

BEST PRACTICE & SAFETY COMPLIANCE

Approved: July 28, 2004

Review Frequency: Yearly

Procedure Type: Electrical/Fuse Replacement

Reason for Review: Yearly Requirement

Final Approver: Mr. In Charge

Primary Audience: Operations/Maintenance

SCOPE: Procedure for replacing fuses for indoor disconnects up to 600 volts AC.

PURPOSE:

The purpose is to ensure that should any ruptured fuse be replaced that this standard operating procedure is followed which meets the intent of the OH&SA (Industrial Regulations) and Barton's safe work practices.

PERSONAL PROTECTIVE EQUIPMENT:

All personal protective equipment required for working on energized apparatus operating at 600 volts, including shirts with full length sleeves, safety glasses, hard hat and Class 0 Rubber Gloves.

TEST EQUIPMENT AND TOOLS:

A Cat III rated multimeter or voltage detector will be used for testing purposes along with an approved fuse puller. Prior to installing the new fuse, complete verification must be done to ensure the fuse characteristics are similar to the ruptured fuse and that the appropriate fuse end caps have been installed.

NOTE:

Should any suspect electrical problem be identified or the fuse(s) rupture immediately upon reclosing, a qualified electrician must be contacted.

Procedures and skills required

Instructed and trained in the following:

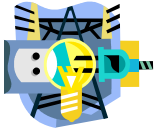
- 1- Familiar with the Occupational Health and Safety Act and Regulations for Industrial Establishments.
- 2- Electrical awareness and hazard identification training.
- 3- Safe operation of disconnect switch "opening /closing" procedure.
- 4- Care and use of personal protective equipment and tools required for the task.
- 5- Safety procedures while performing work on electrical equipment (operations limited to changing fuses only on fused disconnects that are indoors)
- 6- Operation of the potential indicating device and the fuse testing equipment.
- 7- Equipment Tag and Lockout procedures.
- 8- The installation and removal of power fuses.
- 9- Clear knowledge of the purpose of the equipment being operated.

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INITIAL JOB STEPS/VERIFICATION:

- 1.) Determine what equipment has been effected by contacting system control and establish the location and nomenclature of the fused disconnect and overload switch to be checked.
- 2.) Check overloads by pushing the reset button, if overloads are tripped you will feel pressure on the overload-reset button and a slight sound as the overload is reset back into position. If resetting the overload re-energizes the equipment, no further steps are required. This will be confirmed with Control.
Note: Should overloads reset and trip immediately, the equipment/pump will have to be taken out of service and a manual rotation performed. This is to be done in accordance with the developed procedure.
- 3.) Should the overload reset be in the “normal operating mode” and the equipment is still not operable additional troubleshooting will be required to determine the condition of the fuses.

JOB STEPS/FUSE REPLACEMENT:

All Personal Protective and Test Equipment/Tools referenced are to be used.

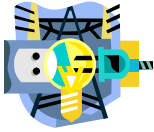
- 1.) Open the disconnect switch by operating the disconnect handle from the On to Off position.
Operator may stand to either side depending on the physical layout of the area. The Left Hand Open/Close Rule should be followed whenever permissible.
- 2.) Fill out a DANGER – DO NOT OPERATE TAG and in conjunction with your LOCK, secure it on the disconnect in the OPEN POSITION.
- 3.) With the disconnect door open, do a visual inspection looking for any obvious problems such as a burnt or damaged conductor or poor connections. Should this condition exist, the disconnect door will be reclosed, a lock applied and a Do Not Operate Tag will be applied stating the defect. Control will be notified and an approved Electrician will be required to make the necessary repairs.
- 4.) If there is no apparent damage noted, the potential testing procedure will be done to prove Isolation and the presence of a Backfeed.
- 5.) After verifying the Voltage Detector/ Multimeter on a known live device, test both the Line and Load Side of all three fuses to prove isolation. Retest the Voltage Detector/ Multimeter to prove its accuracy.
- 6.) Using approved fuse pullers, remove all three fuses.
- 7.) Check all three fuses for continuity by means of an ohmmeter or the Barton fuse test device. In either case the fuse testing equipment must be proven as well.
- 8.) Once determined what fuse(s) are defective, ensure they are properly marked. Prior to discarding the defective fuse(s) remove the “end caps” from the fuses as they will be required for the replacement fuses.
Note: Not all fuses have these “end caps”.
- 9.) Prior to installing the new fuse(s), there must be an exact replacement regarding characteristics and fuse type and may include the installation of end caps, if required.
- 10.) Provided the requirements of step nine have been met, using the fuse pulling tool, reinstall all three fuses ensuring that they seated properly in the fuse holders.

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11.) Close the disconnect door making sure that it has securely latched with the TAG and LOCK in place.

12.) Prior to closing the disconnect switch, the operator must check that the affected equipment is intact and whenever possible verifies that the motor is rotating freely before removing his lock and allowing a restart of the equipment this disconnect switch is feeding.

Please note! When a piece of equipment is rotated by hand, the operator must follow proper lock out procedures.

13.) Once the pump rotation has taken place, remove the Tag & Lock at the fused disconnect. Using the same Left Hand Rule, close the disconnect to the On position.

12.) When clear of the fused disconnect notify Control and have them attempt to pick up the equipment remotely. The operator should stay well back from the disconnect switch while a restart is made in the event of an equipment malfunction. A minimum of 2.5 – 3 metres (8-10 feet) is recommended.

13.) If the Equipment fails to restart, open disconnect switch and tag/lock it as “Equipment in need of repair, Do Not Operate” and notify Control. During normal working hours, advise supervisor of problem.