

## Industry Advisory

### Relay Maintenance Practices

Issued June 26, 2008

**Status:** Informational Only

**Distribution:** Planning Coordinators, Balancing Authorities, Transmission Owners, Transmission Operators, Transmission Service Providers, Reliability Coordinators, and Regional Entities

**Background:** On Tuesday February 26<sup>th</sup>, 2008, the FRCC Bulk Power System experienced a system disturbance initiated by a 138 kV transmission system fault that remained on the system for approximately 1.7 seconds. The fault and subsequent delayed clearing led to the loss of approximately 2,300 MW of load concentrated in South Florida along with the loss of approximately 4,300 MW of generation within the Region. Approximately 2,200 MW of under-frequency load shedding subsequently operated and was scattered across the peninsular part of Florida.

The initiating event was a three phase fault on a failed 138 kV switch at a transmission substation located West of Miami, Florida. The disabling of all local protective relay equipment while troubleshooting a transmission switch led to delayed clearing of a fault that developed on the switch. The initial phase to phase fault migrated to a three-phase fault and resulted in the subsequent events described above.

**Advisory:** Transmission Owners, Transmission Operators, and Reliability Coordinators are encouraged to review their internal relay maintenance and protection failure practices and outage assessment and approval procedures to assure that forced or planned removal of any protective relay system includes an evaluation of the impact on system reliability and an assessment of IROLs, and SOLs where there is potential impact. Such evaluations are particularly critical where there is only a single primary protection group in place.

Where impacts are identified:

- Include a system operations approval step by the Transmission Operator / Reliability Coordinator before removing any protection system for planned maintenance or troubleshooting.
- Include a system operations notification summarizing the expected mode of fault clearing when the primary source of protection is out of service. For example, this clearing mode may be with the same breaker with backup protection on the breaker, or may require fault clearing by different breakers, perhaps at remote switching stations.
- Include a Reliability Coordinator notification step, summarizing any modified equipment fault clearing modes when the primary source of protection is out of service.

**Primary Interest Groups:** Protection Engineers, Protection Field Managers, Personnel, and Operations Engineers

# NERC

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