



TEDDER'S TECHNICAL FACTS

Summer 2008

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**Testing today's
meters and relays
is not a simple
task. If it's solid
state technology
you're testing.....**



GE Model C60 Breaker Protection Relay



Modules provide a variety of Functions



Schweitzer Model SEL-734
revenue meter

**then you'd better have one
of these
guys sitting
on the
shelf >>>>**



Doble Engineering
Model F6150 Power System Simulator

Electronic relays & meters have evolved much since their early 1930s introduction, but their basic purpose hasn't changed. Technology's improved & applications have dramatically expanded because solid-state technology offers a significant number of advantages over its electro-mechanical counterpart, including dramatically expanded sophistication and ease of adjustment. Solid-state relays & multi-function meters have become the preferred choice for electrical system protection and monitoring.

Three positive aspects of solid state technology are: 1) affected less by dirt, vibration, & humidity than electro-mechanical relays, 2) reduced maintenance frequency because of fewer moving parts, and 3) less likely to fail at critical times. Be aware, though, that solid state technology presents important and unique problems that require crucial precautions when performing testing, adjustment, or repair, so read on.

Solid-state relay & meter testing standards & methods have important differences from electro-mechanical relay testing, including the following:

- ⇒ Recording of electrical system trips & events
- ⇒ Cleaner test current wave shapes
- ⇒ Spike suppression
- ⇒ Electronics knowledge

Always follow these precautions when testing solid-state relays & meters:

- ⇒ Verify that actual wiring matches connection diagrams
- ⇒ Eliminate all static electricity potential
- ⇒ Assure the relay's control power is applied with the proper polarity
- ⇒ Apply rated control voltage (Never apply a high-voltage test to a solid-state relay)
- ⇒ Never force a board into place or bend it

Your testing agency must have BOTH in-house sophisticated equipment AND a skilled staff that can effectively use the equipment. We are proud to say that HTTS has both the sophisticated test equipment/software AND a highly trained staff on hand in every office.



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HTTS Las Vegas Office tackles maintenance testing on Schweitzer Engineering's new satellite synchronizing complex relays at Nevada Test Site Facility



Aerial view of some of NTS Site's many facilities.

Nevada Test Site (NTS) is a remote site buffered by vast, federally-owned land masses. Larger than Rhode Island, its 1,350 square miles (864,000 acres), make this one of the largest secured areas in the United States. A number of operations are located at NTS facilities: nuclear weapons testing readiness, national Nuclear Emergency Search Team, aerial measurement system/aerial surveys, HAZMAT Spill Center, Yucca Mountain, low-level waste storage, technology development (plutonium cleanup), and environmental restoration, among others.



Schweitzer SEL-311c

HTTS was invited to perform maintenance testing on several hundred protective relays inside some of the most sensitive NTS areas. Of course, there were many solid state relays, like the new Schweitzer Model 311 Transmission Line Protection Relay. Of #1 importance is that your testing agency has the testing software & capabilities to test them.

HTTS Phoenix Office performs protective relay start-up & maintenance testing for power plants across AZ and NM



Relays number into 1000s in many power plants.

Entegra Power Group owns and operates electric power plants. They also market the power generated from highly efficient natural gas-fueled power plants to wholesale customers across the southern United States. Entegra owns and operates two of the largest independent power plants in the USA, each capable of producing 2,200 MW of power. These plants have been in commercial operation since 2003. The Gila River Power Station is one of such facility and is located just south of Phoenix.

HTTS is deeply involved in comprehensive & complex maintenance testing activities at Gila River, as well as at many other facilities.



2200MW Gila River Power Station

HTTS Headquarters in Montclair CA performs both acceptance and maintenance protective relay and meter testing on both large and small projects



OCSD Logo

Nearly 1,000 relays didn't slow down HTTS Montclair's field staff. This typical project we recently completed saw the testing of hundreds & hundreds of relays for the Orange County Sanitation District (OCSD). We did it all in just under a three month time frame!

Over the years, HTTS Montclair has performed testing in most of the Southland's larger industrial facilities. Performing NETA acceptance & maintenance testing in Water Treatment Plants, Sewage Plants, and Power Plants are but a few of the HTSS specialty areas.



OCSD Odor Control System WWTP #2, Fountain Valley, CA

Every HTTS office maintains in-house test sets/software and the highly skilled staff necessary to test today's sophisticated solid state relays, whether there's satellite synchronization or a multitude of complex functions because HTTS is at the technological forefront.

Testing periodicity, or frequency, varies with environment, duty cycle and relay type, so call an HTTS office near you (see side bar) for a discussion of your testing needs.



**The HTTS team is
dedicated to you!!
Our High Quality
Technical Expertise
has been Gained by
Serving Our Clients
for Fifty Years !!!**

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