

2 workers endangered in near-miss

On September 2, 2003, two subcontractor employees were placed in grave danger when they unknowingly violated minimum safeapproach distances to live conductors in a 13,200-volt (13.2kV) electrical cabinet.

The near-miss incident occurred during decontamination and decommissioning (D&D) activities at Technical Area 3, Structure 287 (Syllac Building). The cabinet had been mistakenly cleared for removal by a support services subcontractor supervisor.

A D&D employee gained access to the cabinet by cutting two utility cabinet door locks and removing two five-point bolt locks. The employee also removed the cabinet's final fiberglass barriers, an action that placed his hand within an estimated 8 inches of an energized 13.2 kV switch.

The worker then asked a subcontractor electrician in the vicinity to assist him in verifying that the electrical cabinet switch was de-energized. The electrician, who is not a qualified electrical lineman, held an inductive proximity detector rated for 600 volts within an estimated 6 inches of the switch. The detector indicated the presence of voltage and the electrician withdrew the detector. Neither employee was wearing personal protective equipment. Fortunately, no arc occurred and no injury resulted from this event.

The National Electrical Safety Code minimum safe approach distance for working on 13.2 kV equipment by QUALIFIED WORKERS is 2 feet, 3 inches. Both employees had their hands well within this approach distance, and had an arc occurred, it would have triggered an



explosion and plasma fireball that would have been directed outside the cabinet doors and likely have incinerated anything within 15 feet of the open door.

PRELIMINARY ANALYSIS:

closed

The investigation into this event is continuing, and formal findings will be made available when the investigation is complete. Preliminary analysis indicates informal and inaccurate communication and the lack of formal procedures for assuring that utility lines had been deenergized were primary factors in this event.

The investigators noted that D&D work control standards differ in some areas from regular LANL facility work control procedures, and that the D&D employee had implicit authority to remove locks that were not placed at the facility

FOR DETAILS:

- Occurrence Report: ALO-LA-LANL-WASTEMGT-2003-0006
- Facility Contact:

Dennis McLain, 665-5099

■ PS-7 Occurrence Investigator:

Matt Hardy, 667-6335

An additional alert about this event will follow if the investigation reveals details that indicate an unknown hazard exists for other employees involved in this type of activity. For more information about "1st Take," please call LANL PS-7 at 665-0033.

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through the formal lockout/tagout procedure. The communication errors concerning the live 13.2 kV cabinet involved LANL project management, primary support services subcontractors, and the D&D company. The D&D employee believed the cabinet was de-energized based on inaccurate information supplied by a support services supervisor. While power to the building had been disconnected, the cabinet was still energized because support services utility officials were awaiting electrical equipment that would have allowed them to splice the highpower lines and reroute power away from the cabinet. These organizations did not have formal processes in place to turn over utilities equipment and assure that high-voltage utility lines had been de-energized and properly isolated.

INITIAL RECOMMENDATIONS:

Investigators are focusing on the LANL safework process failures associated with turning over the facility to the D&D company.

MANAGEMENT LEVEL: Configuration management programs establish and maintain the status of equipment and systems. A critical element of configuration management is the establishment of formal processes to control turnover or removal of all potentially hazardous equipment and systems. These processes should include formal, documented methods for consistent and accurate communication of equipment status and formal procedures for hazardous energy isolation and verification. When these processes are implemented, workers will not encounter unknown or unexpected situations at the moment work is to commence, and thus be forced to make snap decisions that could put them at risk for potentially serious

WORKER LEVEL: Regardless of the work or situation, believe, and act upon, what you know or suspect to be true. For example, if your job is to verify that an electrical system is deenergized, you must *believe* that there is a possibility that the system is actually live. If you act on *this* belief, then other factors, such as the presence of warning signs, locks, bolts, doors, or other barriers, will tend to re-enforce this belief and better allow you to recognize and *believe* that any barriers you encounter are active and thus necessary. If you believe and act upon what you know or suspect, you are much better equipped to stop work before your personal safety is at risk.

GUIDANCE: LANL resources at hand

The following references contain LANL guidance for inspections and verification of system status before performing work that is an integral part of the LANL safe-work process:

- LIR 402-10-03.2 ES&H Management of Contractor Performed . . . Decontamination and Decommissioning . . . Operations
- LIR 402-600-01.2 Electrical Safety
- LIR 401-10-01.1 Stop Work and Restart
- LIR 300-00-01.4 Safe Work Practices
- LIR 230-03.01 Facility Management Work Control
- LIR 402-10-01 Hazard Analysis and Control for Facility Work

The LANL contact for operational safety issues is HSR-5 Group Leader Brad F. Gallimore, 667-5231.