

Date: Thu, 26 Mar 1998 09:05:49 -0500
From: eub@ornl.gov (Cynthia M. Eubanks)
Subject: LMES LL: Additions Made To Heavy Equipment

The following Lockheed Martin Energy Systems, Inc. Lessons Learned communicates an incident that occurred recently at the East Tennessee Technology Park. Please disseminate as applicable. If you have any questions, please contact Joanne Schutt (s6u@ornl.gov) at (423)574-1248.

Cynthia M. Eubanks
Mgr., Issues Mgt. Support Staff

TITLE: Additions Made To Heavy Equipment Used to Move UF6 Cylinders

IDENTIFIER: L-1998-OR-LMESETTP-0201

DATE: February 17, 1998

LESSONS LEARNED STATEMENT: When additions are made to heavy equipment, personnel responsible for the maintenance of the equipment should be included in equipment job planning.

DISCUSSION: Health and safety concerns were expressed by employees concerning future maintenance for additions made to heavy equipment used to move UF6 cylinders at ETTP.

An East Tennessee Technology Park (ETTP) employee observed that UF6 cylinder handling equipment was in the process of being equipped with exhaust system insulation blankets and subsequent fire suppression systems. These hardware additions were being performed to reduce the likelihood of an on-board fire causing injury to operating personnel. This addition also reduces the potential for a fire in the storage yard that could lead to the hydraulic rupture of a UF6 cylinder. This was determined to be the worst case accident scenario that could occur in a cylinder storage yard. Fire suppression additions were performed at all three sites (Paducah, Portsmouth, and ETTP) by a common service subcontractor under the direction of the Paducah Engineering organization, who are considered the design authorities for UF6 handling equipment.

Equipment Test and Inspection (ET&I) personnel were informed of the additions so that proper pre-operational testing and training could be performed. Garage personnel were to be informed as part of the task close-out process.

The employee expressed concern that the organization responsible for the maintenance of this equipment had not been made aware of the observed additions.

ETTP garage personnel had not been informed of the planned additions to the UF6 cylinder handling equipment. Garage mechanics and supervisors, when planning maintenance of heavy equipment, use equipment history files to ensure safety concerns are addressed and maintenance is performed correctly.

The concerns raised pertaining to this event were:

1. Personnel responsible for the maintenance of UF6 cylinder handling equipment were not included in the planning phase for the additions.
2. Safety and configuration information for the UF6 cylinder handling equipment additions was not provided to garage personnel for inclusion in equipment files prior to performing the hardware additions.
3. Health issues related to the material used as insulation blankets on the equipment's exhaust systems were raised.

ANALYSIS: A critique of the event was conducted and following are facts related to the event.

A three-site team (Paducah, Portsmouth, and Oak Ridge) was charged with implementing measures to address accident scenarios associated with handling of UF6 cylinders.

The team decided that equipment used to stack and move UF6 cylinders would be equipped with a fire suppression system and that the exhaust manifolds and exhaust piping would be covered with ceramic-based insulation blankets to reduce the likelihood of the occurrence of fire during movements of UF6 cylinders. This protects the operators and reduces the potential of a cylinder rupture.

Project planning for the installation of fire suppression systems and insulating blankets on the UF6 cylinder handling equipment was very thorough for operating the UF6 cylinder handling equipment. The planning included the need for review of operations by responsible operators, implementation of measures to address operating safety concerns, and appropriate training for personnel conducting the work. Planning did not, however, include the involvement of personnel responsible for maintenance of the UF6 cylinder handling equipment.

RESOLUTION/RECOMMENDED ACTIONS: To minimize the recurrence of this event the following action plan was developed:

Issue a lessons learned through the ETTP Lessons Learned Program emphasizing the need for inclusion of appropriate maintenance personnel during planning activities for equipment additions.

Communicate to the appropriate authorities at Portsmouth and Paducah the lessons learned from this event and the actions being taken.

As part of the planning process, provide garage personnel with the information they need to include in their files to ensure maintenance to the additions are performed safely and correctly.

Garage personnel will contact the Industrial Hygiene Organization prior to performing work on the exhaust system insulating blankets to ensure planned work is evaluated and appropriate personnel protection is used per governing procedures.

ORIGINATOR: Lockheed Martin Energy Systems; E. Jeff Lavender, 423/576-4620 ETPP Operations

VALIDATOR: Halen E. Philpot, 423/576-4525 ETPP Operations

CONTACT: Joanne E. Schutt, 423/574-1248

NAME OF AUTHORIZED DERIVATIVE CLASSIFIER: C. J. Schermerhorn

NAME OF REVIEWING OFFICIAL: A. S. Quist

PRIORITY DESCRIPTOR: Blue/Information

DOE FUNCTIONAL CATEGORY: Maintenance, Conduct of Operations, Packaging and Transportation

LMES FUNCTIONAL CATEGORY: MA - Maintenance, OP - Conduct of Operations, TR - Transportation Safety

KEYWORDS: cylinders, maintenance, additions, equipment, planning, files

REFERENCES: I Care Issue: IC-98-022

ETTP Critique CR-98-0004 - "Concerns for Maintenance of Additions Made to Heavy Equipment Used to Move Uranium Hexafluoride (UF₆) Cylinders at ETPP"

FOLLOW-UP ACTION: Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please notify Joanne E. Schutt at 423/574-1248, e-mail at s6u@ornl.gov of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.

Cynthia M. Eubanks

(423)576-7763; FAX=(423)576-8835

Mgr. Issues Management Staff

Lockheed Martin Energy Systems, Inc.