

*This presentation is for illustrative and **general** educational purposes only and is not intended to substitute for the official MSHA Investigation Report analysis nor is it intended to provide the sole foundation, if any, for any related enforcement actions.*

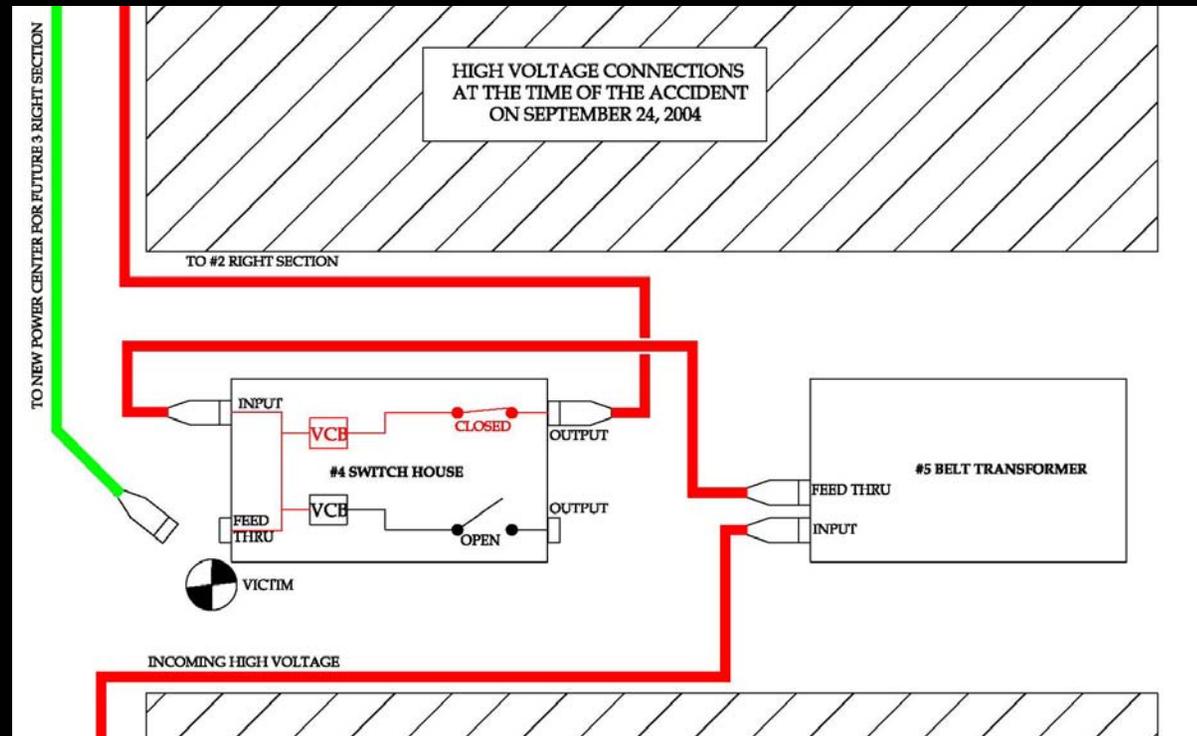
# GENERAL INFORMATION

## Coal Mine Fatal Accident 2004-18



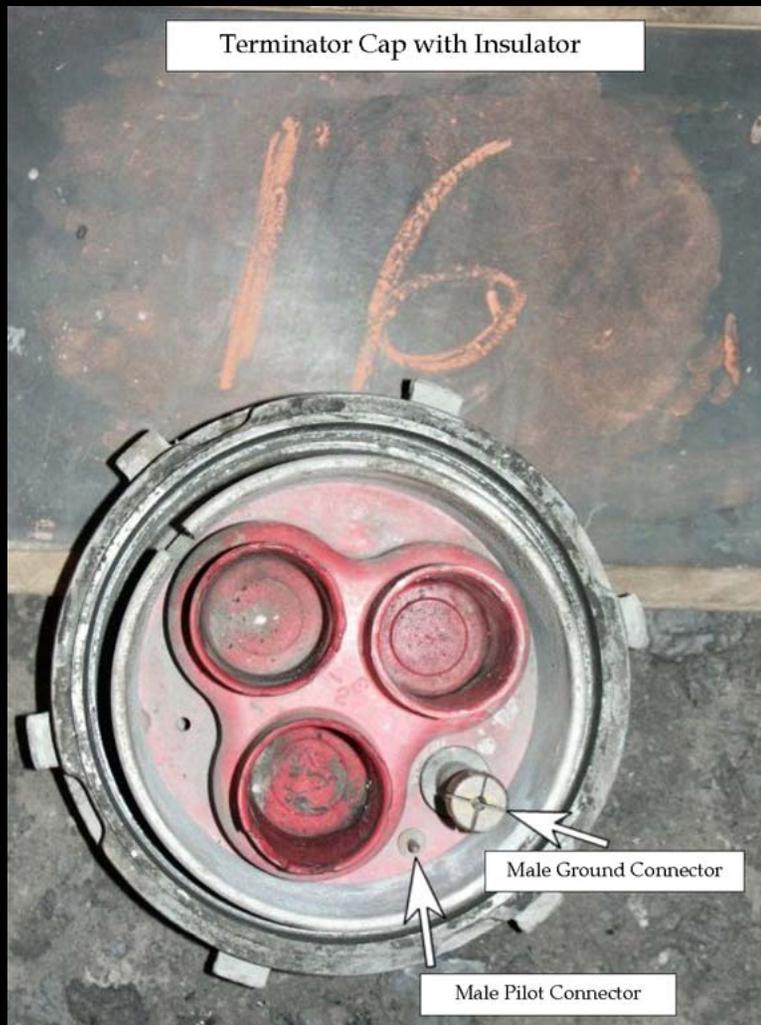
Operator:	Cumberland River Coal Company
Mine:	Fork Ridge Mine
Accident Date:	September 24, 2004
Classification:	Electrical
Location:	District 5, Wise County, VA
Mine Type:	Underground
Employment:	39
Production	~1,300 Tons/Day

# ACCIDENT DESCRIPTION



On September 24, 2004, at approximately 8:40 p.m., a 46 year-old face equipment operator with 30 years mining experience was fatally injured in an underground coal mine. The victim and a qualified electrician were preparing to connect a high-voltage coupler to a receptacle labeled "FEED THROUGH" on a 7,200 VAC high-voltage switch house. The electrician thought the receptacle was incorrectly labeled and that it was actually an output receptacle. After opening the visual disconnect and cleaning the coupler, he went to the personnel carrier. When he heard the victim cry out, the electrician turned and saw him within arms reach of the exposed receptacle. The victim suffered an electrical shock resulting in the fatality.

# ROOT CAUSE ANALYSIS



*Causal Factor:* A dust cap was located on the feed-through receptacle and a terminator cap was located on the output receptacle .

*Corrective Actions:* All electricians and helpers were retrained on appropriate caps for feed-through and output receptacles. Also, more extensive retraining occurred at the annual electrical retraining.

# ROOT CAUSE ANALYSIS

*Causal Factor:* The electrician stated that the No. 4 Switch House was installed exactly opposite of how he used to install them at previous operations.

*Corrective Actions:* An action plan has been submitted and implemented by the company. The plan required immediate retraining of all electricians and helpers on the importance of reading and following VCB and Power Center/Transformer labels and on appropriate operation of VCB's.

*Causal Factor:* All other electrical equipment (transformers, power centers, etc.) have a visual disconnect on the input end.

*Corrective Actions:* An action plan has been submitted and implemented by the company. The plan required immediate retraining of all electricians and helpers on the importance of reading and following VCB and Power Center/Transformer labels and on appropriate operation of VCB's.

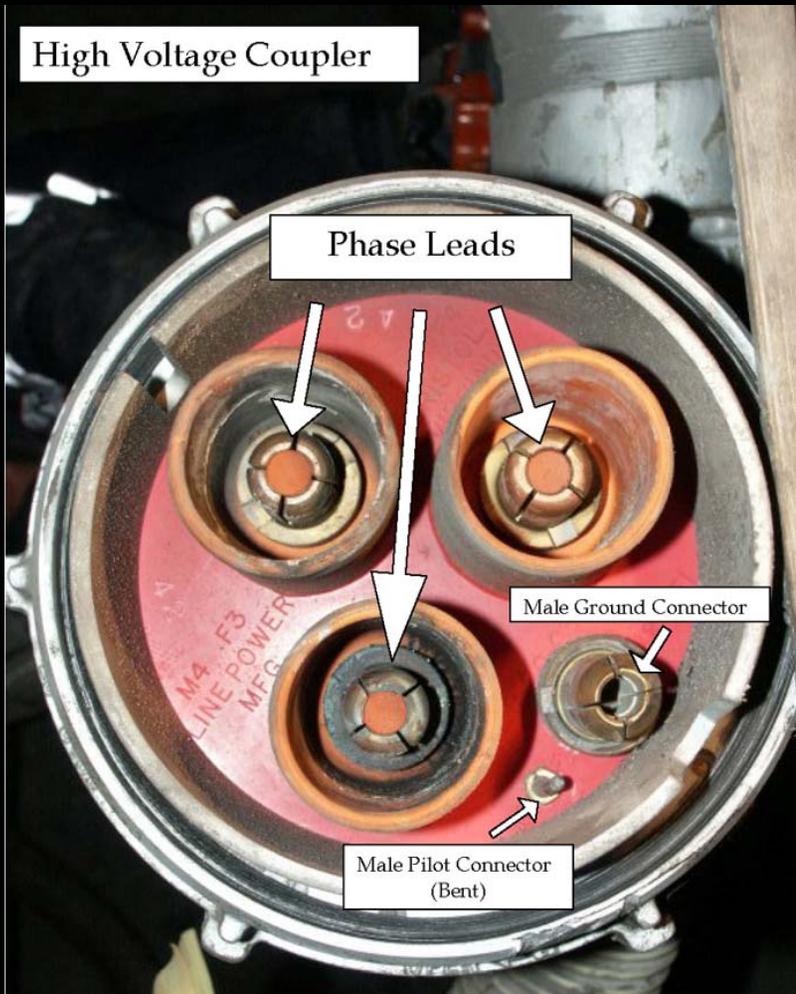
# ROOT CAUSE ANALYSIS

Causal Factor: The appropriate circuit was not locked and tagged out.

Corrective Actions: An action plan has been submitted and implemented by the company. The plan required immediate retraining of all electricians and helpers on the on appropriate operation of VCB's and tag and lockout procedures.



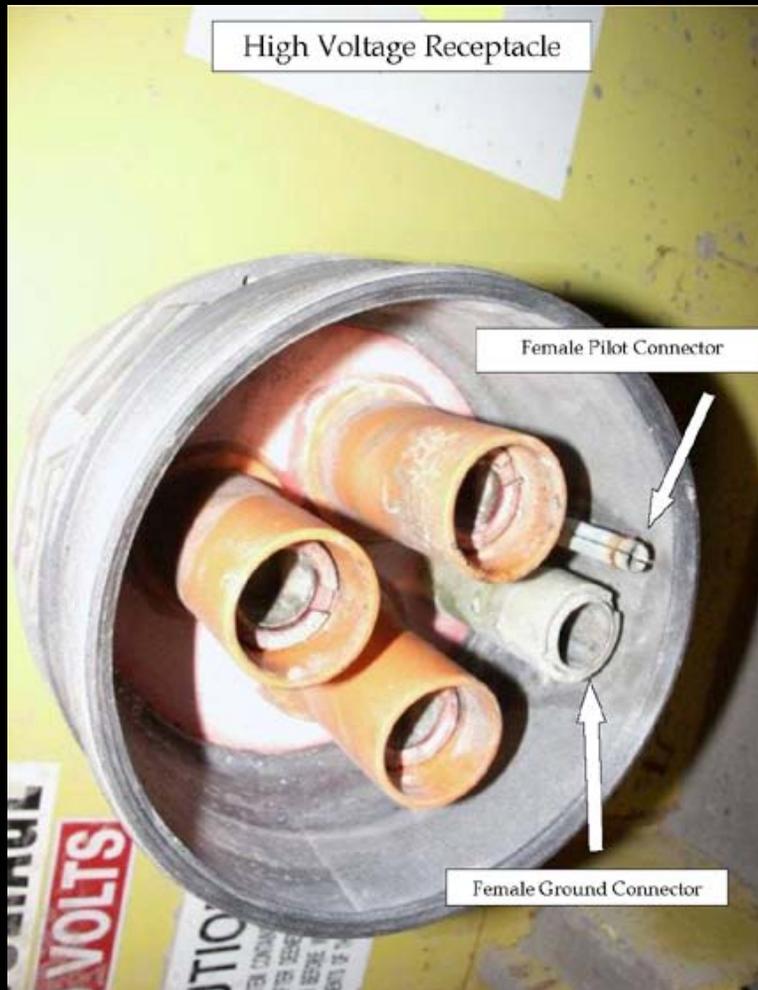
# ROOT CAUSE ANALYSIS



Causal Factor: The pilot (monitor) pin, in the high-voltage coupler attached to the No. 5 Belt Power Center, was bent, short-circuiting the fail safe ground check circuit.

Corrective Actions: An action plan has been submitted and implemented by the company. The plan requires more extensive retraining of all electricians and helpers in high-voltage system testing, operation and maintenance.

# ROOT CAUSE ANALYSIS



*Causal Factor:* A guide screw (alignment pin) for the No. 5 Belt Power Center Feed-Through Receptacle was not maintained.

*Corrective Actions:* An action plan has been submitted and implemented by the company. The plan required all electrical high-voltage receptacles to be inspected for the presence of guide pins. If pins are missing or inoperative, new guide pins will be reinstalled. All cathead receptacles will be inspected and corrected within 60 days, if repairs are needed.

# CONCLUSION

The accident occurred when the victim contacted an energized 7,200 VAC high-voltage feed-through receptacle while attempting to clean the receptacle. The qualified electrician assumed they were working on the output receptacle based on the receptacle cover. When an inappropriately located dust cover was removed from the feed-through receptacle it remained energized. The receptacle did not deenergize because a bent pilot (monitor) pin short circuited the fail safe ground check system in a coupling in the adjacent belt transformer.

The accident resulted from failure to properly: identify the correct high-voltage receptacle, deenergize and ground, lock and tag-out, provide a functioning fail safe ground check circuit and to properly maintain the system.

# ENFORCEMENT ACTIONS

104(a) Citation was issued for a violation of 30 CFR75.705 in that the high-voltage lines supplying 7,200 VAC, three phase power to the No. 4 switch house located underground at this mine were not de-energized and grounded before work was performed on them on September 24, 2004.

The victim performed electrical work on the underground high-voltage feed-through receptacle of the No. 4 switch house without the circuit being properly de-energized and grounded. The electrician had opened the visible disconnects and the vacuum breaker leading to the unused output of the No. 4 switch house. However, this action did not de-energize and ground the No. 4 switch house feed-through. The electrician removed the dust cover from the feed-through receptacle and cleaned a high-voltage coupler. The victim appears to have been cleaning the receptacle prior to connecting the coupler for the cable that would energize a new section power center.

# ENFORCEMENT ACTIONS

104(a) Citation was issued for a violation of 30 CFR 75.511 in that the visual disconnecting device at the surface substation for the underground high-voltage circuit at this mine was not locked out or suitably tagged by the person performing electrical work at the No. 4 switch house on September 24, 2004.

A face equipment operator performed electrical work on the underground high-voltage circuit without locking out or tagging the disconnecting device. The electrician opened the visual disconnects to the unused output of the No. 4 switch house mistakenly thinking this de-energized the circuit on which work was performed. The disconnecting device at the surface is the only means to disconnect the circuit. Also, electrical work was performed on a high-voltage circuit by a non-qualified person not under the direct supervision of a qualified person at this mine. This resulted in fatal injuries to the face equipment operator. The only qualified electrician at the mine was in the area, but had not directed the victim to perform electrical work.

## BEST PRACTICES

- Ensure that electrical work is only performed by a qualified person or one trained to perform electrical work under the direct supervision of a qualified person.
- Ensure that all circuit breakers and disconnecting switches are properly marked for identification purposes.
- Ensure that the contacts of the appropriate visual disconnecting device are open and that the device is locked out and suitably tagged by the person performing electrical work.
- Use proper equipment (gloves, multimeter, etc.) when performing electrical work.
- Ensure that complete and thorough examinations of electrical equipment are performed and that electric equipment is maintained to assure safe operating conditions.
- Never assume that you know how a circuit is wired. Ask for help and/or consult a wiring diagram/schematic if you are unsure.
- Use properly rated non-contact voltage testers to ensure that high-voltage circuits are de-energized.