



**Work Packages that inadequately defined lockout/tagouts have placed workers at risk.**

**Events**

**Site/Facility: Los Alamos National Laboratory**

**Wrong Lockout Attachment Provided in Work Package – Reference: [ALO-LA-LANL-TRITFACILS-2004-0004](#)**

On November 1, 2004, mechanics were tasked with replacing the heads on two air compressors. Two red locks and tags were placed on the electrical supply to the compressors and a cross connect valve was opened to provide air from a backup air compressor. As the mechanics began bleeding down the air system, low pressure alarms occurred on the main air system indicating a leak and failure of the mechanics to close and lockout an isolation valve as required by the work package.

Important Points:	<ul style="list-style-type: none"> <li>• <b>The lockout/tagout attachment included in the work package was meant for isolating a single energy source, whereas one for isolating multiple energy sources should have been provided. Had the latter been provided, the mechanics may have questioned where the additional lockout needed to be placed (i.e., the isolation valve).</b></li> <li>• <b>The job planner never walked down the job with the foreman or mechanics.</b></li> </ul>
Contributors:	<ul style="list-style-type: none"> <li>• <b>One of the two energy sources (compressed air) was misidentified as hazardous (requiring a red lock), when in fact it should have had an orange lock to only control the configuration of the air system.</b></li> <li>• <b>The mechanics performed steps out of sequence and failed to close and lock the air isolation valve.</b></li> </ul>

**Site/Facility: Idaho Nuclear Technology and Engineering Center**

**Workers Fail to Isolate Steam Condensate Hazard – Reference: [ID--BBWI-LANLORD-2003-0002](#)**

On February 18, 2003, maintenance personnel working on an air-handling unit discovered that the work package had not identified two condensate valves to be closed under the lockout/tagout for repair of a leaking preheat coil that required welding. Welding could not be performed because of the presence of condensate and risk of pressurization.

Important Points:	<ul style="list-style-type: none"> <li>• <b>The work package’s failure to require isolation of the preheat coil not only prevented welders from making the repair, it allowed conditions by which the coil could have become pressurized from the steam condensate.</b></li> <li>• <b>The technical lead responsible for the lockout did not ensure that a proper review of the available system drawings and work package was performed. He also failed to perform a planning walk down to ensure hazardous energy was properly isolated.</b></li> </ul>
Contributors:	<ul style="list-style-type: none"> <li>• <b>The technical lead was pressured to get the lockout completed and relied on the input of others without verifying the adequacy of the lockout himself.</b></li> <li>• <b>Work packages that require lockouts do not always get to the technical leads in enough time for proper review and planning.</b></li> <li>• <b>The piping drawings were hard to read and understand, making it difficult to identify the piping and valves for the air handler.</b></li> </ul>

**Site/Facility: Savannah River Site Utilities Department**

**Lack of Unique Equipment ID Results in Wrong Circuit Breaker Locked Out – Reference: [SR--WSRC-SUD-2003-0001](#)**

On February 5, 2003, a maintenance crew was balancing the motor on a return pump and had hung their Single Point Lockout Tagout (SPLT) on the circuit breaker identified by a Process Water Team associate as the source of power to the motor. During the balancing operation the mechanics had the associate remove and reapply the SPLT as necessary. When the associate was relieved by another worker, the mechanics noticed that the other worker opened a different circuit breaker than the one opened earlier.

Important Points:	<ul style="list-style-type: none"><li>• <b>The work package did not use a unique component identifier on the tag to clearly identify the correct circuit breaker to be locked out.</b></li></ul>
Contributors:	<ul style="list-style-type: none"><li>• <b>Equipment labeling for the return pump is unclear. The heater disconnect switch is clearly labeled but the motor starter label, while attached to the motor starter, is not near the motor starter disconnect switch. Because the heater disconnect switch is attached to the motor starter, the location of the labeling can lead to confusion.</b></li></ul>

**Site/Facility: Hanford Site Waste Receiving and Processing Facility**

**Inadequately Prepared Lockout Isolates Wrong Equipment – Reference: [RL--PHMC-WRAP-2001-0004](#)**

On September 25, 2001, in preparation for millwrights to change inlet filters in a glovebox, an operator performing safe-to-work checks determined that the wrong lift table had been locked and tagged. The circuit breakers in the electrical room do not specify which lift table goes with which glovebox port, resulting in confusion.

Important Points:	<ul style="list-style-type: none"><li>• <b>The individual assigned to prepare the lockout did not perform an adequate system walk down or adequately use the drawings to ensure the tagout was correctly identified in the work package.</b></li></ul>
Contributors:	<ul style="list-style-type: none"><li>• <b>The worker assigned to install the lockout/tagout had only been recently assigned to this duty.</b></li><li>• <b>There is no correlation between the circuit breakers for the lift table and the gloveport doors, which can be confusing. However, adequate review of the drawings would have prevented any confusion.</b></li></ul>

**Important Considerations for Lockouts and Tagouts (Lessons Learned)**

- Who will determine the isolation boundaries? Will subject matter experts be involved in this determination and/or verify that boundaries are correct before the lockout/tagout is approved?
  - Have all applicable system drawings (e.g., electrical one-line drawings, piping & instrumentation drawings, and architectural drawings) been reviewed? Have drawing errors been identified for correction?
  - Have all potential hazards been identified (e.g., pressure, temperature, motion, electricity) and analyzed? Do the specified isolation boundaries fit the scope of work?
  - Do the installed equipment labels agree with the labeling on drawings and in work documentation? Does the lockout/tagout use unique equipment identifiers?
  - Has a walkdown of the work area been performed as part of the lockout/tagout preparation? Who will conduct this walkdown?
  - Are standardized lockout/tagouts used to isolate certain pieces of equipment, or to perform preventive maintenance, or to perform routine evolutions?
  - How will the status of systems and components affected by the tagout be monitored and tracked? Who will ensure this information is turned over during shift change?
  - Has the prejob briefing reviewed the tagout boundaries, equipment train and equipment location? Have all parties involved in the work attended the briefing?
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