

Testing Times

A newsletter for the electrical construction and maintenance industry

Volume 5 No. 3

Ready for testing?

We get a phone call: "We're ready for testing!" Our test engineers arrive at the jobsite and find out that equipment at the site is not ready for testing. At best, this leads to several people scrambling around and a few hours delay. At worst, the situation cannot be quickly remedied. We leave the site and schedule a return trip while the jobsite schedule can be painfully delayed.

So what can you do to be prepared for the testing services you require?

We have compiled a list of typical testing scenarios to help you understand what's involved and what needs to be done before your testing firm arrives.

Grounding Systems need to be tested after they are completely installed but before they are connected to the utility. Specifications typically call for grounding system tests to be performed using the fall-of-potential or three-point method. This method can be difficult if not impossible at sites saturated with buildings and concrete. This possibility should be discussed prior to the arrival of the testing firm to avoid delays on site.

Transformers need to be in their final location (not still on the truck)

and isolated (disconnected) on the primary and secondary side. This is usually not a problem at a new construction site. It can be a problem, however, in the case of a unit substation transformer where the primary or secondary connections are hard bussed. A



Knowing what conditions are required for testing can avoid costly delays when the electrical testing firm arrives.

decision needs to be made to either isolate the transformer, time consuming but usually not impossible, or to forego some of the transformer tests.

Medium voltage cables need to have all terminations completed prior to testing. If new cables are to be spliced to old cables, you need to have the new cable tested

prior to the splice. The entire run can be tested after the splice at a reduced voltage. Also, cable testing is difficult when the humidity is high. It is best not to schedule cable testing in the morning or close to rain.

Main switchgear and switchboards need to be tested after all interconnect wiring (i.e., main-tie-main ground fault wiring) is completed but before the incoming and load cables are connected. In many cases, circuit breakers have to be removed for testing and load connections will have to be removed anyway. The switchgear/board needs to be de-energized. However, the testing firm will need 120V, 240V or sometimes 480V power for test equipment. Obviously, the situation gets tricky if the switchboard under test is the only power source in the room! The 480V primary injection test set used for breaker and some ground fault tests requires a large generator for operation.

Ground fault system testing can be fairly straight forward or rather complex, depending on the scheme. In all cases, the switchboard should be de-energized, but as before, power is required for the test equipment. The simplest test scenario is an external ground fault system on a bolted pressure switch. This situation requires 120V power

(continued on page 2)

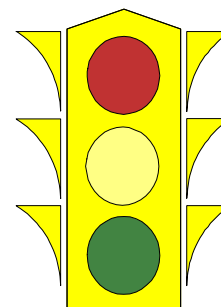


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Ready for testing (continued from page 1)

and is fairly quick. A little trickier test is an integral ground fault system on a solid state circuit breaker. Depending on the size of the breaker, this can require a large primary injection test set and a 480V power source. A more complex test situation is a main-tie-main ground fault scheme. This configuration takes the longest to test, usually requires a 480V power source, and has the greatest chance of not operating properly.

This article does not cover all testing situations, but we have attempted to describe some of the more common conditions we encounter. We hope you will save this as a reference for your future testing needs. ❖



Stop - Make sure you know what requirements your testing firm has before they arrive on site.

FaxBack

We are pleased to offer back issues of our Testing Times to our readers. If you see any topic(s) on the list below that you have missed, please check it and fax this page to us. We will mail you a copy for your files.

- _____ Fall/Winter 1994: Building Safety (City of Atlanta GF Ordinance)
- _____ Spring 1995: Who is H-P&D/Before The Lights Go On(Start-up testing)
- _____ Fall 1995: Testing 1,2,3...(Maintenance testing)/Infrared Surveys
- _____ Winter 1996: Mystery Unveiled - Ground Faults/How to Choose a Testing Firm
- _____ Spring 1996: Short Circuit Study/ One-Line Update
- _____ Summer 1996: Coordination - Selectivity & Protection/Electrical Testing Specifications
- _____ Fall 1996: Maintenance Testing - How much?/Cable Testing for Maintenance
- _____ Winter 1997: Routine Torquing - a good practice?/Ground Fault Protection - a necessity
- _____ Spring 1997: Grounding - Why Ground?/Testing Grounding Systems
- _____ Summer 1997: Zone Selective Interlocking/Commissioning
- _____ Winter 1998: Insulation Coordination/Cable Testing Update
- _____ Spring 1998: Tested at the factory?
- _____ Company Information

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inside:

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