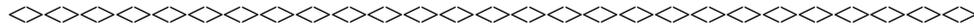


Date sent: Thu, 27 Aug 1998 08:14:35 -0400
From: "Eubanks, Cynthia M. (EUB) " eub@bechteljacobs.org
Subject: Yellow Alert: Near Miss on Lockout-Tagout

The following Bechtel Jacobs Company, LLC Lesson Learned Yellow Alert is being distributed to communicate a near-miss incident that occurred at the East Tennessee Technology Park (ETTP). If you have any questions, please contact Joanne Schutt at (423)574-1258, s6u@ornl.gov. Cynthia M. Eubanks Performance/Quality Assurance Org. Bechtel Jacobs Company, LLC Phone: (423)576-7763;



TITLE: Near Miss on Lockout-Tagout

IDENTIFIER: Y-1998-OR-BJCETTP-0802

DATE: August 14, 1998

LESSONS LEARNED STATEMENT: Improperly interpreted electrical distribution panel layout, and the failure to exercise stop work authority when faced with perceived schedule pressures and uncertainty, including times when schedule pressures are inherent, can result in a near-miss incident.

DISCUSSION: On June 8, 1998, subcontractor personnel were performing maintenance in a maintenance tent located in a contamination zone. The lockout/tagout for the job had been temporarily suspended for testing and was reapplied on June 8 to continue maintenance. The lockout/tagout consisted of two locks, one each for a 480-volt AC circuit and a 120-volt AC circuit. The maintenance that was scheduled required that only the 480-volt AC be locked out; however, since the suspended lockout/tagout was available, it was reapplied. The breaker for the 120-volt AC was located in a distribution panel which included a circuit directory; however, the individual breakers were not numbered. The locks were placed by a lockout/tagout trained individual, the circuit was verified dead at the equipment's on/off switch, and work was commenced. Unknown to the electricians, the system lead supervisor unplugged the 120-volt AC power cord from the circuit outlet. Lockout/tagout isolation was not verified by the issuing authority and an authorized employee did not conduct an independent verification. Therefore, the lockout/tagout procedure was not followed. Maintenance was performed on the system without incident, and the work crew departed for the day leaving the lockout/tagout in place.

Later that same day, the project Radiological Control Technician informed the project Site Safety and Health Officer (SSHO) that the portable air sampler, taking a sample on the doffing area in the maintenance tent, was not operating. The SSHO investigated and found that the circuit that the portable air sampler was plugged into had been locked out under the lockout/tagout. The SSHO informed the project shift supervisor who investigated and found that the lock was hung on the wrong circuit breaker in the distribution panel. With no personal locks on the system, the shift supervisor removed the incorrect lock and placed the lock on the correct circuit and restored power to the portable air sampler. The removal and replacing of the lockout/tagout was performed in accordance with the lockout/tagout procedure.

ANALYSIS: The direct and root causes of this event were determined to be a deficiency in training. Both the initiating authority and the individual applying the lockout/tagout had received Lockout/tagout training. However, the individuals were not trained on the layout of distribution panels.

Design problems were deemed a contributing cause because the distribution panel was located close to the floor and under a counter. The individual applying the lockout/tagout had to kneel to read the directory of the distribution panel. When the correct breaker was identified on the directory, the individual then counted breakers beginning with the most upper left breaker and counted sequentially down the left column to the desired breaker. Though not required by code, the individual breakers were not labeled. Had the breakers been labeled, the lock would have been applied to the correct breaker.

Personnel actions were deemed a contributing cause because the individual applying the lock when faced with trying to determine the correct breaker to lockout failed to stop and obtain guidance on the numbering of breakers in a distribution panel. What the individual applying the lock did not know was that the panel breakers are numbered with the odd breakers on one side and the even numbered breakers on the other.

Management oversight was deemed a contributing cause because the individual applying the lock perceived some schedule pressures to complete the maintenance. It was stated in the investigation that the individual would have applied greater diligence in the application of the lock in the absence of the pressure.

RESOLUTION/RECOMMENDED ACTIONS:

1. Ensure all project electrical distribution panels contain proper directories and are adequately labeled.
2. Discuss this incident at the plan-of-the-day meeting to ensure all of the project team members are aware of the following:
 - a. Management expectations that work should be stopped when faced with uncertainty including times when schedule pressures are inherent;
 - b. The requirements of how to apply a lockout/tagout to equipment having plug power cords; and
 - c. Training requirements for team members on the numbering scheme of distribution panels.
3. Employees involved with this near miss should receive retraining for the Lockout/Tagout Procedure.
4. Prepare and issue a formal Lesson Learned concerning this event.

ORIGINATOR: Bechtel Jacobs Company, LLC; David H. Bolling, 423-241-2424 Project Management

VALIDATOR: Paul B. Pehrson, (423) 241-1171 Performance/Quality Assurance

CONTACT: Joanne E. Schutt, (423) 574-1248

NAME OF AUTHORIZED DERIVATIVE CLASSIFIER: S. P. Parks

NAME OF REVIEWING OFFICIAL: J. F. Preston

PRIORITY DESCRIPTOR: Yellow/Caution

KEYWORDS: near miss, lockout/tagout, electrical,

REFERENCES: Occurrence Report: ORO--BJC-X10ENVRES-1998-0005 Critique Summary CR-98-020

DOE FUNCTIONAL CATEGORY: Safety, Conduct of Operations, Management

LMES FUNCTIONAL CATEGORY: SH - Safety and Health, OP - Conduct of Operations, MG - Management

HAZARD CATEGORY: Electrical/NEC

WORK ACTIVITY: Work Control

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, eub@bechteljacobs.org

Performance/Quality Assurance Org.

Bechtel Jacobs Company, LLC

Phone: (423)576-7763; Pager = 873-6968

Fax: (423)574-5398