

Enclosure 5  
Letter, Felton to Jackson  
Dated: July 27, 1998

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**DEPARTMENT OF ENERGY  
OPERATIONAL READINESS REVIEW OF  
RESUMPTION OF ENRICHED URANIUM OPERATIONS, PHASE A,  
AT THE OAK RIDGE Y-12 PLANT**

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**Final Report  
Volume II**

**May 1998**

**U.S. Department of Energy  
Washington, D.C. 20585**

**ORR ASSESSMENT FORM 1**  
Configuration Management

<b>FUNCTIONAL AREA: CM</b>	<b>OBJECTIVE 1, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Safety systems and systems essential to worker and public safety are defined and a system to maintain control over the design and modification of facilities and safety-related systems is established. (CORE REQUIREMENT #4)

Criteria

Administrative controls are in place to ensure that repairs (or modifications) are adequately analyzed to identify system degradation and to ensure that design changes are documented and approved prior to implementation. (DOE-STD-1073-93, Ch. 1.3; S/RID FA Environmental Restoration (ER) LMES ID # 649)

Approach

**Record Review:** Review recent design changes and modifications to the facility to ensure that they have been reflected in drawings and documents available to operators and maintenance personnel. Review the listing of safety systems and components to ensure consistency with safety basis.

**Interviews:** Interview personnel associated with the configuration management program to assess their understanding of program requirements and responsibilities.

**Shift Performance:** Perform a facility walkdown to determine whether there are uncontrolled modifications to safety systems. This walkdown should evaluate the accuracy of drawings and other documentation for plant operation and maintenance.

Record Review:

- ES-CM-100, Martin Marietta Energy Systems, Inc. Policy, Configuration Management, Rev. 0, 12/22/92
- Y12-003, Martin Marietta Energy Systems, Inc; Oak Ridge, Y12 Plant Procedures: Policy for Configuration Management (CM); Rev. 0, 6/9/92
- Memorandum of Understanding to Provide a Configuration Management Program in Support of Work Activities in Enriched Uranium Operations between EUO Resumption Manager and Fire Protection Operations Manager, March 31, 1997
- Memorandum of Understanding to Provide a Configuration Management Program in Support of Work Activities in Enriched Uranium Operations between EUO Resumption Manager and PSS Coordinator/CAAS Owner, March 24, 1997

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- Memorandum of Understanding to Provide a Configuration Management Program in Support of Work Activities in Enriched Uranium Operations between EUO Resumption Manager and Product Certification Organization Manager, March 24, 1997
- Y/MA-7312, EUO Configuration Management Plan, Rev. 0, July 1997
- Y10-37-036, Configuration Management - Change Control Process, 1/15/98
- Y-12 CM-43/RI, Y-12 Guidance for Grading Structures, Systems, and Components, September 1997
- Y10-37-039, Enriched Uranium Operations Records Management, 01/30/98
- Y10-37-037, Enriched Uranium Operations Document Control, 3/13/98
- Y/MA-7255, The Operational Safety Requirements for Building 9212 Enriched Uranium Operations Complex (u), Revision 3 (corrected), March 1998
- Y/MA-7254, Rev. 2, The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex, March 1998
- Y/MA-7290, Rev. 1, The Basis for Interim Operation for Building 9215 Enriched Uranium Operation Complex, March 1998
- Y/MA-7291, Revision 2 (Corrected), The Operational Safety Requirements for the 9215 Complex Enriched Uranium Operations, March 1998
- Y/MA-7238, Configuration Control Board (CCB) Charter 9212/9215/9206, September 15, 1996, Revision 2
- Y/10-37-047, EUO Authorization Basis/Criticality Safety Requirement Linking Database, 3/31/98 (Training copy, not issued for implementation)
- Y/MA-7373, Lockheed Martin Energy Systems, Inc., Operational Readiness Review for the Enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, April 1998
- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, April 30, 1998 along with completed assessment forms
- EUO Change Request Report, 5/8/98
- Master Equipment Lists

Interviews Conducted:

- YSO Point of Contact for Configuration Management
- Y-12 Site CM Program Manager
- EUO Deputy Chief Engineer, Technical Support
- EUO Technical Support Manager / Chief Engineer
- EUO Engineering Manager, Technical Support
- Design Support Lead Engineer
- Engineering Division Director
- EUO Configuration Management Lead / Change Control Manager
- EUO Document Management Center Manager
- 9212 Operations Manager

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- Team Leader, Process Based Restart
- Product Certification Organization Manager
- Manager EUO
- Design Technicians (3)
- Designers (2)
- Design Engineers (2)
- System Engineers (3)
- Team Manager, O-Wing, accountability 2 systems
- Y-12 Facility Safety Manager

Shift Performance Evolution:

- Walkdown of change package for lube oil flow indicator replacement, O-Wing (EUO-1998-223), dwg no. PRM56878-SK1
- Walkdown of change package for cutting and capping of by-pass line in the west dry vacuum system, E-Wing (EUO-19998-184), dwg no. DVE-P2

Discussion of Results:

Record Review: The configuration management program as described in the site implementing documents is well defined, roles and responsibilities of individuals and organizations are clearly delineated, and necessary organizational interfaces are identified. The documents define a process to ensure changes are reviewed for safety implications and approved prior to implementation of the change. The process incorporates checks to identify that appropriate organizations review proposed changes and that identified implementing documents are modified to reflect changes once they have been accomplished.

The EUO organization utilizes a master equipment list for delineating all equipment which has been assigned a Structure, System, and Component (SSC) Grade; a listing of safety systems and components has not been developed. SSC grades are assigned according to the safety function of the equipment with consideration given for whether the equipment is relied upon for preventing or mitigating exposure to hazardous material, worker fatalities, serious injuries, and effects to the environment, mission, and plant personnel. Reliance on equipment for preventing criticality is indicated by the use of the letter "N" along with the numeric grade.

The Basis for Interim Operations (BIO) for Building 9212 and the one for Building 9215 provide interim classifications for all identified safety SSCs. The contents of the master equipment list were compared to the safety SSCs identified in the BIOs. All systems identified in the BIOs were addressed in the master equipment list. Component classifications in the master equipment list

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were compared to the BIO classifications and there were no discrepancies found. However, it should be noted that the master equipment list identifies more safety SSCs than identified by the BIOs.

Interviews: Personnel interviewed demonstrated an appropriate level of knowledge of the configuration management program established at EUO. Individuals were cognizant of their roles and responsibilities as defined in the requirements documents. Individuals responsible for program development verbalized a well thought out and designed program; interfaces with other organizations and programs were clearly articulated. Individuals responsible for management of enriched uranium operations understood their roles and responsibilities in support of the program and expressed a thorough understanding of the program objectives. Management personnel were also knowledgeable of the program objectives and conveyed their belief that the program is beneficial to operations.

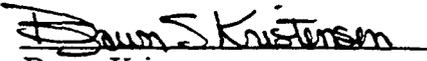
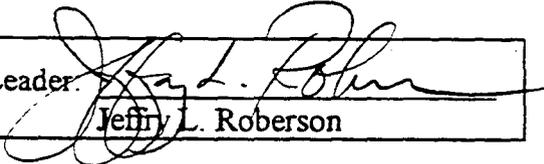
Shift Performance: Walkdowns were performed of two recent modifications. These involved the cutting and capping of the by pass line on the dry vacuum system and replacement of hand valves/flow indicator valves on the rolling mill drive box. The drawings changes associated with the modifications were found to be consistent with the physical configurations.

No uncontrolled modifications to safety systems were identified during facility and system walkdowns. There were, however, inconsistencies identified between the drawings and the actual system configurations. These inconsistencies are discussed in form 1 for CM.2 and deficiency form CM2-1.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Dawn Kristensen	Team Leader:  Jeffrey L. Roberson
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Configuration Management

<b>FUNCTIONAL AREA: CM</b>	<b>OBJECTIVE 2, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		YES	NO <input checked="" type="checkbox"/>

**OBJECTIVE:** The facility systems, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis included in the safety basis. (**CORE REQUIREMENT #4 and #15**)

Criteria

An adequate process has been implemented to ensure that documentation for systems critical to the safety of the facility exist and is kept current, as appropriate for their safety functions and that documentation is available to the operators. (DOE-STD-1073-93, Ch. 1.3; S/RID FA Environmental Restoration (ER) LMES ID # 649)

Drawings and other documentation relied upon for operations and maintenance activities are consistent with the existing plant configuration. (DOE-STD-1073-93, Ch. 1.3; S/RID FA Environmental Restoration (ER) LMES ID # 649)

Approach

**Record Review:** Review the configuration management process to ensure it will maintain up-to-date plant configurations. Review records for current or previous temporary modifications and verify required analysis is conducted and any required actions are implemented during the period the temporary modification is in place.

**Interviews:** Interview engineering personnel responsible for developing, reviewing and approving supporting safety analyses for proposed facility and equipment changes to assess their understanding of the program and their individual responsibilities in support of the CM program.

**Shift Performance:** Observe in-progress work control for compliance with administrative requirements such as currency of drawings and procedures.

Walkdown a temporary modification, if one is in effect, and evaluate the accuracy of the temporary modification records and drawings.

While observing evolutions and drill response, assess CM activities or programs in-place or planned to ensure compliance with safety requirements. At least one recently completed modification should be observed and changes verified, including changes to operating procedures if applicable.

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Record Review:

- ES-CM-100, Martin Marietta Energy Systems, Inc. Policy, Configuration Management, Rev. 0, 12/22/92
- Y12-003, Martin Marietta Energy Systems, Inc; Oak Ridge, Y12 Plant Procedures: Policy for Configuration Management (CM); Rev. 0, 6/9/92
- Memorandum of Understanding to Provide a Configuration Management Program in Support of Work Activities in Enriched Uranium Operations between EUO Resumption Manager and Fire Protection Operations Manager, March 31, 1997
- Memorandum of Understanding to Provide a Configuration Management Program in Support of Work Activities in Enriched Uranium Operations between EUO Resumption Manager and PSS Coordinator/CAAS Owner, March 24, 1997
- Memorandum of Understanding to Provide a Configuration Management Program in Support of Work Activities in Enriched Uranium Operations between EUO Resumption Manager and Product Certification Organization Manager, March 24, 1997
- Y/MA-7312, EUO Configuration Management Plan, Rev. 0, July 1997
- Y10-37-036, Configuration Management - Change Control Process, 1/15/98
- Y-12 CM-43/RI, Y-12 Guidance for Grading Structures, Systems, and Components, September 1997
- Y10-37-039, Enriched Uranium Operations Records Management, 01/30/98
- Y10-37-037, Enriched Uranium Operations Document Control, 3/13/98
- Y/MA-7254, Rev. 2, The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex, March 1998
- Y/MA-7290, Rev. 1, The Basis for Interim Operation for Building 9215 Enriched Uranium Operation Complex, March 1998
- Y/MA-7291, Revision 2 (Corrected), The Operational Safety Requirements for the 9215 Complex Enriched Uranium Operations, March 1998
- Y/MA-7255, Revision 3 (Corrected), The Operational Safety Requirements for the 9212 Complex Enriched Uranium Operations, March 1998
- Y/MA-7238, Configuration Control Board (CCB) Charter 9212/9215/9206, September 15, 1996, Revision 2
- Y50-37-20-003, Rolling Mill Operation, EUO O-Wing Rolling and Forming, 5/6/98
- Y/10-37-047, EUO Authorization Basis/Criticality Safety Requirement Linking Database, 3/31/98 (Training copy, not issued for implementation)
- Y10-153, Temporary Modification Control, 3/5/98
- Y/MA-7373, Lockheed Martin Energy Systems, Inc., Operational Readiness Review for the Enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, April 1998
- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, April 30, 1998 along with completed assessment forms

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- EUO Change Request Report, 5/8/98
- EUO Configuration Management S/RID Compliance Matrix, 4/29/98
- EUO-1997-665, Change Package
- EUO-1998-035, Change Package
- EUO-1998-257, Change Package
- EUO-1998-223, Change Package
- EUO-1998-184, Change Package

#### Interviews Conducted:

- YSO Point of Contact for Configuration Management
- Y-12 Site CM Program Manager
- EUO Deputy Chief Engineer, Technical Support
- EUO Technical Support Manager / Chief Engineer
- EUO Engineering Manager, Technical Support
- Design Support Lead Engineer
- Engineering Division Director
- EUO Configuration Management Lead / Change Control Manager
- EUO Document Management Center Manager
- 9212 Operations Manager
- Team Leader, Process Based Restart
- Product Certification Organization Manager
- Manager EUO
- Design Technicians (3)
- Designers (2)
- Design Engineers (2)
- System Engineers (3)
- Team Manager, O-Wing, accountability 2 systems

#### Shift Performance Evolution:

- Drill for high capacity evaporator fume-off reaction
- Walkdown of change package for lube oil flow indicator replacement, O-Wing (EUO-1998-223), dwg no. PRM56878-SK1
- Walkdown of change package for cutting and capping of by-pass line in the west dry vacuum system, E-Wing (EUO-1998-184), dwg no. DVE-P2
- Walkdown of Filtered Tower Water East Casting Panel D, dwg no. FTW-P8
- Walkdown of Filtered Tower Water East Casting Panel E, dwg no. FTW-P11
- Walkdown of Filtered Tower Water West Casting Panel G, dwg no. FTW-P9
- Walkdown of Filtered Tower Water West Casting Panel J, dwg no. FTW-P13

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**Configuration Management**

- Walkdown of Filtered Tower Water West Casting Panel L, dwg no. FTW-P15
- Walkdown of West Casting, Closed Loop Cooling, dwg no. CWL-P25

Discussion of Results:

Record Review: The configuration management program as described in the site implementing documents is well defined, roles and responsibilities of individuals and organizations are clearly delineated, and necessary organizational interfaces are identified. A flowdown of implementing documents from the requirements in the S/RID has been developed. The configuration management program emphasizes the control of changes to safety structures, systems, and components (SSCs) and does not focus on systematic boundaries of safety systems. Components are assigned a SSC grade and this grade is utilized in defining the level of rigor utilized for change control.

The documents define a process to ensure changes are reviewed for safety implications and approved prior to implementation of the change. The process incorporates checks to identify that appropriate organizations review proposed changes and that identified implementing documents are modified to reflect changes once they have been accomplished.

Memoranda of Understanding (MOUs) have been established between the tenant organizations and EUO to define the roles and responsibilities of the involved organizations. The MOUs define specific administrative controls which the tenants are to comply with to ensure any changes to EUO facility SSCs and related documents will be controlled under the EUO Configuration Management Program. The MOUs state that they are intended to be temporary and are to remain in effect until the tenants have implemented approved Configuration Management Programs.

Records for temporary modifications were reviewed. The change packages clearly identified the proposed changes. Completed change request forms were included in the files. These involved the modification of hand valves for connection to a vacuum gauge, installation of over temperature switches, opening of inspection doors in stack 33 to increase flow for Holden furnace operation.

Records for recent modifications were reviewed. Change packages were found to be complete for the cutting and capping of the by pass line on the dry vacuum system. The change package for replacement of the hand valve/flow indicator valves (HV/FIs) on the rolling mill drive box did not identify the operating procedure as an affected document. This is presented as a post start finding. (CM 2-2)

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### **Configuration Management**

**Interviews:** Personnel responsible for developing, reviewing, and approving supporting analyses for change packages demonstrated a thorough understanding of the program objectives and their associated roles and responsibilities. Personnel have received training on the configuration management program and its objectives.

During an interview with the manager for one of the tenant organizations, the manager displayed a thorough knowledge of the objectives and requirements of EUO's Configuration Management Program, and how she was required to comply with it as a tenant in EUO's facilities (per the MOU as discussed above). She was able to identify the SSCs under her purview that have received the highest safety grading for change control. She related how these SSCs had been graded by the EUO organization with active participation by personnel in her organization.

**Shift Performance:** During the planning phase for modifications, which was underway during the ORR, LMES personnel identified that the water cooling piping configuration for furnace D was inconsistent with the current drawing (DWG No. FTW-P8). Specifically, the functional location of check valve, 9212-FTW-FV-406D, was not accurately depicted on the drawing. The check valve is rated as a SSC 2N indicating it is safety significant. The actual configuration was analyzed and it was determined that it did not meet the design intent for the safety function of this valve. During operator rounds which were underway during the ORR, inconsistencies were identified by LMES between the drawings and the actual configuration of four vacuum pumps for the casting furnaces. These inconsistencies are not considered to be of significance to safety. During follow-up walkdowns, initiated by LMES during the ORR, there were numerous inconsistencies identified between the operating systems and the associated drawings. The large majority of these were considered to be inconsequential to safety. (Examples: missing labels, labels contained incorrect verbal descriptors along with the correct component identification numbers, termination mechanism for pipe incorrectly identified.)

During the development of the system drawing, additional rigor for safety systems was not utilized. It should be noted that after initial development, two independent validations were performed for accuracy of drawings which were considered important for safe operations. However, DWG No. FTW-P8 would be considered to be in this category and the inconsistency discussed above was not identified by either of these verifications.

While only one of the above described discrepancies have direct safety implications, the number of inconsistencies leads to a lack of confidence in the overall accuracy of the drawings. This was identified as a pre-start finding based on the potential for discrepancies between the actual configuration and the drawings for systems relied upon for safe enriched uranium operations (CM 2-1).

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Configuration Management

The drill for the high capacity evaporator fume-off reaction was observed. The drill did not engage configuration management personnel or engineering support personnel.

A recent modification to the rolling mill drive gearbox was walked down. The field configuration of the system was consistent with the change package.

Additionally, a recent modification to the west dry vacuum producer was walked down. The field configuration of the system was consistent with that in the change package. It should be noted that the drawings had not been modified to reflect the changed configuration; however, this drawing change was in process. The status board in the shift managers office listed this system as "warm shutdown" which provides an administrative barrier for preventing operation of the system until the change package has been closed out. This is in accordance with the change control process which requires turnover and closure of the change package before returning the equipment to service.

Conclusion: The criteria for this objective have not been met.

Issue(s):

- Lack of confidence that drawings adequately reflect the actual configuration of systems. (CM2-1)
- Need to strengthen the change control process for identification of affected documents. (CM2-2)

Inspector: <u>Dawn S Kristensen</u> Dawn Kristensen	Team Leader: <u>Jeffrey L. Roberson</u> Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Configuration Management

<b>Functional Area:</b> CM	<b>Objective No.:</b> 2	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> CM2-1 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** Lack of confidence that drawings adequately reflect the actual configuration of systems.

**REQUIREMENT:** The Configuration Management Program ensures that the physical and functional characteristics of structures, systems, components, instructions and procedures, and other designated physical or administrative items are consistent with design and administrative requirements and are properly identified, controlled, and incorporated into the facility's documentation.

**REFERENCE(S):** Y/MA-7255, The Operational Safety Requirements for Building 9212 Enriched Uranium Operations Complex (u), Revision 3 (Corrected), March 1998; and Y/MA-7291, Revision 2 (Corrected), The Operational Safety Requirements for the 9215 Complex Enriched Uranium Operations, March 1998.

**DISCUSSION:** During the planning phase for modifications, which was underway during the ORR, LMES personnel identified that the water cooling piping configuration for furnace D was inconsistent with the current drawing (DWG No. FTW-P8). Specifically, the functional location of check valve, 9212-FTW-FV-406D, was not accurately depicted on the drawing. The check valve is rated as a SSC 2N indicating it is safety significant. The actual configuration was analyzed and it was determined that the actual configuration did not meet the design intent for the safety function of this valve.

Additionally, numerous discrepancies were identified in system drawings during other walkdowns conducted by LMES during the ORR. While these drawing discrepancies were less significant than that described above, the number of discrepancies indicates a possible systematic weakness in the control of safety significant systems.

**CONCLUSION:** This is a pre-start finding based on the potential for safety impacts from discrepancies between the actual configuration and the system drawings.

Inspector: <u>Dawn S. Kristensen</u> Dawn Kristensen	Team Leader: <u>Jeffery L. Roberson</u> Jeffery L. Roberson
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**ORR DEFICIENCY FORM**  
Configuration Management

<b>Functional Area:</b> CM	<b>Objective No.:</b> 2	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> CM2-2 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** Need to strengthen the change control process for identification of affected documents.

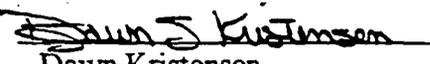
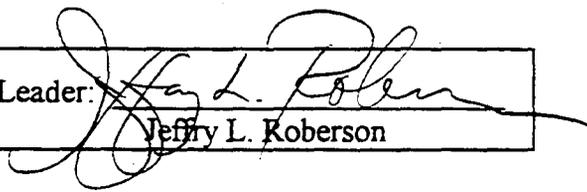
**REQUIREMENT:** CM shall ensure that consistency is maintained among the requirements, the physical and functional configuration and the documentation particularly as changes are made. Critical documents affected by a change such as drawings and procedures commonly used for system operation, tagouts, and maintenance, shall be updated prior to operation of the system or equipment.

**REFERENCE(S):** S/RID requirement adopted from DOE STD 1073 Section: 1.2  
S/RID requirement adopted from DOE Order 4330.4B Chapter I, 3.6.4 f.

**DISCUSSION:** During the rolling mill demonstration for the ORR, the operation was halted due to a discrepancy between the procedure and the physical configuration of the hand valve/flow indicators (HV/FIs) on the mill drive gearbox. There are a total of twelve HV/FIs on this gear box. These components had recently been modified. Review of the associated change package revealed that the procedure had not been identified as one of the affected documents.

The change control process does address the need to identify documents affected by a proposed change and a "tickler" list of potentially effected documents is provided in the procedure. However, this "tickler" list is not incorporated into the change control forms. The process relies almost totally on individual knowledge of the systems/components being changed and associated documents.

**CONCLUSION:** This is identified as a post start as this issue primarily affects the efficiency of operations and there was only one instance of this type was identified during the review.

Inspector:  Dawn Kristensen	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
**Criticality Safety**

<b>FUNCTIONAL AREA: CS</b>	<b>OBJECTIVE 1 , REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A criticality safety program is established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure criticality safety support services are adequate for safe operations. **(CORE REQUIREMENT #8)**

Criteria

The criticality safety organization is established and supports the operations organization. The criticality safety organization is adequately staffed with qualified personnel. (5480.24, para 7.c., 5480.19, Ch. II and III, 5480.20, Ch. 4 and 5, S/RID FA Criticality Safety (CS) LMES ID #5406, #5317, #5326)

Revised processes for the issuances of criticality safety operating limits are implemented in facility operating procedures, and are viable. (5480.24, para 7, 5480.19, Ch. XVII, S/RID FA Criticality Safety (CS) LMES ID #6898, #6899, #5487, #5318, #10292, #5489)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, and internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels of the criticality safety organization that supports operations. Ensure proper integration of lessons learned from recent occurrences. Verify that facility procedures implement criticality safety operating limits.

**Interviews:** Interview the criticality safety personnel supporting operations to determine if they are knowledgeable of their roles, responsibilities, and methods.

**Shift Performance:** While observing evolutions and drill response, verify that criticality safety operating limits and any other program requirements are effectively implemented in the facility. Monitor the communications between criticality safety support personnel and operators for demonstrated understanding of criticality safety processes.

Record Review:

- Organization chart, Nuclear Criticality Safety Organization, dated 2/6/98
- Roster, Nuclear Criticality Safety Organization, dated 2/6/98
- K.J. Carroll, Assignment as 9212 Facility Lead NCS Engineer, 12/8/97
- K.J. Carroll, Assignment as 9215 Facility Lead NCS Engineer, 12/8/97

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- K.J. Carroll, Assignment as 9206 Facility Lead NCS Engineer, 12/8/97
- Y/DD-704, Nuclear Criticality Safety Organization (NCSO) Administrative Guide, Rev. 2, 12/19/97
- Y/DD-430, Quality Assurance Plan Y-12 Nuclear Criticality Safety Organization, Rev. 4, 4/9/97
- Y/MA-7296, Enriched Uranium Organization Memorandum of Understandings Index, Rev. 1, 5/29/97 and Memorandum of Understandings between EUO and NCSO
- Nuclear Criticality Safety Organization Educational Information, 2/16/98
- Training Management System Requirement/Qualification Status, members of NCSO, 1/26/98
- Y/DD-694, Rev.4, Qualification Program Nuclear Criticality Safety Organization, 5/19/97
- Y/DD-587, Rev. 26, List of Qualified Personnel, 1/30/98
- Y/DD-680, Roles and Responsibilities in the Nuclear Criticality Safety Organization, 5/9/95
- Y/DD-696, Training Implementation Nuclear Criticality Safety Organization, Rev. 4, 5/19/97
- Y/DD-710, Guidance for the Development of Continuing Technical Training, Nuclear Criticality Safety Organization (NCS), Rev. 1, 5/20/97
- Y70-150, Nuclear Criticality Safety Program, 2/9/98
- Y70-151, Criticality Accident Alarm System, 8/21/92 and Change Directives 1, 2, and 3 dated 7/28/94, 8/2/95 and 10/10/95
- Y70-159, Fissile Material Activity Identification, Marking, and Requirements Posting, 8/16/96
- Y70-160, Criticality Safety Approval System, 11/10/97
- Y70-162, Nuclear Criticality Safety Training Program, 7/6/94 and Change Directives Y70-162-1 and 2 dated 10/28/94 and 1/5/94 (actually 1/5/95), respectively
- Y70-68-001, Criticality Safety Requirements Development, Review, and Approval, 11/10/97
- Y70-68-002, Nuclear Criticality Safety Organization External Monitoring Program, 8/19/97
- Y70-68-003, Nuclear Criticality Safety Incidents, Deficiencies, and Procedural Noncompliances, 7/18/97
- Y70-68-004, Criticality Safety Approval Development, Review, and Approval, 8/18/97
- Y70-68-005, Quality Assurance for Nuclear Criticality Safety Computer Calculations, 7/17/97
- Y70-68-007, Review of Documents Controlling Fissile Material Activities, 9/17/97
- Y/DD-724, NCS Guidance for STAs, 4/4/97
- Y/DD-552, Oak Ridge Y-12 Plant Nuclear Criticality Safety Organization Self-Assessment Program, Rev. 3, 8/26/97

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### Criticality Safety

- Y/DD-737, Y-12 Plant Nuclear Criticality Safety Long-Term Improvement and Implementation Plan, 11/1/96
- K.J. Carroll, Nuclear Criticality Safety Advisory Council Charter, 5/29/96
- Nuclear Criticality Safety Advisory Council monthly meeting minutes, 1997
- Nuclear Criticality Safety Deficiency Reports, 1996 and 1997
- Y/MA-7243, Enriched Uranium Operations (EUO) Restart Plan, Rev. 3, 10/97
- Y/MA-7316, Operational Readiness Review (ORR) Plan of Action for Enriched Uranium Operation Restart Phase A, Rev. 1, 8/97
- Y/MA-7332, LMES ORR Implementation Plan for EUO Restart Phase A1 at the Oak Ridge Y-12 Plant, 12/97
- Y/MA-7373, Lockheed Martin Energy Systems, Inc., Operational Readiness Review Report for the Enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, 4/98
- U.S. Department of Energy, Oak Ridge Operations, Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, 4/30/98
- ESAMS Issue Management Report, Oak Ridge Y-2 Plant, Findings A1-CS-01 to 04, 5/07/98
- NCSO INFO 98-009, Y-12 Nuclear Criticality Safety Organization Guidance, CSE Content Expectations, 4/30/98
- NCSO INFO 98-010, Y-12 Nuclear Criticality Safety Organization Guidance, Senior Technical Resource Group, Rev. 0, 5/4/98
- CSE/CSR Operational Readiness Review Checklist, 4/98
- NCSO CSE Review-Pre-Start Issues, 5/7/98
- Completed CSE/CSR Operational Readiness Review Checklists for 13 CSEs, 4/98
- CSR-PKL-008, E Wing Metal Pickling Process, Rev. 2, 8/19/97
- CSE-PKL-008, Criticality Safety Evaluation for E Wing Metal Pickling Process, Rev. 0, 2/27/98
- CSR-CMH-012, Containers and Material Handling (U), Rev. 5, 12/1/97
- CSE-CMH-012, Rev. 3, 12/1/97
- CSR-STOR-E-014, E Wing Storage, Rev. 2, 4/14/98
- CSE-STOR-E-014, Criticality Safety Evaluation for E Wing Storage (U), Rev. 2, 4/3/98
- CSR-CE/W-016, Casting Operations (East and West Lines), Rev. 2, 4/29/98
- CSE-CE/W-016, Criticality Safety Evaluation for Casting Operations (East and West Lines), (U), Rev. 3, 5/2/98
- CSR-NR&NHO3-019, 9818 Tanks and Tankers, Rev. 1, 2/16/98
- CSE-NR&NHO3-019, Criticality Safety Evaluation for 9818 Tanks and Tankers, Rev. 0, 2/16/98
- CSR-WVS-025, Wet Vacuum System, Rev. 3, 4/29/98
- CSE-WVS-025, Criticality Safety Evaluation for Wet Vacuum System, Rev. 3, 4/29/98
- CSR-STOR-C-037, Chemical Area Storage, 2.16/98

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- CSE-STOR-C-037, Rev. 1, 2.16/98
- CSR-HC-041, High Capacity Evaporator, Rev. 2, 3/2/98
- CSE-HC-041, Criticality Safety Evaluation for High Capacity Evaporator, Rev. 2, 3/2/98
- CSR-MO-053, Machining Operations, Rev. 2, 3/30/98
- CSE-MO-053, Criticality Safety Evaluation for Machining Operations, Rev. 3, 3/30/98
- CSR-MCS-056, M-Wing Machine Coolant, Rev. 3, 4/22/98
- CSE-MCS-056, Criticality Safety Evaluation for M Wing Machine Coolant, Rev. 3, 4/22/98
- CSR-OW-060, O Wing Operations (U), Rev. 3, 4/8/98
- CSR-OW-060, Criticality Safety Evaluations for O Wing Operations (U), Rev. 0, 1/12/98 and Addendum 1 (2/13/98), 2 (3/5/98), and 3 (4/8/98)
- EUO Safety Basis Team, Discussion of Available Consequence Analysis for Natural Phenomena Events Building 9212 and 9215, 5/98
- Y/DD-791, Assessment of Y-12 Plant Practices Governing the Relationship Between Nuclear Criticality Safety Organization Double Contingency and Natural Phenomena Events Related in Authorization Basis Documentation, 10/21/97
- Y/DD-807, Methodology to Address Weaknesses Between Nuclear Criticality Safety Analyses and Authorization Basis Events, 1/22/98
- Point Paper No. 24, Increasing Resistance to Natural Phenomena Initiated Event, 2/24/98
- Y/DD-784, The Status of Analysis of Natural Phenomena Issues Relate to Nuclear Criticality Safety, 8/14/97
- Y52-53-SO-035, Surveillance and Testing of Criticality Accident Alarm System(s) for buildings 9212, 9215, 9995, and 9998, 3/16/98

#### Interviews Conducted:

- NCS Manager, NCSO
- NCS Scientific Advisor, NCSO
- NCS Phase A1 Resumption Coordinator, NCSO
- NCS EUO Operations Support Manager, NCSO
- NCS PBR Technical Liaison to Operations, NCSO
- NCS Compliance, Planning, and Resources Manager, NCSO
- NCS Engineers, EUO Phase A1 Resumption, NCSO (11)
- NCS Engineers, EUO Phase A1 Operations, NCSO (2)
- DOE Facility Representatives, EUO Phase A1 (2)
- DOE/YSO Nuclear Criticality Safety Engineer
- Shift Technical Advisors, EUO (3)
- EUO Engineering Manager
- EUO Process Engineer
- EUO Shift Supervisor

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- EUO Supervisors (5)
- EUO Operators (4)

Shift Performance Evolution:

- Chip Processing Evolution
- Machining Operations
- Machine Coolant System Operation
- Spill Drill, High Capacity Evaporators
- Monthly Surveillance of the Criticality Accident Alarm System for Building 9995
- Criticality Safety Walkdowns with CSE Author of:
  - Casting Operations
  - High Capacity Evaporators
  - Chip Processing Operations
  - Ultrasonic Cleaning
  - Dry Vacuum System
  - Machining/chip packing
  - Machine Coolant System

Discussion of Results:

Record Review: The Health and Safety Procedure Y-70-150 clearly established the nuclear criticality safety program at Y-12 that supports EUO Phase A1 activities, defined the responsibilities of each of the operations, management, and support organizations, and established the Nuclear Criticality Safety Organization (NCSO). Other Health and Safety Procedures (Y-70-150 to Y-70-162) clearly established the activities and operating procedures of the NCSO. The functional layout, staffing levels, and reporting relationships of the NCSO were clearly presented in an organization chart. Roles and responsibilities within the department were defined in Y/DD-680 and the Administrative Guide (Y/DD-704). Collectively, these documents clearly laid out the functions, assignments, responsibilities, and reporting relationships for the NCSO and identified the relationships and responsibilities of the NCSO and the operations organization in criticality safety.

The organization charts and staff lists indicated that the NCSO had two groups supporting EUO operations, including Phase A1 activities. The EUO Resumption group had 6 full-time criticality safety engineers and 11 temporary engineers directly supporting preparation of Criticality Safety Evaluations (CSEs) and Criticality Safety Requirements (CSRs) documents for EUO operations. In addition, the Enriched Uranium, Waste Management, and Analytical Services Operations Group had assigned lead criticality safety engineers to each of the buildings supporting EUO operations.

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Review of the NCSO List of Qualified Personnel indicated that NCSO had 14 employees qualified as "Engineer-in-Training", 6 qualified as "NCS Engineer", and 10 qualified as "NCS Specialist". Most of the temporary engineers were qualified as "Engineer-in-Training".

The conclusions of a separate and extensive review conducted recently of the CSEs and interim CSEs by a DOE/OR criticality safety consultant was also reviewed. Twelve of 59 EUO CSEs available at that time were reviewed. All were judged to be "adequate" overall, although 3 interim CSEs were judged to be weak or "not adequate" in certain areas. Comments and concerns from that review had been incorporated into the CSEs approved for Phase A1 startup.

Review of the 4/98 LMES ORR indicated that the criticality safety reviewer had raised serious specific and general programmatic concerns with the CSEs and the companion CSRs that were reviewed. The conclusions included that significant problems existed with the criticality safety program. General problems included the traceability of the safety documentation and the thoroughness of the implementation of criticality safety requirements into operations. Specific problems included CSEs that did not (1) clearly define the scope of operations, operating constraints, and applicability of the CSE or (2) provide sufficient detail to determine failure mechanisms and failure probabilities associated with contingency analysis. Furthermore, conclusions were reached that "a weakness existed in the CSR validation and implementation process that allowed oversights to occur such that equipment and material deviations as compared to CSR requirements can exist". The overall conclusion was that "...it was not unreasonable to assume that operations could be conducted in a safe manner after the prestart findings had been addressed, the root causes of the findings had been determined, and operations had assessed that similar deficiencies that might exist would not affect the safety of operations." The general concern, although not explicitly stated, was that the CSEs did not meet the minimum ANSI/ANS 8.19 requirement that CSEs be "documented with sufficient detail, clarity, and lack of ambiguity to allow independent judgement of results."

The response and closure of both the specific and general concerns raised by the LMES ORR criticality safety review were reviewed and found to be adequate. The NCSO had embarked on a major internal review of all EUO Phase A1 CSE/CSR documents to determine if there was adequate documentation detail to determine the basic assumptions, normal conditions, upset conditions, and technical design information necessary to verify the double contingency principle had been met. That review had two NCSO engineers review each Phase A1 CSE using a CSE/CSR Operational Readiness Review Checklist. Key questions were: 1) does the CSE provide adequate control of safety, based on current known (documented) information and analyst's process knowledge? and 2) is there enough documentation to allow a new analyst to follow the logic several years from now? The NCSO CSE/CSR reviewer questions were submitted to the CSE author who had to defend his CSE against the questions. Most questions could be adequately answered and were judged an area for post-start improvement by the NCSO.

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Technical questions were raised on 8 of 33 Phase A1 CSEs that the NCSO judged must be resolved prior to restart. Independent review during this ORR of 9 of the 33 Phase A1 CSE/CSR checklists indicated that the reviewers raised a number of good questions and identified a large number of areas for improvement for each of the CSEs.

The NCSO effort also included defining a higher standard for content of future CSEs and determining if the Phase A1 CSEs required revision prior to restart or if documentation deficiencies could be corrected after Phase A1 restart. The overall conclusion of this NCSO review must be that the existing Phase A1 CSE's do not meet the basic ANSI/ANSI 8.19 requirement that CSEs be "documented with sufficient detail, clarity, and lack of ambiguity to allow independent judgement of results." With resolution of the pre-start issues NCSO identified with 8 of the 33 CSEs, the CSEs should adequately identify the criticality safety controls to support Phase A1 operations.

Because of the serious nature of the criticality safety concerns raised by the LMES ORR as well as by other outside reviewers, a more extensive review of the existing CSEs and the process by which they had been prepared was performed. Based on perceived criticality safety risk, 11 of the 33 Phase A1 CSEs and the companion CSRs were selected for limited review. This review included a limited review of the CSE to determine if it met the minimum ANSI/ANS and DOE Order/Standard requirements for independent technical review, questioning the CSE authors on their technical qualifications and CSE preparation process, and walkdown of the process with the CSE author to verify the adequacy of the CSE preparation process.

Review of the eleven CSEs and companion CSRs indicated that major progress had been made in documenting the criticality safety basis for operations since the Readiness Assessments performed for Receipt, Shipping and Storage (9/95) and Disassembly and Assembly (3/96) and the Task 2 and 3 DNFSB Recommendation 94-4 assessments (11/96). The CSRs reviewed were a major improvement over the Criticality Safety Approvals (CSAs) that had been previously used. In most cases reviewed, the requirements were clearly delineated and included passive design features, active design features, and administrative controlled limits and requirements. Previous assessments had indicated that there was an effective program to ensure that the limits and controls identified in the CSRs would be adequately implemented into operating procedures. The limited review of this assessment confirmed those findings.

The CSEs, though not always sufficiently detailed in some areas, were a significant advancement over past documentation. Some aspects of the new CSEs were found to be weak, as noted in the LMES ORR report. While some Phase A1 processes had detailed process descriptions prepared and referenced in the CSEs, others did not and the CSE authors had to rely on the limited

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descriptive text available in safety basis documents such as the BIO and lists of drawings. The lack of basic process information in some CSEs made independent review difficult, as also indicated in the LMES ORR. (CS1-1)

Review of the "Discussion of Contingencies" and "Evaluation & Results" sections of several CSEs was sometimes difficult. A loss of contingency-based approach was generally used to verify that the Double Contingency principle had been followed. This approach made it difficult at times to verify that specific process-based scenarios were adequately addressed, particularly those that might required common-mode failure of multiple contingencies, or failures that might cross process analysis boundaries. Discussions with NCSO staff allowed confirmation that adequate contingencies were present even when not clearly identified in the CSEs reviewed. It is expected that future activities combining accident scenarios identified in the safety analysis report program with the CSE program will help ensure that the full range of credible criticality accident scenarios are considered.

The CSEs were found to not have the level of detail specified in the requirements of Section 7.c of DOE Order 5480.24 for documenting the basis for criticality safety. While this section identified the specific information required for a SAR, the basic analysis portion would generally be found in the CSEs and only referenced in the SAR. The CSEs also did not have the level of information suggested in the DOE Standard Guidance for CSEs. (CS1-1)

Review of selected CSEs involving storage of fissile materials indicated that natural phenomena including earthquakes had not been included as initiating events. The analyses did not allow a conclusion to be drawn that even in minor earthquakes, the seismic motion would not result in sufficient spillage of fissile materials, moderator, and reflectors that a subsequent accidental criticality could not be ruled out as required by ANSI/ANS 8.7, Sect. 4.2.3. (CS1-1)

Interviews: Discussions were held with the NCSO manager, senior NCSO staff, and NCSO group leaders on their roles, responsibilities, and efforts in support of Phase A1 of EUO Resumption. The NCSO had clearly developed into a well managed organization that was clearly able to provide support for resumption activities. Interfaces with EUO and other organizations seemed well defined in Memoranda of Understanding (MOU) that specified the support that would be provided.

Discussions indicated that as EUO processes were restarted, the staffing level of engineers preparing CSEs and CSRs for resumption activities would decline, particularly among the temporary CS engineer positions. Some of those staff would likely be assigned operations support responsibilities. Although budgets were tight, the managers thought that adequate staff would continue to be available to support safe operations of EUO Phase A1 and other Y-12 operations.

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Discussions were held with senior NCSO staff to understand the response to both the specific criticality safety and general programmatic concerns raised in the LMES ORR, as well as other recent criticality safety concerns raised by outside reviewers. Those discussions indicated that several corrective actions had been taken. Among them, the NCSO had embarked on a major internal review of all EUO Phase A1 CSE/CSR documents. The purpose of the review was to determine if there was adequate documentation detail to determine the base assumptions, normal conditions, upset conditions, and technical design information necessary to verify the double contingency principle had been met. The effort included defining a higher standard for content of future CSEs and determining if the Phase A1 CSEs required revision prior to restart or if documentation deficiencies could be corrected after Phase A1 restart.

Interviews were held with 2 criticality safety engineers that had recently been assigned EUO Phase A1 building support roles. Each demonstrated an adequate knowledge of their roles and responsibilities. Each was qualified as an NCSO "Engineer-in-Training".

Interviews and discussions were held with 11 criticality safety engineers that had prepared CSEs for EUO Phase A1 activities. Most of the engineers had been the sole author on several Phase A1 CSEs. These discussions focused on several areas. Each engineer demonstrated that they had an adequate knowledge of their roles and responsibilities. Review of their educational background and the NCSO qualification data indicated that each met the minimum NCSO qualifications for preparation of CSEs. Two were qualified as "NCS Engineers" and 7 were qualified as "Engineer-in-Training" (all temporary workers, either on-loan [1] or subcontractors [6]).

Detailed discussions were held with each of the criticality safety engineers to determine their knowledge of the specific operations and criticality safety hazards for the processes for which they had prepared CSEs. Each was asked to describe the EUO Phase A1 operation and the specific process they had followed to determine that both normal and all credible upset conditions could be made adequately safe with the implementation of the specified controls. Each engineer and engineer-in-training demonstrated knowledge of the specific operation they had evaluated and controls applied. Most had relied upon previous analyses for the basic evaluations that demonstrated the safety of the activity. In some cases, NCSO engineers qualified to perform criticality safety computer calculations had evaluated additional scenarios and upset conditions.

Interviews with the EUO Engineering Manager and a process engineer indicated that a good working relationship between EUO engineering and the NCSO had developed. These individuals indicated that they worked well with the NCSO.

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Interviews with EUO operations managers, supervisors, and operators indicated that working relationships with the NCSO had improved since the earlier Readiness Assessments. While there was some variation, all were well aware of criticality safety engineers in their operating areas and knew how to respond when problems arose.

**Shift Performance:** A number of evolutions and drills were observed. In all cases, at least one member of the NCSO was also present. Criticality safety limits and controls were observed to be in place and being followed, both through postings and operating procedures. All operators questioned seemed knowledgeable of their specific processes and the criticality safety controls.

All demonstrated a willingness to stop work and question whenever a process step could not be safely followed as written.

Walkdowns were conducted of seven EUO Phase A1 systems of highest criticality safety concern with the NCSO criticality safety engineer that had prepared the CSE for that system, as well as with senior NCSO personnel. These walkdowns were conducted in part to verify the adequacy of the CSE preparation process, including verification of the basic assumptions under both normal conditions and upset conditions and confirmation that all credible accident scenarios had been considered.

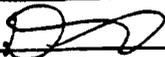
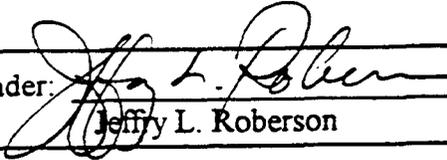
Each of the CSE authors had also been interviewed prior to the walkdown. The NCSO independent reviewer of the CSE was often present. For most of these walkdowns, operations personnel were also present and questioned. The CSE author was asked to explain the key aspects of the processes and the criticality safety controls that had been applied to ensure that the double contingency principle was met under all normal and credible abnormal conditions. Attempts were made to judge the adequacy of the CSE author's understanding of the operation, the criticality safety aspects under normal and abnormal conditions, and the controls that had been applied to ensure adequate safety. Each CSE author demonstrated adequate knowledge of the system. No additional credible criticality accident scenarios were identified during the walkdowns.

Conclusion: The criteria for this objective have been met. Major progress has been made in the development of the nuclear criticality safety organization since the last Readiness Assessment. The criticality safety controls have now been effectively identified in CSRs and implemented in operating procedures, postings, and drawings. The principal area of weakness remaining was in the documentation of the basis for criticality safety in evaluations.

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Issue(s):

- Criticality Safety Evaluations for Phase A1 processes did not always contain sufficient information for independent review. (CS1-1)

Inspector:  Doug Outlaw	Team Leader:  Jeffrey L. Roberson
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## ORR DEFICIENCY FORM

### Criticality Safety

<b>Functional Area:</b> CS	<b>Objective No.:</b> 1	<b>Finding X Observ.</b>	<b>Pre-Start Post Start</b> X	<b>Issue No.:</b> CS1-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** Criticality Safety Evaluations for Phase A1 processes did not always contain sufficient information for independent review.

**REQUIREMENT:** 8.1 Before starting a new operation with fissile materials or before an existing operation is changed, it shall be determined that the entire process will be subcritical under both normal and credible abnormal conditions. 8.3 The nuclear criticality safety evaluation shall be documented with sufficient detail, clarity, and lack of ambiguity to allow independent judgment of results. 8.4 Before starting operation, there shall be an independent assessment that confirms the adequacy of the nuclear criticality safety evaluation.

4.2.2 Double Contingency Principle. Process designs should, in general, incorporate sufficient factors of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible. 4.2.3 Storage of fissile materials shall be such as to obviate concern with accidental nuclear criticality in the event of fire, flood, earthquake, or other natural calamities. 7.c The Criticality Safety section of the SAR shall include (or be included by referring to other sections of the SAR) but not be limited to the following:

- (1) A description, using appropriate sketches or drawings, of equipment and facilities in which the hazard of criticality exists showing dimensions in sufficient detail to permit evaluation of the information mentioned in subparagraphs 7c(3) through 7c(6) below.
- (2) A statement of the chemical and physical form of fissionable material in each step of the process, including isotopic the nature of any material, and the resulting concentrations, densities, and degrees of moderation throughout the steps of the process.
- (3) A statement of the maximum quantities of fissionable material at any one time in each step of the process, including a description of the technical practices which are intended to prevent exceeding these maximum quantities.
- (4) A description of the methods of collection, handling, and transportation products from each process area or individual operation and evaluation of the nuclear safety of these methods.
- (5) An analysis of criticality incident scenarios and their impact on health and safety of the workers and/or public. This analysis will be used to determine the conditions of operation for criticality safety, the design of the CAS as noted in subparagraph (7) below, and the need for audible and/or visual alarms.

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- (6) A description of the safety control parameters which are intended to prevent criticality resulting from events such as: accumulation of fissionable material in scrap or waste, lathe turnings, crucible slag, pickling solutions, choppings, sumps, filters, etc. Also included shall be the description of the technical practices used to prevent exceeding the safety control parameters.
- (7) A description of the installed CAS and emergency procedures, including alarm levels, fail-safe features, response time of devices, and frequency of evacuation drills. Pertinent documents shall show the location of all detectors, their distance to possible sources of criticality, and intervening shielding and audio and visual alarms.
- (8) A description of the technical practices and measurement control program (including reliability and operability characteristics) used in determining the quantities of fissionable material (or other materials such as soluble poisons to prevent accidental criticality) present in any location and the uncertainties of the measured values. The measurement control program shall be in accordance with the latest edition of DOE 5700.6C, QUALITY ASSURANCE.
- (9) An analysis of the spacing of masses of fissionable material within each process area and separation from fissionable material in adjoining areas.

**REFERENCE(S):** ANSI/ANS-8.19-1984, "Administrative Practices for Nuclear Criticality Safety," American Nuclear Society, La Grange Park, IL, October 1, 1984, Sect. 8.1, 8.3, and 8.4.  
ANSI/ANS-8.1-1983, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," American Nuclear Society, La Grange Park, IL, October 7, 1983, Sect. 4.2.2.  
ANSI/ANS-8.7-1983, "Guide for Nuclear Criticality Safety in the Storage of Fissile Materials," American Nuclear Society, La Grange Park, IL, April 12, 1975, Sect. 4.2.3.  
DOE Order 5480.24, Nuclear Criticality Safety, Sect. 7.c.

**DISCUSSION:** The Criticality Safety Evaluations (CSEs) prepared to support the restart of EUO Phase A1 operations were not always documented in sufficient detail to permit independent review. Concerns in this area were clearly identified in the 4/98 LMES ORR, as well as during the internal NCSO review of the EUO Phase A1 CSEs/CSRs review after the LMES ORR. Internal review of the approved CSEs by NCSO staff confirmed that eight did not meet the NCSO criteria: 1) does the CSE provide adequate control of safety, based on current known (documented) information and analyst's process knowledge? and 2) is there enough documentation to allow a new analyst to follow the logic several years from now?

Review of 11 of 33 Phase A1 CSEs during this ORR confirmed that the CSE documentation is often not sufficient to independently judge the safety of the process operations without additional discussions with the CSE author. This situation is clearly far from ideal.

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The NCSO has identified a path forward that includes the assessment of the status of the Phase A1 CSEs and identification those that require pre-start and post-start actions and development of "CSE Content Expectations" (NCSO INFO 98-009, Rev. 0). These actions were being tracked in the ESAMS issue management system under Finding A1-CS-03.

The CSEs, though not always sufficiently detailed in some areas, were a significant advancement over past documentation. Some aspects of the new CSEs were found to be weak, as noted in the LMES ORR report. While some Phase A1 processes had detailed process descriptions prepared and referenced in the CSEs, others did not and the CSE authors had to rely on the limited descriptive text available in safety basis documents such as the BIO and lists of drawings. The lack of basic process information in some CSEs made independent review difficult, as also indicated in the LMES ORR.

Review of the "Discussion of Contingencies" and "Evaluation & Results" sections of several CSEs was sometimes difficult. A loss of contingency-based approach was generally used to verify that the Double Contingency principle had been followed. This approach made it difficult at times to verify that specific process-based scenarios were adequately addressed, particularly those that might required common-mode failure of multiple contingencies, or failures that might cross process analysis boundaries. Discussions with NCSO staff allowed confirmation that adequate contingencies were present even when not clearly identified in the CSEs reviewed. It is expected that future activities combining accident scenarios identified in the safety analysis report program with the CSE program will help ensure that the full range of credible criticality accident scenarios are considered.

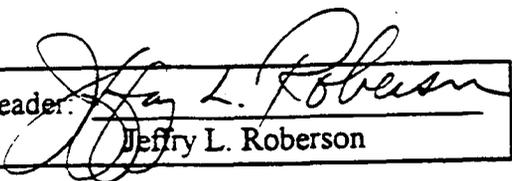
The descriptive information and analysis in the CSEs for Phase A1 restart did not meet the intent of Section 7.c of DOE Order 5480.24 for establishing the basis for criticality safety. Although the Order does not require this information to be in the CSE and permits it to be in the SAR, much of the descriptive and analytical information that leads to the limits and controls is expected to be in the CSE and only referenced in the SAR. The DOE approval for MMES/Y-12-DOE-5480.24-CSA-46A was based, in part, on the assertion that "most of these requirements [of Section 7.c of DOE Oder 5480.24.] are found in the Process Analysis and/or the Criticality Safety Approvals." The CSEs and other process analyses and descriptions reviewed for Phase A1 restart did not meet the intent for process analysis of Section 7.c of DOE Order 5480.24. They also do not contain most of the documentation and analysis requirements of that portion of the Order.

Review of selected CSEs involving storage of fissile materials indicated that natural phenomena including earthquakes had not been included as initiating events. The analyses did not allow a conclusion to be drawn that even in minor earthquakes, the seismic motion would not result in sufficient spillage of fissile materials, moderator, and reflectors that a subsequent accidental

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criticality could not be ruled out. Such a conclusion would be required by the ANSI/ANS 8.7 requirements that fissile material storage be such as to make a criticality following an earthquake unlikely. Discussions with NCSO staff indicated that they strongly believe that a post-earthquake criticality is unlikely, but the CSEs reviewed do not allow that judgement to be confirmed.

**CONCLUSION:** The CSEs developed to support the restart of EUO Phase A1 operations were not prepared in sufficient detail to permit independent review as required by DOE and ANSI/ANS requirements. Upon resolution of the pre-start issues associated with 8 CSEs identified by the internal NCSO review, the criticality safety of the proposed Phase A1 operations should be adequate to support restart. Since no additional criticality accident concerns were identified during the DOE ORR review, this is a post-start issue.

Inspector:  Doug Outlaw	Team Leader:  Jeffrey L. Roberson
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FUNCTIONAL AREA: CS	OBJECTIVE 2 , REV. 0 DATE: May 13, 1998	CRITERIA MET	
		YES X	NO

**OBJECTIVE:** Level of knowledge of operations support (criticality safety) personnel is adequate based on reviews of examinations and examination results and selected interviews of operating personnel. **(CORE REQUIREMENT #3)**

Criteria

Operations support personnel in the criticality safety area, specifically criticality safety engineers, should show the ability to carry out procedures under their cognizance. (5480.24, para 7, 5480.20B, Ch. 1, para 3, 4, 5, and 7, Ch. 4, para 2, 5 and 6, S/RID FA Criticality Safety (CS) LMES ID #5330, #5334, #5356, #5335)

Plant personnel can recognize, evaluate, and respond to criticality safety operating limits. (5480.24, para 7, 5480.20B, Ch. 4, para 2 and 5, S/RID FA Criticality Safety (CS) LMES ID #5336)

Operations support personnel in the criticality safety area should show a working knowledge of facility systems and components related to safety. These personnel should also give adequate attention to health, safety and environmental protection issues. (5480.24, para. 7, 5480.20, Ch. 1, para 3, 4, 5, and 7, S/RID FA Criticality Safety (CS) LMES ID #5336, 5338)

Approach

**Record Review:** Review the training records for level of completeness and adequacy required to prove that criticality safety support personnel are knowledgeable on facility procedures and systems under their cognizance.

**Interviews:** Interview criticality safety support personnel to assess their understanding of required actions when responding to abnormal and emergency conditions. Also assess their understanding of how these actions relate to the safety basis for operations. Assess their understanding of health, safety and environmental protection issues. Decide if personnel are knowledgeable in criticality safety operating limits.

**Shift Performance:** While observing evolutions and drill response, find out if operations and support personnel are familiar with and adhere to criticality safety operating limits and postings.

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Record Review:

- Y70-150, Nuclear Criticality Safety Program, 2/9/98
- Y/DD-694, Rev. 4, Qualification Program Nuclear Criticality Safety Organization, 5/19/97
- Y/DD-696, Training Implementation Nuclear Criticality Safety Organization, Rev. 4, 5/19/97
- Y70-162, Nuclear Criticality Safety Training Program, 7/6/94 and Change Directives Y70-162-1 and 2 dated 10/28/94 and 1/5/94 (actually 1/5/95), respectively
- Y/DD-710, Guidance for the Development of Continuing Technical Training, Nuclear Criticality Safety Organization (NCS), Rev. 1, 5/20/97
- Y/DD-680, "Roles and Responsibilities in the Nuclear Criticality Safety Organization," 5/9/95
- Y/DD-587, Rev. 26, List of Qualified Personnel, 1/30/98
- Training Management System Requirement/Qualification Status, members of NCSO, 1/26/98
- Nuclear Criticality Safety Organization Educational Information, 2/16/98

Interviews Conducted:

- NCS Manager, NCSO
- NCS Scientific Advisor, NCSO
- NCS Phase A1 Resumption Coordinator, NCSO
- NCS EUO Operations Support Manager, NCSO
- NCS PBR Technical Liaison to Operations, NCSO
- NCS Compliance, Planning, and Resources Manager, NCSO
- NCS Engineers, EUO Phase A1 Resumption, NCSO (11)
- NCS Engineers, EUO Phase A1 Operations, NCSO (2)
- DOE Facility Representatives, EUO Phase A1 (2)
- DOE/YSO Nuclear Criticality Safety Engineer
- Shift Technical Advisors, EUO (2)
- EUO Engineering Manager
- EUO Process Engineer
- EUO Shift Supervisor
- EUO Supervisors (5)
- EUO Operators (4)

Shift Performance Evolution:

- Chip Processing Evolution
- Machining Operations
- Machine Coolant System Operation

**ORR ASSESSMENT FORM 1**  
**Criticality Safety**

- Spill Drill, High Capacity Evaporators
- Monthly Surveillance of the Criticality Accident Alarm System for Building 9995
- Criticality Safety Walkdowns with CSE Author of:
  - Casting Operations
  - High Capacity Evaporators
  - Chip Processing Operations
  - Ultrasonic Cleaning
  - Dry Vacuum System
  - Machining/chip packing
  - Machine Coolant System
  - O-Wing Operations

Discussion of Results:

Record Review: Review of education backgrounds of the Nuclear Criticality Safety Organization (NCSO) technical staff indicated that the organization has a large staff of well qualified engineers. The NCSO List of Qualified Personnel indicated that NCSO had 14 employees qualified as "Engineer-in-Training", 6 qualified as "NCS Engineer", and 10 qualified as "NCS Specialist". Training records in the Training Management System included subcontractor and personnel on loan from other sites. Most engineers were current in all their training requirements.

Interviews: Extensive interviews were held with 19 members of the NCSO staff that had supported the Phase A1 EUO restart activities. All were judged to be knowledgeable of their areas of responsibility. Interviews were held with 11 engineers that had prepared criticality safety evaluations (CSEs) supporting Phase A1 activities. Each was asked to describe the Phase A1 processes they had evaluated, the CSE preparation process employed, and accident scenarios. All demonstrate an adequate working knowledge of the processes they had evaluated, the criticality safety concerns, the controls and limits that had been imposed to ensure safety, and other ES&H issues.

Interviews with NCSO engineers that were directly supporting day-to-day Phase A1 operations indicated they had a good working understanding of the process they were responsible for, the limits and controls important to criticality safety, the interfaces between criticality safety and the other safety disciplines, and the correct response in emergency situations. Each was judged to have adequate knowledge for their specific assignment.

EUO Operations staff members were interviewed during formal interviews as well as during walkdowns to assess their knowledge of criticality safety, the importance of the criticality safety limits and controls, the importance of adherence to operating procedures, and their response in abnormal conditions. All interviewed understood their criticality safety responsibilities, could recognize a criticality safety deficiency, and generally responded well.

**ORR ASSESSMENT FORM 1**  
Criticality Safety

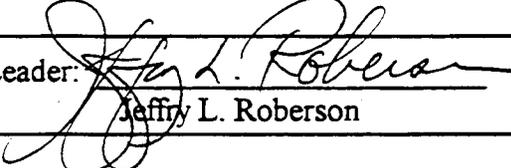
Several operations line supervisors indicated that the recent addition of "small group seminars" or "toolbox briefings" were quite useful. During these sessions, criticality safety staff met for 30 to 60 minutes with a small group of operators and supervisors to work through the issues with a new procedure or Criticality Safety Requirement (CSR). NCSO staff indicated that they had met with a number of operator groups and shifts and that the sessions had been well received. Operators used the sessions to make sure they understood the issues and to ask questions that would have not likely to have been asked in larger groups. Overall, this activity seemed to have worked very well.

**Shift Performance:** A number of evolutions and drills were observed. In addition, walkdowns were conducted of seven EUO Phase A1 systems with the NCSO criticality safety engineer that had prepared the CSE for that system, as well as with senior NCSO personnel. Each of the CSE authors had also been interviewed prior to the walkdown. The NCSO independent reviewer of the CSE was often also present. For most of these walkdowns, operations personnel were also present and questioned. The systems of highest criticality safety concern were selected. The CSE author was asked to explain the key aspects of the processes and the criticality safety controls that had been applied to ensure that the double contingency principle was met under all normal and credible abnormal conditions. Attempts were made to judge the adequacy of the CSE author's understanding of the operation, the criticality safety aspects under normal and abnormal conditions, and the controls that had been applied to ensure adequate safety

**Conclusion:** The criteria for this objective have been met. The level of knowledge of criticality safety support personnel is adequate to support safe operations of the Phase A1 processes.

Issue(s):

- None

Inspector:  Doug Outlaw	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Criticality Safety

<b>FUNCTIONAL AREA: CS</b>	<b>OBJECTIVE 3 , REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A baseline compliance status review of Department of Energy Order 5480.24 has been performed. Noncompliance items have been addressed. **(CORE REQUIREMENT #7)**

Criteria

All noncompliances identified by the Oak Ridge Y-12 Site compliance assessments of Department of Energy Orders of interest to the Defense Nuclear Facilities Safety Board have approved schedules for gaining compliance. Actions described in the Request for Approval have been adequately addressed for the facility/activity. (Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures specified in the Compliance Schedule Agreement are adequately understood and implemented by operations managers. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

**Record Review:** Review the Order compliance package for the listed Order, including all applicable Compliance Schedule Agreements, exemptions and compensatory measures. For identified Requests for Approvals, verify that schedule commitments have been met and compensatory measures identified.

**Interviews:** Interview management personnel to ensure they are aware of the noncompliance(s) and actions necessary to fully carry out the Order requirements, and any interim compensatory measures.

**Shift Performance:** Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

Record Review:

- DOE Order 5480.24, Nuclear Criticality Safety, 8/12/92
- Neal Goldenberg, Interpretive Guidance for DOE Order 5480.24, "Nuclear Criticality Safety", 2/17/93

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- Y-12 Programmatic Assessment Report, Summary of Central Standards/Requirements Identification Document Database for Y-12 Criticality Safety, 1998
- Nuclear Criticality Safety Organization (NCSO) Standards/Requirements Evidence Files, listing of additional evidence documents for each requirement of DOE Order 5480.24 and the required ANSI/ANS standards
- C.A. Worlery to S/RIDs History File, Further Information on S/RIDs Flowdown, 3/6/98
- C.A. Worlery to S/RIDs History File, DOE Order 5480.24 and NCS-Related S/RIDs, 1/9/98
- K.J. Carroll to Mack I. Sparks, Category 2 Standards/Requirements Identification Document (S/RID) Change, 2/18/98
- K.J. Carroll to Mack I. Sparks, Category 2 Standards/Requirements Identification Document (S/RID) Change, 2/19/98
- Mack I. Sparks to G.J. Draper, Standards/Requirements Identification Document (S/RID) and Work Smart Standards Document Maintenance: Review and Approval of Revisions for Criticality Safety Section of the Facility (Nuclear) Safety Functional Area, 4/9/98
- S/RID Programmatic Noncompliances, 5480.24, Nuclear Criticality Safety, 3/17/98
- MMES/Y-12-DOE-5480.24-CSA-46B, Request for Approval: Compliance Schedule Approval, Items to Include in the Safety Analysis Report (SAR), DOE Order 5480.24, Section 7.c, 6/15/95
- ESAMS Issue Response Report, MMES/Y-12-DOE-5480.24-CSA-46B, 5/12/98
- RFA Number CSA-046B, DOE Y-12 Request for Approval Verification Report, 2/11/98
- Request for Approval MMES/Y-12-DOE-5480.24-EX-5, Quarterly Sounding of Criticality Alarm to Refresh Memory, DOE Order 5490.24, Section 7.1(1) 8.3/ 7.2.3, 7/13/94
- Victor Reis to Manager, ORO Office, Exemption Request MMES/Y-12-DOE-5480.24-EX-5, 8/22/95
- Request for Approval, Compliance Schedule Approval MMES/Y-12-DOE-5480.24-CSA-54C, DOE Order 5490.24, Section 7.1(1) ANS 8.7, 4.2.3, "Storage of fissile material shall be such as to obviate concern with accidental nuclear criticality in the event of fire, flood, earthquake, or other natural calamities", 9/26/95
- Contractor Request for Approval (RFA) Comment/ Concurrence Y-12 Site Office, LMES/Y-12-DOE-5480.24-CSA-54C, Approved 11/9/95
- ESAMS Issue Response Report, MMES/Y-12-DOE-5480.24-CSA-54C, issue still open, compensatory measures include perform seismic analysis as part of SARUP program, 3/17/98
- Y70-800, Safety Analysis and Review System, 1/7/97
- FS-103PD, Safety Documentation, Rev. 2, 4/15/97
- EUO Safety Basis Team, Discussion of Available Consequence Analysis for Natural Phenomena Events Building 9212 and 9215, 5/98

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### Criticality Safety

- Y/DD-791, Assessment of Y-12 Plant Practices Governing the Relationship Between Nuclear Criticality Safety Organization Double Contingency and Natural Phenomena Events Related in Authorization Basis Documentation, 10/21/97
- Y/DD-807, Methodology to Address Weaknesses Between Nuclear Criticality Safety Analyses and Authorization Basis Events, 1/22/98
- Point Paper No. 24, Increasing Resistance to Natural Phenomena Initiated Event, 2/24/98
- Y/DD-784, The Status of Analysis of Natural Phenomena Issues Relate to Nuclear Criticality Safety, 8/14/97

#### Interviews Conducted:

- NCS Manager, NCSO
- NCS Scientific Advisor, NCSO
- NCS Phase A1 Resumption Coordinator, NCSO
- NCS EUO Operations Support Manager, NCSO
- NCS PBR Technical Liaison to Operations, NCSO
- NCS Compliance, Planning, and Resources Manager, NCSO

#### Shift Performance Evolution:

- Chip Processing Evolution
- Machining Operations
- Machine Coolant System Operation
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  - Ultrasonic Cleaning
  - Dry Vacuum System
  - Machining/chip packing
  - Machine Coolant System
  - O-Wing Operations

#### Discussion of Results:

Record Review: Review was performed of the Standards/Requirements Identification Document (S/RID) and DOE Order 5480.24 compliance documentation obtained from the NCSO Compliance, Planning, and Resources Manager. That document review indicated that a baseline compliance status review of DOE Order 5480.24 had been performed. Several areas of the

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### Criticality Safety

criticality safety program at Y-12 did not meet the requirements of DOE Order 5480.24 as required by the LMES contract. Three principal areas of programmatic noncompliance included (1) not inclusion of the basis for criticality safety in the SAR, (2) not sounding the criticality alarm during working hours at least once quarterly after notifying all concerned, and (3) insufficient analysis to demonstrate that fissile materials were stored so as to obviate concern with accidental nuclear criticality in the event of fire, flood, earthquake, or other natural calamities. The contractor had submitted Requests for Approval or Exemption for each of these areas.

A Compliance Schedule Agreement (MMES/Y-12-DOE-5480.24-CSA-46B) for DOE Order 5480.24, Section 7.c requirements to include the basis for criticality safety in the SAR was granted by DOE. That approval was based on the fact that most of the requirements were already covered in existing criticality safety process analyses, CSAs, OSRs, SARs, and Safety Analysis Report Upgrade Program (SARUP) documents and that the SARUP would update and improve the information to Order requirements. No compensatory measures were identified as necessary. The Request for Approval (6/15/95) asserted that most of the detailed Order requirements for description of the processes and analysis of criticality incident scenarios were included in the "Process Analysis and/or the Criticality Safety Approvals."

The corrective actions identified in the S/RID database assessment of 8/28/97 indicated that to ensure flowdown of the requirement, the Y-12 procedure Y70-800 was to be revised to incorporate the requirement by stating what was required to be in the SAR to support criticality safety of facilities/operations and to delegate responsibilities. Review of Y70-800 (Rev. 1/7/97) indicated that the procedure did not contain specific requirements to incorporate the requirements of DOE Order 5480.24 7.c into the SARs generated in the SARUP program. Procedure Y70-800 was canceled 4/16/98 with procedure FS-103PD to be used temporarily. That procedure also failed to incorporate the 5480.24 7.c requirements. The ESAMS issue database did indicate, however, that the requirements had been incorporated into the SARUP and the issue closed on 12/17/96.

DOE ORO approved an exemption request for the criticality accident alarm training requirement (MMES/Y-12-DOE-5480.24-EX-5, Quarterly Sounding of Criticality Alarm to Refresh Memory, DOE Order 5490.24, Section 7.1(1) 8.3/ 7.2.3) based upon providing equivalent training utilizing a different approach. DOE headquarters responded that an exemption was not required and that the technical justification for the revised method could be included in the Implementation Plan for DOE Order 5480.24. An S/RID change had been submitted to accomplish this goal.

DOE ORO approved the Compliance Schedule Agreement MMES/Y-12-DOE-5480.24-CSA-54C, DOE Order 5490.24, Section 7.1(1) ANS 8.7, 4.2.3, "Storage of fissile material shall be such as to obviate concern with accidental nuclear criticality in the event of fire, flood, earthquake, or other natural calamities" on 9/26/95. Full seismic and other natural calamity analysis had not been performed for all storage areas. The criticality safety analyses did include

**ORR ASSESSMENT FORM 1**  
Criticality Safety

fire and flood where appropriate. Since storage practices and hardware had been improved to resist seismic events, no additional compensatory measures were imposed. All fissile material storage areas, except waste, were assumed to be vulnerable. A corrective action plan was developed and approved. A commitment was made and tracked in the ESAMS system to perform seismic analysis as part of SARUP to identify natural phenomena related vulnerabilities of the storage of fissile material (closed 12/26/97), document recommended options (closed 2/20/98), document selected options (due 5/30/98), NCSO approve corrective measures options selected (due 8/30/98), and enter corrective actions into ESAMS for tracking (due 9/30/98). Actions were indicated as on schedule. Review of portions of those documents indicated that progress had been made in addressing the issue.

**Interviews:** Discussions were held with the NCSO Compliance, Planning, and Resources Manager as well as other NCSO senior managers and staff. All were aware of the noncompliance issues and the plans for their resolution.

**Shift Performance:** No compensatory measures were required that could be observed during the shift evolutions for MMES/Y-12-DOE-5480.24-CSA-46B.

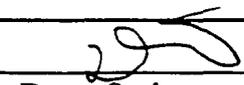
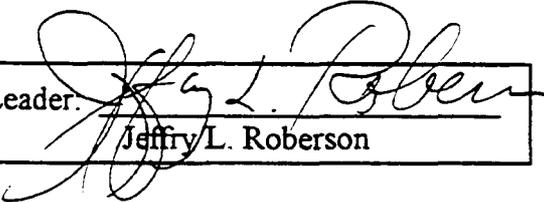
The alternate means of refreshing the memory of the sound of the criticality alarm cited in Approval MMES/Y-12-DOE-5480.24-EX-5 was verified by calling a local telephone number.

The compensatory measures and corrective actions that were cited in justifying the delay in assessing whether controls were sufficient to obviate concern with an accidental nuclear criticality in the event of an earthquake were assessed during walkdowns of the Phase A1 operations. Fissile material storage conditions were generally found to be such that minor shaking would not likely result in major spillage. More severe seismic motion, however, might result in significant spillage of fissile materials, moderators, and reflectors even if the earthquake was not large enough to cause collapse of the buildings. (MMES/Y-12-DOE-5480.24-CSA-54C)

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector:  Doug Outlaw	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

FUNCTIONAL AREA: EP	OBJECTIVE 1, REV. 0 DATE: May 13, 1998	CRITERIA MET	
		YES X	NO

**OBJECTIVE:** An emergency preparedness program is established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure emergency preparedness is adequate for safe operations. (CORE REQUIREMENT #8)

Criteria

The emergency preparedness organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. It is adequately staffed with qualified personnel. (151.1; S/RID FA Emergency Management LMES ID #1478, FA Training and Qualification (TQ) LMES ID #9690)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, and internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels of the emergency preparedness organization that supports operations.

**Interviews:** Interview those emergency preparedness personnel who are responsible for providing support to operations during emergency events to determine if they are familiar with their roles, responsibilities and interfaces with the operations organization.

**Shift Performance:** None.

Record Review:

- EMPO-500, The United States Department of Energy Oak Ridge Reservation Emergency Plan, February 1998
- B/FEP-606, Revision 2, Building/Facility Emergency Plan for the 9215 Complex
- B/FEP-601, Revision 2, Building/Facility Emergency Plan for the 9212 Complex
- Y/MA – 7351, Enriched Uranium Operations Organization Manual as of February 1, 1998

**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

- EMPO-511, Transition Plan for Implementation of The Oak Ridge Reservation Emergency Management Program
- DOE Manager letter, "Oak Ridge Reservation Emergency Management Program", dated April 29, 1998
- Lockheed Martin Energy Systems, Inc. Emergency Management Program Organization Chart, dated January 13, 1998
- Facility Hazards Surveys for the Oak Ridge Y-12 Plant, Building 9998, dated 5/4/98
- Oak Ridge Reservation Building/Facility Emergency Program Procedure EM-127
- Y/SMS-58, Memorandum of Understanding Between Nuclear Operations and Enriched Uranium Operations with Plant Shift Superintendents Office
- Y40-37-004, Safe Shutdown Procedure-9212 Complex
- Y10-53-EM-001, Critical Actions Tracking System (CATS)

Interviews Conducted:

- Lockheed Martin Energy Systems Emergency Management Program Manager
- Lockheed Martin Energy Systems Emergency Management Exercise Evaluations, Education and Interface Section Manager
- Y-12 Site Emergency Management Program Manager
- EUO Emergency Management Program Manager
- Plant Shift Superintendent
- Shift Managers (3)
- Building Emergency Warden (Building 9212)
- Operational Drills Coordinator

Shift Performance Evolution:

- None

Discussion of Results:

Record Review: The Oak Ridge Reservation emergency management system is in transition to meet DOE Order 151.1 requirements and it is anticipated to be fully implemented by September 1999. This transition is described in an approved "Transition Plan." The plan provides a path

## ORR ASSESSMENT FORM 1

### Emergency Preparedness

forward for completion of initiatives, which began in February 1996. The elements included in the plan provide sufficient detail and guidance to be achieved and are supported with achievable target dates.

To ensure effective continuation of this process, an Oak Ridge Reservation (ORR) Emergency Management Council has been established. The Council is charged with coordination of implementation of the ORR emergency management program. The Manager, Emergency Management Program Organization (EMPO), or his designee chairs the Council.

In support of the transition Lockheed Martin Energy Systems provides a comprehensive emergency management system through its issuance and implementation of a recently approved Oak Ridge Reservation Emergency Plan. The plan provides a standard model for Oak Ridge Reservation emergency management activities which includes the Y-12 site and it contains the concepts of operation necessary to ensure a comprehensive and integrated emergency response system. Further, the plan incorporates the expectations of the state of Tennessee concerning interface with state and local governments during emergencies on the Oak Ridge Reservation. The long-term goal is for the Emergency Plan to satisfy all regulatory requirements for an emergency plan, consistent with the "one plan approach" endorsed by the National Response Team.

The concept of operations described by the plan includes a combined response that provides emergency management, facility operations, emergency assessment and protective action formulation in all emergency conditions, categories and classifications. Under this concept, the facility is responsible for taking initial actions, protecting personnel, and controlling or mitigating abnormal events. These actions include execution of abnormal operating procedures, emergency operation procedures, and safe shutdown procedures. Following the report of an emergency from the facility, the Plant Shift Superintendent (PSS) implements the applicable emergency plan(s) and performs the initial emergency action level categorization of the incident. Upon declaration of an operational emergency, the PSS activates the Emergency Response Organization to the extent necessary to perform the duties assigned to initial responders and becomes the site Emergency Director until relieved. The facility Shift Manager retains the responsibility for advising the PSS regarding the condition of the facility, the nature of the event, and potential hazards.

**ORR ASSESSMENT FORM 1**  
**Emergency Preparedness**

The use of an Incident Command System is employed to ensure overall management of an incident with a multi-disciplinary response force. As part of the implementation of emergency plans, the PSS dispatches the Incident Commander (IC). The IC establishes a field command post and staging area, verifies that emergency response units have been dispatched, and ensures that emergency response units are briefed as they arrive, and assumes command of response forces and primary responsibility for mitigation of the abnormal event. Once the IC arrives on scene, the Shift Manager reports to the staging area and supports the IC in the role of Field Operation Manager. In this role, the Shift Manager is responsible for advising the IC regarding the condition of the facility, the nature of the event, and potential hazards and consequences.

Safe Shutdown procedures have been developed and are implemented by the facility shift manager after consultation with the Plant Shift Superintendent (PSS) and the decision is made to conduct an orderly evacuation of the applicable area. These procedures include specific process shutdown actions, which detail the actions for operations personnel to safely shut down area-specific equipment before evacuation, if time allows.

Building/Facility Emergency Plans have been developed and approved for the 9212 and 9215 facilities. These plans provide guidance to employees within the facilities concerning emergency actions and responses during an emergency condition. This includes emergency alarm signals, protective actions, personnel accountability actions, generic type emergencies and some generic hazards found within the facility. These plans have been critiqued in the Y-12 Site Office assessment as lacking in specific hazard detail and in referencing specific emergency and abnormal operating procedures.

Interviews: Interviews with emergency management program personnel indicated they were knowledgeable of their roles, responsibilities, interfaces with the operations organization and emergency response organization's ability to provide the required notification, analysis and assistance to Y-12 site in the case of an emergency. Interviews with facility personnel indicated they were knowledgeable of roles, responsibilities, interfaces with the emergency organization and the facility's ability to respond to emergency conditions. Interviews with Plant Shift Superintendent personnel and facility shift manager personnel revealed each understood their interrelationship requirements and were cognizant of their respective requirements in support of the appropriate response during emergency conditions.

Staffing levels for qualified emergency response support personnel were reviewed with the responsible managers and these were determined to be adequate to provide the required support.

**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

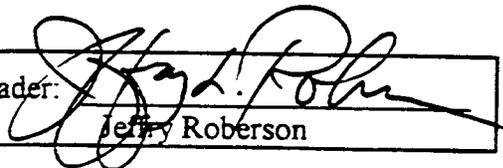
Procedures used by the Plant Shift Superintendent to ensure sufficient emergency response shift personnel are maintained were reviewed. These included the responsibility for unit commanders informing the PSS of manning deficiencies and the invocation of recall procedures by the PSS. This procedure was deemed adequate to ensure sufficient emergency response shift personnel.

Shift Performance: None.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Doug Dearolph	Team Leader:  Jeffrey Roberson
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**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

<b>FUNCTIONAL AREA: EP</b>	<b>OBJECTIVE 2 , REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Level of knowledge of operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of operations support personnel. (CORE REQUIREMENT #3)

Criteria

Emergency preparedness support personnel demonstrate the ability to carry out emergency procedures under their cognizance. (151.1; 5480.20A, Ch. 1; S/RID FA Safety Analysis (SA) LMES ID # 5476)

Emergency preparedness support personnel demonstrate a working knowledge of facility systems and components related to safety. These personnel also give adequate attention to health, safety and environmental protection issues. (151.1; 5480.20A, Ch. 1; S/RID FA Emergency Preparedness (EP) LMES ID #7389, FA Training and Qualification (TQ) LMES #9823, #9690)

Approach

**Record Review:** Review for adequacy and completion, the training records which indicate emergency preparedness support personnel training on facility procedures and systems under their cognizance as well as system and facility hazards.

**Interviews:** Interview emergency preparedness support personnel to assess their understanding of their actions when responding to abnormal and emergency conditions as well as their understanding of how these actions relate to the safety basis for operations. Interview these personnel to determine if their level of knowledge of plant operations hazards, health, safety and environmental protection issues is adequate. Interview personnel responsible for the Emergency drill program to determine if their level of knowledge of plant operations is adequate. Interview Plant Shift Superintendent (PSS) personnel and evaluate their understanding of EUO Phase operations hazards and emergency responses.

**Shift Performance:** Observe drills, routine evolutions and normal operations, to assess the ability of emergency preparedness support personnel to safely operate systems and components under their cognizance in accordance with approved plant procedures.

**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

Record Review:

- Training Histories for PSS
- Exams for various health safety and facility specific classes for PSS
- Training Histories for Fire Protection incident commanders and inspectors
- Exams and study guides for various health, safety, and facility specific classes for incident commanders and inspectors.
- RWP 97-A-0315, Used by E-Wing Casting Operators for Knock-out Operation
- JPA-EW-C-SACL-0001, E-Wing Casting-Stack Assembly
- JPA-EW-C-SACL-0002, E-Wing Casting-Crucible Loading
- JPA-EW-C-FLUL-0001, E-Wing Casting-Main Line Conveyor
- JPA-EW-C-FLUL-E/W0002, E-Wing Casting-Furnace Loading
- JPA-EW-C-CAST-E/W0003, E-Wing Casting-Furnace Preparation
- JPA-EW-C-CAST-E/W0004, E-Wing Casting-Furnace Manual Operation
- JPA-EW-C-FLUL-E/W0003, E-Wing Casting-Furnace Unloading
- JPA-EW-C-FLUL-0002, E-Wing Casting-Main Line Conveyor Unloading
- JPA-EW-C-KO-0001, E-Wing Casting-Knock-out
- JPA-EW-C-KO-0002, E-Wing Casting-Shape(Part) Cleaning
- JPA-EW-C-C&C-0001, E-Wing Casting-Graphite Cleaning
- Y57-37-65-028, Casting Furnace Alarms--East Line
- CL-EU-9212-082, E-Wing West Furnace Checklist
- Y52-37-65-004, E-Wing Casting Furnace Water-Detection System Functional Test
- Y50-37-98-659, Receipt and Shipment of Special Nuclear Materials (C-1 Receiving Area)
- Y-57-37-65-029, Casting Furnace Alarms-West Line
- Building 9212 CSA/CSR Surveillance Schedule
- Building 9212 OSR Surveillance Schedule
- CL-EU-2637-008, Return To Service Checklist
- 9212 Deficiency Database Open Report
- SO-9212-98-002, Work Control in 9212
- Y50-37-65-104, Enriched Uranium Chip Drying and Briquetting

Interviews Conducted:

- Plant Shift Superintendent
- Fire Protection Incident commander
- 9212 E-Wing Casting Operators (5)
- 9212 Operations Manager
- 9215 Operations Manager

**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

- 9212 Shift Technical Advisors (2)
- 9212 E-Wing Casting Supervisors (2)
- 9212 Chemical Production Manager
- 9212 Shift Technical Advisor (2)
- 9212 Shift Manager (3)
- 9212 Chemical Recovery Operators 9818 Qualified (2)
- 9212 Chemical Recovery Operators Waste Handler (2)
- 9212 Chemical Recovery Operators B-1 Lab Qualified (2)
- 9212 Production Supervisor
- 9212 Day Shift Supervisor
- 9212 Chemical Production Manager

Shift Performance Evolution:

- 9212 Plan of the Day Meetings
- 9212 Shift Turnovers
- Pre-job briefs
- HC/O-C-7101 High Capacity Evaporator Operation and Turnover
- High Capacity Evaporator Process Condensate Monitor Test
- Solution Transfer into the F-501 Tanks
- Code 80 Glovebox Operation
- Use of Laboratory Hoods
- B-1 Lab, Standard PPM Analysis
- E-Wing Casting Operations
- E-Wing Chip Processing
- E-Wing Knock-out Operations
- Chemical operations solution transfer
- Chemical operations solution receiving
- E-Wing carbon cleaning
- E-Wing shape cleaning
- 9212 Crew Briefs
- Limited External Exercise, 9212 Contaminated Injured Worker
- Leak in High Capacity Evaporator, Operational Drill
- Casting Furnace Alarms-Water in Furnace, Operational Drill
- Over Temperature in the Billet Salt Bath, Operational Drill
- Drill Pre-Briefs and Post Critiques

**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

Discussion of Results:

**Record Review:** The training histories, exams, and study guides were reviewed for both PSS and FP personnel that could potentially respond to incidents in 9212 and 9215. This information indicates that these personnel are adequately trained and that the training program and exams are sufficient in testing their knowledge of their specific areas. These personnel are also trained on some specific classes dealing with the hazards that they might expect to encounter in the 9212 and 9215 facilities. An example is the class on pyrophoric metals.

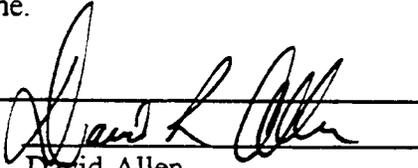
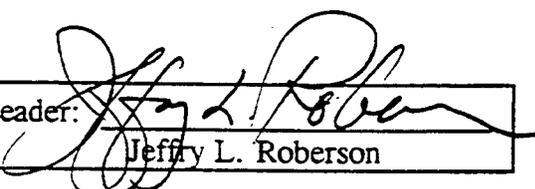
**Interviews:** Discussions with the individuals listed indicate that they have sufficient knowledge of facility operations and safety systems important in maintaining safe conditions within the facility. Their knowledge of handling emergencies within the scope of their duties was good. Facility personnel were knowledgeable of roles, responsibilities, and interfaces with the emergency organization and the facility's ability to respond to emergency conditions. These operators are trained on handling "small" spills and other emergencies within their facilities. Throughout these discussions, the operators, and the building emergency wardens knowledge of needed action was demonstrated. Emergency management program personnel were knowledgeable of their roles, responsibilities, and interfaces with the operations organization and the emergency response organization's ability to provide the required notification, analysis, and assistance to Y-12 site in the case of an emergency. Plant Shift Superintendent personnel and facility Shift Manager personnel understood the interrelationship requirements and were cognizant of their respective requirements in support of the appropriate response during emergency conditions.

**Shift Performance:** A Limited External Exercise, 9212 Contaminated Injured Worker, was conducted and observed. Even though the overall external drill was unsuccessful, the working knowledge of the Fire Protection Incident Commander, Fire Protection Responders, Shift Manager and the Shift Technical Advisor was considered adequate as demonstrated by their actions and steps to correct the problems with getting to the injured worker.

**Conclusion:** The criteria for this objective have been met.

Issue(s):

- None.

<p>Inspector:  David Allen</p>	<p>Team Leader:  Jeffrey L. Roberson</p>
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**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

<b>FUNCTIONAL AREA: EP</b>	<b>OBJECTIVE 3, REV. 0 DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** An emergency operations drill program, including program records, has been established and implemented. (**CORE REQUIREMENT #9**)

Criteria

An effective emergency preparedness program has been established. Drills and exercises are conducted and an adequate response capability exists. (151.1; 5480.20A, Ch. 1; S/RID FA Training and Qualification (TQ) LMES ID # 9688)

Approach:

**Record Review:** Review the records that describe the recent emergency preparedness drills and review the results from each. Determine if the drill scenarios were adequate to cover hazards identified in the BIO for Phase A EUO operations and if the necessary number of drills have been conducted to fully verify and test compliance with the approved safety bases of these processes. Verify EP programs include actions for emergencies in other Y-12 facilities effecting EUO. Determine if lessons learned from drills are factored into following drills and training.

Interviews: None

**Shift Performance:** Observe pre-drill briefings, conduct, and post-drill critiques of an emergency preparedness drill. Observations should include evaluations of all aspects of drill conduct (e.g., EOC support, emergency response functions, etc.)

Record Review:

- Y-12 1998 Emergency Management Drill Schedule
- Y-12 Plant 1998 Evacuation Drill Schedule Third Quarter 1998
- Emergency Management Drill/Exercise – 9212 Contaminated Injured Worker Drill Guide, dated April 9, 1998
- Injured/Contaminated Worker Exercise – Evaluation Report – April 15, 1998
- General Concept of Operations For Field Response to Emergencies at the Y-12 Plant

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- Completed Drill Package for Fire Evacuation and Accountability Drill Package, Dated 7/22/97
- Completed Drill Package for Criticality Evacuation and Accountability Drill Package, dated 12/2/97
- Completed Drill Package for Fire Evacuation and Accountability Drill Package, Dated 2/10/98
- Completed Drill Package for Injured/Contaminated Worker Exercise Drill Package, Dated April 15, 1998
- EMPO-517, Oak Ridge Y-12 Plant, Emergency Drill and Exercise Plan, DRAFT March 1998
- Y10-53-EM-001, Critical Actions Tracking System (CATS)

Interviews Conducted:

- Lockheed Martin Energy Systems Emergency Management Program Manager
- Lockheed Martin Energy Systems Emergency Management Exercise Evaluations, Education and Interface Section Manager Y-12 Site Emergency Management Program Manager
- EUO Emergency Management Program Manager
- Plant Shift Superintendent
- Shift Managers (3)
- Building Emergency Warden (Building 9212)
- Operational Drills Coordinator

Shift Performance Evolution:

- Limited External Exercise, 9212 Contaminated Injured Worker

Discussion of Results:

Record Review: Records for completed emergency preparedness drills involving the Y-12 site for drills completed since March 1997 to the present were reviewed. This included one full participation exercise with state, local and DOE-HQ, one command post security exercise, four evacuations and accountability drills, five response drills, and two limited external exercises. The scenarios for drills and exercises are similar. The distinction between the two is that drills are typically not graded and coaching is allowed, whereas exercises are not coached but are

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### Emergency Preparedness

graded against measurable actions and objectives. The drill and exercise scenarios predominately involve criticality and fire emergencies which require the evacuation of the facility and the accountability of personnel. Response drills performed during this time frame typically involve fire, injured personnel and contamination scenarios. Although not all inclusive of the hazards covered in the BIO, the performed set of drills does represent an adequate subset of the predominate type accident from hazards identified in the BIO for Phase A1 EUO process operations. The number of drills that have been conducted provides an adequate set to verify and test compliance with the approved safety bases of these EUO Phase A1 processes for both the 9212 and 9215 buildings. Schedules for the conduct of emergency management drills at Y-12 for the remainder of the 1998 is adequate to ensure a continuing emergency response capability.

Completed drill packages were reviewed to determine if lessons learned from drills are factored into following drills and training. Each drill evaluation package provided evidence that the drill program includes post evolution critiques. The evaluations indicate an unusually high degree of success as measured against drill and exercise objectives. Of the completed exercise packages reviewed only one objective was evaluated as not being met. This fact indicates that the self evaluation and critique process, which occurs following the conduct of drills and exercises, is not effective in evaluating all aspects of drill performance for continued improvement. This is further supported by the intervention by the DOE ORR review team during the observed limited external exercise, as discussed below in the Shift Performance section of this CRAD.

Actions identified for improvements in the conduct of the drill and improvement in the participants' response to the events were evident in the post drill evaluations. Revisions to drill scenarios reflecting lessons learned were evident. Some procedure changes and training have been initiated from lessons learned that have occurred from the observed limited external exercise. Specifically, the PSS and the Shift Manager's relationship and responsibilities has been changed. The integration of lessons learned from drills into following drills and training has been effectively demonstrated.

Actions identified from the conduct and critique of the drills are entered and tracked into either of the Critical Action Tracking System (CATS), for Emergency Management Program Office (EMPO) action or Energy Systems Action Management System (ESAMS) for EUO action. The system to review, accept or reject, and ensure completion of accepted actions is informal. It was not evident that line management has accepted ownership with respect to identifying and ensuring all lessons are learned from conduct of these drills and exercises. The CATS system was critiqued as nonfunctioning during the LMES ORR. This condition has improved as there

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Emergency Preparedness

were examples of actions entered into the system from most recently performed drills. Actions that are entered into either the CATS or ESAMS are not sufficiently linked to the drill evaluation. This precludes the opportunity to ensure all accepted actions will be completed.

**Interviews:** Interviews were conducted with EMPO, facility operations personnel, and EUO training personnel to verify their knowledge of their roles and responsibilities. Each person interviewed demonstrated sufficient knowledge as compared to the program requirements.

**Shift Performance:** On March 10, 1998 a limited external exercise was conducted as part of the Lockheed Martin Energy System (LMES) Operational Readiness Review (ORR). This exercise was observed by members of the DOE ORR team. Evaluations of the Emergency Operation Center support, incident command, emergency medical service, nuclear criticality safety, and facility specific response were conducted.

The scope of the drill included the simulation of an explosion coincident with simulated operations of the Holden Furnace. One injured and contaminated person was included in the exercise. This person required emergency medical attention to be provided from outside the facility. The scenario for the drill was both reasonable and challenging from a Basis for Interim Operation and shift operation standpoint. Preparations and pre-brief for the drill were extensive and thorough. Important safety concerns were identified as well as the necessary operation procedures and emergency procedures required for response to the drill.

During the drill itself, significant communications problems existed between the facility, incident commander and emergency response support personnel. As a result, criticality safety personnel delayed the entry of the response team because a clear description of the situation in the facility was not provided to them. This led to a delay in excess of thirty minutes in Emergency Response personnel reaching the injured person.

The exercise critique was ineffective in evaluating this communication deficiency. Observers from the DOE ORR intervened to point out the deficiency and the drill was eventually graded as a failure. The LMES ORR report provided an extensive and complete accounting of the comments and additional deficiencies associated with this drill that are sufficient to lead to improvement if acted upon.

Conclusion: The criteria for this objective have been met.

ORR ASSESSMENT FORM 1  
Emergency Preparedness

Issue(s):

- None.

Inspector: <u>Doug Dearolph</u> Doug Dearolph	Team Leader: <u>Jeff Roberson</u> Jeff Roberson
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**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

<b>FUNCTIONAL AREA: EP</b>	<b>OBJECTIVE 4 , REV. 0 DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b> <b>X</b>	<b>NO</b>

**OBJECTIVE:** The implementation status for DOE Order 151.1, and associated S/RIDs is adequate for operations. Non-compliance items have been addressed. (**CORE REQUIREMENT #7**)

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

**Record Review:** Review order compliance packages for the listed orders, including all applicable CSAs, exemptions, and compensatory measures.

**Interviews:** If these orders are not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as any interim compensatory measures.

**Shift Performance:** Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

Record Review:

- Y-12 Programmatic Assessment Report for DOE O 151.1, Comprehensive Emergency Management System
- Y-12 Standards/Requirements Identification Document (S/RID) for DOE O 151.1
- EMPO-511, Transition Plan for Implementation of the Oak Ridge Reservation Emergency Management Program

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- EMPO-500, The United States Department of Energy Oak Ridge Reservation Emergency Plan, February 1998
- B/FEP-606, Revision 2, Building/Facility Emergency Plan for the 9215 Complex
- B/FEP-601, Revision 2, Building/Facility Emergency Plan for the 9212 Complex
- EMPO-511, Transition Plan for Implementation of The Oak Ridge Reservation Emergency Management Program
- DOE Manager letter, "Oak Ridge Reservation Emergency Management Program", dated April 29, 1998
- Facility Hazards Surveys for the Oak Ridge Y-12 Plant, Building 9998, dated 5/4/98
- Oak Ridge Reservation Building/Facility Emergency Program Procedure EM-127
- Y/SMS-58, Memorandum of Understanding Between Nuclear Operations and Enriched Uranium Operations with Plant Shift Superintendents Office
- Y40-37-004, Safe Shutdown Procedure-9212 Complex
- Y10-53-EM-001, Critical Actions Tracking System (CATS)

#### Interviews Conducted:

- Lockheed Martin Energy Systems Emergency Management Program Manager
- Y-12 Site Emergency Management Program Manager
- EUO Emergency Management Program Manager
- Building Emergency Warden (Building 9212)

#### Shift Performance Evolution:

- None.

#### Discussion of Results:

Record Review: The Y-12 Programmatic Assessment Report identified four requirements from DOE O 151.1 as Non-compliant as of September 17, 1997. Compliance has since been established with the Order, except for those line items which have been identified in the Order as not requiring full implementation until September 30, 1999. No CSAs or exemptions are necessary for DOE O 151.1.

The Oak Ridge Reservation emergency management system is in transition to meet DOE Order 151.1 requirements and it is anticipated to be fully implemented by September 1999. This transition is described in an approved "Transition Plan."

Safe Shutdown procedures have been developed and are implemented by the facility Shift Manager after consultation with the Plant Shift Superintendent (PSS) and the decision is made to conduct an orderly evacuation of the applicable area. These procedures include specific process

**ORR ASSESSMENT FORM 1**  
Emergency Preparedness

shutdown actions, which detail the actions for operations personnel to safely shut down area-specific equipment before evacuation, if time allows.

Building/Facility Emergency Plans have been developed and approved for the 9212 and 9215 facilities. These plans provide guidance to employees within the facilities concerning emergency actions and responses during an emergency condition. This includes emergency alarm signals, protective actions, personnel accountability actions, generic type emergencies, and some generic hazards found within the facility.

Additional details on the Transition Plan and Building/Facility Emergency Plans are discussed under Objective EP1.

Interviews: The Emergency Management Program Organization Manager was found to be knowledgeable of the status of gaining full compliance with DOE O 151.1. The Manager was also found to be knowledgeable of status of Emergency Management Program Transition Plan.

Shift Performance: None.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector: <u>Doug Dearolph</u> Doug Dearolph	Team Leader: <u>Jeffery L. Roberson</u> Jeffery L. Roberson
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# ORR ASSESSMENT FORM 1

## Engineering Support

FUNCTIONAL AREA: ES	OBJECTIVE 1, REV. 0 DATE: May 13, 1998	CRITERIA MET	
		YES X	NO

**OBJECTIVE:** An engineering support program is established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure engineering support services are adequate for safe operations. (CORE REQUIREMENT #8)

### Criteria

The engineering support organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. They are adequately staffed with qualified personnel. (5480.19, Ch. VIII; 5700.6C, para 9.b.(1); 10 CFR 830.120; 5480.20A, Chs. I and IV; S/RID FA Quality Assurance (QA) LMES ID #9931, #9954)

A program has been developed and implemented for the identification and disposition of Unreviewed Safety Questions (USQs). (5480.21, Para 10; S/RID FA Safety Analysis (SA) LMES ID #6834, #6835, #5287, #5288 )

### Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, and internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels of the engineering support organization that supports operations. Review dispositioned USQs/USQDs for design changes, special procedures and tests, and other proposed changes to verify adequate implementation. Review initial USQ screenings and supporting USQ safety evaluations. Determine the status of all ongoing USQs and USQDs and evaluate their implications on the startup of EUO Phase A1 operations.

**Interviews:** Interview personnel responsible for developing, reviewing and approving USQ determinations to determine if they are familiar with their support and interface responsibilities to the operations organization. Interview engineering support personnel to ensure they adequately understand their roles, responsibilities, and reporting relationships.

**Shift Performance:** While observing evolutions and drill response, determine if support services personnel are providing adequate support to the operations organization, and attention is given to health, safety and environmental protection issues. Evaluate any in progress USQ/USQD reviews to assess adequacy of program implementation.

**ORR ASSESSMENT FORM 1**  
**Engineering Support**

Record Review:

- Memorandum dated 4/2/98, Jessen/St. Clair, subject: Central Engineering Services Support of Configuration Management Program Work Activities in Enriched Uranium Operations
- Y/MA-7351, Enriched Uranium Operations, Organization Manual as of February 1, 1998
- Y/MA-7255, The Operational Safety Requirements for Building 9212 Enriched Uranium Operations Complex (u), Revision 3 (Corrected), March 1998
- Y/MA-7254, Rev. 2, The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex, March 1998
- Y/MA-7290, Rev. 1, The Basis for Interim Operation for Building 9215 Enriched Uranium Operation Complex, March 1998
- Y/MA-7291, Revision 2 (Corrected), The Operational Safety Requirements for the 9215 Complex Enriched Uranium Operations, March 1998
- Y/MA-7238, Configuration Control Board (CCB) Charter 9212/9215/9206, September 15, 1996, Revision 2
- Y/EN-5500, Revision 1, Guidelines for Producing/Revising EUO Configuration Control Drawings, 2/24/98
- Y/MA-7373, Lockheed Martin Energy Systems, Inc., Operational Readiness Review for the Enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, April 1998
- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, April 30, 1998 along with completed assessment forms
- Y70-809, Unreviewed Safety Question Determination, 7/17/97
- Y-12 Programmatic Assessment Report
- EUO-1997-665, Change Package
- EUO-1998-035, Change Package
- EUO-1998-257, Change Package
- EUO-1998-223, Change Package
- EUO-1998-184, Change Package

Interviews Conducted:

- YSO Point of Contact for Engineering Support
- YSO Point of Contact for Unreviewed Safety Questions
- EUO Deputy Chief Engineer, Technical Support
- EUO Technical Support Manager / Chief Engineer
- EUO Engineering Manager, Technical Support
- Design Support Lead Engineer
- Engineering Division Director

**ORR ASSESSMENT FORM 1**  
**Engineering Support**

- 9212 Operations Manager
- Team Leader, Process Based Restart
- Manager EUO
- Design Technicians (3)
- Designers (2)
- Design Engineers (2)
- System Engineers (3)
- EUO Technical Specialists Manager (Designated Independent Reviewer for USQs)
- Technical Training Manager, Engineering Support
- Y-12 Plant Training Manager
- Team Manager, O-Wing, accountability 2 systems
- EUO Authorization Basis Manager/USQD Manager
- Shift Manager E-Wing

Shift Performance Evolution:

- Drill for high capacity evaporator fume-off reaction

Discussion of Results:

Record Review: The EUO organization manual (Y/MA-7351) provides organization charts along with a brief description of the position's assigned duties and reporting relationships.

- The Technical Support Manager (Chief Engineer) is responsible for "providing engineering and technical support to Enriched Uranium Operations and the buildings within the organization".
- The Engineering Manager reports directly to the Chief Engineer. The Engineering Manager "acts as the technical authority for all engineering matters associated with EUO", is responsible for "providing engineering design and process support to Enriched Uranium Operations and the buildings within the organization", and "manages project and design engineering in support of EUO priorities".
- The Design Support Lead Engineer reports directly to the Engineering Manager and is responsible for "providing engineering design and process support to Enriched Uranium Operations and the buildings within the organization" and "ensures all designs are screened and change packages are properly prepared."
- There are two System Engineering Groups identified, both of which report directly to the Engineering Manager. The Lead Engineers for these groups are "responsible for providing process engineering technical support to Enriched Uranium Operations and the buildings within the organization", "ensures all designs are screened and change packages are properly prepared", and "assembles teams of engineers from EUO and other organizations to complete design tasks".

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**Engineering Support**

Shift Performance: The drill for high capacity evaporator fume-off reaction was observed. This drill did not directly involve engineering support personnel. The shift manager involved in the drill articulated that engineering support could be acquired through the system engineering organization if necessary. A listing of phone and pager numbers for the system engineers is maintained in the shift managers office. Additionally, the shift manager has the option of paging the Engineering Manager or Chief Engineer. It is recommended that the shift manager's office should also maintain a list of the designated subject matter experts for the systems in addition to the system engineers.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector: <u>Dawn S. Kristensen</u> Dawn Kristensen	Team Leader: <u>Jeffrey L. Roberson</u> Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Engineering Support

<b>FUNCTIONAL AREA: ES</b>	<b>OBJECTIVE 2, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Level of knowledge of support personnel is adequate based on reviews of examinations and examination results and selected interviews. **(CORE REQUIREMENT #3)**

Criteria

Engineering support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance. (5480.19, Ch. VIII; 5700.6C, para 9.b.(1)(b); 5480.20A, Ch. I; S/RID FA Training and Qualification (TQ) LMES ID #1365, #2384)

Engineering support personnel demonstrate a working knowledge of design criteria and associated standards, facility systems, and components related to safety. These personnel also give adequate attention to health, safety and environmental protection issues. (5480.19, Ch. VIII; 5700.6C; 5480.20A, Ch. 1; S/RID FA Training and Qualification (TQ) LMES ID #1365)

Entry-level requirements are established for each Engineering Support position and include as applicable the minimum education, experience, technical, and medical requirements. (5480.20A, Ch. 1 and 4; S/RID FA Training and Qualification (TQ) LMES ID #2386, #1378)

Approach

**Record Review:** Review for adequacy and completion, the training records which indicate engineering support personnel training on facility procedures and systems. Review procedures or policies that describe the personnel selection and entry-level requirements.

**Interviews:** Interview engineering support personnel to assess their understanding of their actions when responding to abnormal and emergency conditions as well as their understanding of how these actions relate to the safety basis for operations. Interview these personnel to determine if their level of knowledge is adequate to assist the operations organization in maintaining safe operations. Assess their knowledge of the need and bases for the USQ process and it's importance to maintaining safety operations. Evaluate their familiarity with applicable design criteria and associated engineering standards as they apply to their responsibilities for Phase A EUO operations. Determine if they have an adequate knowledge of health, safety, and environmental issues.

## ORR ASSESSMENT FORM 1

### Engineering Support

Shift Performance: Observe drills, routine and normal operations, to assess the ability of Engineering support personnel to safely operate systems and components under their cognizance in accordance with approved plant procedures. Verify adequate attention is given to health, safety, and environmental protection issues.

#### Record Review:

- Training records for design engineers, designers, and design technicians, system engineers
- Memorandum dated 4/2/98, Jessen/St. Clair, subject: Central Engineering Services Support of Configuration Management Program Work Activities in Enriched Uranium Operations
- Y/MA-7254, Rev. 2, The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex, March 1998
- Y/MA-7290, Rev. 1, The Basis for Interim Operation for Building 9215 Enriched Uranium Operation Complex, March 1998
- Y/MA-7291, Revision 2, The Operational Safety Requirements for the 9215 Complex Enriched Uranium Operations, March 1998
- Y/MA-7255, Revision 3 (Corrected), The Operational Safety Requirements for the 9212 Complex Enriched Uranium Operations, March 1998
- Y/MA-7238, Configuration Control Board (CCB) Charter 9212/9215/9206, September 15, 1996, Revision 2
- Y/EN-5500, Revision 1, Guidelines for Producing/Revising EUO Configuration Control Drawings, 2/24/98
- Y/MA-7373, Lockheed Martin Energy Systems, Inc., Operational Readiness Review for the Enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, April 1998
- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, April 30, 1998 along with completed assessment forms
- Y70-809, Unreviewed Safety Question Determination, 7/17/97
- EUO-1997-665, Change Package
- EUO-1998-035, Change Package
- EUO-1998-257, Change Package
- EUO-1998-223, Change Package
- EUO-1998-184, Change Package

#### Interviews Conducted:

- YSO Point of Contact for Engineering Support
- YSO Point of Contact for Unreviewed Safety Questions
- EUO Deputy Chief Engineer, Technical Support
- EUO Technical Support Manager / Chief Engineer

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**Engineering Support**

- EUO Engineering Manager, Technical Support
- Design Support Lead Engineer
- Engineering Division Director
- 9212 Operations Manager
- Team Leader, Process Based Restart
- Product Certification Organization Manager
- Manager EUO
- Design Technicians (3)
- Designers (2)
- Design Engineers (2)
- System Engineers (3)
- EUO Technical Specialists Manager (Designated Independent Reviewer for USQs)
- Technical Training Manager, Engineering Support
- Y-12 Plant Training Manager
- Team Manager, O-Wing, accountability 2 systems
- EUO Authorization Basis Manager/USQD Manager

Shift Performance Evolution:

- Walkdown of change package for lube oil flow indicator replacement, O-Wing (EUO-1998-223), dwg. no. PRM56878-SK1
- Walkdown of change package for cutting and capping of by-pass line in the west dry vacuum system, E-Wing (EUO-19998-184), dwg. no. DVE-P2
- Walkdown of Filtered Tower Water East Casting Panel D, dwg. no. FTW-P8
- Walkdown of Filtered Tower Water East Casting Panel E, dwg. no. FTW-P11
- Walkdown of Filtered Tower Water West Casting Panel G, dwg. no. FTW-P9
- Walkdown of Filtered Tower Water West Casting Panel J, dwg. no. FTW-P13
- Walkdown of Filtered Tower Water West Casting Panel L, dwg. no. FTW-P15
- Walkdown of West Casting, Closed Loop Cooling, dwg. no. CWL-P25

Discussion of Results:

Record Review: Minimum entry-level requirements have been established for engineering support personnel. Systems engineers and design engineers are required to have a BS in engineering or related science, two years job related experience, and one year nuclear experience. Designers and design technicians are required to have a high school degree along with one year job related experience. A sampling of training records verified that these minimum requirements had been met for the individuals interviewed. Additionally, the system engineers had received formal training on items such as the 9212 and 9215 BIO and OSRs, Configuration Management Program,

## ORR ASSESSMENT FORM 1 Engineering Support

Unreviewed Safety Question Process, authorization basis list, grading SSCs, and design process interface.

Interviews: During discussions in the facility, engineering support personnel demonstrated an understanding of the types of emergency conditions that may be encountered when working in the facilities. Personnel were knowledgeable of the various audible and visual alarms and their associated meaning. Personnel verbalized the appropriate response to the different alarms and were cognizant of the nearest boundary and exit points each time they were asked.

There is no formal training designed for engineering support personnel for the EUO facilities or systems. Knowledge of systems is obtained largely by conducting system walkdowns, drawing review, by reading documentation such as the process descriptions, and by communication with others who are knowledgeable of the specific processes/systems.

LMES actively encourages professional licensing among the engineering community at Y-12. Approximately 75-80% of the engineers are registered professional engineers. The yearly registration fee and the professional privileged tax are both paid by LMES. The contractor does not pay for the initial testing or the training necessary to meet the yearly training requirements.

System engineers demonstrated an appropriate knowledge of the systems/processes under their purview and the interfacing processes. They were able to describe component functions and were able to relate these functions using system drawings. Personnel demonstrated an adequate knowledge to support enriched uranium operations. The system engineers were well versed in the USQ process and its importance to maintaining the safety envelope of the facility. Personnel demonstrated a thorough knowledge of the safety basis documents and the importance of the safety systems identified in these documents. Personnel expressed adequate knowledge regarding USQ screens and determinations, their roles and responsibilities in the development and review of USQ documentation, and the interface between the USQ and CM programs.

During walkdowns, engineering support personnel demonstrated an appropriate knowledge of health, safety, and environmental issues as discussed in the shift performance section below.

Shift Performance: During system/facility walkdowns, engineering support personnel demonstrated an appropriate level of knowledge of the operating systems and associated components. They were capable of identifying components in the field, adequately describing the function of individual components and their physical attributes, and the system interfaces. Personnel were adept at reading drawings.

Prior to entering the facility, personnel reported to the shift manager's office to inform him of their intent to enter and to obtain the current status of the facility including radiological postings and other pertinent information. The appropriate personnel protective equipment was donned

**ORR ASSESSMENT FORM 1**  
Engineering Support

according to the radiological work permit (RWP); personnel read the permits and signed as appropriate. Additionally, personnel read the RWP for the ORR team member under escort to ensure the ORR team member donned the appropriate protective equipment and to determine if there were any access restrictions identified in the permit. While in the facility, personnel demonstrated an understanding of radiological protection and security requirements, and all radiological postings in the facility were followed. Personnel checked in with the floor supervisor to inform him of their presence in the facility and what they would be doing while there. Personnel were knowledgeable of the appropriate response in case of an emergency situation and were aware of security measures for entering the material access area. When exiting the facility, personnel appropriately doffed their personnel protective equipment. They conducted the appropriate radiological scanning, demonstrating good technique.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector: <u><i>Dawn S. Kristensen</i></u> Dawn Kristensen	Team Leader: <u><i>Jeffrey L. Roberson</i></u> Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Engineering Support

<b>FUNCTIONAL AREA: ES</b>	<b>OBJECTIVE 3, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** The implementation status of DOE Order 5480.21 and associated S/RIDs is adequate for operation. Non-compliance issues have been addressed. (**CORE REQUIREMENT #7**)

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Adequate compensatory measures are specified in the CSAs as necessary, and have been effectively implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

**Record Review:** Review the order compliance package for DOE 5480.21, including all applicable CSAs, exemptions, and compensatory measures.

**Interviews:** If this order is not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as any interim compensatory measures.

**Shift Performance:** Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

Record Review:

- Y/MA-7254, Rev. 2, The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex, March 1998
- Y/MA-7290, Rev. 1, The Basis for Interim Operation for Building 9215 Enriched Uranium Operation Complex, March 1998

**ORR ASSESSMENT FORM 1**  
**Engineering Support**

- Y/MA-7291, Revision 2 (Corrected), The Operational Safety Requirements for the 9215 Complex Enriched Uranium Operations, March 1998
- Y/MA-7255, Revision 3 (Corrected), The Operational Safety Requirements for the 9212 Complex Enriched Uranium Operations, March 1998
- Y70-809, Unreviewed Safety Question Determination, 7/17/97
- Y-12 Programmatic Assessment Report
- Results of the Unreviewed Safety Question (USQ) Program Self-Assessment, 1/27/98

Interviews Conducted:

- YSO Point of Contact for Engineering Support
- YSO Point of Contact for Unreviewed Safety Questions
- Y-12 Facility Safety Manager
- Y-12 Subject Matter Expert for USQ
- Engineering Personnel, Support for S/RIDs (USQ)
- EUO Authorization Basis Manager/USQD Manager

Shift Performance Evolution:

- None

Discussion of Results:

Record Review: The results from a recent LMES self-assessment on the USQ process revealed that the issues identified were not significant and should not effect LMES's ability to conduct enriched uranium operations safely. Examples of issues identified include the clarification of the programs role in changes affecting safety and like-for-like changes, clarification of roles and responsibilities for support organizations, and retention times for change packages. A process improvement team has been formed to address these issues. Both DOE and LMES are represented on this team.

Interviews: The requirements identified in the STRIDE database for DOE Order 5480.21 were wholly incorporated into implementing document *Y70-809, Unreviewed Safety Question Determination*. No exceptions were taken to these requirements during the original order compliance activities. In the transition to S/RIDS, LMES did not eliminate any requirements from those originally adopted.

At this time both LMES and DOE believe that EUO is in compliance with all incorporated requirements, except for one requirement which relates to turnover of the facility and systems to a new contractor. The requirement states, "For all safety evaluations required under this section, a contractor shall: Maintain documentation required by paragraph 10e(1) for the authorized

**ORR ASSESSMENT FORM 1**  
Engineering Support

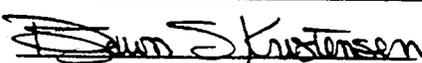
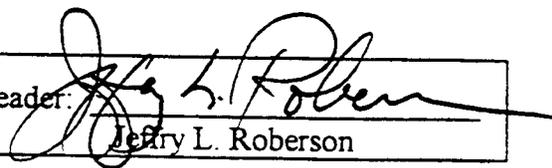
operating period of the nuclear facility and ensure the completed transfer of all documentation to any subsequent contractor prior to termination of its contract". The resolution of this issue is in progress.

Shift Performance: No compensatory measures are in effect.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector:  Dawn Kristensen	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Fire Protection

<b>FUNCTIONAL AREA: FP</b>	<b>OBJECTIVE 1, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A fire protection program is established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure fire protection support services are adequate for safe operations. (CORE REQUIREMENT #8)

Criteria

The fire protection organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. It is adequately staffed with qualified personnel. (5480.7A, para 9; S/RID FA Fire Protection Engineering (FP) LMES ID #5033, #5034)

Fire protection programs have been established that ensure plant personnel can prevent and respond to fire hazards. (5480.7A, para 9; S/RID FA Fire Department Operations (FO) LMES ID #5044)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, and internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels for the fire department group that supports operations. Determine if the fire department group that supports operations is providing adequate support to the operations organization, and that they are giving adequate attention to health, safety and environmental protection issues.

**Interviews:** Interview selected fire department, fire engineering, and surveillance personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the operations organization.

**Shift Performance:** Walkdown the facilities to determine if the material condition of the fire detection and suppression equipment and fire boundaries adequately reflect documented needs and if combustibles are suitably controlled.

Record Review:

- Memorandum of Understanding between Fire Protection Operations and Enriched Uranium Operations regarding the Fire Protection Program, FO-MOU-002, Rev. 0, 11/14/97

**ORR ASSESSMENT FORM 1**  
**Fire Protection**

- Enriched Uranium Operations (EUO) Fire Protection Restart Plan, Y/MA-7310, Rev. 0, 10/03/97
- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant (April 30, 1998)
- Fire department response staffing letter to F.P. Gustavson from J. Dale Jackson, dated 2/11/98
- White Paper - fire department response staffing
- Compensatory measures tracking matrix, dated 5/6/98
- Y-12 Fire Department monthly/quarterly Building Inspection Reports
- Y52-37-019, EUO Fire Safety Inspection Forms
- Y52-51-FDO-013, Fire Suppression System Monthly Inspection Reports
- Y52-51-FDO-014, Wet Pipe Sprinkler System Surveillance Reports
- Smoke and Heat Detector Test Reports
- Y53-51-FDO-311, Fire Door Test and Inspection Reports
- Y/MA-7254, Basis for Interim Operation for Building 9212, Enriched Uranium Complex (U), Rev. 2, March 1998
- Specification S-04117-51, Construction Specification for Oil Dike 9 Fire Protection Upgrades
- MMES Engineering Service Order, Life Safety Upgrades

Interviews Conducted:

- Y-12 Fire Chief
- Y-12 Fire Department Incident Commander
- Y-12 Site Security Commanders (3)
- Fire Protection Engineering Representative from the Y-12 Site Office Manager, Y-12 Fire Protection Operations
- Fire Protection Engineering Representatives from the EUO Organization (2)
- Fire Protection Engineering Representatives from LMES (2)

Shift Performance Evolution:

- Attend the 5/6/98 performance test of the Common Response Plan demonstrating Fire department response from ORNL and ETPP
- Attend the 5/7/98 forming demonstration in Building 9215

Discussion of Results:

Record Review: A review of LMES fire protection operations was conducted. This review included an assessment of the Fire Department Operations, Fire Protection Engineering (FPE) and

**ORR ASSESSMENT FORM 1**  
**Fire Protection**

Fire Systems Group as well as other organizations established to provide corporate fire protection engineering support. The EUO management structure to track operations support in fire protection engineering was also reviewed. A sample of monthly inspections, semi-annual inspections, preventive maintenance inspections, as well as other EUO operational activities were also reviewed. The results of these reviews indicate that the Y-12 Site Fire Protection Program is adequately implemented.

Fire protection recommendations from YSO's Assessment of Enriched Uranium Operations Phase A1 Activities were reviewed. These recommendations were responded to by LMES and are currently being tracked by the site office in its deficiency tracking database. All of the deficiencies have been addressed to the satisfaction of the YSO fire protection engineer. To date however, 3 of the 10 deficiencies have yet to receive formal verification of completion by YSO.

Interviews: Interviews were conducted with selected Fire Department personnel, fire protection engineers, and surveillance personnel to determine familiarity with assigned roles, responsibilities, and interfaces with the operations organization. No inadequacies were observed.

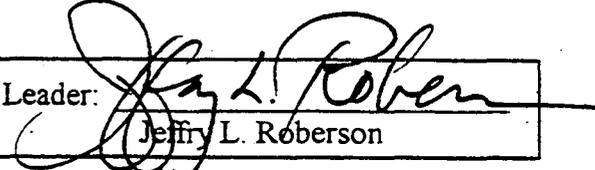
Shift Performance: An off-hour drill of the Fire Department's Common Response Plan was observed. The drill was conducted to verify adequate response to a major fire event. This verification was initiated in response to a recent fire protection needs assessment recommending an increase in Y-12 Department staffing. The results of this announced drill indicate that supplemental response from ORNL and ETTP can be achieved within 30 minutes of request from the Y-12 Incident Commander. Interviews with site security supervisors indicate an awareness and a plan to facilitate site access in an actual fire event. In addition, a monthly surveillance of the fire suppression system in the EUO complex was observed as well as other demonstrations conducted for ORR team review.

A walkdown was performed to determine housekeeping adequacy and control of ignition source efforts. Adequate combustible and ignition source control was observed.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector:  Jim Bisker	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Fire Protection

<b>FUNCTIONAL AREA: FP</b>	<b>OBJECTIVE 2, REV. 0 DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Level of knowledge of operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of operations support personnel. (CORE REQUIREMENT #3)

Criteria

Fire protection support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance. (5480.7A, para 9; 5480.20A, Chs. I and IV; S/RID FA Fire Protection Engineering (FP) LMES ID #5035, FA Training and Qualification (TQ) LMES ID #5060)

Fire protection support personnel demonstrate a working knowledge of facility systems and components related to safety. These personnel also give adequate attention to health, safety and environmental protection issues. (5480.7A, para 9.b.; 5480.20A, Chs. I and IV; 5700.6C, Criteria II; 10 CFR 830.120; S/RID FA Fire Protection Engineering (FP) LMES ID #5038, #5039)

Approach

**Record Review:** Review for adequacy and completion, the training records which indicate fire protection support personnel training on facility procedures and systems under their cognizance as well as system and facility hazards.

**Interviews:** Interview fire protection support personnel to assess their understanding of their actions when responding to abnormal and emergency conditions as well as their understanding of how these actions relate to the safety basis for operations. Interview the personnel designated for emergency response actions to determine if they have been trained to anticipate, recognize, evaluate, and respond to fire hazards. Assess their understanding of health, safety, and environmental protection issues.

**Shift Performance:** Observe or review records of drills, routine evolutions and normal operations, to assess the ability of fire protection support personnel to safely operate systems and components under their cognizance in accordance with approved plant procedures.

## ORR ASSESSMENT FORM 1

### Fire Protection

#### Record Review:

- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant (April 30,1998).
- Fire Protection Training master record

#### Interviews Conducted:

- Training Coordinator for LMES Fire Protection operations
- Y-12 Fire Chief
- Y-12 Fire Department Incident Commander
- Y-12 Site Security Commanders (3)
- Fire Protection Engineering Representative from the Y-12 Site Office
- Manager, Y-12 Fire Protection Operations
- Fire Protection Engineering Representatives from the EUO Organization (2)
- Fire Protection Engineering Representatives from LMES (2)

#### Shift Performance Evolutions:

- Attend the 5/6/98 performance test of the Common Response Plan demonstrating Fire department response from ORNL and ETTP
- Attend the 5/7/98 rolling demonstration in Building 9215

#### Discussion of Results:

Records: A review was conducted of the Fire Protection Operations training records. It is concluded that an adequately maintained system is in place to track the training of Fire Protection Operations personnel.

Memorandum of Understanding FO-MOU-002 addresses a program to include a fire safety education program for new employees, and a program to establish a lessons-learned to increase existing site personnel levels of fire safety consciousness, responsibility, and culture to prevent and abate potential and identified fire prevention deficiencies. Training Department personnel identifying the programs are addressed in Material Access Area (MAA) training. Participation in the MAA training program does not address the specific items described in the MOU, nor does it place adequate emphasis on non-nuclear hazards. For example, no mention was made relating to the operational sequence of the building fire alarm system (i.e., the non-actuation of evacuation alarms upon initiation of a manual fire alarm pullstation).

**ORR ASSESSMENT FORM 1**  
Fire Protection

<b>FUNCTIONAL AREA: FP</b>	<b>OBJECTIVE 3, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b>	<b>NO X</b>

**OBJECTIVE:** The implementation status of DOE Order 5480.7A and associated S/RIDs are adequate for operation. Non-compliance issues have been addressed. (**CORE REQUIREMENT #7**)

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA), equivalencies, and exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

**Record Review:** Review order compliance packages for the listed orders, including all applicable CSAs, equivalencies, exemptions and compensatory measures.

**Interviews:** If this order is not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as any interim compensatory measures.

**Shift Performance:** Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

Record Review:

- DOE Order 5480.7A, Fire Protection
- ORO Fire Prevention and Protection Implementation Guidelines
- Equivalency Request- Inspection, Testing and Maintenance of Fire Protection and Fire Alarm Systems (June 8,1994 memo from Fitzgerald to Rothrock)

**ORR ASSESSMENT FORM 1**  
**Fire Protection**

- Y-12 Plant Fire Protection Equivalency Request (July 8, 1996 memo from Rothrock to Spence)
- Fire Hazards Analysis for 9212 (September 5, 1997)
- Fire Hazards Analysis for 9215 (November 27, 1995)
- Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant (April 30, 1998)
- Ready for Operations Punch List, 5/6/98
- DOE Y-12 Compensatory Measure Review
- Detection System Interlock Equivalency Request, 3/12/98
- Compensatory Measure Tracking Matrix
- Contract DE-AC0584-OR-21400, Detection System Interlock Equivalency Request

Interviews Conducted:

- Fire Protection Engineering Representative from the Y-12 Site Office
- Fire Protection Engineering Representatives from the EUO Organization (Technical Programs Division) (2)
- Fire Protection Engineering Representatives from LMES (2)

Shift Performance Evolution:

- Attend the 5/11/98 Qualitative Emergency Lighting Test for M-wing (basement and first floor areas) of Building 9215.
- Attend the 5/6/98 monthly inspection for fire suppression systems for the 9212/9215 Complex.

Discussion of Results:

Record Review: A review of the EUO Compensatory Measure Tracking Matrix was conducted to ensure that fire protection compensatory measures were adequately implemented. The review included the identification of deficiencies, recommended compensatory measures by Fire Protection Engineering (FPE), and actions to remove the compensatory measures. A review of the disposition of Buildings 9212, 9215, and 9998 Fire Hazard Analyses (FHA) recommendations and associated fire protection issues management tracking systems was also conducted. Emphasis was placed on determining EUO readiness to commence Phase A1 activities.

There are currently 79 items assigned to 21 activity areas listed in the EUO fire protection Compensatory Measure Tracking Matrix. Of these 79 items, two have yet to have compensatory measures fully implemented. CM No. EUO-FP-98-4.01 and CM No. EUO-FP-98-5.01 are

## ORR ASSESSMENT FORM 1

### Fire Protection

outstanding. These items address deficiencies in the cooling tower fan shutdown interlock and the closing of a fire damper at column line CC-Y/90 in Building 9998 respectively. These compensatory measures are being tracked as pre-start items in the EUO Energy Systems Action Systems (ESAMS) by the facility management.

Approximately 34 compensatory measures identified address the need to provide adequate egress lighting in accordance with the NFPA Life Safety Code (NFPA 101). These compensatory measures involve the use of flashlights as a condition for entering specific areas of the facility. LMES is proceeding with a continuing program to close-out the flashlight compensatory measures by adding new battery-powered units where necessary, replacing existing equipment with new units equipped with self-testing features, and by qualitatively evaluating emergency lighting compliance. Compensatory measures for emergency lighting appear to be sufficient to provide egress capability for occupants; however, fissile material operations introduce additional factors. Actions required to secure parts or use respirators within areas where fissile materials are being handled will make reliance on flashlights cumbersome. The EUO management has not requested the Authority Having Jurisdiction (AHJ), the Oak Ridge Operations Office, to evaluate the acceptability of flashlights during fissile operations.

Activity Area EUO-FP-98-8.01 describes a series of compensatory measures for secondary exiting of building occupants in certain upper floor areas of Building 9212. These compensatory measures include familiarization training for area occupants, marking headroom obstructions, requiring the use of flashlights as a condition for entering the area, and marking the rooftop as a means of egress with adequate signs and reflective tape to clearly mark the exit route. A survey of this exiting arrangement was performed with the determination that these compensatory measure are not equivalent to the required Life Safety Code. Due to the arrangement of the roof, the many obstructions, and the lack of lighting, the egress path is not considered an adequate secondary exit path from certain upper floor areas of Building 9212.

A review of inspection testing and maintenance (ITM) frequencies and activities for Water Based Fire Protection Systems as delineated in NFPA Standard 25 and Chapter 7 of the National Fire Alarm Code, NFPA 72 were reviewed. LMES requested an "Equivalency Determination" from the Assistant Secretary for Environment, Safety, and Health (EH) for frequencies deviating from required ITM practices. The "Equivalency Determination" was concurred in by EH in June 1994, with stipulations that data on fire protection system performance should be continually collected and maintained so as to be able to provide a sound technical basis for continuing to implement the revised testing frequencies. This data was required to be maintained in an auditable format, so that trends in system performance could be evaluated to determine if significant degradation of system performance is occurring over time. Trending data was not commenced until 1996 and has not been consistently maintained to determine performance trends.

## ORR ASSESSMENT FORM 1

### Fire Protection

A site survey was conducted to validate stated corrective actions or credited fire protection improvements; shift and engineering performance of day-to-day activities; and housekeeping activities necessary to maintain a fire safe working environment. With the exception of the evaluation of emergency lighting provisions by the ORO AHJ, the results of this assessment indicate that appropriate fire protection measures have been implemented to resume operations.

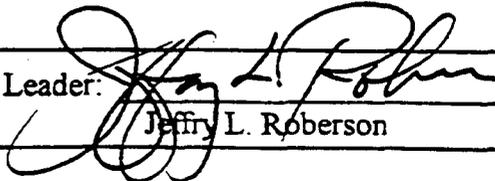
**Interviews:** Interviews were conducted with EUO and FPO management personnel to ascertain their awareness of the impact of correcting life safety and property protection deficiencies within the EUO Complex. Management is fully aware of the need to resolve deficiencies.

**Shift Performance:** The Building 9215 emergency lighting test was observed during an off-hour period. This test proves to be an adequate method of determining minimum lighting levels necessary for occupant egress. In addition, the monthly fire suppression system inspection was observed. No inadequacies were observed in performance of this task.

**Conclusion:** The criteria for this objective have not been met. Approval to use flashlights must be evaluated by ORO. This is a pre-start finding.

Issue(s):

- EUO has not requested that the Authority Having Jurisdiction (AHJ), the Oak Ridge Operations Office, evaluate the acceptability of using flashlights during fissile operations. (FP3-1)
- Compensatory measures currently in place for the roof egress from 9212 are not adequate. (FP3-2)
- Data on fire protection system performance has not been adequately collected and maintained as required by EH concurred Equivalency Determination. (FP3-3)

Inspector:  Jim Bisker	Team Leader:  Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Fire Protection

<b>Functional Area:</b> FP	<b>Objective No.:</b> 3	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> FP3-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** EUO has not requested that the Authority Having Jurisdiction (AHJ), the Oak Ridge Operations Office, evaluate the acceptability of using flashlights during fissile operations.

**REQUIREMENT:** NFPA 101, The Life Safety Code.

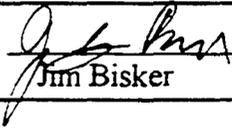
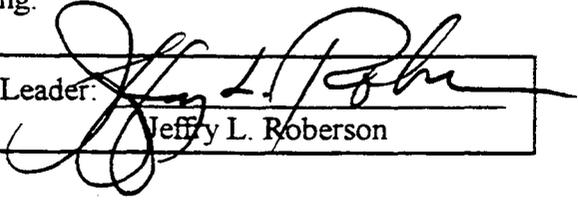
**REFERENCE(S):** DOE Order 5480.7A, Fire Protection; NFPA 101, Life Safety Code.

**DISCUSSION:** There are currently 79 compensatory measures assigned to 21 activity areas listed in the EUO fire protection Compensatory Measure Tracking Matrix. Approximately 34 of these compensatory measures relate to 5 activity areas where LMES has instituted a program to verify that building occupants have adequate means of egress lighting in accordance with the NFPA life Safety Code (NFPA 101). These compensatory measures involve the use of flashlights as a condition for entering specific areas of the facility.

LMES is proceeding with an aggressive program to close out the flashlight compensatory measure by adding new battery-powered units where necessary, replacing existing equipment with new units equipped with self-testing features, and by qualitatively evaluating emergency lighting compliance. The Compensatory Measure Tracking Matrix lists an estimated completion date for the removal of emergency lighting compensatory measures as June 1, 1998.

Compensatory measures for emergency lighting appear to be sufficient to provide egress capability for occupants; however, fissile material operations introduce additional factors not currently present. Actions to operate or shutdown processes, to secure parts, or perform respirator work within these areas may make reliance on flashlights cumbersome.

**CONCLUSION:** The use of flashlights during fissile operations should be evaluated by the Oak Ridge Operations Office (ORO). This is a pre-start finding.

Inspector:  Jim Bisker	Team Leader:  Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Fire Protection

<b>Functional Area:</b> FP	<b>Objective No.:</b> 3	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> FP3-2 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** Compensatory measures currently in place for the roof egress from 9212 are not adequate.

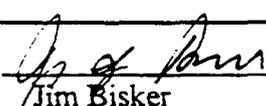
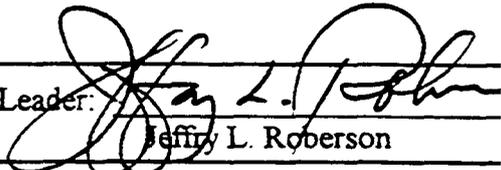
**REQUIREMENT:** NFPA 101, The Life Safety Code.

**REFERENCE(S):** DOE Order 5480.7A, Fire Protection; NFPA 101, Life Safety Code.

**DISCUSSION:** There are currently 79 compensatory measures assigned to 21 activity areas listed in the EUO fire protection Compensatory Measure Tracking Matrix. Activity area EUO-FP-98-8.01 describes a series of compensatory measures for secondary exiting of building occupants in certain upper floor areas of building 9212. These compensatory measures include familiarization training for area occupants, marking headroom obstructions, requiring the use of flashlights as a condition for entering the area, and marking the rooftop means of egress with adequate signs and reflective tape to clearly mark the exit route.

A survey of this exiting arrangement was performed with the determination that these compensatory measures are not equivalent to the means of egress requirements specified in the Life Safety Code. Due to the arrangement of the roof, the many obstructions, and the lack of lighting, the egress path is not considered an adequate secondary exit path. Building occupants in certain upper floor areas of building 9212 are affected.

**CONCLUSION:** A survey of this exiting arrangement was performed with the determination that these compensatory measures are not equivalent to the requirements of the Life Safety Code. Since these areas are not considered a part of the Phase A1 restart activities, this is a post start finding.

<b>Inspector:</b>  Jim Bisker	<b>Team Leader:</b>  Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Fire Protection

<b>Functional Area:</b> FP	<b>Objective No.:</b> 3	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> FP3-3 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** Data on fire protection system performance has not been adequately collected and maintained as required by an Equivalency Determination.

**REQUIREMENT:** DOE Order 5480.7A, Fire Protection.

**REFERENCE(S):** Equivalency Request - Inspection, Testing, and Maintenance of Fire Protection and Fire Alarm Systems, June 8, 1994, Fitzgerald to Rothrock; Y-12 Plant Fire Protection Equivalency Request, July 8, 1996, Rothrock to Spence.

**DISCUSSION:** Section 5.C of DOE Order 5480.7A identifies the National Fire Protection Association (NFPA) Codes and Standards as a minimum set of technical requirements for the implementation of DOE's Fire Protection Program. As identified in the "Definitions" section of 5480.7A, any deviation from NFPA reference documents should have in its place an approved alternative or "equivalent" feature to compensate for the said deviation. Section 8g.(4) assigns authority for this approval to the Heads of Field Organizations, which in this case is the Oak Ridge Operations Office (ORO).

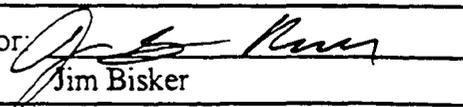
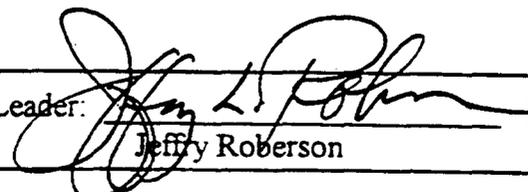
Inspection testing and maintenance (ITM) frequencies and activities for Water Based Fire Protection Systems are delineated in NFPA Standard No. 25. Additionally, ITM frequencies and activities for fire alarm systems are contained within Chapter 7 of the National Fire Alarm Code, NFPA 72. In 1994, the Y-12 contractor organization reviewed these NFPA documents and concluded that certain frequencies deviated from their current ITM practices. Rather than comply with the NFPA, the contractor requested an "Equivalency Determination" from the Assistant Secretary for Environment, Safety, and Health (EH), who has authority for approving fire protection exemption requests. EH reviewed the justification in support of the Equivalency Determination and concurred with ORO's decision to allow an alternative frequency schedule subject to a number of comments including the following:

- "Data on fire protection system performance should be continually collected and maintained so as to be able to provide a sound technical basis for continuing to implement the revised frequencies. This data should be in an auditable form. Trends in system performance should also be monitored so as to be able to determine if significant degradation of system performance is occurring over time. Such degradation would justify revising the inspection testing and maintenance program to feature more conservative frequencies."

**ORR DEFICIENCY FORM**  
Fire Protection

- Contractor trending and tracking of ITM activities (used to determine if significant degradation of system performance is occurring over time) is suspect, given the fact that trending has only recently been initiated (1996) and has not been consistently maintained to schedule.

**CONCLUSION:** Data on fire protection system performance has not been adequately collected and maintained. This is a post start finding.

Inspector:  Jim Bisker	Team Leader:  Jeffrey Roberson
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**ORR ASSESSMENT FORMS**  
Industrial Safety

<b>FUNCTIONAL AREA: IH</b>	<b>OBJECTIVE 1, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Occupational safety and industrial hygiene programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure services are adequate for safe operations. **(CORE REQUIREMENT #8)**

Criteria

The occupational safety and industrial hygiene organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. They are adequately staffed with qualified personnel. (5480.10; 5483.1A, Ch. 1; S/RID S/RID FA Quality Assurance (QA) LMES ID #9931, #9954, FA Safety and Health (SH) LMES ID #10459)

Occupational safety and industrial hygiene programs are implemented and are consistent with DOE Orders and applicable industry standards. (5483.1A, Ch. 1; 5480.10.; S/RID FA Medical (MD) LMES ID #997, FA Safety and Health (SH) LMES ID #10459, FA Training and Qualification (TQ) LMES ID #7681)

Job hazard analyses are conducted routinely by experienced engineering, occupational safety, and industrial hygiene personnel in a coordinated effort to avoid hazardous and unsafe operations. (5483.1A, Ch. 1; 5480.10; S/RID FA Safety and Health (SH) LMES ID #10459)

Industrial safety and hygiene related equipment has been identified, reviewed, selected, maintained and where applicable, tested to ensure adequate personnel protection. (5480.19, Ch II; 5480.10; S/RID FA Maintenance (MA) LMES ID #9993)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, and internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels for the occupational safety and industrial hygiene group that supports operations. Review the necessary records and program procedures to ensure that occupational safety, industrial hygiene, and chemical safety programs continue to be implemented and are consistent with DOE Orders and applicable industry standards. Review the results of one job hazard analysis and determine if any items should be followed up during the Shift Performance phase of the ORR.

## **ORR ASSESSMENT FORMS**

### **Industrial Safety**

Review industrial hygiene sampling sheets for adequacy.

**Interviews:** Interview the occupational safety and industrial hygiene personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the operations organization.

**Shift Performance:** The occupational safety and industrial hygiene organization that supports operations will be requested to conduct at least one process hazard analysis. The person conducting this analysis will be accompanied by one of the ORR team members to determine if the results of the analysis are accurate and provide meaningful feed back to the operations group, and that they are giving adequate attention to health, safety and environmental protection issues. Observe the role played by the occupational safety and industrial hygiene/ chemical safety organization to ensure they are proactive in their approach to safety during routine operations. Walkdown the facilities to determine if appropriate industrial safety/hygiene related equipment is supplied, maintained, and reviewed to ensure the proper protection is provided to personnel.

#### Records Reviewed:

- E-mail, subject: Field Operations Support Staff Assignments, November 28, 1997
- Memo, Lockheed Martin Energy Systems (LMES) Safety and Health Organization, Jan. 15, 1998
- Resume, Defense Programs Safety and Health Organization (DPSHO) Nuclear Operations Support Group Leader
- Resumes, DPSHO Nuclear Operations Industrial Hygienist (4)
- Resume, DPSHO Nuclear Operations Industrial Safety Specialist (2)
- Resume, DPSHO Facility Management Support Group Industrial Safety Associate (2)
- Resume, DPSHO Facility Management Support Group Industrial Hygienist
- LMES Training and Qualification Program Industrial Hygiene Department (Rev 3)
- Industrial Hygiene Technician Qualification Summaries (5), May 1998
- Industrial Hygiene Training Management System Training Histories (for 5 industrial hygiene technicians), May 5, 1998
- Occupational Safety and Health Organization Health Hazard Assessment Walk-through of Building 9215, O-Wing Rolling and Forming Operations, November 1996
- Occupational Safety and Health Organization Health Hazard Assessment Walk-through of Building 9215, M-Wing, November 1996
- Industrial Hygiene Health Hazard Assessments for EUO Decontamination Pad and Plant Support Operations, October 1996
- Industrial Hygiene Health Hazard Assessment for Building 9818/9815, November 1996
- Industrial Hygiene Health Hazard Assessment for Building 9212 B-1 Wing, C-1 Wing and Head House, Special Processing, D-Wing and Reduction Operations, November 1996

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### Industrial Safety

- Industrial Hygiene Health Hazard Assessment for Building 9212, E-Wing, November 1996
- Industrial Hygiene Health Hazard Assessment for Building 9215, O-Wing Rolling and Forming Operations, August 1995
- Industrial Hygiene Health Hazard Assessment for Building 9818 Operations, Aug 1995
- EUO-C-1/H 023 Exposure Group Summary Report
- EUO-C-1/H 002 Exposure Group Summary Report
- CY 1997 Personal Air Sampling, Buildings 9212 and 9215
- CY 1997 Area Noise Monitoring Summary, Buildings 9206, 9212, 9215
- CY 1997 Area Heat Stress Monitoring Sampling Summary, Building 9215
- CY 1997 Area Bulk Sampling Summary, Buildings 9206, 9212, 9215
- CY 1997 Area Oxygen and Explosive Gas Sampling Summary, 9215
- Building 9212 E-Wing Air Sampling Results, pre-1997
- DPSHO Chemical Incompatibility Walk-through of Building's 9206 and 9215, June 1997
- DPSHO Chemical Incompatibility Walk-through of Building 9212, July 1997
- FY 1998 LMES Safety and Health Organization Information Management Plan
- Medical Occupational Health Information System (MOHIS) EUO Medical Statistical Report, May 4, 1998
- MOHIS EUO Medical Program Enrollment, 5/4/98
- Employee Health Records (7)
- E-mail, subject: Building 9206 Room 15, from Pete Calkin, March 14, 1997
- E-mail, subject: Baghouse Entry Project, from Pete Calkin, Aug 27, 1997
- E-mail, subject: Building 9215 O-Wing pit, from Pete Calkin, Aug 18, 1997
- E-mail, subject: M-Wing/Capsur Respirator Use, from Pete Calkin, Apr 15, 1997
- E-mail, subject: Ball Mill/Special Processing, from Pete Calkin, Feb 26, 1997
- E-mail, subject: Heat Stress/Nitric Acid Christmas Tree, from Pete Calkin, undated
- E-mail, subject: Lead Paint Chips, from Pete Calkin, Jan 31, 1997
- E-mail, subject: Noise sign/E-Wing basement, from Pete Calkin, July 9, 1997
- E-mail, subject: Argon Relief Value, from Pete Calkin, June 26, 1997
- E-mail, subject: VAT Info, from Pete Calkin, May 27, 1997
- Y-12 Plant Policies and Procedures List
- Y70-043, Job Hazard Analysis
- Y70-525, Operations Safety and Health Work Permit
- SH-134PD, LMES Management of Temperature Extremes
- SH-117PD, LMES Electrical Safety Program
- SH-120PD, LMES Safe Work Controls Program
- SH-151PD, LMES Respiratory Protection Program
- SH-138PD, LMES Confined Space Program
- IS-107, LMES Lockout/Tagout

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### Industrial Safety

- FP-111 LMES Welding, Burning, and Hotwork Outside of An Approved Fixed Welding Shop
- SH-201 PP Chronic Beryllium Disease Prevention Program, Appendix I
- Y10-202 LMES Integrated Safety Management Program
- Y10-012 Hazard Identification Planning for Maintenance and New Work Tasks
- Y78-002 LMES Occupational Medicine Services Procedures
- Work Order Plan Print Maintenance Job Requirement (MJR) 0053998
- Work Order Plan Print MJR 0055043
- EUO Confined Space List Printout, 5/4/98
- Job Hazard Analysis (JHA) EU-1998-REC-01, Code 80 Glovebox Operations (DRAFT)
- JHA EU-1998-REC-02, Sampling Safe Bottles (DRAFT)
- JHA EU-1998-REC-03, Filter and Separate Station Operations (DRAFT)
- JHA EU-1998-REC-06, Receipt and Shipment of Special Nuclear Materials (C-1 Receiving Area) (DRAFT)
- JHA, High Capacity Evaporator, HC/O-C-7101 Operations (DRAFT)

#### Interviews Conducted:

- DPSHO Safety and Health Department Head
- DPSHO Nuclear Operations Support Group Leader
- DPSHO Nuclear Operations Industrial Safety Specialist
- Medical Director
- DOE Safety and Occupational Health Manager
- Industrial Hygiene Technician Supervisor
- Industrial Hygiene Equipment Laboratory Manager
- Safety and Health Information System Data Manager
- DPSHO Non-nuclear Operations Respirator Facility Technician
- DPSHO Nuclear Operations Industrial Hygienist
- FMO Support Group Leader
- DPSHO FMO Support Group Industrial Safety Associate
- EUO Compliance Coordinator
- EUO Building Manager

#### Shift Performance Evolution:

- JHA of Area Trap Check for Wet Vac System (Building 9212)
- Walkdown of work areas in Building 9212 (flammable storage locker, respirator issue point, etc)
- IH Equipment Laboratory, where measuring equipment is stored, maintained, flow checked, and inspected in preparation for use.

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#### Discussion of Results:

Current S/RIDs show only DOE Orders 225.1, 231.1, and 440.1 applicable for these subjects.

**Record Review:** A review of the organization chart indicates a safety and health organization exists that provides Occupational Safety/Industrial Hygiene (OS/IH) support, as well as IH technician support, to both EUO operations and maintenance. Individual OS/IH staff are matrixed to EUO, and EUO contains its own OS personnel. Roles, responsibilities, and interfaces are, in general, described, and staffing levels are appropriate to the OS/IH hazards, that are generally of a standard industrial nature. Resumes indicate that assigned OS/IH staff have extensive education and work experience both in their technical fields and on site (see Objective #2), indicating they possess the knowledge of technical OS/IH principles and application sufficient to provide appropriate support to EUO activities.

A review of program specific documentation indicates that OS/IH Programs are being implemented consistent with DOE Orders and mandatory standards referenced in the orders (such as 29 CFR 1910, ANSI Z88.2, ACGIH TLVs). Health hazard assessments have accurately identified the industrial hygiene hazards present. Personal and other monitoring are performed when needed to quantify exposure or as established by a particular standard. Sampling sheets document exposure level and exposure conditions, and these sheets receive a QA review prior to entry into a data base, from which results may be retrieved for use in support subsequent job hazard analyses. Health hazard assessment and monitoring results are also used as the basis for employee inclusion in site Occupational Medicine Programs.

OS inspections are regularly conducted that identify material deficiencies relating to electrical safety, machine guarding, and hazardous material storage. Identified deficiencies are tracked by Y-12 and EUO, and are generally abated in accordance with a schedule. Administrative procedures describe required actions with respect to the more complex programs such as Confined Space Entry, Lock Out/Tag Out, and Respiratory Protection Programs. These procedures define terms, provide technical background, and list line and staff responsibilities.

Job Hazard Analyses (JHA) have been and are being performed and several draft JHAs were reviewed. JHAs have apparently not been completed for all EUO phase I activities, nor do Y-12 procedures require they be. Rather, the Y-12 procedure describes how JHAs are to be performed and lists conditions under which a manager should or may request their performance. In general, the draft JHAs are very narrowly focused, and primarily serve to "fine tune" the incorporation of OS/IH guidance into specific process procedures. Signature boxes for draft JHAs indicate input by matrixed OS/IH support staff. The OS/IH hazards addressed in the JHAs would be classed as standard industrial, and result in the reiteration of the need for certain personal protective equipment or precautions to avoid personal injury or strain. For the Draft JHAs reviewed, the

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### Industrial Safety

analyses were found adequate, and they provide meaningful feedback and adequate attention to safety and health.

Logs and status boards in the IH equipment laboratory indicate that instrument calibration and preventive maintenance are tracked, that sampling pumps are flow checked as required before and after use, and that equipment is inspected prior to issuance after calibration.

Interviews: During interviews, OS/IH specialists showed they were familiar with their organization's structure, mission, and interfaces. Among personnel interviewed, the descriptions of their responsibilities and interfaces were consistent, and demonstrated knowledge of site procedures, requirements, how problems are solved, and solutions obtained. Answers to questions showed an understanding of procedures, local issues, and their status. Answers to questions were frank and logical, and indicated an understanding of local OS/IH conditions that were both consistent with one another, but also with documentation, and this reviewer's observations of processes and activities. Interviews indicated that OS/IH staff possess sufficient technical knowledge to carry out their duties at their assigned level.

Personnel could explain their place in the JHA process and the interviews reiterated their understanding that JHAs are not a requirement for EUO activities, but rather that they are being performed at the request of line managers, primarily for purposes of documentation and to ensure additional safety preparation, through expert OS/IH input into planned activities. Interviews indicated that OS/IH walkdown of operations is required as a part of the JHA process.

Shift Performance: The pre-job briefing for and performance of the Area Trap Check for Wet Vac. Systems in Building 9212, and its associated JHA, were observed. The JHA was accompanied by the matrixed support Operations Safety and Health Specialist. All credible hazards were identified during the JHA and appropriate controls identified. Hazards identified would be termed standard industrial.

Other areas in Building 9212 were walked down with OS support and operations staff in order observe both work place OS/IH conditions and their knowledge of operations. Among the locations visited was a respirator issue point and a flammable storage locker. At the respirator issue point, respirators were properly stored and the log provided documentation of the review of user credentials prior to respirator issue. The flammable storage locker was in good condition and it contained no incompatible chemicals. Various work stations where nitric acid might be used were also visited as a check against health hazard assessments reviewed, but no operations were in progress.

The IH Equipment Laboratory was visited. The status board that is used to ensure regular maintenance and calibration of equipment was explained, as was the process for checking pump flow checking. The log books recording pump flow and documenting post calibration &

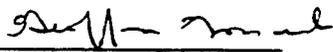
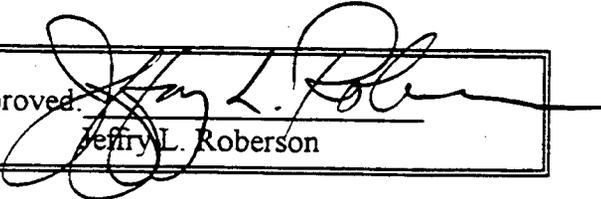
**ORR ASSESSMENT FORMS**  
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maintenance inspection were also seen. Equipment storage, charging stations, and sampling media storage were seen. The systems of tracking, maintenance, calibration, and storage all seemed appropriate and satisfactory.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Geoffrey Gorsuch	Approved:  Jeffrey L. Roberson
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<b>FUNCTIONAL AREA: IH</b>	<b>OBJECTIVE 2, REV. 0 DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Level of knowledge of operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of operations support personnel. (**CORE REQUIREMENT #3**)

Criteria

Occupational safety and industrial hygiene support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance. (5480.10; 5483.1A, Ch. 1; 5480.20A, Ch. I; S/RID FA Training and Qualification (TQ) LMES ID #9887, #2385, #1365)

Occupational safety and industrial hygiene support personnel demonstrate a working knowledge of facility systems and components related to safety. These personnel also give adequate attention to health, safety, and environmental protection issues. (5480.10; 5483.1A, Ch. 1; 5480.20A, Ch. I; S/RID FA Training and Qualification (TQ) LMES ID #2392)

Personnel have been trained to anticipate, recognize, evaluate, and respond to hazards that may be present in the workplace. (5483.1A Ch. 1, para 5; 5480.10; 5700.6C; 10 CFR 830.120; S/RID FA Training and Qualification (TQ) LMES ID #1365, 1378)

Approach

**Record Review:** Review for adequacy and completion, the training records which indicate occupational safety and industrial hygiene support personnel have received training on facility procedures and systems under their cognizance as well as system and facility hazards.

**Interviews:** Interview occupational safety and industrial hygiene support personnel to assess their understanding of their actions in response to abnormal and emergency conditions as well as their understanding of how these actions relate to the safety basis for operations. Determine if these personnel have an adequate knowledge of health, safety, and issues.

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Shift Performance: Observe drills, routine evolutions and normal operations, to assess the ability of occupational safety and industrial hygiene support personnel to safely operate systems and components under their cognizance in accordance with approved plant procedures.

#### Records Reviewed:

- Resume, Defense Programs Safety and Health Organization (DPSHO) Nuclear Operations Support Group Leader
- Resume, DPSHO Nuclear Operations Industrial Hygienist (4)
- Resume, DPSHO Nuclear Operations Industrial Safety Specialist (2)
- Resume, DPSHO Facility Management Support Group Industrial Safety Associate (2)
- Resume, DPSHO Facility Management Support Group Industrial Hygienist
- LMES Training and Qualification Program Industrial Hygiene Department (Rev 3)
- Industrial Hygiene Technician Qualification Summaries (5), May 1998
- Industrial Hygiene Training Management System Training Histories (for 5 industrial hygiene technicians), May 5, 1998
- Training Management System, Module Detail Report, Modules #15948, 49, 50, 51, 52, May 7, 1998
- Occupational Safety and Health Organization Health Hazard Assessment Walk-through of Bldg 9215, O-Wing Rolling and Forming Operations, November 1996
- Occupational Safety and Health Organization Health Hazard Assessment Walk-through of Bldg 9215, M-Wing, November 1996
- Industrial Hygiene Health Hazard Assessments for EUO Decontamination Pad and Plant Support Operations, October 1996
- Industrial Hygiene Health Hazard Assessment for Bldg 9818/9815, November 1996
- Industrial Hygiene Health Hazard Assessment for Bldg 9212 B-1 Wing, C-1 Wing and Head House, Special Processing, D-Wing and Reduction Operations, November 1996
- Industrial Hygiene Health Hazard Assessment for Bldg 9215, O-Wing Rolling and Forming Operations, August 1995
- Industrial Hygiene Health Hazard Assessment for Bldg 9818 Operations, Aug 1995
- EUO-C-1/H 023 Exposure Group Summary Report
- EUO-C-1/H 002 Exposure Group Summary Report
- Bldg 9212 E-Wing Air Sampling Results, pre-1997
- E-mail, subject: Building 9206 Rm 15, from Pete Calkin, Mar 14, 1997
- E-mail, subject: Baghouse Entry Project, from Pete Calkin, Aug 27, 1997
- E-mail, subject: Bldg 9215 O-Wing Pit, from Pete Calkin, Aug 18, 1997
- E-mail, subject: M-Wing/Capsur Respirator Use, from Pete Calkin, March 15, 1997
- E-mail, subject: Ball Mill/Special Processing, from Pete Calkin, Feb 26, 1997

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- E-mail, subject: Heat Stress/Nitric Acid Christmas Tree, from Pete Calkin, undated
- E-mail, subject: Lead Paint Chips, from Pete Calkin, Jan 31, 1997
- E-mail, subject: Noise Sign/E-Wing Basement, from Pete Calkin, July 9, 1997
- E-mail, subject: Argon Relief Valve, from Pete Calkin, June 26, 1997
- E-mail, subject: VAT Info, from Pete Calkin, May 27, 1997
- Y-12 Industrial Hygiene Department Operating Procedures
- Y73-206, Testing and Use of Laboratory-Type Hoods, Rev 4/20/98

Interviews Conducted:

- DPSHO Safety and Health Department Head
- DPSHO Nuclear Operations Support Group Leader
- DPSHO Nuclear Operations Industrial Safety Specialist
- Industrial Hygiene Technician Supervisor
- DOE Safety and Occupational Health Manager
- Industrial Hygiene Equipment Laboratory Manager
- Safety and Health Information System Data Manager
- DPSHP Nuclear Operations Industrial Hygienist
- FMO Support Group Leader
- DPSHO FMO Support Group Industrial Safety Associate
- EUO Compliance Coordinator
- EUO Building Manager
- DPSHO Senior Industrial Hygienist
- Training Manager
- Industrial Hygiene Technicians (3)

Shift Performance Evolution:

- Performance of breathing zone and area sampling during asbestos cleanup, graphite machine shop
- Performance of oxygen deficiency and combustible gas measurements with direct reading instrument, power plant.
- Performance of hood air flow measurements, Bldg 9212, Room 1009.

Discussion of Results:

Current S/RIDs show only DOE Orders 225.1, 231.1, and 440.1 applicable for these subjects.

Record Review: The resumes of the two Occupational Safety/Industrial Hygiene (OS/IH) specialists matrixed to EUO indicate an average of 14 years (range 10-19) experience in their

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### Industrial Safety

specialties on site. Both staff have BS degrees and one an MS in their fields. Other OS/IH support staff that may be drawn upon by EUO average 11 years in their specialties and 12 years on site. A majority of these have BS degrees and a third MS degrees. Overall, 11 OS/IH support staff assigned to or available for support have national certifications (i. e. Certified Industrial Hygienists or Certified Safety Professionals) and five other individuals have completed one of two required examinations towards certification. This general and specific education, training, and work experience in their respective fields strongly suggests their ability to carry out all procedures under their cognizance, as well the ability to anticipate, recognize, evaluate, and respond to hazards in this work place. This same education, training, and experience, should enable support staff to acquire an understanding of work place facility systems and components.

The five IH technicians that may support EUO activities are similarly qualified. Training summaries show these personnel possess an average 7.6 years in safety and health (range 5-10) and 13.8 years in nuclear industry (range 7-17). All have completed training in the operation of the sampling instruments they use and the performance of certain specific sampling protocols. Some of this training is repeated every 2 years in order to maintain proficiency.

OS/IH support personnel have received access training on facility procedures, systems, or hazards, prior to assignment to EUO. Given the extensive technical background of assigned staff, and the presence of standard OS/IH hazards in EUO, this level of training would seem to be adequate to enable them to understand facility OS/IH procedures, systems, and hazards.

Interviews: Interviews of OS/IH specialists documented a clear and consistent understanding of their responsibilities in all situations, as well as an understanding of applicable procedures. Interviews also indicated that staff have thorough knowledge of the OS/IH issues potentially relating to their respective duties and responsibilities in EUO operations. The level of knowledge and understanding shown is consistent with the level of responsibility assigned. Few or no OS/IH issues have significant impact on safety basis; rather, as a rule OS/IH disciplines are involved in protecting individual employees from either routine or intermittent exposure to low levels of hazardous materials, or intermittent contact with standard industrial hazards. Involvement with emergency response activities is limited and will only occur if requested by the on-scene coordinator. IH activities will then be limited to ones similar to those performed in their normal duties.

Shift Performance: The performance of personal breathing zone and area sampling during asbestos cleanup by members of the insulation shop was observed. Sampling was performed with personal sampling pump and was representative of that performed during similar activities in EUO. Equipment appeared to be properly used and the information needed to adequately document employee exposure was recorded

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Industrial Safety

The performance of measurements for oxygen deficiency and combustible gas at the power plant were observed. Sampling was performed with a Gastec GX-4000 Fore Runner and was representative of that performed during similar activities in EUO. The instrument was tagged as calibrated and measurements taken and recorded properly.

The performance of hood air flow measurements at hood USC-L-1A, Line A Chip Cleaning, Room 1009 was observed. Sampling was performed using a Alnor Thermoanaemometer model 8565 by an industrial hygiene technician and was performed according to the referenced documents.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector: <u>Geoffrey Gorsuch</u> Geoffrey Gorsuch	Approved: <u>Jerry L. Roberson</u> Jerry L. Roberson
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**ORR ASSESSMENT FORMS**  
Industrial Safety

<b>FUNCTIONAL AREA: IH</b>	<b>OBJECTIVE 3, REV. 0 DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** The implementation status of DOE Orders 5480.8A, 5480.10, 5483.1A, and associated S/RIDs is adequate for operation. Non-compliance items have been addressed.  
**(CORE REQUIREMENT #7)**

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

**Record Review:** Review order compliance packages for the listed orders, including all applicable CSAs, exemptions, and compensatory measures.

**Interviews:** If these orders are not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as any interim compensatory measures.

**Shift Performance:** Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

**ORR ASSESSMENT FORMS**  
Industrial Safety

Records Reviewed:

- Y-12 Programmatic Assessment Report, March 1998
- Request for Approval No. MMES/Y-12-DOE-5480.10-CSA-32A, Feb 13, 1995
- EUO Energy Systems Activity Management System (ESAMS), List of Open Items, April 27, 1998
- E-mail, subject: OSHA Inspection of 9212 head house basement, 1/13/98
- E-mail, subject: OSHA Inspection head house basement (Deficiency Report 9212-98-0089)
- E-mail, subject: Deficiencies in 9212 head house basement, 1/15/98
- E-mail, subject: Deficiencies in 9212 head house basement, 1/15/98
- E-mail, subject: Continue with head house problems, 1/16/98
- E-mail, subject: Continue correcting deficiencies in the head house basement, 1/17/98
- E-mail, subject: Continue with head house problems, 1/18/98
- Printout, open deficiencies from 1/13/98 OSHA Inspection of head house basement, 5/8/98
- CL-EU-2637 EUO Deficiency Report form
- Print-out Health and Safety Open Deficiencies for Buildings 9212, May 6, 1998

Interviews Conducted:

- DPSHO Nuclear Operations Support Group Leader
- EUO Compliance Coordinator
- EUO Building Manager
- DOE Safety and Occupational Health Manager
- EUO Engineer
- EUO Procedures Manager

Shift Performance Evolution:

- None

Discussion of Results:

Current S/RIDs show only DOE Orders 225.1, 231.1, and 440.1 are applicable for Occupational Safety and Industrial Hygiene.

Record Review: Only one non-compliance issue is identified in the Y-12 Programmatic Assessment Report, and this relates to the lack of documentation of hazard evaluations and inventories for all Y-12 facilities. This issue appears to have been adequately addressed. No

**ORR ASSESSMENT FORMS**  
Industrial Safety

compensatory measures were required or needed.

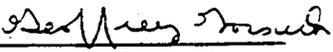
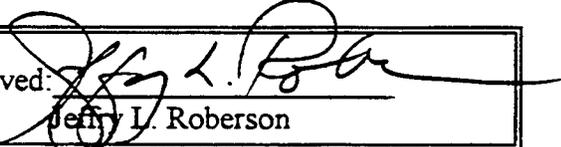
Interviews: The DPSHO Nuclear Operations Support Group Technician was interviewed and is aware of the compliance status of these orders. Additionally, he noted that EUO building hazard evaluations are up to date.

Shift Performance: No related activity was available for observation.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Geoffrey Gorsuch	Approved:  Jeffrey L. Roberson
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## ORR ASSESSMENT FORMS

### Management

FUNCTIONAL AREA: MG	OBJECTIVE 1, REV. 0 DATE: May 12, 1998	CRITERIA MET	
		YES	NO X

**OBJECTIVE:** A process has been established to identify, evaluate, and resolve deficiencies and recommendations made by oversight groups, official review teams, audit organizations, and the operating contractor. (CORE REQUIREMENT #6)

#### Criteria

A system for identifying, reviewing, cataloging, and resolving deficiencies and recommendations is adequately implemented. (5480.19, Chs. VI and VIII; 5700.6C; 10 CFR 830.120; S/RID FA Quality Assurance (QA) LMES ID # 1390)

#### Approach

**Record Review:** Review the issue management tracking system, selecting representative issues and assessing the adequacy of the program. Assess the backlog and prioritization system for reducing it.

**Interviews:** Interview issue management personnel to establish their qualification and understanding of the program.

**Shift Performance:** Evaluate the Issue Management Programs' effectiveness in ensuring that corrective actions are being completed and tracked to closure through the system.

#### Records Reviewed:

- Issues Management Program, QA-312
- Guidance Document for Implementation of QA-312
- Energy Systems Action Management System (ESAMS) Reports (25)
- ESAMS Closure Documentation Packages (8)
- A1 Punch List Closure Documentation Packages (5)
- Deficiency Report Closure Documentation for Fire Protection Issues (4)
- Y-12 Issues Management Prioritization and Risk Board (IMPRB) Charter
- Source Reports used by the IMPRB to determine "Significant" Issues (6)
- Y10-158, Y-12 Compliance Assurance Program
- EUO Standing Order SO-EUO-98-009, EUO Compensatory Measures Program
- EUO compensatory measures in place for Buildings 9212/9215 (37)
- Report of Open deficiencies in Deficiency Report (DR) Data Base dated 05/11/98
- Report of open WCC-55 Maintenance Job Requests (MJR) dated 05/08/98

## ORR ASSESSMENT FORMS

### Management

#### Interviews Conducted:

- Vice President for Restart Operations
- Deputy to Vice President for Restart Operations
- EUO Facility Manager
- EUO Deputy Facility Manager
- Plant Training Manager
- ESAMs Closure Manager
- EUO Staff Engineer
- EUO Assessment Manager
- Acting Site Issues Manager
- Chairman of the IMPRB
- EUO Administrative Support Manager
- Fire Protection Operations Compliance Manager
- Fire Protection Manager
- Fire Protection Process Engineer
- Fire Protection Maintenance Coordinator

#### Shift Performance Evolution:

- Attend Operational Safety Board (OSB) Meeting scheduled to review ESAMS Issue Corrective Action Plans
- Attend EUO Process Based Restart Schedule and Status Meeting
- Attend ESAMs status review meeting

#### Discussion of Results:

Record Review: The issues management tracking systems were reviewed. A single compilation of deficiencies has been prepared and is managed under the cognizance of the EUO Deputy Facility Manager. The action to compile such a list under one manager was taken to correct the finding of the LMES ORR that there was no single list or person who could specifically identify all actions required to be completed prior to restart. The single list identifying those actions required to be completed prior to restart consists of four issue categories which are:

- Open ESAMS items including open occurrence reports, DOE findings, LMES ORR findings, MSA findings, and internal EUO management commitments
- ESAMS items addressing fire protection issues
- A punch list of maintenance and testing items (Deficiency Reports and Maintenance Job Requests-MJR)
- A list of deficiencies addressing fire protection issues

## ORR ASSESSMENT FORMS

### Management

The breakout of issues categories was selected to provide management a comprehensive view of issues and to consolidate responsibilities for correction. EUO and Restart Project Managers were working to manage the total list of issues but demonstrated limited success in reducing the backlog. Several senior, experienced managers were placed in temporary assignments to manage separate parts of the list. At the start of the ORR the number of total outstanding items on these lists numbered approximately 120. Actions to close these issues consisted of a formal process of reviewing corrective action plans and independent verification by assessment personnel. A recently chartered Operational Safety Board (OSB) chaired by the Deputy to the Vice President for Restart Operations, or the EUO Facility Manager as an alternate, approved corrective action plans and reviewed and evaluated closure for ESAMS items designated as prestart. These activities were reviewed and found to be effective in providing a senior management review and approval of key closure issues. The total number of outstanding actions was significantly larger than normally seen during past ORRs. Restart Project and Facility Managers were reportedly working to complete all of these items by the completion of the ORR as this was stated as the goal at the start of the ORR. This goal was not based on any experience in completing corrective actions or on any assessment of the total effort required to close all of the prestart issues. There was no well defined schedule for closure and as a result it was not possible to fully evaluate the results of the closure process. During the ORR additional items were added to the punch list of material items and some issues were closed, however, the rate of closure of the total issue list was not demonstrated to support completion of prestart issues in a timely fashion. At the end of the first week of the ORR, the total outstanding items on these lists numbered 119. Only 8 of 28 of the prestart findings from the contractor ORR had been corrected and closed by LMES. The LMES ORR was completed on April 14, 1998 (three weeks prior to the start of the DOE ORR). The difficulty encountered in reducing the size of the issues requiring closure indicates that the list cannot yet be considered manageable. The cumulative effect of managing the issues closure process together with the need to control the maintenance backlog as reported in MT1 complicates achieving readiness for restart.

Interviews: Issues management personnel and process based restart managers who were assisting with the management of the issues closure process were interviewed. The infusion of senior management talent was impressive. The senior managers had clearly taken charge of managing issues and the closure process. EUO staff managers currently assigned to administer issues management concerns were knowledgeable of the processes to be used to address issues. The process in place to manage previous issues and concerns was ineffective. This inattention to managing the issues at the appropriate level of facility management resulted in the current extensive backlog and administrative inadequacies.

Interviews with the IPMRB staff personnel revealed that they were knowledgeable of the procedures described in Issues Management Program, QA-312. They defended their process as

**ORR ASSESSMENT FORMS**  
Management

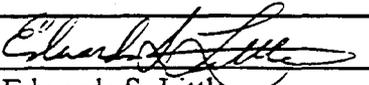
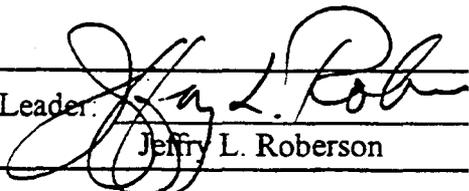
being essential to ensuring an independent review of issues and emphatically stated that they performed a screening function for the use of the facility management.

Shift Performance: An OSB was attended. Senior managers were observed to interact effectively and applied good management techniques to the review of corrective action plans and issues closure packages. Several additional meetings dealing with the management of issues were attended. These meetings were well conducted and were productive in demonstrating the administration of the issues management program. It was clear from these meetings that the independent verification and OSB requirements established would be the limiting factors in the time required to complete issue closure.

Conclusion: The criteria for this objective have not been met.

Issue:

- There was no well defined schedule for issue closure and as a result it was not possible to fully evaluate the results of the closure process. (MG1-1)

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORMS**  
Management

<b>FUNCTIONAL AREA: MG</b>	<b>OBJECTIVE 2, REV. 0 DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b>	<b>NO X</b>

**OBJECTIVE:** The results of the responsible contractor "Readiness Determination Process" are adequate to verify the readiness of hardware, personnel, and management programs for safe operations. (**CORE REQUIREMENT #17**)

Criteria

The scope of the corporate readiness determination is adequate for assessing the areas of health, safety, and the environment, and verifies the satisfactory implementation of the restart plan. Identified issues and deficiencies are appropriately categorized and dispositioned. (425.1; S/RID FA Management Systems (MS) LMES ID #10496)

Approach

**Record Review:** Review the corporate readiness review plan, findings, recommendations, implementation plans, and schedules to ensure they are complete in scope and adequate in detail. Verify the rationale for corporate acceptance of any non-compliance items. Determine whether the contractor has systematically analyzed findings for root causes and generic implications. Evaluate the effectiveness of discrepancy closure system.

**Interviews:** Interview corporate readiness review team personnel to establish their qualification and the adequacy of their review.

**Shift Performance:** Select previously identified findings to determine if corrective actions have been effective in resolving the issue.

Records Reviewed:

- LMES Operational Readiness Review Report for the Enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, Y/MA-7373 dated April 1998
- LMES Operational Readiness Review Plan of Action for Enriched Uranium Operations Phase A, Y/MA-7316
- US, Department of Energy Oak Ridge Operations Y-12 Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, dated April 30, 1998
- Issues Management Program, QA-312
- Guidance Document for Implementation of QA-312
- ESAMS Reports (8)
- ESAMS Closure Documentation Packages (5)
- Y-12 Issues Management Prioritization and Risk Board (IMPRB) Charter

## ORR ASSESSMENT FORMS

### Management

- Source Reports used by the IMPRB to determine "Significant" Issues (6)
- Operational Safety Board Charter, Y/MA-7387
- QA-912, Operational Readiness Reviews and Assessments
- Enriched Uranium Operations (EUO) Restart Plan, Y/MA-7243, Revision 3, dated October 1997

#### Interviews Conducted:

- Vice President for Restart Operations
- Deputy to Vice President for Restart Operations
- EUO Facility Manager
- EUO Deputy Facility Manager
- Plant Training Manager
- ESAMs Closure Manager
- EUO Staff Engineer
- EUO Assessment Manager
- Acting Site Issues Manager
- Chairman of the IMPRB
- Administrative Support Manager
- LMES ORR Team Leader
- LMES ORR Team Member-Operations Functional Area
- Manager of the Nuclear Criticality Safety Organization

#### Shift Performance Evolution:

- Attend EUO PBR Schedule Meeting
- Attend ESAMs status review meeting
- Attend Operational Safety Board (OSB) Meeting scheduled to review ESAMS Issue Corrective Action Plans

#### Discussion of Results:

Record Review: The corporate readiness review plan, findings, recommendations, implementation plans, and schedules were reviewed to ensure they were complete in scope and adequate in detail. The corporate ORR was adequately planned and executed. The scope of the ORR was not as complete as the DOE ORR. Functional areas of fire protection and radiological controls were not separately addressed. In discussions with the LMES ORR team leader, he described the rationale and logic for not addressing these topical areas. The corporate Management Self Assessment (MSA) reported that there were significant deficiencies in the fire protection area and these areas of discrepancies were not corrected prior to commencing the corporate ORR. The LMES ORR

## ORR ASSESSMENT FORMS Management

team leader concluded that it would have been unproductive to restate these deficiencies in the corporate ORR. The failure to review this area is considered a significant weakness in the corporate ORR. The seriousness of previously noted fire protection deficiencies, involving violation of Operational Safety Requirements (OSRs) and the establishment of many compensatory measures, should have caused an increased level of concern within the corporate management to direct a thorough evaluation of this area. The radiological controls aspects were not evaluated separately but were reviewed using a performance based approach within the functional areas assigned to evaluate radiological controls. Based on a review of the report, the radiological controls area was effectively evaluated.

The corporate ORR team members were well qualified and the report documents an effective review. The findings of the corporate ORR are considered significant. Twenty eight prestart and 10 post start items were reported.

The closure process for the LMES ORR Findings and the closure process for resolving the manageable list of items prior to restart was reviewed. The initial screening for establishment of the "significance" of the LMES ORR issues was performed by the Issues Management Prioritization and Risk Board (IMPRB) which is a site chartered board with EUO representation. Procedures as listed in QA-312 were used to determine whether issues were "significant". Those issues identified as "significant" were required to have root cause analyses conducted. Although the screening was accomplished using the procedures of QA-312, the results of the screening do not appear to be logical or provide the necessary assessment of those issues which should be candidates for root cause analyses. Of concern is the lack of senior Restart Project and EUO Managers' input to the process. The Chairman of the IMPRB reported that the results of the screening could have been altered if these managers had objected to the screening, however, no objections were raised. The IMPRB screening results for the corporate ORR findings judged as "significant" were as follows:

- Six of 28 prestart items identified as significant. Of these 6, 4 were training issues and 2 were management issues.
- Four of 10 post start items identified as significant. Of these 4, 2 were training issues, one was a drill issue and 1 was a management issue.
- None of the 4 criticality safety issues nor any of the 8 safety documentation issues were judged to be significant. From a review of the LMES ORR Report and discussions with the LMES ORR team leader, the IMPRB assessment of "significance" is not correct. In discussions with the Manager of the Nuclear Criticality Safety Organization, he described the process used to evaluate the criticality safety issues. While he was not required to conduct a root cause analysis by the IMPRB evaluation, he directed a rigorous review

**ORR ASSESSMENT FORMS**  
Management

process for the findings which was equivalent to a root cause analysis. A similar approach for the evaluation of the eight safety basis prestart findings was not apparent.

The Chairman of the IMPRB does not report to any EUO or Process Based Restart manager. From the stand point of effective management of safety related issues this is inappropriate and directly abrogates the line manager's responsibility for safety. The injection of a senior management input, particularly in the assessment of the significance of major audit and assessment findings, is essential to provide the correct emphasis to address major safety related deficiencies.

A review of the LMES EUO Restart Plan, Y/MA-7243, revealed that root cause analyses were required to be conducted for all ORR findings.

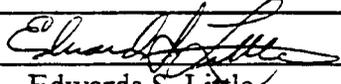
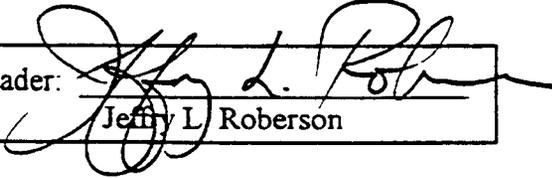
Interviews: The LMES corporate ORR team leader was not directly available for interview. Discussions with him by phone were conducted. He was appropriately concerned about the apparent lack of rigor used in the evaluation of the significance of the LMES ORR findings. Discussions with the operations functional area team leader were conducted. From a review of the corporate ORR team member credentials, limited discussions with one team member, and a review of the corporate ORR report, it was concluded that with the exception of the fire protection area, an adequate review was conducted.

Shift Performance: Due to the incomplete status of closure of the LMES ORR findings, it was not possible to fully evaluate if corrective actions were effective in fully resolving the significant issues identified by the corporate ORR. A limited sample of items closed revealed that corrective actions for some of the lesser significant items had been accomplished.

Conclusion: The criteria for this objective have not been met.

Issue(s):

- Root cause analyses were not conducted for LMES ORR findings as required by the LMES EUO Restart Plan, Y/MA-7243. (MG2-1)
- The scope of the corporate ORR was not adequate. The fire protection functional area was not evaluated. (MG2-2)

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Management

<b>Functional Area:</b> MG	<b>Objective No.:</b> 2	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> MG2-1 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** Root cause analyses were not conducted for LMES ORR findings as required by the LMES EUO restart plan, Y/MA-7243.

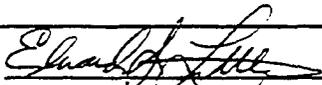
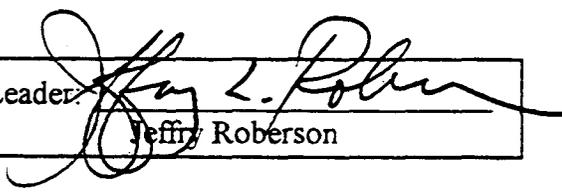
**REQUIREMENT:** Following each ORR, root causes and corrective actions will be determined for each finding.

**REFERENCE(S):** LMES EUO Restart Plan, Y/MA-7243, Revision 3, section 5.5

**DISCUSSION:** The initial screening for establishment of the "significance" of the LMES ORR issues was performed by the Issues Management Prioritization and Risk Board (IMPRB) which is a site chartered board with EUO representation. Procedures as listed in QA-312 were used to determine whether issues were "significant". Those issues identified as "significant" are required to have root cause analyses conducted. Although the screening was accomplished using the procedures of QA-312, the results of the screening were not correct and did not provide the necessary assessment of those issues which should be candidates for root cause analyses. Senior Restart and EUO Managers' input to the process was not evident.

A review of the LMES EUO Restart Plan, Y/MA-7243, revealed that root cause analyses were required to be conducted for all ORR findings.

**CONCLUSION:** Corrective actions to address safety envelope significant findings are inadequate since root cause analyses for these findings have not been conducted. This is a prestart finding.

<b>Inspector:</b>  Edwards S. Little	<b>Team Leader:</b>  Jeff Roberson
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**ORR DEFICIENCY FORM**  
Management

<b>Functional Area:</b> MG	<b>Objective No.:</b> 2	<b>Finding X Observ.</b>	<b>Pre-Start Post Start</b> X	<b>Issue No.:</b> MG2-2 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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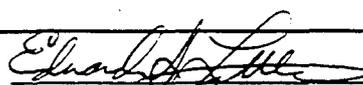
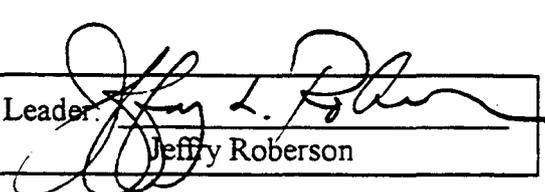
**ISSUE:** The scope of the corporate ORR was not adequate. The fire protection functional area was not evaluated.

**REQUIREMENT:** The depth of the evaluation of core requirements will be determined according to situations associated with the shutdown, magnitude of hazard, and level of complexity associated with then proposed facility operating mode using a graded approach.

**REFERENCE(S):** QA-912, Operational Readiness Reviews and Assessments.

**DISCUSSION:** The failure to review the fire protection area is considered a significant weakness in the corporate ORR. The seriousness of previously noted fire protection deficiencies, involving violation of Operational Safety Requirements (OSRs) and the establishment of many compensatory measures, should have caused an increased level of concern within the corporate management to direct a thorough evaluation of this area during the corporate ORR.

**CONCLUSION:** Based on the evaluation of the fire protection area conducted by the Y-12 Site Office Assessment team and the demonstrated closure of the majority of fire protection issues, this is a post start finding.

Inspector:  Edwards S. Little	Team Leader:  Jeffy Roberson
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**ORR ASSESSMENT FORMS**  
Management

<b>FUNCTIONAL AREA: MG</b>	<b>OBJECTIVE 3, REV. 0 DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A systematic review of the facility's conformance to applicable Standards/Requirements has been performed, any non-conformance issues have been identified, and schedules for gaining compliance have been justified in writing and formally approved. (Contractor) Note: Review of the compliance packages by Y-12 Site Office (YSO) is addressed in objective OR.2) (**CORE REQUIREMENT #7**)

Criteria

A formal program has been established which ensures that the requirements of the DOE Standards/Requirements are identified and evaluated for compliance. (Plan for Continuity and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirement Identification Document Development and Approval Instruction)

Approach

Record Review: Review the procedures used for conducting DOE Standards/Requirements compliance reviews to ensure that they contain adequate guidance for identifying requirements and assessing the status of compliance. The guidance provided for determining if non-compliance issues are startup or non-startup issues will also be assessed for adequacy. In coordination with the efforts of the team's other technical experts, determine if the procedures are being followed.

Interviews/Shift Performance: None.

Records Reviewed:

- Y-12 Compliance Assessment Program, Procedure Y10-158
- Enriched Uranium Operations (EUO) Resumption Phase A Management Self-Assessment (MSA), Y/MA-7329
- EUO Compliance Assessment Report, Y-97-C026, dated July 7, 1997
- RFA LMES/Y-12-DOE-5480.19-CSA-162D, Conduct of Operations Implementation Deficiencies for EUO
- RFA LMES/Y-12-ORIG 1300.XIA-CSA-130B, Configuration Management on Standards/Requirements Identification Documents
- EUO Mentor Program, Y/MA-7309
- RFA LMES/Y-12-DOE-5700.6C-CSA-102B, Quality Assurance Program

## ORR ASSESSMENT FORMS Management

- RFA LMES/Y-12-DOE-5480.19-CSA-170, Conduct of Operations Manual Implementation (Plant Shift Superintendent)

### Interviews Conducted:

- EUO Assessments Manager
- Acting Site Issues Manager
- MSA Team Leader

### Shift Performance Evolution:

- None

### Discussion of Results:

Record Review: Two S/RID compliance assessments of significant substance have been conducted recently. These include a triennial compliance review of the Y-12 Site conducted in the June-August 1997 time frame and the Management Self Assessment (MSA) completed during the beginning of 1998. These reports and resulting corrective action were reviewed. The July 1997 compliance assessment confirmed that S/RIDS were adequately flowed down into policies, procedures, and programs. The MSA was of considerable depth and confirmed that policies, procedures, and programs were adequately implemented at EUO facilities. The corrective actions from the MSA findings were reviewed. These actions were effectively fully closed out in the ESAMS issues management program with sufficient depth and understanding. There is one Request for Approval (RFA) outstanding which effects operations at EUO facilities. This RFA has been approved by YSO and addresses conduct of operations implementation deficiencies. Compensatory measures for the incomplete implementation of Conduct of Operations includes the assignments of mentors to provide coaching, assessment, and safety oversight monitoring. Mentors will not be removed from compensatory measures assignments until EUO management has determined, based upon assessments, and documented that Conduct of Operations performance is satisfactory, and DOE approval has been obtained. This action is adequate to support restart operations. There are two RFAs in effect which are site-wide and affect the manner in which those programs are implemented for EUO facilities. These include:

- RFA LMES/Y-12-DOE-5700.6C-CSA-102B, Quality Assurance Program
- RFA LMES/Y-12-DOE-5480.19-CSA-170, Conduct of Operations Manual Implementation (Plant Shift Superintendent)

The other ORR team members confirmed that the S/RID compliance status as reported above for their assigned technical areas was accurate.

**ORR ASSESSMENT FORMS**  
Management

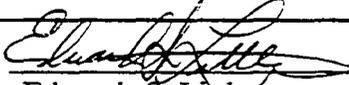
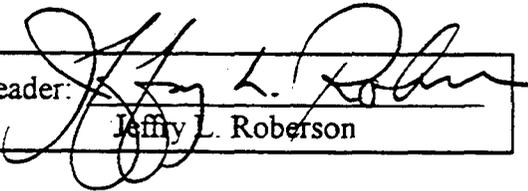
Interviews: The S/RID compliance and assessment programs and resulting corrective actions and follow up activities were discussed with the EUO Assessment Manager, the Acting Site Issues Manager, and the Team Leader for the MSA. All of these personnel were knowledgeable of the details of the assessments, the corrective actions and the status of the RFAs.

Shift Performance: None

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORMS**  
Management

<b>FUNCTIONAL AREA: MG</b>	<b>OBJECTIVE 4, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A program is established to promote a site-wide safety culture. (CORE REQUIREMENT #14)

Criteria

Site programs actively promote safety through a broad range of activities possibly including, but not limited to, safety bulletins, lessons learned briefings and/or employee concerns programs. (5480.1B, Ch. IX; 5480.29, para 9.a.; S/RID FA Quality Assurance (QA) LMES ID #10052, FA Environmental Protection (EP) LMES ID #6954)

Approach

Record Review: Verify the existence and use of mechanisms (policies, procedures, etc) which promote the identification and promulgation of safety concerns to employees and provides the opportunity for employee to report safety issues.

Interviews: Interview EUO line management personnel to determine objectives of site-wide safety culture. Also, interview operations personnel to assess effectiveness of communicating the goals of the program.

Shift Performance: None

Records Reviewed:

- Y70-001, Plant Safety and Health Program
- I Care-We Care Program
- Y10-012, Hazard Identification Planning for Maintenance and New Work Tasks
- Employee Concerns Program

Interviews Conducted:

- Vice President for Restart Operations
- Deputy to Vice President for Restart Operations
- EUO Facility Manager
- EUO Deputy Facility Manager
- Plant Training Manager
- Building 9215 Shift Managers (2)

## ORR ASSESSMENT FORMS

### Management

- Building 9215/9998 Deputy Operations Manager
- Building 9212 Deputy Operations Manager
- Building 9212 Functional Manager
- Building 9212 Operations Manager
- Building 9212/9998 Operations Manager
- Building 9215/9998 Production Manager O Wing Roll/Form
- Building 9212 Shift Manager
- Building 9215 Functional Manager
- Plant Shift Superintendents (2)
- EUO Safety Engineer
- Safety and Health Support Manager for Nuclear Operations
- Manager FMO

#### Shift Performance Evolution:

- None

#### Discussion of Results:

Record Review: The programs in place to identify and promulgate safety concerns to employees and to provide them an opportunity to report safety issues were reviewed. A recent pilot program entitled, "I Care-We Care" has been implemented in the FMO organization. It is currently on the site web pages and is reported to have much promise in highlighting employee safety concerns. EUO personnel are currently using this program even though it is still in the pilot stage. Personnel responsible for this program demonstrated its capabilities and depth of recording and reporting.

Discussions with the manager of the employee concerns program revealed that there are no significant employee safety concerns existing with personnel assigned to the EUO facilities. The program appears to be effective and well utilized.

Interviews: EUO managers and Process Based Restart Managers were interviewed to determine the status of the establishment of a site-wide safety culture. Managers were fully supportive of safety goals and demonstrated full support of safety initiatives in place for the EUO facilities and the site. Operations personnel displayed an excellent awareness of safety programs and indicated strong support for safety initiatives. Recent management emphasis on adherence to procedures and stopping unsafe actions was clearly evident. While managers and senior operations personnel had a good understanding of safety issues and concerns, there were several events observed

**ORR ASSESSMENT FORMS**  
Management

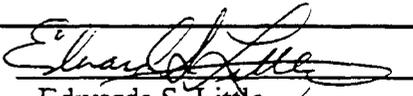
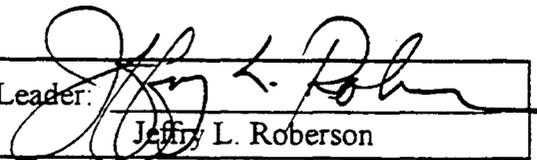
during the ORR which indicated that a positive safety culture has not been fully established. Examples of these safety related issues and failure to follow appropriate safety related actions include:

- (1) An apparent failure of operating personnel to stop the high capacity evaporator startup when procedure revisions were clearly required. When these problems were recognized by the Shift Manager, he stopped the operation and followed correct actions to revise the procedure. (OP-6)
- (2) A failure to recognize the significance of expired chemicals in the B-1 Laboratory. (OP-6)
- (3) A process liquid spill from the high capacity evaporator during shutdown. The apparent cause of this abnormality was failure to understand limitations of a tank liquid level gage and to monitor tank overflow. (reported by facility on 5/12/98)

Conclusion: The safety culture has been established but is not yet fully ingrained at the operating levels. Based on effective senior management's involvement in safety concerns, the criteria for this object have been met.

Issue:

- None.

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORMS**  
Management

<b>FUNCTIONAL AREA: MG</b>	<b>OBJECTIVE 5, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented with line management responsibility for control of safety. (**CORE REQUIREMENT #11**)

Criteria

A clear management structure is established, approved and in place. This structure is implemented and is understood by the EUO operations staff. (5480.19, Ch. I and III; S/RID FA Environmental Restoration LMES ID #215, FA Environmental Protection (EP) LMES ID #7337)

A FRAM has been prepared by the Field organization and is in use at the Y-12 Site. (DOE M411.1-1 Para 8)

Approach

Review documented functions, responsibilities, and reporting relationships. Interview line management, operations, and support personnel to assess understanding and implementation. (Note: The approach to assess this criteria is subsumed in the approaches for operations and operations support organizations. Information from review of those areas will be integrated with that obtained by the above review and interviews.)

Records Reviewed:

- EUO Organization Manual, Y/MA-7351 dated 02/01/98
- EUO Memorandums of Understanding (MOU) (52)
- EUO MOU-022, Building 9215 Operations Complex/Depleted Uranium Operations Conduct of Operations
- EUO and Process Based Restart Organizational Charts
- Plant Shift Superintendent (PSS) Job-Task Analysis
- Y-12 Site Shift Operations Department Organization Charter
- Memorandum of Understanding, FO-MOU-005, dated March 30, 1998
- Y10-202, Integrated Safety Management
- 9212 and 9215 Chemical and Metal Processing Minimum Staffing Requirements, Y/MA-7322

## ORR ASSESSMENT FORMS

### Management

#### Interviews Conducted:

- Vice President for Restart Operations
- Deputy to Vice President for Restart Operations
- EUO Facility Manager
- EUO Deputy Facility Manager
- Building 9215 Shift Managers (2)
- Building 9215/9998 Deputy Operations Manager
- Building 9212 Deputy Operations Manager
- Building 9212 Functional Manager
- Building 9212 Operations Manager
- Building 9212/9998 Operations Manager
- Building 9215/9998 Production Manager O Wing Roll/Form
- Building 9212 Shift Manager
- Building 9215 Functional Manager
- Plant Shift Superintendents (2)

#### Shift Performance Evolution:

- Attend Building 9212 Operation Manager's Staff Meeting
- Attend Deputy to Vice President for Restart Operations Daily Standup Meeting (2)
- Attend Management Reviews (2)

#### Discussion of Results:

Record Review: The EUO Organization Manual and associated EUO and Process Based Restart (PBR) Organizational Charts were reviewed to determine that personnel assignments were adequately documented and that responsibilities and reporting relationships were clearly described. The organizational descriptions were accurate and effectively delineated. LMES developed the PBR organizational structure to support EUO restart. This organization is separate from the EUO operating staff. Following restart of Phase A1, it is expected that the PBR organization will continue with restart preparations for Phase A2 and B, while the EUO staff operates the Phase A1 processes. The PBR staff provides significant management oversight to the EUO staff and was observed to actively manage functions for which the EUO staff should have been capable. One significant example is the management of the issues management program. As discussed in MG 1, several senior, experienced managers were placed in temporary assignments to manage the backlog of issues required to be closed prior to restart and a newly chartered EUO Operational Safety Board (OSB) was established to bring senior managers into the issues management process. The staff supporting the issues management program reports to the Manager of Administrative Support and consists of 5 positions. Of these five, three positions

## ORR ASSESSMENT FORMS

### Management

are being filled on loan from the Quality Organization. To assist in the administrative management of issues dealing with restart and in preparation for this ORR, additional senior level managers were assigned on a temporary basis to manage the total issues management program and to ensure that the corrective actions were appropriate and were being accomplished. None of the personnel acting in temporary roles to manage the issues management system were described in organizational charts or position descriptions. It is likely that these personnel will only fulfill this duty until restart is approved. While it is stated that the OSB will continue to carry out their newly chartered function after the restart, the established issues management staff, without the staff on loan, may be incapable of administering an effective issues management program.

There are an extensive number of Memorandum of Understanding (MOUs) in place between the EUO Organization and site organizations. A total of 52 active MOUs were in place. While a brief review of some of these MOUs revealed that they were current and provided appropriate direction, the magnitude of this unique and separate direction needed to operate a facility on this site is questionable. This brings into question the adequacy of the site program documentation.

Interviews: PBR and EUO staff managers were interviewed. These personnel included line management, operations, and support personnel. The EUO staff were aggressively pursuing restart objectives and were enthusiastic about restoring operations. The PBR staff were well qualified and well versed on the approach to achieving restart. Interactions between the PBR staff and the EUO staff appeared to be working well and were understood by both organizations.

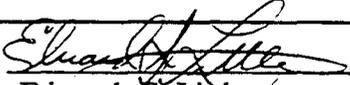
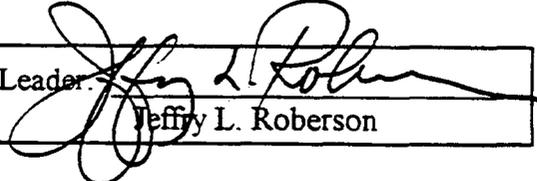
Shift Performance: While shift performance observations are not specifically required by this objective, two unique opportunities occurred during this ORR which enabled a good demonstration of interactions between the PBR and EUO staffs and provided an opportunity to evaluate management interactions. Two management reviews (MRs) were observed. These MRs were convened to determine the facts surrounding off normal occurrences. The first MR involved a review of existing configuration management problems discovered by the facility during the ORR. The second involved a review of conditions which caused out of date chemicals to be used in the B-1 Analytical Laboratory. The first MR was attended by senior level PBR and EUO staff personnel. While both these MRs were effective in evaluating conditions and developing immediate corrective actions, the MR conducted to evaluate the B-1 Analytical Laboratory was not performed in a timely manner and was not led by a fully technically qualified manager. The out of date chemicals were detected on the evening shift, and the MR was not convened until the next day, after the majority of the evening shift had departed the site. During the MR the Shift Technical Advisor, who chaired the MR, demonstrated a significant lack of understanding of the technical aspects of the pH meter, which was the subject of the analytical concern. While these deficiencies by themselves are not particularly significant, deficiencies in conducting MRs have been the subject of previous corrective actions.

**ORR ASSESSMENT FORMS**  
Management

Conclusion: The criteria for this objective have been met.

Issue(s):

- The EUO issues management group is inadequately staffed and may not perform effectively when personnel on loan are removed. (MG5-1)
- A Management Review conducted during the ORR was not conducted in a timely manner and was chaired by a Shift Technical Advisor who demonstrated a lack of understanding of the technical aspects of the issue. (MG5-2)
- There is an excessive number of Memorandum of Understanding (MOU) in place at the EUO facilities. (MG5-3)

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Management

<b>Functional Area:</b> MG	<b>Objective No.:</b> 5	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> MG5-1 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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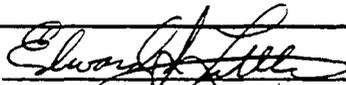
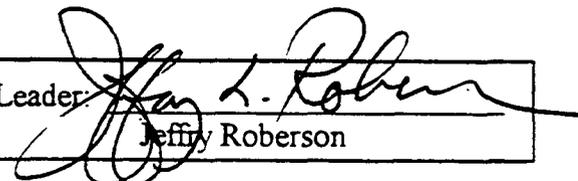
**ISSUE:** The EUO issues management group is inadequately staffed and may not perform effectively when personnel on loan are removed.

**REQUIREMENT:** Organizational managers are responsible for maintaining a long-range plan that includes staffing needs.

**REFERENCE(S):** Nuclear Operations Conduct of Operations Manual, Chapter 1, section G.1.

**DISCUSSION:** The staff supporting the issues management program reports to the Manager of Administrative Support and consists of 5 positions. Of these five, three positions are being filled on loan from the Quality Organization. To assist in the administrative management of issues dealing with restart and in preparation for this ORR, additional senior level managers were assigned on a temporary basis to manage the total issues management program and to ensure that the corrective actions were appropriate and were being accomplished. None of the personnel acting in temporary roles to manage the issues management system were described in organizational charts or position descriptions. It is likely that these personnel will only fulfill this duty until restart is approved. While it is stated that the OSB will continue to carry out their newly chartered function after the restart, the established issues management staff, without the personnel on loan, may be incapable of administering an effective issues management program.

**CONCLUSION:** The issues management staff, with personnel on loan, is currently administering the issues management program in a satisfactory manner. This is a post start issue.

Inspector:  Edwards S. Little	Team Leader:  Jeffrey Roberson
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**ORR DEFICIENCY FORM**  
Management

<b>Functional Area:</b> MG	<b>Objective No.:</b> 5	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> MG5-2 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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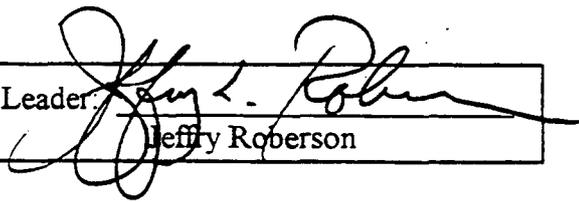
**ISSUE:** A Management Review conducted during the ORR was not conducted in a timely manner and was chaired by a Shift Technical Advisor who demonstrated a lack of understanding of the technical aspects of the issue.

**REQUIREMENT:** The individual assigned to conduct and document the management review shall be operationally and technically knowledgeable of the issue.

**REFERENCE(S):** Nuclear Operations Conduct of Operations Manual, Chapter 6, section IV, E.

**DISCUSSION:** Two management reviews (MRs) were observed during the ORR to determine the facts surrounding off normal occurrences. The first MR involved a review of existing configuration management problems discovered by the facility during the ORR. The second involved a review of conditions which caused out of date chemicals to be used in the B-1 Analytical Laboratory. The first MR was attended by senior level PBR and EUO staff personnel. While both these MRs were effective in evaluating conditions and developing immediate corrective actions, the MR conducted to evaluate the B-1 Analytical Laboratory was not performed in a timely manner and was not led by a manager who fully understood the technical details of the process involved. The out of date chemicals were detected on the evening shift, and the MR was not convened until the next day, after the majority of the evening shift had departed the site. During the MR the Shift Technical Advisor, who chaired the MR, demonstrated a significant lack of understanding of the technical aspects of the pH meter, which was the subject of the analytical concern. While these deficiencies by themselves are not particularly significant, deficiencies in conducting MRs have been the subject of previous corrective actions.

**CONCLUSION:** Management reviews should be convened in a more timely manner and should be led by managers who fully understand the technical details of the issue being reviewed. This is a post start issue.

Inspector:  Edwards S. Little	Team Leader:  Jeffrey Roberson
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**ORR DEFICIENCY FORM**  
Management

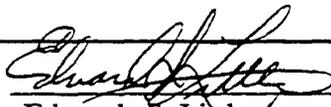
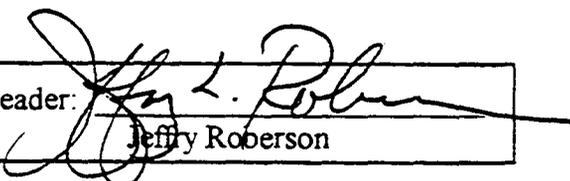
<b>Functional Area:</b> MG	<b>Objective No.:</b> 5	<b>Finding Observ. X</b>	<b>Pre-Start Post Start</b>	<b>Issue No.:</b> MG5-3 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** There is an excessive number of Memorandum of Understanding (MOU) in place at the EUO facilities.

**REQUIREMENT:** Although primary responsibility for the Integrated Safety Management (ISM) lies with the line management at the facility and activity levels where work is performed, worker involvement and strong senior management support at the site level is necessary to ensure successful implementation.

**REFERENCE(S):** Y10-202, Integrated Safety Management Program.

**DISCUSSION:** There are an extensive number of Memorandum of Understanding (MOUs) in place between the EUO Organization and site organizations. A total of 52 active MOUs were in place. While a brief review of some of these MOUs revealed that they were current and provided appropriate direction, the magnitude of this unique and separate direction needed to operate a facility on this site is questionable. This brings into question the adequacy of the site program documentation.

<b>Inspector:</b>  Edwards S. Little	<b>Team Leader:</b>  Jeffrey Roberson
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**ORR ASSESSMENT FORMS**  
Management

FUNCTIONAL AREA: MG	OBJECTIVE 6, REV. 0 DATE: May 12, 1998	CRITERIA MET	
		YES X	NO

**OBJECTIVE :** The implementation status of DOE Order 5000.3B, DOE O 232.1A, and associated S/RIDs are adequate for operation. Non-conformance items have been addressed. (CORE REQUIREMENT #7)

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994.

Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

Record Review: Review the order compliance package for DOE 5000.3B, and 232.1A, including the applicable CSA, exemptions and compensatory measures.

Interviews: If these orders are not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as current compensatory measures in the interim.

Interview line managers to verify they understand their roles and responsibilities with respect to reporting, analyzing and correcting ORPS reportable deficiencies.

Shift Performance: Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness. Select 2 ORPS reports submitted by the contractor as final and verify that all corrective actions have been effectively implemented.

## ORR ASSESSMENT FORMS Management

### Records Reviewed:

- Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994
- Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction, Y/AD-623
- Y-12 Compliance Assessment Program, Procedure Y10-158
- Enriched Uranium Operations (EUO) Resumption Phase A Management Self-Assessment (MSA), Y/MA-7329
- EUO Compliance Assessment Report, Y-97-C026, dated July 7, 1997
- EUO Occurrence Report Corrective Action Plan Approval Status dated 05/04/98
- OP-301, Occurrence Notification and Reporting
- Final ORRPs Reports (2)
- RFA LMES/Y-12-DOE-5480.19-CSA-162D, Conduct of Operations Implementation Deficiencies for EUO

### Interviews Conducted:

- EUO Deputy Facility manager
- EUO Assessments Manager
- Acting Site Issues Manager
- Plant Training Manager
- ESAMS Closure Manager
- EUO Administrative Support Manager
- EUO Issues Management Manager

### Shift Performance Evolution:

- Review of 2 ORPS Reports with verification of corrective actions

### Discussion of Results:

Record Review: The order compliance package for DOE Order 5000.3B and DOE O 232.1A were reviewed in conjunction with the S/RID compliance review documented in objective MG3. RFA LMES/Y-12-DOE-5480.19-CSA-162D, Conduct of Operations Implementation Deficiencies for EUO also affects occurrence reporting. With this exception, the occurrence reporting process in place at EUO complies with current DOE policies and directives. At the commencement of this ORR there were 21 outstanding EUO occurrence reports affecting Buildings 9212/9215 being tracked in the ESAMs system. The breakout by calendar years are as follows: 1996-1/1997-4/1998-16. Of these occurrence reports, 5 addressed safety basis issues, 7 addressed OSR violations (three recent), and 2 addressed personal contamination issues. The restart management team recently recognized the management of the occurrence report system as

**ORR ASSESSMENT FORMS**  
Management

deficient and recognized the failure of EUO line management to supervise the occurrence report program. To actively manage the preparation of occurrence reports and the follow up of occurrence related issues, the Site Plant Training Manager was placed in charge of monitoring and improving the EUO occurrence reporting program. The existing EUO management staff is currently not adequate to ensure this program receives the required visibility and adequately pursues issues to closure. This deficiency is discussed as a finding in MG 5. There is an excellent facility/Facility Representatives (FRs) interface in the occurrence process. The FRs exert a strong influence in identifying reportable occurrences and are thorough in evaluating corrective actions.

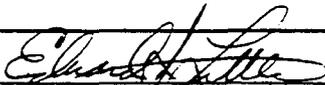
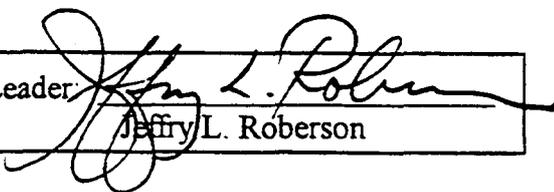
Interviews: Personnel responsible for administering the occurrence reporting program were interviewed to determine their understanding of the program and their involvement in causing improvements. The current restart organization provides sufficient additional management resources to adequately manage the occurrence reporting programs. When the restart effort is concluded and the additional restart management personnel are removed from monitoring and improving the occurrence reporting process, the EUO occurrence reporting program may once again become inadequate unless additional EUO issues management improvements are implemented. This is discussed further as a finding in MG5.

Shift Performance: Two ORPS reports were reviewed for completeness and adequacy for corrective actions. There was sufficient evidence that these reports were adequately closed and there was also sufficient evidence that the DOE YSO FRs had thoroughly reviewed and understood the issues and the underlying causes.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORMS**  
Management

<b>FUNCTIONAL AREA: MG</b>	<b>OBJECTIVE 7, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** An adequate startup test program has been developed that includes adequate plans for graded operations to simultaneously confirm operability of equipment, the viability of procedures, and the adequacy of training of operators. **(CORE REQUIREMENT #10)**

Criteria

The plan is adequate and is being implemented. Specific hazards and evaluations which cannot be addressed prior to commencement of "radioactive operations" are included. (425.1; S/RID FA Management Systems LMES ID #10496)

Approach

**Record Review:** Evaluate the status of actions under the plan. Assure a phased approach to normal operations and inclusion of procedures, operator qualification and equipment startup testing as required. Verify the plan includes mechanisms to deal with specific hazard and evaluations unique to the startup of Phase A EUO operations.

**Interviews/Shift Performance:** Interview personnel responsible for supervising execution of the startup test program to assess their understanding of the objectives and limitations of the program.

Records Reviewed:

- Enriched Uranium Operations (EUO) Startup Plan, Y/MA-7367, Revision 2
- EUO Restart Plan, Y/MA-7243
- EUO Process Based Restart Schedule dated 05/11/98

Interviews Conducted:

- Vice President for Restart Operations
- Deputy to V. P. for Restart Operations
- EUO Facility Manager
- EUO Deputy Facility Manager

Shift Performance Evolution:

- None

## ORR ASSESSMENT FORMS

### Management

#### Discussion of Results:

Record Review: The EUO Restart Plan and the EUO Startup Plan were reviewed. The startup plan establishes the additional management controls that will be in place during the first use of restarted Phase A1 or A2 processes with enriched uranium. The criteria used to identify processes requiring first-use controls includes the following factors:

- a procedure being restarted in Phase A1 or Phase A2
- the importance to criticality safety; and
- complexity as pertaining to manipulation of multiple controls, valves, switched, etc.

First-use controls include defining the personnel who will be on duty, including key operators and supervisors, nuclear criticality safety engineers, and senior supervisory monitors. It further defines the required managers who will be in the vicinity or on call and requires that each first-use evolution will be monitored by a mentor and senior supervisory monitor. Additional rigor is placed in first-use procedures by limiting access to the area of the first-use evolution, eliminating trainees, and documenting actions using a process startup checklist. A post-start review will be conducted after each first use and prior to repeating the evolution. First-use controls may be removed based upon the recommendation from the Vice President for Restart Operations and obtaining the concurrence of YSO.

The startup plan adequately addresses those actions required to effectively monitor and control the activities being restarted. The mechanisms established are sufficient to deal with the specific hazard and evaluations unique to the startup of Phase A1 EUO operations.

There is no integrated long range schedule which can serve as an effective management tool to plan, monitor, and assess progress during restart activities. While there are several schedules prepared to show the technical interactions of the processes, a comprehensive long range schedule which displays activities such as maintenance outages, training requirements, construction activities, etc. would be useful. Deficiencies noted in the areas of training and qualification may adversely impact accomplishment of the start up plan. TR2 discusses that training and qualification processes and procedures are not adequately implemented to ensure that all operations, maintenance, and support personnel have completed qualification, certification, and proficiency requirements. This is an example of an issue which should be made visible to management in the long range plan.

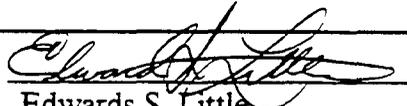
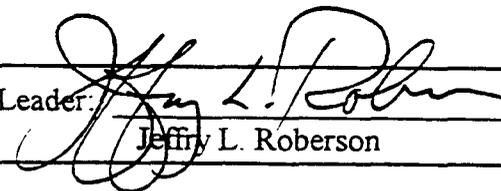
Interviews: Management personnel interviewed were familiar with the controls to be used for first-use procedures. Most had been involved in developing the actions of the plan.

Conclusion: The criteria for this objective have been met.

**ORR ASSESSMENT FORMS**  
Management

Issue(s):

- None.

Inspector:  Edwards S. Little	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORMS**  
Maintenance

<b>FUNCTIONAL AREA: MT</b>	<b>OBJECTIVE 1, REV. 0</b> <b>DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b>	<b>NO X</b>

**OBJECTIVE:** A maintenance management program is established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure maintenance services are adequate for safe operations. (**CORE REQUIREMENT #8**)

Criteria

The maintenance organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. It is adequately staffed with qualified personnel. (4330.4B, Ch. II, section 2 and 3; S/RID FA Training and Qualification (TQ) LMES ID #8639, #8642, #8643, FA Management Systems/Technical Procedures (MS/TP) LMES ID #9174)

The maintenance program conforms to the guidance provided in DOE Order 4330.4B and associated S/RIDs. (S/RID FA Configuration Management (CM) LMES ID #8756)

The maintenance backlog is controlled, prioritized and minimized. Work relating to safety components, protecting the environment and ensuring safety and health receives a higher priority than other items. (4330.4B, Ch. II, section 5 and 7; S/RID FA Configuration Management (CM) LMES ID #9859)

Measuring and test equipment (M&TE) and installed process equipment used to ensure the proper operation of safety systems are identified, available, and calibrated. (4330.4B, Ch. II, section 12; S/RID FA Training and Qualification (TQ) LMES ID #9076, #9114)

Approach

Record Review: Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, or internal memorandums) which establish the roles, responsibilities, interfaces, and staffing levels for the maintenance organization. Review any recent records and program procedures changes to ensure that the maintenance program includes the requirements of the order. Review completed maintenance work packages and associated maintenance procedures for facility safety systems (safety class and safety significant). Review the maintenance backlog listing and job priority. Review M&TE and installed process instrumentation recall and calibration records. Review the requirements to ensure that counterfeit or suspect spare parts are effectively addressed.

## ORR ASSESSMENT FORMS

### Maintenance

**Interviews:** Interview personnel to determine if they are familiar with their support and interface responsibilities to the operations organization. Interview maintenance planners and supervisors responsible for developing, reviewing, and approving work packages. Interview personnel responsible for prioritizing work requests and establishing maintenance schedules. Interview maintenance personnel to assess their understanding of the maintenance program.

**Shift Performance:** While observing evolutions and drill response, determine if maintenance personnel are providing adequate support to the operations organization, and attention is given to health, safety and environmental protection issues. Observe the use of M&TE for maintenance activities for proper control. Observe the performance of maintenance, including post-maintenance testing, in the facility on safety systems. Observe the status of safety systems during normal operations. Spot check calibration for installed instruments/gauges (safety class and safety significant) and M&TE for currency.

#### Records Reviewed:

- Facilities Maintenance Organization (FMO) Memorandums of Understanding (MOUs) with the Enriched Uranium Operation (EUO) (9)
- FMO Organizational Charts, 5/1/98
- EUO Maintenance Backlog and related Performance Indicators
- Y-12 Plant Facilities Management Organization Charter, 3/16/98
- Defense Programs Maintenance Department Charter, 3/26/98
- Y/MA-7255, Operational Safety Requirements (OSR) for Building 9212, Rev. 3, 3/98
- Y/MA-7291, Operational Safety Requirements (OSR) for Building 9215, Rev. 2, 3/98
- U.S. DOE Y-12 Site Office Assessment of EUO Phase A1, 4/30/98
- LMES Operational Readiness Review Report for EUO Phase A1, April 1998
- ORO-LMES-Y12Nuclear-1998-0009 Occurrence Report, 1/30/98
- ESAMS Issue Response Report I0035826, Finding A1-TQ-08, 4/20/98
- ORO-LMES-Y12Nuclear-1998-0028 Occurrence Report, 4/9/98
- ORO-LMES-Y12Nuclear-1998-0029 Occurrence Report, 4/10/98
- ORO-LMES-Y12Nuclear-1998-0026 Occurrence Report, 4/1/98
- ORO-LMES-Y12Nuclear-1998-0012 Occurrence Report, 3/11/98
- DOE 4330.4B, Maintenance Management Program, 2/10/94
- DOE 440.1, Worker Protection Management
- DOE Guide 440.1-6, Suspect/Counterfeit Items, June 1997
- DOE-STD-1065-94, Guideline to Good Practices for Postmaintenance Testing, 6/94
- DOE-STD-1053-93, Guideline to Good Practices for Control of Maintenance, 3/93
- DOE-STD-1054-93, Guideline to Good Practices for Control and Calibration of Measuring and Test Equipment (M&TE), 3/93

**ORR ASSESSMENT FORMS**  
**Maintenance**

- Recall Program Items for Building 9212, 5/6/98
- Recall Program Items for Building 9215, 5/5/98
- LMES Memorandum, R.E. Crass to EUO Planners, Lifted Electrical Leads, 2/12/97
- Fastener procurement documentation for Maintenance Job Request (MJR) 58331, 3/3/98
- Engineering review of Postmaintenance Test for MJR 60484, 5/8/98
- Grade 1 Maintenance Packages (3)
- Grade 2 Maintenance Packages (6)
- Y10-35-009, Maintenance Supervisor's Work Control Guide, 5/8/97
- Y10-35-004, Executing Maintenance Jobs, 11/21/97
- Y10-35-008, Planner's Guide, 1/20/98
- Y10-35-002, Planning Maintenance Jobs, 12/13/96
- Y10-35-AD-0403, Executing Post Maintenance Testing, 11/21/97
- Y10-204, Postmaintenance Testing, 2/18/98

Interviews Conducted:

- Manager, FMO
- Deputy Manager, FMO
- FMO Maintenance Manager for EUO
- FMO Maintenance Planning Manager for EUO
- FMO General Plant Maintenance Manager
- MIP Coordinator
- EUO Preventive Maintenance Manager
- EUO Facility Support Manager
- EUO Engineers (2)
- Maintenance Supervisors (3)
- Electricians (3)
- Pipefitters (3)
- Outside Machinists (3)
- FMO Maintenance Planners (3)

Shift Performance Evolution:

- Pre-job Maintenance briefings (4)
- EUO Daily Maintenance Status Meeting
- OSR Surveillance - Calibration of Building 9212 Stack 27 HEPA D/P Gauge - Grade 1 Package - MJR 59995
- Inspection of Casting Furnace Check Valve internals for Furnaces G,H, and J - Grade 2N Package - MJR 59882

## ORR ASSESSMENT FORMS

### Maintenance

- Criticality Safety Requirement - Annual Vacuum Integrity Check for G Casting Furnace - Grade 2 Package - MJR 60484
- Troubleshoot/Repair the electro-hydraulic relief valve for the Hydroform Press - Grade 2 Package - MJR 60661
- Troubleshoot/Repair Bldg. 9212 Ventilation Fan EF-7030 - Grade 3 Package - MJR 59091
- Walkdown of Building 9215 Stack 3 instrumentation and gauges
- Criticality Safety Violation Response

#### Discussion of Results:

Record Review: Documentation was reviewed (e.g., administrative procedures, organizational charts, position descriptions, or internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels for the maintenance organization. The functions, responsibilities, and coordination of the Facilities Management Organization (FMO) with respect to the Enriched Uranium Operation (EUO) are clearly defined and implemented in the FMO Management Charter, DP Maintenance Department Charter, Maintenance Programs and Administrative Services Charter, and the MOUs between EUO and FMO. FMO has adequately staffed and qualified a maintenance organization and a maintenance planning organization that is co-located and well integrated within EUO. In addition, FMO routinely provides general plant maintenance support (painters, insulators, etc.) through a central organization that addresses the training and qualification needs of EUO while also serving the entire Y-12 complex. The execution of maintenance is performed by single and multi-craft crews assigned to either Building 9212 or 9215. Each crew performs as separate maintenance entities under a common management structure. A high degree of conformance with the site maintenance program is evident from this management structure. Maintenance planning, scheduling, and operations support is well integrated between EUO and FMO as a result of the close working relationships and documented division of responsibilities.

Recent records and program procedures changes were reviewed to ensure that the maintenance program includes the requirements of the order.

Completed maintenance work packages and associated maintenance procedures were reviewed for facility safety systems (safety class and safety significant). Nine work packages were reviewed for work control practices, qualification of maintenance personnel, counterfeit/suspect parts and postmaintenance testing. Overall, work control was satisfactory. Configuration management and maintenance of the safety basis through the USQ process was consistent and adequate for the packages reviewed. The control of temporary modifications were appropriate, including one package that brought in painters from general plant maintenance support for the modification of fissile material storage arrays. The inconsistent use of logs for lifted leads in electrical

## ORR ASSESSMENT FORMS

### Maintenance

troubleshooting packages was one common deficiency with respect to work control. Maintenance workers on two Grade 1 packages were qualified on appropriate safety systems for the Casting Furnace and Ventilation systems to perform work. Also, the qualification of five maintenance workers that are not assigned to DP maintenance were reviewed and found satisfactory with respect to two completed Grade 2 packages. Postmaintenance tests were reviewed and in most cases, the identified testing was appropriate and documented acceptably. One observed evolution of a Grade 1 package, MJR 60484, contained an inappropriate postmaintenance test. The operations review of this package before the MJR was released for work, and/or the operations engineer at the work site should have captured and revised the test. The test, as written and as performed, did not re-establish the integrity of the system (MT1-1).

The maintenance backlog listing and job priority was reviewed. MOU-015 establishes maintenance backlog procedures and backlog goals for EUO with FMO. The latest performance data on the maintenance backlog is a total backlog of 1254 actions with 853 actions overdue. The backlog has increased by 20% over the past seven months and has not been reduced in number for 12 months. The MOU has established a maximum desirable level of 1200 items and requires an assessment by the Operations Managers to determine if Enriched Uranium Operations may be conducted. This assessment has not been done. This long term trend indicates either a lack of required maintenance staffing, an operational readiness problem, or both (MT1-2).

The M&TE and installed process instrumentation was reviewed for recall and calibration records. The recall listing of M&TE was reviewed against field instruments and found to be satisfactory.

The program to ensure that counterfeit/suspect items (S/CI) within EUO are effectively addressed was reviewed. A wet vacuum system valve replacement package was reviewed with respect to counterfeit/suspect parts. Procurement documentation provided no indication that a review was made on the supplied fasteners. Maintenance planning reported that the AVID (accelerated vendor inventory delivery) vendor is contractually bound to conduct these reviews and provide the required quality parts. Further review of the site-wide program indicates a strong emphasis towards building in quality at the vendor site. Quality Services has evaluated each of the three suppliers of fasteners to the AVID vendor, in addition to the contractual terms regarding S/CI. However, Quality Services does not have an assessment plan for periodic inspection or formal evaluation of the C/SI program. Three maintenance planners have received training in this area and report they conduct undocumented visual inspection of parts. The implementation of the suspect/counterfeit parts program within EUO may be overly reliant on vendor contract agreements (MT1-3).

Interviews: Personnel were interviewed to determine if they are familiar with their support and interface responsibilities to the operations organization. Maintenance planners and supervisors were interviewed to review the division of responsibility for developing, reviewing, and approving

## ORR ASSESSMENT FORMS

### Maintenance

work packages. The maintenance planning organization personnel were competent in their duties and had strongly established interfaces with the operating organization and the DP maintenance organization. Responsibilities of craft, scheduling, procurement, and engineering personnel are well established. Maintenance planners are trained and competent in their areas of responsibility.

Personnel responsible for prioritizing work requests and establishing maintenance schedules were interviewed. The maintenance plan of the week and operations plan of the day are effective tools used by the maintenance scheduler for planning and coordinating all maintenance work. The plan of the day is effectively controlled by the Operations Shift Manager and the process permits dynamic changes to allow for the resolution of coordination issues while providing positive control of work within the facility.

Maintenance personnel were interviewed to assess their understanding of the maintenance program. The FMO Manager and his direct reports have a strong commitment to fully support EUO and understood their roles with respect to the maintenance program. Personnel in each of the primary organizations within FMO that support EUO had a firm understanding of their roles and are effective in supporting EUO in a matrix fashion. The matrix organization is effective in maintaining programmatic consistency within EUO.

Shift Performance: Evolutions and drill response were observed to determine if maintenance personnel are providing adequate support to the operations organization, and attention is given to health, safety and environmental protection issues. The pre-job briefings were consistently thorough and covered the procedure, the job-specific Radiation Work Permit if applicable, the safety aspects of the work, and the required coordination. Participants in the meeting were attentive and asked good questions. The attachment of locks and tags to support one maintenance evolution was observed and properly applied. The maintenance supervisor was generally effective in directing maintenance and demonstrating consistent guidance and concern for radiological and criticality safety. During one maintenance evolution, a criticality safety issue was identified near the job site. Although the job was ready to begin, the maintenance supervisor acted correctly to temporarily stop work until the issue was resolved. Skills demonstrated by craft personnel were adequate to perform the planned work and good coordination was demonstrated. Maintenance personnel properly relied on process engineers and trained operators for interface with safety systems.

During the observation of troubleshooting and repair of the Hydroform relief valve electronics, the maintenance crew failed to use the lifted lead log that was supplied in the Grade 2 package. Two wires were completely removed from the panel while a DC power supply was installed to insert a test signal. Although the electricians did not leave the panel, the wires were removed for approximately 30 minutes before reinstallation. A memorandum on this subject requires all lifted electrical leads be logged if not reinstalled immediately. By not formally controlling lifted leads by

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### Maintenance

a written record, additional reliance is placed on post maintenance testing if an error is made during re-installation. The use of a lifted lead log as common practice should be considered in order to strengthen work control practices (MT1-4).

The use of M&TE for maintenance activities was observed for proper control. During two maintenance evolutions, M&TE equipment was (1) utilized properly, (2) in good working order, (3) in calibration, and (4) logged-in to the Recall-A Program.

The performance of maintenance, including post-maintenance testing, on safety systems was observed. Of the five evolutions observed, four were performed adequately and without difficulty. The remaining postmaintenance test involved the restoration of the furnace vacuum system after removal of a temporary modification. A test was performed to ensure proper vacuum system integrity. The procedure was either poorly written and misinterpreted or improper to provide an appropriate test. The test actually checked the leak rate across the permanently installed isolation valve instead of the restored section of the vacuum system. In either case, an appropriate postmaintenance test was not performed. A later engineering evaluation along with another vacuum integrity check (weekly surveillance) provided a satisfactory post maintenance test (MT1-1).

The status of safety systems during normal operations was observed. Calibration for installed instruments/gauges and the use of appropriate M&TE was observed during a walkdown of the Stack 3 safety system in Building 9215. While the configuration control of Stack 3 was satisfactory, all 10 HEPA filter D/P gauges and remote instruments were in the process of recalibration due to maintenance packages being used instead of Category 1 maintenance procedures to satisfy OSR Surveillances. A similar condition also existed on other Stacks in Building 9212. During the observation of HEPA D/P gauge calibrations for Stack 27, the surveillance activity was aborted due to uncertainties by the maintenance crew in how to perform the procedure. In addition, the casting furnaces were out of service due to check valve material problems, the electro-hydraulic relief valve on the hydroform process was out of service, and the wet and dry vacuum systems were not fully operable. The problems regarding material status and operability of these safety systems are further discussed in Operations and Safety Envelope functional areas (OP and SE).

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Conclusion: The criteria for this objective have not been met.

Issue(s):

- The process to approve post maintenance testing to verify the design functions of a s related system was inadequate. (MT1-1)
- The EUO maintenance backlog exceeds 1200 jobs and has not been evaluated for its impact on safety, as required. (MT1-2)
- Quality Services in support of EUO, have no formal assessment program for counterfeit/suspect parts and instead, rely on the AVID (Accelerated Vendor Invento Delivery) Vendor contract and informal inspections. (MT1-3)
- Lifted electrical leads were not logged during the troubleshooting and repair of a safe related system. (MT1-4)

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**ORR DEFICIENCY FORM**  
Maintenance

<b>Functional Area:</b> MT	<b>Objective No.:</b> 1	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> MT1-1 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** The process to approve postmaintenance testing to verify the design functions of a safety related system was inadequate.

**REQUIREMENT:** "The work request should be reviewed by the operations organization to verify that post maintenance testing requirements listed will provide adequate verification that the equipment will be capable of performing its designed functions."

**REFERENCE(S):** DOE Order 4330.4B, Maintenance Management Program, Chapter II, para. 9.3.1.

**DISCUSSION:** One observed evolution of a Grade 1 package, MJR 60484, contained an inappropriate postmaintenance test. The operations review of this package before the MJR was released for work, and/or the operations engineer at the work site should have captured and revised the test. The test, as written and as performed, did not re-establish the integrity of the system.

The postmaintenance test restored the furnace vacuum system by removing a temporary modification and performing a test to ensure proper integrity. The procedure was either poorly written and misinterpreted or improper to provide an appropriate test. In either case, an appropriate postmaintenance test was not performed. A later engineering evaluation along with another vacuum integrity check (weekly surveillance) was needed to return the system to operability.

**CONCLUSION:** Grade 1 maintenance packages are developed under the most stringent requirements due to the potential for off-site consequences to the public or environment. Postmaintenance tests provide assurance that systems are returned to service and meet all design functions. This would include the determination of Operability for safety systems. In this case, an improper postmaintenance test was authorized that did not test the design function of the system.

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Maintenance

<b>Functional Area:</b> MT	<b>Objective No.:</b> 1	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> MT1-2 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** The EUO maintenance backlog exceeds 1200 jobs and has not been evaluated for its impact on safety, as required.

**REQUIREMENT:** "The program shall clearly define the management systems used to control maintenance activities, including the means for monitoring and measuring the effectiveness of the program and the management of the maintenance backlog."

"The Operations Manager established a quantity of 1200 jobs in the EUO backlog as the maximum desirable total backlog level ... If the 1200 is exceeded, a review will be conducted by the Operations Managers to assess the affect of the quantity and nature of backlog on the ability of the organization to conduct Enriched Uranium Operations."

**REFERENCE(S):** Maintenance Management Order, DOE 4330.4B, para. 10.a.(2); and Memorandum of Understanding 015, dtd. 9/10/96.

**DISCUSSION:** MOU-015 establishes maintenance backlog procedures and backlog goals for EUO with FMO. The latest performance data on the maintenance backlog is a total backlog of 1254 actions with 853 actions overdue. The backlog has increased by 20% over the past seven months and has not been reduced in number for 12 months and expects a formal determination be made on the ability of the facility to conduct Enriched Uranium Operations. The MOU has established a maximum desirable level of 1200 items and requires an assessment by the Operations Managers to determine if Enriched Uranium Operations may be conducted. This assessment has not been done

**CONCLUSION:** The maintenance backlog needs to be managed to the degree that restart of the Phase A1 activities of Enriched Uranium Operations can be conducted safely. The cumulative impact of the EUO backlog needs to be understood prior to restart.

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**ORR DEFICIENCY FORM**  
Maintenance

<b>Functional Area:</b> MT	<b>Objective No.:</b> 1	<b>Finding Observ.:</b> X	<b>Pre-Start Post Start</b>	<b>Issue No.:</b> MT1-3 <b>Rev.:</b> 0 <b>Date:</b> may 12, 1998
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**ISSUE:** Quality Services, in support of EUO, have no formal assessment program for counterfeit/suspect parts and instead, rely on the AVID (Accelerated Vendor Inventory Delivery) Vendor contract and informal inspections.

**REQUIREMENT:** "Identify, control, and disposition Suspect/Counterfeit Items (S/CI) that create potential hazards in safety systems and applications."

**REFERENCE(S):** DOE Order 440.1, Worker Protection Management.

**DISCUSSION:** The program to ensure that counterfeit/suspect parts within EUO are effectively addressed was reviewed. A wet vacuum system valve replacement package was reviewed with respect to counterfeit/suspect parts. Procurement documentation provided no indication that a S/CI review was made on the supplied fasteners. Maintenance planning reported that the AVID (accelerated vendor inventory delivery) vendor is contracturally bound to conduct these reviews and provide the required quality parts. Three maintenance planners have received training in this area and conduct undocumented visual inspection of parts. The implementation of the suspect/counterfeit parts program within EUO does not include a formal assessment plan for facility level, site level, or vendor field inspections as part of the S/CI program.

The EUO Maintenance Planning organization relies upon the AVID Vendor to supply parts that are evaluated, tested, or dispositioned for suspect/counterfeit items. The process within EUO to assess the AVID vendor's responsibility is informal and places a heavy reliance on the vendor's compliance with contractual terms related to S/CI.

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Maintenance

<b>Functional Area:</b> MT	<b>Objective No.:</b> 1	<b>Finding Observ.</b> X	<b>Pre-Start Post Start</b>	<b>Issue No.:</b> MT1-4 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** Lifted electrical leads were not logged during the troubleshooting and repair of a safety related system.

**REQUIREMENT:** "Troubleshooting should be controlled to prevent ... unauthorized modifications. The requested work should be reviewed to ensure unauthorized modifications are not accomplished by the maintenance request."

"Effective February 13, 1997, all Job Packages in EUO that contain electrical tasks shall address Lifted Electrical Leads to ensure that ... 4. All Lifted Electrical Leads that are not installed immediately must be logged in the Lifted Lead Log."

**REFERENCE(S):** DOE Order 4330.4B, Maintenance Management Program, Chapter II, para. 8.2; LMES Memorandum, Lifted Electrical Leads, dtd. 2/12/97.

**DISCUSSION:** During the observation of troubleshooting and repair of the Hydroform relief valve electronics, the maintenance crew failed to use the lifted lead log that was supplied in the Grade 2 package. Two wires were completely removed from the panel while a DC power supply was installed to insert a test signal. Although the electricians did not leave the panel, the wires were removed for approximately 30 minutes before reinstallation. A memorandum on this subject requires all lifted electrical leads be logged if not installed immediately.

By not formally controlling lifted leads by a written record, additional reliance is placed on post maintenance testing if an error is made during re-installation. The use of a lifted lead log as common practice should be considered in order to strengthen work control practices.

<b>Inspector:</b> <u>James Winter</u> James Winter	<b>Team Leader:</b> <u>Jeffery Roberson</u> Jeffery Roberson
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### Maintenance

FUNCTIONAL AREA: MT	OBJECTIVE 2, REV. 0 DATE: May 12, 1998	CRITERIA MET	
		YES	NO X

**OBJECTIVE:** Level of knowledge of operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of operations support personnel. (CORE REQUIREMENT #3)

#### Criteria

Maintenance support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance. (4330.4B, Ch. II, section 5; 5480.20A, Chs. I and IV; S/RID FA Training and Qualification (TQ) LMES ID #9148, FA Management Systems/Technical Procedures (MS/TP) LMES ID #9164)

Maintenance support personnel demonstrate a working knowledge of facility systems and components related to safety. These personnel also give adequate attention to health, safety and environmental protection issues. (4330.4B, Ch. II, section 5; 5480.20A, Chs. I and IV; 5700.6C; 10 CFR 830.120; S/RID FA Training and Qualification (TQ) LMES ID #9148)

Entry-level requirements are established for each maintenance position and includes as applicable the minimum education, experience, technical, and medical requirements. (5480.20A, Chs. I and 4; S/RID FA Training and Qualification (TQ) LMES ID #9142)

#### Approach

**Record Review:** Review for adequacy and completeness, the training records which indicate maintenance support personnel training on facility procedures and systems. Review procedures or policies to ensure that they describe the personnel selection and entry-level requirements.

**Interviews:** Interview maintenance support personnel to assess their understanding of their actions when responding to abnormal and emergency conditions as well as their understanding of how these actions relate to the safety basis for operations. Determine if these personnel have an adequate knowledge of health, safety, and environmental protection issues.

**Shift Performance:** Observe drills, routine evolutions and normal operations, to assess the ability of maintenance support personnel to safely operate systems and components in accordance with approved plant procedures.

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Records Reviewed:

- Facilities Maintenance Organization (FMO) Memorandums of Understanding (MOUs) with the Enriched Uranium Operation (EUO) (9)
- FMO Organizational Charts, 5/1/98
- EUO Maintenance Backlog and related Performance Indicators
- Y-12 Plant Facilities Management Organization Charter, 3/16/98
- Defense Programs Maintenance Department Charter, 3/26/98
- Y/MA-7255, Operational Safety Requirements (OSR) for Building 9212, Rev. 3, 3/98
- Y/MA-7291, Operational Safety Requirements (OSR) for Building 9215, Rev. 2, 3/98
- U.S. DOE Y-12 Site Office Assessment of EUO Phase A1, 4/30/98
- LMES Operational Readiness Review Report for EUO Phase A1, April 1998
- ORO-LMES-Y12Nuclear-1998-0009 Occurrence Report, 1/30/98
- ESAMS Issue Response Report I0035826, Finding A1-TQ-08, 4/20/98
- ORO-LMES-Y12Nuclear-1998-0028 Occurrence Report, 4/9/98
- ORO-LMES-Y12Nuclear-1998-0029 Occurrence Report, 4/10/98
- ORO-LMES-Y12Nuclear-1998-0026 Occurrence Report, 4/1/98
- ORO-LMES-Y12Nuclear-1998-0012 Occurrence Report, 3/11/98
- DOE 4330.4B, Maintenance Management Program, 2/10/94
- DOE 440.1, Worker Protection Management
- DOE Guide 440.1-6, Suspect/Counterfeit Items, June 1997
- DOE-STD-1065-94, Guideline to Good Practices for Postmaintenance Testing, 6/94
- DOE-STD-1053-93, Guideline to Good Practices for Control of Maintenance, 3/93
- DOE-STD-1054-93, Guideline to Good Practices for Control and Calibration of Measuring and Test Equipment (M&TE), 3/93
- Qualified Personnel Listing for FMO who support Buildings 9212 and 9215, 3/31/98
- Y-12 FMO Qualification Programs by Position (10)
- Training Implementation Matrices (TIM) by Position (10)
- Individual Training Management Information System printouts (14)
- Training Requirements MOU between FMO and EUO, 3/4/98
- FMO Tabletop Analysis Worksheet for TMS #10329, 6/28/95
- Performance Documentation Checklist for TMS #10329, 12/6/95
- FMO Personnel Training Records (10)
- Y10-35-009, Maintenance Supervisor's Work Control Guide, 5/8/97
- Y10-35-004, Executing Maintenance Jobs, 11/21/97
- Y10-35-008, Planner's Guide, 1/20/98
- Y10-35-002, Planning Maintenance Jobs, 12/13/96
- Y10-35-AD-0403, Executing Post Maintenance Testing, 11/21/97
- Y10-204, Postmaintenance Testing, 2/18/98

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Interviews Conducted:

- Manager, FMO
- Deputy Manager, FMO
- FMO Maintenance Manager for EUO
- FMO Maintenance Planning Manager for EUO
- FMO General Plant Maintenance Manager
- MIP Coordinator
- EUO Preventive Maintenance Manager
- EUO Facility Support Manager
- EUO Engineers (2)
- Maintenance Supervisors (3)
- Electricians (3)
- Pipefitters (3)
- Outside Machinists (3)
- FMO Maintenance Planners (3)

Shift Performance Evolution:

- Pre-job Maintenance briefings (4)
- EUO Daily Maintenance Status Meeting
- OSR Surveillance - Calibration of Building 9212 Stack 27 HEPA D/P Gauge - Grade 1 Package - MJR 59995
- Inspection of Casting Furnace Check Valve internals for Furnaces G,H, and J - Grade 2N Package - MJR 59882
- Criticality Safety Requirement - Annual Vacuum Integrity Check for G Casting Furnace - Grade 2 Package - MJR 60484
- Troubleshoot/Repair the electro-hydraulic relief valve for the Hydroform Press - Grade 2 Package - MJR 60661
- Troubleshoot/Repair Bldg. 9212 Ventilation Fan EF-7030 - Grade 3 Package - MJR 59091
- Walkdown of Building 9215 Stack 3 instrumentation and gauges
- Criticality Safety Violation Response

Discussion of Results:

Record Review: Training records which indicate maintenance support personnel training on facility procedures and systems were reviewed for accuracy and completeness. Eight personnel training records were sampled. The training records maintained by the training department support the computerized TMIS (Training Management Information System) and the Training

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Implementation Matrices maintained for each qualification position. Some of the testing results were short answer type exams that appropriately challenged participants understanding of the learning objectives. Overall, the training and qualification requirements expected of maintenance personnel are appropriate for the work being performed.

During the review of OJT (On-the-Job-Training) records, two OJT instructors' qualifications were sampled. The result was that their initial qualifications in 1988 and 1995, respectively, were not followed by biannual requalification or the locally required annual evaluation. Upon further evaluation by FMO (Facilities Management Organization), six additional OJT instructors were overdue in their annual evaluation. The impact of this finding on the qualification of maintenance personnel needs to be determined (MT2-1 and TR2-1).

The procedures and policies that establishes personnel selection and entry-level requirements were sufficient to ensure good quality of new maintenance personnel. There is an excellent level of experience within all maintenance organizations – journeyman or higher. This experience is the result of a stable work force over a long period of time.

Interviews: Maintenance support personnel were interviewed to assess their stated actions when responding to abnormal and emergency conditions as well as their understanding of how these actions relate to the safety basis for operations. Personnel were determined to have an adequate knowledge of health, safety, and environmental protection issues. The organization was well versed in the recognition and disposal requirements for hazardous waste, industrial safety requirements, and criticality safety requirements as related to performing maintenance work in EUO. The relationship between the safety basis and the grade levels of maintenance packages and categorization of maintenance procedures was well understood by all maintenance personnel.

Shift Performance: Drills, routine evolutions and normal operations were observed to assess the ability of maintenance support personnel to safely operate systems and components in accordance with approved plant procedures. Maintenance evolutions observed were professionally performed and demonstrated that maintenance training programs have been effective in establishing proficiency and sufficient level of knowledge at EUO. Each of the pre-job briefings were thorough and informative, following the prescribed checklist.

The performance of the casting furnace check valve inspection job was well coordinated and configuration control was maintained throughout the evolution (3 check valves were removed for inspection). The maintenance personnel worked closely with the design engineer while maintaining procedural compliance and appropriate interface with Fissile Material Operators. The

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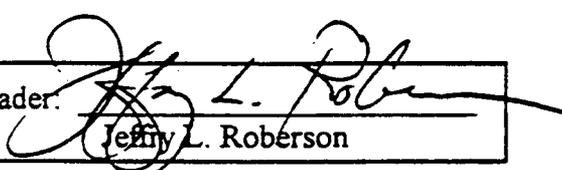
only weak area in this job was planning with respect to criticality safety. While there was a known potential for water leaks when the three line breaks were made, the storage arrays in close proximity (within five feet) were not cleared of material. Approximately one gallon of water was ultimately mopped up by Operations after the line breaks had been completed.

During the observation of troubleshooting and repair of the Hydroform relief valve electronics, the maintenance crew failed to use the lifted lead log that was supplied in the Grade 2 package. Two wires were completely removed from the panel while a DC power supply was installed to insert a test signal. Although the electricians did not leave the panel, the wires were removed for approximately 30 minutes before reinstallation. A memorandum on this subject requires all lifted electrical leads be logged if not installed immediately (MT1-4).

Conclusion: The criteria for this objective have not been met.

Issue(s):

- OJT instructor qualifications for several maintenance OJT instructors have lapsed and the impact on maintenance personnel qualifications is not known. (MT2-1)

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**ORR DEFICIENCY FORM**

Maintenance

<b>Functional Area:</b> MT	<b>Objective No.:</b> 2	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> MT2-1 <b>Rev.:</b> 0 <b>Date:</b> May 12, 1998
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**ISSUE:** OJT instructor qualifications for several maintenance OJT instructors have lapsed and the impact on maintenance personnel qualifications is not known.

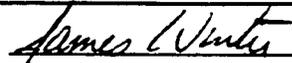
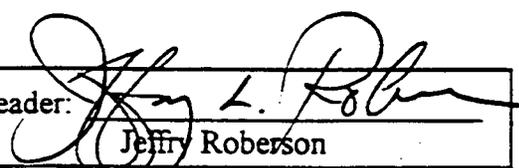
**REQUIREMENT:** "The maintenance manager and supervisors should work closely with the training organization to ... ensure qualified instructors are available to teach specific courses."

"When trainees perform maintenance on installed equipment, a qualified OJT instructor should observe the work"

**REFERENCE(S):** DOE Order 4330.4B, Maintenance Management Program, Chapter II, para. 3.3.3 and 3.3.4.

**DISCUSSION:** During the review of OJT (On-the-Job-Training) records, two OJT instructors' qualifications were sampled. The result was that their initial qualifications in 1988 and 1995, respectively, were not followed by biannual requalification or the locally required annual evaluation. Upon further evaluation by FMO (Facilities Management Organization), six additional OJT instructors were overdue for their annual evaluation. Overall, 8 of 13 maintenance OJT instructors were deficient in their qualification at the time of discovery.

**CONCLUSION:** The lapsed qualification of several OJT instructors in the maintenance organization brings into question the qualification status of those individuals trained under OJT instruction for CAAS/ENS and Fire Protection Systems. This finding encompasses the qualification of maintenance personnel and the management of training in the maintenance area. The qualification status of personnel trained under these areas needs to be understood and resolved prior to restart.

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**ORR ASSESSMENT FORMS**  
Maintenance

<b>FUNCTIONAL AREA: MT</b>	<b>OBJECTIVE 3, REV. 0 DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** The implementation status of DOE Order 4330.4B and associated S/RIDs are adequate for operations. Non-compliance issues have been addressed. (**CORE REQUIREMENT #7**)

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

**Record Review:** Review the order compliance package for the listed orders. Ensure the MIP is being followed.

**Interviews:** If this order is not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as all interim compensatory measures.

**Shift Performance:** Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

Records Reviewed:

- Y-12 Programmatic Assessment Report of Maintenance S/RID, 9/4/97
- LMES/Y-12-DOE-4330.4A-CSA-2D, 12/11/97
- DOE Validation Letter, J.D. Jackson to F.P. Gustavson, DOE Validation of LMES/Y-12-DOE-4330.4A-CSA-2D, dtd. 2/25/98
- Y-12 Consolidated Maintenance Implementation Plan (CMIP), Rev. 2, 8/15/96

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- Forwarding Letter, T.R. Butz to R.J. Spence, CMIP review and approval, 9/27/96
- CMIP evidence file on Work Control
- CMIP evidence file on Reliability Centered Maintenance
- CMIP evidence file on instrument recall
- DOE 4330.4B, Maintenance Management Program, 2/10/94

#### Interviews Conducted:

- MIP Coordinator

#### Shift Performance Evolution:

- None

#### Discussion of Results:

Record Review: The order compliance package for DOE 4330.4B and the Consolidated Maintenance Implementation Plan (CMIP) have been reviewed. The current CMIP, dated August 1996, adequately addresses the objectives of the Order. Three evidence files were reviewed and each contained substantive programmatic improvements in work control, reliability centered maintenance, and instrument recall. Work control procedures established and implemented in the past 3-12 months have made substantial improvements in the conduct of maintenance within EUO.

The S/RIDs for the maintenance area are acceptable and have been validated by YSO. There are no compensatory measures and the Order requirements will continue to be implemented for consistency and continuous improvement through the CMIP. The S/RIDs process as supported by RFAs is not synchronized with the current CMIP. As reported by LMES, the revised CMIP in December 1998 should be developed consistent with the S/RIDs process. This is needed since the Order requirements are reduced to only 70 items, uniquely identified by an Energy Systems Identification Number (ESID).

One notable deficiency is that the current CMIP has not been approved by DOE. Actions and schedules for the current CMIP are tracked by DOE, however, no formal approval exists. LMES is tracking the follow on CMIP for DOE Approval in the Energy Systems Action Management System (ESAMS). Appropriate action by YSO on ESAMS I0016579 is needed to ensure the revised CMIP is consistent with the S/RIDs process.

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Interviews: The MIP coordinator understood that the maintenance order is fully implemented at EUO consistent with the graded approach and there are no compensatory measures. The MIP coordinator demonstrated through evidence files that the ongoing work in accomplishing the CMIP was effective in providing a more consistent implementation of order requirements.

Shift Performance: None.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

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**ORR ASSESSMENT FORMS**  
Operations

<b>FUNCTIONAL AREA: OP</b>	<b>OBJECTIVE 1, REV. 0</b> <b>DATE: May 13, 1998,</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Level of knowledge of operations personnel is adequate based on reviews of examinations and examination results and selected interviews of operating personnel. (**CORE REQUIREMENT #3**)

Criteria

The level of operator knowledge is adequate to operate safely. This includes knowledge of RP, IH, FP, WM, and SE as required for operator qualification. (5480.19 Ch. XIII; 5480.20A, Chs. I and IV; S/RID FA Training and Qualification (TQ) LMES ID #9674, #9659)

The level of knowledge of lab support personnel is adequate to ensure proper analysis in the support of safe operations, and to ensure safety of the analytical processes. This includes knowledge of RP, IH, FP, WM, and SE as appropriate to support operations. (5480.19 Ch. XIII; 5480.20A, Chs. I and IV; S/RID FA Training and Qualification (TQ) LMES ID #9675)

Operations personnel retain a practical and adequate understanding of facility systems and operations. These personnel also give adequate attention to and retain an adequate knowledge of health, safety and environmental protection issues. (5480.19, Ch. XIII; 5480.20A, Chs. I and IV; 5700.6C, Criteria II; S/RID FA Training and Qualification (TQ) LMES ID #9676)

Operators demonstrate the ability to carry out normal, abnormal, and emergency procedures. (5480.19 Ch. XIII; 5480.20A, Ch. I; S/RID FA Training and Qualification (TQ) LMES ID #9688)

Operators demonstrate a working knowledge of facility systems and components related to safety. (5480.19 Ch. XIII; 5480.20A, Ch. I; S/RID FA Training and Qualification (TQ) LMES ID #9688)

Approach

Record Review: Review examinations to determine if they adequately test the operators and lab support personnel's understanding of technical fundamentals, facility systems, and operating procedures.

## ORR ASSESSMENT FORMS

### Operations

**Interviews:** Interview operators, lab support personnel, and their supervisors to assess their understanding of Phase A1 EUO processes, procedures, and fundamentals as they relate to the re-start effort. Interview supervisory operations personnel to assess their understanding of the safety envelope, their ability to maintain EUO Phase A1 operations within the safety envelope, and their understanding of where the responsibility for maintaining the safety envelope resides in various operating scenarios.

**Shift Performance:** Observe drills, routine evolutions and normal operations to assess technical understanding and ability of the operators, lab support personnel, and supervisors to conduct their duties and to safely operate systems and components in accordance with approved plant procedures.

#### Records Reviewed:

- Training Histories for Plant Shift Supervisor (PSS)
- Exams for various health safety and facility specific classes for PSS
- Training Histories for Fire Protection incident commanders and inspectors
- Exams and study guides for various health safety and facility specific classes for incident commanders and inspectors.
- RWP 97-A-0315 Used by E-Wing Casting Operators for Knock-Out Operation
- JPA-EW-C-SACL-0001 E-Wing Casting-Stack Assembly
- JPA-EW-C-SACL-0002 E-Wing Casting-Crucible Loading
- JPA-EW-C-FLUL-0001 E-Wing Casting-Main Line Conveyor
- JPA-EW-C-FLUL-E/W0002 E-Wing Casting-Furnace Loading
- JPA-EW-C-CAST-E/W0003 E-Wing Casting-Furnace Preparation
- JPA-EW-C-CAST-E/W0004 E-Wing Casting-Furnace Manual Operation
- JPA-EW-C-FLUL-E/W0003 E-Wing Casting-Furnace Unloading
- JPA-EW-C-FLUL-0002 E-Wing Casting-Main Line Conveyor Unloading
- JPA-EW-C-KO-0001 E-Wing Casting-Knockout
- JPA-EW-C-KO-0002 E-Wing Casting-Shape(Part) Cleaning
- JPA-EW-C-C&C-0001 E-Wing Casting-Graphite Cleaning
- Y57-37-65-028 Casting Furnace Alarms--East Line
- CL-EU-9212-082 E-WING WEST FURNACE CHECKLIST
- Y52-37-65-004 E-Wing Casting Furnace Water-Detection System Functional Test
- Y50-37-98-659 Receipt and Shipment of Special Nuclear Materials (C-1 Receiving Area)
- Y-57-37-65-029 Casting Furnace Alarms-West Line
- Building 9212 CSA/CSR Surveillance Schedule
- Building 9212 OSR Surveillance Schedule
- CL-EU-2637-008 Return To Service Checklist

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- 9212 Deficiency Database Open Report
- SO-9212-98-002 Work Control in 9212
- Y50-37-65-104 Enriched Uranium Chip Drying and Briquetting

Interviews Conducted:

- 9212 E-Wing Casting Operators (5)
- 9212 Operations Manager
- 9215 Operations Manager
- 9212 Shift Technical Advisors(2)
- 9212 E-Wing Casting Supervisors(2)
- 9212 Chemical Production Manager
- 9212 Shift Technical Advisor (2)
- 9212 Shift Manager (3)
- 9212 Chemical Recovery Operators 9818 Qualified (2)
- 9212 Chemical Recovery Operators Waste Handler (2)
- 9212 Chemical Recovery Operators B-1 Lab Qualified (2)
- 9212 Production Supervisor
- 9212 Day Shift Supervisor
- 9212 Chemical Production Manager

Shift Performance Evolution:

- 9212 Plan of the Day Meetings
- 9212 Shift Turnovers
- Pre-job briefs
- HC/O-C-7101 High Capacity Evaporator Operation and Turnover
- High Capacity Evaporator Process Condensate Monitor Test
- Solution Transfer into the F-501 Tanks
- Code 80 Glovebox Operation
- Use of Laboratory Hoods
- B-1 Lab, Standard PPM Analysis
- E-Wing casting operations
- E-Wing Chip Processing
- E-Wing Knockout Operations
- Chem ops. solution transfer
- Chem ops. solution receiving
- E-Wing carbon cleaning
- E-Wing shape cleaning
- 9212 Crew Briefs
- Limited External Exercise, 9212 Contaminated Injured Worker
- Leak in High Capacity Evaporator, Operational Drill

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### Operations

- Casting Furnace Alarms-Water in Furnace, Operational Drill
- Over Temperature in the Billet Salt Bath, Operational Drill
- Drill Pre-Briefs and Post Critiques

#### Discussion of Results:

**Record Review:** Training records, study guides and tests were reviewed for operations staff positions for both 9212 and 9215. These records were found to be adequate in testing the knowledge of operations personnel in the operating systems and base technical fundamentals including knowledge of the safety basis and environmental protection. Only minor administrative issues were found. A more in-depth explanation of this training can be found in TR-2.

**Interviews:** Shift Managers and Shift Technical Advisors (STAs) were interviewed to assess their level of knowledge. Shift Managers and Shift Technical Advisors have a good knowledge of procedures, facility equipment, safety systems and Nuclear Criticality Safety requirements. Two of the three Shift Managers interviewed were also qualified Shift Technical Advisors. Shift Managers qualified as STAs had a better understanding of the BIO and OSRs. Additional questioning related to the control of plant operations, evaluation of abnormal events, notification and response to these conditions confirmed all had adequate knowledge of their responsibilities. Responses to questions concerning their relationship between the Shift Manager and the Production Shift Superintendent confirm their knowledge and understanding of the program requirements. This knowledge included the changes effected following the lessons learned from the observed limited external exercise event conducted during the LMES ORR.

Other interviews were also conducted with operators, supervisors, process supervision and Functional Managers. The questions asked gaged the level of knowledge specific to the process systems and support systems operated or supervised by the personnel. Questions were asked concerning the BIO, OSR, criticality requirements and design features. Operators demonstrated an adequate knowledge of their roles and responsibilities as well as specific conduct of operations requirements related to the performance and adequacy of their procedures.

The interviews also indicated that each of the personnel felt that their respective training programs had provided sufficient training to allow them to perform their functions. Generally, the operators and supervisors were familiar with the requirements of their job and exhibited familiarity with the criticality safety requirements associated with the design and operation of the building ventilation system, exhaust system, wet vacuum system, and dry vacuum system. They could adequately describe surveillance requirements associated with these systems and alarm response actions related to the vacuum systems under their cognizance. Responses to questioning of the factors that control criticality confirmed their knowledge of these controls as they relate to conditions in the field and the performance of their duties. Their attitude was positive and each cited examples of good practices and improved performance achieved

## ORR ASSESSMENT FORMS

### Operations

through their conduct of operations training. There was some reservation expressed relative to procedural problems experienced during the restart process, but most felt the processes needed to be operated to work out all of these issues. Some weaknesses were observed in the responses to stack monitoring devices. Most operators could not describe the type of monitor used to detect HEPA filter breakthrough.

**Shift Performance:** Operators, supervisors, and shift management personnel were observed during several evolutions, surveillances and inspections. Personnel were knowledgeable of their responsibilities and completed the actions called for in the procedures or Job Performance Aids (JPAs) with proficiency. On at least two occasions (chip processing and casting operations) when the procedures or JPAs were flawed, the operators quickly noted the problems, stopped and then informed their supervisor. The supervisor then appropriately contacted the Shift Manager. The Shift Manager and the supervisor jointly agreed on a solution to obtain a safe shutdown along with processing a procedure modification request to correct the problem. The operators and supervisors for both the casting operations and the knockout/shape-carbon cleaning were also cognizant of safety issues concerning radcon, NCS and worker safety.

The leak check of the casting furnace was a further demonstration of the knowledge shown by a casting operator. The surveillance and the leak check were performed without any difficulty. During this surveillance the operator was also questioned concerning the system, safety aspects of the casting operation and the parameters within which it could operate. The operator was able to answer all questions demonstrating a good level of understanding.

Several Plan of Day (POD) meetings, shift turnovers, pre-job briefs and crew briefs were attended. Operations Managers, Shift Managers and supervisors conducted these quickly and efficiently, covering important work that was proceeding and any safety and health implications. These briefings, as a whole, were effective in maintaining consistent work control and providing up to date information to all individuals in the facilities on the condition of the facility and its associated subsystems.

Pre-job briefs varied greatly between different evolutions and supervisors. This was mainly due to the type of procedure compliance that was used (i.e. reader/worker procedure or the use of JPAs). The Special Nuclear Material transfer operations pre-job brief was very detailed with many questions to the operators though this was a fairly simple operation. The casting operation brief was more general without many questions to the operators. Casting is the much more complex operation. The casting evolution was accomplished with JPAs.

The knowledge of the operators and supervisors as demonstrated by the drills conducted during the ORR was adequate. A full participation exercise was conducted in March and observed by several ORR team members. This drill involved the rescue of an injured and contaminated worker. The Shift Manager was very knowledgeable of facility equipment and

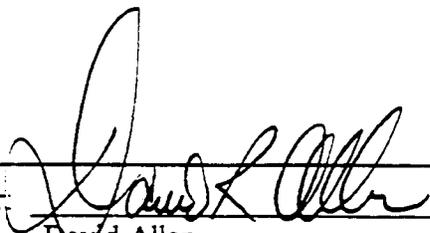
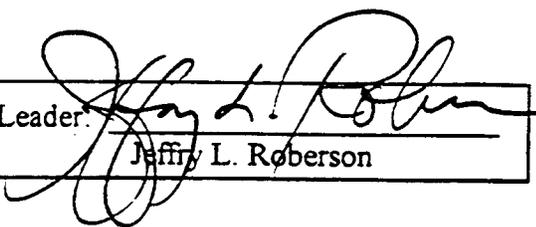
**ORR ASSESSMENT FORMS**  
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operating conditions, however, there was some confusion in the Shift Manager's office with the multiple and sometimes conflicting information streams. At one point the STA left the Shift Manager's office to join the Incident Commander outside the facility.

Conclusion: The Criteria for this objective have been met.

Issue(s):

- None

Inspector:  David Allen	Team Leader:  Jeffrey L. Roberson
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## ORR ASSESSMENT FORMS

### Operations

<b>FUNCTIONAL AREA: OP</b>	<b>OBJECTIVE 2, REV. 0 DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A routine drill program, including program records, has been established and implemented. (CORE REQUIREMENT #9)

Criteria

An effective routine operations drill program has been established. Drills and exercises are conducted and an adequate response capability is demonstrated to exist. (5480.19, Ch. VI; 5480.20A, Ch. I; S/RID FA Training and Qualification (TQ) LMES ID #9688)

Approach

**Record Review:** Review the drill records that describe the routine drills that have been conducted and review the results from each. Determine if the drill scenarios were adequate and if the necessary number of drills have been conducted to fully test personnel, procedures and equipment in a broad range of facility operations.

**Interviews:** Interview personnel responsible for the development and conduct of drills to evaluate their understanding of the purpose and their ability to execute the drill program.

**Shift Performance:** Observe operational drills to verify they test operator and maintenance personnel with realistic and challenging scenarios. Evaluate whether an adequate response capability exists.

Records Reviewed:

- Y/MA-7366, Enriched Uranium Operations Drill Program Plan, February 1998
- Completed drill packages (57)
- Drill Guide 37-0009, High Capacity Evaporator Pump Diaphragm Failure
- Drill Guide 37-0018, High Capacity Evaporator Fume –Off Reaction
- Drill Guide 37-0024, Chemical Reaction Sampling Station
- Revised Drill Schedule for First Quarter 1998
- Drill Guide 37-0038, Billet Salt Bath Temperature Alarm, Building 9215 Owing
- Drill Guide 37-0005, Chip Fire During Casting
- Y57-37-65-029, Alarm Response Procedure – Casting Furnace Alarms – West Line
- JPA-EW-C-CAST-W0002, E-Wing Casting West Furnace Manual Operation, Revision 3.2
- Roster of Qualified Operators detailing drill participation, dated 5/5/98

## ORR ASSESSMENT FORMS

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- List of Trained Drill Monitors, dated 4/28/98
- Summary of the Drill Program for Second Quarter Fiscal Year 1998, Barrett to Jessen letter dated April 10, 1998
- Goals for Third Quarter, Barrett to Jessen letter dated April 10, 1998
- Completed Drill Package, High Capacity Evaporator Fume Off, 12/9/97
- Y37xx, Conduct of Drills DRAFT

#### Interviews Conducted:

- Drill Training Manager
- Operations Drill Coordinator
- Drill Writer (2)
- Facility Drill Coordinator – Building 9212

#### Shift Performance Evolution:

- Leak in High Capacity Evaporator, Operational Drill
- Casting Furnace Alarms – Water in Furnace, Operational Drill
- Over Temperature in the Billet Salt Bath, Operational Drill

#### Discussion of Results:

Record Review: Drill records that describe the routine drills that have been conducted were reviewed. Operational drills commenced in November 1997 and since this time to the present a total of 54 operational drills were completed prior to the start of the DOE ORR. This represents an approximate achievement rate of 80% of the drills scheduled for the period. Examples of the scenarios performed include numerous accident types discussed in the BIO. These include chip fires in both 9212 and 9215, loss of ventilation and confinement, injured and contaminated personnel, chemical reactions, hazardous and radiological spills. Each of the scenarios included expected actions and objectives that typically would be construed as alarm response drills. Consequently, termination points for the drill typically precluded the effective demonstration of the analysis of abnormal plant conditions and plant control to maintain the safety basis by the Shift Technical Advisor and the Shift Manager. Weaknesses observed in the approved scenarios included excessive and confusing simulation. Many scenarios are not supported by an approved alarm response procedure nor abnormal operating procedure. None of the scenarios required actual operator actions on process or support systems. Likewise, external notifications were almost exclusively simulated.

## ORR ASSESSMENT FORMS

### Operations

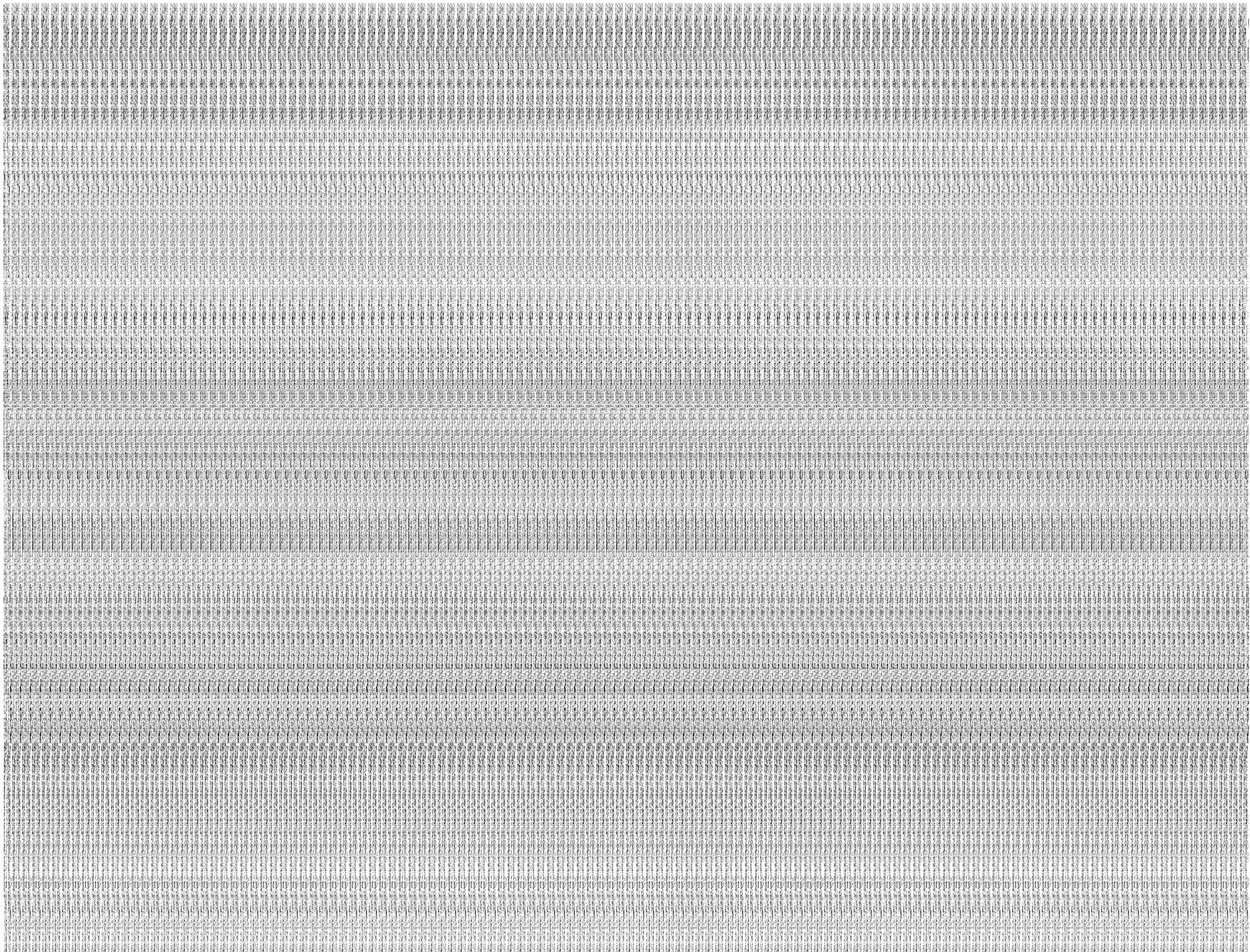
Completed drill evaluation packages were reviewed. Each drill evaluation package provided evidence that the drill program includes post drill critiques. None of the packages reviewed indicated the response failed to meet the objectives of the drill. This fact indicates, that the self-evaluation and critique process, which occurs following the conduct of drills, is not sufficiently aggressive in evaluating all aspects of drill performance for continued improvement. Actions identified for some improvements in the conduct of the drill and improvements in the participant's response to the events are evident in the post-drill evaluations. Some of these actions are entered into the ESAMS and are tracked for EUO completion. The system to review, accept or reject, and ensure completion of accepted actions is informal. It was not evident that line management has accepted ownership with respect to identifying and ensuring all lessons are learned from conduct of these drills. Actions that are entered into ESAMS are not sufficiently linked to the drill evaluation. This precludes the opportunity to ensure all accepted actions will be completed.

Internal correspondence initiated by the drill coordinator to line management indicates improvements in the drill program have recently occurred and attributed this to the involvement of the 9212 Operations Manager's Deputy with the drill program. However, the training department, instead of line management, has assumed the lead in establishing the goals for the program. Line management has not assessed the drill requirements for personnel as part of their readiness to operate the Phase A1 processes. As a result, numerous operators have not been involved with operational drills nor required to demonstrate their capability under abnormal conditions.

Interviews: Personnel responsible for the development and conduct of drills were interviewed to evaluate their understanding of the purpose and their ability to execute the drill program. Each person was sufficiently knowledgeable with regard to these issues. Each person displayed a responsive and well intentioned demeanor in the conduct of their duties. The willingness and desire to achieve continued improvement in the operational drill program was very evident. Personnel interviewed considered that the operational drill program is not fully supported by line management due to issues of priority.

Shift Performance: Three operational drills were observed to verify they test operator and maintenance personnel with realistic and challenging scenarios.

A simulated water leak in the high capacity evaporator was observed. At the request of the ORR Team, the scenario initially presented to the ORR team was modified to include a valve anomaly. An additional request to run the drill during high capacity evaporator operations was not supported by the facility. Weaknesses were noted during the pre-brief, conduct and critique of the drill. The initial conditions, as briefed to the supervisor and Shift Manager were inadequate,



## ORR ASSESSMENT FORMS

### Operations

in that neither were willing to commence the drill. The scenario presented an anomalous condition that in an actual event would require a technical evaluation prior to proceeding with the procedure. This confused the supervisor and an additional prompt was required by the drill team to commence the drill. All actions associated with the conduct of the drill and the response by the operators were simulated. Analysis and control of the abnormal plant condition by the Shift Manager and Shift Technical Advisor was not part of the drill. The post-drill critique failed to critically assess the operator's action. An example of this was the fact that the operator was expected to shut down the evaporator per the referenced operating procedure. This action was not demonstrated by the operator nor critiqued using the referenced procedure. Though the facility considered the drill to be satisfactory, the drill was evaluated by the ORR team to be of marginal training benefit.

A simulated Billet Salt Bath high temperature alarm drill was observed. The supervisor conducted an adequate pre-job brief for the machinist assigned to operate the salt bath. Some weaknesses in the performance of the drill were observed. The machinist was observed to check off a Prerequisite Action step of the Billet Salt Bath Operation procedure without completing the required action of ensuring the currency of certification of the Billet Basket Lifting Fixture. When questioned on how he satisfied the step he had checked off, the machinist attempted to locate the certification sticker, but could not without help from his supervisor. The machinist completed the appropriate actions upon actuation of the Salt Bath High Temperature Alarm during the drill. It was noted that the machinist failed to review the Alarm Response Procedure, Y57-37-20-004. Subsequent questioning of the machinist indicated that he was not aware that an Alarm Response Procedure had been written for the alarm. He did indicate that he had been trained on the appropriate action to take should the alarm actuate with a billet in the salt bath. The supervisor provided adequate direction to the machinist and did review the Alarm Response Procedure without the operator. The facility is evaluating the need to provide additional direction in the Alarm Response Procedure to direct taking local control of the temperature controller to maintain salt bath temperature, in situations where the temperature controller caused the high temperature alarm. The drill was evaluated by the ORR team to be of marginal training benefit, although the facility evaluated the drill as satisfactory.

A simulated water leak in a casting furnace was observed. At the request of the ORR Team, the scenario initially presented to the ORR team was modified. These modifications included: 1) a communications radio anomaly requiring the use of an alternate communications circuit; 2) actual operating conditions with respect to furnace vacuum and power conditions; and 3) actions requiring the demonstration by the shift control element for analysis and control of the plant. Numerous weaknesses were noted during the pre-brief, conduct and critique of the drill. Several initial conditions conflicted with the stated scenario. This required changes to the scenario to be made during the pre-drill brief. The JPA needed by the operator to initiate the drill was not

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identified nor included in the preparations for the drill. Additional simulations with respect to the JPA actions were needed following the commencement of the drill. The NCSO was pre-alerted to the drill. Entry and exit conditions for the drill were not adequately identified as a part of the scenario. Operators and supervisors routinely used first names in their communications. The pre-drill brief failed to adequately address the expected operator actions to ensure the criticality safety aspects of the drill. Drill monitors did not fully monitor all operators telephone communications. The supervisor did not inform the Shift Manager of the radio failure nor did he seek a replacement. Radiological controls personnel were observed to enter the affected area without first consulting with the supervisor. The supervisor was unaware of their presence and their actions. Receipt of an indication of a trip circuit was expected per the alarm response procedure but was not received. None of the participants could state the conditions during which the indication should occur. Public address announcements were not discernable in the E-wing. Guidance from the NCSO reflected the wrong furnace. Drill monitors conducted informal conversations with the drill participants during the drill. The post-drill critique did not adequately discuss the inadequacies involved in the conduct of the drill. The drill was evaluated by the ORR team to be of marginal training benefit.

Conclusion: A routine drill program has been established and implemented. An adequate response to abnormal plant conditions was demonstrated. Significant weaknesses in drill scenarios, conduct and evaluation of the drills were observed and indicate improvements in the conduct of the drills are needed. Programmatic requirements for operators to perform drills should be defined and supported by line management.

Issue(s):

- The routine drill program is immature, lacks appropriate definition for goals and objectives and does not receive full support from line management. (OP2-1)

Inspector: <u>Doug Dearolph</u> Doug Dearolph	Team Leader: <u>Jeffery L. Roberson</u> Jeffery L. Roberson
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**ORR DEFICIENCY FORM**  
Operations

<b>Functional Area:</b> OP	<b>Objective No.:</b> 2	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> OP2-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** The routine drill program is immature, lacks appropriate definition for goals and objectives and does not receive full support from line management.

**REQUIREMENT:** A routine operations drill program, including program records, has been established and implemented.

**REFERENCE(S):** DOE Order 225.1, Core Requirement 9.

**DISCUSSION:** Operational drills commenced in November 1997 and since this time to the present a total of 54 operational drills were completed prior to the start of the DOE ORR. This represent approximately achievement rate of 80% of the drills scheduled for the period. Each of the scenarios included expected actions and objectives that typically would be construed as alarm response drills. Weaknesses observed in the approved scenarios included excessive and confusing simulation. Many scenarios are not supported by an approved alarm response procedure or abnormal operating procedure. None of the scenarios required actual operator actions on process or support systems. Each of the scenarios included expected actions and objectives that typically would be construed as alarm response drills. Consequently, termination points for the drill typically precluded the effective demonstration of the analysis of abnormal plant conditions and plant control to maintain the safety basis by the Shift Technical Advisor and the Shift Manager. The system to review, accepts or reject, and ensure completion of accepted actions is informal. It was not evident the line management has accepted ownership with respect to identifying and ensuring all lessons are learned from conduct of these drills/exercises. Line management has not defined programmatic goals and objectives for the drill program nor stated the requirements for operators to demonstrate readiness to operate the Phase A1 processes. As a result numerous operators have not been involved with operational drills nor required to demonstrate their capability to operate under abnormal conditions. Numerous weaknesses were noted during the pre-brief, conduct and critique of the observed drills.

**ORR DEFICIENCY FORM**  
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**CONCLUSION:** Significant weaknesses in drill scenarios, conduct and evaluation of the drills were observed and indicate improvements in the conduct of the drills are needed. Programmatic requirements for operators to perform drills should be defined and supported by line management. Adequate response to abnormal conditions were observed, hence this is a post start finding.

Inspector: <u><i>Doug Dearolph</i></u> Doug Dearolph	Team Leader: <u><i>Jeffry Roberson</i></u> Jeffry Roberson
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- Training Histories for FP incident commanders and inspectors
- Exams and study guides for various health safety and facility specific classes for incident commanders and inspectors.
- RWP 97-A-0315 Used by E-Wing Casting Operators in Knock Out Operation
- JPA-EW-C-SACL-0001 E-Wing Casting-Stack Assembly
- JPA-EW-C-SACL-0002 E-Wing Casting-Crucible Loading
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- JPA-EW-C-C&C-0001 E-Wing Casting-Graphite Cleaning
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- Y50-37-98-659 Receipt and Shipment of Special Nuclear Materials (C-1 Receiving Area)
- Y-57-37-65-029 Casting Furnace Alarms-West Line
- Building 9212 CSA/CSR Surveillance Schedule
- Building 9212 OSR Surveillance Schedule
- CL-EU-2637-008 Return To Service Checklist
- 9212 Deficiency Database Open Report
- SO-9212-98-002 Work Control in 9212

Interviews Conducted:

- 9212 E-Wing Casting Operators (5)
- 9212 Operations Manager
- 9215 Operations Manager
- 9212 Shift Technical Advisors(2)
- 9212 E-Wing Casting Supervisors(2)
- 9212 Chemical Production Manager
- 9212 Shift Technical Advisor (2)
- 9212 Shift Manager (3)
- 9212 Chemical Recovery Operators 9818 Qualified (2)
- 9212 Chemical Recovery Operators Waste Handler (2)
- 9212 Chemical Recovery Operators B-1 Lab Qualified (2)

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- 9212 Production Supervisor
- 9212 Day Shift Supervisor
- 9212 Chemical Production Manager

#### Shift Performance Evolution:

- 9212 Plan of the Day Meetings
- 9212 Shift Turnovers
- Pre-job briefs
- HC/O-C-7101 High Capacity Evaporator Operation and Turnover
- High Capacity Evaporator Process Condensate Monitor Test
- Solution Transfer into the F-501 Tanks
- Code 80 Glovebox Operation
- Use of Laboratory Hoods
- B-1 Lab, Standard PPM Analysis
- E-Wing casting operations
- E-Wing Chip Processing
- E-Wing Knockout Operations
- Chem ops. solution transfer
- Chem ops. solution receiving
- E-Wing carbon cleaning
- E-Wing shape cleaning
- 9212 Crew Briefs
- Limited External Exercise, 9212 Contaminated Injured Worker
- Leak in High Capacity Evaporator, Operational Drill
- Casting Furnace Alarms-Water in Furnace, Operational Drill
- Over Temperature in the Billet Salt Bath, Operational Drill
- Drill Pre-Briefs and Post Critiques

#### Discussion of Results:

Record Review: Documents reviewed for 9212 and 9215 personnel indicate that management and operators have received sufficient training on safety, health and environmental protection areas. Much of this training is required such as Radiological Worker II, NCS For Y-12 Fissionable Material Worker, Nuclear Criticality Safety fundamentals, General Employee Training, etc.

The environmental protection training required for all employees are Storm Water Pollution Prevention and a few excerpts included in the GET. Several other 9212 and 9215 personnel have been trained on spill response and the 40 hour OSHA course on hazardous materials.

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Interviews: Operations Managers and Shift Managers have an excellent knowledge of the safety impacts their facility could have on the environment, safety of the workers and the public. They understood the concept of the safety envelope for their facility. The personnel interviewed understood the programs and formal systems available that promote the identification and promulgation of safety concerns. Employee's are provided the opportunity to report safety issues. Generally operators and operational support personnel have a positive attitude concerning their ability to operate safely and their ability to be heard by management about other safety issues.

Shift Performance: 9212 and 9215 personnel were observed during performance of several evolutions, drills, and facility walkdowns and inspections. During the casting evolution the supervisor and the Shift Manager were aware of late OSR changes that identified a need for an extra hold point and an additional check sheet. These were conducted with rigor and personnel involved understood the concerns with the furnace alarms and their ability to safely shut down the furnace. On several occasions radcon practices were reinforced to visitors and workers.

A question did arise during the knock out operation evolution in E-wing, Building 9212. It was observed that one glove near one end of the knock out process line had been found damaged or cut. The glove had been taped and tied off rendering it unusable. Due to the nature of the operation, and the design of the process line, the glove was not required for operation. The process near the location of the glove was only a pass-through between the knock out station and the shape cleaning station. The parts could be moved with only a single glove, however, the appropriateness of not changing out a damaged glove was questioned. The operations staff indicated that the process line was considered to be composed of "ventilated gloveboxes" which are considered to be more like hoods than normal gloveboxes. The decision to continue operations after the glove had been tied off and taped was apparently made based upon the operations staff process knowledge and traditional accepted practice at the facility.

Applicable procedures (Y70-111, *Glovebox Surveillance*, and 50-37-65-024, *Gloveboxes*, which was placed on administrative hold on 2/13/98, pending revision in accordance with Performance Based Review requirements) indicated that gloves should be inspected before use. However, the expected response to a defective glove was not clearly described. Similar observations were also identified in reviewing the procedures for the Code 80 Glovebox evolution and the Room 1022 Dry Air Glovebox. Furthermore, the E-Wing operations staff did not believe that these "ventilated gloveboxes" required the same level of rigor as normal gloveboxes with regard to glove changeouts.

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<b>FUNCTIONAL AREA: OP</b>	<b>OBJECTIVE 4, REV. 0 DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** There are sufficient numbers of qualified operations to support safe operations. The technical and management qualifications of contractor personnel responsible for facility operations are adequate. **(CORE REQUIREMENTS #13 and #19)**

Criteria

Minimum staffing requirements have been established for operations personnel, supervisors, shift technical advisors, and managers. These staffing levels are met and are consistent with the safety analysis report requirements and assumptions. (Facility Safety Basis Documentation)

Sufficient numbers of qualified operations personnel, supervisors, shift technical advisors, and managers are available to carry out facility operations. Staffing levels are consistent with the technical safety requirements. (Facility Safety Basis Documentation)

Entry-level requirements are established for each operation position and include as applicable the minimum education, experience, technical, and medical requirements. (5480.20A, S/RID FA Training and Qualification (TQ) LMES ID #9697, #9698)

Approach

Record Review: Review EUO Phase A BIO, OSRs, and CSRs for staffing requirements. Compare with personnel records to assess the ability of the facility to field the required personnel.

Review the procedures or policies which describe the personnel selection and entry-level requirements to ensure they address the minimum physical attributes a trainee must possess, as well as the minimum educational, technical, and experience requirements necessary for the employee to meet job requirements.

Interviews: Interview operators and supervisors to ensure they understand the minimum staffing requirements for all phases of facility operations.

Shift Performance: Assess staffing levels while observing drills and routine evolutions to determine if they are adequate and satisfy administrative and safety basis requirements.

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#### Records Reviewed:

- Y/MA-7254, The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex
- Y/MA-7255 The Operational Safety Requirements For Building 9212 Enriched Uranium Operations Complex(U)
- Y/MA-7290, The Basis for Interim Operation for Building 9215 Enriched Uranium Operation Complex
- YMA-7291 The Operational Safety Requirements For The 9215 Complex Enriched Uranium Operations

#### Interviews Conducted:

- 9212 E-Wing Casting Operators (5)
- 9212 Operations Manager
- 9215 Operations Manager
- 9212 E-Wing Casting Supervisors (2)
- 9212 Shift Technical Advisor (2)
- 9212 Shift Manager (3)
- 9212 Chemical Recovery Operators 9818 Qualified (2)
- 9212 Chemical Recovery Operators Waste Handler (2)
- 9212 Chemical Recovery Operators B-1 Lab Qualified (2)
- 9212 Day Shift Supervisor

#### Shift Performance Evolution:

- 9215 Shift Turnovers
- 9212 Shift Turnovers
- Pre-job briefs
- HC/O-C-7101 High Capacity Evaporator Operation and Turnover
- Solution Transfer into the F-501 Tanks
- Code 80 Glovebox Operation
- B-1 Lab, Standard PPM Analysis
- Simulated Leak in High Capacity Evaporator Drill
- Simulated Casting Furnace Alarms – Water in Furnace Drill
- Simulated Over-Temperature in the Billet Salt Bath Drill
- E-Wing casting operations

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#### Discussion of Results:

**Record Review:** The listed documents were reviewed to assess the minimum staffing requirements for 9212 and 9215. The minimum staffing requirements for 9215 are specified in the OSR Y/MA-7291. There is no minimum staffing level identified for safety in the 9215 material access area. 9215 alarms are not required to be continuously monitored by operations personnel to assure the performance of safety functions. Fire and criticality alarms are annunciated at continuously monitored locations, which shall be manned by at least one person while in Operation and Warm Shutdown modes. Both of these alarms are monitored on a 24 hour basis in the Plant Shift Superintendent (PSS) office. The Fire Department is required to maintain a minimum of eight on-shift emergency response personnel. Less than the minimum number of required response personnel is allowed for up to 90 minutes for responses to situations such as medical emergencies and mutual aid response.

Minimum staffing levels for 9212, are specified in OSR Y/MA-7255. The minimum staffing level for 9212 is one Shift Manager or one front-line supervisor present when a process area requiring OSR required safety systems is operating. A Shift Technical Advisor shall be present as determined by the Operations Manager. The dry vacuum systems requires one person continuously manning connected vacuum hoses when the system is running to prevent vacuuming liquid into the system. In B-1 wing, D-1 wing, and Headhouse, the dry vacuum system requires one person at the final trap when the system is operating to prevent trap overflow. The Fire Department shall also maintain a minimum of eight on-shift emergency response personnel as in 9215.

A review of the procedures describing the personnel selection and entry-level requirements confirmed that required staff personnel meet the minimum physical and the minimum educational, technical, and experience requirements necessary for the employee to meet job requirements or have an approved exemption.

**Interviews:** Interviews with Shift Managers and Operations Managers revealed they were aware of the OSR requirements for minimum staffing for 9215 and 9212. The personnel that are assigned to various shifts who operate safety systems have adequate knowledge and training to operate these systems safely. The PSS and the Fire Department meet their minimum staffing levels and are considered adequately trained.

**Shift Performance:** The evolutions, drills and the limited external exercise demonstrated that the facility has knowledgeable and qualified staff to man safety systems and to respond to emergencies. The requirement for the Shift Manager to review and approve the commencement

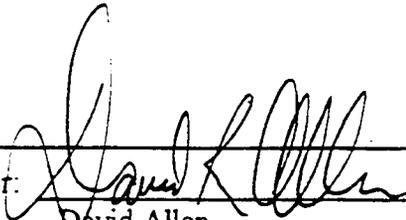
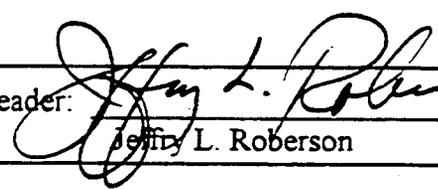
**ORR ASSESSMENT FORMS**  
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of any activity ensures that the minimum staffing requirements are met. The 9212 facility has staff to meet the minimum staffing level. In almost all areas the number of staff qualified is at or close to the minimum staffing level.

Conclusion: The criteria for this objective have been met.

Issue(s):

- None

Inspector:  David Allen	Team Leader:  Jeffrey L. Roberson
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<b>FUNCTIONAL AREA: OP</b>	<b>OBJECTIVE 5, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b>	<b>NO X</b>

**OBJECTIVE:** The implementation status for DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities" and associated S/RIDs is adequate for operations. Non-compliance issues have been addressed. (**CORE REQUIREMENT #12**)

Criteria

Program requirements have been developed and issued for the topics addressed in the order. (5480.19, S/RID FA Operations (OP) LMES ID #5954)

Operations personnel demonstrate the principles of the conduct of operations requirements during the shift performance period. Adequate performance will be demonstrated in all areas of the order, including:

- Shift routines and operating practices (control area activities, logkeeping, shift turnover, communications),
- System control (lockouts and tagouts, independent verification, control of equipment, control of plant systems via status boards, system labeling, etc.),
- Procedures and training (control of on-shift training, procedure use, operator aids, required reading, timely orders to operators), and
- Housekeeping including adequate control of hazardous materials, transient combustibles, and ignition sources. (5480.19, para 4, S/RID FA Operations (OP) LMES ID #5954)

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

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Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

#### Approach

**Record Review:** Review recently completed operations logs, shift turnover documents, and other plant records of note to assess compliance with conduct of operations principles.

Review the order compliance package for DOE 5480.19, including the applicable CSA, exemptions and compensatory measures.

**Interviews:** Interview operators and supervisors to assess their understanding of the conduct of operations principles in the performance of their duties.

If this order is not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as current compensatory measures in the interim.

**Shift Performance:** While observing evolutions and drill response, determine if the facility is effectively implementing the conduct of operations requirements. Attend shift turnovers, incident critiques, management reviews, and pre-job briefings and observe control room activities, operator rounds, panel walk downs, procedure use, communications, and response to alarms, control of system status, and lockout/tagout activities.

Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

#### Records Reviewed:

- Y-12 Programmatic Assessment Report for DOE Order 5480.19
- LMES/Y-12-DOE-5480.19-CSA-162D approved 10/1/97
- Y-12 Standards/Requirements Identification Document (SRID) for DOE Order 5480.19
- Y/MA-7309, Enriched Uranium Operations (EUO) MENTOR PROGRAM
- Procedure Y52-53-SO-035, Surveillance and Testing of the Criticality Accident Alarm System(s) for Buildings 9212, 9215, 9995 and 9998

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### Operations

- Roundsheet RS-EU-9212-003, Outside Operator Roundsheet
- Roundsheet RS-EU-9212-004, C-Wing Operator Roundsheet
- Roundsheet RS-EU-9212-005, Special Processing Operator Roundsheet
- Roundsheet RS-EU-9212-006, E-Wing Casting Operator Roundsheet
- Roundsheet RS-EU-9212-008, 9212, Utility Operator Roundsheet
- Roundsheet RS-EU-9212-009, E-Wing Vacuum Pumps Roundsheet
- Roundsheet RS-EU-9212-010, E-Wing Chip Processing & Pack Ship Operator Roundsheet
- Checklist CL-EU-9212-064, Criticality Accident Alarm System (CAAS) Daily Visual Checklist
- 9215 Shift Manager Logbook
- 9215 Shift Manager System Status Files
- 9215 Functional Manager System Status Files
- 9215 Plan of the Day
- 9215 Standing Orders
- 9212 System Status Files
- 9212 OSR Surveillance Files
- 9215 Required Reading Notebook
- 9215 List of Process Qualified Personnel
- 9215 Operator Aid Binder
- 9212 System and Equipment Status Boards
- 9215 System and Equipment Status Boards
- EUO-SA-CE/W-001, E-Wing Casting (East) Hydraulics System Alignment Checklist
- EUO-SA-CE/W-002, E-Wing Casting (West) Hydraulics System Alignment Checklist
- EUO-SA-CE/W-003, E-Wing Casting (East) Furnace Vacuum System Alignment Checklist
- EUO-SA-CE/W-004, E-Wing Casting (West) Furnace Vacuum System Alignment Checklist
- EUO-SA-CE/W-005, E-Wing Casting Filter Tower System Alignment Checklist
- EUO-SA-CE/W-006, E-Wing Casting (East) Closed Loop Cooling Water System Alignment Checklist
- EUO-SA-CE/W-007, E-Wing Casting (West) Closed Loop Cooling Water System Alignment Checklist
- EUO-SA-DAG-0001, Special Processing Dry Air Glovebox (DAG-R-85) Valve Alignment Checklist
- EUO-SA-MF-001, Muffle Furnace System Alignment Checklist
- EUO-SA-PU-001, F-571 Pour-Up Station Alignment Checklist
- EUO-SA-WVS-001, Wet Vacuum System Alignment Checklist
- EUO-SA-WVS-002, WVS Fan Room System Alignment Checklist

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- EUO-SA-98-313, AEC C-Wing Scrubber System Alignment Checklist
- EUO-SA-WVS-001, Wet Vacuum System Alignment Checklist
- EUO-SA-9212-002, E-Wing Metal Pickling System

#### Interviews Conducted:

- 9215 Lockout/Tagout Coordinator
- 9215 Shift Manager (2)
- 9215 Shift Technical Advisor
- 9215 Functional Manager
- 9215 Production Manager
- 9215 Production Supervisor (2)
- 9215 Dimensional Inspection Supervisor
- 9215 Dimensional Inspectors (2)
- 9215 Machinists (6)
- 9215 Machine Cleaners (2)
- 9215 Material Clerk
- 9215 Material Controller
- 9212 Chemical Production Manager
- 9212 Shift Technical Advisor (2)
- 9212 Shift Manager (2)
- 9212 Chemical Recovery Operators 9818 Qualified (2)
- 9212 Chemical Recovery Operators Waste Handler (2)
- 9212 Chemical Recovery Operators B-1 Lab Qualified (2)
- 9212 Production Supervisor
- 9212 Day Shift Supervisor
- 9212 Chemical Production Manager

#### Shift Performance Evolution:

- 9215 Shift Manager pre-shift briefings
- Startup and operation of Rolling Mill support equipment
- Transformation of a billet into a rolled plate
- Billet Salt Bath pre-operational checks
- Billet Salt Bath pre-operational checks
- Salt Bath Annealing of a rolled plate
- Gantry Crane Control System Startup
- Gantry Crane Operations
- 9212 Plan of the Day Meetings

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- 9212 Shift Turnovers
- Pre-job briefs
- HC/O-C-7101 High Capacity Evaporator Operation and Turnover
- High Capacity Evaporator Process Condensate Monitor Test
- Solution Transfer into the F-501 Tanks
- Code 80 Glovebox Operation
- Use of Laboratory Hoods
- B-1 Lab, Standard PPM Analysis
- Limited External Exercise, 9212 Contaminated Injured Worker
- Leak in High Capacity Evaporator, Operational Drill
- Casting Furnace Alarms – Water in Furnace, Operational Drill
- Over Temperature in the Billet Salt Bath, Operational Drill
- Drill Pre-Briefs and Post Critiques

#### Discussion of Results:

Record Review: Completed roundsheets were reviewed. The rounds were performed at the specified frequency and out of specification readings appropriately circled in red and reported to supervision. Documentation of corrective action taken was found to be adequate for most red circled readings, as the condition was the result of equipment being secured, out of service, or known and documented deficient. Supervisory reviews were generally documented on the roundsheet. It was noted that the daily checks performed in Building 9212 for the portable Criticality Accident Alarm System (CAAS) stations had periodic checks marked 'U' for Unsatisfactory. These checks involved inspecting each CAAS unit for 'No obvious physical damage'. An Unsatisfactory condition required notification of the Supervisor or Plant Shift Superintendent. This notification was typically not documented in the appropriate block on the checklist, or the block was inappropriately marked 'N/A'. An additional condition was checked indicating a satisfactory condition for a permanent CAAS station, even though the condition checked was only applicable to portable stations.

Completed surveillance procedures were reviewed for facility safety systems. Procedure Y52-53-SO-035, *Surveillance and Testing of the Criticality Accident Alarm System(s) For Buildings 9212, 9215, 9995 and 9998*, is used to satisfy OSR Surveillance Requirements for Building 9212. The procedure lists Drawing Zone Numbers to be checked during the evacuation signal audibility/visibility test. The procedure approved on 03/16/98 did not accurately identify the Zones to be checked during the test. A pen and ink change was made to the procedure to correct this deficiency and to add additional zones to be checked during performance of the quarterly surveillance. There is no indication that the pen and ink changes made to the surveillance

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### Operations

procedure were made in accordance with the EUO Technical Procedure change process or received required technical reviews and approvals. Additional discussion associated with the adequacy of surveillance procedures can be found under Objective SE2.

Limiting Condition for Operation (LCO) 3.4.3, Stack 48 Exhaust System, requires an annual calibration of the Stack 48 HEPA filter differential pressure instruments. Records associated with the annual calibration of PDIS-2 were reviewed and found to include a line-out and replacement of the specified acceptance criteria. This unauthorized change to the specified acceptance criteria had not been identified by the Shift Manager or the Shift Technical Advisor during the review of the completed datasheet.

LCO 3.4.3, Stack 48 Exhaust System, requires a periodic integrity test of the Stack 48 HEPA filters. Records generated during performance of the integrity surveillance test were reviewed and found to have been filled out incorrectly. The datasheets specified that the upstream and downstream concentration be recorded for both the data run and the verification run. The actual data recorded was recorded in percentages in lieu of the required concentrations. This deficiency was not noted during the review of the surveillance test data.

LCO 3.2.1, Fire Protection System, requires a periodic test of Building 9215 wet pipe sprinkler system. Records generated during a recent performance of this Surveillance Test were reviewed. It was noted that some of the steps associated with testing water flow switches were not performed. The procedure identified these steps as part of the acceptance criteria for the OSR requirement. The need to revise the surveillance procedure acceptance criteria prior to signing off the test as satisfactory was not enforced by operations personnel.

LCO 3.2.1, Criticality Accident Alarm System, requires periodic Functional Testing of the 9212 Complex CAAS station radiation detector pairs. Procedure Y52-53-SO-035, *Surveillance and Testing of the Criticality Accident Alarm System(s) For Buildings 9212, 9215, 9995 and 9998*, is used to satisfy this OSR Surveillance Requirements for Building 9212. This procedure was performed on 5/9/98. Data required to be recorded to aid in confirming CAAS operability was not recorded by the performing organization. The surveillance procedure data was reviewed and accepted by Facility Operations without noting that the data was incomplete.

System Status Files maintained by the Shift Manager and by the Production Manager were reviewed. Alignment Checklists were maintained in the files and were reviewed for completeness and compliance with administrative guidance.

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### Operations

It was noted that Building 9212 often implements the checklist as an Appendix to the associated equipment operating procedure. This practice makes it difficult for the supervisor to complete the associated equipment operating procedure Field Preparation check of ensuring that the alignment checklist is current and on file before he operates the equipment. This difficulty is from the fact that many of the Appendix style checklists maintained in the status file are several revisions old. Two examples were noted where Appendix style checklists maintained in the System Status File were not current with the approved version of the associated operating procedure.

System Status controls in Building 9212 failed to capture the use of portable CAAS carts in E-Wing Addition. Portable CAAS Stations 5 and 12 were installed in the E-Wing Addition compensatory measures for a CAAS audibility deficiency during construction of the E-Wing Addition. The System Status File, System Status Board, or Plan of the Day Compensatory Measures listing did not capture the installation of the units. The Shift Manager was aware the portable units were installed and applicable roundsheets required daily visual checks of units to confirm continued operability. It was also noted that the System Status Files for support systems in Building 9212 did not contain system alignment checklists.

Y-12 Programmatic Assessment Report for DOE Order 5480.19 was reviewed. Non-compliance issues are documented in LMES/Y-12-DOE-5480.19-CSA-162D approved 10/1/97. The Y-12 Standards/Requirements Identification Document (SRID) for DOE Order 5480.19 was also reviewed. The approved CSA compensatory measures rely on assigned mentors to provide guidance, coaching, assessment, and safety oversight monitoring. Y/MA-7309, *Enriched Uranium Operations (EUO) MENTOR PROGRAM*, outlines the Mentor Program. The Vice President for Restart Operations makes the final selection of Mentors from the recommended mentor candidates. The Vice President for Restart Operations must also approve removing Mentors from the role of Compensatory Measures when it is determined that conditions are satisfactory for safe, sustained operations without Mentors. This decision is to be concurred by DOE-YSO. Operations activities requiring Strategy III Mentor oversight are identified on the facility Plan of the Day. No deficiencies were noted with the selection of Operations requiring Mentor oversight.

Shift Turnover records were reviewed and found to be adequate.

Interviews: Interviews were conducted with operators, machinists, dimensional inspectors, supervisors, Shift Technical Advisors, Shift Managers, process supervision and Functional Managers. Questions asked gauged the level of knowledge specific to procedure compliance policy, what to do if a procedure can not be performed as written, and how management reinforces this policy. Questions related to the Operator Aid program, lockout/tagout program

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control of equipment and system status, and roles and responsibilities of each person were asked as well as specific conduct of operations requirements related to the performance and adequacy of their procedures. Results of the interviews indicated the personnel felt that their respective training programs had provided sufficient training to allow them to perform their functions safely. Operators and supervisors were familiar with the conduct of operations requirements associated with their jobs. Their attitude was positive and each cited examples of good practices and improved performance achieved through their conduct of operations training.

Shift Managers, Production Managers, and Shift Technical Advisors were interviewed to assess their level of knowledge similar to the operators and supervisors. Additional questioning related to the control of plant operations, evaluation of abnormal events, notification of and response to these conditions, and control of system and equipment status confirmed adequate knowledge of their responsibilities and conduct of operation requirements.

Shift Performance: Pre-job briefs were observed. The assigned supervisor for the tasks led the briefs. A Pre Job checklist was utilized for each of the briefs held. This ensured adequate discussion of the precautions and limitations, preparations, safety hazards and controls, and the sequence of expected events associated with task. Representatives from all the affected organizations were in attendance. A strength observed in Building 9212 was the discussion of possible outcomes of the task. Operators were asked for potential unexpected outcomes associated with the tasks and a discussion of actions to be taken in these situations.

Operators, supervisors, and shift management personnel were observed during several evolutions, surveillance and inspections. In all of the observed operations, personnel were knowledgeable of their responsibilities and completed the actions called for in the procedures or JPAs. On at least two occasions (chip processing and casting operations) when the procedures or JPAs were flawed the operators quickly noted the problems, stopped and then informed their supervisor. The supervisor then appropriately contacted the Shift Manager. The Shift Manager and the supervisor jointly agreed on a solution to obtain a safe shutdown along with processing a procedure modification request (PMR) to correct the problem.

A determination of uranium PPM in Building 9212 was observed using JPA-B1-LAB-0007. This was a mentored evolution. The lab operator demonstrated sufficient knowledge and proficiency with this task. Some weaknesses were noted. The JPA included a requirement from CSR-LAB-018, to ensure "SAMPLE BOTTLES NOT TO EXCEED 150-ml". The lab operator stated that the sample bottles received were 100ml. The actual size was 150 ml. The JPA included a requirement for ensuring the Fluorometer Digital Indicator is within calibration. This is satisfied by either verifying an appropriate reading is displayed on the Fluorometer or by performing a Fluorometer calibration during current shift. The operator indicated the he had

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### Operations

performed the calibration earlier in the shift. An inspection of the operator's log indicated the operator does not routinely log the completion of the calibration. Mentor interaction was observed which directed the operator to complete step 15 of the JPA, placing residue from the platinum dish into a 4-L or less beaker located in the lab hood, before step 14 of the JPA, which was to notify applicable personnel of results. A note-preceding Step 14 allowed step 14 to be performed any time after step 13. Mentor interaction was not necessary.

A receipt and shipment of simulated liquid and solid special nuclear material to the C-1 receiving area was observed. The evolution was performed in accordance with the procedural requirements and the observed conduct of operations was adequate. The assigned operators demonstrated proficiency with the task involved. No weaknesses were observed.

A Code 80 Glovebox Operation which involved the receipt and transfer, opening, sieving, sampling and repackaging of a surrogate Uranium Oxide material was observed. The evolution was performed in accordance with the procedural requirements and conduct of operation was adequate. The assigned operators generally demonstrated proficiency with task involved. Some weaknesses were noted. Scale checks for the scale located inside the glovebox had not been completed as expected by the night shift. The record indicated the weight scale check had been partially performed. Only one page of the two pages on the record documenting this check had been completed. This required the performance of this check as part of the evolution and resulted in a delay of approximately one half-hour. This was a mentored evolution. Mentor intervention was observed twice to correct deficient performance. In one situation, the operator demonstrated an inability to correctly perform arithmetic operations involved with the accountability of material. In the second situation, the operator failed to record calculated accountability information in the appropriate location on the record documents.

Several attempted startups and operation of the High Capacity Evaporator were observed. Each attempt to achieve evaporator operation failed. Two different operating shifts were observed and this included a turnover of the startup procedure from one shift to the other. Personnel performing the procedure were very diligent in ensuring verbatim compliance with the procedural requirements. In the initial attempt, a procedural inadequacy required the suspension of the procedure when the inlet valve to both process holdup condensate tanks were observed to be in the open position. The unexpected condition was not recognized by the first shift personnel. Personnel from the second shift who were verifying the preparations as part of recommencing the procedure observed the condition. The second shift operator realized that this condition would lead to condensate being received to both tanks. Another startup attempt failed

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### Operations

when the B-1 laboratory could not perform the required pH analysis due to chemicals with expired shelf lives. Another attempt failed when the Plant Laboratory also failed to provide an accurate pH determination. Issues associated with Y-12 Laboratories are discussed later in this Objective. Evaporator Operations was a mentored activity.

Some observations were noted during the performance of the evolutions. The unexpected condition of both tank inlet valves was not initially recognized by personnel from the first shift. Upon discovery of the unexpected condition, the operator stopped the procedure and informed the supervisor assigned to the task. Subsequent evaluation and discussion by the operating crew indicated that the operator and supervisor believed the Shift Manager could direct the closure of the valve and the procedure could be recommenced. Once the procedure was suspended, the Mentor assumed the coaching role and provided some incorrect alternatives to the Shift Manager. This included the allowance that the Shift Manager could direct the valve to be closed and the procedure continued, or the procedure could be continued without repositioning the inlet valve and when the sampling and recirculating portion of the procedure was reached the Shift Manager could direct the affected tank be recirculated and sampled. This would ultimately close the inlet valve. Lastly, the Mentor indicated that the Shift Manager could proceed directly to the portion of the procedure for recirculation and sampling to affect closure of the valve and then resume the procedure from where it had been suspended. None of these alternatives would not have met procedure compliance expectation. Discussions with the Production Manager, Functional Manager and the Operations Manager on the operating shift at the scene indicated that there was a prevalent feeling the Shift Manager could simply direct the closure of the valve. Throughout this situation, the Shift Manager recognized this to be a procedure inadequacy, which required a procedure modification to resolve the issue. He steadfastly held to that position and, ultimately, a procedure modification was effected. This was an example where most members of the operations staff exhibited some difficulty in recognizing the proper action to take during procedural problems.

During the resumption of the startup, the activity was proceeding well until a sample of liquid from the evaporator was taken to the B-1 Lab for pH and uranium analysis. In conducting the pH analysis, the DOE Facility Representative observed that the pH buffer solution used to calibrate the pH instrument had expired in February 1997. Upon further review of other chemicals used in the lab, it was discovered that the pH probe fill solution had expired in 1995. This essentially invalidated pH results from the past 3 years. Once the operations personnel realized that they were not able to obtain pH and uranium sample results, they decided to shutdown the evaporator.

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There are three primary concerns related to this issue. First and foremost, the lab technicians continued to use chemicals, which had expired more than a year ago. Second, in October 1997, a DOE Facility Representative requested lab personnel to remove old chemicals from the B-1 lab because some were discovered to have expired in 1989. Therefore, lab personnel removed those chemicals; however, they eventually replaced them with another stock of expired chemicals. The third concern is that lab technicians, supervisors, and mentors were aware of the expired chemicals but a conscious decision was made to continue using them until new chemicals could be procured. This indicates a failure on the part of the supervisors and mentors to realize that the use of expired chemicals invalidated the results of analyses performed in that particular lab.

The final evaporator startup attempt was also stopped because the operators were unable to obtain proper sample results from the lab. Investigation into reasons for this suspension determined that the Analytical Services Organization laboratory personnel had utilized a type of pH probe that was reportedly incompatible for the condensate solution. A management review of the causes for the erroneous sample result was conducted on the following day. The analysis was eventually performed using a different pH meter and probe and the results were reported to EUO.

A process condensate tank transfer was observed. The evolution proceeded as required by the procedure. Conduct of operations were adequate. Some weaknesses were observed. The procedure required the use of an 'approved' container for the collection of sample flush liquid. When asked why the container used was considered to be approved, the answers varied and the source document referenced did not specifically identify the container which was used. The procedure does not require any material balance calculation or evaluation. This does not promote a disciplined response for the detection and mitigation of an inadvertent transfer or leak condition.

The procedure revision, review and validation process was observed during a change to the High Capacity Evaporator operating procedure. Engineering support personnel demonstrated adequate knowledge of the procedure revision process and actively participated in the field validation process.

Rolling mill operations were observed. These operations include operation of the Billet Salt Bath, startup and operation of the Gantry Crane Control System, startup and operation of the Rolling Mill and Rolling Mill Support Systems, operation of the Plate Salt Bath and Sheet Rinse Station. Machinists were observed questioning supervision about how to satisfy specific requirements of the procedure at the pre-job briefing. The procedures were followed in a step-by-step, in sequence manner. It was noted that periodic checks of rolling mill equipment was not performed during operation of the mill. The sight glass to one of the mill bearings was noted to

## ORR ASSESSMENT FORMS

### Operations

be near full. This condition prevented determining if adequate oil flow existed to the associated bearing. Recent changes to the oil flow control valves resulted in establishing a flow rate of at least ten drops per minute. This flow rate cannot be assured if the sight glass is full. Periodic checks of this equipment while in operation could have identified this condition and corrected it. Additionally, periodic checks of the operating equipment enable identification of potential problems before they affect operation of the equipment.

The machinist operating the gantry crane noted an unexpected indication on the bar code scanner. The machinist immediately notified his supervisor, who obtained direction from the Shift Manager on how to proceed. The section of the procedure where the bar code reader failed to provide the expected indication was a time dependent step with a plate in the salt bath. The Shift Manager authorized continued use of the gantry control system to remove the plate from the salt bath, while having the machinist maintain immediate access to the Emergency Stop button, should the crane not perform as programmed. The control system provided correct commands to the gantry crane and the plate was retrieved from the salt bath. Operations were subsequently suspended when the bar code reader failed to provide a second expected display. The machinist informed the supervisor of the situation. The supervisor obtained direction from the Shift Manager to manual retrieve the plate suspended from the gantry crane and stow it in an approved storage location. The plate was subsequently retrieved and transported to storage.

Working copies of procedures were typically provided to the machinists by their supervisor and had been verified to be current. Field working copies of in use procedures were confirmed to have been verified to be current the Document Management Center.

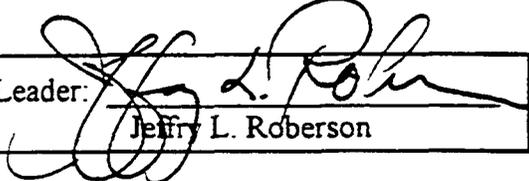
An attempt to startup and operate the Hydroform was observed. The pre-job briefing was observed and was satisfactory. Machinists were observed questioning supervision about how to satisfy specific requirements of the procedure at the pre-job briefing. The procedure was followed in a step-by-step, in sequence manner. Operations were suspended when a Fault Indicator Alarm would not reset. The Alarm Response Procedure was reviewed and specified actions confirmed to have been performed. Subsequent investigation revealed that a hydraulic regulating relief valve was not supplying an acceptable signal to the control system. Troubleshooting and repair of the regulating relief valve were attempted by support organizations, however the problem was not resolved during this review.

Conclusion: The criteria for this objective have not been met.

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Issue(s):

- Y-12 Laboratories, including the B-1 Wing Lab and the Analytical Services Organization's plant lab, did not provide adequate support to operations to ensure proper criticality safety control with operation of the high capacity evaporator. (OP5-1)
- Conduct of Operations practices have not been effective in identifying deficiencies associated with the acceptability of completed surveillance test data. (OP5-2)

Inspector:  Rick Ledtje	Team Leader:  Jeffrey L. Roberson
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## ORR DEFICIENCY FORM

### Operations

<b>Functional Area:</b> OP	<b>Objective No.:</b> 5	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> OP5-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** Y-12 Laboratories, including the B-1 Wing Lab and the Analytical Services Organization's plant lab, did not provide adequate support to operations to ensure proper criticality safety control with operation of the high capacity evaporator.

**REQUIREMENT:** Y-12 Laboratories must be able to perform reliable analyses of various materials to ensure the double contingency principle is maintained for criticality safety.

**REFERENCE(S):** The Basis for Interim Operation for Building 9212 Enriched Uranium Operation Complex, Section 5.6.4 and Control No. 25 in Table 6.

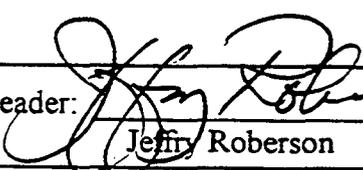
**DISCUSSION:** Operation of the High Capacity Evaporator requires sampling and analysis for pH and uranium concentration in the condensate solutions. Two attempts to operate the evaporator were suspended due to obtaining laboratory pH results which were outside of the required specification. The B-1 laboratory and the Analytical Services Organization's plant lab (ASO lab) were unable to supply a satisfactory pH analysis in a timely manner.

Investigation into reasons for the first suspension determined the B-1 lab was using expired chemicals to perform the pH analysis. The pH buffer solution used for the first analysis had expired in February 1997, and the pH probe-fill solution had expired in 1995. In October 1997, a DOE Facility Representative requested the facility to remove the expired chemicals from the B-1 lab after observing some chemicals had expired in 1989. Lab personnel removed the expired chemicals; however, they eventually replaced them with another stock of expired chemicals. Lab technicians, supervisors, and Mentors were aware of the expired chemicals, but a conscious decision was made to continue using them until new chemicals could be procured. This indicates a failure on the part of the supervisors and mentors to realize that the use of expired chemicals could invalidate the results of analyses performed in that particular lab.

Investigation into reasons for the second suspension determined that the Analytical Services Organization's plant lab (ASO lab) personnel had utilized a type of pH probe that was reportedly incompatible for the condensate solution. The ASO lab was requested to provide the analysis since the B-1 Lab had been placed under administrative hold following the first evaporator operation suspension. A management review of the causes for the erroneous sample result was conducted on the following day. The analysis was eventually performed using a different pH meter and probe and the results were reported to EUO.

**ORR DEFICIENCY FORM**  
Operations

**CONCLUSION:** The B-1 Wing Laboratory and the plant laboratory have not demonstrated their ability to provide reliable sample results in support of continuing operations as required to maintain criticality safety. This is a pre-start finding.

Inspector:  Rick Ledtje	Team Leader:  Jeff Roberson
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**ORR DEFICIENCY FORM**  
Operations

<b>Functional Area:</b> OP	<b>Objective No.:</b> 5	<b>Finding X Observ.</b>	<b>Pre-Start X Post Start</b>	<b>Issue No.:</b> OP5-2 <b>Rev.:</b> 0 <b>Date:</b> 5/21/988:54 am
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**ISSUE:** Conduct of Operations practices have not been effective in identifying deficiencies associated with the acceptability of completed surveillance test data.

**REQUIREMENT:** The Operations Supervisor should ensure that testing appropriately proves equipment operability.

**REFERENCE(S):** DOE Order 5480.19, Chapter VIII, Paragraph C.7.

**DISCUSSION:** Records generated during performance of Operational Safety Requirement Surveillance Requirements were reviewed.

Limiting Condition for Operation (LCO) 3.4.3, Stack 48 Exhaust System, requires an annual calibration of the Stack 48 HEPA filter differential pressure instruments. Records associated with the annual calibration of PDIS-2 were found to include a line-out and replacement of the specified acceptance criteria. This unauthorized change to the specified acceptance criteria had not been identified by the Shift Manager or the Shift Technical Advisor during the review of the completed datasheet.

LCO 3.4.3, Stack 48 Exhaust System, requires a periodic integrity test of the Stack 48 HEPA filters. Records generated during performance of the integrity surveillance test were reviewed and found to have been filled out incorrectly. The datasheets specified that the upstream and downstream concentration be recorded for both the data run and the verification run. The actual data recorded was recorded in percentages in lieu of the required concentrations. This deficiency was not noted during the review of the surveillance test data.

LCO 3.2.1, Fire Protection System, requires a periodic test of Building 9215 wet pipe sprinkler system. Records generated during a recent performance of this surveillance test were reviewed. It was noted that some of the steps associated with testing water flow switches were not performed. The procedure identified these steps as part of the acceptance criteria for the OSR requirement. The need to revise the surveillance procedure acceptance criteria prior to signing off the test as satisfactory was not enforced by operations personnel.

LCO 3.2.1, Criticality Accident Alarm System, requires periodic Functional Testing of the alarm signal for the 9212 Complex CAAS. Procedure Y52-53-SO-035, *Surveillance and Testing of the Criticality Accident Alarm System(s) For Buildings 9212, 9215, 9995 and 9998*, was used to

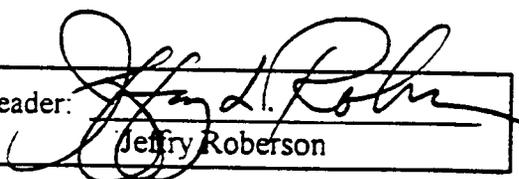
## ORR DEFICIENCY FORM

### Operations

satisfy OSR Surveillance Requirements for Building 9212. The procedure listed Drawing Zone Numbers to be checked during the evacuation signal audibility/visibility test. The procedure approved on 03/16/98 did not accurately identify the Zones to be checked during the test. A pen and ink change was made to the procedure to correct this deficiency and to add additional zones to be checked during performance of the quarterly surveillance. There is no indication that the pen and ink changes made to the surveillance procedure were made in accordance with the EUO Technical Procedure change process or received required technical reviews and approvals. This deficiency was not corrected prior to facility Operations accepting the test data and using it to confirm operability of the Safety System.

LCO 3.2.1, Criticality Accident Alarm System, requires periodic Functional Testing of the 9212 Complex CAAS station radiation detector pairs. Procedure Y52-53-SO-035, *Surveillance and Testing of the Criticality Accident Alarm System(s) For Buildings 9212, 9215, 9995 and 9998*, is used to satisfy this OSR Surveillance Requirements for Building 9212. This procedure was performed on 5/9/98. Data required to be recorded to aid in confirming CAAS operability was not recorded by the performing organization. The surveillance procedure data was reviewed and accepted by Facility Operations without noting that the data was incomplete. The data did not confirm operability of the CAAS detector pair.

**CONCLUSION:** Conduct of Operations practices have not been effective in identifying deficiencies associated with the acceptability of completed surveillance test data. Safety Systems have been returned to service in situations where test data did not confirm operability. This is a pre-start finding.

Inspector:  Rick Ledtje	Team Leader:  Jeffrey Roberson
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## ORR ASSESSMENT FORMS

### Operations

FUNCTIONAL AREA: OP	OBJECTIVE 6, REV. 0 DATE: May 13, 1998	CRITERIA MET	
		YES X	NO

**OBJECTIVE:** Adequate and correct procedures that are available for operating and maintaining the process systems and designated utility systems. Procedures have been revised to reflect modifications to the facility. Procedures, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis included in the safety basis. (CORE REQUIREMENTS 1, 15, and 18)

#### Criteria

Operations, maintenance, and surveillance procedures meet or exceed the requirements of the guidance provided in DOE Order 5480.19, Conduct of Operations. (5480.19, Ch. XVI; 5700.6C, para 9.b.(2)(a); 4330.4B, Ch. II; S/RID FA Management Systems/Technical Procedures (MS/TP) LMES ID #5904)

Operations personnel, including operators, lab support, supervisors, and shift technical advisors understand the importance of procedural compliance and adhere to the policy. (5480.19, Chs I and XVI; S/RID FA Management Systems/Technical Procedures (MS/TP) LMES ID #5904)

Operations, maintenance, and surveillance procedures adequately implement and are consistent with the approved safety basis. BIO and CSR requirements are clearly delineated. Procedures are available to the operators to enable them to monitor and control the safe operation of the plant under normal, abnormal, and emergency conditions in compliance with DOE Order 5480.19 and associated S/RIDs. Procedures are developed, approved, controlled, and changed consistent with the requirements of S/RIDs. (5480.19, Ch. XVI; 5480.22, para 9.; 5480.23; 5700.6C, para 9; S/RIDs FA Management Systems/Technical Procedures (MS/TP) LMES ID #5904)

#### Approach

Record Review: Review validation, walk down, and reviewer comments for recent procedure changes on safety systems. Review procedures for implementation of the safety envelope. Assess the adequacy of the review and approval process for procedures. Review the procedure compliance policy to verify that it conforms to 5480.19 guidance. Assess the currency of procedures and verify current configuration of safety systems is reflected in operations, maintenance and surveillance procedures.

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### Operations

**Interviews:** Interview operators and supervisors to assess their understanding of the temporary procedure change process, and how they verify the latest approved revision of a procedure. Interview support staff personnel responsible for procedure writing and revision to assess their understanding of procedure control requirements, validation process, and implementation of safety requirements. Interview operator and supervisors and assess their understanding of site procedure compliance policy.

**Shift Performance:** While observing evolutions and drill response, determine if the facility procedures are adequate in content, level of detail, and acceptance criteria, and properly implement safety requirements. If temporary procedure changes are necessary, assess the steps taken by an operator and his supervisor in the review and approval process. Verify procedures used by the operators are properly controlled to ensure only the latest revision is used. Verify that operators are following site procedure compliance policy.

#### Records Reviewed:

- Procedure Y10-102, Technical Procedure Process Control
- Procedure Y52-53-SO-035, Surveillance and Testing of the Criticality Accident Alarm System(s) for Buildings 9212, 9215, 9995 and 9998
- Procedure Y50-37-20-002, Billet Salt Bath Operation
- Procedure Y50-37-20-003, Rolling Mill Operation
- Procedure Y57-37-20-004, Billet Salt Bath Temperature Alarm Response
- Procedure Y50-37-10-006, Machining Operations
- Procedure Y50-37-20-055, Operation of the Gantry Control System
- Procedure Y50-37-20-056, Version 25" Hydroform Operation
- Procedure Y57-37-20-002, Version 25" Hydroform Alarms
- Roundsheet RS-EU-9212-003, Outside Operator Roundsheet
- Roundsheet RS-EU-9212-004, C-Wing Operator Roundsheet
- Roundsheet RS-EU-9212-005, Special Processing Operator Roundsheet
- Roundsheet RS-EU-9212-006, E-Wing Casting Operator Roundsheet
- Roundsheet RS-EU-9212-008, 9212 Utility Operator Roundsheet
- Roundsheet RS-EU-9212-009, E-Wing Vacuum Pumps Roundsheet
- Roundsheet RS-EU-9212-010, E-Wing Chip Processing & Pack Ship Operator Roundsheet
- Checklist CL-EU-9212-064, Criticality Accident Alarm System (CAAS) Daily Visual Checklist
- 9212 System Status Files
- 9212 OSR Surveillance Files

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### Operations

- 9212 System and Equipment Status Boards
- 9215 System and Equipment Status Boards
- Roundsheet RS-EU-9212-003, Outside Operator Roundsheet
- Roundsheet RS-EU-9212-004, C-Wing Operator Roundsheet
- Roundsheet RS-EU-9212-005, Special Processing Operator Roundsheet
- Roundsheet RS-EU-9212-006, E-Wing Casting Operator Roundsheet
- Roundsheet RS-EU-9212-008, 9212 Utility Operator Roundsheet
- Roundsheet RS-EU-9212-009, E-Wing Vacuum Pumps Roundsheet
- Roundsheet RS-EU-9212-010, E-Wing Chip Processing & Pack Ship Operator Roundsheet
- Checklist CL-EU-9212-064, Criticality Accident Alarm System (CAAS) Daily Visual Checklist

#### Interviews Conducted:

- 9215 Lockout/Tagout Coordinator
- 9215 Shift Manager (2)
- 9215 Shift Technical Advisor
- 9215 Functional Manager
- 9215 Production Manager
- 9215 Production Supervisor (2)
- 9215 Dimensional Inspection Supervisor
- 9215 Dimensional Inspectors (2)
- 9215 Machinists (6)
- 9215 Machine Cleaners (2)
- 9215 Material Clerk
- 9215 Material Controller
- 9212 Chemical Production Manager
- 9212 Shift Technical Advisor (2)
- 9212 Shift Manager (2)
- 9212 Chemical Recovery Operators 9818 Qualified (2)
- 9212 Chemical Recovery Operators Waste Handler (2)
- 9212 Chemical Recovery Operators B-1 Lab Qualified (2)
- 9212 Production Supervisor
- 9212 Day Shift Supervisor
- 9212 Chemical Production Manager

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#### Shift Performance Evolution:

- 9215 Shift Manager pre-shift briefings
- Startup and operation of Rolling Mill support equipment
- Transformation of a billet into a rolled plate
- Billet Salt Bath pre-operational checks
- Billet Salt Bath pre-operational checks
- Salt Bath Annealing of a rolled plate
- Gantry Crane Control System Startup
- Gantry Crane Operations
- 9212 Plan of the Day Meetings
- 9212 Shift Turnovers
- Pre-job briefs
- HC/O-C-7101 High Capacity Evaporator Operation and Turnover
- High Capacity Evaporator Process Condensate Monitor Test
- Solution Transfer into the F-501 Tanks
- Code 80 Glovebox Operation
- Use of Laboratory Hoods
- B-1 Lab, Standard PPM Analysis
- Limited External Exercise, 9212 Contaminated Injured Worker
- Leak in High Capacity Evaporator, Operational Drill
- Casting Furnace Alarms – Water in Furnace, Operational Drill
- Over Temperature in the Billet Salt Bath, Operational Drill
- Drill Pre-Briefs and Post Critiques

#### Discussion of Results:

Record Review: Procedure History files were reviewed at the Document Control Center. Review validation, walk down, and review process were reviewed. Procedure Modification Request (PMR 98-EU-0577) incorporated Procedure Y50-37-10-006, *Machining Operations*. Issue generated during the LMES ORR for this procedure was confirmed to have been resolved and incorporated in to the approved and issued procedure.

The Enriched Uranium Operations (EUO) Authorization Basis/Criticality Safety Requirement Linking Database was reviewed. The Database is intended to capture the relationships between Authorization Basis and Criticality Safety Requirement (CSR) requirements, documented that implement these requirements, and processes associated with each requirement. Selected Database records were reviewed to confirm that the requirement linked by the Record was adequately implemented in the identified procedures. Deficiencies were noted with the accuracy

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### Operations

of the database, however, requirements captured by the selected records were found to be adequately implemented in facility procedures and Job Performance Aids (JPAs). The Authorization Basis (AB) Manager noted that the Linking Database had not been finalized and would not be made available for use by Facility personnel until all noted deficiencies were resolved and records updated, as necessary.

Completed maintenance work packages and associated maintenance procedures were reviewed for facility safety systems (safety class and safety significant). Nine work packages were reviewed for work control practices and adequacy of post maintenance testing. Overall, work control was satisfactory. Maintenance of the safety basis through the USQ process was consistent and adequate for the packages reviewed. Additional discussion associated with the adequacy of maintenance procedures can be found under Objective MT1.

Completed surveillance procedures were reviewed for facility safety systems. Procedure Y52-53-SO-035, *Surveillance and Testing of the Criticality Accident Alarm System(s) For Buildings 9212, 9215, 9995 and 9998*, are used to satisfy OSR Surveillance Requirements for Building 9212. The procedure lists Drawing Zone Numbers to be checked during the evacuation signal audibility/visibility test. The procedure approved on 03/16/98 did not accurately identify the Zones to be checked during the test. A pen and ink change was made to the procedure to correct this deficiency and to add additional zones to be checked during performance of the quarterly surveillance. There is no indication that the pen and ink changes made to the surveillance procedure were made in accordance with the EUO Technical Procedure change process or received required technical reviews and approvals. Additional discussion associated with the adequacy of surveillance procedures can be found under Objective SE2.

Procedure Y10-102, *Technical Procedure Process Control*, was reviewed and considered to implement adequate controls for the procedure review and approval process. The procedure also implements adequate requirements for periodic review of technical procedures, maintaining the procedure history files, and provides checklists to aid procedure writers, reviewers, and validators in completing their assigned responsibilities.

Nuclear Operations Conduct of Operations Manual Chapter 16.0, *Procedure Use*, provides instruction and guidance on procedural compliance and use. The procedure applies to all nuclear operations personnel, support organization personnel, and all other personnel from any other organization that uses technical or response procedures in the EUO Operations areas. The procedure was reviewed and found to conform to the procedure compliance guidance provided by DOE Order 5480.19.

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Portable Criticality Accident Alarm System (CAAS) stations have been installed in Building 9212. A review of Facility roundsheets confirmed that appropriate roundsheets had been revised to document the necessity to perform daily checks on the portable CAAS stations. A review of the CAAS daily check records provided confirmation that the additional checks have been performed.

Plant Shift Superintendent (PSS) Office records were reviewed and it was confirmed that required monthly and quarterly surveillance tests have been scheduled, performed, and documented for the portable CAAS stations.

Interviews: Interviews were conducted with operators, machinists, dimensional inspectors, supervisors, Shift Technical Advisors, Shift Managers, process supervision and Functional Managers. Questions asked gauged the level of knowledge specific to procedure compliance policy, what to do if a procedure can not be performed as written, and how management reinforces this policy. Questions related to the roles and responsibilities of each person were asked as well as specific conduct of operations requirements related to the performance and adequacy of their procedures. All personnel interviewed understood the process and need for verifying that they have the latest approved revision of a procedure prior to use.

Shift Performance: The evolution involving Enriched Uranium Chip Drying and Briquetting (Y50-37-65-104) was stopped when the operators using the reader/worker method of procedure compliance discovered a step in the procedure that had an incorrect valve identification. This involved section 4.11.1 Normal Shutdown. When the "reader" operator listened to the "worker" operator read the tag on the argon valve he stopped the operation and notified the supervisor. The valve was labeled correctly CP-FIC-318 LOADING BOX ARGON FLOW. The section 4.11.1 step [2] has the valve listed as CP-FIC-318 LOADING HOOD ARGON FLOW. The supervisor called the Shift Manager who directed them on the final steps to accomplish getting the system in safe shutdown and told them to initiate a PMR on the procedure.

The evolution involving E-Wing Casting used a JPA to operate the Casting Furnace. During the pre-job brief the casting supervisor briefed the operators on an additional checklist that needed to be used during Operational Mode. The DOE Facility Representative questioned whether the operators had been trained on the checklist. As a result, the Shift Manager instructed the operators and supervisor on the checklist and its purpose. The Shift Manager instructed the supervisor that prior to closing the furnace he needed to be informed and would then complete actions to put the furnace in Operating Mode from Warm Shutdown Mode. He also instructed the supervisor that after the furnace was opened and lowered, he should be notified and he would then place the furnace in Warm Shutdown. Anytime the furnace is in Operational Mode an

# ORR ASSESSMENT FORMS

## Operations

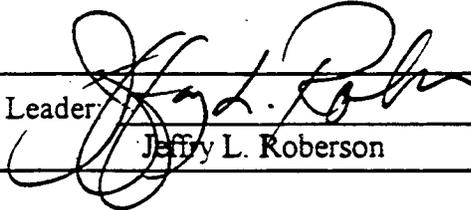
operator has to be stationed to monitor the status of several indicator lights. After casting, the operator lowered the furnace partially per the JPA to allow further cooling of the material. At thAT time, the supervisor called the Shift Manager and he placed the furnace in Warm Shutdown Mode. After a cooling period the operator determined that in order to lower the furnace to the bottom position he would have to first close the furnace then lower it in one operation to the bottom position. In order to do this the supervisor had to request the shift manager place the furnace back in Operational Mode, close the furnace, open the furnace to the bottom position and then call the Shift Manager back to place the furnace back in Warm Shutdown. The JPAs did not address any of these hold points involved in the mode change in the furnace.

Additional comments related to the criteria in this objective are discussed in the shift performance section of CRAD 5.

Conclusion: The criteria for this objective have been met.

Issue:

- Several of the procedures used in evolutions were inaccurate or did not contain the appropriate hold points or steps. (OP6-1)

Inspector:  Rick Ledtje	Team Leader:  Jeffery L. Roberson
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# OR DEFICIENCY FORM

## Operations

<b>Functional Area:</b> OP	<b>Objective No.:</b> 6	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> OP6-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** Several of the procedures used in evolutions were inaccurate or did not contain the appropriate hold points or steps.

**REQUIREMENT:** Procedures should be technically and administratively accurate (i.e., the instructions and information should be correct; referenced documents should be correctly identified; and necessary instructions should be present to guide the user when transferring between procedures).

**REFERENCE(S):** DOE 5480.19 Conduct of Operations Requirements For DOE Facilities; Chapter XVI, C(2) j.

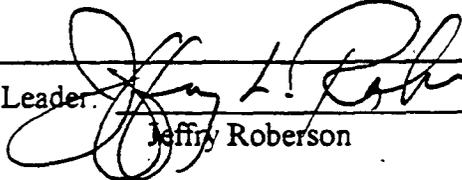
**DISCUSSION:** The evolution involving Enriched Uranium Chip Drying and Briquetting (Y50-37-65-104) was stopped when the operators using the reader/worker method of procedure compliance discovered a step in the procedure that had an incorrect valve identification.

The initial effort to calibrate Stack 3 HEPA filter dP gauges had to be aborted because confusion on the method to perform the restoration and post-maintenance test activities in a step-by-step manner.

During the operation of the High Capacity Evaporator, a procedural inadequacy required the suspension of the procedure when the inlet valve to both process holdup condensate tanks were observed to be in the open position.

JPs used during casting furnace operations did not address hold points needed to conduct operational mode changes.

**CONCLUSION:** While these procedural issues indicate problems with the procedure review, approval, verification and validation process, good conduct of operations prevented violations. This is a post start finding.

Inspector:  Rick Ledtje	Team Leader:  Jeffrey Roberson
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**ORR ASSESSMENT FORMS**  
DOE-OR

<b>FUNCTIONAL AREA: OR</b>	<b>OBJECTIVE 1 , REV. 0</b> <b>DATE: May 11, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE :** The technical and managerial qualifications of those at the Y-12 Site Office (YSO) and the Oak Ridge Operations Office (ORO) who have been assigned responsibilities for direction and guidance to the contractor, including the Facility Representatives (FRs), are adequate. **(CORE REQUIREMENT #16)**

Criteria

Formal training and qualification requirements and staffing levels have been developed for the FRs. (DOE-STD-1063-93, para 4 and 5; O 360.1)

Records demonstrate that FRs assigned to cover facility operations are qualified and the minimum staffing levels are met. (DOE-STD-1063-93, para 4 and 5; O 360.1)

Responsible YSO and ORO personnel have sufficient applicable experience and/or training to adequately understand facility operations and safety systems under their cognizance. (DOE-STD-1063-93, para 4 and 5; O 360.1)

The YSO FRs have adequate knowledge of facility operations and hazards and is involved in overseeing operations on a daily basis. The YSO FRs are formally qualified and are providing critical oversight of operations. (DOE-STD-1063-93, para 4 and 5; O 360.1)

Approach

**Record Review:** Review completed FR Qual-Cards, and oral and written exam results demonstrating qualification. Review FR and Duty Officer assignments. Review training and qualifications of operations and safety department personnel at the Oak Ridge Operations Office.

**Interviews:** Interview the FRs to determine his/her understanding of operations, safety envelope, past incidents and occurrences, conduct of operations principles, and stop work authority. Interview members of the ORO operations and safety departments and assess understanding of operations and the safety envelope.

**Shift Performance:** Perform a walkthrough of the facility, with all qualified FRs, to determine their understanding of the building layout, system operation, normal operator routines, and shift activities.

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Records Reviewed:

- DOE-OR Deficiency Tracking System status report (5/4/98)
- Y-12 DOE Defense Nuclear Facility Representatives (Duty Officer List), dated October, 1997
- Building 9212 Plan of the Day for 5/5/98
- LMES ORR Report for EUO Restart Phase A1 at Oak Ridge Y-12 Plant, April, 1998
- DOE-OR Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, April 30, 1998
- DOE-OR, "Line Management Self-Assessment (MSA) of the Y-12 Site Office (YSO) (98-3113)," Sundie to Spence, April 30, 1998 [and supporting files to document adequacy of the MSA]
- YSO-1.2, Rev. 3, "Organization and Responsibilities," 5/28/97
- YSO-1.6, Rev. 3, "Facility Representative Program," 2/11/98
- YSO-1.9, Rev. 1, "Master Assessment Plan," 3/11/98
- YSO-2.1, Rev. 0, "Technical Qualification Training Program," 11/21/97
- YSO-3.1, Rev. 1, "Conduct of Operations," 1/2/97
- YSO-3.2, Rev. 3, "Deficiency Processing," 5/1/98
- YSO-9.6, Rev. 1, "Management Walk-Around Surveillances," 4/4/97
- Y-12 Site Office Technical Qualification Standard, November, 1996
- DOE-OR Manual 411.1-1A, "Manual of Safety Management - Functions, Responsibilities, and Authorities, Level II, for Defense Programs, Y-12 Plant, July 30, 1997
- List of Technical Qualification Program Participants (list of Subject Matter Experts and Qualification Officials), 10/30/97
- Training records for 3 fully qualified Facility Representatives for EUO. Included original written and oral exam records and completed qualification cards
- Training records for YSO senior management and Subject Matter Experts
- YSO-97-10, DOE Y-12 Monthly Assessment Report, for the period 9/3/97 - 10/6/97, dated 11/10/97
- YSO-97-11, DOE Y-12 Monthly Assessment Report, for the period 10/7/97 - 11/3/97, dated 12/19/97
- YSO-97-12, DOE Y-12 Monthly Assessment Report, for the period 11/4/97 - 12/1/97, dated 1/8/98
- Y50-37-96-051, Rev. 1.6, "Waste Solution Transfer," Building 9818
- Y50-37-98-601, Rev. 1.5, "High Capacity Evaporator, HC/O-C-7101 Operation," 5/5/98
- Memo, Wellbaum to Spence, "Enriched Uranium Operations (EUO) Readiness to Proceed for Phase A1 Processes (98-3112)," 4/29/98
- DOE-ORO Facility Representative Program Manual, Rev. 1, 11/95
- YSO Facility Representative Qualification Program, Rev. 4, 1/97

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**DOE-OR**

- LMES Standards/Requirements Implementing Document (and supporting DOE assessment reports):
  - Section 19, Occupational Safety
  - Section 3, Configuration Management
  - Section 5, Emergency Management
- Various procedures for operating the High Capacity Evaporator and support lab equipment. Includes B-1 Lab JPA's

Interviews Conducted:

- Three DOE-ORO Y-12 Site Office (YSO) Facility Representatives assigned permanent to the Enriched Uranium Operations facility
- YSO Site Manager
- YSO Acting Site Manager
- YSO Senior Nuclear Engineer
- YSO Training Program Manager
- YSO Weapons Program Manager
- YSO Environment, Safety, and Health Branch Chief
- YSO Environment, Safety, and Health Administrative Support Lead
- YSO Subject Matter Experts for: Industrial Hygiene & Occupational Safety, Conduct Operations, Environmental Management
- YSO Issues Management Coordinator
- Various YSO subcontract support personnel
- Operations staff for building 9818, including the assigned mentor

Shift Performance Evolution:

- Observed solution transfer from 9212 tank 6001 to 9818 tank 604
- Observed general acts within Y-12 for compliance with safety programs
- Toured facilities with all three qualified Facility Representatives who are permanently assigned to EUO
- Attended pre-job brief for High Capacity Evaporator (HiCap) startup, observed evolution and attended management review to discuss errors
- Operational drill in 9215

Discussion of Results:

Record Review: Reviews of completed Facility Representative qualification cards, written exam and oral exams, along with the program requirements and standards established to support Facility Representative qualification, indicate that the DOE-ORO Y-12 Site Office has developed and

## ORR ASSESSMENT FORMS DOE-OR

implemented a Facility Representative program which meets, and often exceeds, the requirements of DOE STD-1063-97. The program has achieved a status which may be considered a model for other DOE sites in the complex. Facility Representative assignments and Duty Officer assignments are adequate to meet programmatic needs. If anything, YSO may wish to consider creating additional Facility Representative positions, as evidenced by the fact that a single individual is responsible for all Y-12 activities outside the EUO and DSO facilities. Also, the Facility Representatives assigned to EUO must work consistently more than 40 hours per week to effectively perform their oversight activities, and YSO must utilize subcontracted expertise to properly oversee EUO activities.

**Interviews:** Interviews with the YSO Facility Representatives indicate that they are knowledgeable of the operations of their assigned facilities, their associated safety bases, and past incidents and occurrences. All Facility Representatives possess a firm grasp of the principles of good Conduct of Operations, and they fully understand their responsibilities associated with Stop Work Authority. Interviews with contractor operations personnel revealed that they are accustomed to the presence of Facility Representatives in the field, indicating that the Facility Representatives spend an adequate amount of time in each facility.

Subject Matter Experts have been trained in at least an overview format to understand the facilities to which they are assigned, they understand the safety bases, they spend a good deal of their time within the facilities, and like Facility Representatives they understand their responsibilities associated with Stop Work Authority.

One item of note is that DOE STD-1063-97 stipulates that a site office should implement a "pipeline" program to train new Facility Representatives who could take the place of a departing Facility Representative. While at this time there is no evidence that any Facility Representatives will leave their current positions, when that time comes YSO will not be prepared to replace the departing Facility Representative. This may become an issue in the future.

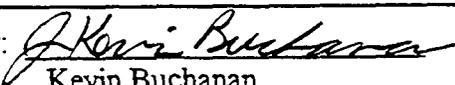
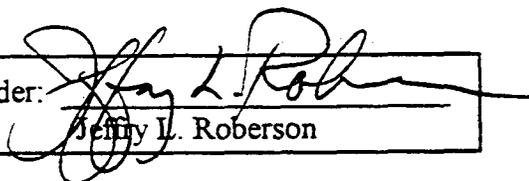
**Shift Performance:** Time spent with all qualified Facility Representatives in the field indicate that contractor personnel are well aware of the presence, position, and responsibilities of the Facility Representatives. Their relationships are collegial, rarely confrontational, both formal and informal, and professional. In touring the facilities with the Facility Representatives it was clearly evident that they spend a large amount of time in the field and possess an excellent understanding of the facility operations, routines, and shift activities. YSO has established an excellent team of Facility Representatives for the EUO facility.

ORR ASSESSMENT FORMS  
DOE-OR

Conclusion: The criteria for this objective have been met.

Issue(s):

- None.

Inspector:  Kevin Buchanan	Team Leader:  Jerry L. Roberson
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**ORR ASSESSMENT FORMS**

<b>FUNCTIONAL AREA: OR</b>	<b>OBJECTIVE 2, REV. 0 DATE: May 11, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A systematic review of the facility's conformance to applicable Standards/Requirements has been performed, any non-conformance issues have been identified, and schedules for gaining compliance have been justified in writing and formally approved. (DOE) (CORE REQUIREMENT #7)

Criteria

A formal order compliance review program has been established by YSO and ORO which ensures that the requirements of the appropriate DOE Orders are identified and evaluated for compliance. The results of the review have been documented and validated. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

YSO and ORO have reviewed all of the Standards/Requirements compliance packages generated by LMES for Phase A EUO restart. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Approach

Record Review: Review the procedures used by YSO and ORO for conducting DOE Order compliance reviews to ensure that they contain adequate guidance for identifying requirements and assessing the status of compliance. The guidance provided for determining if non-compliance issues are startup or non-startup issues will also be assessed for adequacy. Three Standards/Requirements compliance packages will also be selected at random to determine if the compliance reviews were conducted in accordance with the approved procedures.

Review the documentation which demonstrates that YSO and ORO has reviewed and approved the LMES Standards/Requirements compliance packages.

Interviews/Shift Performance: None.

## ORR ASSESSMENT FORMS

### Records Reviewed:

- YSO-97-10, DOE Y-12 Monthly Assessment Report, for the period 9/3/97 - 10/6/97, dated 11/10/97
- YSO-97-11, DOE Y-12 Monthly Assessment Report, for the period 10/7/97 - 11/3/97, dated 12/19/97
- YSO-97-12, DOE Y-12 Monthly Assessment Report, for the period 11/4/97 - 12/1/97, dated 1/8/98
- LMES Standards/Requirements Implementing Document (and supporting DOE assessment reports):
  - Section 19, Occupational Safety
  - Section 3, Configuration Management
  - Section 5, Emergency Management
- YSO-3.5, Rev. 0, "Review of Requests for Approval for Noncompliance to Standards/Requirements Identification Documents," 8/9/95
- YSO-3.2, Rev. 3, "Deficiency Processing," 5/1/98
- YSO -9.2, Rev. 2, "Contractor Oversight," 2/24/98
- YSO-1.9, Rev. 1, "Master Assessment Plan," 3/11/98
- YSO-5.4, Rev. 1, "Operational Readiness Reviews/Suspension of Operations/Restart," 7/8/96
- YSO-5.4.1, Rev. 2, "Readiness Assessments," 10/1/96

### Interviews Conducted:

- DOE-OR Y-12 Site Office (YSO) Facility Representatives assigned permanently to the Enriched Uranium Operations facility (3)
  - YSO Site Manager
  - YSO Acting Site Manager
  - YSO Senior Nuclear Engineer
  - YSO Training Program Manager
  - YSO Weapons Program Manager
  - YSO Environment, Safety, and Health Branch Chief
  - YSO Environment, Safety, and Health Administrative Support Lead
  - YSO Subject Matter Experts for: Industrial Hygiene & Occupational Safety, Conduct of Operations, Waste Management
  - YSO Issues Management Coordinator

### Shift Performance Evolution:

- None

## ORR ASSESSMENT FORMS

### Discussion of Results:

Record Review: YSO requirements for implementing S/RID assessments are documented primarily in two procedures. YSO-3.5, "Review of Requests for Approval for Noncompliance to Standards/Requirements Identification Documents," and YSO-9.2, "Contractor Oversight," provide the guidance required for S/RID assessments. Additionally, these two procedures reference the Master Assessment Plan procedure, YSO-1.9, which is the tool by which S/RID assessments are scheduled, assigned, and completed. The assessment guidance contained in YSO-9.2 is adequate for ensuring assessors look at their assigned areas and evaluate the effectiveness of the contractor's implementation of standards and requirements. Through the Master Assessment Plan, YSO has established a three-year assessment schedule which is implemented via Annual Assessment Plans. These assessment plans require that all S/RIDs are evaluated at least every three years by technically competent individuals.

YSO procedures 5.4 and 5.4.1 provide guidance to site office personnel for reviewing facility readiness to restart/startup. Attachment 5 of YSO-5.4.1 in particular provides the guidance to be used for determining whether items must be completed prior to or following restart. Reviews of a sample of EUO issues raised by YSO personnel indicated that the issue evaluation guidance in Attachment 5 was used properly.

YSO and ORO assessments for S/RID compliance packages for Occupational Safety, Configuration Management, and Emergency Management were reviewed for adequacy, and no deficiencies were found. Results of the S/RID assessments are documented within the Monthly Assessment Reports.

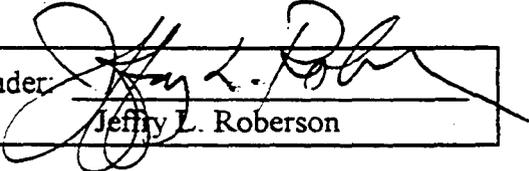
Interviews: Interviews with YSO personnel indicate they understand that they are expected to conduct assessments in accordance with the assessment plans. Additionally, these individuals appeared technically competent to perform their duties. Individuals understood that results of the assessments are to be documented in the Monthly Assessment Reports.

Shift Performance: None.

Conclusion: The criteria for this objective have been met.

### Issue(s):

- None.

Inspector:  Kevin Buchanan	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORMS**  
DOE-OR

<b>FUNCTIONAL AREA: OR</b>	<b>OBJECTIVE 3, REV. 0</b> <b>DATE: May 11, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** DOE Operations oversight programs such as occurrence reporting, facility representative, corrective action, Standards/Requirements compliance, and quality assurance programs, are adequate. **(CORE REQUIREMENT #20)**

Criteria

Responsible YSO and ORO managers have sufficient applicable on-the-job experience and/or training to adequately understand facility operations and safety systems under their cognizance. (O 360.1)

Adequate reporting or operational and occurrence information is provided to appropriate DOE Managers in accordance with DOE Orders 5480.19 and 232.1. This information is reviewed and acted on appropriately by DOE Managers and corrective actions are adequately tracked. (5480.19, Ch. VIII; 5700.6C, para 9.b.(1)(c); O 360.1; 232.1A)

YSO and ORO matrix support organizations (such as radiological protection, quality assurance, and industrial hygiene) have the capability to oversee safety and environmental protection aspects of operations. (5480.19, Ch. VIII; O 360.1; 232.1A)

Approach

**Record Review:** Review training records for managers to determine if they have received adequate training in operations. Review completed inspection reports, management tour reports, and self-assessments that indicate whether management and matrix support personnel are providing adequate and critical oversight of operations at Phase A EUO operations. Review occurrence reporting per DOE Order 232.1.

**Interviews:** Interview selected matrix support personnel who have completed assessments for Phase A EUO operations to evaluate their knowledge and method of review.

**Shift Performance:** While observing evolutions and drill response, determine if management and matrix support personnel are actively involved in oversight activities.

Records Reviewed:

- DOE-OR Deficiency Tracking System status reports (5/4/98, 5/7/98)
- LMES ORR Report for EUO Restart Phase A1 at Oak Ridge Y-12 Plant, April, 1998

**ORR ASSESSMENT FORMS**  
**DOE-OR**

- DOE-OR Y-12 Site Office Assessment of Enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, April 30, 1998
- DOE-OR, "Line Management Self-Assessment (MSA) of the Y-12 Site Office (YSO) (98-3113)," Sundie to Spence, April 30, 1998 [and supporting files to document adequacy of the MSA]
- YSO-1.2, Rev. 3, "Organization and Responsibilities," 5/28/97
- YSO-1.9, Rev. 1, "Master Assessment Plan," 3/11/98
- YSO-2.1, Rev. 0, "Technical Qualification Training Program," 11/21/97
- YSO-3.1, Rev. 1, "Conduct of Operations," 1/2/97
- YSO-3.2, Rev. 3, "Deficiency Processing," 5/1/98
- YSO-9.6, Rev. 1, "Management Walk-Around Surveillances," 4/4/97
- Y-12 Site Office Technical Qualification Standard, November, 1996
- DOE-OR Manual 411.1-1A, "Manual of Safety Management - Functions, Responsibilities, and Authorities, Level II, for Defense Programs, Y-12 Plant, July 30, 1997
- List of Technical Qualification Program Participants (list of Subject Matter Experts and Qualification Officials), 10/30/97
- Training records for YSO senior management and Subject Matter Experts.
- YSO-97-10, DOE Y-12 Monthly Assessment Report, for the period 9/3/97 - 10/6/97, dated 11/10/97
- YSO-97-11, DOE Y-12 Monthly Assessment Report, for the period 10/7/97 - 11/3/97, dated 12/19/97
- YSO-97-12, DOE Y-12 Monthly Assessment Report, for the period 11/4/97 - 12/1/97, dated 1/8/98
- LMES Standards/Requirements Implementing Document (and supporting DOE assessment reports):
  - Section 19, Occupational Safety
  - Section 3, Configuration Management
  - Section 5, Emergency Management
- Memo, Jackson to Distribution, "Management Walk-Through Program," 11/10/97
- Memo, Hoag to Distribution, "Management Walk-Around Surveillance Quarterly Schedule," 4/4/97
- Memo, Hoag to Distribution, "Management Walk-Around Surveillance Quarterly Schedule," 9/30/97
- Memo, Hoag to Distribution, "Management Walk-Around Surveillance Quarterly Schedule," 12/3/97
- Various reports tracking time spent by YSO personnel "in the field" at Y-12
- Various reports generated on the YSO Deficiency Tracking System
- A random sample of eleven Verifier Action Reports from the Deficiency Tracking System
- DOE-ORO O 420, Rev. 2, "Facility Authorization," 8/19/97

## ORR ASSESSMENT FORMS DOE-OR

### Interviews Conducted:

- Three DOE-OR Y-12 Site Office (YSO) Facility Representatives assigned permanently to the Enriched Uranium Operations facility
- YSO Site Manager
- YSO Acting Site Manager
- YSO Senior Nuclear Engineer
- YSO Training Program Manager
- YSO Weapons Program Manager
- YSO Environment, Safety, and Health Branch Chief
- YSO Environment, Safety, and Health Administrative Support Lead
- YSO Subject Matter Experts for: Industrial Hygiene, Occupational Safety, Conduct of Operations, Waste Management
- YSO Issues Management Coordinator

### Shift Performance Evolution:

- Observed solution transfer from 9212 tank 6001 to 9818 tank 604
- Toured facilities with all three qualified Facility Representatives who are permanently assigned to EUO
- Attended pre-job brief for High Capacity Evaporator (HiCap) startup, observed evolution, and attended management review to discuss errors
- Operations drill in Building 9215

### Discussion of Results:

Record Review: Reviews of training records and other documentation supporting implementation of training for DNFSB 93-3 recommendation indicates that YSO has established an adequate program for increasing the technical knowledge base of non-Facility Representative individuals, such as senior management and the Subject Matter Experts. Most Subject Matter Experts are expected to be qualified by May 31, 1998; however, of those that will not achieve the May 31, 1998, deadline, many have been delayed by EUO restart activities, and others have been extended to May 1999 due to programmatic changes in the technical qualification program. This extension to May 1999 was due to a Headquarters directive to not allow personnel to qualify under a "Technical Program Manager" role; therefore, approximately one half of the YSO personnel in the 93-3 program were reassigned a qualification goal under a different program and given an extra year to complete the program. An item of note is that the one year extension may have been excessive because most individuals had completed a large portion of their new assignment as part of the "Technical Program Manager" role. A goal of sometime in late 1998 would have been more appropriate.

## ORR ASSESSMENT FORMS DOE-OR

Reviews of personnel time sheets indicate that senior management and certain Subject Matter Experts do not spend an adequate amount of time in the field performing assessment. For example, according to the personnel field-time tracking system, the YSO Site Manager has spent zero time in the field this fiscal year; the Acting Site Manager has spent zero time in the field since November 1, 1997; the Criticality Safety SME has spent only 18 hours in the field between January 1, 1998, and April 30, 1998; the Environmental Management SME has spent 29 hours in the field since October 1, 1997; and the Waste Management SME has spent only 6 hours in the field since November 1, 1997. The time tracking system also indicates that the Senior Nuclear Engineer and the SME's for Training, Conduct of Operations, Radiological Control, Emergency Preparedness, and Occupational Safety spend a very large amount of time in the field. The YSO goal of 1000 hours of field time has been consistently met by the field office.

A review of YSO implementation of DOE O 232.1 indicates that Facility Representatives are generally responsible for YSO implementation of the occurrence reporting program. Senior management gets involved when an occurrence is of sufficient significance to warrant their involvement. A review of a sample of occurrence reports indicates that the requirements of the order have been properly implemented by YSO.

Reviews of YSO-1.2, Rev. 3, "Organization and Responsibilities," and the Function, Responsibilities, and Authorities Matrix (FRAM, Manual 411.1-1A) indicate that YSO has established an adequate organization with specifically identified authorities for providing technical oversight of the operating contractor.

Interviews: Interviews with YSO personnel indicate that they have adequate technical expertise to properly oversee LMES operations and to perform restart oversight activities. Additionally, these interviews indicate that senior management and SME's spend an adequate amount of time in the field observing activities. This is contradictory to the time tracking system which identifies very little time is spent in the field by certain members of YSO. The appearance is that certain YSO personnel do not properly document their time in the field or the results of their assessments.

ORO has implemented a Management Walk-Around Program in accordance with the requirements of DOE-ORO O 420, Chapter IV, "Conduct of Operations Requirements for DOE Facilities," paragraph 5. This paragraph provides guidance for scheduling, conducting, and documenting management walk-throughs. The program is mandatory at Y-12. This requirement was established in response to DNFSB Recommendation 94-4. YSO has implemented a management walk-through program via Procedure YSO-9.6, Management Walk-Around Surveillances. Quarterly schedules have been distributed to identify when members of management must conduct a walk-around in the field. Interviews with personnel indicate that these walk-arounds are usually, but not always, completed, and that results of these walk-arounds

**ORR ASSESSMENT FORMS**  
**DOE-OR**

are often documented within emails distributed to the responsible parties. Time sheets and Walk-Around Program records do not indicate that these walk-arounds are being performed. There exists little documentation indicating that the Walk-Around Program has been effectively implemented. Therefore, the conclusion is made that YSO has not adequately implemented a management walk-through program.

Subject Matter Experts have been trained in at least an overview format to understand the facilities to which they are assigned, they understand the safety bases, they spend a good deal of their time within the facilities, and like Facility Representatives they understand their responsibilities associated with Stop Work Authority.

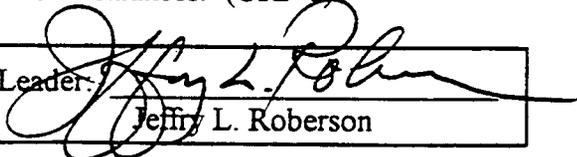
One positive item to note is that YSO has established a computerized system through which they track open issues. This system, known as the Deficiency Tracking System (DTS), is an excellent system which is simple to use and effective in ensuring YSO personnel maintain cognizance over their outstanding items and follow them through closure. All YSO personnel are kept aware through their own computer systems of the status of their items in DTS, and they are reminded daily when they have issues awaiting action. The DTS system is a model which could be utilized by other DOE site offices.

**Shift Performance:** While observing evolutions conducted during the scope of this ORR, YSO personnel were involved in performing oversight of activities in their field of expertise. In particular, all three EUO Facility Representatives and the SME's for Conduct of Operations, Radiological Control, and Training were observed conducting field oversight activities.

**Conclusion:** The criteria for this objective have been met. YSO does not adequately implement the requirements DOE-ORO O 420, "Facility Authorization," Chapter IV, "Conduct of Operations Requirements for DOE Facilities," paragraph 5, which provides guidance for scheduling, conducting, and documenting management walk-throughs. The program is mandatory at Y-12. This requirement was established in response to DNFSB Recommendation 94-4.

Issue(s):

- ORO has not properly implemented the requirements of the Management Walk-Around Program as stipulated in ORO O 420, Facility Authorization, and YSO has not properly implemented YSO-9.6, Management Walk-Around Surveillances. (OR3-1)

Inspector:  Kevin Buchanan	Team Leader:  Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
DOE-OR

<b>Functional Area: OR</b>	<b>Objective No.: 3</b>	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.: OR3-1 Rev.: 0 Date: May 11, 1998</b>
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**ISSUE:** ORO has not properly implemented the requirements of the Management Walk-Around Program as stipulated in ORO O 420, Facility Authorization, and YSO has not properly implemented YSO-9.6, Management Walk-Around Surveillances.

**REQUIREMENT:** DOE issued a Corrective Action Plan (Identification No. III.A.1.a.3) in response to the DNFSB Recommendation 94-4 that committed ORO to develop a Management Walk-Through Process for Y-12. The program is mandatory at Y-12 and may be performed at other ORO sites.

**REFERENCE(S):** ORO O 420, Rev. 1, Facility Authorization, Chapter IV, Conduct of Operations Requirements for DOE Facilities, paragraph 5, Requirements and Procedures: Management Walk-Through Program, 8/19/97; and YSO09.6, Management Walk-Around Surveillances, 4/4/97.

**DISCUSSION:** Reviews of personnel time sheets indicate that senior management and certain Subject Matter Experts do not spend an adequate amount of time in the field performing assessments. For example, according to the personnel field-time tracking system, the YSO Site Manager has spent zero time in the field this fiscal year; the Acting Site Manager has spent zero time in the field since November 1, 1997; the Criticality Safety SME has spent only 18 hours in the field between January 1, 1998, and April 30, 1998; the Environmental Management SME has spent 29 hours in the field since October 1, 1997; and the Waste Management SME has spent only 6 hours in the field since November 1, 1997. The time tracking system also indicates that the Senior Nuclear Engineer and the SME's for Training, Conduct of Operations, Radiological Control, Emergency Preparedness, and Occupational Safety spend a very large amount of time in the field.

Contrary to what was found in the time records, interviews with YSO personnel and other evidence indicate that senior management and SME's spend an adequate amount of time in the field observing activities. This should be better documented.

**ORR DEFICIENCY FORM**  
**DOE-OR**

**CONCLUSION:** Document reviews indicate that the Management Walk-Through Program has not been adequately implemented by YSO.

Inspector: <i>Kevin Buchanan</i> Kevin Buchanan	Team Leader: <i>Jeffrey L. Roberson</i> Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Quality Assurance

<b>FUNCTIONAL AREA: QA</b>	<b>OBJECTIVE 1, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** A quality assurance program is established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure quality assurance services are adequate for safe operations. (CORE REQUIREMENT #8)

Criteria

The quality assurance organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. It is adequately staffed with qualified personnel. (5700.6C, para 9.; 10 CFR 830.120; S/RID FA Information Flow and Operations (IO) LMES ID #7151, FA Quality Assurance (QA) LMES ID #1399)

The quality assurance program meets or exceeds the requirements and guidance provided in 10 CFR 830.120. (10 CFR 830.120; S/RID FA Information Flow and Operations (IO) LMES ID #7151)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, or internal memorandums) which establish the roles, responsibilities, interfaces, and staffing levels for the quality assurance organization. Review the necessary records and program procedures to ensure that the QA program includes QA audits, a process for tracking, tending, and correcting conditions adverse to quality, self assessments, verification that operational support organizations have implemented administrative controls to ensure compliance with federal and state regulations, and resolution of identified QA deficiencies. Evaluate the program for identifying, replacing, and prohibiting counterfeit or suspect parts.

A policy or procedure describes the long- and short-term requirements for performing program evaluations and provides guidance relative to who conducts the evaluations, how often evaluations are conducted, and how evaluations are conducted.

**Interviews:** Interview those QA personnel that support operations to determine if they are familiar with their roles, responsibilities, and interfaces with the operations organization. Verify adequate knowledge of site QA procedures.

**ORR ASSESSMENT FORM 1**  
Quality Assurance

Shift Performance: The QA organization will be requested to conduct at least one surveillance. The person conducting this surveillance will be accompanied by one of the ORR team members to determine if the results of the surveillance are accurate and provide meaningful feed back to the operations group, and that they are giving adequate attention to health, safety and environmental protection issues.

Record Review:

- Lockheed Martin Marietta Energy Systems Inc. Price-Anderson Amendments Act
- Quality Assurance Program Commitments and Implementation Plan, QA-102PD, Rev. 3
- Lockheed Martin Energy Systems Quality Program Description, Y/QD-35
- Enriched Uranium Operations(EUO) Restart Plan, Y/MA-7243, Rev.1
- Enriched Uranium Operations Organization Quality Assurance Plan, Y/MA-7239
- Roles and Responsibilities Documentation and Communication, ESS-OP-2
- QA Organization , 60-011
- QA Procedure ,60-026
- EUO Organization Charts
- Quality Division Quality Plan
- QA Organization and Program, ESS-QA-10
- MOU between EUO Support Organization
- Enriched Uranium Operations Performance Based Restart Qualification Areas Process Assignment, Y/MA-7278 Rev. 1

Interviews Conducted:

- EUO Assessment Manager
- Building 9212 Operations Manager
- Engineering Manager, Process Engineering
- Quality Director
- Quality Service Director
- Y-12 Quality Director
- Occurrence Reporting Manager
- Material Control Manager
- 9215 Operations Manager
- Document Control Manager
- Facility Support Manager
- EUO Training Manager

**ORR ASSESSMENT FORM 1**  
Quality Assurance

Shift Performance:

- QA evaluation of High Capacity Evaporator operation

Discussion of Results:

Record Review: QA organization documentation was reviewed including: administrative procedures, organization charts, and position descriptions. The documents which establish the roles, responsibilities, interfaces, and staffing levels were reviewed to determine their adequacy against the requirements of the qualification program. EUO supports the Y-12 mission by ensuring personnel are trained and certified or qualified to safely operate nuclear facilities. The QA personnel qualification and training are documented in the "Conduct of Training Manual, Y-12 Nuclear Operations." The process described by this manual ensures that personnel are qualified and adequately trained to perform their work. EUO Performance Based Restart Qualification Areas Process Assignment, Subsection 1.2.2, addresses personnel qualification. A more detailed description of the training and qualification program for each of the identified positions requiring qualification and/or certification is provided in EUO's Training and Qualification Program Plan for restart. The support organizations provide this information in their Training Development and Administrative Guide.

The program to ensure that counterfeit/suspect items (S/CI) within EUO are effectively addressed was reviewed. A wet vacuum system valve replacement package was reviewed with respect to counterfeit/suspect parts. Procurement documentation provided no indication that a review was made on the supplied fasteners. Maintenance Planning reported that the AVID (accelerated vendor inventory delivery) vendor is contractually bound to conduct these reviews and provide the required quality parts. Further review of the site-wide program indicates a strong emphasis towards building in quality at the vendor site. Quality Services has evaluated each of the three suppliers of fasteners to the AVID vendor, in addition to the contractual terms regarding S/CI. However, Quality Services does not have an assessment plan for periodic inspection or formal evaluation of the C/SI program. Three maintenance planners have received training in this area and they report conducting undocumented visual inspection of parts. The implementation of the suspect/counterfeit parts program within EUO may be overly reliant on vendor contract agreements (MT1-3).

EUO has developed adequate Memoranda of Understanding (MOUs) with support organizations to assure the adequacy of the training, certification and qualification of the support organization's personnel working on process and equipment. The purpose of this agreement is to establish that, in the future, Quality Organization's support personnel who enter Building 9212 and 9215 to perform work will meet certain training and qualification requirements.

**ORR ASSESSMENT FORM 1**  
Quality Assurance

Procedure ESS-QA-15.0 , Control of Nonconforming Items and Services, Rev.0, requires that equipment that fails ET&I Safety inspections be evaluated via initiation of the NCR process. Contrary to that requirement, an elevator failed the ET&I inspection on December 12, 1995; however, the elevator was kept in operation without an NCR and semi-annual safety inspections were not performed thereafter. During a DOE inspection, the DOE assessor noted that a reject tag dated December 12, 1995 was attached to an elevator ( Class C-1 freight elevator, ET&I 319301). The DOE assessor conducted review of inspection records on file and found that the subject elevator was dropped out of the of the scheduled semi-annual routine inspection since the placement of the reject tag. At least four safety inspections were not performed. As a result of this identified deficiency, the DOE assessor conducted a limited review of elevator inspection records and found two additional rejected elevators (Class C-1, freight elevator, ET&I 31920017) for which three ET&I inspections were not performed. These two elevators had also been dropped from the recall inspection schedule without NCRs. The elevator in building 9119, ETI 3195009, was rejected by ET&I and several subsequent safety inspections were not performed. EUO facilities have numerous procedures for correcting deficiencies which not only create confusion but could create safety problems.

The DOE ORR reviewed eleven ET&I records for current status. Five of the eleven records indicated equipment was rejected and associated NCR's could not be located by Operations. In one case, the rejected equipment (1 ton overhead crane, ET&I 31581178) was no longer installed in the facility. Two other rejected items were elevators that were being repaired as part of a major upgrade program. The lack of documentation that would provide continuity between Operations and Quality Services who manages the ET&I program presents a major problem in dispositioning the rejected equipment. There are many examples of equipment that have been rejected by ET&I and not identified for action by operations.

One example is an air breathing station that was inspected and rejected in April 1998 (ET&I 25000473). The inspection was not completed because air was isolated to the station, the filter cartridge was not replaced, and the inspection was rescheduled for April 1999. The Operations Shift Manager (9212) was unaware of the reject status until questioned. Other ET&I equipment with identified deficiencies and without disposition are the Building 9212 Dock 14 Elevator, a 1-Ton and 2-Ton overhead hoist, and a Building 9215 waste sump tank. The lack of communication between Quality Services and Operations has created a loss of control over the equipment monitored by the ET&I program (QA1-1).

Interviews: Interviews were conducted covering operations, quality process engineering, material control, document control personnel and shift operators. All managers interviewed demonstrated adequate knowledge of their facility and the facility's quality assurance program.

**ORR ASSESSMENT FORM 1**  
Quality Assurance

**Shift Performance:** The High Capacity Evaporators process was observed. An EUO QA person was present. The shift operator stopped the operation when the procedure was unclear and informed his supervisor.

**Conclusion:** The criteria for this objective have been met.

**Issue(s):**

- The control, disposition, and implementation of corrective actions on equipment in the ET&I program at EUO is not being performed as required. (QA1-1)

Inspector: <u>Paul Chimah</u> Paul Chimah	Team Leader: <u>Jeffery L. Roberson</u> Jeffery L. Roberson
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**ORR DEFICIENCY FORM**  
Quality Assurance

<b>Functional Area:</b> QA	<b>Objective No.:</b> 1	<b>Finding X Observ.</b>	<b>Pre-Start Post Start X</b>	<b>Issue No.:</b> QA1-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** The control, disposition, and implementation of corrective actions on equipment in the ET&I program at EUO is not being performed as required.

**REQUIREMENT:** This procedure establishes the requirements for identifying, controlling, segregating, dispositioning, classifying, documenting, and implementing corrective actions associated with nonconforming items. (QA-301)

**REFERENCE(S):** TRI-QC-101, Equipment Inspection and Testing-Status Tagging, Rev.1; Control of Nonconforming Items, QA-301; ESS-IS-107 Lockout/Tagout Procedure; ESS-QA-15.0, Control of Nonconforming Items and ESS-QA-15.1, Preparation of a Non-conformance Report; DOE Y-12 Site Office letter dated April 17, 1989 on Assessment of Equipment Test and Inspection(ET&I) Management and Performance.

**DISCUSSION:** Procedure ESS-QA-15.0, Control of Nonconforming Items and Services, Rev.0, requires that equipment that fails ET&I Safety inspections be evaluated via initiation of the NCR process. Contrary to that requirement, an elevator failed the ET&I inspection on December 12, 1995; however, the elevator was kept in operation without an NCR and semi-annual safety inspections were not performed thereafter. During a DOE inspection, the DOE assessor noted that a reject tag dated December 12, 1995, was attached to an elevator (Class C-1 freight elevator, Building 9201, ET&I 319301). The DOE assessor conducted review of inspection records on file and found that the subject elevator was dropped out of the of the scheduled semi-annual routine inspection since the placement of the reject tag. Several subsequent safety inspections were not performed on this elevator. As a result of this identified deficiency, the DOE assessor conducted a limited review of other elevator inspection records and found two additional rejected elevators for which three ET&I inspections were not performed. These two elevators had also been dropped from the recall inspection scheduled without NCRs. EUO sites have numerous procedures for correcting deficiencies which not only create confusion but could create safety problems.

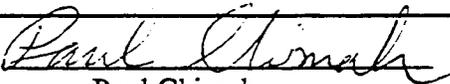
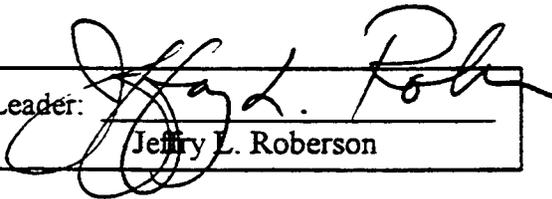
The DOE ORR reviewed eleven ET&I records for current status. Five of the eleven records indicated equipment was rejected and associated NCR's could not be located by Operations. In one case, the rejected equipment (1 ton overhead crane, ET&I 31581178) was no longer installed in the facility. Two other rejected items were elevators that were being repaired as part of a major upgrade program. The lack of documentation that would provide continuity between

**ORR DEFICIENCY FORM**  
Quality Assurance

Operations and Quality Services who manages the ET&I program presents a major problem in dispositioning the rejected equipment. There are many examples of equipment that has been rejected by ET&I and not identified for action by Operations.

One example is an air breathing station that was inspected and has been rejected in April 1998, (ET&I 25000473). The inspection was not completed because air was isolated to the station, the filter cartridge was not replaced as required, and the inspection was rescheduled for April 1999. The Operations Shift Manager (9212) was unaware of the reject status until questioned. Other ET&I equipment with identified deficiencies and without disposition are the Building 9212 Dock 14 Elevator, a 1 Ton and 2 Ton overhead hoist, and a Building 9215 waste sump tank.

**CONCLUSION:** The lack of communication between Quality Services and Operations has created a loss of control over the equipment monitored by the ET&I program. Because no safety systems are directly impacted, this is a post start finding.

Inspector:  Paul Chimah	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Quality Assurance

<b>FUNCTIONAL AREA: QA</b>	<b>OBJECTIVE 2, REV. 0</b> <b>DATE: May 13, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES X</b>	<b>NO</b>

**OBJECTIVE:** Level of knowledge of operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of operations support personnel. **(CORE REQUIREMENT #3)**

Criteria

Quality assurance support personnel demonstrate the ability to carry out normal, abnormal, and emergency procedures under their cognizance. (5480.20A, Ch. I; 10 CFR 830.120, 5700.6C, para 9.b.(1)(b); S/RID FA Training and Qualification (TQ) LMES ID #1378, #1365)

Quality assurance support personnel demonstrate a working knowledge of QA requirements and facility systems and components related to safety. These personnel also give adequate attention to health, safety and environmental protection issues. (5480.20A, Ch. I; 10 CFR 803.120; 5700.6C; 5480.19, Ch. 1; S/RID FA Training and Qualification (TQ) LMES ID #9675, #1365)

Approach

**Record Review:** Review for adequacy and completion, the training records which indicate quality assurance support personnel training on facility procedures and systems under their cognizance as well as system and facility hazards.

**Interviews:** Interview quality assurance support personnel to assess their understanding of their actions when responding to abnormal and emergency conditions and facility hazards as well as their understanding of how these actions relate to the safety basis for operations. Determine if these personnel have an adequate knowledge of health, safety, and environmental protection issues.

**Shift Performance:** Observe drills, routine evolutions and normal operations, to assess the ability of quality assurance support personnel to safely operate systems and components under their cognizance in accordance with approved plant procedures. Observe a QA surveillance to determine if the person conducting the surveillance has an adequate level of knowledge of facility operations and hazards.

**ORR ASSESSMENT FORM 1**  
Quality Assurance

Record Review:

- QA-102PD, Lockheed Martin Marietta Energy Systems Inc. Price-Anderson Amendments Act Quality Assurance Program Commitments and Implementation Plan, Rev. 3
- Y/QD-35, Lockheed Martin Energy Systems Quality Program Description
- Enriched Uranium Operations(EUO) Restart Plan, Y/MA-7243, Rev.1
- Y/MA-7239, Enriched Uranium Operations Organization Quality Assurance Plan
- ESS-OP-2, Roles and Responsibilities Documentation and Communication
- 60-011, QA Organization
- 60-026, QA Procedure
- EUO Organization Charts
- Quality Division Quality Plan
- ESS-QA-10, QA Organization and Program
- MOU between EUO and Supporting Organizations (MOU-008)
- Y/MA-7278, Enriched Uranium Operations Performance based Restart Qualification Areas Process Assignment, Rev. 1

Interviews Conducted:

- EUO Assessment Manager
- Building 9212 Operations Manager
- Engineering Manager, Process Engineering
- Quality Director
- Quality Service Director
- Y-12 Quality Director
- Occurrence Reporting Manager
- Material Control Manager
- 9215 Operations Manager
- Document Control Manager
- Facility Support Manager
- EUO Training Manager

Discussion of Results:

Record Review: The QA department required training list was reviewed and found satisfactory for adequate training in QA procedures and practice. Twelve personnel training records for EUO support organizations were reviewed and found to adequately document required training. Two QA training record reviews were completed to assess the appropriate training commensurate with responsibilities of the individual and the QA organization and found satisfactory.

**ORR ASSESSMENT FORM 1**  
Quality Assurance

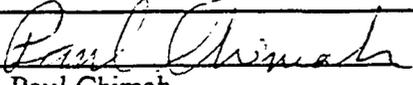
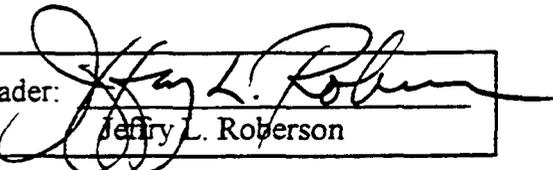
**Interviews Conducted:** Interviews conducted with EUO managers and personnel indicated most of them have experience in EUO operations. The QA staff had an adequate level of knowledge in normal, abnormal and emergency procedures. They were also sufficiently knowledgeable in the safety basis related to their job duties and responsibilities.

**Shift Performance Evolution:** Normal operation of High Capacity Evaporator was observed with a QA inspector. The QA inspector attended the pre-job briefing and no assessment of the evolution was provided.

**Conclusion:** The criteria for this objective have been met.

Issue(s):

- None

Inspector:  Paul Chimah	Team Leader:  Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Quality Assurance

FUNCTIONAL AREA: QA	OBJECTIVE 3, Rev. DATE: May 13, 1998	CRITERIA MET	
		YES X	NO

**OBJECTIVE:** The implementation status of 10 CFR 830.120 and S/RIDs associated with DOE Order 5700.6C are adequate for operations. Non-compliance issues have been addressed.  
**(CORE REQUIREMENT #7)**

Criteria

All non-compliance issues are adequately addressed by DOE approved compliance schedule approvals (CSA) or exemptions. The CSAs include an adequate technical basis and schedule for attaining compliance. (Plan for Continuing and Resuming

Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Compensatory measures that are specified in the CSAs are adequately implemented. (Plan for Continuing and Resuming Operations, Y/AD-623, dated October 1994. Y/AD-623, Standards/Requirements Implementation Assessment Instruction, Standards/Requirements Identification Document Development and Approval Instruction)

Implementation Plan for the QA Final Rule 10 CFR 830.120 is approved and on schedule.

Approach

Record Review: Review the compliance packages for 10 CFR 830.120 including all applicable CSAs, exemptions, and compensatory measures.

Review status of actions under the implementation plan for the QA Final Rule. Verify the plan is approved and the schedule is being met.

Interviews: If this order is not fully implemented, interview management personnel to ensure they are aware of the non-compliance(s) and action necessary to fully implement the order requirements, as well as any interim compensatory actions.

Shift Performance: Where appropriate, observe the implementation of any specified compensatory measures within the facility to determine their effectiveness.

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Quality Assurance

Record Review:

- Lockheed Martin Marietta Energy Systems Inc. Price-Anderson Amendments Act Quality Assurance Program Commitments and Implementation Plan, QA-102PD, Rev. 3
- Lockheed Martin Energy Systems Quality Program Description, Y/QD-35
- Enriched Uranium Operations(EUO) Restart Plan, Y/MA-7243, Rev. 1
- Enriched Uranium Operations Organization Quality Assurance Plan, Y/MA-7239
- Roles and Responsibilities Documentation and communication, ESS-OP-2
- QA Organization , 60-011
- QA Procedure ,60-026
- EUO Organization Charts
- Quality Division Quality Plan
- QA Organization and Program, ESS-QA-10
- Enriched Uranium Operations Performance based Restart Qualification Areas Process Assignment, Y/MA-7278 Rev. 1

Interviews Conducted:

- EUO Assessment Manager
- Building 9212 Operations Manager
- Engineering Manager, Process Engineering
- Quality Director
- Quality Service Director
- Y-12 Quality Director
- Y-12 Occurrence Reporting Manager
- Material Control Manager
- 9215 Operations Manager
- Document Control Manager
- Facility Support Manager
- EUO Training Manager

Shift Evolution Performance:

- None.

Discussion of Results:

Record Review: The LMES 10 CFR 830.120 quality plan was reviewed (LMES Price-Anderson Amendments Act (PAAA) Quality Assurance Program Commitments and Implementation Plan, QA-102PD, Rev. 3). Several EUO milestones were completed just prior to the DOE-ORR. This document was DOE approved ( 2-23-95) and sets forth the commitments that LMES adopted to

## ORR ASSESSMENT FORM 1

### Quality Assurance

comply with the provisions of 10 CFR 830.120, Quality Assurance Requirements. LMES ensures that work is conducted in accordance with the commitments described therein. QA-102PD Rev. 3, April 1998, indicates that the Y-12 plant has now completed the remaining PAAA Quality Assurance Implementation milestones in the implementation plan of QA-102 PD, Rev. 2. The Quality Program Description (QPD) contains fifty quality requirement commitments that were adopted as part of the LMES response to the PAAA. These fifty commitments are clearly identified in the plan. Energy Systems line managers are responsible for ensuring the requirements of the quality program are appropriately implemented in programs and procedures and communicated and understood by appropriate personnel.

Management assessments are required to identify, correct, and prevent management problems that hinder the achievement of an organization's objectives. The assessments focus on broad categories of management issues to determine the effectiveness of the integrated management system. EUO senior managers have overall responsibility for the implementation of, and participation in, the management assessment process. EUO managers at all levels are expected to periodically assess implementation of the integrated quality assurance program requirements in their functional areas.

The LMES QA Rule Implementation Plan requires management assessments. More than three years have passed since the approval of the QA Rule Implementation plan, yet a management assessment has not been completed. An interview with senior managers indicate that the management assessment is scheduled to start in July 1998. The EUO management self-assessment program does not meet the Implementation Guide for the QA Rule. EUO has been engaged in a broad range of activities during the restart which include substantial participation by management personnel (QA3-1).

Interviews: Interviews were conducted with senior managers to confirm their understanding of commitments made to assure safe operation of EUO facility. EUO has established a records management system with Satellite Document Control Centers located in Buildings 9212, 9215, and 9206. Based on interviews, documents are being verified before use. LMES PAAA Quality Assurance Program Commitments and Plan, QA-102PD Rev. 3 dated April 1998, is on schedule and responsible personnel are knowledgeable in these areas. There are no compensatory measures for QA S/RIDs.

**ORR ASSESSMENT FORM 1**  
Quality Assurance

Conclusion: The criteria for this objective have been met.

Issue(s):

- LMES management assessment program is not fully implemented. (QA3-1)

Inspector: <i>Paul Chimah</i> Paul Chimah	Team Leader: <i>Jeffrey L. Roberson</i> Jeffrey L. Roberson
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**ORR DEFICIENCY FORM**  
Quality Assurance

<b>Functional Area:</b> QA	<b>Objective No.:</b> 3	<b>Finding Observ.</b>	<b>Pre-Start Post Start</b> X	<b>Issue No.:</b> QA3-1 <b>Rev.:</b> 0 <b>Date:</b> May 13, 1998
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**ISSUE:** LMES management assessment program is not fully implemented.

**REQUIREMENT:** Manager shall assess their management process; (10 CFR 830.120) & (LMSQA-102PD, Rev. 2); Schedule assessment activities, using graded approach, ensuring all elements are assessed activities, ensuring all elements are assessed at least on a three year cycle. (LMES Procedure Y-60-028 Section, B.5.c); Management assessment program should provide a means for managers at every level to assess the performance of their organization to determine how well those organizations are meeting customers' requirements and expectations and the organization goals and objective (LMSQPD Y/QD-35).

**REFERENCE(S):** Martin Marietta Energy System, Inc. Price-Anderson Act Quality Assurance Program commitments and Implementation Plan, QA-102PD, Rev. 3; Lockheed Martin Energy System Quality Program Description, Y/QD-35; Enriched Uranium Operation Organization Quality Assurance Plan Y/MA-7239, Rev. 1; and Lockheed Martin Energy System Inc, Y-12 Plant Management Assessment, Procedure Y-60-028.

**DISCUSSION:** Management assessments are required to identify, correct, and prevent management problems that hinder the achievement of an organization's objectives. The assessments focus on broad categories of management issues to determine the effectiveness of the integrated management system. EUO senior managers have overall responsibility for the implementation of, and participation in, the management assessment process. EUO managers at all levels are expected to periodically assess implementation of the integrated quality assurance program requirements in their functional areas.

The LMES QA Rule Implementation Plan requires management assessments. More than three years have passed since the approval of the QA Rule Implementation plan, yet a management assessment has not been completed. An interview with senior managers indicate that the management assessment is scheduled to start in July 1998. The EUO management self-assessment program does not meet the Implementation Guide for the QA Rule. EUO has been engaged in a broad range of activities during the restart which include substantial participation by management personnel.

**ORR DEFICIENCY FORM**  
Quality Assurance

**CONCLUSION:** Management assessment is both a QA Rule and DOE Order 5700.6C requirement which has to be fulfilled. This is a post start finding.

Inspector: <u>Paul Chimah</u> Paul Chimah	Team Leader: <u>Jeffrey L. Roberson</u> Jeffrey L. Roberson
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**ORR ASSESSMENT FORM 1**  
Radiation Protection

<b>FUNCTIONAL AREA: RP</b>	<b>OBJECTIVE 1, Rev. 0 DATE: May 12, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b> <input checked="" type="checkbox"/>	<b>NO</b>

**OBJECTIVE:** Radiological protection programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure operational support services are adequate for safe operations. **(CORE REQUIREMENT #8)**

Criteria

The radiological protection organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. It is adequately staffed with qualified personnel. (5480.19, Ch. II and VIII; 10 CFR 835; S/RID FA Radiological Protection (RP) LMES ID #10067)

The radiological protection program meets or exceeds the requirements of 10 CFR 835 as set forth in the LMES (DOE Approved) Radiological Protection Plan (RPP), Appendix A. (10 CFR 835; S/RID FA Radiological Protection (RP) LMES ID # 10058, #10060-#10070)

The radiation protection program appropriately implements DOE N441.1 as incorporated into the Y-12 S/RIDs; addresses the radiological hazards unique to the facility for normal and abnormal conditions; and conducts evaluations for improvement and corrective actions. (10 CFR 835; S/RID FA Radiological Protection (RP) LMES ID #10071-#10087)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, or internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels for the radiological protection support organization. Review the necessary records and program procedures to ensure that the radiological control program includes the items identified above. Review records of radiation protection evaluations of off-normal occurrences with identified necessary corrective actions.

**Interviews:** Interview those selected radiation protection personnel that support operations to determine if they are familiar with their roles, responsibilities, and interfaces with the operations organization.

**ORR ASSESSMENT FORM 1**  
**Radiation Protection**

Shift Performance: While observing operations and maintenance evolutions and drill response, determine if the radiation protection personnel that support operations are providing adequate support to the operations organization, and that they are giving adequate attention to health, safety and environmental protection issues. At least one operations or maintenance evolution and drill will be conducted to specifically assess those items contained in 10 CFR 835 and associated S/RIDs.

Record Review:

- Martin Marietta Energy Systems, Inc. Radiation Protection Program Implementation Plan for 10 CFR 835, Occupational Radiation Protection, April 4, 1995.
- Y-12 Plant Compliance Assessment and Implementation Strategy for Title 10, Code of Federal Regulations Part 835, Occupational Radiation Protection, December 22, 1997.
- Radiological Control Organization Roles and Responsibilities, RCO-AD-202PD, Rev. 0, 10/1/97.
- RADCON organizational charts, signed J. Barker, 4/15/98.
- Radiological Posting and Entry Control, Y75-117, 1/21/98.
- Radiological Work Permit, Y75-122, 1/21/98.
- Selection and Use of Protective Clothing for Radiological Protection, Y75-124, 1/22/98.
- Transfer and Management of Material for Radiological Control, Y70-101, 1/23/98.
- Y-12 Plant Radiological Control Program, Y70-100, 1/22/98.
- Response to Loss of Ventilation in Contaminated Work Areas, Y70-110, 12/20/96.
- Glovebox Surveillance, Y70-111, 1/26/98.
- Personnel Radiation Exposure Records and Reports, Y70-112, 1/20/98.
- Radiation Generating Devices, Y70-121, 1/20/98.
- Bioassay Program, Y70-130, 12/9/96.
- Dosimetry Services for Visitors to the Y-12 Plant, Y70-133, 1/21/98.
- Y-12 Plant ALARA Program for Radiological Protection, Y70-134, 1/23/98.
- Radioactive Source Control, Y75-102, 12/31/97.
- Exposure Limits and Administrative Control Levels, Y75-105, 1/21/98.
- External Dosimetry Program, Y75-119, 1/21/98.
- Y-12 Field Operations Radiological Control Technician Training and Qualification Program, RCO-TR-TQ1, Rev. 1, January 30, 1998.
- Training Management System Requirement/Qualification Status reports for 4 Radiological Control Technicians, dated 5/7/98.
- Radiological Control Assessment Program, RCO-AD-400, Rev. 0, 6/14/97.
- Entry Control Assessment Report, Memorandum, K. Branum to J. Barker, LMES, September 22, 1997.
- Onsite Assessment Report of LMES External Personnel Dosimetry Program for DOE Laboratory Accreditation Program (DOELAP), November 3-4, 1997, 11/4/97.

**ORR ASSESSMENT FORM 1**  
Radiation Protection

- Management Self-Assessment Report, memorandum, K. Branum to J. Barker, LMES, January 21, 1998.
- Dosimetry and Records Department Quarterly Assessment Report of MK Ferguson Dosimetry, report number DOS-97-02, June 16, 1997.
- Assessment Checklist, *Implementation of Posting Requirements*. Dates of assessment, 9/11/97 to 9/19/97.
- Radiological Work Permit Implementation Assessment, memorandum, K. Branum to J. Barker, LMES, May 12, 1997.
- LMES Compliance Assessment Reports for 10 CFR 835, examples, dated 4/24/97.
- Protocol between Radiological Control (RADCON) and the 9212 Facility Manager for Transfer of Personnel and Material Between High Contamination Areas via Radiological Buffer Area, PROTOCOL-97-003, Rev. 1, October 14, 1997.
- Protocol between Radiological Control (RADCON) and the 9212 Facility Manager for Removal of Trash and Used (Dirty/Contaminated) Anti-C Laundry from Boundary Control Stations at 9212, PROTOCOL-97-004, Rev. 0, November 24, 1997.
- Air Sampling at the Y-12 Plant, RCT Training Module, delivered April - May, 1998.
- Identified Deficiencies or Poor Task Performance, RCT Training Module, delivered February, 1998.
- Sample RCT Comprehensive Examination.
- Contract DE-AC05-84OR21400, Y-12 Plant As Low As Reasonably Achievable (ALARA) Goals for Radiological Protection Calendar Year 1998, memorandum Gustavson, LMES, to Jackson, DOE/YSO, April 30, 1998.
- Y-12 Price-Anderson Amendments Act (PAAA) Site Evaluation Board (YSEB), memorandum, Gustavson to Butz, et al, LMES, March 31, 1998.
- Y-12 Site Office Assessment of enriched Uranium Operations Phase A1 Activities at the Y-12 Plant, US DOE Oak Ridge Operations, April 30, 1998.
- Lockheed Martin Energy Systems, Inc. Operational Readiness Review Report for the enriched Uranium Operations Restart Phase A1 at the Oak Ridge Y-12 Plant, April 1998.
- Y-12 Site Office (YSO) Radiological Control (RADCON) Protocol for Occurrence Reporting, letter from Jackson, DOE/YSO, to Gustavson, LMES, October 27, 1997.
- Consensus of the Y-12 Plant Radiological Control Organization and the U.S. department of Energy (DOE) Y-12 Site Office regarding Radiological Control Reporting Requirements of DOE M 232.1-1A, "Occurrence Reporting and Processing of Operations Information", September 22, 1997.
- Radiological Work Permit, RCO/Y-FO-400, Rev. 1, 8/29/97.
- Y-12 Occurrence Reports involving radiation protection related incidents at EUO facilities during CY98.
- First Quarter Summary of Off-Normal Personnel Contamination Occurrences, memorandum from Barker to Beck, Bowers, et al, LMES, April 13, 1998.
- Example graphs and data from the Y-12 off-normal and non-reportable radiological incidents tracking and trending process, April 1998.

## ORR ASSESSMENT FORM 1

### Radiation Protection

#### Interviews Conducted:

- Y-12 RADCON Manager
- DOE YSO RADCON Manager
- Y-12 Field Operations Manager (RCO)
- A DOE YSO Facility Representative for EUO
- 9215 Radiological Engineer
- 9212 Radiological Engineer
- 9215 RADCON Supervisor
- 9212 RADCON Supervisor
- Y-12 Technical Programs Manager (RCO)
- Y-12 Dosimetry and Records Manager
- Y-12 RADCON Field Instrumentation Supervisor
- Y-12 ORPS Program Manager
- EUO RADCON Technicians (6)
- RADCON Training Team Leader
- RADCON Policy/Regulation Lead
- Team Leader, RADCON Compliance and Assessment Group

#### Shift Performance Evolution:

- RADCON "Management by walking around" assessment of 9212
- Code 80 Glovebox operation pre-job briefing
- Code 80 Glovebox operation
- Crucible cleanup from casting operation
- Routine RCT performance during operations

#### Discussion of Results:

Records Review: Reviews of the documentation concerning the organizational structure demonstrate that the radiation protection program is established sufficiently to support EUO operations. Organization charts, functions, roles and responsibilities, and reporting relationships are defined and implemented. Minimum qualification levels are established for the technical staff. Training requirements are established for those non-professional and supervisory positions which have training requirements placed upon them.

Documentation of LMES and YSO assessments indicate that the program has achieved a satisfactory level of compliance with the requirements placed upon it. Internal audit and assessment processes are in place to identify, report, and respond to potential deficiencies. A process is in place for the review and appropriate reporting of Price-Anderson Amendments Act (PAAA) related deficiencies should they occur.

## ORR ASSESSMENT FORM 1 Radiation Protection

Recent occurrence reports were reviewed and determined to contain a sufficient level of detail, causal analyses, and appropriate corrective actions. Incidents that occurred but were not above the reporting thresholds were also internally tracked and trended, with corrective actions taken when the underlying causal factors were identified.

A review of several RADCON operating procedures demonstrated a level of detail, appropriateness, and completeness sufficient to support operations. One procedure in particular, *Radiological Work Permit*, RCO/Y-FO-400, Rev. 1, 8/29/97, is noteworthy in the amount of supplemental information and methodology provided to assist the user in developing effective RWPs.

Site-wide ALARA goals are established, reviewed, and updated by Y-12 management on an annual basis, and are applicable to EUO operations.

**Interviews:** All interviews with the radiation protection staff indicated that they were familiar with the roles and responsibilities. Personnel in direct support of the EUO operations organization were cognizant of and comfortable with their assignments and interfaces with EUO. Interviews with personnel in indirect roles indicated that they were cognizant of the impact of their functions upon the EUO restart activities. The working relationship between the RADCON organization, the occurrence investigation and reporting organization, the DOE Site Office (YSO) and the EUO operations organization is noteworthy in its efficiency and effectiveness in identifying, analyzing, reporting, and responding to occurrences.

**Shift Performance:** Observations of radiation protection staff during operations and maintenance evolutions demonstrated an adequate level of attention to health, safety, and environmental protection issues. Interfaces with the operations organization were appropriate and effective in the evolutions observed.

General housekeeping within the areas visited was good. The recent and ongoing efforts to reduce the levels of contamination and the size of the contaminated areas were observed to be successful in reducing both the hazards to the workers and the associated costs, and should be encouraged to continue.

**Conclusion:** The criteria for this objective have been met. Due to the nature of the support they provide EUO, the radiation protection organization has been in operations throughout the shutdown of the facilities. Also, changes of a few years ago in the LMES RADCON Manager position and the YSO RADCON Manager position, have resulted in strong leadership and direction in the protection programs site wide, as is evidenced from the completeness of the programmatic documentation and its implementation.

**ORR ASSESSMENT FORM 1**  
Radiation Protection

<b>FUNCTIONAL AREA: RP</b>	<b>OBJECTIVE 1, Rev. 0</b> <b>DATE: May 21, 1998</b>	<b>CRITERIA MET</b>	
		<b>YES</b>	<b>X</b>

**OBJECTIVE:** Radiological protection programs are established, sufficient numbers of qualified personnel are provided, and adequate facilities and equipment are available to ensure operational support services are adequate for safe operations. (CORE REQUIREMENT #8)

Criteria

The radiological protection organization is established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. It is adequately staffed with qualified personnel. (5480.19, Ch. II and VIII; 10 CFR 835; S/RID FA Radiological Protection (RP) LMES ID #10067)

The radiological protection program meets or exceeds the requirements of 10 CFR 835 as set forth in the LMES (DOE Approved) Radiological Protection Plan (RPP), Appendix A. (10 CFR 835; S/RID FA Radiological Protection (RP) LMES ID # 10058, #10060-#10070)

The radiation protection program appropriately implements DOE N441.1 as incorporated into the Y-12 S/RIDs; addresses the radiological hazards unique to the facility for normal and abnormal conditions; and conducts evaluations for improvement and corrective actions. (10 CFR 835; S/RID FA Radiological Protection (RP) LMES ID #10071-#10087)

Approach

**Record Review:** Review the documentation (e.g., administrative procedures, organizational charts, position descriptions, or internal memoranda) which establish the roles, responsibilities, interfaces, and staffing levels for the radiological protection support organization. Review the necessary records and program procedures to ensure that the radiological control program includes the items identified above. Review records of radiation protection evaluations of off-normal occurrences with identified necessary corrective actions.

**Interviews:** Interview those selected radiation protection personnel that support operations to determine if they are familiar with their roles, responsibilities, and interfaces with the operations organization.

**ORR ASSESSMENT FORM 1**  
Radiation Protection

Shift Performance: While observing operations and maintenance evolutions and drill response, determine if the radiation protection personnel that support operations are providing adequate support to the operations organization, and that they are giving adequate attention to health, safety and environmental protection issues. At least one operations or maintenance evolution and drill will be conducted to specifically assess those items contained in 10 CFR 835 and associated S/RIDs.

Record Review:

- Martin Marietta Energy Systems, Inc. Radiation Protection Program Implementation Plan for 10 CFR 835, Occupational Radiation Protection, April 4, 1995.
- Y-12 Plant Compliance Assessment and Implementation Strategy for Title 10, Code of Federal Regulations Part 835, Occupational Radiation Protection, December 22, 1997.
- Radiological Control Organization Roles and Responsibilities, RCO-AD-202PD, Rev. 0, 10/1/97.
- RADCON organizational charts, signed J. Barker, 4/15/98.
- Radiological Posting and Entry Control, Y75-117, 1/21/98.
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- Transfer and Management of Material for Radiological Control, Y70-101, 1/23/98.
- Y-12 Plant Radiological Control Program, Y70-100, 1/22/98.
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- Glovebox Surveillance, Y70-111, 1/26/98.
- Personnel Radiation Exposure Records and Reports, Y70-112, 1/20/98.
- Radiation Generating Devices, Y70-121, 1/20/98.
- Bioassay Program, Y70-130, 12/9/96.
- Dosimetry Services for Visitors to the Y-12 Plant, Y70-133, 1/21/98.
- Y-12 Plant ALARA Program for Radiological Protection, Y70-134, 1/23/98.
- Radioactive Source Control, Y75-102, 12/31/97.
- Exposure Limits and Administrative Control Levels, Y75-105, 1/21/98.
- External Dosimetry Program, Y75-119, 1/21/98.
- Y-12 Field Operations Radiological Control Technician Training and Qualification Program, RCO-TR-TQ1, Rev. 1, January 30, 1998.
- Training Management System Requirement/Qualification Status reports for 4 Radiological Control Technicians, dated 5/7/98.
- Radiological Control Assessment Program, RCO-AD-400, Rev. 0, 6/14/97.
- Entry Control Assessment Report, Memorandum, K. Branum to J. Barker, LMES, September 22, 1997.
- Onsite Assessment Report of LMES External Personnel Dosimetry Program for DOE Laboratory Accreditation Program (DOELAP), November 3-4, 1997, 11/4/97.