



**MRO Commenting
&
Membership on a SDT
&
NERC Variance
&
NERC Project 2007-17
Protection System Maintenance**

By Carol Gerou



Topics to Discuss

- **MRO Commenting**
- Membership on a SDT
- NERC Variance
- NERC Project 2007-17



MRO Commenting

- MRO Staff
- MRO Stakeholders
- MRO NSRS



MRO NSRS

- Midwest Reliability Organization's NERC Standards Review Subcommittee (MRO NSRS)
- Official Commenting wing of the MRO Standards Committee.
- Comments on all topics where interest is shown by MRO stakeholders.
- The Group is made up experts from Transmission Planning and Operations.
- A Point of Contact (POC) is assigned a topic. He or she is responsible for receiving comments and consolidating comments into one comment form.
- The membership will decide how those comments are submitted and if those are submitted.
- [NSRS Webpage](#)
- Group meets weekly:
 - [Normal Agenda](#)
 - [Summary of Topics](#)



Topics to Discuss

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MRO NSRS



Membership on a SDT

- Each SDT is different. I'm an observer on one SDT and a member on another. The following items make a difference:
 - The Chairman
 - The NERC Coordinator
 - The Chemistry of the Team



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NERC Variance

- NERC doesn't have defined criteria for a variance.
- FERC Order 672 paragraph 291 defines a variance and the criteria.



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NERC Project 2007-17 Protection System Maintenance



Project 2007-17

- General Info
- Definitions
- Maintenance Methods



General Info

Applicable Entities: TO, GO, & DP.

Applicable Facilities:

- Protection Systems that are applied on, or are designed to provide protection for the BES.
- **Protection System components:**
 - Used for underfrequency load-shedding systems
 - Used for undervoltage load-shedding systems which are installed to prevent system voltage collapse or voltage instability
 - Installed as a Special Protection System for BES reliability.
- **Protection Systems for Generator Facilities:**
 - That act to trip the generator either directly or via generator lockout or auxiliary tripping relays
 - For GSU for BES generators
 - For transformers connecting aggregated generation
 - For generator-connected station service transformers for BES generators
 - For system-connected station service transformers for BES generators



Definitions

- **Protection System Maintenance Program (PSMP)** — An ongoing program by which Protection System components are kept in working order and proper operation of malfunctioning components is restored. A maintenance program can include:
 - Verification
 - Monitoring
 - Testing
 - Physical inspection
 - Calibration
 - Upkeep
 - Restoration
- **Protection System** — Components of a protection system are: Protective relays, associated communication systems necessary for correct operation of protective devices, voltage and current sensing inputs to protective relays, station DC supply, and DC control circuitry from the station DC supply through the trip coil(s) of the circuit breakers or other interrupting devices.
- **Non-components** — Devices that sense non-electrical conditions, such as thermal or transformer sudden pressure relays, are not included within the scope of this standard.
- **A maintenance correctable issue** — is a failure of a device to operate within design parameters that can be restored to functional order by calibration, repair or replacement.



Maintenance Methods

Identify interval for each Component. These Intervals are based on four maintenance methods:

- Time-Based
- Condition-Based
- Performance-Based
- A Combination



Time-Based Method

- **Unmonitored Protection Systems -**
Components which do not have self-monitoring alarms, or if self-monitoring alarms are available, the alarms are not transmitted to a location where action can be taken for alarmed failures.
- **Advantage from V0: No basis is needed.**
- **[Go to Table 1.](#)**



Condition-Based Method

- **Partially Monitored Protection System Components** - Components whose alarms are automatically provided daily (or more frequently) to a location where action can be taken for alarmed failures. Monitoring includes all elements of level 1 monitoring with additional monitoring attributes as listed below for the individual type of component.
- **Fully Monitored Protection Systems** - Every function required for correct operation of that component is continuously monitored and verified, and detected maintenance-correctable issues reported. Level 3 Monitored Protection Systems also includes verification of the means by which alarms and monitored values are transmitted to a location where action can be taken. Detected maintenance-correctable issues for Level 3 Monitored Protection Systems must be reported within 1 hour or less of the maintenance-correctable issue occurring, to a location where action can be taken. Level 3 Monitoring includes all elements of Level 2 Monitoring, with additional monitoring attributes as listed below for the individual type of component.
- **Advantage from V0: No basis is needed.**
- [Go to Table 1.](#)



Performance-Based Method

- Advantage: The Maintenance intervals can be extended.
- Disadvantages:
 - At least 60 components are needed for a segment and 30 components maintain segment.
 - A basis is needed using specific records.
 - A segment can't experience more than 4% countable.
 - Documentation nightmare.
- [Go to Attachment A.](#)



Schedule

- Anticipated finish date September 2010.
 - The project is considered finished once the industry has voted on it after the re-circulation ballot is finished, and is sent to the BOT.
- Major Milestones:
 - Posting the first draft.
 - Answering comments & redrafting the standard.
 - Anticipated next posting would be March 2010.



Questions

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Summary

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