



## 081: Test Equipment

### *Why this is important*

Test equipment is safe only in the hands of a trained person who follows the rules of use. It is not, and cannot be, idiot-proof.

Improper use of test equipment may destroy the equipment under test, the test equipment, the user, and innocent bystanders.

### *Training*

Use only test equipment you have been trained to use.

The amount of training you need depends on the equipment you want to use. Each has its own requirements. Some equipment requires a few minutes of reading the instruction manual. Other equipment requires a week of training.

### *Inspection*

Inspect test equipment before first use on a shift. If you see signs of damage, take the equipment out of service.

Inspect test leads and clips for signs of damaged insulation and replace any damaged items. Most test leads are not fused, therefore a test lead that is faulted phase to phase or phase to ground will clear only after the lead has burned through. And it may do that while in your hand.

### *Application*

Check the voltage rating, current rating, and operating frequency of the test instrument to verify it is the proper device to use for your application. Do not count on fuses or test lead insulation to protect you from misuse.

For example, don't use a DMM rated at 600V to check 15KV switchgear.

While it may seem obvious that you shouldn't use a motor rotation tester to check current on a 4160 bus, this is exactly what two electricians did on a new installation. Both received severe burns, and the meter didn't survive.

In another case, two electricians used a desktop DMM to check the current on a 480V bus in a nuclear power plant. The current vaporized the 2A fuse and then jumped across the space where the fuse used to be. The insides of the meter were completely burned, and one of the electricians needed hospitalization.

### *Connections*

When connecting test equipment to energized components, wear your PPE. This PPE includes, but is not limited to, safety glasses and gloves. Use other PPE, such as insulating blankets, face shield, and flame resistant clothing, as conditions require.

If you are connecting test equipment to de-energized components, make sure lockout/tagout procedures have been followed. It may not be enough that you have followed the procedures. Just prior to the testing, check that others have not violated those procedures on that equipment.

Verify the setup of the test equipment before making connections. This takes only a minute, and it may save hours of costly repair, plus prevent injury or death.

### *Discussion leader duties for this session:*

Obtain test equipment in use on this jobsite or likely to be used on future jobs for a demonstration during the discussion portion.

### *What this Safety Talk covers:*

The general safety principles to follow when you are using test equipment.

### *Discussion notes :*

