

A Review of Electrical Hazards & DMM Safety Requirements




AR Training

**Updated
2012**

DMME

**Division of
Mineral
Mining**

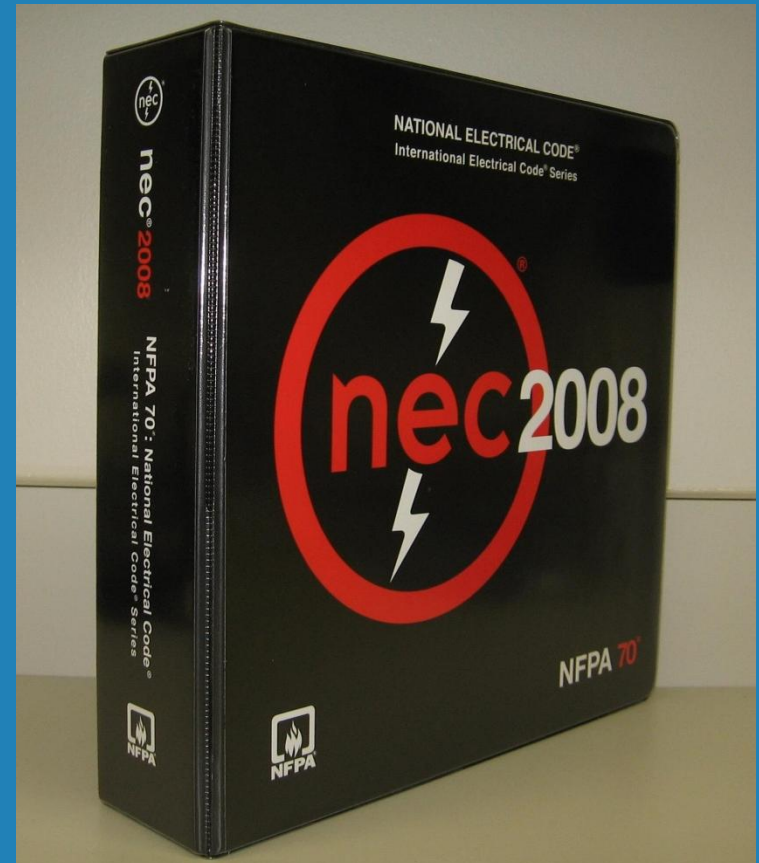


Electrical Work Restrictions 4VAC25-40-2015

- **Equipment and circuits must be installed in accordance with the National Electric Code, and DMM Part 12 electrical regulations.**
- **Electrical work must be performed by, or under the supervision of a DMME-certified mine electrician or licensed electrical contractor.**

Certified Mine Electrician

- **Performs the electrical work, or supervises the work of properly task-trained helpers.**
- **Ensures circuits and equipment are installed & maintained in accordance with the National Electric Code and DMM regulations.**



State Licensed Electrical Contractor

- **Can be used in lieu of a mine electrician.**
- **Must be made aware of DMM electrical regulations.**
- **Contractor employees may need GMM certification.**



Electrical Inspections

4VAC25-40-2270

- A “competent person” must inspect the wiring and equipment as often as necessary to ensure safe operating conditions.



Correcting Dangerous Conditions

4VAC25-40-2270

- **Potentially dangerous conditions must be corrected before the equipment or wiring is energized.**



Water damaged equipment & wiring.

Miner's Pre-Op Inspection

4VAC25-40-145

- Prior to starting electrically powered equipment, the miner must make a visual electrical inspection; hazards must be reported to the mine foreman.



Typical Inspection Hazards



Defective insulating bushing



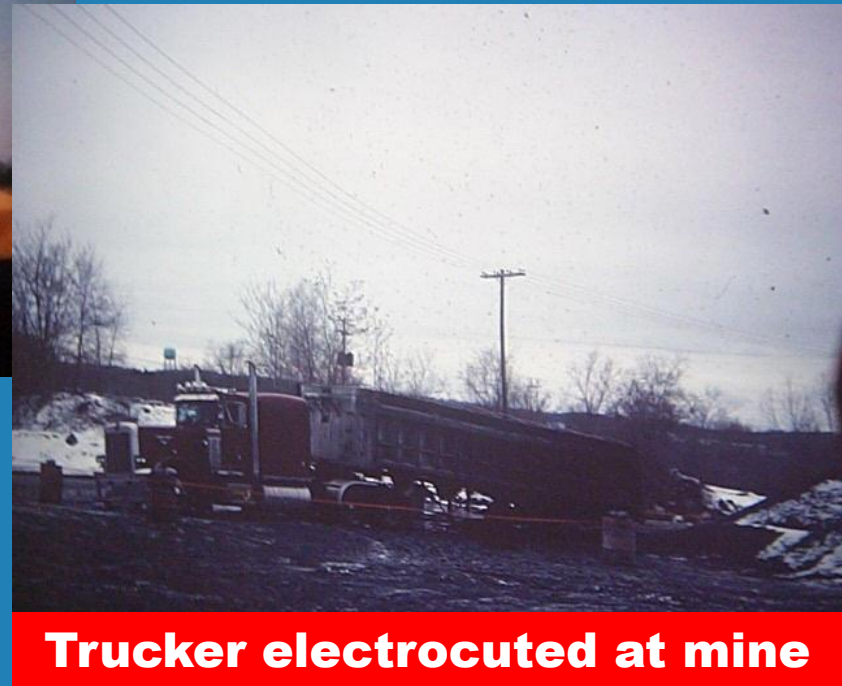
Broken, taped conduit

What's The Potential Hazard Here?

**Should
stockpiling
and load-
out be
done under
power
lines?**



Overhead Power Lines Can Be Fatal!



Trucker electrocuted at mine

Maintain At Least 10-ft. Clearance



Electric Transformers

- **Must be totally enclosed as shown, or pole mounted, or fenced (4VAC25-40-2460).**



Pole Mounted & Fenced Transformers



← Pole mounted, must be at least 8 feet from the ground.

All metal enclosures, fences/buildings, must be grounded and 3 feet of clearance maintained.



(Fencing shall be at least 6 feet tall)

Don't Dig Near Transformers, Know Where Lines Are Located

**F-E loader broke UG lines to
transformer**



**Call Miss Utility if you
need to!**



Motor Control Center (MCC) Requirements

- **Posted with warning signs.**
- **Entered only by authorized persons.**
- **Kept clean and orderly.**



MCC Requirements

- **Wooden floor or insulated mats.**
- **Switches labeled.**
- **Doors and covers closed.**
- **At least 3 feet of clearance around switches or equipment.**



Other MCC Requirements

- **Provided with fire extinguisher.**
- **Provided with suitable fuse tongs.**
- **Provided with locks & tags.**



Evaluate This MCC





Electrical Lockout And Tag-out Requirements

- **Company must provide miners with suitable locks & tags.**
- **Company must train miners in lock-out tag-out procedures.**
- **Miners must lock & tag out prior to starting repairs on equipment.**

Always test to be sure power is off!

Lock-Out And Tag-Out Responsibilities

- **Each person should install their own lock and tag.**
- **Foremen should check behind miners.**



Failure to lock, tag & test can be fatal!

Lock-out & Tag-out Prior To Starting Repairs



Equipment Not Insulated Must Be Guarded



Electrical Circuit Testing

- **Must be performed at time of installation, repair, or modification, and annually thereafter. Records must be kept of most recent tests. (4VAC25-40-2250).**



What's The Hazard Here?



What's Wrong With This Electrical Equipment?

- **Where would a miner be standing when pulling the switch lever?**



What Hazard Has The Mine Inspector Found?



12. 2. 2003

Properly Supported Cables On A Field Conveyor



Does The Conveyor Belt Insulate The Miner?



How do requirements differ between dry locations and wet, or potentially wet, locations?

Is there a problem using conveyor belting?

Are there other issues in these pictures?



Non-conductive Safety Mats

- **Must be provided, or metal plates/grates grounded to the electrical equipment.**



Metal grate bonded to metal conduit

What Are The Potential Hazards?



- **Proper equipment grounding?**
- **Equipment rated for outdoor use?**

- **Tripping?**
- **Overheating?**



Miner's Arm Caught In Moving Equipment

They Failed To:

- **De-energize the power circuit.**
- **Lock-out.**
- **Tag-out.**
- **Test to ensure equipment will not start.**





Electrical Safety Summary

- **Company must ensure electrical wiring and equipment remains in safe operating condition by periodic testing and inspections.**
- **Miners assigned to operate electrically powered equipment must inspect the equipment prior to use each shift; Hazards must be reported. Machinery, tools, cords, etc.**
- **Defective equipment must be removed from service. Locked out/tagged out!**