

Lesson Learned

SCADA Failure Resulting in Loss of Monitoring Function

Primary Interest Groups

Transmission Operators (TOP)
Reliability Coordinators (RC)

Transmission Owners (TO)
Balancing Authority (BA)

Problem Statement

A TO's control center experienced a SCADA failure which resulted in a loss of monitoring functionality for more than thirty minutes.

Details

During the event, the TO's Inter-Control Center Communications Protocol (ICCP) data links to their TO and RC remained in-service. All data sent and observed by the TO and RC was frozen at the values transmitted at the time of the failure and remained at these values for the duration of the event. Because the event occurred during a light load period on a Sunday in September, the RC and TO Energy Management Systems (EMS) did not alarm or indicate any abnormalities with the TO data for an extended period of time due to:

- The TO maintained its ICCP link with the TOP and RC and the data being sent was within the tolerance limits set by each.
- Each organization's state estimator continued to solve within normal tolerances.
- The TO experienced no generation changes.
- The TO did not experience any disturbances.
- Load ramps, in and out, remained slow.
- The TO was not required to operate any equipment in its system.

Corrective Actions

The TO implemented a data check, or "heartbeat monitor", to identify a stagnant data condition that generates an audible alarm for control room operators in the event that stagnant ICCP data is received for greater than five minutes. In addition, the TOP lowered its mismatch tolerance set points (MW & MVAR) in the state estimator to levels that will improve the detection of stagnant data while keeping the mismatch alarms at a manageable level during normal operations.

Lesson Learned

- It is beneficial that TOPs and TOs install a "heartbeat monitor" alarm to detect stale or stagnant data.

- A periodic evaluation should be conducted of the mismatch thresholds for state estimator alarming specific to each operating area, such that it will allow for the optimum sensitivity while minimizing false mismatch alarms.

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For more information on this lesson learned please contact:

NERC – Lessons Learned (via email)	NPCC – John Mosier (via email) or (212) 840-1070
Source of Lesson Learned:	Northeast Power Coordinating Council
Lesson Learned #:	20130202
Date Published:	February 8, 2013
Category:	Communications

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