



Working near energized circuits has resulted in electrical near misses.

Events

Site/Facility: **Hanford Fast Flux Test Facility Project**

Instrument Technician Receives Electrical Shock while Removing Module -- Reference: **ORPS Report [RL--PHMC-FFTF-2004-0001](#)**

On January 26, 2004, an instrument technician received a shock while removing an electronic module from a control cabinet when his hand brushed against a 110-volt terminal while using a crescent wrench to remove a fastener. The technician had replaced another module the previous day as part of a troubleshooting effort to fix a heat trace control system, but that had not solved the problem. The technician knew of the energized circuits which were clearly marked.

Important Points:	<ul style="list-style-type: none"> • No walkdown of the job site was conducted that could have identified an appropriate tool for the job and precautions to accomplish the task safely. • The technician did not use and personal protective equipment.
Contributors:	<ul style="list-style-type: none"> • The module was oriented differently than other similar modules he had worked on in other systems at the facility. • The module was located closer to the energized source than the module he had replaced the preceding day. • He self-imposed pressure to complete the job in twenty minutes to prevent the trace heat computer from timing out.

Site/Facility: **Los Alamos National Laboratory - Data Storage Project**

Near Miss while Working Near Energized Panel -- Reference: **ORPS Report [ALO-LA-LANL-CMPTRDIV-2003-0001](#)**

On December 22, 2003, an electrician observed a subcontractor worker running a metal fish tape through a conduit toward an open junction box connected to fire alarm booster panel containing energized 120-volt terminals. Because the worker was alone, he used a block of wood at the end of the conduit at the junction box to prevent the fish tape from entering the fire alarm panel.

Important Points:	<ul style="list-style-type: none"> • The worker did not recognize the hazards posed by running metal fish tape near energized equipment. • The worker was aware that a lockout was required before running wires into the panel (which he planned to do); however he did not consider a lockout for running the metal tape.
Contributors:	<ul style="list-style-type: none"> • The activity hazards analysis did not address the use of fish tapes. • The panel was not de-energized and locked out.

Site/Facility: **Sandia National Laboratory - Albuquerque**

Electrical Subcontractor Causes Short Circuit -- Reference: **ORPS Report [ALO-KO-SNL-1000-2003-0007](#)**

On October 10, 2003, a journeyman electrician accidentally pinched a 120-volt energized conductor while using a knockout cutting device to cut a 3-inch access hole in a distribution panel to attach a new service raceway conduit. There was no injury but the ground fault opened a circuit breaker resulting in a power outage.

Important Points:	<ul style="list-style-type: none"> • The electrician assumed the panel could not be de-energized and he chose to work energized because he believed he could perform the work safely. • The work in the panel was designated to be performed during a planned power outage per the hazard control identified in the activity hazard analysis.
Contributors:	<ul style="list-style-type: none"> • The construction safety plan included a procedure for obtaining a permit to authorize work on energized electrical circuitry. • The electrician did not understand the protocol for requesting a permit. • The protocol did not clearly define “energized work.”

Site/Facility: **Strategic Petroleum Reserves - Bryan Mound Site**

Electrical Near Miss while Pulling Power Cables into Raceway -- Reference: **ORPS Report [HQ--SPR-BM-2002-0001](#)**

On March 15, 2002, an electrician unbolted a metal cubicle separation panel and left it hanging in a motor control center to facilitate routing cables. While pulling cable, the panel inadvertently contacted an energized 480-volt bus bar, causing a fault and circuit breaker to open. The panel was attached to a Lexan barrier that protects the bus bars and when it was removed, it created an opening that exposed personnel and equipment to the energized bus bars.

Important Points:	<ul style="list-style-type: none"> • De-energizing the bus and applying a lockout was considered not necessary because the Lexan barrier would provide protection (if left in place). • The panel should not have been removed while energized.
Contributors:	<ul style="list-style-type: none"> • The electrician should not have been allowed to take a shortcut by leaving the panel hanging by wires from an attached terminal strip for a 110-volt space heater.

Important Considerations for Energized Electrical Work (Lessons Learned)

- Has safety training been provided to personnel who work on energized equipment/circuits?
 - How will all circuits near the work be verified as de-energized or energized? Who will perform that verification?
 - What are the proper methods for using test meters in checking for energized circuits? Are all workers trained and qualified to use these meters? How can you verify their qualifications?
 - Has authorization been given to work on or near energized equipment? Who can authorize this work? Below what voltage can work be performed without authorization? Does a two-man rule apply when working energized?
 - Is the correct personal protective equipment (PPE) being used when working energized?
 - What protective equipment is required (e.g., shielding, insulating materials, tools)? How can you verify that the equipment is in good condition and appropriate for the work? Has the protective equipment been issued and being used?
 - What should be done if procedures or work instructions have not adequately addressed electrical safety?
 - What actions must be taken if before any work is performed that is not clearly specified in the work package?
 - Do all workers know the configuration of the electrical equipment and completely understand the limits of the work scope?
 - Has the prejob briefing reviewed the scope of the work, equipment train and equipment location? Have all parties involved in the work attended the briefing?
 - What first aid should be administered to a person who has been shocked?
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