BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(b)(1) Employee did not ensure that electric equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.

Location: Building 9204-2 Stairwell

Hazard: Open conductors used for temporary light strings had splices made, protected only by plastic wire nuts.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(d)(1) Electric equipment was not firmly secured to the surface on which it was mounted.

Location: Broadway Trailer

Hazard: 2x4-2 knockout-type box was allowed to hang from its energized Romex cable rather than being affixed to the wall.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(h) Each service, feeder, and branch circuit was not legibly marked at its disconnecting means or overcurrent device to indicate its purpose, nor located and arranged so that the purpose is evident.

Location: Broadway Office and Storage Trailer

Hazard: CB distribution panel box had unlabeled circuit breakers installed.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Seious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(i) Employer did not use either ground-fault circuit interrupters as specified in paragraph (b)(1)(ii) of this section, or an assured equipment grounding conductor program as specified in paragraph (b)(1)(iii) of this section to protect employees on construction sites.

Location: Broadway Office and Storage Trailer

Hazard: A 2x4 knockout-type receptacle box, energized to 120 volts, was not provided GFCI protection or the assured grounding conductor program.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(i) Employer did not use either ground-fault circuit interrupters as specified in paragraph (b)(1)(ii) of this section, or an assured equipment grounding conductor program as specified in (b)(1)(iii) of this section to protect employees on construction sites.

Location: Broadway Office Storage Trailer

Hazard: A 2x4 knockout-type receptacle box, energized to 120 volts, was not provided GFCI protection or the assured grounding conductor program.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(i) Employer did not use either ground-fault circuit interrupters as specified in paragraph (b)(1)(ii) of this section, or an assured equipment grounding program as specified in paragraph (b)(1)(iii) of this section to protect employees on construction sites.

Location: Building 9204-2, South wall near Kathabar, East side

Hazard: The temporary services used in the work area had no GFCI nor was the assured grounded conductor program in effect.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(6) The path to ground from circuits, equipment, or enclosures was not permanent and continuous

Location: Broadway Trailer

Hazard: The Toledo Threader, 120 volts, available for use had a three-wire cord and plug but the path-to-ground when tested was neither permanent nor continuous.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(6) The path to ground from circuits, equipment, or enclosures was not permanent and continuous.

Location: Storage Trailer #2

Hazard: The orange 50-ft. extension cord with a 4x4-4 knockout-type receptacle box connected to it showed no path-to-ground between the grounding conductor and the knockout box frame.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(7)(iv)(C) Exposed noncurrent-carrying metal parts of cord- and plug- connected equipment which could become energized were not grounded when the equipment was one of the types listed in 29 CFR 1926.404(f)(7)(iv)(C)(1) through (5)

Location: Broadway Trailer No. 2 (Storage)

Hazard: A Black and Decker Band Saw, Broadway #08, was available for use and had its grounding prong removed.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(7)(iv)(C)(6) Double-insulated tools were not distinctively marked to indicate that the tool or appliance utilizes a system of double insulation.

Location: Broadway Storage Trailer

Hazard: A Craftsman Drill Motor Model #315.11490 appeared to be a double-insulated tool but it was not marked as such.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(B) Runs of open conductors used as temporary wiring branch circuits were located where the conductors would be subject to physical damage, or the conductors were fastened at intervals exceeding 10 feet.

Location: Building 9204-2 Stairway and Fan Room

Hazard: Energized light strings providing illumination for the stairway and fan room were not protected from hazards such as equipment being carried, employee passage, door closure nor were they fastened every 10 feet.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(B) Each temporary wiring branch circuit run as open conductors and supplied receptacles or fixed equipment did not contain a separate equipment grounding conductor.

Location: Building 9204-2 Fan Room

Hazard: Flexible cords and cables were allowed to pass through open doorways that were subject to door closure.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(E) Lamps used in temporary wiring for general illumination were not protected from accidental contact or breakage.

Location: Building 9204-2 Fan Room

Hazard: Temporary light string had bulbs that were broken and one that was unguarded.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(F) Temporary lights were suspended by their electric cords when not designed for such suspension.

Location: 9204-2 Stairway and Fan Room

Hazard: The temporary light strings energized were wrapped around metal handrails and guardrails, as well as pipes and other metal fixed objects.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof.

Location: Building 9204-2, Fan Room area South wall near Kathabar East side

Hazard: A waterproof-type box was installed such that two top plugs and one bottom plug was missing the Romex conductor had a nonwaterproof-type bushing used.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof.

Location: Storage Trailer #2

Hazard: The receptacle boxes at the end of the two 50-ft. extension cords, available for use, had nonwaterproof knockout-type boxes.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof.

Location: Storage Trailer #2

Hazard: The receptacle boxes at the end of the two 50-ft. extension cords, available for use, had nonwaterproof knockout-type boxes.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.500(d)(1) Open-sided floors or platforms, 6 feet or more above adjacent floor or ground level, were not guarded by a standard railing or the equivalent on all open sides.

Location: 9204-2 Fan Room Area

Hazard: Open-sided platform floor had a 42-in. top rail, but no intermediate rail installed.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.56(a) While work was in progress, construction areas, ramps, runways, corridors, offices, shops or storage areas were not lighted to the minimum illumination intensities listed in Table D-3 of subpart D of 29 CFR part 1926.

Location: Building 9204-2 Fan Room

Hazard: Needed flashlight to get around in passageway to and including work areas of Fan Room.

BROADWAY

Type of Violation	Inspection Number	Inspection Site
Serious	107458747	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59 (e)(2) Employer who produces, uses, or stores hazardous chemicals at a workplace such that employees of other employers may be exposed shall ensure that the hazard communications programs developed and implemented under this paragraph(s) include the following: (i), (ii), (iii).

Location: Jobsite

Hazard: The written Company hazardous communications program developed did not address methods of providing other employers with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken to protect employees during the workplace normal operating conditions and in foreseeable emergencies, and (3) the methods the employer will use to inform the other employers of the labeling system used in the workplace.

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(b)(1) Employer did not ensure that electric equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees

Location: Steam Plant, Outside Between Plant and Trailer

Hazard: An energized extension cord used to supply power to lights, tools, and equipment in trailer was attached to a chain-link fence

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(i) Employer did not use either ground-fault circuit interrupters as specified in paragraph (b)(1)(ii) of this section, or an assured equipment grounding conductor program as specified in paragraph (b)(1)(iii) of this section to protect employees on construction sites

Location: Storage Trailer near Office Trailer Steam Plant

Hazard: An energized flat yellow multi-receptable, three-wire extension cord, was run from the inside wall/column mounted plant outlet box into the storage trailer for electric power, and neither GFCI nor an assured grounding conductor program was provided

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(6) The path to ground from circuits, equipment, or enclosures was not permanent and continuous

Location: Storage Trailer near Office Trailer Steam Plant

Hazard: A droplight cord with two 120-volt plug receptables, was available for use and had no grounding prong in place

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(6) The path to ground from circuits, equipment, or enclosures was not permanent and continuous

Location: Storage Trailer near Office Trailer Steam Plant

Hazard: Energized multi-receptacle flat yellow extension cord showed open ground when tested

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BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(I) Protection was not provided to avoid damage to flexible cords and cables used for temporary wiring which passed through doorways or other pinch points

Location: Storage Trailer near Steam Plant

Hazard: Energized 100-ft yellow extension cord was run through the hinged side of the trailer door and caught between door and edge of trailer when door was closed

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(J) Extension cord sets used for temporary wiring with portable electric tools and appliances were not designed for hard or extra-hard usage

Location: Steam Power Plant and Storage Trailer Hazard

Hazard: One energized flat yellow extension cord and one in storage were not rated for hard or extra-hard usage

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BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(g)(1)(iii) Flexible cords and cables were: (A) Used as a substitute for the fixed wiring of a structure; (B) Run through holes in walls, ceilings, or floors; (C) Run through doorways, windows, or similar openings; (D) Attached to building surfaces; or (E) Concealed behind building walls, ceilings, or floors

Location: Storage Trailer and Steam Power Plant

Hazard: An ungrounded 100-ft extension cord was run through the trailer hinged edge of the door out to the hole cut in the power plant siding and plugged into an in-plant outlet box

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(g)(2)(iii) Flexible cords were not used only in continuous lengths without splice or tap

Location: Storage Trailer near Office Trailer Steam Plant

Hazard: Droplight cords, with two 120-volt receptacles, had a splice in its length

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BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(4) The written hazard communication program was not made available, upon request, to employees, their designated representatives, the Assistant Secretary, or Director

Location: Office Trailer at Steam Plant

Hazard: The Company's written Hazard Communication Program was not available at the jobsite

BROCK BLEVINS

Type of Violation	Inspection Number	Inspection Site
Serious	107458549	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(h) Employees were not provided information and training as specified in 29 CFR 1926.59(h)(1) and (2) on hazardous chemicals in their work area at the time of their initial assignment and whenever a new hazard was introduced into their work area

Location: Office Trailer at Steam Plant

Hazard: Neither the superintendent nor the one employee had received the training required by the Hazard Communication Program

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CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.25(a) During the course of construction, form or scrap lumber with protruding nails was not kept clear

Location: Building 9119 jobsite

Hazard: Pile of concrete forms were in the work area without having had protruding nails removed

CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(h)(1) Each service, feeder, and branch circuit was not legibly marked at its disconnecting means or overcurrent device to indicate its purpose, nor located and arranged so that the purpose is evident

Location: Bldg. 9119, Temporary Service (Electrical)

Hazard: Temporary Service circuit breakers not labelled as to use

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CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(ii) On a construction site, where an assured equipment grounding program was not utilized, all 120-volt, ingle-phase, 15- and 20-ampere receptacle outlets which were not a part of the permanent wiring of the building or structure and which were used by employees did not have approved ground fault circuit interrupters for personal protection.

Location: Temporary Electric Service

Hazard: A defective GFCI was in line with the circuit being used on the jobsite

CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(f)(6) The path to ground from circuits, equipment, or enclosures was not permanent and continuous

Location: Jobsite back of pickup truck

Hazard: A defective three wire extension cord, available for use, had a two prong household plug put in place

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CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof

Location: Office - Trailer side of jobsite roadway edge

Hazard: A non waterproof 4X4-4 energized outlet box was resting on the wet ground in with wet grass

CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.416(e)(1) Worn or frayed electric cords or cables were used

Location: Back of pickup truck

Hazard: A twenty five foot extension cord available for use had numerous breaks in the cord insulation and individual conductor insulation with exposed copper wire conductor showing

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CMC

Type of Violation	Inspection Number	Inspection Site
Other	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(1)(i) The written hazard communication program did not include a complete list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet

Location: Jobsite 9119 Bldg.

Hazard: The contractor had only a file full of MSDS's for various chemicals only used by the various subcontractors no list was compiled

CMC

Type of Violation	Inspection Number	Inspection Site
Serious	107458713	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59 (e)(1)(ii) The written hazard communication program did not include the methods that will be used to inform employees of the hazards of nonroutine tasks, and the hazards associated with chemicals contained in unlabeled pipes in their work areas

Location: Jobsite

Hazard: Nonroutine tasks and hazards associated with chemicals contained in unlabeled pipes in the employees work area were not addressed in the program

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DEL AIR

Type of Violation	Inspection Number	Inspection Site
Serious	107458564	Oak Ridge Y-12 Plant

Description

29 CFR 1926.102(a)(2) Eye protection equipment required by this part did not meet the requirements specified in American National Standards Manual Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection.

Location: Building 9201-3 North Side

Hazard: Employee in area of grinding while on elevated platform was not wearing approved safety glasses.

DEL AIR

Type of Violation	Inspection Number	Inspection Site
Serious	107458564	Oak Ridge Y-12 Plant

Description

29 CFR 1926.25(a) Debris was not kept cleared from the following areas:

Location: Building 9201-3 North Side

Hazard: Employees were working on an elevated work platform that was cluttered with threaded rods, pipe hangers, pieces of scrap metal, welding rods, loose cords, etc.

DEL AIR

Type of Violation	Inspection Number	Inspection Site
Serious	107458564	Oak Ridge Y-12 Plant

Description

29 CFR 1926.28(a) Appropriate personal protective equipment was not worn by employee(s) in all operations where there was exposure to hazardous conditions.

Location: Building 9201-3 North Side

Hazard: Employees working in an elevated platform exposed to vehicular traffic were not wearing the safety belts and lanyards provided.

DEL AIR

Type of Violation	Inspection Number	Inspection Site
Other	107458564	Oak Ridge Y-12 Plant

Description

29 CFR 1926.350(d)(2) The special wrench required to close the valve on fuel gas cylinder(s) was not left in position on the stem of the valve while the cylinder(s) were in use.

Location: Building 9201-3 North Side

Hazard: The acetylene cylinder hooked up for use had a special use wrench required but wasn't in place on the stem.

DEL AIR

Type of Violation	Inspection Number	Inspection Site
Serious	107458564	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1926.59(f), (g), and (h) will be met.

Location: Building 9201-3 Work Area and Trailer

Hazard: The company had not developed a written hazard communication program.

G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(a)(15) Upright members of scaffold(s) were not plumb

Location: Building 9616-7 - Groundwater Treatment Facility

Hazard: Right side fixed scaffold sections were not plumb in that one front leg rested on a piece of scrap plywood while the other three rested on concrete floor

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G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(a)(2) The footing or anchorage for scaffolds was not sound, rigid, and capable of carrying the maximum intended load without settling or displacement

Location: Building 9616-7 - Groundwater Treatment Facility

Hazard: The left fixed scaffolds' rear set of legs were placed on a length of 2 x 4 which was placed on a 4 x 4 while the front legs rested 1 1/2 in. away from the edge of a 6-in. deep concrete sill

G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(a)(8) Scaffold(s), including accessories such as braces, brackets, trusses, screw legs, ladders, etc., damaged or weakened from any cause were not immediately repaired or replaced

Location: Building 9616-7 - Groundwater Treatment Facility

Hazard: Right fixed scaffold had legs (front) of base section drilled through and fitted with machine screws to attach angle iron attachment thereby weakening by area reduction of metal the scaffold legs

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G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(a)(8) Scaffold(s), including accessories such as braces, brackets, trusses, screw legs, ladders, etc., damaged or weakened from any cause were not immediately repaired or replaced

Location: Building 9616-7 - Groundwater Treatment Facility

Hazard: The left mobile scaffold and the right fixed scaffold had bolts welded to legs to replace missing locking pins and the right mobile scaffold and left fixed scaffold had wire used to fasten X-bracing in lieu of locking pins.

G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(d)(4) Scaffold legs were not set upon adjustable bases or plain bases

Location: Building 9616-7 - Groundwater Treatment Facility

Hazard: Left and right fixed scaffold sections had no base plates installed

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G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(e)(1) The height of free-standing manually-propelled mobile scaffold tower(s) was greater than 4 times the minimum base dimension

Location: Building 9616 - Groundwater Treatment Facility

Hazard: The working height of the manually-propelled mobile scaffold was 24 ft 6 inches while the minimum base dimension was 5 feet.

G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(e)(2) Casters were not properly designed for strength and dimensions to support 4 times the maximum-intended load

Location: Building 9616-7 - Groundwater Treatment Facility

Hazard: 4 1/2 in. casters were used on a working mobile scaffold 6 sections in height

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G & S

Type of Violation	Inspection Number	Inspection Site
Serious	107458465	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(e)(6) Scaffolds were not moved on level floors free of obstructions and opening

Location: Building 9616 - Groundwater Treatment Facility

Hazard: Left and right mobile scaffolds were located on a pitched concrete floor with associated drain grating and scattered debris and floor dowels

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Serious	17526286	Oak Ridge Y-12 Plant

Description

29 CFR 1926.25(a) Debris was not kept cleared from the following areas

Location: Building 9201 Grove Manlift

Hazard: Basket of the grove MZ66A manlift was cluttered with used duct tape, aerosol cans of extremely flammable spray adhesive, and an aerosol container of Raid

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Serious	17526286	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(a)(2) The footing or anchorage for scaffolds was not sound, rigid, and capable of carrying the maximum intended load without settling or displacement

Location: Building 9201-2

Hazard: Scaffold 1 had three legs fitted with 9 in. casters, and one leg fitted with a metal plain base plate, Scaffold 2 had two legs fitted with 9 in. casters, one leg with a fixed plain base plate and one leg 10 1/2 in. off the ground.

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Serious	17526286	Oak Ridge Y-12 Plant

Description

29 CFR 1926.451(e)(8) Manually propelled mobile scaffold(s) in use were not resting upon a suitable footing and standing plumb

Location: Building 9201-2

Hazard: Manually propelled mobile scaffold with 2-9" casters was set on soft wet grass.

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Serious	17526286	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(e)(6)(i) Where feasible, the employer did not establish negative-pressure enclosures before commencing asbestos removal, demolition, or renovation operations:

Location: Steam lines north of old steam plant

Hazard: A negative-pressure enclosure was not used when removing asbestos on the high steam lines north of the old steam plant, Building 9401-1.

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Serious	17526286	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(f)(5)(i) All samples taken to satisfy the monitoring requirements of paragraph (f) of the section were not personal samples collected following the procedures specified in Appendix A

Location: North of 9401-1

Hazard: Air sampling pumps used to monitor employee exposure to asbestos were calibrated on a weekly basis instead of before and after each use, during the asbestos removal operation on the high steam lines north of the old steam plant, Building 9401-1.

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Other	17526286	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(m)(2)(ii)(B) Medical examinations made available pursuant to 29 CFR 1926.58(m)(2)(i)(A) through (C) did not include on initial examination, the standardized questionnaire contained in Appendix D, Part 1, and, on annual examination, the abbreviated standardized questionnaire contained in Appendix D, Part 2.

Location: North of old steam plant

Hazard: The company did not specify that a detailed medical history questionnaire be used in the physical exam; the company directed the walk-in medical center to use a short, general history form.

GREAT BARRIER INSULATION

Type of Violation	Inspection Number	Inspection Site
Willful	107458531	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(f)(1)(iii)	Determinations of employee exposure to asbestos were not made from breathing zone air samples that were representative of the 30 minute short term exposures of each employee

Location: Steam lines north of old steam plant

Hazard: Thirty minute asbestos excursion samples were not taken during the asbestos removal job on the high steam lines north of the old steam plant, Building 9401-1.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Other	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1904.2(a)	A log and summary of occupational injuries and illnesses (OSHA Form No. 200 or its equivalent) was not completed in the detail provided in the form and the instructions contained therein

Location: Jobsite

Hazard: The OSHA 200 for 1988, was not totaled.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(a)(1) Defective rigging equipment was not removed from service.

Location: Building 9204-2 Fan Room Gang Box

Hazard: 4-in. nylon sling had its red internal marker thread exposed and was left in service.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(a)(4) Special custom design lifting accessories for material handling were not marked to indicate the safe working load(s).

Location: Truck crane cab outside Building 9204-2.

Hazard: 3 1/2"-wide nylon sling was badly worn and frayed and was not removed from service.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(e)(1) The employer did not have each synthetic web sling marked to show: (1) name of manufacturer; (2) rated capacity for the type of hitch; and (3) type of materials.

Location: Outside Building 9204-2, truck crane.

Hazard: The nylon sling available for use in the cab of the truck crane had no tag attached.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.28(a) Appropriate personnel protective equipment was not worn by employee(s) in all operations where there was exposure to hazardous conditions.

Location: Building 9204-2 Fan Room Gang Box

Hazard: A safety belt, available for use in the company's gang box, had mildewed leather eyelets and showed signs of fabric deterioration.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(b)(1) Employer did not ensure that electric equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.

Location: Building 9204-2 Stairwell

Hazard: Open conductors used for temporary light strings had splices made, protected only by plastic wire nuts.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(i) Employer did not use either ground-fault circuit interrupters as specified in paragraph (b)(1)(ii) of this section, or an assured equipment grounding conductor program as specified in paragraph (b)(1)(iii) of this section to protect employees on construction sites.

Location: Building 9204-2 South Wall near Kathabar East Side

Hazard: Employees using tools and equipment of engaged wall outlet boxes were not protected from electric shock by GFCI or the assured grounding conductor program.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(B) Runs of open conductors used as temporary wiring branch circuits were located where the conductors would be subject to physical damage, or the conductors were fastened at intervals exceeding 10 feet.

Location: Beta-2 Stairway and Fan Room

Hazard: Energized light strings providing illumination for the stairway and fan room were not protected from hazards such as equipment being carried, employee passage door closures, nor were they fastened every 10 feet.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(E) Lamps used in temporary wiring for general illumination were not protected from accidental contact or breakage.

Location: Beta-2 Fan Room, Building 9204-2

Hazard: Temporary light strings had bulbs that were broken and one that was unguarded.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(F) Temporary lights were suspended by their electric cords when not designed for such suspension.

Location: Building 9204-2 - Beta-2, Stairway and Fan Room

Hazard: The temporary light string energized were wrapped around metal handrails and guardrails, as well as pipes and other metal fixed objects.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(G) Flexible cords and cables used for temporary wiring were not protected from damage.

Location: Beta 2 Fan Room, Building 9204-2

Hazard: Flexible cords and cables were allowed to pass through open doorway that were subject to door closure.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e) Cabinets, cutout boxes, fittngs, boxes, and panelboard enclosures in damp or wet locations were not installed so as to prevent moisture or water from entering and accumulating within the enclosures.

Location: Building 9204-2 south wall near Kathabar eastside

Hazard: A waterproof-type box was installed such that two top plugs and one bottom plug was missing and the romex conductors had a nonwaterproof-type bushing used.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.450(a)(10) Portable ladder(s) in use were not tied, blocked, or otherwise secured to prevent their being displaced.

Location: Building 9204-2, Fan Room (Kathabar)

Hazard: 10-ft step ladder used as an extension ladder was not tied or secured in position.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.450(a)(3) Manufactured portable wood ladders provided by the employer shall be in accordance with the provisions of the American National Standards Institute, A14.1-1968 Safety Code for Portable Wood Ladders.

Location: Building 9204-2 Fan Room (Kathabar)

Hazard: A 10-ft step ladder was improperly used as an extension ladder to gain access to work elevation.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.450(a)(9) The side rails of ladder(s) did not extend more than 36 inches above landing(s).

Location: Building 9204-2 Fan Room (Kathbar)

Hazard: The 10-ft step ladder used to gain access to work platform was improperly used as an extension ladder and did not extend beyond the landing by 3 ft.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.500(d)(1) Open-sided floors or platform, 6 feet or more above adjacent floor or ground level, were not guarded by a standard railing or the equivalent on all open sides.

Location: Building 9204-2 Fan Room area outside west and north sides

Hazard: The floor area of the north and west side of the Kathabar was not guarded by a standard guardrail, had only a piece of metal purlin/lentile across vertical member, 50 inches off floor.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(15)(i) Equipment was operated where part of the equipment was within 10 feet of electrical distribution or transmission lines rated 50kv or below that had not been de-energized and visibly grounded, nor had insulating barriers not a part of, or an attachment to, the equipment been erected to prevent physical contact with the lines.

Location: Building 9204-2 outside west side.

Hazard: A truck crane used to unload a large stainless steel elbow was set up such that its center pin for the rotating superstructure was 6 feet from the middle of the telephone pole supporting energized electric power lines.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.56(a) While work was in progress, construction areas, ramps, runways, corridors, offices, shops or storage areas were not lighted to the minimum illumination intensitites listed in Table D-3 of subpart D of 29 CFR part 1936.

Location: Beta-2 Fan Room, Building 9204-2

Hazard: Needed flashlight to get around in passage ways to and including work area of fan room.

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Serious	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59 (e)(2) Employer who produces, uses, or stores hazardous chemical at a workplace such that employees of other employers may be exposed shall ensure that the hazard communications programs developed and implemented under this paragraph(s) include the following:

Location: Jobsite

Hazard: The written Company hazardous communications program developed did not address (1) methods of providing other employers with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken to protect

HICKS & INGLE

Type of Violation	Inspection Number	Inspection Site
Other	107458481	Oak Ridge Y-12 Plant

Description

29 CFR 1940.5(c) The annual summary of occupational injuries and illnesses (applicable portion of OSHA Form No. 200) was not certified as true and complete.

Location:

Hazard: The OSHA 200 for 1988, was not signed certifying it to be true and complete.

K & N

Type of Violation	Inspection Number	Inspection Site
Serious	107458622	Oak Ridge Y-12 Plant

Description

29 CFR 1926.21(b)(2) The employer did not instruct each employee in the recognition and avoidance of unsafe condition(s) and the regulation(s) applicable to his work environment to control or eliminate any hazard(s) or other exposure to illness or injury

Location: Outside Bldg 9201-4 Roadway side

Hazard: Safety belt and lanyard used by employee while riding in TLG manlift had been left out exposed to the elements and covered with paint and employees were not made aware of care to be taken

K & N

Type of Violation	Inspection Number	Inspection Site
Serious	107458622	Oak Ridge Y-12 Plant

Description

29 CFR 1926.21(b)(2) The employer did not instruct each employee in the recognition and avoidance of unsafe condition(s) and the regulation(s) applicable to his work environment to control or eliminate any hazard(s) or other exposure to illness or injury

Location: Bldg 9201-4 Roadway side

Hazard: The operator of the JLG manlift was not adequately trained in that he allowed personnel to ride in basket without safety belt and lanyard, sit up outrigger over man hole cover & was unaware of lifting requirements

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K & N

Type of Violation	Inspection Number	Inspection Site
Serious	107458622	Oak Ridge Y-12 Plant

Description

29 CFR 1926.556(b)(2)(ix) Controls shall be plainly marked as to their functions for all articulating booms and extensible boom platforms

Location: Bldg 9201-4 Roadway Side

Hazard: The JLG manlift had its control functions as well as the load capacity caution note required for safe manlift operations covered with paint.

K & N

Type of Violation	Inspection Number	Inspection Site
Serious	107458622	Oak Ridge Y-12 Plant

Description

29 CFR 1926.556(b)(2)(v) A body belt with landyard attached to the boom or basket was not worn by employee(s) working from an aerial lift

Location: Outside Bldg 9201-4 Roadway side

Hazard: One employee out of four, riding in a JLG manlift basket, had no safety belt & landyard provided while riding down from the 80-ft roof elevation to the ground

K & N

Type of Violation	Inspection Number	Inspection Site
Serious	107458622	Oak Ridge Y-12 Plant

Description

29 CFR 1926.556(b)(2)(vii) On aerial manlifts when outriggers are used, they shall be on pads or a solid surface

Location: Bldg 9201-4 Roadway Side

Hazard: The JLG manlift had one outrigger placed over a manhole cover while making lifts with 4 employees to and from the roof elevation

K & N

Type of Violation	Inspection Number	Inspection Site
Serious	107458622	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59 (e)(2) Employer who produces, uses, or stores hazardous chemicals at a workplace such that employees of other employers may be exposed shall ensure that the hazard communication programs developed and implement under this paragraph(s) include the following: (i)

Location: Jobsite

Hazard: The written Company hazard communications program developed did not address (1) methods of providing other employers with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken to protect

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MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(i) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the identity of the hazardous chemical(s) contained therein.

Location: Building 9401-2, Plating Shop Annex

Hazard: In the annex of the plating shop, Building 9401-2, a container of chrome additive had its name partially degraded by chemical action making it difficault to determine its identity. The material was later determined to be "Macro Drab 6B".

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(i) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the identity of the hazardous chemical(s) contained therein.

Location: Building 9401-2, Plating Shop

Hazard: In the plating shop, 9401-2, some plating tanks were labeled with generic identities (such as the term "alkaline" instead of "sodium hydroxide"). These generic identifiers were not readily cross-referenced to the material safety data sheets on file.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning

Location: Building 9401-2, Plating Shop Annex

Hazard: In the annex of the plating shop, Building 9401-2, a container of Macro drab 6B chrome additive lacked hazard warnings.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.157(c)(1) Portable fire extinguishers were not mounted, located and identified so that they were readily accessible without subjecting the employees to injuries.

Location: Guardhouse 27

Hazard: The Sentry fire extinguisher was allowed to stand behind a large cardboard box which obscured its accessibility.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(a)(1) Place(s) of employment were not kept clean and orderly, or in a sanitary condition.

Location: Guardhouse 27

Hazard: Interior of guardhouse was cluttered with a large cardboard box, bag of respirators, fire entinguishers, waste paper container and chair.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(b)(1) Aisle(s) or passageway(s) were not kept clear and in good repair where mechanical handling equipment was used.

Location: Building 9401-2, Plating Shop, NW Corner

Hazard: In the plating shop, Building 9401-2, a steam line hose ran 30 feet across the platform from the west end to the dichromate barrel in the northwest corner. This hose created a tripping hazard; mechanical devices such as hoists are used on the platform.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(c) Cover(s) and/or guardrail(s) were not provided to protect personnel from the hazards of open pits:

Location: Open pits

Hazard: In the northwest corner of the plating shop, Building 9401-2, guardrails were not erected on the plating platform in the location where a cyanide tank had been removed. Employees were exposed to a 5-6 foot fall hazard

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(f) Each service, feeder and branch circuit, at its disconnecting means or overcurrent device, was not legibly marked to indicate its purpose, nor located and arranged so the purpose was evident.

Location: Guardhouse 27

Hazard: The circuit breakers in the disconnecting box were not labeled as to use.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(g)(2)(i) Live parts of electric equipment operating at 50 volts or more were not guarded against accidental contact by approved cabinets or other forms of approved enclosures, or other means listed under this provision.

Location: Guardhouse 27

Hazard: Disconnecting box cover was actually removed exposing energized electric parts operating at 120/240 volts.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(f)(5)(v) Exposed non-current-carrying metal parts of cord- and plug-connected equipment which may become energized were not grounded.

Location: Guardhouse 27

Hazard: Air conditioner installed in the guardhouse lower wall had the grounding prong removed.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.305(g)(1)(i) Flexible cords and cables were not approved and suitable for conditions of use and location.

Location: Guardhouse 27

Hazard: An extension cord with a 4X4-4 receptacle box was used for appliances in place of permanent wiring.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.28(a) Appropriate personal protective equipment was not worn by employee(s) in all operations where there was exposure to hazardous conditions.

Location: Parking Lot Area, North Post 7, Excavation

Hazard: The operator of the Case 580D backhoe, with ROPS installed, did not wear seat belts provided.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(1) The employer did not comply with the manufacturer's specifications and limitations applicable to the operation of crane(s) or derrick(s)

Location: Off Bear Creek Road, Lorain Hydraulic Crane, Model LRT230, Rust MX#17-2130

Hazard: Travel requirements placed on company requires crane to be in travel mode, with block attached; to have hook fastened to frame of crane thereby damaging rope and block side plate bolt sleeve spacers when running boom down from the nearly full vertical position to the boom down travel position.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(12) Window(s) provided in the cab(s) of cranes or derricks were not of safety glass or equivalent that introduced no visible distortion that would interfere with the safe operation of the machine

Location: Building 9204-4, southwest corner outside area

Hazard: The Lorain 9115 crane, S/N 32818, had its upper sliding operator's window cracked and was left in service.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(7)(ii) Wire ropes were not taken out of service when kinking occurred, resulting in distortion of the rope structure.

Location: Off Bear Creek Road, Lorain LRT230, Rust MX#17-2130

Hazard: The block, reeve up four parts, had two kinks in the one leg leading to the becket and wedge assembly.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(1) Jibs of cranes did not have positive stops to prevent their movement of more than 5 degrees above the straight line of the jib and boom.

Location: Building 9204-4, southwest corner outside area

Hazard: The Lorain 9115 Conventional Crane, with jib installed and in use, had belly slings attached to prevent the jib's movement of more than 5 degrees above the straight line of the jib and boom.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(2) There were no written, dates, and signed inspection reports and records being kept on a monthly basis concerning critical items such as brakes, crane hooks, and ropes.

Location: All crane areas - specifically Building 9204-4

Hazard: Mobile cranes utilized on site did not have written inspection reports being kept on the brakes, crane hooks, and ropes.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(2) Employer who produces, uses, or stores hazardous chemicals at a workplace such that employees of other employers may be exposed shall ensure that the hazard communication programs developed and implemented under this paragraph(s) include the following: ((i), (ii), (iii).

Location: 9401-3 steam plant boiler #2

Hazard: The written Company hazards communications program developed did not address (1) methods of providing other employees with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken to protect employees during the workplace normal operating conditions and in foreseeable emergencies, and (3) the methods the employer will use to inform the other employers of the labeling system used in the workplace.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.602(a)(9)(ii) Earth moving or compacting equipment which had an obstructed view to the rear was operated in reverse gear; such equipment did not have in operation a reverse signal alarm distinguished from the surrounding noise level nor did an employee signal that it was safe to operate in reverse gear.

Location: Parking Lot, North Post 7, Excavation

Hazard: Operating Case 58D, backhoe had an inoperable back up alarm.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1926.651(i)(1) Excavated or other material was not effectively stored or retained at least 2 feet or more from the edge of the excavation(s) which employee(s) were required to enter.

Location: Parking Lot Area, North Post 7

Hazard: Excavated material spoil pile was allowed to be up to edge of excavations.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.252(a)(2)(iv)(c) Oxygen cylinder(s) in storage were not separated from fuel-gas cylinder(s) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

Location: Building 9401-2, plating shop

Hazard: In the northeast corner of the plating shop, Building 9401-2, an acetylene cylinder was stored two feet from an oxygen cylinder.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107458515	Oak Ridge Y-12 Plant

Description

29 CFR 1910.94(d)(9)(iv) Persons required to work at open surface tanks in such a manner that their clothing may become wet were not provided with garments made of materials impervious to liquids other than water, as required to keep their clothes dry.

Location: Building 9401-2, plating shop

Hazard: In the plating shop, 9401-2, electroplaters were not required to use and did not use aprons when hoisting parts in and out of the plating baths.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	0	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(c) Cover(s) and/or guardrail(s) were not provided to protect personnel from the hazards of open pits.

Location: Building 9215

Hazard: North of the exit end of the third mill in Building 9215, guardrails were not erected to prevent personnel and forklift traffic from falling into an open concrete pit where a salt bath had been removed

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	0	Oak Ridge Y-12 Plant

Description

29 CFR 1910.24(b) Fixed stairs were not provided for access from one structure level to another where operations necessitated travel regularly, daily, or at each shift

Location: Building 9204-4, West End

Hazard: In the west end of Building 9204-4 at the cold treat freezers, an employee stood on a forklift barrier and placed one knee on the freezer edge in order to unhook a load from the lift truck

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MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(f) Each service, feeder disconnecting and branch circuit, at its disconnecting means or overcurrent device, was not legibly marked to indicate its purpose, nor located and arranged so the purpose was evident:

Location: Building 9201-1, Special Service Shop

Hazard: CB's distibution panel for overhead lighting were not labeled as to use.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(g)(1)(i) Workspace was less than 30 inches wide in front of electric equipment operating at 600 volts, nominal, or less:

Location: Building 9201-1, Special Services Shop, Welding Shop

Hazard: Distribution boxes, main power disconnects and control panels were blocked by tables, moveable stairs, wires, tubings, and machining.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(g)(2)(i) Live parts of electric equipment operating at 50 volts or more were not guarded against accidental contact by approved cabinets or other forms of approved enclosures, or other means listed under this provision:

Location: Building 9201-1, Welding Shop Milk Cup

Hazard: A panel board housing electric parts operating at 120 volts, had its access door open and unlocked allowing access to unauthorized personnel

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.178(g)(11) Precautions were not taken to prevent open flames, sparks, or electric arcs in battery charging area(s):

Location: Building 9201-1, Special Materials Shop

Hazard: Designated battery charging area for EE type forklifts was located to the side of a large electrical switchgear panel.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.178(n)(4) Industrial truck driver(s) were not required to slow down and sound the horn at cross aisles and whenever vision was obstructed:

Location: Building 9201-1, Metal Fab and outside welding

Hazard: Two forklift truck numbers Y-252867 and Y-252852, were not required to sound a warning horn at cross aisles and when vision was restricted.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.178(p)(1) Powered industrial truck(s) with defect(s) or in any way unsafe had not been withdrawn from service until restored to safe operating condition(s):

Location: Building 9201-1, Metal Fab and outside Welding Clean Room

Hazard: Two forklifts, numbers Y-252867 and Y-252852, were operated with defective horns.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.179(1)(2)(i) Adjustments and repairs were started on crane(s) and rail stops or other suitable means were not provided to prevent interface with the idle crane(s) where other cranes were in operation on the same runway.

Location: Building 9201-1, NE Bay Machine Shop

Hazard: While performing maintenance on overhead crane, railstops are not used to prevent contact between the service crane and the idle crane both on same track in same bay.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(a)(2) Floor(s) of workroom(s) were not maintained, so far as possible, in a dry condition:

Location: Building 9201-1

Hazard: The edges of the elevated work platform consisted of smooth metal and in combination with the oily consistency of the machines surroundings made for a very slippery work surface.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	107525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(b)(1) Aisle(s) or passageway(s) were not kept clear and in good repair where mechanical handling equipment was used.

Location: Building 9201-1

Hazard: Two pallets of hoses and coupling devices were left partially in the designated aisleway.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(a)(3)(ii) Every chute floor opening shall be guarded by fixed standard railings with the boards on all sides.

Location: Building 9201-1, Chip Discard Area

Hazard: The disposal chute discharge opening did not have a toe board installed on two of the three accessed sides.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(b)(1) Electrical equipment was not free from recognized hazards that were likely to cause death or serious physical harm to employees:

Location: Building 9201-1, Welding Shop, Milk Cup Area

Hazard: Employees used panelboard, containing electric parts operating at 120 volts to store tubes and cardboard boxes.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(b)(2) Listed or labeled electrical equipment was not used or installed in accordance with instructions included in the listing or labeling:

Location: Building 9201-1

Hazard: Metal conduit used to contain open conductors terminated at the external wall face with the open conductors continuing out for connection to PA speaker box.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.107(b)(5)(1) There were no visible gauge(s), audible alarm(s) or pressure activated device(s) installed on paint spray booth(s) to indicate or insure that the required air velocity was maintained:

Location: Building 9204-4

Hazard: In Building 9204-4 the second floor assembly spray booth was not furnished with a pressure gauge or alarm system.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.107(c)(6) Electrical wiring and equipment not subject to deposits of combustible residues but located within spraying area(s) was not of the explosion-proof type approved for Class 1, Group D, locations conforming to the provisions of Class 1, Division 1, hazardous location:

Location: Building 9204-4

Hazard: In Building 9204-4, the second floor assembly spray booth contained two lights which were not labeled as approved for the location.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.107(e)(9) Flammable or combustible liquids for use in spraying operations were transferred from one container to another without both containers being effectively bonded and grounded to prevent discharge sparks of static electricity:

Location: Building 9204-4

Hazard: In Building 9204-4 at the second floor assembly spray paint booth mixing area, grounding/bonding straps were not used when transferring material such as lacquer thinner from one container to another.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.94(d)(9)(iv) Persons required to work at open surface tanks in such a manner that their clothing may become wet were not provided with garments made of materials impervious to liquids other than water, as required to keep their clothing dry:

Location: Building 9201-1

Hazard: In the Alpha-1 can fab shop furnace room, the ultrasonic cleaner operator was potentially exposed to splashing of a hot cleaning solution while making additions and hoisting parts in/out of the ultrasonic tank and did not wear an apron.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.94(d)(9)(v) Employees were not required to wear either tight fitting chemical goggles or effective face shield(s) at the open surfaced tanks where there was a danger of splashing:

Location: Building 9201-1

Hazard: In the Alpha-1 can fab shop furnace room, the ultrasonic cleaner operator did not wear a face shield when making additions to or hoisting parts in/out of the ultrasonic tank.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(d)(6) Chemical manufacturer, importer or employer did not describe in writing the procedures used to determine the hazards of the chemical evaluated:

Location: Plantwide

Hazard: Martin Marietta's written hazard communication program did not describe procedures used to research and evaluate chemicals for the purpose of developing or enhancing material safety data sheets (MSDS).

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.134(e)(5)(i) Respirators were worn when conditions such as growth of beard, side burns, a skull cap that projected under the face piece, or temple pieces on glasses, prevented a good face seal:

Location: Beta-4

Hazard: In Building 9204-4 two cleaner employees had beard growths of one and two days, respectively. These cleaners were required to wear half-mask respirators to protect against uranium dust exposure during certain sweeping and cleaning operations.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(i) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged, or marked with the identity of the hazardous chemical(s) contained therein:

Location: Building 9201-1

Hazard: The ultrasonic cleaner tank in the Alpha-1 can shop furnace room was not labeled with the chemical identity of the cleaner in the tank.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(i) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged, or marked with the identity of the hazardous chemical(s) contained therein:

Location: Alpha-5 West Machine Shop

Hazard: In the Alpha-5 west machine shop, Trim-Sol coolant tanks associated with T-shaped lathes were not labeled with the chemical identity. These tanks are required to be labeled because they are not physically built into these machines.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(g)(1) Employer did not have a material safety data sheet for each hazardous chemical used in the workplace:

Location: Building 9206

Hazard: In Building 9206, material safety data sheets were missing for chemicals such as uranyl nitrate and uranium tetrafluoride.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered:

Location: Building 9201-1

Hazard: In the Alpha-1 can shop marking room, employees were exposed to small quantities of an etchant and did not use gloves. The etchant contained ammonium hydroxide and potassium bichromate, among other chemicals.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(b)(1) Aisle(s) or passageway(s) were not kept clear and in good repair where mechanical handling equipment was used:

Location: Building 9204-4

Hazard: In Building 9204-4 at heat treat furnace #1023, thermocouple wires running between the furnace control panel and the quench tank created a tripping hazard.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(c) Cover(s) and/or guardrail(s) were not provided to protect personnel from the hazards of open pits:

Location: Building 9215

Hazard: North of the exit end of the third mill in Building 9215, guardrails were not erected to prevent personnel and forklift traffice from falling into an open concrete pit where a salt bath had been removed.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.24(b) Fixed stairs were not provided for access from one structure level to another where operations necessitated travel regularly, daily, or at each shift:

Location: Building 9204-4, West End

Hazard: In the west end of Building 9204-4 at the cold treat freezers, an employee stood on a forklift barrier and placed one knee on the freezer edge in order to unhook a load from the lift truck.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(e)(6)(i) Where feasible, the employer did not establish negative-pressure enclosures before commencing asbestos removal, demolition, or renoviation operations:

Location: Y-12 Plant, observed at Beta-4

Hazard: In Building 9204-4, a negative-pressure enclosure was not used during a glove bag asbestos removal operation on the ends of two brine pipes. Negative pressure was applied only prior to removal of the glove bags. Martin Marietta's program did not call for use of negative pressure during glove bag operations.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(a)(1) Place(s) of employment were not kept clean and orderly, or in a sanitary condition

Location: Building 9204-4

Hazard: In the west end of Building 9204-4 at the grit blaster, steel shot on the floor created a potential slipping hazard.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1926.58(f)(1)(iii) Determinations of employee exposure to asbestos were not made from breathing zone samples that were representative of the 30 minute short term exposure of each employee

Location: Building 9204-4

Hazard: Thirty minute excursion samples were not being taken on asbestos removal jobs done on the Y-12 site.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(g)(1)(ii) Working space about electric equipment rated 600 volts, nominal, or less was used for storage

Location: Dimensional Inspection Out Going Area, Alpha-1

Hazard: CB panels and switch disconnect were blocked by a barrel and cart of aluminum cans.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(g)(2)(ii) Enclosures or guards for electric equipment in locations where it would be exposed to physical damage were not arranged and of a strength to prevent such damage to the equipment

Location: Dimensional Inspection, Main Floor Outside North Wall Can Shop, Column E-3 Back of Niles VTL, all A1

Hazard: Electrical distribution panels and control panels were energized and subject to damage caused by fork lift truck contract.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.252(b)(4)(ix) Work or electrode lead cable(s) with damaged insulation or exposed bare conductors were not replaced

Location: Alpha 1, General Maintenance Heliarc Area

Hazard: The lead from a miller are welding machine had its stinger, connected to a bare piece of copper conductor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Alpha 1, Shop 12, First Floor Bullard 46 (Y2170839092), Graphite Shop

Hazard: The three vertical turret lathes, two of which were in operation, did not have the rotating chucks and jaws guarded from accidental operation.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.252(b)(4)(ix) Lengths of arc welding work or electrode lead cable(s) were joined by connecting means not specifically intended for this purpose

Location: Alpha 1, General Maintenance, Heli Arc Area

Hazard: A lead splice to a heli arc welding operation was made by a stinger and a bared piece of copper conductor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(b)(1) Electrical equipment was not free from recognized hazards that were likely to cause death or serious physical harm to employees

Location: Alpha 1, Shop 12, First Floor Bullard 46 (Y217093)

Hazard: A coverplate was removed and not replaced exposing electrical parts that would operate at 120 volts.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(b)(2) The floor of every work room shall be maintained in a clean, and so far as possible, dry condition.

Location: Alpha 1 Bullard (Y217093)

Hazard: Right side of vertical turret lathe was cluttered with parts and other stored equipment with an oily film covering metal and concrete work surface.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(b)(1) The employer shall use either ground fault circuit interupters as specified in paragraph(b)(1)(i) of this section or unassured equipment grounding conductors program as specified in paragraph (b)(1)(ii) of this section to protect employees.

Location: Alpha 1, Building 9201-1, Bullard 76 VTL

Hazard: Employee installing a pump and bracket on the Bullard 76 VTL was using a Black & Decker drill motor off an energized extension cord plugged into a column mounted wall outlet, without any protection of either GFCI, or the assured equipment grounding conductor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to causing or likely to cause death or serious physical harm to employees in that employees were exposed to

Location: Alpha 1, Shop 12 Column Line K-1

Hazard: Hot steam pipe 5 ft. off the floor was uninsulated and within contact with employees using grease fittings mounted on the backwall. Among other methods one feasible and acceptable abatement method to correct the beyond is to install pipe insulators over pipe length.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protecft operator(s) and other employees from hazard(s) created by rotating parts:

Location: Alpha 1 Graphite Saw Area

Hazard: A W. F. Wells Cut-off Saw, number Y219264, was in use, cutting 1-ft diameter metal bar stock, without the 10 1/2" section of unused saw blade guarded against accidental contact.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.95(i)(2)(i) The wearing of hearing protectors was not ensured for employees exposed to an 8-hour time-weighted average of 85 dBA or greater who had not yet had a baseline audiogram established:

Location: Alpha 1, Graphite Shop Saw Area

Hazard: Employee operating the Wells Cut-Off Saw in an area designated as "Hearing Protection Required" was not using the PPE required.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(h)(2) Entrances to buildings, rooms, or enclosures containing exposed live parts or exposed conductors operating at over 600 volts, nominal, were not kept locked or under the observation of a qualified person at all times:

Location: Alpha 1, Graphite Area Transformer Vault

Hazard: Both doors leading into transformer vault were unlocked with one being capable of being held open with wire attached to door knob.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(5) Fan blade guard(s) were not provided where the periphery of the blades was less than seven feet the floor or working level:

Location: Alpha 1, Transformer Vault, Graphite Area

Hazard: Wall mounted fan 4'8" in diameter and 6'1" off floor had no back guarding at all.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(d)(1) Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o):

Location: Alpha 1, Graphite Area, Transformer Vault

Hazard: The fan motor drive pulley was unguarded and located 6'6" above floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Alpha 1, Can Fabrication

Hazard: Littell coil winders were not guarded to protect their rotating parts.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(a)(8) Floor hole(s), into which persons could accidentally walk, were not guarded by standard railings with standard toeboards on all exposed sides or by floor hole covers of standard strength and construction:

Location: Building 9201-4

Hazard: In Building 9201-4, shields have been removed from 13 columns on the second floor and 16 columns on the third floor, leaving exposed floor holes at each of these columns.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(a)(1) Enclosures or guards for electric equipment in locations where it would be exposed to physical damage were not arranged and of a strength to prevent such damage to the equipment:

Location: Building 9204-4

Hazard: In Building 9204-4 at the second floor assembly spray paint booth, there was an unsecured ground wire running on the floor between the motor and the back of the booth.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(d)(2)(i) Approved container(s) or portable tank(s) were not used for the storage of flammable or combustible liquids:

Location: Building 9201-4, Second Floor Assembly Spray Paint Booth Storage Room

Hazard: In Building 9201-4 at the second floor assembly spray paint booth storage room flammable liquids were stored in nonapproved containers.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1910.1200(f), (g) and (h) will be met:

Location: Health Care Services, Building 9706-2

Hazard: In the Health Care Services Building 9706-2, the written hazard communication program for the laboratory did not address labeling or training.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(i) The written hazard communication program did not include a complete list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet:

Location: Health Care Services, Building 9706-2

Hazard: In the Health Care Services Building 9706-2, the laboratory hazard communication program lacked a chemical list.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning:

Location: Laboratory of Health Care Services, Building 9706-2

Hazard: In the laboratory of the Health Care Services, Building 9706-2, plastic bottles of bleach solution were not labeled with hazard warnings.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.133(a)(1) Protective eye and face equipment was not required where there was a reasonable probability of injury that could be prevented by such equipment:

Location: Health Care Services, Building 9706-2

Hazard: Eye protection was not used to protect against contact with blood and body fluids in the following situations: (1) When placing blood specimens into the laboratory blood analyzer. The plastic sip tube has the potential to spray blood droplets when placing the vials of blood into the machine, (2) When handling urine specimens in the urine sample containers in the lab, (3) When nurses incise and drain infections boils.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.176(b) Material stored in tiers was not stacked, blocked, interlocked or limited in height so that it was stable and secure against sliding and collapse:

Location: Building 9401-2, Plating

Hazard: Incompatible chemical storage in the annex created a fire hazard. Containers of 50% caustic soda solution and 50% hydrogen fluoride solution were stored next to each other.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to:

Location: Building 9706-2

Hazard: Health care workers (nurses and laboratory technicians) in the health services Building 9706-2 were exposed to the hazard of being infected by HBV and/or HIV through possible direct contact with blood or other body fluids. Feasible and useful abatement methods for reducing this hazard, among others, are:

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.133(a)(1) Protective eye equipment was not required where there was a reasonable probability of injury that could be prevented by such equipment:

Location: West of Garage 9712

Hazard: West of the garage, Building 9712, employee was using a circular grinder to cut bolts off a flange on an underground storage tank. A faceshield or goggles was not worn to protect against the flying metal particles.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.151(c) Where employees were exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body were not provided within the work area for immediate emergency use.

Location: Building 9402-2

Hazard: In Building 9402-2 machine shop, employees are potentially exposed to lithium hydride dust in the event of a machine dust can falling or if a glove of a glove box breaks. No deluge shower was provided. Some locations in the shop are more than 100 feet from an eyewash.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to:

Location: Building 9996 - Hydraulics Lab

Hazard: Being struck by pieces of shrapnel and/or parts of recently repaired pumps while hydrostatically testing piston and vane pumps at the hydraulic testing station in the Hydraulics Lab in Building 9996.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(c) Cover(s) and/or guardrail(s) were not provided to protect personnel from the hazards of open pits:

Location: Building 9404-4 - 7500-Ton Press

Hazard: Building 9404-4, basement, north end, 7500-ton press pit, no guardrail to prevent employees from falling in while working in the area.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(a)(7) Temporary floor opening(s) were not guarded by standard railings or constantly attended by someone:

Location: Building 9401-2 - Main Plating Shop

Hazard: Building 9401-2, main plating shop, elevated work platform around plating tanks, 6-by 6-inch floor hole in front of sodium hydroxide tank 14 where ventilation duct had been removed.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(a)(8) Floor hole(s), into which persons could accidentally walk, were not guarded by standard railings with standard toeboards on all exposed sides or by floor hole covers of standard strength and construction:

Location: Building 9401-2 - Main Plating Shop

Hazard: Building 9401-2, main plating shop, elevated work platform around plating tanks - bad floor openings in the following areas: (a) Two 4- by 4-inch holes between alkaline and HCI tanks. (b) One 4- by 6-inch hole in front of water rinse 4 tank. (c) One 4- by 4-inch hole in front of black oxide tank.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(a)(8) Floor hole(s), into which persons could accidentally walk, were not guarded by standard railings with standard toeboards on all exposed sides or by floor hole covers of standard strength and construction:

Location: Building 9818

Hazard: (d) Building 9818, top mezzanine, north side, at distillation column, 23- by 23-inch floor hole where floor grating had been removed and not replaced.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(a)(9) Floor hole(s) into which persons could not accidentally walk were not protected by securely held covers:

Location: Building 9401-2 - Main Plating Shop

Hazard: Building 9401-2, main plating shop, elevated work platform around plating tanks, 4-inch by 6-foot opening alongside of black oxide tank on east end.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.22(c) Open sided floor(s) or platform(s) 4 feet or more above adjacent floor or ground level were not provided with toeboards where required:

Location: Building 9712

Hazard: Building 9712, lube/grease pit was not protected by railings when not in use thus exposing employees to falls of five feet.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(1) Open sided floor(s) or platform(s) 4 feet or more above adjacent floor or ground level were not provided with toeboards where required:

Location: Building 9818

Hazard: Building 9818, outside at west end, tanker unloading station, east and west sides, employees connecting hoses to tankers were exposed to falls of approximately 13 feet.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Willful	17525809	Y-12 Plant

Description

29 CFR 1910.156(c)(3) The quality of the training and education program for fire brigade members was not similar to those conducted by fire training schools.

Location: Y-12 Plant

Hazard: Y-12 Plant, Emergency Squad, 20 regular emergency squad members and 43 shift relief emergency squad members received only in-house training by fire department personnel.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Willful	17525809	Y-12 Plant

Description

29 CFR 1910.156(b)(1) The employer elected to establish a fire brigade, and a statement or written policy was not maintained which establishes the existence of a fire brigade; the basic organizational structure; the type, amount and frequency of training to be provided to fire brigade members; the expected number of members in the fire bridgade and the functions that the fire brigade is to perform at the workplace.

Location: Y-12 Plant

Hazard: Y-12 Plant, policy statement for emergency squad was inadequate in that it did not indicate the type, amount and frequency of training to be provided to regular and relief squad members nor did it indicate the expected number of members of which this squad is composed.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Willful	17525809	Y-12 Plant

Description

29 CFR 1910.156(c)(1) The employer did not provide training and education commensurate with those duties and functions that fire brigade members are expected to perform prior to performing fire brigade emergency activities.

Location: Y-12 Plant

Hazard: Y-12 Plant, Emergency Squad, 20 regular emergency squad members and 43 shift relief emergency squad members were not provided with sufficient training and education before being permitted to perform emergency activities.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.22(b)(1) Where mechanical handling equipment was used, sufficient safe clearances were not allowed wherever turns on passage had to be made.

Location: Building 9808 - Carpenter Paint Shop, Outside east end

Hazard: Building 9808, Carpenter Paint Shop, outside at east end, walkway between building and paint storage building does not provide sufficient clearance for forklift trucks to load skids of paint into paint storage building.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.106(d)(4)(ii) Storage in inside storage rooms did not comply with Table 14-13.

Location: Building 4404-5 Paint Shop

Hazard: Building 9404-5, Paint Shop, Flammable Liquid Storage Room, 30 piles of 4 gallon paint containers stored 4 high exceeded 10 gallons per square feet of floor area.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1)&(e)(i)(ii Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m)&(o).
Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt

Location: TSD Maint. Facility 9714

Hazard: Building No. 9714 TSD Maintenance Facility, Royal Drill Press, SN 16, 20 by 4 inch openings on both sides of top guard located 67 inches from the floor allowing employees access to rotating pulleys and belt.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.107(e)(9) Flammable or combustible liquids for use in spraying operations were transferred from one container to another without both containers being effectively bonded and grounded to prevent discharge sparks of static electricity.

Location: Building 9404-5

Hazard: Building 9404-5, Paint Shop, paint spray room, employees transferring paint and solvent from one and 5 gallon cans to paint spraying pots were not bonding and grounding.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.305(g)(1)(iii) Flexible cords and cables were used for purposes prohibited by subparagraphs (a) through (e) of this paragraph.

Location: 9808 Carpenter Paint Shop

Hazard: Building 9808, Carpenter Paint Shop, Delta Table Saw, Asset no. Y-243589, flexible cord was used to supply power to saw which is at a fixed location in lieu of fixed wiring.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.305(g)(1)(iii) Flexible cords and cables were used for purposes prohibited by subparagraphs (a) through (e) of this paragraph.

Location: TSD Maintenance Facility - Building 9414

Hazard: Building No. 9714, TSD Maintenance Facility, portable extension cord from real system was being used to supply electrical service to a workbench power strip in lieu of fixed wiring.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.107(b)(9) Spray booth(s) were not installed so that all portions were readily accessible for cleaning.

Location: Building 9808 - Carpenter Paint Shop

Hazard: Building No. 9808, Carpenter Paint Shop, water wash paint spray booth, MSA respirators in cardboard boxes stored along east side of booth, paint storage rack containing gallon and quart paint cans stored in back of booth and flammable liquids in an approved safety cabinet stored along west side of booth.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.213(b)(3) Provisions were not made to prevent woodworking machine(s) from automatically restarting upon restoration of power after power failure.

Location: Building 9808 - Carpenter Paint Shop

Hazard: Building 9808, Carpenter Paint Shop, Sunstrand Engelberg Belt Sander, Asset No. Y-243590.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.213(b)(3) Provisions were not made to prevent woodworking machine(s) from automatically restarting upon restoration of power after power failure.

Location: Building 9808 - Carpenter Paint Shop

Hazard: Building 9808, Carpenter Paint Shop, Machine Co. Belt Sanding Machine, No Asset Number, No SN.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by.

Location: Building 9616-7, Maintenance Shop

Hazard: Building 9616-7, West End Treatment Facility, Maintenance Shop, Greenlee horizontal metal cutting bandsaw model no. 1399, unused portion of blade was not guarded.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.106(d)(5)(vi)(a) Flammable and combustible liquid storage buildings located within 50 feet or less from another building did not have a blank wall rated for 2-hour fire resistance on the exposed side.

Location: Building 9808 - Carpenter Paint Shop

Hazard: Building No. 9808, Carpenter Paint Shop, outside of east end, paint storage building, wall facing building 9808 contained the entryway to the paint storage building.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.106(d)(5)(vi)(f) Three foot aisleways were not maintained at access to doors, windows or standpipe connections in flammable and combustible liquid sstorage buildings.

Location: Building 9808 - Carpenter Paint Shop, Outside, East End

Hazard: Building 9808, Carpenter Paint Shop, outside at east end, paint storage building, aisleway blocked by two pallets containing 4 gallon paint cans at access door.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.106(d)(5)(vi)(e) Storage of flammable and/or combustible liquids were stored within three feet of sprinkler deflectors, discharge orifices of water spray, or other overhead fire protection system.

Location: Building 9808 - Carpenter Paint Shop

Hazard: Building 9808, Carpenter Paint Shop, outside at east end, paint storage building, flammable paint stored on shelves was less than three feet from overhead sprinkler system.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.252(a)(2)(iv)(c) Oxygen cylinder(s) in storage were not separated from fuel-gas cylinder(s) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

Location: TSD Maintenance Facility - Building 9714

Hazard: Building No. 9714, TSD Maintenance Facility, outside of south end, compressed gas cylinder storage rack, two full acetylene cylinders stored within 4 feet of one full oxygen cylinder.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered.

Location: Building 9616-7, West End Treatment Facility

Hazard: Building No, 9616-7, West End Treatment Facility, Southeast and Southwest Mezzanines, employees manually opening and closing valves subject to overhead hazards located from 59 to 69 inches off the floor were not provided with appropriate head protection.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.213(p)(4) Belt sanding machinery was not provided with a guard at each nip point where the sanding belt ran onto a pulley, to prevent the operator's hands or fingers from coming into contact with nip points.

Location: 9808 Carpenter Paint Shop

Hazard: Building No. 9808, Carpenter Paint Shop, Machine Co, Belt Sanding Machine, No Asset Number, No SN.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.307(b) Equipment, wiring methods, and installations of equipment in hazardous (classified) locations were not intrinsically safe, or approved for the hazardous (classified) location, or safe for the hazardous (classified) location.

Location: TSD Maintenance Facility - Building 9714

Hazard: Building No. 9714, TSD Maintenance Facility, portable incandescent and fluorescent trouble lights used for working underneath motor vehicles were not approved for class I, group D atmosphere.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(c)(2)(1)(a) Point of operation guard(s) on mechanical power press(es) did not conform to the maximum permissible opening(s) specified in Table 0-10.

Location: Alpha 1 Can Press

Hazard: The backs of the three punch presses were not guarded at all.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(e)(1)(i) A program of periodic and regular inspections of mechanical power press(es) was not establied and followed to insure that all parts, auxiliary equipment and safeguards were in a safe operating condition and adjustment.

Location: Alpha 1 Can Press Area

Hazard: A program was not set up to provide for periodic and regular inspections of Bliss full revolution, and the two Minster part revolution mechanical power presses.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(e)(1)(i) A certification record of mechanical power press inspections which includes the date of inspection, the signature of the person who performed the inspection, and the serial number or identifier of the power press that was inspected was not maintained.

Location: Alpha 1 Can Press Area

Hazard: No certification record was available showing the designated power press had been inspected.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(e)(1)(ii) Mechanical power press(es) were not inspected and tested at least weekly to determine the condition of the clutch/brake mechanism, anti-repeat feature, and/or single stroke mechanism.

Location: Alpha 1 Can Press Area

Hazard: The EW Bliss mechanical full revolutions power press was not inspected weekly for items to include anti-repeat, clutch, brake, and single strokes.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(e)(1)(iii) Records of inspections and the maintenance work performed on the clutch/brake mechanism, anti-repeat feature, and single stroke mechanism of mechanical power press(es) were not maintained.

Location: Alpha 1 Can Press Area

Hazard: Records of maintenance work performed on the two Minster part revolution presses and the one Bliss full revolution press were not maintained.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(e)(3) Original and continuing competence of personnel maintaining mechanical power press(es) was not insured.

Location: Alpha 1 Can Press Area

Hazard: Training of maintenance and personnel was not being accomplished at any level original or continuing.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(f)(2) Operator(s) were not trained and instructed in the safe method of work before starting work on mechanical power press(es).

Location: Alpha 1 Can Press Area

Hazard: Operators received no training which prepared them for the safe operations of the 2 Minster part revolution presses and the one Bliss full revolution press.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(f)(2) Supervision to ensure that correct operating procedures were being followed on mechanical power press(es) was inadequate.

Location: Alpha 1 Can Press Area

Hazard: There was no informed supervision provided for the safe operations of the mechanical power presses in use.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(d)(9)(ii) Spring loaded turnover bars were not provided for mechanical power press(es) designed to accept such turnover bars.

Location: Alpha 1 Can Press Area

Hazard: Two turnover bars, used on the Bliss & Minster mechanical power presses, did not have the required spring necessary to require bar removal when turnover was complete.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(d)(9)(iv) Safety blocks were not used mechanical power press die(s) were being adjusted or repaired in the press.

Location: Alpha 1 Can Press Area

Hazard: Die setters, when installing, removing or adjusting and repairing dies, did not use safety blocks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(d)(9)(i) The employer did not establish a die setting procedure for mechanical power press(es) that would ensure compliance with 29 CFR 1910.217(b).

Location: Alpha 1 Can Press Area

Hazard: A die setting procedure was not set up by the company.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(d)(b)(i) Tonnage and stroke requirements were neither stamped on die(s) nor recorded on records readily available to the die setter.

Location: Alpha 1 Can Press Area

Hazard: Dies used with mechanical power presses only had weight of die and number stamped on them.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(d)(4) Guide post(s) on mechanical power press(es) which were separated from their bushing by more than one-fourth inch were not protected by point of operation guards or devices in accordance with 29 CFR 1910.217(c).

Location: Alpha 1 Can Press Area

Hazard: The guide posts on the mechanical power presses were not protected by point of operations guards.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(d)(1)(i) The employer did not use dies and operating method(s) designed to control or eliminate hazards to operating personnel on mechanical power press(es).

Location: Alpha 1 Can Press Area

Hazard: Operating methods consisted of turn on press and blank out pieces required and use what ever die is provided.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(c)(2)(iii) Fixed barrier guard(s) on mechanical power press(es) were not attached securely to the frame of the press or to the bolster plate.

Location: Alpha 1 Can Press Area

Hazard: The fixed barrier guards on the sides of the Bliss full revolution press and the Minster press (Y2117439) part revolution were not securely attached to the machine in that the top could be pushed in or out at least 5 inches.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(c)(2)(i)(a) Point of operation guard(s) on mechanical power press(es) did not prevent entry of hands or fingers into the point of operation by reaching through, over, under or around the guard(s).

Location: Alpha 1 Can Press Area

Hazard: Point of operations guards on the Bliss, full revolution press and the Minster (Y217439) part allowed entry of handover and around the guards.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(b)(8)(iii) Mechanical power press control(s) did not incorporate a type of drive motor starter that would disconnect the drive motor from the power source in event of control voltage or power source failure and require operation of the motor start button to restart the motor when voltage conditions were restored to normal.

Location: Alpha 1 Can Press Area

Hazard: The Bliss full revolution press and the Minster (Y217439) part revolution press had no means provided to prevent auto restart after power interruptions or low voltage.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.217(b)(7)(v)(a) Each two-hand control for single stroke operations on mechanical power press(es) using part revolution clutches was not protected against unintended operation.

Location: Alpha 1 Can Press Area

Hazard: The Minster part revolution press (Y217439) had the run buttons set such that they extended beyond the protective box edges.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s).

Location: Alpha 1 Can Press Area

Hazard: Pacific press brake, Model 100-6, had no point of operation guarding provided with die installed.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to.

Location: Y-12 Plant

Hazard: The improper labeling of switch controls providing power to foot and hand operation of the press brake as well as malfunctioning foot control operations resulting in non actuations of press brake when foot pedal is actuated.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.22(b)(2) Permanent aisle(s) or passageway(s) were not appropriately marked.

Location: Alpha 1 Shipping & Delivery and Corridor Separating Dimensional Inspection and the Can Shop

Hazard: Aisleways used by fork lift trucks were not marked designating boundaries for fork lift operations.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered.

Location: Alpha 1, Basement Area

Hazard: Employees required to enter area of overhead hazards such as low positional pipes, beams, underside floor protuberances used bump cap instead of hard hat.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1) and (e)(1	Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o). Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt

Location: Building 9720-6 Metal Fabrication

Hazard: Building 9720-6, Metal Fabrication, Clausing Drill Press, Model No. 1641, SN 125141, no top cover exposing employees to ingoing nip points on horizontal belts and pulleys located six feet, two and a half inches off the floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1)and (e)(1)	Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o). Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt

Location: Building 9720-6 Metal Fabrication

Hazard: Building 9720-6, Metal Fabrication, Delta Drill press, Asset No. Y-14084, SN 32-7269, no top cover exposing employees to ingoing nip points on horizontal belts and pulleys located

five feet, three incnes off the floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1)&(e)(1)(i)	Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o). Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt

Location: Building 9404-4 Basement

Hazard: (a) Building 9404-4, Basement, Production Maintenance Shop, Cincinnati Royal Drill Press, Asset No. Y-106500, 4 by 20 inch opening located 5 feet, 4 inches of the ground allowing employee access to rotating belt and pulleys.
(b) Building 9404-4, Basement, Production Maintenance Shop, Delta Drill Press, Asset No. Y-425177, 3 by 31/2 inch hole located 5 feet off the ground allowing employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1)&(e)(1)(i)	Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o). Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt

Location: Building 9206 Maintenance Shop

Hazard: Building No. 9206, Maintenance Shop, Monarch Drill Press, 11 by 30 inch opening located 6 feet off the ground allowed employees access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(f)(3)	Sprocket wheels and chains which were seven feet or less above floors or platforms were not enclosed.

Location: Building 9201-5 Arc Melt Carbon Storage Area

Hazard: Building No. 9201-5, Arc Melt, Carbon Storage Area. Norton Parts Tumbler, SN CF80104, chain and sprocket wheels providing power to rollers located 16 inches off the floor were not guarded on the inside.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.242(a) Hand and portable powered tools or equipment were not kept in safe condition.

Location: Building 9201-SW

Hazard: Building No. 9201-SW, Tool box adjacent to Pratt and Whitney Jib Borer, No 313, wooded mallet, cracked head on one side used for lining up fixtures.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.242(a) Hand and portable powered tools or equipment were not kept in safe condition.

Location: Building 9404-4 Basement Maintenance Shop

Hazard: Building 9404-4, Basement, Production Maintenance Shop, Welding Area, Rubber mallet with broken taped head and splintered handle.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.252(a)(2)(iv)(c) Oxygen cylinder(s) in storage were not separated from fuel-gas cylinder(s) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

Location: Building 9201-5 Maintenance Shop

Hazard: Building No. 9201-5, Maintenance Shop, welding booth, one oxygen and one acetylene cylinder stored next to one another not manifolded together.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.252(a)(2)(iv)(c) Oxygen cylinder(s) in storage were not separated from fuel-gas cylinder(s) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

Location: East side of 9204-2

Hazard: Outside Building 9204-2, East end, cylinder storage area, two full oxygen plus two mixed gas compressed gas cylinders containing 15% and 18.2% oxygen, respectively, were stored within three feet of 3 full acetylene cylinders.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.252(a)(2)(iv)(c) Oxygen cylinder(s) in storage were not separated from fuel-gas cylinder(s) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

Location: South side of Building 9204-2

Hazard: Outside Building 9204-2, south end along wall, six full oxygen cylinders stored within 34 inches of thirteen full acetylene cylinders.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.252(a)(2)(iv)(c) Oxygen cylinder(s) in storage were not separated from fuel-gas cylinder(s) by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

Location: Building 9206 East side dock

Hazard: Building No. 9206, East side dock, decontamination area, one oxygen cylinder stored adjacent to one acetylene cylinder.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(b)(1)(i) Electrical equipment was not free from recognized hazards that were likely to cause death or serious physical harm to employees.

Location: Building 9996 Hydraulics Lab

Hazard: Building 9996, Hydraulics Lab, Hydraulic testing station, ordinary electrical disconnect boxes and duplex receptacle outlets were located adjacent to pump testing station and were subject to be sprayed by hydraulic oil should pumps leak or fail during hydrostatic testing.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(b)(1)(ii) Electrical equipment was not free from recognized hazards that were likely to cause death or serious physical harm to employees.

Location: Building 9204-2 Electrolytic Cell Area

Hazard: Building No. 9204-2, Electrolytic cell area, east cell room, cells no. 12 & 5, 110-volt electrical lines leading to cell heater jackets, protected by fiberglass insulation and attached to nylon plugs, were not of sufficient strength to protect against splashes of molten lithium, lithium chloride and/or potassium chloride.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: Building 9201-5 Northside

Hazard: (a) Building No. 9201-5, north side of aisle at column K-9, 440-volt electrical service panels not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: Building 9205

Hazard: Building 9201-5, adjacent to column L-14, opposite column K-13, 440-volt electrical service panels not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: 9201-5

Hazard: Building No. 9201-5, opposite column K-21, 440-volt electrical service panels not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: Building 9201-5

Hazard: Building No. 9201-5, opposite column K-28, 440-volt electrical service panels not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(d)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: Building 9201-SE

Hazard: Building No. 9201-SE, south aisleway, 440 volt electrical service panels not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: Building 9201-SE

Hazard: Building No. 9201-SE, Dock entrance area, 440 volt electrical service panels not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.304(3)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage

Location: Building 9201-5

Hazard: Building No. 9201-5, scrap reclamation, west wall, between columns F11 and G11, 480 volt electrical service disconnect panel was not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.304(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were located where they were exposed to physical damage.

Location: Building 9201-5

Hazard: Building No. 9201-5, scrap reclamation, east wall, between columns D8 and E8, 480 volt electrical disconnect panel was not protected from being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(g)(2)(i) Live parts of electric equipment operating at 50 volts ormore were not guarded against accidental contact by approved cabinets or other forms of approved enclosures, or other eans listed under this provision

Location: Building 9404-4

Hazard: Building No. 9404-4, Metal Prep, Salt Bath Area, column G23, live 110 volt electrical wires sticking out of receptacle box

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MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.303(g)(2)(ii) Enclosures or guard for electric equipment in locations where it would be exposed to physical damage were not arranged and of a strength to prevent such damage to the equipment.

Location: Building 9404-4 Metal Prep

Hazard: Building No. 9404-4, Metal Prep, Low Bay Area, south side of 1500 ton press, pendant control for show-box 15 ton overhead crane, rubber insulation protecting electrical wiring was damaged and split directly above the pendant box for a 3 inch area.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.305(g)(1)(iii)(a) Flexible cords and cables were used for purposes prohibited by subparagraphs (a) through (e) of this paragraph

Location: 9737 Photo Metal Room

Hazard: Building No. 9737, Photo Metal Room, Room 24, flexible cord running across floor and taped down used to power extension box with two duplex receptacles into which were plugged a Simon aerostat, a vacuum pump and a light table.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.305(g)(2)(iii) Flexible cords were not used in continuous lengths without splice or tap.

Location: Building 9404-9 Rubber Shop

Hazard: Building 9409-9, Rubber Shop, Pendant drop at east end of autoclave, improper strain relief connecting drop cord to outlet box.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.307(b) Equipment, wiring methods, and installations of equipment in hazardous (classified) locations were not intrinsically safe, or approved for the hazardous (classified), location, or safe for the hazardous (classified) location.

Location: Building 9712

Hazard: Building No. 9712, none of the portable incandescent or fluorescent trouble lamps used for illumination while repairing motor vehicles were approved for Class I, division 1 or 2 locations.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.307(b) Equipment, wiring methods, and installations of equipment in hazardous (classified) locations were not intrinsically safe, or approved for the hazardous (classified) location, or safe for the hazardous (classified) location.

Location: Building 9712

Hazard: Building No. 9712, Battery Servicing Area, lighting and receptacles were not approved for a class I, division 2 location.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.307(b) Equipment, wiring methods, and installations of equipment in hazardous (classified) locations were not intrinsically safe, or approved for the hazardous (classified) location, or safe for the hazardous (classified) location.

Location: Building 9712

Hazard: Building No. 9712, Lube/Grease pit, recessed Benjamin lighting fixtures.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.307(b)(2)(ii) Equipment was not marked to show the class, group and operating temperature or temperature range, based on operation in a 40 degrees C ambient, for which it is approved.

Location: Building 9712

Hazard: Building No. 9712, Lube/Grease pit, recessed Benjamin lighting was not marked to show class and group.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.307(b)(2)(ii) Equipment was not marked to show the class, group and operating temperature or temperature range, based on operation in a 40 degrees C ambient, for which it is approved.

Location: Building 9712

Hazard: Building No. 9712, Lube/Grease pit, northwest corner, fan on floor or pit was not marked to show class and group.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1910.1200 (f), (g) and (h) will be met.

Location: Maintenance, Utilities, Waste Management

Hazard: The written hazard communication program for the following departments did not describe the in-plant labeling system, how employees would be trained on the hazards of chemicals unique to specific production departments and where classified MSDS's could be located: (a) Production Maintenance Services, (b) Production Maintenance Field Services, (c) Production Maintenance Engineering, (d) Utilities Department, (e) Waste Management Operations, (f) Waste Management Engineering.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1910.1200 (f), (g) and (h) will be met.

Location: Building 9712

Hazard: Building No. 9712, a copy of the written hazard communication program was not maintained in this building.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1910.1200 (f), (g) and (h) will be met.

Location: Building 9737

Hazard: Building 9737, written Hazard Communication Program was not available for review by employees in their work area.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(i) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1910.1200 (f), (g) and (h) will be met.

Location: Building 9204-2

Hazard: The list of hazardous chemicals required by the written hazard communication program did not contain the classified chemical Fogbank and Seabreeze. (a) Building 9204-2, Lithium focused factory, (b) Production Maintenance Services, (c) Production Maintenance Field Services, (d) Production Maintenance Engineering, (e) Utilities Department, (f) Waste Management Operations, (g) Waste Management Engineering, (h) Building 9201-5, Program Management Division.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(e)(2) The employer did not ensure that the hazard communication program developed and implemented under paragraph (e) met the provisions contained in 1910.1200(e)(2)(i)-(iii) for employees of other employers who may be exposed to hazardous chemicals produced, used or stored at the workplace.

Location: Building 9204-2

Hazard: Building 9204-2, Lithium focused factory, the written hazard communication program did not contain procedures for alerting outside contractors to hazardous chemicals to which they could be exposed while working in this facility.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5) Each container of hazardous chemical(s) in the workplace was not labeled, tagged or marked with the identify of the hazardous chemical(s) contained therein and appropriate hazard warning.

Location: Building 9204-2 Maintenance Shop

Hazard: Building No. 9204-2, Maintenance Shop, Degreaser containing varsol, a flammable liquid used for degreasing parts and cleaning tools, was not labeled with its identify and hazard warning.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(i) The employer did not ensure that each container or hazardous chemicals in the workplace was labeled, tagged or marked with the identity of the hazardous chemical(s) contained therein.

Location: Building 9404-4 Basement Room 001B

Hazard: Building 9404-4, Basement, NDT Area, Room 001B, Darkroom, one plastic container of fixer and one plastic container or developer were not marked with identify of their contents.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(1) Employer did not have a material safety data sheet for each hazardous chemical used in the workplace.

Location: Building 9204-2 Rubber Shop

Hazard: Building No. 9204-2, Rubber Shop, no MSDS for cellulose acetate butyrate sheets used in vacuum thermoformer.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(1) Employer did not have a material safety data sheet for each hazardous chemical used in the workplace.

Location: Building 9204-2 Rubber Shop

Hazard: Building No. 9204-2, Rubber Shop, no MSDS for styrene sheets used in vacuum thermoformer.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(1) Employer did not have a material safety data sheet for each hazardous chemical used in the workplace.

Location: Building 9204-2 Rubber Shop

Hazard: Building No. 9204-2, Rubber Shop, no MSDS for Lexan sheets used in vacuum thermoformer.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(1) Employer did not have a material safety data sheet for each hazardous chemical used in the workplace.

Location: Building 9204-2 Rubber Shop

Hazard: Building 9204-2, Rubber Shop, No MSDS for high density and low density polyethylene sheets used in vacuum thermoformer.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(1) Employer did not have a material safety data sheet for each hazardous chemical used in the workplace.

Location: Building 9204-2 Rubber Shop

Hazard: Building 9204-2, Rubber Shop, No MSDS for polypropylene sheets used in vacuum thermoformer.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(2)(i)(a) Each material safety data sheet for hazardous chemicals did not include its chemical and common names when the hazardous chemical was a single substance.

Location: Building 9204-2E, 9204-2, 9404-11, & 9201-5

Hazard: The classified MSDS for Seabreeze, used by employees working in Buildings 9204-2, 9204-2E, 9404-11 and 9201-5, did not contain this code name by which this hazardous chemical is commonly known.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(g)(2)(i)(a) Each material safety data sheet for hazardous chemicals did not include its chemical and common names when the hazardous chemical was a single substance.

Location: Building 9204-2E, 9204-2, 9404-11, & 9201-5

Hazard: The classified MSDS for Fogbank used by employees working in Building 9204-2 and 9204-2E, did not contain this code name by which this hazardous chemical is commonly known.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container or hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning.

Location: Building 9404-4 Metal Prep

Hazard: Building No. 9404-4, Metal Prep, Ucon A quench tank had a health hazard rating of "4."

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning.

Location: Building 9404-4 Metal Prep

Hazard: Building No. 9404-4, Metal Prep, water rinse tank had a health hazard rating of "4."

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1) & (e)(1)(Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o).
Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt.

Location: Building 9737 Fab Shop

Hazard: Building No. 9737, Fab Shop, Powermatic drill press, Asset No. Y-162423, SN 208984, 8 inch by 24 inch opening on top located 6 feet, 4 inches off the floor allowed employee access to belts and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.219(d)(1) & (e)(3)(	Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o). Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt.

Location: Building 9712 South bend

Hazard: Building No. 9712, South Bend horizontal engine, lathe, Asset No. Y-263294, inclined poor transmission belts and pulleys were not guarded on west side located approximately seven to ten inches above table which was approximately three and one half feet off the floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1904.2(a)	The log and summary of occupational injuries and illnesses (OSHA Form No. 200 or its equivalent) was not completed in the detail provided in the form and the instructions contained therein:

Location: Building 9116

Hazard: Building 9116, 1988 OSHA 200 log, number of days restricted activity was not recorded for Case #88073.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1904.5(c) The annual summary of occupational injuries and illnesses (applicable portion of OSHA Form No. 200) was not certified as true and complete:

Location: Building 9116

Hazard: (a) Building 9116, 1988 200 log, was not certified as true and complete. (b) Building 9116, 1987 OSHA 200 log, was not certified as true and complete.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(d)(1)(ii) Flight(s) of stairs with 4 or more risers, less than 44 inches wide and having one side open, were not equipped with a standard stair railing on the open side:

Location: Building 9201-5E

Hazard: Building 9201-5E, outside at loading dock, stairway at south end of truck unloading bay did not have a handrail for the six step climb.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(d)(1)(ii) Flight(s) of stairs with 4 or more risers, less than 44 inches wide and having one side open, were not equipped with a standard stair railing on the open side:

Location: Building 9712, Outside at SE Corner

Hazard: Building 9712, outside at southeast corner, access stairway to waste oil storage drum had no handrails, 4 steps high.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(d)(1)(ii) Flight(s) of stairs with 4 or more risers, less than 44 inches wide and having one side open, were not equipped with a standard stair railing on the open side:

Location: Building 9720-6, Carpentry Shop

Hazard: Building 9720-6, Carpentry Shop, lumber storage area, northeast end of building, wooden stairway leading from loading dock, 4 steps, did not have handrails on north end.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(e)(3)(ii) Posts for pipe railings were spaced on more than 8 foot centers:

Location: Building 9212, Metal Preparation Foundry

Hazard: Building 9212, Metal Preparation Foundry, maintenance storage area, mezzanine, guard rail constructed of two-inch diameter pipe had posts at 12-foot intervals.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.37(q)(1) Exit(s) or access to exit(s) were not marked by readily visible signs:

Location: Building 9737, 1st Floor

Hazard: Building 9737, first floor, south hallway, west end, outside instrument repair shop, no signs to indicate access to exists.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.37(q)(2) Door(s) which were not an exit or way of exit access, and which were so located as to be likely to be mistaken for an exit, were neither identified by a sign reading "NOT AN EXIT" or similar designation nor identified by a sign indicating their actual character:

Location: Building 9737, Electrical Standards Lab

Hazard: Building 9737, Electrical Standards Lab, entranceway into ultra clean room which did not lead to a means of egress.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.157(g)(2) The educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting was not provided to all employees upon initial employment, and at least annually thereafter:

Location: Building 9204-2, Maintenance Shop

Hazard: Building 9204-2, Maintenance Shop, annual educational programs not given to employees who can use portable fire extinguishers for incipient stage fire fighting.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.176(b) Material stored in tiers was not stacked, blocked, interlocked or limited in height so that it was stable and secure against sliding and collapse:

Location: Building 9737

Hazard: Building 9737, Physical Standards Lab, east wall, pipe storage rack, pipe storage of PVC, black iron and galvanized pipe extended above retaining brackets and was not secured or interlocked to prevent pipes from falling.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.179(g)(1)(v) Pendant control box(es) were not clearly marked for identification of functions:

Location: Building 9998, "Z" Area Bridge

Hazard: Building 9998, "Z" Area, Yale overhead bridge crane, 5-ton, pendant control box, on and off buttons were not labeled as to their function.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.184(d) Damaged or defective sling(s) were not immediately removed from service:

Location: Building 9201-2E, Main Shop Area

Hazard: Building 9201-2E, Main Shop Area, East Bay, sling storage rack, alloy steel sling, eyelet displaced on one of books of wire rope.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.215(b)(9) Guard for abrasive wheel machine where the operator stands in front of the machine was not constructed so that the peripheral protecting member could be adjusted to the constantly decreasing diameter of the wheel:

Location: Building 9720-6, Carpentry Shop

Hazard: Building 9720-6, Carpentry Shop, Milwaukee pedestal grinder, SN LK14683, right and left wheels were not constructed so that a peripheral protecting member could be adjusted to the constantly decreasing diameter of the wheel. (NOTE: Distance from wheels to frame of grinder did not exceed 1/4 inch.)

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(5) Fan blade guards, where the periphery of the blades was less than seven feet above the floor or working level, had openings larger than one-half inch:

Location: Building 9712

Hazard: (a) Building 9712, along west wall, pedestal fan, SN 8-108675-01, two-inch diameter hole in center of blade guard.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(5) Fan blade guards, where the periphery of the blades was less than seven feet above the floor or working level, had openings larger than one-half inch:

Location: Building 9712

Hazard: (b) Building 9712, Lube/Grease Pit, ventilation fan located in northeast corner of pit at floor level, guard for rotating fan blades was not secured and easily dislodged exposing employees to blades.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(c)(4)(i) Unguarded projecting shaft end(s) did not present a smooth edge and end and projected more than one-half the diameter of the shaft:

Location: Building 9737, Fab Shop

Hazard: Building 9737, Fab Shop, Powermatic drill press, Asset No. Y-162423, SN 208984, 2-inch by 5-inch opening on west side of machine which allowed employee access to rotating shaft directly adjacent to lever used to operate the drill press.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(e)(1)(i) Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt:

Location: Building 9712

Hazard: Building 9712, Delta drill press, SN 29-4803, top guard had a 4-inch diameter hole on top of drill press exposing employees to moving belt located 5 feet, 3 inches off the ground.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.243(b)(2) Hose and hose connections used for conducting compressed air to utilization equipment were not designed for the pressure and service to which they were subjected:

Location: Building 9720-6, Metal Fabrication

Hazard: Building 9720-6, Metal Fabrication, weld booth area, compressed air line hose for pneumatic portable cup grinder being used to brush welds had cracks in the reinforced air hose line where it was attached to the tool with a clamp.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.244(a)(1)(ii) Rated load(s) of portable jack(s) were not legibly and permanently marked in a prominent location on the jack(s) by casting, stamping, or other suitable means:

Location: Building 9712

Hazard: (a) Building 9712, west wall, Walker hydraulic jack, no rated load marking. (b) Building 9712, west wall, Blackhawk hydraulic jack, no rated load marking.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.215(b)(9) Guard for abrasive wheel machine where the operator stands in front of the machine was not constructed so that the peripheral protecting member could be adjusted to the constantly decreasing diameter of the wheel:

Location: Building 9720-6, Carpentry Shop

Hazard: Building 9720-6, Carpentry Shop, Milwaukee pedestal grinder, SN LK14683, right and left wheels were not constructed so that a peripheral protecting member could be adjusted to the constantly decreasing diamter of the wheel. (NOTE: Distance from wheels to frame of grinder did not exceed 1/4 inch.)

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1) Employer had not developed or implemented a written hazard communication program which describes how the criteria in 29 CFR 1910.1200(f), (g) and (h) will be met:

Location: Building 9737

Hazard: (h) Building 9737, written hazard communication program was not available for review by employees in their work area.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(i) The written hazard communication program did not include a complete list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet:

Location: Building 9204-2

Hazard: Building 9204-2, Lithium focused factory, the list of hazardous chemicals required by the written hazard communication program did not contain the classified chemicals Fogbank and Sea Breeze.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(2) The employer did not ensure that the hazard communication program developed and implemented under paragraph (e) met the provisions contained in 1910.1200(e)(2)(i)-(iii) for employees of other employers who may be exposed to hazardous chemicals produced, used or stored at the workplace:

Location: Building 9204-2

Hazard: The written hazard communication program did not contain procedures for alerting outside contractors to hazardous chemicals to which they could be exposed while working in this facility. (a) Building 9204-2, Lithium focused factory.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.252(a)(2)(ii)(d) Valve protection caps were not in place, hand-tight, on compressed gas cylinder(s) not in use or connected for use:

Location: Building 9201-5, North Side

Hazard: Building 9201-5, outside, north end, adjacent to ECM room, compressed gas cylinder storage area, 4 acetylene cylinders did not have valve protection caps affixed (NOTE: Cylinders were properly stored and secured.)

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.252(b)(4)(ix)(c) Work or electrode lead cable(s) with damaged insulation or exposed bare conductors were not replaced:

Location: Building 9720-6

Hazard: Building 9720-6, iron workers shop, lead cable extension attached to Miller welder, Y-243057, being used to repair dumpster had taped insulation at the attachment point to the lead cable.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(b)(2) Listed or labeled electrical equipment was not used or installed in accordance with instructions included in the listing or labeling:

Location: Building 9201-5N

Hazard: (a) Building 9201-5N, Monarch lathe, No. 307, 3/4" conduit containing electrical service for machine, 440 volt, was not adequately supported for a distance of approximately 15 feet.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(b)(2) Listed or labeled electrical equipment was not used or installed in accordance with instructions included in the listing or labeling:

Location: Building 9201-5, NC Repair Shop

Hazard: (b) Building 9201-5, NC Repair Shop, Allen-Bradley test cell, upsupported conduit drop from ceiling terminated with a duplex receptacle box used to provide electricity to a power strip on a test work bench. (c) Building 9201-5, NC Repair Shop, GC test cell, two supported conduit drops from ceiling terminating with duplex receptacle boxes used to provide electricity to testing equipment.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(b)(2) Listed or labeled electrical equipment was not used or installed in accordance with instructions included in the listing or labeling:

Location: Building 9201-5, Computer Training Room

Hazard: (d) Building 9201-5, Computer Training Room, conduit supplying 110-volt service to duplex receptacles at computer stations was not adequately supported for the six to seven foot down drop length from main branch circuit to computer stations.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(e) Markings were not provided on electrical equipment giving voltage, current, wattage, and other ratings as necessary:

Location: Building 9720-6, Metal Fabrication

Hazard: Building 9720-6, Metal Fabrication, Delta drill press, Asset No. Y-14084, SN 32-7269, electric motor powering the drill press had no identifiable markings.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.303(f) Each disconnecting means for motors and appliances was not located and arranged so the purpose was evident, nor legibly marked to indicate its purpose:

Location: Buidling 9201-5, Arc Melt

Hazard: Building 9201-5, Arc Melt, parts storage area, between columns J-1 and H-1, northernmost disconnect box.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(a)(2) Grounded conductors were attached to terminals or leads so as to reverse designated polarity:

Location: Beta-2E, Dimensional Inspection

Hazard: Building 9204-2, Dimensional Inspection Area, No. 224 Y-12 machine, south end, outlet box, two duplex receptacles, 110-volt service.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(a)(2) Grounded conductors were attached to terminals or leads so as to reverse designated polarity:

Location: Building 9212, A2-Wing Machine Shop

Hazard: Building 9212, A2-Wing Machine Shop, Monarch lathe, No. 208, duplex receptacle on north end, 110-volt service.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were not readily accessible to each employee or authorized building management personnel:

Location: Building 9201-5E, Electrolytic Area

Hazard: (a) Building 9201-5E, Electrical Chemical Machining Area, access to electrical panel disconnect box blocked by carts stored in front of it along south wall.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were not readily accessible to each employee or authorized building management personnel:

Location: Building 9201-5, Arc Melt

Hazard: (b) Building 9201-5, Arc Melt, parts storage area, between columns J-1 and H-1, 480-volt disconnect boxes had access obstructed by storage of shipping skids below them.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(e)(1)(iv) Overcurrent devices for ciruits rated 600 volts, nominal, or less were not readily accessible to each employee or authorized building management personnel:

Location: Building 9404-4, Basement, NDT Area

Hazard: (c) Building 9404-4, Basement, NDT Area, east wall, electrical disconnect panels blocked by carts.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(e)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were not readily accessible to each employee or authorized building management personnel:

Location: Building 9404-4, Metal Preparation, Press Area

Hazard: (d) Building 9404-4, Metal Preparation, Press Area, west wall, circuit breaker box, pallet with pens for wheelabrator blocking access to box.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(3)(1)(iv) Overcurrent devices for circuits rated 600 volts, nominal, or less were not readily accessible to each employee or authorized building management personnel:

Location: Building 9404-4, Metal Preparation, Maintenance Shop

Hazard: (e) Building 9404-4, Metal Preparation, Maintenance Shop, north wall, access to electrical disconnect boxes blocked by table with Rockwell lathe attached. (f) Building 9404-4, Metal Preparation, Press Area, south wall, access to electrical disconnect boxes blocked by storage of material from Rust construction job.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.304(f)(4) The path to ground from circuits, equipment, and enclosures was not permanent and continuous:

Location: Building 9215

Hazard: Building 9215, Third Mill, adjacent to Bliss rolling mill, pedestal fan, ground prong missing.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.305(b)(1) Unused openings in cabinets, boxes, and fittings were not effectively closed:

Location: Building 9712, West Wall, Center

Hazard: Building 9712, center of building, west wall, duplex receptacle box, knockout missing on top north end of box.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.305(g)(1)(iii)(a) Flexible cords and cables were used for purposes prohibited by subparagraphs (a) through (e) of this paragraph:

Location: Building 9737, Photo Metal Room, Room 24

Hazard: Building 9737, Photo Metal Room, Room 24, flexible cord used to power lights for Wysong shear, Model No. 1452, SN P36-617.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(i) The written hazard communication program did not include a complete list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet:

Location: Building 9737

Hazard: Building 9737, written hazard communication program, list of hazardous chemicals to which employees are exposed is not available in the workplace.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(ii) The written hazard communication program did not include the methods that will be used to inform employees of the hazards of nonroutine tasks, and the hazards associated with chemicals contained in unlabeled pipes in their work areas:

Location: Building 9204-2

Hazard: The written hazard communication program did not contain procedures addressing hazards of chemicals contained in process piping. (a) Building 9204-2, Lithium focused factory.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(ii) The written hazard communication program did not include the methods that will be used to inform employees of the hazards of nonroutine tasks, and the hazards associated with chemicals contained in unlabeled pipes in their work areas:

Location: Maintenance, Utilities, Waste Management

Hazard: (b) Production Maintenance Services. (c) Production Maintenance Field Services. (d) Production Maintenance Engineering. (e) Utilities Department. (f) Waste Management Operations. (g) Waste Management Engineering.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(e)(1)(ii) The written hazard communication program did not include the methods that will be used to inform employees of the hazards of nonroutine tasks, and the hazards associated with chemicals contained in unlabeled pipes in their work areas:

Location: Building 9201-5

Hazard: (h) Building 9201-5, Program Management Division.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5) Each container of hazardous chemical(s) in the workplace was not labeled, tagged or marked with the identity of the hazardous chemical(s) contained therein and appropriate hazard warnings:

Location: Building 9737, PC Lab, Room 26

Hazard: Building 9737, PC Lab, Room 26, flammable liquid storage cabinet, southwest corner of the room, 1 quart can of solder flux was not labeled with its identity and a hazard warning.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5) Each container of hazardous chemical(s) in the workplace was not labeled, tagged or marked with the identity of the hazardous chemical(s) contained therein and appropriate hazard warnings:

Location: Alpha 5 West, 9201-5W, Oil Room

Hazard: Building 9201-5W, Oil Room, parts washer, parts being degreased with trim rinse, no identification or hazardous warning label.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning:

Location: Building 9737, Metal Fab, South Wall

Hazard: (a) Building 9737, Metal Fab, south wall, flammable liquid storage cabinet, plastic squeeze bottle containing alcohol had no hazard warning. (b) Building 9737, LD Shop, flammable liquid storage cabinet, plastic squeeze bottle containing isopropyl alcohol used to clean parts had no hazard warning. (c) Building 9737, LD Shop, flammable liquid storage cabinet, plastic squeeze bottle containing light oil used to lubricate parts had no warning label.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warnig:

Location: Building 9212, Kearney & Traker Machine

Hazard: Building 9212, Machine No. 297, two 5-gallon buckets of skimmer oil had no hazard warning.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(1) Open sided floor(s) or platform(s) 4 feet or more above adjacent floor or ground level wer not provided with toeboards where required:

Location: Building 9404-4

Hazard: Building 9404-4, B1002 Furnace, elevated work platform, northwest side, no guardrail for a six-foot distance on the side of the platform facing the furnace exposing employees to falls of 11 1/2 feet.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(1) Open sided floor(s) or platform(s) 4 feet or more above adjacent floor or ground level were not provided with toeboards where required:

Location: Building 9404-4, Metal Preparation

Hazard: Building 9404-4, Metal Preparation, south side of 1500-ton press, no guardrails on east and west ends of two scissors lifts used to attach crane hooks to tooling being removed from the press exposing employees to falls from 4 to 15 feet.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(1) Open sided floor(s) or platform(s) 4 feet or more above the adjacent floor or ground level were not guarded by standard railings (or the equivalent as specified in 29 CFR 1910.23(e)(3)(i) through (v)), on all open sides:

Location: Building 9206

Hazard: Building 9206, southeast corner, outside, loading dock, no guardrails exposing employees to falls of 4 feet, 4 inches.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(1) Open sided floor(s) or platform(s) 4 feet or more above the adjacent floor or ground level were not guarded by standard railings (or the equivalent as specified in 29 CFR 1910.23(e)(3)(i) through (v)), on all open sides:

Location: West Tank Farm

Hazard: West Tank Farm, HF Dock, no mid-rails on south and east sides of dock.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(1) Open sided floor(s) or platform(s) 4 feet or more above the adjacent floor or ground level were not guarded by standard railings (or the equivalent as specified in 29 CFR 1910.23(e)(3)(i) through (v)), on all open sides:

Location: West Tank Farm

Hazard: West Tank Farm, Nitric Acid Tank, non-secured wooden plank without guardrails used as a work platform on top of tank to gain access to valve and transmitter exposing employees to a 13-foot fall from the tank.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(c)(2) Runway(s) were not guarded by standard railing(s) (or the equivalent as specified in 29 CFR 1910.23(e)(3)(i) through (v)) on all open sides 4 feet or more above the floor or ground level:

Location: Building 9818, Outside

Hazard: Building 9819, west end, outside, elevated runway over Bio Reactor diked area, west end at Tank No. 708, no mid-rail on guardrail.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(e)(1) Standard railings did not consist of a top rail, intermediate rail, and posts having a vertical height of 42 inches nominal from the upper surface of the top rail to floor, platform, runway or ramp level plus an intermediate rail approximately halfway between the top rail and the floor, platform, runway or ramp:

Location: Building 9204-2, Electrolytic Cell Area

Hazard: Building 9204-2, Electrolytic Cell Area, East Cell Room, Cell No. 12, west end of elevated work platform, top section of guardrail was 58 inches high beginning 24 inches from north edge of platform and extended for 58 inches plus there was no mid-rail along the west end of the elevated work platform exposing employees to a fall of 58 inches from platform to the concrete floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.23(e)(3)(v) Other types, sizes and arrangements of railing construction were not acceptable in lieu of standard railings because they did not meet the conditions specified in 29 CFR 1910.23(e)(3)(v)(a) through (c):

Location: Building 9204-2, Electrolytic Cell Area

Hazard: Building 9204-2, Electrolytic Cell Area, East Cell Room, Cell No. 5, west end of elevated work platform, metal chain used for portion of guardrail was correded and not capable of withstanding a load of at least 200 pounds applied in any direction at any point also metal chain used for mid-rail had broken attachment means and was not being used thus exposing employees to a fall of 56 1/2 inches to the concrete floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.24(b) Spiral stairways were used where it was practical to provide a conventional stairway:

Location: Building 9206, Rooms 28 & 29

Hazard: Building 9206, Room 29, spiral staircase provides primary access to second and third floors.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.94(d)(9)(v) Employees were not required to wear either tight fitting chemical goggles or effective face shield(s) at the open surfaced tanks where there was a danger of splashing:

Location: Building 9201-5E, Applications Area

Hazard: Building 9201-5E, Applications Area, nickel sulfonate baths, employees washing off parts and making manual additions to baths without any face protection.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(c)(4) Piping systems containing flammable and/or combustible liquids were not protected against physical damage:

Location: Building 9201-5

Hazard: Building 9201-5, south of column M-26, Brine column feeder lines were not protected against being struck by forklift trucks.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(c)(4) Piping systems containing flammable and/or combustible liquids were not substantially support and protected against excessive stresses arising from settlement, vibration, expansion, or contraction:

Location: Building 9201-5

Hazard: Building 9201-5, south of column M-26, Brine column feeder line was being supported by a portable jack.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(d)(2)(i) Approved container(s) or portable tank(s) were not used for the storage of flammable or combustible liquids:

Location: Building 9737

Hazard: Building 9737, Instrument Repair Shop, Flammable Liquid Storage Cabinet, one-gallon glass bottle of tetrahydrofuran (a Class IB liquid) used for cleaning vacuum gauges.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(d)(4)(iii) Electrical wiring and equipment in inside storage room(s) for Class I liquids were not of the type approved for Class I Division 2 hazardous locations:

Location: Building 9720-6, Paint Shop

Hazard: Building 9720-6, Paint Shop, paint vault, loudspeaker hanging from northeast wall with exposed electrical connections.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(d)(4)(iv) The ventilation system(s) of the inside flammable or combustible liquid storage room(s) were not designed to provide for a complete change of air within the room at least six times per hour:

Location: Building 9720-6, Paint Shop

Hazard: Building 9720-6, Paint Shop, paint vault, mechanical exhaust ventilation only provided for one air change per hour and a pilot light was not installed adjacent to the switch that controls the lighting and ventilation.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(e)(2)(iv)(d) Flammable or combustible liquids were not drawn from or transferred into vessel(s), container(s), or portable tank(s) within a building through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tank by gravity through an approved self-closing valve:

Location: Building 9737, PC Lab

Hazard: Building 9737, PC Lab, Room 26, 55-gallon drum of denatured ethyl alcohol did not have a self-closing valve.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.106(e)(6)(ii) Class I flammable liquid(s) were dispensed into containers without electrically interconnecting the nozzle and the container:

Location: Building 9737, PC Lab

Hazard: Building 9737, PC Lab, Room 26, no bonding while transferring from 55-gallon drum of denatured ethyl alcohol to smaller containers.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.120(l)(4) Employee(s) who are members of a HAZMAT team were not provided training on a monthly basis totaling 24 hours annually which includes care and use of chemical protective clothing and procedures to be followed when working on leaking drums, containers, tanks, or bulk transport vehicles:

Location: See Hazard Information

Hazard: (a) Y-12 Plant, Emergency Squad, 20 regular emergency squad members. (b) Y-12 Plant, Emergency Squad, 43 shift relief emergency squad members. (c) Y-12 Plant, Fire Department, members.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not maintained in a sanitary and reliable condition:

Location: Building 9204-4, Beta-4

Hazard: Building 9204-4, 2nd Floor, Utility Fan Area, elevated work platform on top of fan room for AJ-1009 building supply fan, two employees replacing a valve were exposed to a fall hazard of 13 feet due to failure to wear appropriate protective equipment, such as safety belts with lanyards.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered:

Location: Building 9212, C-1 Wing Mezzaine

Hazard: Building 9212, south side of C-1 Wing mezzanine, no head protection provided for chemical operators who work in an area with low hanging process piping some of which is as low as 5 feet from mezzanine floor.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.151(c) Where employees were exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body were not provided within the work area for immediate emergency use:

Location: Building 9212, Reduction Area

Hazard: Building 9212, Reduction Area, Pickling Station, no emergency eyewash station in immediate area where employees are handling glacial acetic acid solutions.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.151(c) Where employees were exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body were not provided within the work area for immediate emergency use:

Location: Building 9201-5, PHB-1E, Product Management Division

Hazard: Building 9201-5, Product Management Division, no emergency eye flushing facilities where employees are applying corrosive etching solutions to parts for identification numbers.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.176(b) Material stored in tiers was not stacked, blocked, interlocked or limited in height so that it was stable and secure against sliding and collapse:

Location: Building 9404-4, Metal Preparation

Hazard: Building 9404-4, north hallway, Drum Storate Area, six 40-gallon drums stacked on a pallet atop four 40-gallon drums on another pallet.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.176(g) Covers and/or guardrails were not provided to protect personnel:

Location: Building 9201-5, Scrap Reclamation

Hazard: From open pits, adjacent to material storage area, Building 9201-5, scrap reclamation, 9-foot by 9-foot pit created by removal of salt bath was not protected by a cover or standard guardrail but by portable posts with flagged warning line.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.178(m)(12) Industrial truck(s) used to lift personnel were not provided with a firmly secured safety platform and a means whereby personnel on the platform could shut off power to the truck:

Location: Building 9212, Foundry, Metal Preparation

Hazard: Building 9212, Metal Preparation, Foundry, portable work platform used on forklift for re-bricking furnaces did not have an adequate safety platform in that the side used for access to the platform had no mid-rail and chain used for top rail was not taut.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9712

Hazard: Building 9712, Brake Lathe Room, Johnson horizontal metal cutting band saw, Asset No. Y-263290, unused portion of blade not guarded.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by in-running nip points:

Location: Building 9737, Temperature Standards Lab

Hazard: Building 9737, Temperature Standards Lab, Doughboy bag sealer, Model No. C, SN 6099, no guard for in-running nip points.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9737, Motor Shop

Hazard: Building 9737, Motor Shop, Greenlee horizontal metal cutting band saw, Model No. 1395, SN 33RY-0808, unused portion of blade not guarded.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9712

Hazard: Building 9712, South Bend horizontal engine lathe, Asset No. Y-263294, 5 1/4 inch rotating chuck was not guarded while turning bushings and transmission parts.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9212, Fabrication Division, Equipment Services, 1216MH

Hazard: Building 9212, Fabrication Division, Equipment Services, Peerless Hi-Speed horizontal metal cutting band saw, Model No. 1215MH, SN MH66-540-39, Asset No. Y-215392, unused portion of blade on left and right sides was not guarded.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9720-5E, Maintenance Shop, East Bay

Hazard: Building 9201-5E, Maintenance Shop, East Bay, Do-All horizontal metal cutting band saw, Machine No. 219, unused portion of blade was not guarded.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9201-5E, Maintenance Shop, East Bay

Hazard: Building 9201-5E, Maintenance Shop, East Bay, American Ultra Precision Lathes, Nos. 215-217, used for machining hanger turning fixtures, no guarding to prevent operator from being struck by rotating chuck with protrusions.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9204-2, Comet Star Vacuum Rubber Strip

Hazard: Building 9204-2, Comet Star Vacuum Thermoformer, Model No. 60x60, SN 11717, no guarding provided for ingoing nip point created by frame rollers on the oven track.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9737, Motor Shop

Hazard: Building 9737, Motor Shop, South Bend Lathe, Asset No. Y-260736, no guard to prevent contact with rotating chuck with protruding dogs while machining phenolic parts and forms for coils.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by ingoing nip points:

Location: Building 9720-6, Metal Fabrication

Hazard: Building 9720-6, Metal Fabrication, Wysong shear, Model No. 1232, SN P13-990, lexan barrier guard was positioned 1 1/8 inch above shear bed and 2 1/2 inches from hold downs allowing access to pinch points created between the hold downs and the shear bed.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by rotating parts:

Location: Building 9404-4, Reclamation Area

Hazard: Building 9404-4, Reclamation Area, Monarch Lathe, SN 40073, no guarding for rotating chuck with protrusions used for parting cuts on materials.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9720-6, Iron Working Shop

Hazard: Building 9720-6, Iron Working Shop, Eaco Swaging Press, Mark 150, SN 739, no point of operation safeguarding provided while swaging slings.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9720-6, Iron Working Shop

Hazard: Building 9720-6, Iron Working Shop, Eaco Swaging Press, Mark 75, SN 333, no point of operation safeguarding provided while swaging slings.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(1)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9201-5W

Hazard: Building 9201-5W, Cincinnati Dynapoise milling machine, No. 337, used for making chips had no point of operation safeguarding to prevent entry of operators' hands into point of operation during the operating cycle.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9201-5W, Lap Area

Hazard: Building 9201-5W, Lap Area, Spitfire lapping machines, Nos. 404-405, no point of operation safeguarding to prevent access to ingoing nip points where parts are being lapped.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9201-5E, Maintenance Shop, East Bay

Hazard: (a) Building 9201-5E, Maint. Shop, East Bay, Kearing and Trecker milling machine, #207, used for taking off bevels on a part had no point of operation safeguarding. (b) Building 9201-5E, Maint. Shop, East Bay, Cincinnati milling machine, #203, used for cutting channels in a part had no poing of operation safeguarding. (c) Building 9201-5E, Maint. Shop, East Bay, Kearing and Tracker milling machine, #202, used for milling part had no point of operation safeguarding. (d) Building 9201-5E, Maint. Shop, East Bay, Bridgeport milling machine, #201, used for milling parts had no point of operation safeguarding. (e) Building 9201-5E, Maint. Shop, East Bay, Bridgeport milling machine, #306, used for milling parts had no point of operation safeguarding.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9212, A2-Wing, Machine Shop

Hazard: Building 9212, A2-Wing, Machine Shop, Cincinnati Dial Milling Machine, No. 234, no point of operation safeguarding while cutting slots in the top of screw heads.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9212 A2-Wing, Machine Shop

Hazard: Building 9212, A2-Wing, Machine Shop, Bridgeport Milling Machine, No. 219, no point of operation safeguarding while machining aluminum cover plates.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9201-5, Scrap Reclamation

Hazard: Building 9201-5, Scrap Reclamation, Alligator Shear, Asset No. Y-265137, two-inch high by twenty-seven-inch long points of operation guard was not sufficient to prevent access to point of operation.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9737, Microelectronics Lab

Hazard: Building 9737, Microelectronics Lab, Room 28, Shear plastic shear, Model No. 25-160-00, used for cutting phenolic plastic sheets, had no point of operation safeguarding for blade.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9201-5N

Hazard: Building 9201-5N, Spitfire flat lapping machine, Model No. SPF 888-36, SN 6604-37611, no point of operation safeguarding while lapping falls of parts.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(1)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s).

Location: Building 9712

Hazard: Building 9712, Star Machine and Tool Company brake shoe rivet machine, Model No. 170B, SN 1167, no point of operation guarding while putting rivets into brake shoes.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(1)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9212, Fabrication Division, Equipment Services

Hazard: Building 9212, Fabrication Division, Equipment Services, Bridgeport milling machine, No. 42, no point of operation safeguarding utilized while milling support blocks to size.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9212, E-Wing

Hazard: Building 9212, E-Wing, 45-ton flattening hydraulic press, Asset No. Y-210926, single-hand control allowed operator access to point of operation while crushing materials as front barrier guard was not interlocked or securely fastened.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9712

Hazard: Building 9712, Enerpac hydraulic press, Asset No. Y-187575, pendant control box with 9 1/2 foot pendant allowed employee access to point of operation while pressing bearings and/or forklift wheels.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9201-5, Maintenance Shop

Hazard: Building 9201-5, Maintenance Shop, Peck, Stow and Wilcox Shear, Model No. 10-U-44, SN 684319, Asset No. Y-209409, point of operation guard pushed in toward blade allowing access to moving blade.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9215, Third Mill

Hazard: Building 9215, Third Mill, Hill Acme Alligator Shear, Asset No. Y-211111, SN 702411H 5- by 6-inch opening at discharge area and 13- by 7-inch opening at top of barrier guard allowed access to point of operation during operating cycle.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9215, P-Wing

Hazard: Building 9215, P-Wing, Finn mill room, hand-operated shear, no point of operating safeguarding while cutting thin sheets of metal.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s):

Location: Building 9204-2, Metal Preparation

Hazard: Building 9204-2, Metal Preparation, employees are exposed to point of operation hazards during die-set procedures, an the HPM 7500-ton hydraulic press due to pinch and shear points created by the tooling and ram movement while bolting up.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(4) Revolving drum(s), barrel(s), or container(s) were not guarded by enclosure(s) which were interlocked with the drive mechanism so that the barrel(s), drum(s), or container(s) could not revolve unless the enclosure(s) were in place:

Location: Building 9206

Hazard: (a) Building 9206, Room 24, two v-blenders in hood, not interlocked.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(4) Revolving drum(s), barrel(s), or container(s) were not guarded by enclosure(s) which were interlocked with the drive mechanism so that the barrel(s), drum(s), or container(s) could not revolve unless the enclosure(s) were in place:

Location: Building 9206

Hazard: (b) Building 9206, Room 100W, one v-blender in hood, not interlocked.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(4) Revolving drum(s), barrel(s), or container(s) were not guarded by enclosure(s) which were interlocked with the drive mechanism so that the barrel(s), drum(s), or container(s) could not revolve unless the enclosure(s) were in place:

Location: Building 9206

Hazard: (c) Building 9206, Room 103, cross flow v-blender in glovebox, no interlocked guards.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(4) Revolving drum(s), barrel(s), or container(s) were not guarded by enclosure(s) which were interlocked with the drive mechanism so that the barrel(s), drum(s), or container(s) could not revolve unless the enclosure(s) were in place:

Location: Building 9206

Hazard: (d) Building 9206, Room 101, two cross flow v-blenders in hoods, not interlocked.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(4) Revolving drum(s), barrel(s), or container(s) were not guarded by enclosure(s) which were interlocked with the drive mechanism so that the barrel(s), drum(s), or container(s) could not revolve unless the enclosure(s) were in place:

Location: Building 9201-5, Arc Melt, Carbon Storage Area

Hazard: (e) Building 9201-5, Arc Melt, Carbon Storage Area, Norton parts tumbler, SN CF 90104, no interlocked guards.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.212(a)(4) Revolving drum(s), barrel(s), or container(s) were not guarded by enclosure(s) which were interlocked with the drive mechanism so that the barrel(s), drum(s), or container(s) could not revolve unless the enclosure(s) were in place:

Location: Building 9201-5

Hazard: (f) Building 9201-5, Arc Melt, Carbon Storage Area, U.S. Stoneware parts tumbler, SN CK86101, no interlocked guards.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.213(h)(4) Radial saw(s) were not installed in a manner so as to cause the cutting head to return gently to the starting position when released by the operator:

Location: Building 9720-6, Carpentry Shop

Hazard: Building 9720-6, Carpentry Shop, DeWalt 16-inch radial arm saw, northeast end of shop.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.215(b)(9) The distance between the abrasive wheel periphery(s) and the adjustable tongue or the end of the safety guard peripheral member at the top exceeded one-fourth inch:

Location: Building 9212, Fabrication Division, Equipment Services

Hazard: Building 9212, Fabrication Division, Equipment Services, standard pedestal grinder, Model No. 100, SN 57693, tongue guard on left side was one inch from grinding wheel.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.215(b)(9) Guard for abrasive wheel machine where the operator stands in front of the machine was not constructed so that the peripheral protecting member could be adjusted to the constantly decreasing diameter of the wheel.

Location: Building 9212, Maintenance Division

Hazard: Building 9212, Maintenance Division, welding area, Dayton pedestal grinder, Model No. 47123C, SN LR155CR, no tongue guards on right and left wheels.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.215(b)(9) Guard for abrasive wheel machine where the operator stands in front of the machine was not constructed so that the peripheral protecting member could be adjusted to the constantly decreasing diameter of the wheel.

Location: Building 9404-4, Maintenance Shop

Hazard: Building 9404-4, basement, Production Maintenance Shop, Black and Decker pedestal grinder, Asset No. Y-209495, SN G2824209, no tongue guard on right wheel used for grinding off welds.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(d)(1) Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o):

Location: Building 9737, Fabrication Shop

Hazard: Building 9737, Fabrication Shop, Rockwell drill press, east wall, 9-inch by 3-inch opening on north side of machine located 5 feet above the floor exposed employees to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(e)(1)(i) Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt:

Location: Building 9737, Fabrication Shop

Hazard: Building 9737, Fabrication Shop, Rockwell drill press, east wall, 9-inch by 3-inch opening on north side of machine located 5 feet above the floor exposed employees to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(d)(1) Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o):

Location: Building 9737, Coil Shop

Hazard: Building 9737, Coil Shop, Sears Craftsman drill press, Asset No. Y-262337, 7-inch by 3-inch hole on top of press, 5 feet, ten inches off the ground allowed employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(e)(1)(i) Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt:

Location: Building 9737, Coil Shop

Hazard: Building 9737, Coil Shop, Sears Craftsman drill press, Asset No. Y-262337, 7-inch by 3-inch hole on top of press, 5 feet, ten inches off the ground allowed employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(d)(1) Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o):

Location: Building 9212, Reduction Area

Hazard: Building 9212, Reduction Area, Bridgeport drill press, west side, 2 1/2-inch by 11-inch opening approximately 6 feet off the floor allowed employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(e)(1)(i) Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt:

Location: Building 9212, Reduction Area

Hazard: Building 9212, Reduction Area, Bridgeport drill press, west side, 2 1/2-inch by 11-inch opening approximately 6 feet off the floor allowed employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(d)(1) Pulley(s) with part(s) seven feet or less from the floor or work platform were not guarded in accordance with the requirements specified at 29 CFR 1910.219(m) & (o):

Location: Building 9737, Scales & Balances Area

Hazard: Building 9737, Room 2, Scales & Balances Area, Delta drill press, SN 29-9041, 3-inch by 8-inch opening in top cover located 5 feet, 7 inches from the floor allowed employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1910.219(e)(1)(i) Horizontal belts which had both runs seven feet or less from the floor level were not guarded with a guard that extended to at least fifteen inches above the belt:

Location: Building 9737, Scales & Balances Area

Hazard: Building 9737, Room 2, Scales & Balances Area, Delta drill press, SN 29-9041, 3-inch by 8-inch opening in top cover located 5 feet, 7 inches from the floor allowed employee access to rotating belt and pulleys.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary hazards capable of causing injury and impairment were encountered.

Location: Metal Chip Disposal Area, Alpha 1, Building 9201-1

Hazard: Maintenance personnel required to work under a heavy metal chute closure lid did not wear head protection.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered.

Location: Alpha 1, Building 9201-1, Chip Disposal Area

Hazard: Employees doing maintenance work around open sided disposal chute area were not protected from fall distances of up to 20 ft by the use of safety belt and landyard.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.132(a) Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered.

Location: Alpha 1, Building 9201-2, G&L 7" & 6" horizontal Boring machines

Hazard: The metal operator's basket (G&L 6") unadaptable to standard guardrail, and operators using maintenance personnel requiring access to top of machine work levels, unadaptable to standard guardrails were not provided with nor required to wear safety belts and landyards while performing their tasks at elevations ranging from 4 ft to 16 ft.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning.

Location: Building No. 9737, Metal Fab

Hazard: Building 9737, Metal Fab, south wall, flammable liquid storage cabinet, plastic squeeze bottle containing alcohol had no hazard warning.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning.

Location: Building 9737, Metal Fab

Hazard: Building 9737, LD Shop, Flammable liquid storage cabinet, plastic squeeze bottle containing isopropyl alcohol used to clean parts had no hazard warning.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Other	17525809	Y-12 Plant

Description

29 CFR 1910.1200(f)(5)(ii) The employer did not ensure that each container of hazardous chemicals in the workplace was labeled, tagged or marked with the appropriate hazard warning.

Location: Building 9212

Hazard: Building No. 9212, Machine no. 297, two five gallon buckets of skimmer oil had no hazard warning.

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.1200(e)(2) The employer did not ensure that the hazard communication program developed and implemented under paragraph (e) met the provisions continued in 1910.1200(e)(i)-(iii) for employees of other employers who may be exposed to hazardous chemicals produced, used or stored at the workplace.

Location: Building 9204-2

Hazard: The written hazard communication program did not contain proceudres for alerting outside contractors to hazardous chemicals to which they could be exposed while working in this facility. (a) Building 9204-2, Lithium focused factory, (b) Production Maintenance Services, (c) Production Maintenance Field Services, (d) Production Maintenance Engineering, (e) Utilities Department, (f) Waste Management Operators, (g) Waste Management Engineering, (h) Building 9201-5, Program Management Division

MARTIN MARIETTA ENERGY SYSTEMS

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

Section 5 (a)(1) Section 5 (a)(1) of the Occupational Safety and Health Act of 1970: The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death of serious physical harm to employees in that employees were exposed to.

Location: Y-12 Steam plant

Hazard: In the steam plant building 9401-3 employees were exposed to the hazards of oxygen deficiency, toxic atmospheres, and scalding when entering tanks and baghouses: a)On October 13, 1989, a steam plant employee entered baghouse #3 for the purpose of testing for oxygen deficiency and flammable vapors. The employee was potentially exposed to oxygen deficiency and air contaminants such as carbon monoxide. Precautions including training protective equipment, standby personnel, safety harness and lifeline, and mechanical ventilation were not used. Remote atmospheric testing was not available. b)On October 14, 1989 a tank inspector entered a water deaerator tank and heater tank, and was exposed to hazards of oxygen deficiency and scalding. Steam lines leading into the space were tagged out but not locked out frequent or continuous atmospheric testing was not done, and mechanical ventilation was not provided except at the request of OSHA personnel. c)Employees entered one compartment of an operating baghouse for the purpose of inspector and maintenance, and were exposed to the hazards of heat, oxygen deficiency, and toxic atmospheres from flue gas. The devices used to block the valves from opening were not padlocked. (Note: The design of the baghouse appears to allow for a slight opening of the inlet and reversal valves should the blocking mechanism not be fully inserted. Although Martin Marietta did not design or maunufacture the baghouse, it is recommended that this possibility be investigated/corrected to prevent flue gas from entering baghouse compartments during servicing.) Among other methods, one feasible and acceptable means of correcting this hazard is to modify the facility's existing confined space entry procedures and/or implement the following: 1. Provide for remote atmospheric testing capabilities for spaces such as baghouses. 2. In addition to oxygen deficiency and flammable vapor testing, monitor for other air contaminants when they are likely to be present. 3. Provide for continuous or frequent atmospheric monitoring during entry. 4. Provide continuous mechanical ventilation before and during entry. 5. Ensure that employees entering spaces where unknown

atmospheres exist are trained and provided with appropriate respiratroy protection, protective equipment, safety harness and lifeline, mechanical ventilation, and standby personnel. 6. Lockout all gas, liquid, mechanical and electrical system related to the confined space, such as steam lines and flue gas valves. 7. The confined space program should make it clear that spaces containing known atmospheres which are immediately dangerous to life or health should not be entered, as well as including a statement that each space should be downgraded to the least hazardous condition prior to entry.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Oak Ridge Y-12 Plant

Description

29 CFR 1926.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazards(s) created by rotating parts:

Location: Building 9201-1, Alpha 1

Hazard: Operating lathes did not have their rotating chucks guarded against accidental contact.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) op operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycles.

Location: Alpha 1, Building 9201-1, Metal Fab

Hazard: The W. A. Whitney hydromatic duplicator (press) did not have any point of operations guarding installed during operation.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(2)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by ingoing nip points.

Location: Alpha 1, Building 9201-1 Metal Fab

Hazard: Two Niagra Sheet Metal WOrking Machine numbers Y175717 and Y217215 had unprotected ingoing nip points upper and lower wheels.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s).

Location: Alpha 1, Building 9201-1 Metal Fab

Hazard: Hydraulic press brakes, sizes 12 ft, 12 ft, 6 ft, and 6ft had inadequate point of operation guarding in the form of hinged plastic covers along its operating lengths.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(a)(3)(ii) Point(s) of operation of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operation cycle(s).

Location: Alpha 1 Building 9201-1 Metal Fab

Hazard: The sides and back of the hydraulic press brakes were inadequately guarded in that access to the point of operation was from both ends of the machine frame openings as well as the removal of the rear safety rope.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

29 CFR 1910.212(a)(1) Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by .

Location: Alpha 1, Building 9201-1, Metal Fab

Hazard: The ingoing nip points on metal rolling machines were not guarded adequately.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to

Location: Chip Disposal Area

Hazard: A heavy steel chute cover lid capable of being actuated up and down by pneumatic cylinders while performing maintenance on chute components located in the chip disposal area among other methods, one feasible and acceptable method to correct this hazard is to provide acceptable physical mechanical stope and employ pneumatic lock out procedures.

Martin Marietta Energy Systems

Type of Violation	Inspection Number	Inspection Site
Serious	17525809	Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to inadvertant actuation of machinery resulting in crushing, electrocution multiple internal injuries and/or death due an ineffectively implemented and enforced lockout program.

Location: Plantwide

Hazard: Building 9204-2, Maintenance Repair, a common key - 411 key - is used by electricians for locking out electrical equipment prior to performing maintenance.

Building No. 9404-4, QE Lab, at the Octagonal Box, a loud cell was being replaced and the 430-volt service supplying power was shut down, but not locked out.

Building 9201-1, at waste chip area, employees enter a pit with a raised pneumatically controlled cover which was not locked out, or sufficiently blocked, before being allowed to repair lower doors.

RIDGE

Type of Violation	Inspection Number	Inspection Site
Serious	107458606	Oak Ridge Y-12 Plant

Description

29 CFR 1926.1000(e) Each ROPS shall have the following information permanently affixed to the structure: (1) Manufacturing names; address; (2) ROPS model number; (3) Machine make and model or series number that the structure is designed to fit

Location: Bldg 9119 jobsite

Hazard: Dynahoe Series B-140 had no name plate affixed ROPS

RIDGE

Type of Violation	Inspection Number	Inspection Site
Serious	107458606	Oak Ridge Y-12 Plant

Description

29 CFR 1926.28(a) Appropriate personal protective equipment was not worn by employee(s) in all operations where there was exposure to hazardous conditions

Location: Bldg 9119 jobsite

Hazard: The operator of the Dynahoe Series B-140 did not use the seat belts provided with the ROPs installed

RIDGE

Type of Violation	Inspection Number	Inspection Site
Serious	107458606	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(1) Employer had not developed or implemented a written hazard communication which describes how the criteria in 29 CFR 1926.59 (f), (g) and (h) will be met

Location: Bldg 9119 Worksite

Hazard: Company did not develop nor have implemented a written hazardous communication program

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RIDGE

Type of Violation	Inspection Number	Inspection Site
Serious	107458606	Oak Ridge Y-12 Plant

Description

29 CFR 1926.602(a)(9)(1) Bidirectional machine(s) were not equipped with an operable horn, distinguishable from the surrounding noise level

Location: Bldg 9119 Jobsite

Hazard: Dynahoe Series B-140, did not have an operable horn at the operators station

ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(a)(1) Defective rigging equipment was not removed from service

Location: Roehl Storage Trailer

Hazard: 10-ft long 1-in. diameter wire rope sling had numerous broken wires, a nail driven between the strands, and its entire length was rusted and was still left in service

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ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(a)(3) Rigging equipment when not in use was not removed from the immediate work area so as not to present a hazard to employees

Location: Blaine-Hayes Yard Area

Hazard: Two sets of 16 ft 3/4-in. wire rope slings were left lying on the ground·the eye of one under a heavy iron sewer lid

ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(d)(1) Electric equipment was not firmly secured to the surface on which it was mounted

Location: Entrance to Storage Trailer

Hazard: 2x4-2 knockout-type receptacle box was not affixed to trailer wall and was allowed to hang by its energized Romex cable

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ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(e) Conductors were not spliced or joined with splicing devices designed for the use or by brazing, welding, or soldering with a fusible metal or alloy

Location: Roehl Storage Trailer

Hazard: The two-wire cord of a double-insulated 7 1/4-in. Skil Saw was hand spliced to a piece of household appliance cord with a plug

ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.404(b)(1)(i)	Employer did not use either ground-fault circuit interrupters as specified in paragraph (b)(1)(ii) of this section, or an assured equipment grounding conductor program as specified in paragraph (b)(1)(iii) of this section to protect employees on construc

Location: Storage Trailer

Hazard: Energized 2·4-2 outlet box was available for use with electric tools, operating at 120 volts, and neither GFCI nor the assured grounding conductor program was in use.

ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(C)	Receptacles for uses other than temporary lighting were installed on branch circuits which supplied temporary lighting

Location: Storage Trailer

Hazard: A 2·4-2 knockout receptacle box at the entrance to the trailer was wired into a switch box controlling temporary lights.

ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(E) Lamps used in temporary wiring for general illumination were not protected from accidental contact or breakage

Location: Roehl Storage Trailer

Hazard: Three 200-watt bulbs overhead pigtailed into Romex conductor were not guarded from accidental contact.

ROEHL

Type of Violation	Inspection Number	Inspection Site
Serious	107458440	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59 (e)(2) Employer who produces, uses, or stores hazardous chemicals at a workplace such that employees of other employers may be exposed shall ensure that the hazard communications programs developed and implemented under this paragraph(s) include the following:

Location: Jobsite

Hazard: The written Company hazardous communications program developed did not address (1) methods of providing other employers with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken to protect

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.101(a) Ear protective devices were not provided or were not used when it was not feasible to reduce noise levels or duration of exposures to those specified in Table D-2, Permissible Noise Exposure, in 29 CFR 1926.52

Location: Building 9929-1 Carpenter Shop

Hazard: Employee operating jointer with noise level readings in excess of 100 db was not wearing ear protection.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.21(b)(2) The employer did not instruct each employee in the recognition and avoidance of unsafe condition(s) and the regulation(s) applicable to his work environment to control or eliminate any hazard(s) or other exposure to illness or injury.

Location: Building 9929-1 Carpenter Shop and Building 9204-1 area

Hazard: Employees working in the areas of high noise level machinery as well as employees working in the vicinity of operating cranes were not aware of the hazards in their respective work areas.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(a)(1) Defective rigging equipment was not removed from service.

Location: Building 9204-4, southwest corner, outside area

Hazard: The wire lifting lug attached to the jersey barrier used to stabilize crane ball and hook when not in use, was defective in that wires were broken and twisted together, then attached to the sling attached to the crane hook.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.251(a)(4) Special custom design lifting accessories for material handling were not marked to indicate the safe working load(s).

Location: Building 9204-4, southwest corner outside area

Hazard: The lifting lugs (wires) for the Jersey barrier used to stabilize crane ball and hook when not in use, were not marked to indicate safe working load.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.304(f) Radial saw(s) were not provided with an adjustable stop to prevent the forward travel of the blade beyond the position necessary to complete the cut in repetitive operations.

Location: Building 9929-1 Carpenter Shop

Hazard: Dewalt 16 Radial Saw blade extends beyond worktable when head is pulled out to its full travel.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.304(f) Electrically driven equipment shall be controlled with magnetic switches or other devices that will prevent automatic restarting of the machine after a power failure.

Location: Building 9929-1 Carpenter Shop

Hazard: The hand-fed jointer would, upon power failure and after reapplication of power, restart automatically.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.304(f) Power controls and operating controls shall be located within easy reach of the operator while he is at his regular work location.

Location: Building 9929-1 Carpenter Shop

Hazard: The jointer on-off switch was located such that one had to reach inside a wooden frame cutout inches away from the rotating bit to shut it off.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.304(f) Each hand-fed jointer shall have an automatic guard that will cover all sections of the cutting head on the working side of the fence or guard.

Location: Building 9929-1 Carpenter Shop

Hazard: The operating jointer head used to bevel edges of 2X10 planks was not guarded on the work side by an automatically adjusting guard.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.304(f) All portions of the saw blade shall be enclosed or guarded except for the working portion of the blade between the bottom of the guide rolls and the table.

Location: Building 9929-1 Carpenter Shop

Hazard: The operator of the Dewalt band saw did not adjust the opening of the saw blade for the depth of wood being cut.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(b)(1) Employer did not ensure that electric equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.

Location: Southwest corner steam plant (outside)

Hazard: Energized blue extension cord used for temporary outdoor service to tools and equipment was dropped or wrapped about metal overhead pipe carriers, or metal handrails.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(b)(1) Employer did not ensure that electric equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees.

Location: Building 9204-2, Stairwell

Hazard: Open conductors used for temporary light strings had splices made, protected only by wire nuts.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(d)(1) Electric equipment was not firmly secured to the surface on which it was mounted.

Location: Building 9929-1 Carpenter Shop, Break Room

Hazard: 2X4-2 knockout type box was not affixed to a building surface.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(d)(1) Electric equipment was not firmly secured to the surface on which it was mounted

Location: Southwest corner steam plant

Hazard: 3-outlet boxes, designed to be mounted on fixed wall surfaces, were allowed to hang loosely from their cords or loosely on the ground

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(h) Each disconnecting means for motors and appliances was not legibly marked to indicate its purpose, nor located and arranged so that the purpose is evident

Location: Building 9929-1 Carpenter Shop

Hazard: A motor disconnect, wall mounted, was not labeled as to its function

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(h) Each service, feeder, and branch circuit was not legibly marked at its disconnecting means or overcurrent device to indicate its purpose, nor located and arranged so that the purpose is evident

Location: Building 9929-1, Carpenter Shop

Hazard: The CBs for the various overhead lights were not labeled so as to determine what bank of lights would be shut off by each CB

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(i)(1)(ii) Working space about electric equipment operating at 600 volts, nominal, or less was used for storage

Location: Building 9929-1 Carpenter Shop, Nail Bin Storage Area

Hazard: A bank of eight light switches had only 6 1/2" space space to reach arm in to activate switches

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(B) Runs of open conductors used as temporary wiring branch circuits were located where the conductors would be subject to physical damage, or the conductors were fastened at intervals exceeding 10 feet

Location: Building 9204-2, Stairway and Fan Room

Hazard: Energized light strings providing illumination for the stairway and the fan room were not protected from hazards, such as equipment being carried, employee passage, door closure, nor were they supported every 10 feet

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(E) Lamps used in temporary wiring for general illumination were not protected from accidental contact or breakage

Location: Building 9204-2

Hazard: Temporary light string had bulbs that were broken and one that was unguarded

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(F) Temporary lights were suspended by their electric cords when not designed for such suspension

Location: Building 9204-2, Stairway and Fan Room

Hazard: The temporary light strings energized were wrapped around metal hand rails, guardrails, and other metal fixed objects such as pipes

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(I) Protection was not provided to avoid damage to flexible cords and cables used for temporary wiring which passed through doorways or other pinch points

Location: Southwest corner, doorway

Hazard: Black flexible cord, attached to 2X4-2 knockout box, was run through doorway of building and door closed on it, crushing it between the door edges and the door back

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(a)(2)(ii)(I) Protection was not provided to avoid damage to flexible cords and cables used for temporary wiring which passed through doorways or other pinch points

Location: Building 9204-2, Fan Room

Hazard: Flexible cords and cables were allowed to pass through open doorways that were subject to door closure

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(b)(1) Unused openings in cabinets, boxes, and fittings were not effectively closed

Location: Southwest corner steam plant

Hazard: A 4x2-2 knockout type outlet box had one of its middle knockout covers partially pushed in

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof

Location: Building 9929-1 Carpenter Shop, Break Room

Hazard: A 2x4-2 open top outlet box of the nonwaterproof type was placed such that coffee could enter area of energized parts

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof

Location: Building 9204-2, South Side Wall

Hazard: A waterproof type box was installed such that two top plugs and one bottom plug were missing and the Romex conductor had a nonwaterproof-type bushing used

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof

Location: Southwest corner steam plant (outside)

Hazard: Electrical outlet boxes, not of the waterproof type, were used outside and allowed to accumulate water

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(g)(1)(iii) Flexible cords and cables were: (A) Used as a substitute for the fixed wiring of a structure; (B) Run through holes in walls, ceilings, or floors; (C) Run through doorways, windows, or similar openings; (D) Attached to building surfaces; or (E) Concealed behind building walls, ceilings, or floors

Location: Building 9929-1 Carpenter Shop, Saw Filing Room

Hazard: Extension cord with outlet box attached was used for additional power source (remote) on a regular basis in lieu of fixed wiring

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.416(a)(3) Before work began the employer did not ascertain by inquiry, direct observation, or by instruments, whether any part of an energized electric power circuit, exposed or concealed, was so located that the performance of the work could bring a person, tool,or machine into physical or electrical contact with an energized electric power circuit

Location: Building 9929-1 Carpenter Shop, Break Room

Hazard: A metal flip top box contained electric parts operating at 120 volts and was accessible to unauthorized personnel

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.500(d)(1) Open-sided floors or platforms, 6 feet or more above adjacent floor or ground level, were not guarded by a standard railing or the equivalent on all open sides

Location: Building 9204-2, Fan Area

Hazard: Open sided platform/floor, had a 42-in. top rail but no intermediate or toe board installed.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.500(d)(1) Open-sided floors or platforms, 6 feet or more above adjacent floor or ground level, were not guarded by a standard railing or the equivalent on all open sides

Location: Building 9204-2, Fan Room Area Outside West and North Side

Hazard: The floor area on the north and west sides of the Kathabor was not guarded by a standard guard rail, had only a piece of metal purliss/lentile across vertical member 50 inches off the floor

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(1) The employer did not comply with the manufacturer's specifications and limitations applicable to the operation of crane(s) or derrick(s)

Location: Building 9204-4, Lorain 9115 crane

Hazard: A 5-sleeved load block was available on site for use by the Lorain 9115 crew but its manufacturer and load rating were not provided

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(1) The employer did not comply with the manufacturer's specifications and limitations applicable to the operation of crane(s) or derrick(s)

Location: Off Bear Creek Road, Lorain Hydraulic Crane, Model #LRT230, Rust MX#17-2130

Hazard: Travel requirement placed on the company requires, crane in travel mode, with block attached, to have hook fastened to frame of crane thereby damaging rope and block side plate bolts sleeve spacer when running boom down from the nearly full vertical position to the boom down travel position

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RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(12) Window(s) provided in the cab(s) of cranes or derricks were not of safety glass or equivalent that introduced no visible distortion that would interfere with the safe operation of the machine

Location: Building 9204-4 southwest corner outside area

Hazard: The front upper sliding window was cracked and crane left in service (Lorain 9115, S/N 32818)

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(2) Rated lead capacities, recommended operating speeds, special hazard warnings, or instructions, were not conspicuously posted on equipment:

Location: Building 9204-4 southwest corner outside area

Hazard: The Lorain 9115 Conventional Crane used to lift only with a whip line (Jib) had no job operation load charts available at operator's station

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(5) A competent person was not designated by the employer to inspect all cranes and derricks

Location: Building 9204-4, southwest corner outside area

Hazard: Crane crew and designated iron workers were unaware of length of boom or job in use, jib offset, location of load chart, wire rope, removal criteria, size of wire rope being used as hoist line, or length of cable being used

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(5) Crane and derrick machinery and equipment was not inspected prior to and during each use to make sure it was in a safe operating condition

Location: Building 9204-4, southwest outside area

Hazard: The Lorain Moto Crane, model 9115, was not properly inspected by crane crew or other inspecting officials, in that hooks of an unknown size and rating were used, blocks of unknown rating were available for use, load charts for crane setup were not available for operator use, length of boom, length of jib, jib offset were unknown; cracked window at operator's station and knowledge of size of hoist ropes installed on crane unknown.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(a)(7)(ii) Wire ropes were not taken out of service when kinking occurred resulting in distortion of the rope structure

Location: Off Bear Creek Road, Lorain Hydraulic Crane, Model LRT230, Rust MX#17-2130

Hazard: Four part block had two kinks in one of its running rope legs leading to the becket and wedge assembly

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(1) Jibs of cranes did not have positive stops to prevent their movement of more than 5 degrees above the straight line of the job and boom

Location: Building 9204-4, southwest corner outside area

Hazard: The Lorain 9115 Conventional Crane, with jib installed and in use, had belly slings connected to prevent the jib's movement of more than 5 degrees above the straight line of the jib and boom

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(2) There were no written, dated, and signed inspection reports and records being kept on a monthly basis concerning critical items such as brakes, crane hooks, and ropes

Location: Building 9204-4 southwest corner outside area

Hazard: The Lorain Moto Crane 9115, S/N 32818, had no written inspection reports being kept on the brakes, crane hooks, and ropes

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.550(b)(2) Crawler, truck, or locomotive cranes in use did not meet the applicable requirements for operation as prescribed in the ANSI B 30.5-1968 Safety Code for Crawler, Locomotive, and Truck Cranes

Location: Building 9204-4, southwest corner outside area

Hazard: The operator of the Lorain 9115 Moto Truck Crane, S/N 32818, was unaware of load chart location and or associated notes, unaware of boom length, job length, jib offset weights of loads lifted, proper inspections required for safe crane operations, and size of hoisting rope in use on crane.

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.56(a) While work was in progress, construction areas, ramps, runways, corridors, offices, shops, or storage areas were not lighted to the minimum illumination intensities listed in Table D-3 of subpart D of 29 CFR part 1926

Location: Building 9204-2, Fan Room

Hazard: Needed a flashlight to get around in passageway both to and including work areas of the fan room

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(1)(ii) The written hazard communication program did not include the methods that will be used to inform employees of the hazards of nonroutine tasks, and the hazards associated with chemicals contained in unlabeled pipes in their work areas

Location: Jobsite

Hazard: The written hazard program adapted by the Company does not address the issues of nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(b)(1) Conductors entering boxes, cabinets, or fittings were not protected from abrasion, or openings through which conductors entered or were not effectively closed

Location: Southwest corner steam plant

Hazard: A 4X2-2 knockout box used to supply power to other extension cords had its bushing disconnected from the box

RUST ENGINEERING

Type of Violation	Inspection Number	Inspection Site
Serious	107458754	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(b)(1) Conductors entering boxes, cabinets, or fittings were not protected from abrasion, or openings through which conductors entered or were not effectively closed

Location: Building 9929-1 Carpenter Shop, Nail Bin Storage Area

Hazard: A bank of eight switch boxes, the exposed backside of which showed energized Romex cable entering unprotected knockout box openings

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TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

29 CFR 1926.20(b)(3) Machinery, tool(s) material, or equipment which was not in compliance with the applicable requirement(s) of or locking the controls to render them inoperable

Location: Building 9204-4, High Roof Beta-4

Hazard:

Building 9204-4, High Roof Beta-4

A Kawasaki 300, all terrain vehicle capable of speeds up to 15 mph was used on the roof to haul roofing material from one location to another.

TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

29 CFR 1926.252(a) An enclosed chute of wood, or equivalent material, was not used where materials were dropped more than 20 feet to points lying outside the exterior walls of the building(s)

Location: Building 9204-4, High Roof East Side

Hazard: A debris chute erected to remove debris from roof level 70 ft plus to the ground was not enclosed on all sides

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TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

29 CFR 1904.2(a) The log and summary of occupational injuries and illnesses (OSHA Form No. 200 or its equivalent) was not completed in the detail provided in the form and the instructions contained therein

Location:

Hazard: The OSHA 200 form for 1988, was not totalled and used column 1 (fatalities) for the coding number 10

TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

29 CFR 1926.403(b)(2) Listed, labeled, or certified equipment was not installed and used in accordance with instructions included in the listing, labeling, or certification

Location: Building 9204-4, High Roof Center

Hazard: Water proof electric outlet box available for use had its cover unscrewed and a screw conductor opening left unplugged exposing weld nuts inside to water entry.

TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

29 CFR 1926.405(e)(1) In wet locations, cabinets, cutout boxes, fittings, boxes or panelboard enclosures were not waterproof

Location: Building 9204-4 Low Roof North Side

Hazard: Blue extension cord had a nonwater proof 2x4-2 outlet box attached and was exposed to rain and water puddles

TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

29 CFR 1926.59(e)(2) Employer who produces, uses, or stores hazardous chemicals at a workplace such that employees of other employers may be exposed shall ensure that the hazard communication programs developed and implemented under this paragraph(s) include the following:

Location: Jobsite

Hazard: The written developed did not address (1) methods of providing other employees with copies of their MSDS's, (2) methods to inform the other employers of any precautionary measures that need to be taken.

TENNESSEE ROOF

Type of Violation	Inspection Number	Inspection Site
Serious	107458655	Oak Ridge Y-12 Plant

Description

Section 5(a)(1) The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to

Location: Roof Area (High) East Side

Hazard: The portable guardrail system acting as a 3-ft-high parapet was not fixed into position such that a lateral force such as leaning against them would displace them. Among other methods, one feasible and acceptable method to correct the hazard is to affix standard metal base plates to the legs of the guardrails.

APPENDIX C
INTERAGENCY AGREEMENT

Appendix C

INTERAGENCY AGREEMENT

U.S. Department of Labor

Assistant Secretary for
Occupational Safety and Health
Washington, D.C. 20210

SEP 5 1989

Mr. Peter N. Brush
Acting Assistant Secretary for Environment,
Safety and Health
U.S. Department of Energy
Washington, D.C. 20585

Dear Mr. Brush:

The purpose of this letter is to obtain your concurrence on this agency's understanding of the role our employees will play in assisting DOE in its evaluation of contractor responsibilities for occupational safety and health in government-owned, contractor-operated facilities.

At our meeting on August 7, we named Mr. Leo Carey of the Occupational Safety and Health Administration (OSHA) and Mr. Jerry Hulman of the Department of Energy (DOE) as our coordinators. Mr. Carey and Mr. Hulman have met and had extensive discussions about OSHA's role. I would like to formalize their conclusions by spelling them out in this letter and its Appendices and asking for your concurrence.

DOE has requested OSHA assistance and, as Secretary Dole said in her August 11 letter to Secretary Watkins, we are pleased to assist you in accomplishing our mutual objective of assuring a safe and healthful workplace for all employees. To accomplish this objective, OSHA has agreed to assign three groups consisting of three experienced safety and health professionals each. In addition, OSHA will have available three alternate members for the groups, and has assigned a field coordinator to supervise the OSHA personnel. These OSHA groups will join the DOE "Tiger Teams" and will address all occupational safety and health issues (excluding radiological health) for the Tiger Team assessments. Details of the groups' work is spelled out in Appendix A. OSHA has also agreed to evaluate contractor estimates of costs for improving workplace safety and health, and to provide DOE information on the development of voluntary protection programs.

As you are aware, Section 4(b)(1) of the Occupational Safety and Health Act provides that the Act shall not apply to working conditions for which another Federal agency has issued and enforces safety and health standards. In a February 4, 1974 letter to the chairman of DOE's predecessor agency, the Atomic Energy Commission, the Secretary of Labor accepted AEC's interpretation that the issuance of occupational safety and health regulations under section 161(i)(3) of the Atomic Energy Act of 1954 precludes OSHA from enforcing its standards at AEC (now DOE) contractor-operated facilities. Thus, it should be

understood that our personnel will not be carrying out responsibilities under the Occupational Safety and Health Act, but rather will be assisting DOE in carrying out its responsibilities under section 161(i)(3) of the Atomic Energy Act of 1954. Such assistance is authorized by 42 U.S.C. §5816, which provides: "The Administrator [of the Energy Research and Development Administration, whose functions were transferred to DOE pursuant to 42 U.S.C. 7151] is authorized to utilize, on a reimbursable basis, the services of any personnel made available by any department, agency, or instrumentality, including any independent agency of the Government." While assisting DOE, the OSHA personnel will act as consultants for DOE, but will remain OSHA employees for personnel administration purposes. Although subject to the overall direction of the DOE Tiger Team leader, the OSHA consultants will be supervised by the OSHA group leader and field coordinator. Their salary, travel and per diem will be paid by OSHA. Details of the reimbursement procedures are spelled out in Appendix B.

I look forward to OSHA's participation in this important undertaking and hope that the procedures worked out by our staffs will be agreeable to you, as they are with me. If, however, you have any disagreement with what I have outlined, please don't hesitate to call me so that we can work out any potential problems and the evaluations can proceed in a timely manner.

Sincerely,

Alan C. McMillan
Acting Assistant Secretary

Attachments

APPENDIX A

ROLES

The role of the OSHA consultants is to identify all occupational safety and health hazards (excluding radiological hazards) observed in the DOE facilities visited. DOE safety and health personnel will observe the OSHA process in order to learn the procedures used by OSHA during an inspection of a similar OSHA-covered facility. OSHA will, in general, use the procedures outlined in Chapter III of the OSHA Field Operations Manual.

PRE-WALKAROUND

The OSHA consultants will be given appropriate materials in advance of the evaluation in order to become knowledgeable in the potential hazards and industrial processes that may be encountered. DOE contractors will provide necessary physical examinations for the group and all appropriate personal protective equipment. OSHA consultants will conduct an opening conference with employer and employee representatives. This may be combined with any Tiger Team opening conference, if appropriate. The consultants will review injury and illness records, hazard communication compliance, employee exposure and medical records, and other records relating to occupational safety and health. The review of medical records will be in accord with medical guidelines for confidentiality and the Privacy Act.

WALKAROUND

The OSHA group will do a walkaround of all areas of the facility and interview employees to identify potential safety and/or health hazards in the workplace. A designated representative of employees will participate in the walkaround. All contractor employees will be advised that DOE Order 5483.1A of June 22, 1983, Chapter III, Section III-I provides that contractors are forbidden to take any negative action against employees who file safety and health complaints or exercise other rights related to safety and health, and that employees who believe they have been discriminated against may file a complaint with DOE.

The consultants will review the contractor's overall safety and health management program and specific programs such as those related to personal protective equipment and respiratory protection.

During the walkaround, the consultants will document all hazards by performing airborne monitoring and taking noise and other measurements, and by using cameras, videotapes, tape recorders and other devices. We understand that DOE must review all pictures and tapes for security purposes prior to removal from the facility and that portions of them may be classified. We also understand that DOE and contractor industrial hygiene sampling equipment will be used where available. OSHA will analyze the samples taken by OSHA, using the OSHA standard method. If OSHA inspection equipment is used, the DOE contractor will be responsible for decontamination.

IMMINENT DANGER

If, during the course of the walkaround or any other phase of the evaluation, the OSHA consultants observe what, in their opinion, is an imminent danger or extremely serious situation, DOE will require the contractor to abate immediately the hazardous condition.

CLOSING CONFERENCE

At the conclusion of the evaluation, the OSHA group will conduct a closing conference with the contractor and the employee representative. This may be combined with that of the entire Tiger Team. At the closing conference, the contractor will be advised of the hazards found during the inspection and which of them would have been in violation of OSHA standards. OSHA will indicate the gravity of the hazard under the OSHA classification scheme and will discuss correction procedures and interim methods of control. The contractor will be given OSHA's assessment of the strengths and weaknesses of the occupational safety and health program at the facility. Finally, the contractor will be reminded that DOE Order 5483.1A forbids negative action against employees who exercise their rights relating to occupational safety and health.

EVALUATION REPORT

The OSHA group will complete the forms OSHA-1 and 1B (Identification of Hazards Worksheet) as if OSHA had performed an inspection in an OSHA-covered establishment. However, OSHA will not calculate the penalties that would have been assessed, and will not issue the citations. Where DOE standards are more stringent than OSHA's, OSHA will note whether there is compliance with the DOE standards. DOE will provide on-site clerical support for the typing of the forms. The OSHA group will deliver to DOE one copy of each form and any other documentary evidence prior to leaving the facility. These materials will be used by DOE to complete the Tiger Team's report. Where laboratory analysis results have not been completed by the conclusion of the evaluation, the OSHA group will supplement its materials within 60 days. In any event, a detailed consultative report in the format prescribed by the Tiger Team will be provided no later than 60 days following receipt of all sampling results. DOE will provide the OSHA group with a draft copy of the Tiger Team report for comment prior to submission to the Secretary of Energy. OSHA will receive a copy of the final report when it is submitted to the Secretary.

COST ESTIMATES

DOE has asked OSHA for assistance in estimating the cost of abating the hazards identified by the OSHA group. Because the OSHA consultants are not experienced in estimating capital costs for facilities of this type, DOE has suggested that OSHA review the estimates provided by the contractors. The OSHA consultants will evaluate the reasonableness of the contractors' estimates. They will also be able to consult with OSHA National Office personnel who may have more knowledge in this area and provide additional information in the complete report submitted 60 days after the evaluation.

CONFLICT RESOLUTION

As can occur in any joint undertaking, conflicts may arise. OSHA and DOE believe that these will be few, but a system for resolving differences should be in place. OSHA believes that these differences should be resolved at the lowest level possible. On all Tiger Team evaluations, the OSHA group leader

will be the primary point of contact between OSHA and DOE. If a conflict arises between an OSHA consultant and a DOE employee or a contractor, the OSHA group leader will attempt to resolve the issue, and notify the Tiger Team Coordinator even if the issue is resolved at the lower level. If the OSHA group leader is unable to resolve the issue, it will be elevated to the OSHA coordinator in the field for resolution with assistance from DOE. The evaluation will continue pending resolution. If necessary, the OSHA coordinator in the field will notify the OSHA Director of Field Programs, who will notify the DOE Coordinator and will bring the issue to the attention of the Acting Assistant Secretary for OSHA. Where needed, the Acting Assistant Secretary of OSHA will resolve the issue with the Acting Assistant Secretary for Environment, Safety and Health of DOE.

Voluntary Protection Programs

OSHA has developed Voluntary Protection Programs (VPP) for OSHA-covered workplaces. The VPP are intended to recognize and encourage worksites that have adopted comprehensive safety and health program management approaches used by industry leaders which have significantly reduced workplace injury rates. DOE is interested in applying this approach to its contractor facilities. OSHA will provide DOE with information on the development and operation of a similar program for DOE.

Alan C. McMillan
Acting Assistant Secretary
for Occupational Safety
and Health
U.S. Department of Labor

SEP 5 1989

Date

Peter N. Brush
Acting Assistant Secretary
for Environment, Safety,
and Health
U.S. Department of Energy

SEP 19 1989

Date

APPENDIX B

REIMBURSEMENT

1. The Department of Energy commits to pursue with the Office of Management and Budget, the establishment of full time equivalent ceiling to fully reimburse the Department of Labor for all time spent on this program.

2. Reimbursement for this agreement will be accomplished by a properly executed SF-1081 initiated by:

Office of Financial Management
U.S. Department of Labor
Occupational Safety and Health Administration
Room N-3419 FPB
200 Constitution Avenue, N.W.
Washington, D.C. 20210

TEL: (202) 357-0290 (Contact: June Adams)

3. Billing will be submitted to:

U.S. Department of Energy
Office of Controller
Washington Financial Services
Chief, Accounts Payable
P.O. Box 500
Germantown, MD 20874

Alan C. McMillan
Acting Assistant Secretary
for Occupational Safety
and Health
U.S. Department of Labor

SEP 21 1989
Date

Peter N. Brush
Acting Assistant Secretary
for Environment, Safety,
and Health
U.S. Department of Energy

Sep. 21, 1989
Date

Department of Energy
Washington, DC 20585

September 19, 1989

Alan C. McMillan
Acting Assistant Secretary
for Occupational Safety and Health
U.S. Department of Labor
Washington, D.C. 20210

Dear Mr. McMillan:

This is a request for your approval for reimbursable details of 13 Occupational Safety and Health Administration (OSHA) employees to the Department of Energy's (DOE) Office of Environment, Safety and Health (EH), and for related consultation. OSHA employees and contractors will be assisting DOE in its evaluation of DOE responsibilities for occupational safety and health, as specified in the interagency agreement executed on September 19, 1989, by Peter N. Brush, Acting Assistant Secretary for Environment, Safety and Health, U.S. Department of Energy and Alan C. McMillan, Acting Assistant Secretary for Occupational Safety and Health, U.S. Department of Labor.

The following conditions pertain to the details:

- The terms and conditions of the above-mentioned interagency agreement are incorporated herein (copy attached).

- OSHA will assign three inspection groups of three experienced safety and health professionals each and will have available three alternate members. The names of the OSHA employees are as follows:

  - Fred Bartol
  - Charlie Shields
  - Kay Coffey
  - Rob Medlock
  - Manuel Ypsilantes
  - M. Paula Gonsa
  - Bruce Beelman
  - Mark Kaszniak
  - Lesley Grove
  - Stephen R. Frye
  - Walter Cienaski
  - Clayton D. Rose
  - Ronald H. Sarnacki

- OSHA will also consult on cost estimates for improving workplace health and safety, and on the OSHA private sector voluntary protection program.

- OSHA will assign one employee, Bruce Beelman, to serve as group leader and field coordinator, with responsibility to supervise the detailed OSHA employees. All OSHA detailees will be subject to overall direction from the DOE Tiger Team leader for participation on inspections. Technical and administrative direction, and interagency coordination

responsibilities, are assigned to Jerry Hulman (Tel. 353-5299) of DOE and Leo Carey (Tel. 523-7725) at OSHA. Mr. Beelman will be responsible for time and attendance and leave approval for the above-named OSHA employees during this detail.

- The 13 above-named OSHA employees will continue to be assigned as OSHA employees, at their present grade levels and duty stations, and will continue to receive salaries and benefits coverage from OSHA. DOE will reimburse OSHA for salaries and benefits, including adjustments for any salary increases or benefits changes that may take place during the period of the detail, and for all travel and per diem expenses incurred by these employees incident to DOE duties during the period of the detail. Reimbursement for consultants employed by OSHA to aid in these activities is to be made at the costs incurred by OSHA.

- Billing for salary and fringe benefits costs, and travel and per diem costs are to be submitted by OSHA to DOE on Standard Form 1081 on a quarterly basis for costs actually incurred. The voucher should include the period covered and a breakdown of costs between salaries and benefits, and travel and per diem, and citing appropriation symbol. In FY 1989, the appropriation symbol will be 89X0224.91; allotment: CR-94.91; Budget and Reporting Codes: Salary HA040211, and Benefits, HA040212. The FY 1990 appropriation symbol will be 89X0224.91; allotment: CR-04.91; Budget and Reporting Codes: Salary HA040211, and Benefits HA040212.

- Vouchers should be mailed to DOE, Office of Controller, Washington Financial Services, Chief, Accounts Payable, P.O. Box 500, Germantown, Maryland 20874.

- Any and all of the conditions noted above are subject to cancellation, or to change by renegotiation, should the organization to which the above-named OSHA employees are detailed be revised or reduced in scope, or otherwise redirected to the extent their services are no longer required, or are unsupported because of budget restrictions in personnel, travel, or program support funding. This office will provide OSHA and the above-named OSHA employees as much notice as possible when such changes are anticipated or are required.

Should there be further questions, please contact Barbara Mason on 586-9239. If you agree with the provisions of the reimbursable details under the terms outlined above, please sign below and return the original and one copy to this office. Please retain two copies for your files.

Sincerely,

J. M. Schulman
Director of Personnel
and Career Development

Approved: _____
Alan C. McMillan
Acting Assistant Secretary
for Occupational Safety and Health

APPENDIX D
MEETING MINUTES

October 3, 1989

Meeting with EPA, Region IV

Attendees: (See attachment)

Subject: EPA assessment of working relationship with Y-12

The meeting opened with William Brumley giving an explanation of the Tiger Team's objective and the openness of the process to be followed. An open invitation was extended to the EPA representatives to participate in the team's assessment. Following the attached outline the following information was obtained from EPA.

All the EPA representatives said they enjoyed an excellent working relationship with Y-12 staff. An example that was used to illustrate this was the successful negotiations of the Federal Facility Agreement for the Oak Ridge Reservation.

EPA felt that they were well informed of events and activities on site. Communication between EPA Administrator and Oak Ridge Manager was good and that set the standard for the staff. Accordingly, the EPA Federal Facilities Coordinator has not had to go to EPA Administrator with problems - they are resolved with Y-12 staff.

It was learned that, between EPA and the State, the site is visited at least once a month. Although EPA's access to the site is made somewhat difficult due to security and safety precautions this was felt to be a universal problem not specific to Y-12. Nothing was done to make EPA's access unnecessarily difficult. EPA stated that they didn't encounter any exceptional delays in getting clearances but they did have a problem in retaining staff with clearances.

According to EPA about 75% of their effort at Y-12 is directed toward RCRA and CERCLA matters (closure, corrective actions, permitting). The major compliance issues centered around missing RCRA closure schedules. Overall, EPA stated that they were pleased with Y-12's current rate of progress.

A serious problem that was discussed was EPA's severely limited staff resources and their professed inability to provide technical oversight to so called "mega sites" like Y-12. EPA felt this problem could undermine DOEs environmental remediation program, especially when the Y-12 RCRA and CERCLA corrective action plans begin to accelerate. This problem has been recognized for several years and both the EPA Administrator and the Oak Ridge Manager are aware of it.

When asked about coordination with the State, EPA responded by saying the State was not able to keep up due to high staff turnover (low pay). Apparently, EPA would like to focus their resources on corrective action plans but due to limitations at the State level they are unnecessarily involved in relatively

straightforward closure plans and routine compliance monitoring. The State is aware of the problem.

In response to a request for other issues EPA raised a concern about data management. Specifically, the EPA would like Y-12 to generate environmental data in a uniform and electronic manner so that it could be better utilized. Fundamental to their concern was the realization that DOE's planned $90 million environmental restoration program involved a lot of monitoring data.

In closing, Bill Brumley extended an invitation to EPA to attend the exit conference scheduled for 9:00 a.m. on October 20, 1989.

Attendees

W.J. Brumlely	DOE-SR, Tiger Team	FTS 239-3296 (SR), 624-9670 OR
Ralph Basinski	NUS Corp, Tiger Team	412-788-1080
Todd Butz	Y-12 Plant HSEA Division	624-2579
Richard Campbell	EPA/RCRA	257-3433
Mickey Hartnett	EPA-CERCLA-Fed. Fac.	FTS 257-5059
David Hopkins	EPA Fed. Fac. Coord. (DOE)	FTS 257-3776
Arthur G. Limtom	EPA Reg. Fed. Fac. Coord.	FTS 257-3776
Tony Morrell	BPA, Tiger Team	FTS 429-5136 (BPA), FTS 624-5960
Bruce Potoka	DOE-ES&H, HQ, Tiger Team	FTS 896-5486 (DOE), 624-9607 (OR)
Suzanne Riddle	EPA-RCRA	FTS 257-3433
Jim Scarbrough	EPA-RCRA	FTS 257-3016
Beverly A. Spagg	EPA/CERCLA	FTS 257-5059
Tom Tison	DOE Y-12 Site Off.	FTS 626-9854
Susan S. Waddle	DOE-ORO	FTS 626-9855
Victor L. Weeks	(RPM-SRS) EPA Region 4-Fed. Fac.	FTS 257-5059

QUESTIONS FOR FEDERAL AND STATE REGULATORS

1. How would you describe the overall working relationship between DOE and the regulator?

2. Are communications open and frank? Examples?

3. How often is the regulator staff on site?

4. In the regulators viewpoint, what are the major program activities?

5. What are the major compliance issues?

6. What are the major current issues being worked between the regulator and DOE?

7. Is the regulator satisfied with the current rate of progress?

8. How would you describe the working relationship between the State and Federal regulators?

9. Are there any specific staff that you would like us to contact?

10. Is the regulator adequately staffed to regulate DOE activities?

October 11, 1989

Meeting with TDHE

Attendees: (see attachment)

Subject: TDHE views on their working relationship with Y-12

Bill Brumley opned the meeting by describing the Tiger team initiative and the process by which the final report of findings will be generated. The TDHE was again invited to participate in the Tiger Team effort at Y-12 by attending the evening debriefings or by observing field activities.

TDHE stated that their relationship with Y-12 is one of cooperation. In the past, pre-1983, the relationship was adversarial. Because of the cooperative relationship TDHE and Y-12 are able to solve issues at the working level unless the issue is of a nature that requires senior officials attention.

TDHE has no problems with communications with Y-12. DOE and MMES has presented sufficient information to assist TDHE decision making. There is adequate procedures in place of facilitate spill notification and response. DOE has streamlined communications by establishing technical contacts within MMES for the TDHE to contact directly.

State inspectors are at one of the Oak Ridge facilities every week to perform an evaluation in one of the program areas, i.e. RCRA, NPDES, Air. TDHE feels that it has a sufficient number of Q-cleared inspectors and that access to Y-12 has not been a problem. Previously inspectors were required to conduct all inspections without prior notification to the facility. This created problems at DOE facilities which required notification to security to arrange for access to the site. TDHE procedures now accommodate notification to facilities prior to inspections.

Major areas of focus at Y-12 for TDHE is remedial action at hazardous waste sites (RCRA and CERCLA). Generally, the State feels that Y-12 is "doing a good job." Radiation protection is an important program at TDHE. Y-12 has received radiation safety reviews by the State and has been responsive to correcting any noted deficiencies. TDHE stated that radiation safety problems are identified and addressed at the working level.

According to the State, there are no major areas of non-compliance at Y-12 however, ther are areas that will require extensive work. TDHE has limited resources in its' Air program, therefore it is a major effort to keep all the air permits current. Similarly, the NPDES permit at Y-12 is very complex and the State and Y-12 have been working to address issues such as meeting BDAT and eliminating toxicity problems in the West End Treatment Plant prior to issuance of the new permit.

TDHE is satisfied with the progress at Y-12 to address environmental concerns.

The State expressed concern that it was grossly understaffed and could not dedicate full time staff to focus attention on Y-12. DOE has offered to supplement staffing expenses, as it has in Colorado, and negotiations are underway. TDHE expressed hope that additional resources will be possible once an agreement is reached.

The EPA and TDHE have been working closely and try to maintain similar approaches to handling issues. EPA has demonstrated to the State its' willingness to sit down and discuss issues with them.

When asked if the State had any areas for the Tiger Teama to address the State recommended that the health physics program should be reviewed because problems were found during a June 1988 State audit.

William Brumley closed the meeting by again extending the invitation to the State and attend the Tiger Team closeout meeting on October 20. TDHE expressed interest in attending and agreed to contact the State OSHA equivalent and inform them about the closeout at Y-12.

Tiger Team/TDHE 10/11/89

Name	Organization	Phone
Tony Morrell	BPA (Tiger Team)	8 429-5136
Bruce Potoka	DOE - Washington, DC	(202) 586-5486
William J. Brumley	DOE - SR	239-3296
Tom Tison	DOE - Y-12 Site Office	576-9854
Susan Waddle	DOE - Y-12 Site Office	576-9855
Ralph Basinski	DOE - (NUS)	(412) 788-1080
Dick Tarbert	DOE - (NUS)	(412) 788-1080
Theodore Koss	DOE - (NUS)	(301) 258-8518
Lenny Vaughan	Martin Marietta - Y-12	576-8108
Jimmy Stone	Martin Marietta - Y-12	574-6911
Dale Ozier	DSWM, TDHE	(615) 741-3424
Jack P. Crabtree	DSWM, TDHE Knoxville	(615) 594-6466
Earl C. Leming	TDHE DOE Project Coordinator	(615) 594-6444
Jami D. Holbert	TDHE, DRH Knoxville	(615) 594-6035

APPENDIX E
ACRONYMS

ACL	alternate concentration limit
ADM	Action Description Memorandum
ASTM	American Society for Testing and Materials
BCBG	Bear Creek Burial Ground
BMP	best management practice
CAPCA	Closure and Post Closure Activities
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Lab Program
CPAF	Cost Plus Award Fee
CRSDB	Chestnut Ridge Sediment Disposal Basin
CRSP	Chestnut Ridge Security Pits
CWA	Clean Water Act
CY	calendar year
D&D	decontamination and decommissioning
DARA	Disposal Area Remedial Action
DMR	Discharge Monitoring Report
DOE	U.S. Department of Energy
DOP	dioctylphthalate
DOT	U.S. Department of Transportation
DP	Defense Programs
EA	Environmental Assessment
EFPC	East Fork Poplar Creek
EIS	Environmental Impact Statement
EMG	Environmental Monitoring Group
EPA	U.S. Environmental Protection Agency
ES&H	environmental, safety, and health
EUCFM	Enriched Uranium Conversion Facility Modifications
FAC	free available chlorine
FFA	Federal Facility Agreement
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
FS	Feasibility Study
FSAR	Final Safety Analysis Report
FY	fiscal year
H&S	health and safety
HEPA	high-efficiency particulate air
HP	health physics
HQ	Headquarters
HSEA	Health, Safety, Environment, and Accountability
ICP	inductively coupled plasma

LDR	Land Disposal Restriction
LLWDDD	Low-Level Waste Disposal, Development, and Demonstration
MCL	maximum contaminant level
MTF	Memoranda to File
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHP	New Hope Pond
NIST	National Institute of Standards and Technology
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
OJT	on-the-job training
ORGDP	Oak Ridge Gaseous Diffusion Plant
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
OSHA	Occupational Safety and Health Administration
OSR	Operational Safety Requirements
PA	public address
PCB	polychlorinated biphenyls
PDC	Performance Documentation Checklist
PE	project engineer
PM	project manager
PRA	probability risk analysis
PSD	Prevention of Significant Deterioration
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RSO	Responsible Supervisory Official
SAR	Safety Analysis Report
SARA	Superfund Amendments Reauthorization Act
SDWA	Safe Drinking Water Act
SEN.7	Secretary of Energy Notice 7
SWDA	Solid Waste Disposal Act
SWMU	solid waste management unit
SWP	Safety Work Permit
TDHE	Tennessee Department of Health and Environment
TEP	Technical Evaluation Program
TLD	thermoluminescent dosimeter
TMS	Training Management System
TRC	total residual chlorine

TSA	Technical Safety Appraisal
TSCA	Toxic Substances Control Act
UNC	United Nuclear Corporation
UST	underground storage tank
VOC	volatile organic carbon
WMA	waste management area
WMP	Water Management Plan
WTSD	Waste Treatment Storage and Disposal

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Executive Summary

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2. Key Findings and Noteworthy Practices

3. Environmental Assessment

4. Safety and Health Assessment

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Appendix A - Biographical Sketches of Assessment Personnel

Appendix B - OSHA Assessment Report and Form 1B Summaries

Appendix C - Interagency Agreement

Appendix D - Meetings Minutes

Appendix E - Acronyms