



K+S Potash Canada

SMA SAFETY SUMMIT 2020

K+S POTASH CANADA - BETHUNE MINE

Medium Voltage – Electrical/Loto Incident
Gene Cochrane

BACKGROUND
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BACKGROUND



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BACKGROUND



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- **Brownfield Project**
- **Issues with Contractor safety performance**
- **Safety measures in place:**
 - Safe Work Permitting Process (SWP)
 - Lock out/Tag Out Program (LOTO)
 - Processes and Procedures in place to protect people and physical assets

- **Incident occurred on August 13, 2019.**
 - Task...re-route cables for makeup air unit to allow new construction
 - LOTO placed on **wrong** MakeUp Air Unit, LOTO steps **not followed** through to local disconnect, verification process **not followed** at local disconnect resulted in electrician receiving 347 volt shock



TIMELINE



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TIMELINE (I)



- **Aug 9 – Discuss cable re-route plan**
- **Aug 12 – Prepared LOTO, no SWP provided**
- **Aug 13 – SWP & LOTO reviewed for 2 isolations**
 - Went to both MCC disconnects
 - Contacted Operations
 - Opened the disconnect for each device...confirming loss of power on the PCS.
 - LOTO confirmed at MCC location.
- **LOTO complete on 2951-FCL-902 vs 2970-FCL-902**

TIMELINE (II)



- **Continued activity at work face (i.e. local disconnect) required:**
 - Electrician removed 'C' phase lead...no issue
 - Busy area...requested to disperse while an overhead lift was completed
 - Lift complete...electrician resumed work
 - Tried 'B' phase wire but still tight
 - Used allen wrench and **received a shock**
 - Stopped and checked LOTO
 - Immediate investigation and medical assessment of worker



ROOT CAUSE ANALYSIS



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ROOT CAUSE ANALYSIS

ROOT CAUSE: LOTO process not followed to ensure zero energy state!

- **Contributing factors...processes not followed:**
 - Pre-walkdown to verify scope of work prior to requesting work permit
 - Safe work permitting...requestor to fill out SWP which kicks off successive steps
- **Verification step...walkdown of lock out**
 - Review of documentation at work front
 - Includes testing to ensure zero energy by competent personnel at all areas necessary.(MCC and/or workfront)
- **Special note...numbering convention (similarities)**
 - Example...2970 FCL 902 ✘ vs 2951 FCL 902 ✔





ROOT CAUSE ANALYSIS(2)



FINDINGS AND SOLUTIONS



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FINDINGS



- **Findings:**

- ✘ No pre-job planning walkdown
- ✘ SWP not initiated as first step (verbal request initially, then SWP filled out later)

- **LOTO steps not followed:**

- ✘ No confirmation of zero energy at local disconnect
- ✘ No involvement by a competent electrician
- ✘ No field tag verification of field equipment with paperwork (i.e. drawings w SWP)

SOLUTIONS(I)



Solutions:

- ✓ Implement mandatory pre-job planning walkdowns for all CP&T construction LOTO's.
- ✓ First step for all LOTO needs begins with SWP.
- ✓ Mandatory steps to final element or local disconnect for all CP&T Construction LOTO installations.
- ✓ LOTO retraining for contractors and CP&T CMT.-

SOLUTIONS(II)



Solutions:

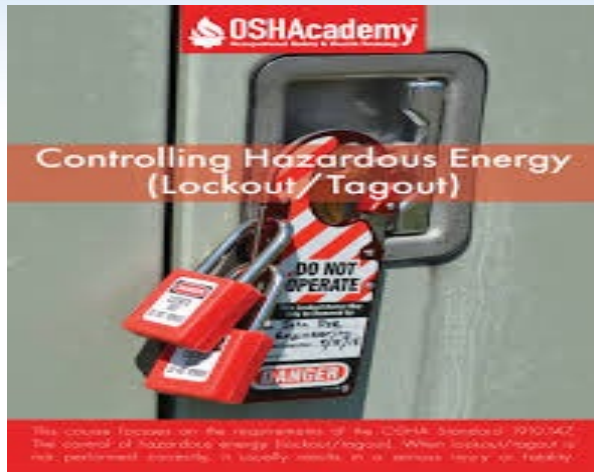
- ✓ Competency requirements for field verifications to be completed by:
 - Contractor SI or GF, accompanied by Permit Issuer.
 - Field verification of paperwork to field device tag.
 - Contractor to review manpower skillset according to ability and experience.

RECOMMENDATIONS



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RECOMMENDATIONS



Contractors/Owner:

Training review of the LOTO process

- Confirm training records

• Training review of SWP process

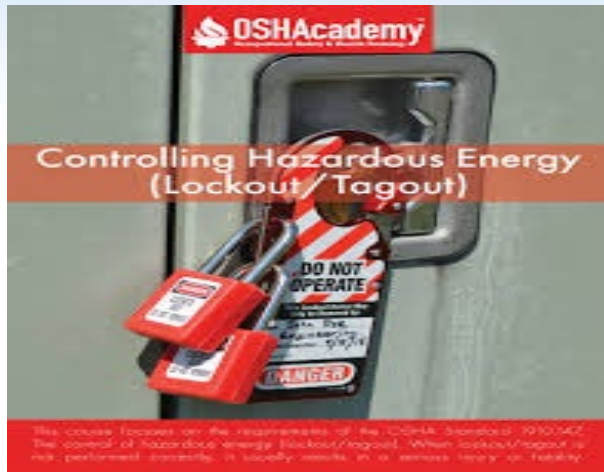
- Documentation review for clarity and completeness

• Owner review of LOTO program for gaps

• Owner review of equipment numbering convention



RECOMMENDATIONS



Contractors:

- **Mandatory pre-job walkdown for all scopes of work**
- **Review contractor electrical org structure**
 - Competency testing of contractor manpower
 - Additional contractor expertise added to bolster current team and to review processes





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THANK YOU

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