



# SAFETY ALERT NOTIFICATION

This is **NOT** an investigation report. It is a **NOTIFICATION** of a **Significant Incident** that has taken place at a Freeport-McMoRan location. The information below is a preliminary assessment and not a formal investigation.

<b>OPERATION:</b>	Global		<b>Incident:</b>	
<b>ISSUED BY:</b>	Curtis Stacy, Electrical Safety Advisor		<b>Injury:</b>	
<b>DATE:</b>	5/8/15		<b>Property Damage:</b>	
<b>TIME:</b>	N/A		<b>Process Loss:</b>	
<b>LOCATION/DEPARTMENT:</b>	Electrical and Mechanical			
<b>INCIDENT DESCRIPTION:</b>	<p>A potential exists for unintended motion of electrically operated equipment under special circumstances. If electrical equipment is secured under the LOTOTO process known as the "Non-electrical Switching Green Label Guidelines", but is operated by remote equipment such as PLC's operating in automatic mode or some other electrical interlock which could initiate equipment start-up, it is possible for equipment to operate if the following take place:</p> <ul style="list-style-type: none"> <li>The disconnect switch fails to open all energized electrical phases when actuated</li> </ul> <p><b>AND one of the following:</b></p> <ul style="list-style-type: none"> <li>The qualified individual fails to properly try out the equipment by placing the local-remote switch in local mode and actuating the start/jog button</li> <li>The start/jog button has failed and the local-remote switch is left in remote mode</li> <li>The local-remote switch has failed and remains in remote mode regardless of indicated position</li> <li>The qualified individual fails to perform the equipment try out prior to beginning work</li> </ul>			
<b>DETAILS OF INJURY TYPE:</b>	The potential for injury exists if individuals who are working under presumed LOTOTO conditions then place their body within potential danger zones of the equipment they are working on and the equipment starts to operate based on some automatic start-up process.			
<b>POTENTIAL FOR INJURY:</b>	Fatality	Lost Time	Permanent Disability	Other Potential
	<b>X</b>	<b>X</b>	<b>X</b>	
<b>PROBABLE DIRECT CAUSES:</b>	Human error Equipment failure Improper application of "Green Label" switching program			
<b>IMMEDIATE CORRECTIVE ACTION:</b>	"Non-electrical Switching Green Label LOTOTO" (see attached) should not be applied to electrical systems that could potentially fall into the conditions described in the incident description. Electrical systems that do fall into those categories should have specific SOPs developed for the purpose of securing all forms of energy prior to start of work on them. Within these SOPs testing by qualified individuals for absence of voltage after the disconnect switch has been activated must be included as a step			

<b>REQUIRED ACTIONS:</b>	to be performed.
	<p>Branch electrical safety teams should review their green label switching program for potentially high risk equipment. High risk equipment should be eliminated from the green label switching program and SOPs developed for such equipment to ensure adequate protection from potential energy sources.</p> <p>Branch training departments should ensure that risks associated with LOTOTO on equipment that could potentially start without human initiated startup commands are adequately communicated to the work force. Two such examples follow:</p> <p><b><u>Example 1</u></b></p> <p>A mechanic is dispatched to work on a pump that is controlled by a remote PLC system that is connected to probes in two tanks. If either set of probes indicates high level of fluid, the pump is energized and runs until the probes indicate the level is below the probe.</p> <p>The mechanic locates the electrical disconnect associated with the pump motor and turns it to the open position. He places his lock and proceeds to the local control station to try out the pump to ensure disconnection of electrical sources and security of all energy sources. He then places the local-remote switch in the local position and presses the start button. The pump does not rotate so the mechanic believes the energy sources have been properly isolated. While turning the local-remote switch he notices that the switch feels strange and does not securely switch to the local position but since the pump did not rotate he feels secure and proceeds to work on the pump.</p> <p>While working on the coupling, the probe in Tank 1 becomes covered with fluid and the remote PLC initiates a start on the pump the mechanic is working on. The pump begins to rotate and the mechanic is severely injured by the rotation of the coupling he was working on.</p> <p><b>WHAT WENT WRONG</b></p> <p>The disconnect device failed to operate all three of the electrical phases that energize the pump thereby leaving electrical energy on the pump control starter although the disconnect switch was in the OPEN position and locked. In addition, the local-remote switch failed to switch to the local mode and consequently the operation of the start push button was ineffective in ascertaining energized/de-energized status of the pump's electrical system. When not in local mode, the remote start push button is ignored by the electrical control system. This resulted in the mechanic incorrectly believing the pump was properly isolated and consequently being injured when the pump start command was issued by the automatic systems.</p> <p><b><u>CORRECTIVE ACTION</u></b></p> <ul style="list-style-type: none"><li>• Sites should evaluate which tasks require testing by a qualified individual for the absence of voltage prior to starting work</li><li>• The SOPs for these tasks should include the step for a qualified individual to verify the absence of voltage prior to starting work.</li><li>• Tasks that do not require this step will continue to utilize the Green Label Switching program.</li><li>• The training department should ensure this information is included in the safety and technical training for these tasks.</li></ul>

## Non-Electrical Switching Green Label Guidelines

The green label will be applied using the following guidelines

- 300 to 600 Volt
- 100 Amperes and below
- Disconnect / Safety Switches only
- Never to be applied to disconnects / safety switches located within a MCC Room, Control Room, Switch Room, etc.
- The integrity of the disconnect / safety switch must be verified prior to placing a green label (door latching mechanisms)
- The disconnect / safety switch must be properly labeled for identification
- Each area will be responsible for identifying the disconnects / safety switches and applying the green labels
- An arc flash evaluation on the disconnect / safety switch is not required for the placement of the green label

At many of our operations, the green label part number is DBF13LABEL and may be purchased from Hagemeyer. The price of the label is approximately \$0.50 each when purchased in quantities of 500.



**This is NOT an investigation report. It is a NOTIFICATION of a Significant Incident that has taken place at a Freeport-McMoRan operation and is being communicated to enhance safety awareness should a similar situation exist. The information above is a preliminary assessment of the event and is not a formal investigation.**