

## July 2008 Electrical Safety Occurrences

There were 12 electrical safety occurrences for July 2008:

- 1 resulted in an electrical shock
- 7 involved lockout/tagout
- 3 involved cutting or penetrating energized conductors
- 5 involved electrical workers and 7 involved non-electrical workers
- 8 occurrences involved subcontractors

In compiling the monthly totals, the search initially looked for occurrence discovery dates in this month (excluding Significance Category R reports), and for the following ORPS "HQ keywords":

01K – Lockout/Tagout Electrical, 01M - Inadequate Job Planning (Electrical),

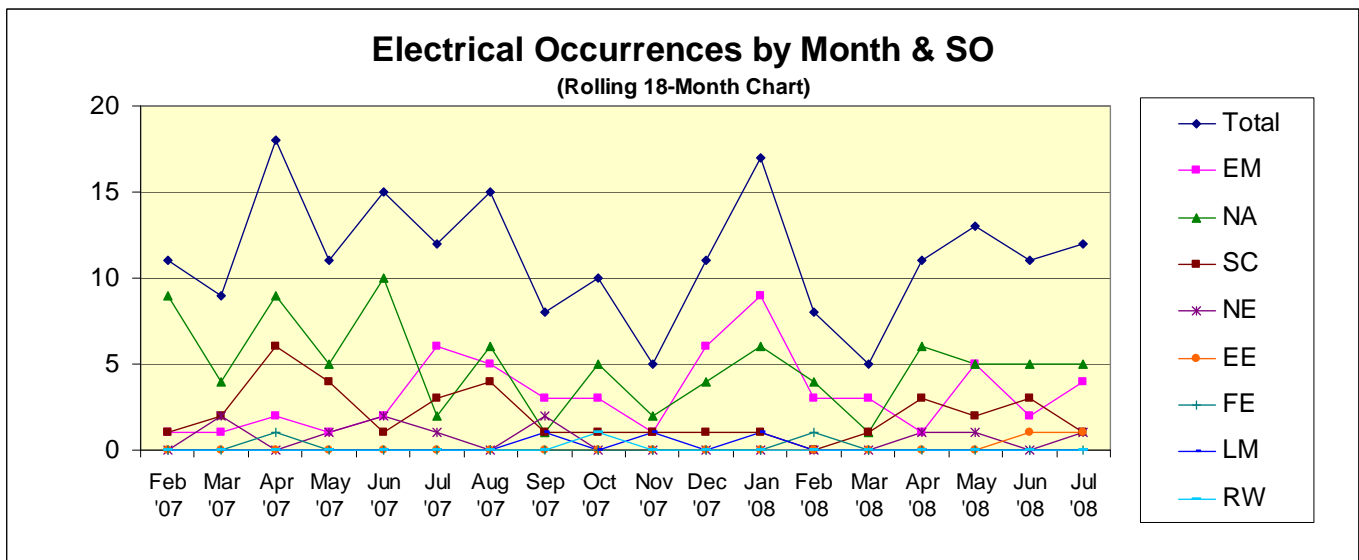
08A – Electrical Shock, 08J – Near Miss (Electrical), 12C – Electrical Safety

The initial search yielded 12 occurrences and a review of these determined none needed to be culled out.

Below is the current summary of 2008 electrical safety occurrences:

Period	Electrical Safety Occurrences	Shocks	Burns	Fatalities
Jan-08	17	7	0	0
Feb-08	8	3	0	0
Mar-08	5	1	0	0
Apr-08	11	1	0	0
May-08	13	1	1	0
Jun-08	11	4	0	0
Jul-08	12	1	0	0
2008 total	77 (avg. 11/month)	18	1	0
2007 total	140 (avg. 11.7/month)	25	2	0
2006 total	166 (avg. 13.8/month)	26	3	0
2005 total	165 (avg. 13.8/month)	39	5	0
2004 total	149 (avg. 12.4/month)	25	3	1

The average rate of electrical safety occurrences in 2008 is 11 per month, which is less than the average rate of 11.7 per month experienced in 2007.



## Electrical Safety Occurrences – July 2008

No	Report Number	Subject/Title	EW <sup>(1)</sup>	N-EW <sup>(2)</sup>	SUB <sup>(3)</sup>	SHOCK	BURN	ARCF <sup>(4)</sup>	LOTO <sup>(5)</sup>	EXCAV <sup>(6)</sup>	CUT/D <sup>(7)</sup>	VEH <sup>(8)</sup>
1	EE-GO--NREL-NREL-2008-0010	Sub-contractors violate NREL electrical safety and lockout tagout procedures	X		X				X			
2	EM-ORO--ISOT-3019A-2008-0003	Failure to Recognize Change of Conditions	X						X			
3	EM-RL--PHMC-FSS-2008-0006	Conduit Damaged by Screw		X	X						X	
4	EM-RL--PHMC-GPP-2008-0008	ZP-1 Pump and Treat Facility Upgrade Lockout Error	X						X			
5	EM-RP--BNRP-RPPWTP-2008-0013	Violation of Procedure 24590-WTP-GPP-CON-1202 (Hazardous Energy Work Control)	X						X		X	
6	NA--PS-BWXP-PANTEX-2008-0078	Discovery of unexpected and uncontrolled hazardous energy source		X	X							
7	NA--SS-SNL-2000-2008-0005	Disconnection of Disconnect Switch in Bldg. Y702		X								
8	NA--SS-SNL-2000-2008-0006	Electrical Shock to Subcontractor While Connecting Power Cable to Camera Film Take up Reel at the Tonopah Test Range		X	X	X						
9	NA--SS-SNL-4000-2008-0003	LOTO Violation/Site Service Contracting	X		X				X			
10	NA--SS-SNL-NMFAC-2008-0015	Prime Construction Subcontract Employee Damages 120 volt 20 amp Conductor, Tripping Breaker While Removing a Metal Wall Partition Base Strip		X	X				X			
11	NE-ID--BEA-MFC-2008-0003	LO/TO Violation During Fuel Pump Replacement by Subcontractor		X	X				X			
12	SC--BHSO-BNL-BNL-2008-0009	Embedded Conduit Containing Energized (115VAC) Single Circuit was cut during Concrete Core Drilling		X	X						X	
	TOTAL		5	7	8	1			7		3	

### Key

(1)EW = electrical worker, (2)N-EW = non-electrical worker, (3)SUB = subcontractor, (4)ARCF = significant arc flash, (5)LOTO = lockout/tagout, (6)EXCAV = excavation, (7)CUT/D = cutting or drilling, (8)VEH = vehicle event

# ORPS Operating Experience Report

Production GUI - New ORPS

ORPS contains 53873 OR(s) with 57191 occurrences(s) as of 9/4/2008 10:11:03 AM  
 Query selected 12 OR(s) with 12 occurrences(s) as of 9/4/2008 10:13:37 AM

Download this report in Microsoft Word format. 

<b>1)Report Number:</b>	<a href="#">EE-GO--NREL-NREL-2008-0010</a> After 2003 Redesign		
<b>Secretarial Office:</b>	Energy Efficiency and Renewable Energy		
<b>Lab/Site/Org:</b>	National Renewable Energy Laboratory		
<b>Facility Name:</b>	National Renewable Energy Laboratory		
<b>Subject/Title:</b>	Sub-contractors violate NREL electrical safety and lockout tagout procedures		
<b>Date/Time Discovered:</b>	07/16/2008 15:45 (MTZ)		
<b>Date/Time Categorized:</b>	07/16/2008 17:31 (MTZ)		
<b>Report Type:</b>	Final		
<b>Report Dates:</b>	Notification	07/18/2008	18:37 (ETZ)
	Initial Update	08/29/2008	19:04 (ETZ)
	Latest Update	08/29/2008	19:04 (ETZ)
	Final	08/29/2008	19:04 (ETZ)
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.		
<b>Cause Codes:</b>	A4B1C01 - Management Problem; Management Methods Less Than Adequate (LTA); Management policy guidance / expectations not well-defined, understood or enforced A4B1C02 - Management Problem; Management Methods Less Than Adequate (LTA); Job performance standards not adequately defined A5B4C01 - Communications Less Than Adequate (LTA); Verbal Communications LTA; Communication between work groups LTA		
<b>ISM:</b>	3) Develop and Implement Hazard Controls 4) Perform Work Within Controls		
<b>Subcontractor Involved:</b>	Yes Ameresco and their subcontractors		
<b>Occurrence Description:</b>	A safety concern was reported to NREL's ESH&Q Office by an NREL electrician. This worker observed what appeared to be violations of NREL's		

	<p>Electrical Safety and Lockout Tagout Programs.</p> <p>Electrical work was in progress at the Renewable Fuel Heating Plant (RFHP) which was under construction at the time of the reported incident. The work was conducted by subcontractors to the RFHP construction contractor. The NREL electrician observed subcontractors installing conduit, pulling cables and working in or near open and energized control boxes/panels. These panels had internal voltages of 480 V, 120 V and/or 48 V. The NREL electrician did not observe lockout tagout (LOTO) controls nor workers wearing proper personal protective equipment (PPE) as required by NREL's Electrical Safety Program and NFPA 70E. An NREL permit to conduct energized electrical work had not been issued.</p>
<b>Cause Description:</b>	<ol style="list-style-type: none"> <li>1. Direct Cause: NREL's Electrical Safety and LOTO procedures and NFPA 70E Electrical Safety Practices were not followed.</li> <li>2. Contributing Cause: RFHP Construction Superintendent was not aware of requirements in NREL's LOTO program.</li> <li>3. Contributing Cause: RFHP Construction Superintendent did not ensure that all measures listed within their company's Site Specific Accident Prevention Plan for control of hazardous energy were followed.</li> <li>4. Contributing cause: Hard copies of NREL's Electrical Safety and LOTO procedures, while available upon request, were not handed out to the RFHP Contract Project Manager.</li> <li>5. Contributing cause: The RFHP Construction Superintendent did not (document) flow down health and safety requirements to all of its subcontractors.</li> <li>6. Contributing Cause: Subcontractors conducted work without proper electrical PPE or LOTO equipment as required by NFPA 70E and OSHA Hazardous Energy Control Standard, respectively.</li> <li>7. Root cause: There was a poor understanding of what constitutes energize electrical work.</li> </ol>
<b>Operating Conditions:</b>	Normal operations
<b>Activity Category:</b>	Construction
<b>Immediate Action(s):</b>	<p>The NREL electrician informed the subcontract worker that he was not wearing the proper PPE and not following NREL's electrical practices and requested that he stop and correct the situation. The contract worker ignored the NREL electrician's guidance and continued work. The NREL electrician then contacted his ES&amp;H point of contact to report his concern.</p> <p>A Stop Work was issued on electrical installations on the project until</p>

	<p>concerns could be evaluated further. The Construction Superintendent was notified and electrical work was suspended.</p> <p>The investigation was initiated and confirmed that energized electrical work had been performed without proper PPE, LOTO or without an NREL Electrical Safe Work Permit. The investigation found that NREL had conducted a pre-construction meeting that reviewed all electrical requirements, including LOTO, but the pre-construction meeting documentation did not indicate that hard copies of the NREL programs had been distributed. Records indicate that Subcontractor Orientation was completed with the construction contractor. During this orientation applicable ES&amp;H requirements were reviewed and the contractor was informed that "The construction subcontractor is responsible for verifying that workers are familiar with these requirements (outlined in the orientation document) including lower tier subcontractor employees, if used. Documentation of review by subcontractor/lower tier subcontractor employees is required...". The investigation found that the RFHP construction contractor failed to flow (document) the NREL requirements down to the subcontractors conducting the work.</p> <p>DOE and NREL immediately contacted the construction contractor's management, by phone, regarding the issuance of a stop work for electrical activities and to articulate the concern of non-compliance with NREL and regulatory standards for electrical work. A written follow-up communication will be issued by DOE.</p>				
<b>FM Evaluation:</b>	This was a reported worker concern. No injuries, property damage, environmental impacts or impacts to Laboratory operations resulted from this Stop Work.				
<b>DOE Facility Representative Input:</b>					
<b>DOE Program Manager Input:</b>					
<b>Further Evaluation is Required:</b>	No				
<b>Division or Project:</b>	RFHP				
<b>Plant Area:</b>	South Table Mountain				
<b>System/Building/Equipment:</b>	RFHP				
<b>Facility Function:</b>	Solar Activities				
<b>Corrective Action 01:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>07/24/2008</td> <td><b>Actual Completion Date:</b>07/24/2008</td> </tr> </table>	<b>Target Completion Date:</b> 07/24/2008	<b>Actual Completion Date:</b> 07/24/2008	<table border="1"> <tr> <td><b>Actual Completion Date:</b>07/24/2008</td> </tr> </table>	<b>Actual Completion Date:</b> 07/24/2008
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	Conduct briefing with contractor/subcontractors regarding NREL's Electrical Safety and LOTO procedures, practices and expectations.				
<b>Corrective Action 02:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>10/30/2008</td> </tr> </table>	<b>Target Completion Date:</b> 10/30/2008	<table border="1"> <tr> <td><b>Actual Completion Date:</b></td> </tr> </table>	<b>Actual Completion Date:</b>	
<b>Target Completion Date:</b> 10/30/2008					
<b>Actual Completion Date:</b>					

	Require subcontractor to complete NFPA 70E training and have the appropriate PPE and LO locks prior to performing work at NREL.
<b>Corrective Action 03:</b>	<b>Target Completion Date:</b> 09/30/2008 <b>Actual Completion Date:</b>
	Identify a consistent and formalized process for NREL safety procedures to be made available to contractors for their review.
<b>Corrective Action 04:</b>	<b>Target Completion Date:</b> 09/30/2008 <b>Actual Completion Date:</b>
	Modify safe work permit and contractor/vendor orientation documents to include a signature page for individuals working under that document indicating they have read and understand the hazards and controls established in the document.
<b>Corrective Action 05:</b>	<b>Target Completion Date:</b> 10/31/2008 <b>Actual Completion Date:</b>
	Establish a process to clearly communicate to contractors and vendors the need to have an understanding and be prepared to comply with NFPA 70E in advance of the contractor's arrival at NREL.
<b>Corrective Action 06:</b>	<b>Target Completion Date:</b> 09/02/2008 <b>Actual Completion Date:</b>
	Issue a letter to Construction Contractor announcing stop work and reiterating concerns of non-compliance with NREL and regulatory standards regarding electrical work.
<b>Lessons(s) Learned:</b>	<p>Hazard Identification and Control</p> <ul style="list-style-type: none"> <li>- When new contractors or vendors come to work at NREL it is imperative that they have a clear understanding of NREL's Electrical Safe Work practices and expectations including LOTO. This must be clearly communicated and documented during contractor/vendor orientations or even earlier in the contracting process.</li> <li>- It is important to communicate to contractors and subcontractors what constitutes energized electrical work at NREL. The contractor's and subcontractor's lack of understanding of what constitutes energized electrical work at NREL resulted in a failure to identify potential electrical hazards, therefore the appropriate controls were not put place to mitigate those hazards.</li> <li>- It is prudent to query contractors and their subs regarding their knowledge of NFPA 70E and its requirements, this is particularly true with smaller businesses that may not have equivalent safety programs.</li> <li>- Project Managers should inform contractors and vendors, prior to arriving to conduct work on site, that they will be required to demonstrate compliance with regulatory guidelines, including the appropriate PPE and LOTO equipment.</li> </ul> <p>Flow down of requirements</p> <ul style="list-style-type: none"> <li>- The procedural documents must be provided to contractors during the contracting process; either hard copy or electronically. NREL's subcontract</li> </ul>

language specifies compliance with NREL procedures, which are available upon request.

- There is a need to periodically verify that contractors are flowing down requirements to subcontractors. NREL conveys, both verbally and in writing, the fact that compliance with NFPA 70E and OSHA LOTO is required; however consistent flow down of these requirements to the subcontractor was not always provided nor documented.

**HQ Keywords:** 01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous)  
 01F--Inadequate Conduct of Operations - Training Deficiency  
 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)  
 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)  
 01P--Inadequate Conduct of Operations - Inadequate Oral Communication  
 01R--Inadequate Conduct of Operations - Management issues  
 01T--Inadequate Conduct of Operations - Willful Violation  
 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance  
 11G--Other - Subcontractor  
 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical)  
 14B--Quality Assurance - Training and Qualification Deficiency  
 14E--Quality Assurance - Work Process Deficiency

**HQ Summary:** A worker reported a safety concern to NREL's ESH&Q Office for what appeared to be violations of NREL's Electrical Safety and Lockout Tagout procedures. Subcontractors were performing electrical work at the Renewable Fuel Heating Plant without proper personal protective equipment or lockout tagout protection in place. The electrical work was stopped and an incident investigation was initiated.

**Similar OR Report Number:** 1. EE-GO--NREL-NREL-2008-0005  
 2.

**Facility Manager:**

Name	JORDAN, MAUREEN Y
Phone	(303) 275-3248
Title	SENIOR ENVIRONMENTAL SCIENTIST

**Originator:**

Name	OKANE, BARBARA V.
Phone	(303) 384-7609
Title	ENVIRONMENTAL H & S SENIOR ES&H SPEC

**HQ OC Notification:**

Date	Time	Person Notified	Organization
NA	NA	NA	NA

**Other Notifications:**

Date	Time	Person Notified	Organization
07/16/2008	16:30 (MTZ)	Karen Harness	DOE - GO

**Authorized Classifier(AC):**

<b>2)Report Number:</b>	<a href="#">EM-ORO--ISOT-3019A-2008-0003</a> After 2003 Redesign		
<b>Secretarial Office:</b>	Environmental Management		
<b>Lab/Site/Org:</b>	Oak Ridge National Laboratory		
<b>Facility Name:</b>	3019A Complex		
<b>Subject/Title:</b>	Failure to Recognize Change of Conditions		
<b>Date/Time Discovered:</b>	07/22/2008 08:15 (ETZ)		
<b>Date/Time Categorized:</b>	07/22/2008 08:15 (ETZ)		
<b>Report Type:</b>	Notification		
<b>Report Dates:</b>	Notification	07/23/2008	16:01 (ETZ)
	Initial Update		
	Latest Update		
	Final		
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	<p>2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.</p> <p>10(2) - An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex. One of the four significance categories should be assigned to the occurrence, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 4 occurrence)</p>		
<b>Cause Codes:</b>			
<b>ISM:</b>			
<b>Subcontractor Involved:</b>	No		
<b>Occurrence Description:</b>	On July 17, 2008, the Operations Supervisor received indication of several facility alarm status changes on the control room computer without corresponding audible or visible alarms in the facility. The Operations Supervisor immediately verified that building conditions and system readings were normal. The Operations Supervisor then alerted the Instrumentation and Controls (I&C) engineer who was performing circuit tracing in the RCV control cabinet#6 under a routine work package.		



	<p>The I&amp;C engineer checked the cabinet where he had been working and identified a wire that had come loose during the inspection activities. He verified that the wire had been connected prior to his inspection activities using a pre-job photo of the cabinet wiring.</p> <p>Without recognizing the alarm indication and the corresponding loose wire as a change of condition, the I&amp;C engineer, with the concurrence of the Operations Supervisor, then reconnected the wire to the terminal. This work was outside the scope of the work package.</p> <p>Following discussions with management, the activity was suspended and a critique held on July 18. On July 21 after a review, the Isotek Electrical Authority Having Jurisdiction (AHJ) stated that reconnecting the wire required a lockout-tagout to be in place or the issuance of an Energized Electrical Work Permit. During the review, it was discovered that not all the personal protective equipment (PPE) specified in the pre-task hazard review had been used.</p>
<b>Cause Description:</b>	
<b>Operating Conditions:</b>	All Areas in Standby
<b>Activity Category:</b>	Inspection/Monitoring
<b>Immediate Action(s):</b>	The inspection activities were suspended and the corresponding work package closed. A critique was held on July 18, 2008.
<b>FM Evaluation:</b>	
<b>DOE Facility Representative Input:</b>	
<b>DOE Program Manager Input:</b>	
<b>Further Evaluation is Required:</b>	<p>Yes.          Before Further Operation? No          By Whom: Project Quality Assurance          By When: 08/15/2008</p>
<b>Division or Project:</b>	U233 Material Downblending and Disposition Project
<b>Plant Area:</b>	Building 3019A
<b>System/Building/Equipment:</b>	Radiation Containment Ventilation (RCV) Control Cabinets
<b>Facility Function:</b>	Special Nuclear Materials Storage
<b>Corrective Action:</b>	
<b>Lessons(s) Learned:</b>	
<b>HQ Keywords:</b>	<p>01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical)          01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)          04A--Instrumentation and Controls - I &amp; C Equipment          08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance</p>

	12C--EH Categories - Electrical Safety 14E--Quality Assurance - Work Process Deficiency																							
<b>HQ Summary:</b>	While performing circuit tracing in the RCV control cabinet #6, an Instrumentation and Controls engineer identified a wire that had come loose during his inspection activities, which resulted in several facility alarm status changes. Without recognizing the alarm indication and the corresponding loose wire as a change of condition, the engineer, with the concurrence of the Operations Supervisor, reconnected the wire to the terminal. This work was outside the scope of the work package and would have required a lockout/tagout or energized work permit. The inspection activities were suspended and the corresponding work package closed. A critique revealed that that not all the personal protective equipment specified in the pre-task hazard review had been used.																							
<b>Similar OR Report Number:</b>																								
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">EUTZ, CRAIG L</td> </tr> <tr> <td>Phone</td> <td colspan="3">(865) 574-0109</td> </tr> <tr> <td>Title</td> <td colspan="3">FACILITY MANAGER</td> </tr> </table>				Name	EUTZ, CRAIG L			Phone	(865) 574-0109			Title	FACILITY MANAGER										
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<b>Originator:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">GILPIN, LINDA L</td> </tr> <tr> <td>Phone</td> <td colspan="3">(865) 241-8654</td> </tr> <tr> <td>Title</td> <td colspan="3">NUCLEAR CRITICALITY SAFETY ENGINEER</td> </tr> </table>				Name	GILPIN, LINDA L			Phone	(865) 241-8654			Title	NUCLEAR CRITICALITY SAFETY ENGINEER										
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<b>Authorized Classifier(AC):</b>	Linda Gilpin      Date: 07/22/2008																							

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<b>3)Report Number:</b>	<a href="#">EM-RL--PHMC-FSS-2008-0006</a> After 2003 Redesign
<b>Secretarial Office:</b>	Environmental Management
<b>Lab/Site/Org:</b>	Hanford Site
<b>Facility Name:</b>	Facility & Site Services
<b>Subject/Title:</b>	Roofing screw penetrated non-energized conduit during re-roofing activity and damaged conductor for outside lighting circuit
<b>Date/Time Discovered:</b>	07/01/2008 16:12 (PTZ)
<b>Date/Time Categorized:</b>	07/02/2008 13:00 (PTZ)
<b>Report Type:</b>	Final

<b>Report Dates:</b>	Notification	07/07/2008	16:01 (ETZ)
	Initial Update	08/14/2008	00:01 (ETZ)
	Latest Update	08/14/2008	00:01 (ETZ)
	Final	08/14/2008	00:01 (ETZ)
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	10(3) - A near miss, where no barrier or only one barrier prevented an event from having a reportable consequence. One of the four significance categories should be assigned to the near miss, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 3 occurrence)		
<b>Cause Codes:</b>	A4B3C08 - Management Problem; Work Organization & Planning LTA; Job scoping did not identify special circumstances and/or conditions A5B2C08 - Communications Less Than Adequate (LTA); Written Communication Content LTA; Incomplete / situation not covered		
<b>ISM:</b>	1) Define the Scope of Work 2) Analyze the Hazards		
<b>Subcontractor Involved:</b>	Yes George A. Grant Construction, Inc.		
<b>Occurrence Description:</b>	<p><b>SUMMARY:</b></p> <p>Electricians traced the cause of a tripped circuit breaker at Hanford Patrol administrative Building 2721E to a 5-inch roofing screw that had penetrated an electrical conduit mounted to the internal roof structural supports. The strike occurred during sub-contractor installation of a new roof on the building. The re-roofing activity required the use of long self-tapping screws to secure the roofing materials and penetrate to at least 3/8-inch below the corrugated sheet metal roof decking. The damaged wiring inside the conduit supplied power to outside light fixtures controlled by a photo-cell. The circuit was de-energized during the daylight hours when the fasteners were being installed. When the photo-cell sensor energized the exterior lighting circuit at dusk, a ground fault was created and the circuit breaker opened. The circuit for the exterior pole mounted lights and building wall mounted exterior lights was repaired.</p> <p><b>BACKGROUND:</b></p> <p>On Monday 6/30/08 at 1612 hours, maintenance personnel troubleshooting a previous notification of a tripped circuit breaker discovered that a 5-inch roofing screw had penetrated an electrical conduit containing three conductor wires. The conduit is mounted to structural members supporting the roof and the screw damaged 110-volt wiring inside. The screw extends greater than 1/2-inch through the bottom of the 1/2-inch diameter conduit.</p>		

The conduit and wiring provided electrical power to a series of exterior wall mounted lights and pole mounted lights, was a part of the original building construction, and met construction era National Electrical Code installation requirements. [Note that the 2008 electrical code requires that electrical equipment not be mounted closer than 1.5-inches to the roof decking.]

A new and updated roof had just been installed on the flat-roofed single story building. The roof repair involved removal of the original tar and gravel covering and installation of recover board over the existing rigid insulation. The roof insulation materials were then anchored to the corrugated metal roof decking with screws in a pattern to meet wind uplift criteria, and the roof was covered over with a new membrane and sealed with protective coating.

The roofing screws were 5 and 8-inches long to achieve a minimum 3/8-inch penetration through the corrugated metal and up to 5 inches of existing insulating materials. The two different lengths of screws were to compensate for varying roof insulation thickness. The insulation tapers from about 5-inches down to about 3-inches at drainage locations.

Along with the thickness of roofing materials, the metal roof decking has 1-1/2-inch corrugations. The insulation and the corrugations require that the screws be long enough to penetrate the roofing materials and the lowest parts of corrugation valleys. For example, a 5-inch screw would be necessary to penetrate 3-inches of roofing materials and the additional 1-1/2-inches to the lowest part of the decking by at least 3/8-inch. In this event, the screw penetrated another 1/2-inch or so through the bottom of the conduit (the actual thickness of insulation over the conduit penetration is not known although the screw length is believed accurate).

Hanford Patrol personnel noticed the exterior lights were not working on the evening of Monday, 6/9/08. The condition was reported and work package 2M-47747 was created on 6/10/08 to troubleshoot and repair the circuit failure. The re-roofing activity was completed on 6/11/08. The penetrated conduit was discovered during execution of the troubleshooting work package on Tuesday, 7/1/08, and the circuit was repaired the next day.

Project Hanford Management Contract (PHMC or Fluor Hanford) Planners performed a pre-job walk down of the facility in preparation for letting the roofing contract but did not identify the electrical hazard. Two types of hazard analysis processes exist at Hanford that could have been used for the work in this event: the non-automated Job Safety Analysis (JSA) process in HNF-PRAC-30462 "Pre-job Safety Planning" intended for use by contractors, and the Construction module of the PHMC Automated Job Hazard Analysis (AJHA) process, primarily for in-house use. Both the JSA

and the Construction AJHA tools would have been appropriate for analyzing the hazards in this event. However, the blind penetration hazard is not a checklist item in the JSA while blind penetration hazards must be ruled out in completing the AJHA.

**Cause Description:**

Although the underside of the roof area in this event could have been observed during the planning by moving tiles in the suspended ceiling, no one involved in the work or planning checked the appropriate drawings or performed a visual inspection for potential sources of hazardous energy near the decking. Work planning did not properly scope the roof work to facilitate identification of all the hazards associated with the activity. Hence, the construction job safety analysis and work package did not identify the hazard that conduit was close mounted at the ceiling and did not provide the appropriate hazard controls.

[Apparent] A4B3C08 - Job scoping did not identify special circumstances and/or conditions - The work scoping process was not effective in detecting work process elements having a dependency upon other circumstances or conditions.

Work Planners across Hanford are aware that blind penetrations are associated with a particular hazard control set, and roofing contractors likely are also aware of the potential penetration hazards. However, no one involved in the job scoping for the Building 2721E re-roofing activity recognized that the work process element to drive roofing screws a minimum 3/8-inch through the metal decking was dependent on the absence of a hazard beneath the decking. And because job scoping did not identify the risk of using the roofing fasteners, no one checked whether electrical conduit was present immediately underneath the decking.

This cause code is addressed by an e-mail message to construction managers requesting they review outstanding contract projects to ensure blind penetrations are addressed and to be alert for new work involving blind penetration (Action 2). This code is also addressed by a Lessons Learned addressing work scoped by the JSA process, which does not provide all the automatic features of the Construction AJHA process. For example, in this event, the JSA was silent on blind penetrations; however, the Construction AJHA process clearly identifies and addresses roofing screw blind penetrations (Action 3). Corrective actions to address the root cause also address this cause.

[Root] A5B2C08 - Incomplete / situation not covered - Details of the written communication were incomplete. Insufficient information was presented. The written communication did not address situations likely to occur during the completion of the procedure.

FH construction practice (a procedure used by contractors) HNF-PRAC-30462 "Pre-job Safety Planning" (the PRAC) requires that Job Safety Analyses / Automated Job Hazard Analyses (JSAs/ AJHAs) must provide clear instructions for mitigating unusual or unique hazards. The PRAC addresses blind penetration into walls and floors; however, as an implementing document, the PRAC presents insufficient information to ensure that other specific hazards (e.g., blind penetration of a roof) are covered during the pre-job walk down, and the PRAC does not require completion of a Job Hazard Checklist.

Two additional forms of written communication associated with the PRAC are also incomplete. Neither of the individual construction pre-job safety planning forms (Job Hazard Checklist and JSA) address blind penetration, and did not provoke the planners to address the likelihood that the 3/8-inch penetration requirement could cause a strike event during roofing.

This cause code is addressed by strengthening the PRAC to require completion of a Job Hazard Checklist during job scoping and to add examples of specific hazards for identification during the pre-job walk down (Action 4). This code is also addressed by strengthening the JSA and the Job Hazard Checklist forms to emulate the Construction AJHA (Action 5). Information about these changes will then be disseminated to Buyer Technical Representatives and key Supervisors (Action 6).

The Factor Tree root cause analysis technique was used to determine the causal factors surrounding this event. Contact report originator for a copy.

**Operating Conditions:**

Does not apply

**Activity Category:**

Construction

**Immediate Action(s):**

Maintenance personnel isolated the building wall mounted exterior lights from the exterior pole mounted lights and re-energized the circuit, providing building perimeter pole mounted lighting while preparations were being made to make the necessary repairs to the wall mounted lights. Repairs were completed and the affected outside lighting system was restored to normal service on 07/02/2008.

**FM Evaluation:**

Categorization was delayed while FH facilities management investigated the nature of this historical (by the time of discovery) blind penetration electrical event. Following categorization, the FH Electrical Safety Point of Contact was asked to perform a review through application of the ORPS EFCOG Electrical Severity Measurement Tool [EFCOG / DOE Electrical Safety Improvement Project, Project Area 4 - Performance Measurement "Electrical Severity Measurement Tool" Revision 1, April 16, 2007]. The EFCOG developed this method for determining the severity associated with electrical energy type events to be able to quantify such events and apply some consistency in reporting them within the ORPS process:

$$ES = EHF(0) * [1 + EF(0) + SPF(0) + AFPP(0) + TP(0)] * IF(1) = 0$$

ES = Electrical Severity

EHF = Electrical Hazard Factor - (0) (No exposed energized parts)

EF = Environmental Factor - Dry (0)

SPF = Shock Proximity Factor – Did not cross the Prohibited Approach Boundary because the conductor was not energized at the time of the event. (0)

AFPP = Arc Flash Proximity Factor - No arc flash potential (0)

TP = Thermal Proximity Factor - Does not apply (0)

IF = Injury Factor - No injury (1)

The damaged electrical circuit was not energized when the conduit was penetrated due to the presence of a photo-cell controller that shut the system off at dawn and turned on the building exterior lighting at dusk. The lack of electrical power to the circuit eliminated the potential for the roofer to have received an electrical shock. Incorporating the information that the wiring was de-energized by the controller during the actual event, the FH Electrical Safety Point of Contact calculated the equation with no voltage for both the SPF and EHF, returning an Electrical Severity rating of 0. So, it calculates to a non-electrical hazard event.

A search of the ORPS database for other PHMC blind penetration type events will produce a number of examples associated with floor and wall penetrations. The risks of blind penetration into floors and walls are appreciated by Hanford personnel as these events have been well publicized and controls are built into the PHMC Automated Job Hazard Analysis. This event is unique in that no one identified the drilling of 5 and 8-inch self-tapping screws through a sheet metal roof (to extend at least 3/8-inch through the roof) as a blind penetration or considered the need to inspect the underside of the roof deck for potential hazards. Note that in this event, the self-tapping screw contacted the conduit near a rigid fastening that prevented deflection.

Although this event involved pre-existing construction in Building 2721E, the National Fire Protection Association (NFPA 70) or National Electrical Code (NEC) 300.4 was changed in the 2008 Code to address this issue; NEC 300.4 (E) for "Cables and Raceways Installed Under Roof Decking" states: "A cable- or raceway-type wiring method, installed in exposed or concealed locations under metal-corrugated sheet roof decking, shall be installed and supported so the nearest outside surface of the cable or raceway is not less than 38 mm (1-1/2 in.) from the nearest surface of the roof decking. [Note:] Roof decking material is often repaired or replaced after the initial raceway or cabling and roofing installation and may be penetrated by the screws or other mechanical devices designed to provide 'hold down' strength of the

	waterproof membrane or roof insulating material. Exception: Rigid metal conduit and intermediate metal conduit shall not be required to comply with 300.4(E)."		
<b>DOE Facility Representative Input:</b>			
<b>DOE Program Manager Input:</b>			
<b>Further Evaluation is Required:</b>	No		
<b>Division or Project:</b>	Closure Services & Infrastructure		
<b>Plant Area:</b>	200 East Area		
<b>System/Building/Equipment:</b>	Electrical/ Bldg 2721E/ outside Lighting		
<b>Facility Function:</b>	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)		
<b>Corrective Action 01:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>07/23/2008</td> <td><b>Tracking ID:</b>CARF 20080625</td> </tr> </table> <p>[EOC] This specific issue has not been documented as being present elsewhere across the PHMC. This has been substantiated by a review of the FH CAM data bases that document deficiencies and opportunities for improvement. Key words such as construction, hazard identification and blind penetrations were used in searching the CAM records. In addition, a review of the FH Repetitive Issues report for June 2007 - June 2008 was reviewed and also determined that related or similar issues did not exist within the past year. These reviews were performed by the FH CAM POC.</p> <p>Based upon the lack of any other indicators, it has been determined that this issue was unique to this work activity and a further review at this time is not warranted. A lessons learned is being developed to share with the FH projects that may have the need to use this length of screw in the future when overlaying roofs.</p> <p>In accordance with HNF-PRO-052 section 5.12.2.2, this determination will be the basis for closing the EOC action for this issue.</p> <p>PL Hemsworth, FH CAM</p>	<b>Target Completion Date:</b> 07/23/2008	<b>Tracking ID:</b> CARF 20080625
<b>Target Completion Date:</b> 07/23/2008	<b>Tracking ID:</b> CARF 20080625		
<b>Corrective Action 02:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>07/22/2008</td> <td><b>Tracking ID:</b>CARF 20080625</td> </tr> </table> <p>Pending the implementation of more rigorous actions, disseminate an e-mail message to construction managers to be alert for this and to review outstanding contract projects to ensure blind penetrations are addressed.</p> <p>Internal Tracking Information:  [REM] Closure is a copy of e-mail showing the distribution list. This action is complete.  KA Ekstrom, Facilities and Land Management</p>	<b>Target Completion Date:</b> 07/22/2008	<b>Tracking ID:</b> CARF 20080625
<b>Target Completion Date:</b> 07/22/2008	<b>Tracking ID:</b> CARF 20080625		



<b>Corrective Action 03:</b>	<b>Target Completion Date:</b> 09/17/2008 <b>Tracking ID:</b> CARF 20080625
	<p>Submit Lessons Learned information (in accordance with HNF-PRO-067) to the LL/ OPEX Program Coordinator for evaluation and submittal in the LL/ OPEX site wide system. The LL should include dissemination to contract work planners and should address work scoped by the JSA process, which does not provide all the automatic features of Construction AJHA process. For example, in this event, the JSA was silent on blind penetrations; however, the Construction AJHA process clearly identifies and addresses roofing screw blind penetrations.</p> <p>Internal Tracking Information:  Closure is a copy of the Lessons Learned submitted to the LL/ OPEX Coordinator, including the identified recipients.  CW Stolle, Facilities and Land Management</p>
<b>Corrective Action 04:</b>	<b>Target Completion Date:</b> 11/21/2008 <b>Tracking ID:</b> CARF 20080625
	<p>Revise HNF-PRAC-30462 "Pre-job Safety Planning" to 1) require completion of a Job Hazard Checklist during job scoping, and 2) to add examples of specific hazards for identification during the pre-job walk down.</p> <p>Internal Tracking Information:  Closure is a copy of the relevant sections of the issued procedure with changes highlighted.  RD Silvey, FH Construction Services</p>
<b>Corrective Action 05:</b>	<b>Target Completion Date:</b> 11/21/2008 <b>Tracking ID:</b> CARF 20080625
	<p>Revise 1) the Job Hazard Checklist, and 2) the Job Safety Analysis forms to more closely align with hazards identified in the Construction AJHA form, particularly with regard to blind penetrations.</p> <p>Internal Tracking Information:  Closure is a copy of the revised &amp; issued forms with changes highlighted.  RD Silvey, FH Construction Services</p>
<b>Corrective Action 06:</b>	<b>Target Completion Date:</b> 12/19/2008 <b>Tracking ID:</b> CARF 20080625
	<p>Disseminate the job safety analysis process improvements from the revisions to a) HNF-PRAC-30462 "Pre-job Safety Planning", b)the Job Hazard Checklist, and c) the Job Safety Analysis [described in Actions 4 and 5] to Buyer Technical Representatives and key Supervisors.</p> <p>Internal Tracking Information:  Closure is a copy of the distribution showing recipients.  RD Silvey, FH Construction Services</p>
<b>Corrective Action 07:</b>	<b>Target Completion Date:</b> 06/04/2009 <b>Tracking ID:</b> CARF 20080625

	<p>Perform an Effectiveness Review</p> <p>Internal Tracking Information:          SJ Turner, FH Quality Assurance          SM Kelley, FH Corrective Action Management</p>
<b>Lessons(s) Learned:</b>	<p>In this event, the circuit supplying power to outside lighting at a Hanford Patrol building was damaged by a long roofing screw during work to re-roof the facility. This event highlights the consequence of performing an activity when planners failed to identify a potential hazard and the construction job hazard identification process also failed to clearly call out blind penetrations.</p> <p>None of the people involved in the planning for the Building 2721E re-roofing work recognized that long screws driven through roof insulation material into the sheet metal roof decking could strike a 110-volt wire. Blind penetrations are clearly called out in the PHMC Automated Job Hazard Analysis (AJHA) process, but the AJHA process was not used during the planning for the roof repair work. Blind penetrations are not called out in the Job Safety Analysis (JSA) process that was used in the planning for the roof repair. The JSA is less comprehensive than the AJHA. Because of this weakness in the construction JSA, no one recognized the possibility that a roofing screw could strike electrical wiring.</p> <p>Personnel should ensure that all methods of job hazards analysis consider the hazards associated with blind penetrations. In this event, the Job Safety Analysis used to identify the hazards did not identify blind penetrations as a hazard for consideration.</p>
<b>HQ Keywords:</b>	<p>01G--Inadequate Conduct of Operations - Inadequate Procedure          01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical)          07D--Electrical Systems - Electrical Wiring          08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)          11G--Other - Subcontractor          12C--EH Categories - Electrical Safety          14D--Quality Assurance - Documents and Records Deficiency          14E--Quality Assurance - Work Process Deficiency</p>
<b>HQ Summary:</b>	<p>Maintenance personnel troubleshooting a previous notification of a tripped circuit breaker discovered that a 5" roofing screw had penetrated an electrical conduit mounted to the roof structural supports. A project to install a new roof on the building had recently been completed. The wiring within the conduit was de-energized at the time of the strike, but was damaged to the point that when the photo-cell sensor energized the exterior lighting circuit, a ground fault was created and the circuit breaker opened. Maintenance personnel isolated the building wall mounted exterior lights from the exterior pole mounted lights and re-energized the circuit to provide building perimeter lighting pending repairs to the wall mounted lights, which have now been completed.</p>

<b>Similar OR Report Number:</b>	1. None			
<b>Facility Manager:</b>	Name	C. W. STOLLE		
	Phone	(509) 376-9080		
	Title	MANAGER, FACILITIES & LAND MANAGEMENT		
<b>Originator:</b>	Name	BOYCE, MICHAEL L		
	Phone	(509) 376-3030		
	Title	OCCURRENCE REPORTING SPEC.		
<b>HQ OC Notification:</b>	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
<b>Other Notifications:</b>	Date	Time	Person Notified	Organization
	07/02/2008	12:00 (PTZ)	C. W. Stolle	FH
	07/02/2008	12:15 (PTZ)	R. Nichols	FH
	07/02/2008	13:30 (PTZ)	L. D. Earley	DOE-RL
<b>Authorized Classifier(AC):</b>				

<b>4)Report Number:</b>	<a href="#">EM-RL--PHMC-GPP-2008-0008</a> After 2003 Redesign		
<b>Secretarial Office:</b>	Environmental Management		
<b>Lab/Site/Org:</b>	Hanford Site		
<b>Facility Name:</b>	Groundwater Protection Project		
<b>Subject/Title:</b>	ZP-1 Pump and Treat Facility Upgrade Lockout Error		
<b>Date/Time Discovered:</b>	07/28/2008 11:00 (PTZ)		
<b>Date/Time Categorized:</b>	07/28/2008 11:40 (PTZ)		
<b>Report Type:</b>	Notification/Final		
<b>Report Dates:</b>	Notification	07/30/2008	16:14 (ETZ)
	Initial Update	07/30/2008	16:14 (ETZ)
	Latest Update	07/30/2008	16:14 (ETZ)
	Final	07/30/2008	16:14 (ETZ)
<b>Significance Category:</b>	4		
<b>Reporting Criteria:</b>	10(2) - An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern to other facilities or activities in the DOE complex. One of the four significance categories should be assigned to the occurrence, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 4 occurrence)		

<b>Cause Codes:</b>	
<b>ISM:</b>	3) Develop and Implement Hazard Controls
<b>Subcontractor Involved:</b>	No
<b>Occurrence Description:</b>	<p>During a safety inspection by a Fluor Industrial Safety Engineer of Construction Services activities at the ZP-1 Pump &amp; Treat facility, a technical error was identified with a lock and tag (L&amp;T). All power to the ZP-1 Pump and Treat facility was locked-out to allow Construction crafts to perform upgrades to the facility. The energy source (Main disconnect to the building) was locked-out and a Controlling Organization Lock and Tag was installed. The key to the lock on the main disconnect was secured in a lock box and the Controlling Organization had locked that lock box.</p> <p>A construction electrician installed his personal lock on the lock box appropriately. A spider was attached to his personal lock. The spider was not attached to the lock box, it was only attached to the lock hasp. A second construction electrician attached his personal lock to the spider. If the first construction electrician had removed his lock, the second electrician's lock would not have remained attached to the lock box. Neither electrician was exposed to uncontrolled hazardous energy at any time during the work evolution.</p>
<b>Cause Description:</b>	
<b>Operating Conditions:</b>	Normal Operations
<b>Activity Category:</b>	Normal Operations (other than Activities specifically listed in this Category)
<b>Immediate Action(s):</b>	<ol style="list-style-type: none"> <li>1. The electrical work dependent upon the lockout/tagout was completed by the time of discovery. The construction electricians' locks were removed from the lock box.</li> <li>2. A stand down of ZP-1 Construction work occurred and all Construction crafts assigned to the ZP-1 upgrade work were briefed at 1230 hours on L&amp;T requirements (the same day).</li> </ol>
<b>FM Evaluation:</b>	
<b>DOE Facility Representative Input:</b>	
<b>DOE Program Manager Input:</b>	
<b>Further Evaluation is Required:</b>	No
<b>Division or Project:</b>	Soil & Groundwater Remediation Project (SGRP)
<b>Plant Area:</b>	200 West Area
<b>System/Building/Equipment:</b>	ZP-1 Pump and Treat Facility
<b>Facility Function:</b>	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)
<b>Corrective Action:</b>	
<b>Lessons(s) Learned:</b>	

<b>HQ Keywords:</b>	01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14E--Quality Assurance - Work Process Deficiency															
<b>HQ Summary:</b>	During an inspection at the ZP-1 Pump and Treat facility, a safety engineer identified a technical error with a lock and tag. The main disconnect to the building was locked-out to permit construction craft personnel to install an electrical upgrade. A Controlling Organization lock and tag was installed on the main disconnect, and the key was secured in a lock box which was locked by the Controlling Organization. A construction electrician installed his personal lock on the lock box appropriately. A spider was attached to his personal lock, which was attached to the lock hasp but not to the lock box. A second construction electrician attached his personal lock to the spider. If the first construction electrician had removed his lock, the second electrician's lock would not have remained attached to the lock box. The electrical work dependent upon the lockout/tagout was completed by the time of discovery. The construction electricians' locks were removed from the lock box and the electrical craft personnel were given a briefing on lockout/tagout requirements.															
<b>Similar OR Report Number:</b>																
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">B. H. Von Bargaen</td> </tr> <tr> <td>Phone</td> <td colspan="3">(509) 373-4166</td> </tr> <tr> <td>Title</td> <td colspan="3">Director, SGRP Field Management</td> </tr> </table>				Name	B. H. Von Bargaen			Phone	(509) 373-4166			Title	Director, SGRP Field Management		
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Phone	(509) 373-4166															
Title	Director, SGRP Field Management															
<b>Originator:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">DAVIS, KENNETH W</td> </tr> <tr> <td>Phone</td> <td colspan="3">(509) 376-3030</td> </tr> <tr> <td>Title</td> <td colspan="3">OCCURRENCE NOTIFICATION CENTER</td> </tr> </table>				Name	DAVIS, KENNETH W			Phone	(509) 376-3030			Title	OCCURRENCE NOTIFICATION CENTER		
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<b>HQ OC Notification:</b>	<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Person Notified</th> <th>Organization</th> </tr> </thead> <tbody> <tr> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table>				Date	Time	Person Notified	Organization	NA	NA	NA	NA				
Date	Time	Person Notified	Organization													
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<b>Other Notifications:</b>	<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Person Notified</th> <th>Organization</th> </tr> </thead> <tbody> <tr> <td>07/28/2008</td> <td>11:40 (PTZ)</td> <td>Larry Fitch</td> <td>FH-SGRP</td> </tr> <tr> <td>07/28/2008</td> <td>11:45 (PTZ)</td> <td>Kerry Schierman</td> <td>DOE-RL</td> </tr> </tbody> </table>				Date	Time	Person Notified	Organization	07/28/2008	11:40 (PTZ)	Larry Fitch	FH-SGRP	07/28/2008	11:45 (PTZ)	Kerry Schierman	DOE-RL
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07/28/2008	11:45 (PTZ)	Kerry Schierman	DOE-RL													
<b>Authorized Classifier(AC):</b>																

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<b>5)Report Number:</b>	<a href="#">EM-RP--BNRP-RPPWTP-2008-0013</a> After 2003 Redesign
<b>Secretarial Office:</b>	Environmental Management
<b>Lab/Site/Org:</b>	Hanford Site
<b>Facility Name:</b>	RPP Waste Treatment Plant
<b>Subject/Title:</b>	Violation of Procedure 24590-WTP-GPP-CON-1202 (Hazardous Energy Work Control)

<b>Date/Time Discovered:</b>	07/10/2008 08:00 (PTZ)		
<b>Date/Time Categorized:</b>	07/10/2008 09:50 (PTZ)		
<b>Report Type:</b>	Final		
<b>Report Dates:</b>	Notification	07/14/2008	13:49 (ETZ)
	Initial Update	08/21/2008	09:27 (ETZ)
	Latest Update	08/21/2008	19:29 (ETZ)
	Final	08/21/2008	19:29 (ETZ)
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.		
<b>Cause Codes:</b>	A3B1C01 - Human Performance Less Than Adequate (LTA); Skill Based Errors; Check of work was LTA -->couplet - A5B4C01 - Communications Less Than Adequate (LTA); Verbal Communications LTA; Communication between work groups LTA A3B1C06 - Human Performance Less Than Adequate (LTA); Skill Based Errors; Wrong action selected based on similarity with other actions -->couplet - A5B4C01 - Communications Less Than Adequate (LTA); Verbal Communications LTA; Communication between work groups LTA A3B2C02 - Human Performance Less Than Adequate (LTA); Rule Based Error; Signs to stop were ignored and step performed incorrectly -->couplet - A5B4C01 - Communications Less Than Adequate (LTA); Verbal Communications LTA; Communication between work groups LTA		
<b>ISM:</b>	1) Define the Scope of Work 2) Analyze the Hazards 3) Develop and Implement Hazard Controls 4) Perform Work Within Controls		
<b>Subcontractor Involved:</b>	No		
<b>Occurrence Description:</b>	On 10 July 2008 it was discovered that on 09 July 2008, two (2) Construction Utility Group (CUG) electricians cut the end off of a de-energized 500 MCM electrical cable that was only tagged out with a boundary Lock and tag. Cutting the end of the 500MCM cable off is a violation of Procedure 24590-WTP-GPP-CON-1202 (Hazardous Energy Work Control). There were no injuries.		
<b>Cause Description:</b>	The methodology used to determine the causal codes for this safety and loss of work control incident was the Causal Analysis Tree, Rev. 0 in DOE G 231.1-2, Occurrence Reporting Causal Analysis Guide.		

On Wednesday, 09 July 2008 two Construction Utility Group (CUG) electricians cut a de-energized 500 MCM cable without a Hazardous Energy Work Control package and a Lock-Out/Tag-Out (LO/TO). Performing this work with a de-energized Caution tag at the end of the cable and an administrative boundary lock on breaker switch #7 at substation #14 is a violation of procedure 24590-WTP-GPP-CON-1202, Hazardous Energy Work Control.

A3B1C01 - Check of work LTA: The electricians did not perform a zero energy check on the cable before cutting the end as they did not believe a check was necessary based on the information listed on the Caution tag. The electricians STARRT Card did not identify electrical energy as a hazard and what methods to control the hazard.

A5B4C01 - Communication between work groups LTA: The General Foreman was aware of the correct work scope; the electricians were assuming they knew the working boundaries. There was no clear communication(s) between the two groups on what the actual work boundaries were.

The discovery of the unauthorized work was reported on Thursday, 10 July 2008 by CUG Supervision. It was also revealed the electricians did not perform a zero energy check on the cable and assumed the cable was not terminated at the breaker in the substation and the information on the Caution tag stated it was de-energized.

A3B1C06 - Wrong action selected based on similarity with other actions: The electrician assumed the 500 MCM cable was not energized based on past history working with buried temporary construction cables and the “de-energized” Caution tag attached to the end of the cable. The electricians interpreted this as the cable was not terminated at the sub station.

A3B2C02 – Signs to stop were ignored and steps performed incorrectly: The field environment the electricians encountered had two administrative advisory indicators which should have immediately identified to the craft of a potential change in work condition and they did not take proper action. The LO/TO on Breaker #7 was an administrative boundary/barrier control device outside the scope of its intended use as a hazardous energy control mechanism. The administrative boundary control device lock and the LO/TO control device lock look identical side by side. Craft did not check with the LO/TO group to verify which process applied. Second taking for granted a de-energized Caution tag at the cable end in place of a zero energy verification check and assuming the other end of the cable was not terminated at the Sub.

**Operating Conditions:**

Construction

**Activity Category:**

Construction

<b>Immediate Action(s):</b>	Stopped work. Contacted Supervision and Safety. Conducted a Fact Finding Meeting.	
<b>FM Evaluation:</b>	The event illustrates the importance of taking the time to properly assess the conditions of the work site versus the intended task, to ensure that potentially hazardous conditions are identified and addressed with workers prior to the start of work. Management policy is to reinforce processes known to mitigate or otherwise eliminate hazards.	
<b>DOE Facility Representative Input:</b>		
<b>DOE Program Manager Input:</b>		
<b>Further Evaluation is Required:</b>	No	
<b>Division or Project:</b>	Waste Vitrification and Treatment Plant	
<b>Plant Area:</b>	600	
<b>System/Building/Equipment:</b>	Balance of Facilities Yard Area	
<b>Facility Function:</b>	Nuclear Waste Operations/Disposal	
<b>Corrective Action 01:</b>	<b>Target Completion Date:</b> 09/30/2008	<b>Tracking ID:</b> 24590-WTP-CRPT-QA-08-391
<b>Lessons(s) Learned:</b>	<p>Initiate an Electrical Stand Down, to discuss the latest electrical incident, highlighting the need to perform zero energy checks even when a "de-energized" caution tag is in place.</p> <p>Issue Lessons Learned highlighting fact that administrative boundary control devices and LO/TO devices may look identical and the need to determine type of lock before proceeding with work.</p> <p>Issue a Safety Bulletin on Performing Zero Energy prior to performing work on potential energized systems.</p>	
<b>HQ Keywords:</b>	01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous) 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 01P--Inadequate Conduct of Operations - Inadequate Oral Communication 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14E--Quality Assurance - Work Process Deficiency	



<b>HQ Summary:</b>	On July 9, 2008, two electricians cut the end off of a de-energized 500 MCM electrical cable that was only tagged out with a boundary lock and tag, in violation of hazardous energy control procedures. There were no injuries.			
<b>Similar OR Report Number:</b>	1. EM-RP--BNRP-RPPWTP-2008-0006			
<b>Facility Manager:</b>	Name	READDY, MICHAEL A		
	Phone	(509) 373-8300		
	Title	OCCURRENCE REPORT COORDINATOR		
<b>Originator:</b>	Name	READDY, MICHAEL A		
	Phone	(509) 373-8300		
	Title	OCCURRENCE REPORT COORDINATOR		
<b>HQ OC Notification:</b>	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
<b>Other Notifications:</b>	Date	Time	Person Notified	Organization
	07/10/2008	08:00 (PTZ)	Dave Leeth	BNI/Con
	07/10/2008	08:00 (PTZ)	Mike Hood	BNI/Con
	07/10/2008	08:00 (PTZ)	Tony Bocca	BNI/SA
	07/10/2008	09:50 (PTZ)	Jeff Bruggeman	DOE/FR
	07/10/2008	09:58 (PTZ)	Ron Smithwick	ONC
<b>Authorized Classifier(AC):</b>				

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<b>6)Report Number:</b>	<a href="#">NA--PS-BWXP-PANTEX-2008-0078</a> After 2003 Redesign		
<b>Secretarial Office:</b>	National Nuclear Security Administration		
<b>Lab/Site/Org:</b>	Pantex Plant		
<b>Facility Name:</b>	Pantex Plant		
<b>Subject/Title:</b>	Discovery of unexpected and uncontrolled hazardous energy source		
<b>Date/Time Discovered:</b>	07/15/2008 13:00 (CTZ)		
<b>Date/Time Categorized:</b>	07/15/2008 13:56 (CTZ)		
<b>Report Type:</b>	Update		
<b>Report Dates:</b>	Notification	07/16/2008	14:49 (ETZ)
	Initial Update	08/28/2008	15:24 (ETZ)
	Latest Update	08/28/2008	15:27 (ETZ)
	Final		
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process		

	(e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.
<b>Cause Codes:</b>	
<b>ISM:</b>	
<b>Subcontractor Involved:</b>	Yes Tri-State
<b>Occurrence Description:</b>	<p>On July 14, 2008 at approximately 22:00 hrs a subcontractor was conducting a continued phase of a facility roof upgrade. This upgrade required the installation of knee braces for roof support. During the installation of one of the knee braces, from a scaffold in a Zone 12 South building, the subcontractor inadvertently bumped an existing electrical conduit about eight feet from the conduit junction box connection. Upon contact with the conduit, the subcontractors thought that they had witnessed a momentary electrical spark / flash, but were not sure. Employing conservative decision making, the subcontractor stopped the job and notified the attending Project Subcontractor Technical Representative (PSTR) who in turn made appropriate notifications to the Operations Center (OC).</p> <p>Additionally the PSTR notified Pantex Crafts Electricians who responded to the area and began an investigation of the event. The responding Electricians determined that no circuit breaker had been tripped and that the conduit contained energized 110 Volt wires which had been disconnected sometime in the past, but had been terminated within the junction box. The Electricians proceeded to lock out the associated breaker which removed any voltage from the conductors within the conduit, making the operation safe and stable.</p> <p>During an ensuing event critique, it was identified that the breaker panel with breakers, associated conduit and service lines are facility legacy items of unknown age. Final construction of the facilities completed during 1959, and it is thought that this electrical service is of the same age or older dependent upon construction start time.</p> <p>It was further identified that this electrical wiring had provided power to roof exhaust fans. However, these exhaust fans were disconnected from electrical power years ago (unknown) and continue to be inoperable. Close inspection of the circuit junction box revealed that the mechanical nut that affixes the conduit to the box had either been left loose or had worked loose through vibration or by other unknown means over the years following the electrical disconnect of the exhaust fans.</p> <p>Due to the conduit being loose within the junction box, whenever the</p>

subcontractor inadvertently bumped the conduit, this caused one of the electrical conductors to momentarily touch the junction box, creating a temporary short circuit resulting in the fleeting spark / flash.

It was further revealed during the event critique that this knee bracing is purely a mechanical type operation that did not anticipate any electrical interference which would require electrical circuits to have Lock-Out-Tag-Out applied.

There was no personnel injury, no damage to facilities or equipment, or no threat to security or the environment as a result of this event.

**Cause Description:**

The B&W Safety & Industrial Hygiene (S&IH) Department conducted a Preliminary Hazard Analysis (PreHA) for the affected Facility Knee Brace Project. One of the concerns identified during the PreHA walk down was the fact that existing conduits may need to be repositioned for the installation of knee bracing and contractor personnel would need to attend and complete B&W Lockout/Tagout (LO-TO) Training.

In order to meet this concern, Duke Electric was chosen to assist with the relocation, modification, removal, or repair of any affected conduit. Duke Electric has been at the Pantex Site for several years, is adequately LO-TO trained and is one of the main Electrical subcontractor for Pantex. Although it was determined that this portion of the Knee Brace Installation was mechanical in nature, Duke Electric was available on an as needed basis.

During installation of one of the knee braces, an existing electrical conduit was bumped and subsequently became dislodged from a junction box that was located approximately 8 feet from the worker. As a result, one of the electrical conductors momentarily contacted the junction box, creating a short circuit to the box. This short circuit condition caused a fleeting spark / flash which was observed by the subcontractor. Although the electrical conductor suffered a temporary short circuit, there was no potential for shock to any of the workers. The workers were isolated from ground by the wood platform of the scaffolding.

The subcontractor and Project Subcontract Technical Representative (PSTR) made notifications. One of these notifications included the B&W Pantex Electricians. Upon notification, the Pantex electricians responded, determined the problem, followed LO-TO procedures and were able to air gap the affected circuit (Panel B, circuit 4) and subsequently re-verified that the line was de-energized. The referenced work was documented on work order (WO) #29410761, which was completed on July 15, 2008. This particular conduit and associated circuit remained under LO-TO conditions during the completion of the knee brace upgrade.

During the Event Critique, it was agreed that the process could return to work dependent upon:

1. Resolution of the existing loose conduit with energized electrical conductors.
2. Involvement and availability of Electrical support to mitigate or eliminate any defined hazards.
3. Coordination of the PSTR to conduct a daily walk down of the area to identify potential similar areas of concern.
  - a. Prior to scaffolding being moved, the PSTR visually inspected the areas next to where the scaffolding was to be reassembled with regard to any type of potential hazard, specifically electrical
  - b. After scaffolding was inspected and approved for use, the PSTR would then perform closer inspections to the area which were to receive knee brace supports to insure that there were no unknown or unseen hazards that may have been obscured from the height factor.
4. If and when another electrical hazard was discovered, the subcontractor would cease work, B&W Electricians would be notified and the problem would be corrected before the subcontractor was allowed to resume work.

Following the Event Critique, work resumed in the area and the PSTR performed many visual hazard inspections. The PSTR is quoted as saying, My inspections were not concluded until I was satisfied that we were providing a safe work place for the subcontractor.

The main cause for this event is primarily due to an unknown legacy condition that was totally unexpected.

<b>Operating Conditions:</b>	Normal operations, this is a roof repair project that did not affect any operation, nor were any electrical interferences assumed, damaged o
<b>Activity Category:</b>	Construction
<b>Immediate Action(s):</b>	Upon discovery, the process was halted, proper notifications were made, and Pantex Craft Electricians investigated the area and returned the electrical problem to a safe and stable condition.
<b>FM Evaluation:</b>	<p>Electrical Safety Program Office personnel evaluated this electrical incident using the Electrical Severity Measurement Tool that was developed by a subgroup of the Energy Facility Contractors Group (EFCOG) to grade the severity of electrical energy events. The tool is intended to assist DOE organizations in the determination and classification of ORPS reportable events. It evaluates severity as a function of the electrical hazard and environmental, shock proximity, arc flash proximity, thermal proximity, and injury factors. Using the tool, this particular event was graded as being Low, indicating an incident that should fall beneath the reporting threshold.</p> <p>The PSTR process inspections were invaluable an identified a potential problem on 08-06-08. During inspection of the scaffolding, the</p>

	<p>superintendent noticed that another conduit, with wires taped on the end was hanging near the scaffolding. The PSTR contacted the B&amp;W Crafts to inspect the item. The wire was determined to not be energized, but as a precautionary measure, the B&amp;W Electricians did install a junction box and terminated the wires inside the box. After the item's repair was completed, the contractor continued with the installation of the knee braces.</p> <p>Other than this item, for this particular job and the affected areas of inspection, no other hazards or potential hazards were identified.</p> <p>Note: Final Report should be completed by 09-12-08 to allow adequate time with Labor day weekend, vacations, etc to adequately review, comment and modify as needed.</p>			
<b>DOE Facility Representative Input:</b>				
<b>DOE Program Manager Input:</b>				
<b>Further Evaluation is Required:</b>	<p>Yes.          Before Further Operation? No          By Whom: Jim McElroy          By When:</p>			
<b>Division or Project:</b>	Projects Division			
<b>Plant Area:</b>	Zone 12 South MAA			
<b>System/Building/Equipment:</b>	Zone 12 South			
<b>Facility Function:</b>	Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)			
<b>Corrective Action 01:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>07/15/2008</td> <td><b>Actual Completion Date:</b>07/15/2008</td> </tr> </table>	<b>Target Completion Date:</b> 07/15/2008	<b>Actual Completion Date:</b> 07/15/2008	
<b>Target Completion Date:</b> 07/15/2008	<b>Actual Completion Date:</b> 07/15/2008			
	<p>Troubleshoot, repair replace or mitigate electrical hazard for unexpected energized source.</p> <p>POC: Jim McElroy X-806-633-6357</p>			
<b>Corrective Action 02:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>08/15/2008</td> <td><b>Actual Completion Date:</b>08/08/2008</td> </tr> </table>	<b>Target Completion Date:</b> 08/15/2008	<b>Actual Completion Date:</b> 08/08/2008	
<b>Target Completion Date:</b> 08/15/2008	<b>Actual Completion Date:</b> 08/08/2008			
	<p>PSTR to conduct area hazards walkdown prior to beginning of project each night and if the project changes during the shift.</p> <p>POC Nolan Brown X-806-477-3307</p>			
<b>Corrective Action 03:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>11/07/2008</td> <td><b>Actual Completion Date:</b></td> </tr> </table>	<b>Target Completion Date:</b> 11/07/2008	<b>Actual Completion Date:</b>	
<b>Target Completion Date:</b> 11/07/2008	<b>Actual Completion Date:</b>			
	Develop and publish Lessons Learned			

	POC: Ron McNabb X-477-6855											
<b>Corrective Action 04:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>11/21/2008</td> <td colspan="2"><b>Actual Completion Date:</b></td> </tr> </table>			<b>Target Completion Date:</b> 11/21/2008	<b>Actual Completion Date:</b>							
<b>Target Completion Date:</b> 11/21/2008	<b>Actual Completion Date:</b>											
	<p>Safety and Industrial Hygiene will revise its automated hazard evaluation / hazard controls checklist to include a descriptor to remind users to consider general job site conditions / interferences when evaluating job hazards and performing site related work .</p> <p>POC. Dick Prather X-477-6212</p>											
<b>Lessons(s) Learned:</b>	To Be Determined											
<b>HQ Keywords:</b>	01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other) 07D--Electrical Systems - Electrical Wiring 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 11G--Other - Subcontractor 12C--EH Categories - Electrical Safety 14E--Quality Assurance - Work Process Deficiency											
<b>HQ Summary:</b>	<p>On July 14, 2008, a subcontractor was installing knee braces for roof support during a facility roof upgrade, and inadvertently bumped an existing electrical conduit. Upon contact with the conduit, the subcontractors thought that they saw a brief electrical spark / arc. Work was stopped and appropriate notifications were made. Subsequent investigation found that no circuit breaker had been tripped and that the conduit contained energized 110 Volt wires which had been disconnected in the past, but had been terminated within the junction box. The Electricians proceeded to lock out the associated breaker which removed any voltage from the conductors within the conduit, making the operation safe and stable.</p>											
<b>Similar OR Report Number:</b>	1. N/A											
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="2">Ian Hughes</td> </tr> <tr> <td>Phone</td> <td colspan="2">(806) 477-7530</td> </tr> <tr> <td>Title</td> <td colspan="2">Department Manager, Construction Support</td> </tr> </table>			Name	Ian Hughes		Phone	(806) 477-7530		Title	Department Manager, Construction Support	
Name	Ian Hughes											
Phone	(806) 477-7530											
Title	Department Manager, Construction Support											
<b>Originator:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="2">MCNABB, RON O</td> </tr> <tr> <td>Phone</td> <td colspan="2">(806) 477-6855</td> </tr> <tr> <td>Title</td> <td colspan="2">SUPPORT REPRESENTATIVE</td> </tr> </table>			Name	MCNABB, RON O		Phone	(806) 477-6855		Title	SUPPORT REPRESENTATIVE	
Name	MCNABB, RON O											
Phone	(806) 477-6855											
Title	SUPPORT REPRESENTATIVE											
<b>HQ OC Notification:</b>	<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Person Notified</th> <th>Organization</th> </tr> </thead> <tbody> <tr> <td>07/15/2008</td> <td>13:56 (CTZ)</td> <td>Noel Williams DOE</td> <td>PXSO</td> </tr> </tbody> </table>			Date	Time	Person Notified	Organization	07/15/2008	13:56 (CTZ)	Noel Williams DOE	PXSO	
Date	Time	Person Notified	Organization									
07/15/2008	13:56 (CTZ)	Noel Williams DOE	PXSO									
<b>Other Notifications:</b>	<table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Person Notified</th> <th>Organization</th> </tr> </thead> <tbody> <tr> <td>07/15/2008</td> <td>13:56 (CTZ)</td> <td>Will Bivens Duty Off.</td> <td>B&amp;W</td> </tr> </tbody> </table>			Date	Time	Person Notified	Organization	07/15/2008	13:56 (CTZ)	Will Bivens Duty Off.	B&W	
Date	Time	Person Notified	Organization									
07/15/2008	13:56 (CTZ)	Will Bivens Duty Off.	B&W									
<b>Authorized Classifier(AC):</b>	Norm Sproles      Date: 08/28/2008											

<b>7)Report Number:</b>	<a href="#">NA--SS-SNL-2000-2008-0005</a> After 2003 Redesign		
<b>Secretarial Office:</b>	National Nuclear Security Administration		
<b>Lab/Site/Org:</b>	Sandia National Laboratories - SS		
<b>Facility Name:</b>	SNL Division 2000		
<b>Subject/Title:</b>	Disconnection of Disconnect Switch in Bldg. Y702		
<b>Date/Time Discovered:</b>	07/02/2008 11:00 (MTZ)		
<b>Date/Time Categorized:</b>	07/02/2008 11:50 (MTZ)		
<b>Report Type:</b>	Final		
<b>Report Dates:</b>	Notification	07/07/2008	17:58 (ETZ)
	Initial Update	07/31/2008	17:58 (ETZ)
	Latest Update	07/31/2008	17:58 (ETZ)
	Final	07/31/2008	17:58 (ETZ)
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	<p>2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.</p> <p>10(3) - A near miss, where no barrier or only one barrier prevented an event from having a reportable consequence. One of the four significance categories should be assigned to the near miss, based on an evaluation of the potential risks and the corrective actions taken. (1 of 4 criteria - This is a SC 3 occurrence)</p>		
<b>Cause Codes:</b>	<p>A3B4C02 - Human Performance Less Than Adequate (LTA); Work Practices LTA; Deliberate violation</p> <p>--&gt;couplet - A4B3C06 - Management Problem; Work Organization &amp; Planning LTA; Planning not coordinated with inputs from walkdowns/task analysis</p>		
<b>ISM:</b>	<p>1) Define the Scope of Work</p> <p>2) Analyze the Hazards</p>		
<b>Subcontractor Involved:</b>	No		
<b>Occurrence Description:</b>	<p>On July 1, 2008, a new piece of equipment recently purchased was to be moved from the Y hallway of building 878 into Room Y702. A planning meeting for the move had occurred prior to the move and arrangements had been made to clear the space where the new equipment was to be placed. However, due to some apparent miscommunication, an OD (Outside Diameter) grinder adjacent to the doorway into room Y702 had not been electrically disconnected prior to the new equipment installation. The OD</p>		

grinder was blocking the move of the new equipment into the room. The SNL employee acting as the point of contact for the movers, first called a Sandia electrician to come and disconnect the OD grinder that was blocking the move. The electrician was working on another job and could not come immediately to do the disconnection but could probably be there in two hours.

However, the individual was told by the movers that they needed to get this job done because they had other work to perform and the equipment was part way into the room partially blocking the doorway and adjacent hallway. When the movers left briefly to get something they needed, the individual felt that it was necessary to act and decided that the employee would not wait for the electrician. Instead, the individual proceeded to disconnect the equipment himself. The individual shut off the wall disconnect switch (220 Volt, 20 Amp circuit), opened the cover of the disconnect switch, checked visually to see that the three blades of the disconnect switch were opened, used a screwdriver (non-electrically rated) to remove the three fuses in the box, and disconnected the electrical wires to the equipment. The employee did not Lock Out/Tag Out the equipment nor did the employee perform a "zero energy check". Subsequently, when the electrician arrived, the electrician found that the equipment was already disconnected, and asked who had disconnected it. The Individual informed the electrician that the individual had disconnected the equipment. The electrician properly reported this to management.

There were no injuries and there was no damage to the equipment. As it turns out, the upstream circuit breaker feeding this equipment had apparently been turned off, therefore it is unlikely that the disconnect switch was energized at the time. The individual did not turn the breaker off and the electrician also noted that the breaker was off.

Scoring this event using the EFCOG Severity Measurement tool: The upstream breaker was open, so there was no shock or flash hazard and no personal injury occurred. This event scored zero.

**Cause Description:**

Critique/Fact Finding Performed 7/2/08

A3B4C02 Deliberate violation. Although the individual did contact the electrician, the individual decided the time delay in which the electrician could respond was too long. The individual was concerned about the delay of the move. The individual disconnected the OD grinder from the disconnect switch.

A4B3C06 Planning not coordinated with inputs from Walk downs/task analysis. A planning meeting was conducted prior to the installation of the equipment. After this meeting, the decision to remove the OD grinder was rescinded. Since there was no formal planning or documentation of the



	<p>installation of the equipment, this decision was not reviewed with the Machinery Repair personnel in context of their requirements. Besides the decision to keep the OD grinder, there was no walk down of the area by the individual or Machinery Repair personnel prior to the day of installation.</p> <p>Method of causal analysis: A Root Cause Assessment was performed using the Systemic Factors process.</p>
<b>Operating Conditions:</b>	Normal
<b>Activity Category:</b>	Maintenance
<b>Immediate Action(s):</b>	<p>On July 2, 2008, an FMOC Electrician was requested to administratively lock and tag out the circuit which connected to the OD Grinder disconnection switch. The Senior Manager of the 2450 Group declared a stand down of all electrical maintenance, diagnostic, or repair of equipment. This stand down does not effect the standard operation of equipment within the Group. The stand down will be in effect until personnel have attended a mandatory meeting concerning this incident. The Senior Manager of the 2430 Group will also conduct a mandatory meeting concerning this incident.</p>
<b>FM Evaluation:</b>	<p>EOC #6980</p> <p>DOE/SSO Early Notification Date &amp; Time:  EOC - 07/1/08 - 16:45  FR - Gary Schmidtke - 07/1/08 - 17:10</p> <p>As a result of this event, the senior manager of the 2450 Group declared a stand down of all electrical maintenance, diagnostic, or repair of equipment. This stand down did not affect the standard operation of equipment within the Group. The stand down was in effect until all personnel in Group 2450 have attended a mandatory meeting concerning this incident. This meeting also addressed the extent of condition within the entire group concerning this event. During this meeting, all personnel were reminded they are NOT allowed to access the internal mechanism of the disconnect switches, junction boxes, or breaker boxes. These switches and boxes can only be accessed by qualified and trained FMOC individuals. Group 2450 personnel were also reminded that they are allowed to operate the disconnect switches only if they are trained through the ELC901 Safe Switching course. These mandatory meetings were completed as of July 10, 2008, and therefore this stand down was lifted.</p> <p>Besides the stand down, the causal analysis identified a weakness in planning. Although planning was performed, no documentation was generated to the agreed upon requirements or necessary conditions. A planning aid in the form of a checklist will be generated to allow for an informal means of documenting the planning of equipment installation in the future. This checklist will be documented and incorporated into the center quality management system.</p>

<b>DOE Facility Representative Input:</b>			
<b>DOE Program Manager Input:</b>			
<b>Further Evaluation is Required:</b>	No		
<b>Division or Project:</b>	2000/Product Division		
<b>Plant Area:</b>	Tech Area I		
<b>System/Building/Equipment:</b>	OD Grinder/Bldg. 878 Y702		
<b>Facility Function:</b>	Balance-of-Plant - Machine shops		
<b>Corrective Action 01:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>08/01/2008</td> <td><b>Actual Completion Date:</b>07/10/2008</td> </tr> </table>	<b>Target Completion Date:</b> 08/01/2008	<b>Actual Completion Date:</b> 07/10/2008
<b>Target Completion Date:</b> 08/01/2008	<b>Actual Completion Date:</b> 07/10/2008		
	Department 2450 - All operations concerning Electrical Diagnostics, Maintenance, or Repair will be suspended pending attendance of a mandatory meeting to be held by the Senior Manager. (A3B4C02, A4B3C06)		
<b>Corrective Action 02:</b>	<table border="1"> <tr> <td><b>Target Completion Date:</b>09/30/2008</td> <td><b>Actual Completion Date:</b></td> </tr> </table>	<b>Target Completion Date:</b> 09/30/2008	<b>Actual Completion Date:</b>
<b>Target Completion Date:</b> 09/30/2008	<b>Actual Completion Date:</b>		
	Department 2454 - A planning aid checklist form will be generated for informal planning for minor equipment installation or relocation. (A3B4C02, A4B3C06)		
<b>Lessons(s) Learned:</b>			
<b>HQ Keywords:</b>	01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous) 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other) 01P--Inadequate Conduct of Operations - Inadequate Oral Communication 01T--Inadequate Conduct of Operations - Willful Violation 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14E--Quality Assurance - Work Process Deficiency		
<b>HQ Summary:</b>	The Sandia point of contact (POC), who was supporting the delivery of a new piece of equipment to Building 878, disconnected a grinder which was blocking the move. The POC had not been able to obtain the immediate support of an electrician, and so opened the wall disconnect switch (220 Volt, 20 Amp circuit), and removed the fuse, without performing a lockout/tagout or a zero-energy check. Later, the electrician arrived, found that the equipment was already disconnected, and asked who had disconnected it. When informed that the POC had disconnected the equipment, the electrician properly reported this to management.		

	Management declared a stand down of all electrical maintenance, diagnostic, or repair of equipment until personnel have attended a mandatory meeting concerning this incident.																							
<b>Similar OR Report Number:</b>	1. EM-RP--BNRP-RPPWTP-2008-0004																							
	2. NA--LSO-LLNL-LLNL-2008-0012																							
	3. NE-ID--LITC-ATR-1998-0023																							
	4. EM-ID--BBWI-WASTEMNGT-2005-0004																							
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">John L. Zich</td> </tr> <tr> <td>Phone</td> <td colspan="3">(505) 845-8571</td> </tr> <tr> <td>Title</td> <td colspan="3">ES&amp;H Coordinator</td> </tr> </table>				Name	John L. Zich			Phone	(505) 845-8571			Title	ES&H Coordinator										
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Phone	(505) 845-8571																							
Title	ES&H Coordinator																							
<b>Originator:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">LUCERO, JEWELLEE A</td> </tr> <tr> <td>Phone</td> <td colspan="3">(505) 845-4727</td> </tr> <tr> <td>Title</td> <td colspan="3">REPORTING ADMINISTRATOR</td> </tr> </table>				Name	LUCERO, JEWELLEE A			Phone	(505) 845-4727			Title	REPORTING ADMINISTRATOR										
Name	LUCERO, JEWELLEE A																							
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07/03/2008	08:15 (MTZ)	David W. Plummer	2400																					
<b>Authorized Classifier(AC):</b>	Michael J. Kelly     Date: 07/31/2008																							

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<b>8)Report Number:</b>	<a href="#">NA--SS-SNL-2000-2008-0006</a> After 2003 Redesign											
<b>Secretarial Office:</b>	National Nuclear Security Administration											
<b>Lab/Site/Org:</b>	Sandia National Laboratories - SS											
<b>Facility Name:</b>	SNL Division 2000											
<b>Subject/Title:</b>	Electrical Shock to Subcontractor While Connecting Power Cable to Camera Film Take up Reel at the Tonopah Test Range											
<b>Date/Time Discovered:</b>	07/08/2008 14:20 (MTZ)											
<b>Date/Time Categorized:</b>	07/08/2008 15:20 (MTZ)											
<b>Report Type:</b>	Update/Final											
<b>Report Dates:</b>	<table border="1"> <tr> <td>Notification</td> <td>07/09/2008</td> <td>18:10 (ETZ)</td> </tr> <tr> <td>Initial Update</td> <td>07/15/2008</td> <td>18:34 (ETZ)</td> </tr> <tr> <td>Latest Update</td> <td>08/21/2008</td> <td>18:19 (ETZ)</td> </tr> </table>			Notification	07/09/2008	18:10 (ETZ)	Initial Update	07/15/2008	18:34 (ETZ)	Latest Update	08/21/2008	18:19 (ETZ)
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Initial Update	07/15/2008	18:34 (ETZ)										
Latest Update	08/21/2008	18:19 (ETZ)										

	Revision 2	09/03/2008	15:53 (ETZ)
<b>Significance Category:</b>	2		
<b>Reporting Criteria:</b>	2C(1) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or disturbance of a previously unknown or mislocated hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas) resulting in a person contacting (burn, shock, etc.) hazardous energy.		
<b>Cause Codes:</b>	A1B1C03 - Design/Engineering Problem; Design input Less Than Adequate (LTA).; Design input not correct A4B4C01 - Management Problem; Supervisory Methods LTA; Tasks and individual accountability not made clear to worker A4B3C08 - Management Problem; Work Organization & Planning LTA; Job scoping did not identify special circumstances and/or conditions A5B1C06 - Communications Less Than Adequate (LTA); Written Communication Method of Presentation LTA; Instruction step / information in wrong sequence		
<b>ISM:</b>	3) Develop and Implement Hazard Controls		
<b>Subcontractor Involved:</b>	Yes Washington Group International		
<b>Occurrence Description:</b>	<p>On 7/8/08, at approximately 1420L, a Washington Group International (WGI) employee received an electrical shock to his right index finger during a Range System Checkout for an upcoming test. The event occurred while the individual was connecting the power and control cable to the camera film take-up reel at MC-5, a Cinetheodolite Data Camera unit. The electrical shock occurred at approximately 1420L. The individual was trained and qualified as a Camera Operator. The shock was received during normal camera operations. The Optics Functional Lead was notified of the event at 1435L and he informed the TTR ES&amp;H Coordinator. At 1440L, the ES&amp;H Coordinator notified the WGI Manager to have his employee immediately report to medical for evaluation. At 1500L, the acting Range Manager was notified and proceeded to begin the OOPS reporting process. The acting Manager was unable to contact the Range Manager and left a message on his cell phone describing the incident. The Range Manager was in transit from TTR to Las Vegas. The 2910 Level II manager was contacted at 1518L followed by the Center 2900 ES&amp;H Coordinator at 1520L. During this time, the TTR camera personnel were attempting to determine the level of voltage associated with the incident. At 1520L TTR Medical decided, as a precaution, to send the employee to Nye County Regional Hospital for further evaluation. At 1528L the NNSA/SSO received verbal Early Notification of an electrical shock. At 1540L the TTR Range Manager received the voice mail and was notified of the event. At 1542L TTR camera personnel determined the voltage at the plug to be 150VAC. At 1545L both the Level II Manager and Center ES&amp;H Coordinator were notified of the amount of voltage associated with the shock. At 1555L NNSA/SSO received</p>		

the updated ORPS prompt /verbal Early Notification. Concurrently, the TTR ES&H Coordinator contacted TTR Medical and communicated the maximum voltage associated with the plug. The WGI employee arrived at Nye County Regional Hospital at 1600L and was released at 1715 with no restrictions. At 1740L the Center ES&H Coordinator was notified that the individual was released from hospital.

The Optics Group Functional Lead suspended camera operations and notified all camera personnel and the acting Range Manager of the incident immediately upon notification from the employee of receiving a shock from the camera equipment. The Functional Lead began the process to inspect all film take-up reel power and control cables within camera operations and will complete the inspections before continuing any camera operation.

The Functional Lead inspected the connector associated with the source of the shock and determined the external portion of the cable and connector was in satisfactory condition. However, upon disassembly of the connector there appeared to be a short within the connection. Photographs were taken of the exterior and interior portions of the connector. Statements of those involved were taken.

**Cause Description:**

Fact finding /critique Performed 7/8/08.

The Systemic Factors Causal Analysis process for the Root-Cause-Analysis (RCA) was used and in addition checked with the Tap-Root process.

A1B1C03 - Design input not correct. The electrical connector failed due to inadequate grounding. The new procedure / checklist for connecting power in de-energized state were rewritten to perform the connection with power off.

A4B4C01 - Tasks and individual accountability not made clear to worker: Implementation of changes in the ES&H manual Chapter 4.13 wasn't made clear to the worker with accurate Operating Procedure / Checklist.

A4B3C08 - Job scoping did not identify special circumstances and/or conditions

The proper review and approval of Operating Procedures to ensure all seven guiding principles of ISMS Work Controls and Hazard Analysis are performed in conjunction with current Electrical Safety manual requirements.

A5B1C06 - Instruction step / information in wrong sequence  
Operating Procedure was LTA allowing energized power to be applied to the connector during the connection

**Operating Conditions:**

Normal Operations

**Activity Category:**

Normal Operations (other than Activities specifically listed in this Category)

<b>Immediate Action(s):</b>	<p>Initial incident actions: The Optics Group Functional Lead suspended camera operations and notified all camera personnel and the acting Range Manager of the incident immediately upon notification from the employee of receiving a shock from the camera equipment. The Functional Lead began the process to inspect all film take-up reel power and control cables within camera operations and will complete the inspections before continuing any camera operation.</p> <p>No problems were identified during the inspection of the other MT, PT type power and control cable connectors, which was completed and documented on 7/9/08.</p>
<b>FM Evaluation:</b>	<p>Event #7051</p> <p>DOE/SSO Early Notification Date &amp; Time:  EOC - 07/8/08 - 15:30  FR - Heather Trumble - 07/8/08 - 15:28</p> <p>Robert Sherwood - "Scoring this event using the EFCOG Severity Measurement tool this event scored as a 330 or medium hazard. The breakdown is as follows: the hazard factor = 10, the environment was dry therefore the environmental factor = 0; the prohibited approach boundary had been crossed so the shock proximity factor = 10; there was no arc flash or thermal hazard so the flash proximity factor and thermal proximity factor both = 0; no fibrillation experienced or burn so the injury factor = 3."</p> <p>UPDATE 7/15/08  Title was changed  END OF UPDATE</p> <p>UPDATE 9/3/08  Cause Code A2B2C03 deleted, spelling correction, correct cause code in corrective action #1, correct target completion date and close out corrective action #3, approved by FR, Heather Trumble.  END OF UPDATE</p>
<b>DOE Facility Representative Input:</b>	
<b>DOE Program Manager Input:</b>	
<b>Further Evaluation is Required:</b>	No
<b>Division or Project:</b>	2000/Tonopah Test Range
<b>Plant Area:</b>	Other
<b>System/Building/Equipment:</b>	Amphenol MS 3057-12A/MC-5, Cinetheodolite, Station 37/TTR
<b>Facility Function:</b>	Balance of Plant - Infrastructure (Other Functions not specifically listed in

	this Category)	
<b>Corrective Action 01:</b>	<b>Target Completion Date:</b> 10/15/2008	<b>Actual Completion Date:</b>
	Department 2915 - Update Optics procedures and evaluate other existing procedures & checklists for similar conditions that ensure power is de-energized before connecting. (A1B1C03, A5B1C06, A4B4C01)	
<b>Corrective Action 02:</b>	<b>Target Completion Date:</b> 10/15/2008	<b>Actual Completion Date:</b>
	Department 2915 - Apply recommended warning labels per section 4.13 of the Electrical Safety Manual to all MS, PT, or Non-NRTL approved connectors and/or installation points > 50V. (A4B4C01, A4B1C01)	
<b>Corrective Action 03:</b>	<b>Target Completion Date:</b> 08/14/2008	<b>Actual Completion Date:</b> 08/12/2008
	Department 2915 - Revise the existing procedure for applying power to the camera to require installation of power cable prior to energization. (A1B1C03)	
<b>Corrective Action 04:</b>	<b>Target Completion Date:</b> 09/15/2008	<b>Actual Completion Date:</b>
	Department 2915 - Evaluate the review and approval process for existing procedures/checklists for adequacy. (A4B3C08)	
<b>Corrective Action 05:</b>	<b>Target Completion Date:</b> 12/15/2008	<b>Actual Completion Date:</b>
	Department 2900 - Verification of completion and validation of effectiveness of all corrective actions will be performed within 3 months of completion of last corrective action.	
<b>Lessons(s) Learned:</b>	<p>Title: ES&amp;H Manual</p> <p>Lesson Learned Statement: A technician at TTR received an electrical shock when connecting a connector with power applied. The checklist that was used was created from an older original manufacturers provided technical document for a Cinetheodolite data camera unit that was received in 1980. It allowed personnel to plug electrical power connector to the unit in with power applied.</p> <p>** In the future all procedures for applying power will require installation of power cable prior to energization.</p> <p>The RCA from this incident identified existing procedures &amp; checklists need review to ensure Electrical Safety Manual updates are implemented in all associated Operating Procedures and similar conditions to ensure power is de-energized before connecting. ES&amp;H Manual - The provisions of the National Electric Code (NEC), National Electric Safety Code (NESC), and OSHA Standards contained within this manual are to be complied with at all</p>	

Sandia-controlled premises. These standards have specific requirements that apply to all electrical installations and utilization equipment regardless of when they were designed or installed. In addition, these standards also identify other mandatory provisions and specify effective dates. ES&H Electrical Safety Manual Chapter 4.13 - Connections, Connectors, and Couplings.

The following applies for all AC power connectors within or external to electrical/electronic enclosures:

1) Use of MS, PT, or other non-NRTL approved connectors is not permitted except when justified to and approved by the Authority Having Jurisdiction (AHJ). 2) Connectors shall be NRTL approved for the application.

If conditions require the use of a non-NRTL listed or labeled connector, such as a "MS"(military standard pin and socket type) or "PT" (similar to "MS" but smaller) type, for input/output ac power, a warning label should be affixed next to the connector stating: "WARNING - POWER MUST BE REMOVED BEFORE CONNECTING/DISCONNECTING.

Discussion of Activities:

Implementation Knowledge of ES&H Manual Changes

Analysis:

The Systemic Factors Casual Analysis process for the Root-Cause-Analysis (RCA) was used and in addition checked with the Tap-Root process.

Recommended Actions:

Implementation of Corrective Actions from the Root-Cause -Analysis.

**HQ Keywords:**

07D--Electrical Systems - Electrical Wiring  
08A--OSHA Reportable/Industrial Hygiene - Electrical Shock  
08J--OSHA Reportable/Industrial Hygiene - Near Miss (Electrical)  
11G--Other - Subcontractor  
12C--EH Categories - Electrical Safety  
14L--Quality Assurance - No QA Deficiency

**HQ Summary:**

A subcontractor employee received a low voltage shock to right index finger during a range system checkout for an upcoming test. The event occurred while the individual was connecting the power and control cable to a camera film take-up reel. The employee was evaluated at site medical and then sent to Nye County Regional Hospital for further evaluation, where he was released without restrictions. All film take-up reel power and control cables at the range will be inspected before continuing any camera operation. A critique was held.

**Similar OR Report Number:**

1. None

**Facility Manager:**

Name	Robert Sherwood
------	-----------------



	Phone	(702) 295-8109		
	Title	Range Manager		
<b>Originator:</b>	Name	LUCERO, JEWELLEE A		
	Phone	(505) 845-4727		
	Title	REPORTING ADMINISTRATOR		
<b>HQ OC Notification:</b>	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
<b>Other Notifications:</b>	Date	Time	Person Notified	Organization
	07/08/2008	15:18 (MTZ)	Hank Witek	2910
	07/08/2008	15:40 (MTZ)	Robert Sherwood	2915
	07/08/2008	15:40 (MTZ)	Larry Walker	2900
	07/08/2008	15:40 (MTZ)	Steve Rottler	2000
	07/08/2008	15:45 (MTZ)	Brian Philipbar	2900
	07/08/2008	15:55 (MTZ)	Heather Trumble, FR	DOE/SSO
<b>Authorized Classifier(AC):</b>	Chris Christensen Date: 08/21/2008			

<b>9)Report Number:</b>	<a href="#">NA--SS-SNL-4000-2008-0003</a> After 2003 Redesign		
<b>Secretarial Office:</b>	National Nuclear Security Administration		
<b>Lab/Site/Org:</b>	Sandia National Laboratories - SS		
<b>Facility Name:</b>	SNL Division 4000		
<b>Subject/Title:</b>	LOTO Violation/Site Service Contracting		
<b>Date/Time Discovered:</b>	07/10/2008 09:11 (MTZ)		
<b>Date/Time Categorized:</b>	07/18/2008 07:08 (MTZ)		
<b>Report Type:</b>	Update		
<b>Report Dates:</b>	Notification	07/21/2008	17:28 (ETZ)
	Initial Update	08/28/2008	12:35 (ETZ)
	Latest Update	08/28/2008	12:35 (ETZ)
	Final		
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.		

<b>Cause Codes:</b>	
<b>ISM:</b>	
<b>Subcontractor Involved:</b>	Yes Professional Building Systems
<b>Occurrence Description:</b>	On June 16, 2008, Professional Business Systems (PBS), a company that sells and installs integrated systems removed audio visual equipment (electrical screen) from the wall of Room 9 in Building 803. On June 30, 2008, a building occupant noticed an electrical wire hanging from the ceiling of Room 9. The occupant then noticed the lockout/tagout at the breaker box in the hallway next to the men's room at the north end of the building. On July 1 or 2, a Facilities Management and Operations Center (FMOC) electrician was in Building 803 as part of an electrical assessment survey. The building occupant identified the electrical conduit and lockout/tagout to the FMOC electrician. Upon inspection, the FMOC Electrician identified the wire as an abandoned 3/8" electrical conduit and the lockout/tagout as a process that did not follow the SNL Electrical Safety process.
<b>Cause Description:</b>	
<b>Operating Conditions:</b>	Normal
<b>Activity Category:</b>	Normal Operations (other than Activities specifically listed in this Category)
<b>Immediate Action(s):</b>	The situation was documented with photos. The building occupant was asked details about who performed the work and what work was performed. An FMOC contractor could not be identified associated with the work. An inquiry was performed to identify a SNL contact familiar with the work request.
<b>FM Evaluation:</b>	DOE/SSO Early Notification Date & Time: EOC - 7/10/08 - 09:15 Gary Schmidtke, FR - 7/18/08 - 09:48  UPDATE 8/28/08 Request for a Final extension was granted by DOE/SSO/FR, Bill Wechsler. A meeting date of Thursday August 28 at 2pm has been agreed upon by the off-site contractor who was responsible for performing the work in Building 803. The information gathered in this meeting will have an impact upon the results of the Causal Analysis and will be included in the final report. Extension is granted to Monday, September 8, 2008. END OF UPDATE
<b>DOE Facility Representative Input:</b>	
<b>DOE Program Manager Input:</b>	
<b>Further Evaluation is Required:</b>	Yes. Before Further Operation? No By Whom: Causal Analysis Team

	By When: 09/08/2008															
<b>Division or Project:</b>	4000/Emergency Plans and Support															
<b>Plant Area:</b>	Tech Area I															
<b>System/Building/Equipment:</b>	Electrical Components (Wires, Breaker Box)															
<b>Facility Function:</b>	Balance-of-Plant - Offices															
<b>Corrective Action:</b>																
<b>Lessons(s) Learned:</b>																
<b>HQ Keywords:</b>	01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 08H--OSHA Reportable/Industrial Hygiene - Safety Noncompliance 11G--Other - Subcontractor 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14E--Quality Assurance - Work Process Deficiency															
<b>HQ Summary:</b>	<p>On June 16, 2008, Professional Business Systems, a company that sells and installs integrated systems removed audio visual equipment (electrical screen) from the wall of Room 9 in Building 803. On June 30, 2008, a building occupant noticed an electrical wire hanging from the ceiling of Room 9 and a lockout/tagout at a circuit breaker box. On July 1 or 2, the building occupant showed the electrical conduit and lockout/tagout to a Facilities Management and Operations Center (FMOC) electrician who was in Building 803 as part of an electrical assessment survey. Upon inspection, the FMOC Electrician identified the wire as an abandoned 1/2-inch electrical conduit and the lockout/tagout as a process that did not follow the SNL Electrical Safety process. An inquiry was performed to identify a SNL contact familiar with the work request.</p>															
<b>Similar OR Report Number:</b>																
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td colspan="3">Patrick Murphy</td> </tr> <tr> <td>Phone</td> <td colspan="3">(505) 844-0493</td> </tr> <tr> <td>Title</td> <td colspan="3">Center 4100 ES&amp;H/S&amp;S Coordinator</td> </tr> </table>				Name	Patrick Murphy			Phone	(505) 844-0493			Title	Center 4100 ES&H/S&S Coordinator		
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07/10/2008	09:20 (MTZ)	Bill Lucy	4021													
07/15/2008	01:10 (MTZ)	Bob Brandhuber	4130													

	07/18/2008	09:48 (MTZ)	Gary Schmidtke, FR	DOE/SSO
<b>Authorized Classifier(AC):</b>	Dwight Stockham Date: 07/21/2008			

<b>10)Report Number:</b>	<a href="#">NA--SS-SNL-NMFAC-2008-0015</a> After 2003 Redesign		
<b>Secretarial Office:</b>	National Nuclear Security Administration		
<b>Lab/Site/Org:</b>	Sandia National Laboratories - SS		
<b>Facility Name:</b>	SNL NM Site-wide F & M		
<b>Subject/Title:</b>	Prime Construction Subcontract Employee Damages 120 volt 20 amp Conductor, Tripping Breaker While Removing a Metal Wall Partition Base Strip		
<b>Date/Time Discovered:</b>	07/31/2008 11:30 (MTZ)		
<b>Date/Time Categorized:</b>	07/31/2008 11:45 (MTZ)		
<b>Report Type:</b>	Update		
<b>Report Dates:</b>	Notification	08/04/2008	18:29 (ETZ)
	Initial Update	08/05/2008	11:23 (ETZ)
	Latest Update	08/06/2008	17:19 (ETZ)
	Final		
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.		
<b>Cause Codes:</b>			
<b>ISM:</b>			
<b>Subcontractor Involved:</b>	Yes ECI / B&D Electric		
<b>Occurrence Description:</b>	<p>On July 31, 2008, at approximately 11:30am a Construction Prime Subcontract carpenter damaged the insulation on an energized #12 conductor grounding the conductor and tripping the breaker. The Prime Construction Subcontractors crew, consisting of one foremen and a carpenter, was attempting to remove the base strip of a metal wall partition when the carpenter identified that the "chair" or stand for the wall partition needed to be moved over slightly before the base strip could be removed. The carpenter began tapping the stand with a rubber mallet. It was during this process that the conductor was pinched between the wall panel and the metal chair resulting in the short circuit.</p> <p>The base strip and sections of Dowcraft wall partitions were located in</p>		

	<p>Building 802, Room 2344, and were being removed as part of an office remodel project. The pinched conductor supplied power to a 120 volt 20 amp receptacle located in the base strip the carpenter was preparing to remove. The tripped breaker was a 20amp single-pole, located in Panel P2D, circuit number 19.</p> <p>Prior to the incident the carpenter had removed another base strip and a cap strip (cap strips are located between the wall partitions). Electricians working for the electrical subcontractor for the project arrived on the job after the first base and cap strips had been removed and voiced concern due to the existing outlets in the base strips that needed to be de-energized and removed prior to additional base and cap strips being removed.</p> <p>The electricians began investigating to determine which circuits needed to de-energized and locked and tagged out. Instead of waiting and applying LOTO to the circuits identified by the electricians the carpenter began moving the wall partition stand with the rubber mallet.</p> <p>This incident was not identified as a near miss of a shock because the carpenter was utilizing a rubber mallet and no one was in contact with the metal partition during the work activity. There was no impact to personnel, the environment or line operations as a result of the incident.</p>
<b>Cause Description:</b>	Critique/Fact Finding Performed 8/4/08
<b>Operating Conditions:</b>	Normal
<b>Activity Category:</b>	Construction
<b>Immediate Action(s):</b>	<p>Electrical Subcontract Electricians found the tripped breaker and applied LOTO placing the area in a safe condition.</p> <p>Work on the project suspended until the Prime Construction Contractor provides a letter describing their investigation and proposed corrective actions.</p>
<b>FM Evaluation:</b>	<p>EOC #7417</p> <p>Early Notification Dates and Times:  EOC - 7/31/08 - 11:40  FR - Bill Wechsler - 7/31/08, 11:45</p> <p>UPDATE 8/5/08:  In Description of Occurrence (last paragraph): "No" was added: There was "no" impact to personnel...  END OF UPDATE</p> <p>UPDATE 8/6/08:  In Evaluation by Facility Manager: Added - An SNL Electrical Safety Subject Matter Expert analyzed the event using the EFCOG Electrical</p>

	Severity Measurement Tool and provided the following Electrical Severity Score: 110: Hazard Factor (energy): 10 - Environmental factor (dry): 0 - Shock proximity (within the prohibited approach boundary): 10 - Arc proximity: 0 - Thermal proximity: 0 - Injury (none): 1. END OF UPDATE						
<b>DOE Facility Representative Input:</b>							
<b>DOE Program Manager Input:</b>							
<b>Further Evaluation is Required:</b>	Yes. Before Further Operation? No By Whom: Causal Analysis Team By When: 09/12/2008						
<b>Division or Project:</b>	4000						
<b>Plant Area:</b>	Tech Area I						
<b>System/Building/Equipment:</b>	Bldg. 802, Rm. 2344						
<b>Facility Function:</b>	Balance-of-Plant - Site/outside utilities						
<b>Corrective Action:</b>							
<b>Lessons(s) Learned:</b>							
<b>HQ Keywords:</b>	01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other) 01T--Inadequate Conduct of Operations - Willful Violation 07D--Electrical Systems - Electrical Wiring 11G--Other - Subcontractor 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14E--Quality Assurance - Work Process Deficiency						
<b>HQ Summary:</b>	While attempting to remove the base strip of a metal wall partition, a Construction Prime Subcontract carpenter damaged the insulation on an energized #12 conductor grounding the conductor and tripping the circuit breaker. Electrical Subcontract Electricians found the tripped circuit breaker and applied a lockout/tagout, placing the area in a safe condition. Work on the project was suspended until the Prime Construction Contractor provides a letter describing their investigation and proposed corrective actions.						
<b>Similar OR Report Number:</b>							
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td>Carla Lamb</td> </tr> <tr> <td>Phone</td> <td>(505) 844-1753</td> </tr> <tr> <td>Title</td> <td>ES&amp;H Coordinator - Facilities Management &amp; Ops Ctr</td> </tr> </table>	Name	Carla Lamb	Phone	(505) 844-1753	Title	ES&H Coordinator - Facilities Management & Ops Ctr
Name	Carla Lamb						
Phone	(505) 844-1753						
Title	ES&H Coordinator - Facilities Management & Ops Ctr						
<b>Originator:</b>	<table border="1"> <tr> <td>Name</td> <td>LUCERO, JEWELLEE A</td> </tr> <tr> <td>Phone</td> <td>(505) 845-4727</td> </tr> <tr> <td>Title</td> <td>REPORTING ADMINISTRATOR</td> </tr> </table>	Name	LUCERO, JEWELLEE A	Phone	(505) 845-4727	Title	REPORTING ADMINISTRATOR
Name	LUCERO, JEWELLEE A						
Phone	(505) 845-4727						
Title	REPORTING ADMINISTRATOR						

<b>HQ OC Notification:</b>	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
<b>Other Notifications:</b>	Date	Time	Person Notified	Organization
	07/31/2008	11:30 (MTZ)	Mark McNellis	4122
	07/31/2008	11:35 (MTZ)	John Norwalk	4827
	07/31/2008	11:45 (MTZ)	Bill Wechsler, FR	DOE/SSO
	07/31/2008	13:30 (MTZ)	Jeff Quintenz	4800
	07/31/2008	13:33 (MTZ)	Bill Lucy	4021
<b>Authorized Classifier(AC):</b>	John Norwalk      Date: 08/04/2008			

<b>11)Report Number:</b>	<a href="#">NE-ID--BEA-MFC-2008-0003</a> After 2003 Redesign		
<b>Secretarial Office:</b>	Nuclear Energy, Science and Technology		
<b>Lab/Site/Org:</b>	Idaho National Laboratory		
<b>Facility Name:</b>	Materials and Fuels Complex		
<b>Subject/Title:</b>	LO/TO Violation During Fuel Pump Replacement by Subcontractor		
<b>Date/Time Discovered:</b>	07/29/2008 15:00 (MTZ)		
<b>Date/Time Categorized:</b>	08/04/2008 15:00 (MTZ)		
<b>Report Type:</b>	Notification		
<b>Report Dates:</b>	Notification	08/07/2008	12:15 (ETZ)
	Initial Update		
	Latest Update		
	Final		
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.		
<b>Cause Codes:</b>			
<b>ISM:</b>			
<b>Subcontractor Involved:</b>	Yes Leonard Petroleum		
<b>Occurrence Description:</b>	On the afternoon of July 29, 2008 a subcontractor employee had began removing a fuel pump on E-85 fuel tank 742G in the Materials and Fuels Complex (MFC) parking lot on the Idaho National Laboratory without a LO/TO applied to the 110 V electrical breaker supplying the pump. The		

worker had disconnected the electrical supply at the pump. The pump change out was not on the MFC Plan of the Day (POD) and no one at MFC was initially aware it was occurring. The subcontractor is contracted by the INL to provide service and repair for the fleet fuel island equipment. The fuel tank had recently been changed from an unleaded fuel tank to an E-85 fuel tank. The change to E-85 required the fuel pump be replaced with a pump having seals compatible to E-85 fuel, the new pump had been ordered approximately six weeks prior. On July 29 the subcontract responded to the site to check a reported fuel oil leak at CFA-696. After checking the leak he reported to the fueling station point of contact (POC) that he had the new pump for the tank, and was cleared by the POC to change the pump. The POC is a Vehicle Repair and Maintenance employee in Transportation Services, who works at CFA-696. The fueling station is in the MFC parking lot and is under the responsibility of the MFC Facility Complex Manager (FCM), yet no one at MFC was notified that the subcontract worker was going to change out the pump. After the old pump had been electrically disconnected the worker called his boss seeking assistance to electrically reconnect the new pump, he was not an electrical worker. During this conversation the boss discovered the worker was working without a LO/TO in place, he called the POC and requested assistance in getting a LO/TO installed. The POC called a work team lead and requested help in getting a LO/TO applied. The work team lead contacted the non-nuclear maintenance supervisor and requested he have electricians apply a LO/TO. The work team lead and supervisor contacted the Facility Project Manager (FPM) for Roads and Grounds who is responsible for the fueling station. It was determined through a conversation with the POC that the subcontract employee was not LO/TO trained so the FPM took a Documentation of Lockout/tagged Training for Escorted Personnel (INL) form 4234.37 to the fueling station to train the worker, and two MFC electricians were sent to apply a LO/TO and do a zero energy check. At this time it was discovered that the subcontract worker had electrically disconnected the pump without a LO/TO, although he had isolated the electrical feed by opening the 110 volt disconnect supplying power to the pump. Although the event was discovered on 07/29/2007 at approximately 1500 no one in the Facilities and Site Services (F&SS) management chain was made aware of a potential violation until late Thursday 7/31/2008. This event was not categorized until after the facts were determined during a critique on 08/04/2008 and it was determined that the event did meet ORPS reporting criteria.

<b>Cause Description:</b>	
<b>Operating Conditions:</b>	Normal Operations
<b>Activity Category:</b>	Maintenance
<b>Immediate Action(s):</b>	F&SS electrical work at MFC (excluding Power Management) was suspended until the facts surrounding the event were understood and the extent of conditions determined.



<b>FM Evaluation:</b>							
<b>DOE Facility Representative Input:</b>							
<b>DOE Program Manager Input:</b>							
<b>Further Evaluation is Required:</b>	Yes. Before Further Operation? No By Whom: David Lively By When:						
<b>Division or Project:</b>	Facilities and Site Services						
<b>Plant Area:</b>	Fueling Station						
<b>System/Building/Equipment:</b>	742G Fuel Tank Pump						
<b>Facility Function:</b>	Balance-of-Plant - Site/outside utilities						
<b>Corrective Action:</b>							
<b>Lessons(s) Learned:</b>							
<b>HQ Keywords:</b>	01A--Inadequate Conduct of Operations - Inadequate Conduct of Operations (miscellaneous) 01K--Inadequate Conduct of Operations - Lockout/Tagout Noncompliance (Electrical) 01M--Inadequate Conduct of Operations - Inadequate Job Planning (Electrical) 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other) 01P--Inadequate Conduct of Operations - Inadequate Oral Communication 01R--Inadequate Conduct of Operations - Management issues 11G--Other - Subcontractor 12I--EH Categories - Lockout/Tagout (Electrical or Mechanical) 14E--Quality Assurance - Work Process Deficiency						
<b>HQ Summary:</b>	On July 29, 2008, a subcontractor employee, who was not a trained electrical worker nor trained in lockout/tagout (LO/TO), electrically disconnected a fuel pump on the E-85 fuel tank 742G in the Materials and Fuels Complex (MFC) parking lot without applying a LO/TO to the 110-volt electrical breaker supplying the pump. Two MFC electricians were sent to apply a LO/TO and perform a zero energy check. Electrical work at MFC (excluding Power Management) was suspended until the facts surrounding the event were understood.						
<b>Similar OR Report Number:</b>							
<b>Facility Manager:</b>	<table border="1"> <tr> <td>Name</td> <td>Lively, David B</td> </tr> <tr> <td>Phone</td> <td>(208) 533-7438</td> </tr> <tr> <td>Title</td> <td>MFC Facility Complex Manager</td> </tr> </table>	Name	Lively, David B	Phone	(208) 533-7438	Title	MFC Facility Complex Manager
Name	Lively, David B						
Phone	(208) 533-7438						
Title	MFC Facility Complex Manager						
<b>Originator:</b>	<table border="1"> <tr> <td>Name</td> <td>ALLEN, JEFFREY K</td> </tr> <tr> <td>Phone</td> <td>(208) 526-5320</td> </tr> </table>	Name	ALLEN, JEFFREY K	Phone	(208) 526-5320		
Name	ALLEN, JEFFREY K						
Phone	(208) 526-5320						

	Title	OPERATIONS ASSISTANT		
<b>HQ OC Notification:</b>	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
<b>Other Notifications:</b>	Date	Time	Person Notified	Organization
	08/04/2008	15:00 (MTZ)	Edward C. Anderson	BEA F&SS
	08/04/2008	15:00 (MTZ)	Robert C. Seal	DOE ID
	08/04/2008	15:00 (MTZ)	Dwayne E. Coburn	BEA F&SS
	08/04/2008	15:00 (MTZ)	Deborah A. Tate	BEA F&SS
<b>Authorized Classifier(AC):</b>				

<b>12)Report Number:</b>	<a href="#">SC--BHSO-BNL-BNL-2008-0009</a> After 2003 Redesign		
<b>Secretarial Office:</b>	Science		
<b>Lab/Site/Org:</b>	Brookhaven National Laboratory		
<b>Facility Name:</b>	Brookhaven National Laboratory (BOP)		
<b>Subject/Title:</b>	Embedded Conduit Containing Energized (115VAC) Single Circuit was cut during Concrete Core Drilling		
<b>Date/Time Discovered:</b>	07/14/2008 17:00 (ETZ)		
<b>Date/Time Categorized:</b>	07/15/2008 12:00 (ETZ)		
<b>Report Type:</b>	Final		
<b>Report Dates:</b>	Notification	07/17/2008	16:45 (ETZ)
	Initial Update	08/29/2008	14:51 (ETZ)
	Latest Update	08/29/2008	14:51 (ETZ)
	Final	08/29/2008	14:51 (ETZ)
<b>Significance Category:</b>	3		
<b>Reporting Criteria:</b>	2C(2) - Failure to follow a prescribed hazardous energy control process (e.g., lockout/tagout) or a site condition that results in the unexpected discovery of an uncontrolled hazardous energy source (e.g., live electrical power circuit, steam line, pressurized gas). This criterion does not include discoveries made by zero-energy checks and other precautionary investigations made before work is authorized to begin.		
<b>Cause Codes:</b>	A5B2C07 - Communications Less Than Adequate (LTA); Written Communication Content LTA; Facts wrong / requirements not correct		
<b>ISM:</b>	1) Define the Scope of Work		
<b>Subcontractor Involved:</b>	Yes Conroy		
<b>Occurrence Description:</b>	At Brookhaven National Laboratory (BNL), on July 14, 2008, during a job to install an upgrade to a cooling system for Lab A computer equipment, a		

contractor cut through a conduit embedded in the concrete floor while boring holes. The conduit contained an energized (115VAC) single circuit, with three conductors for dual control of room lighting. There was no indication that the utility was severed until examination of the waste concrete cores revealed the cut conduit and electrical conductors. The power to the energized circuit was located and a lockout/tagout was applied. There were no injuries.

There were four, five inch holes cut through the concrete floor. Two of the holes that were cut went through 1/2 inch embedded conduit. The core boring was performed by a single operator. Cutting through the energized circuit and conduit went unnoticed, as there were no sparks or other evidence of contact with the electrical circuit. The operator was wearing the Personal Protective Equipment called for in performing the job, which provided protection from hazards, including electrical. The sequence of activities in performing the job is such that the four holes were cut to within a fraction of an inch of full penetration before any of the cores were removed. Then the work site was cleaned to remove the water and slurry resulting from the cutting operation. The four cores were freed by manually breaking the remaining concrete that was holding them in place and lifting the cores out of the hole. The job was performed in this way to eliminate or minimize the waste material that might have fallen through the holes into the room below the cut. While cutting, the operator cannot tell the difference between cutting concrete or other material embedded in the concrete, such as rebar or conduit. Since there was no observed indication that other than concrete was being cut the operator proceeded with all four cuts and completion of the job. The cut conduit and wires were discovered when the cores were being discarded. The contractor notified his BNL point of contact and an investigation started. Later it was noticed that some lights in the area below the slab were not operating. Live conductors were found in the concrete slab where the cores had been removed and were traced back to the circuit breaker which had not tripped. The circuit breaker was opened, locked, and tagged out.

The light outage was the result of the wires being cut. It is believed that the diamond coated cutting tool did not short out the wires, which would have tripped the circuit breaker. As a conservative measure the circuit breaker will be replaced.

**Cause Description:**

An investigation was conducted using a trained Fact-finding Facilitator and Human Performance Improvement advocates to collect the facts, perform a causal analysis using the "Five Whys" method, and to develop corrective actions. The following is the result of the investigation.

The penetration was performed in a computer laboratory with a raised floor. In order to access the point at which the drilling was to occur, 2' X 2' floor pieces needed to be removed. These floor pieces, when in place, allowed the

flow of cool air to the computers in the laboratory and are only removed when necessary, therefore each time personnel needed to access the area the floor pieces were removed and replaced before they left the area.

The intended area to be penetrated was taped out with duct tape by the plumbing contractor and walked down by the Project Lead who then prepared the Aggressive Concrete Masonry Permit. The permit indicated that the area to be penetrated was outlined with duct tape. The permit further described that the work was to be performed within an area as shown on drawings attached to the permit.

Investigations revealed that there was a disagreement between the physical mark-out (taping) and the drawing. The identified area on the drawing was the wrong area; it showed an area adjacent to the area marked out by the contractor.

The location of possible electrical utilities within the concrete slab was performed by Toning/Locator Personnel using ground-penetrating-radar (GPR). The GPR operators indicated that they had seen the tape and believed they were working in the correct area, but they were not. GPR results showed embedded items in the area identified on the drawing in the concrete slab area. The items identified within the slab were marked out on the floor (in the area shown by the drawing) and noted in the permit.

When the contractor arrived to set up for the cut, he found the utility markings, as noted (i.e., in the area adjacent to the area to be penetrated), but there were no utility markings in the area to be penetrated. After review of the permit by the Project Lead it was concluded that the work area had no hazards because none were indicated in the area and the Project Lead signed the permit. The contractor was directed to proceed with the cuts.

Disagreement between the taped area and the drawing provided with the permit resulted in the wrong area being checked for utilities. A walk down was conducted with the contractor and the Project Lead to generate the permit. However, the permit was not verified after it was completed to ensure it was accurate, nor was a walk down conducted with the Toning/Locator Personnel who were locating utilities. In addition, there was no clear mechanism to ensure directions were received and understood accurately and executed in accordance with the permit.

<b>Operating Conditions:</b>	Normal
<b>Activity Category:</b>	Construction
<b>Immediate Action(s):</b>	The power to the impacted energized circuit was located, de-energized by opening the associated breaker, and a lockout/tagout was applied.
<b>FM Evaluation:</b>	This event demonstrates the possible consequence when clear, positive identification and communication is not present when planning work for an

	aggressive concrete masonry penetration. Though this event may be an isolated case, it provides us with an opportunity to review and improve our processes for this type of work.
<b>DOE Facility Representative Input:</b>	
<b>DOE Program Manager Input:</b>	
<b>Further Evaluation is Required:</b>	No
<b>Division or Project:</b>	Facilities & Ops, Modernization Project Office
<b>Plant Area:</b>	Lab A
<b>System/Building/Equipment:</b>	Building 515
<b>Facility Function:</b>	Laboratory - Research & Development
<b>Corrective Action 01:</b>	<b>Target Completion Date:</b> 12/01/2008 <b>Actual Completion Date:</b>
	Convene a team of workers, supervisors, Project Leads and at least one Human Performance Advocate, to review, and modify as needed, EP-ES&H-803 and ensure it provides positive means for verifying the accuracy of the drawing/attachments, clear positive identification of the work area, and feedback that the work was performed (e.g., locations of utility) in accordance with the permit other than just a signoff on the permit.
<b>Corrective Action 02:</b>	<b>Target Completion Date:</b> 02/01/2009 <b>Actual Completion Date:</b>
	Conduct a training class for all those involved in the generation and execution of an Aggressive Concrete Masonry Permit to ensure attendees understand the specifics of this event and that any changes that result from the review of EP-ES&H-803 are clearly communicated.
<b>Corrective Action 03:</b>	<b>Target Completion Date:</b> 11/01/2008 <b>Actual Completion Date:</b>
	Replace the circuit breaker (which powered the circuit impacted by the core drilling) prior to re-energizing the circuit.
<b>Lessons(s) Learned:</b>	
<b>HQ Keywords:</b>	01B--Inadequate Conduct of Operations - Loss of Configuration Management/Control 01N--Inadequate Conduct of Operations - Inadequate Job Planning (Other) 07D--Electrical Systems - Electrical Wiring 08F--OSHA Reportable/Industrial Hygiene - Industrial Operations Issues 11G--Other - Subcontractor 12C--EH Categories - Electrical Safety 13A--Management Concerns - HQ Significant (High-lighted for Management attention) 14D--Quality Assurance - Documents and Records Deficiency 14E--Quality Assurance - Work Process Deficiency
<b>HQ Summary:</b>	On July 14, 2008, while installing an upgrade to a cooling system for Lab A

	computer equipment, a worker cut through a conduit embedded in the concrete floor. It contained an energized (115VAC) single circuit, with three conductors for dual control of room lighting. The power to the circuit was located and a lockout/tagout was applied. There were no injuries.			
<b>Similar OR Report Number:</b>	1. NA--KCSO-AS-KCP-2007-0011			
<b>Facility Manager:</b>	Name	SCHAEFFER, MICHAEL		
	Phone	(631) 344-7941		
	Title	MANAGER, MODERNIZATION PROJECT OFFICE		
<b>Originator:</b>	Name	SIERRA, EDWARD A		
	Phone	(631) 344-4080		
	Title	LLL/ORPS COORDINATOR		
<b>HQ OC Notification:</b>	Date	Time	Person Notified	Organization
	NA	NA	NA	NA
<b>Other Notifications:</b>	Date	Time	Person Notified	Organization
	07/15/2008	15:00 (ETZ)	A. Janczewski	BHSO/DOE
<b>Authorized Classifier(AC):</b>				

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