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NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Industry Advisory

Unexpected Loss of Generation due to Low Voltage on the System
Issued June 26, 2008

Status:	**Informational Only**
Distribution:	Generation Owners, Generation Operators, Planning Authorities, Planning Coordinators, Transmission Operators, and Reliability Coordinators
Background:	Analyses of the February 26, 2008 Florida and several other system disturbances have shown that many generator trips or unexpected generator runbacks have been initiated by low voltage on the system. In some instances, plant protective device settings on auxiliary or distribution busses caused the generator auxiliary equipment to trip. In others, contactors dropped out at voltages above the station service under voltage relay settings, or before the under voltage relay timers timed out. Some of those auxiliary system trips were related to legacy equipment in older generating stations that may adversely react to voltage sags that do not necessarily impact more modern equipment. All of these situations can cause the generator to trip or runback. *Details>>*
Advisory:	Generator Owners and Operators are encouraged to review the design and settings for auxiliary and plant distribution under-voltage protection to ensure these settings do not adversely impact the plants' ability to stay in service during under-voltage events. The review should also include an evaluation of whether generator protection settings and transmission protection systems are appropriately coordinated to ensure system reliability can be maintained during transient voltage conditions. Where auxiliary or plant distribution under-voltage protection results in a more limiting voltage protection setting than the generator protection settings, the Generator Owner or Operator is encouraged to inform its associated Planning Authorities, Planning Coordinators, Transmission Operators, and Reliability Coordinators accordingly. Planning Authorities, Planning Coordinators, Transmission Operators, and Reliability Coordinators are encouraged to plan and model the effective under-voltage protection setting of a generator, including auxiliary or plant distribution under-voltage protection, in contingency analysis and dynamic modeling. Such analyses should also include appropriate voltage control restriction on nuclear generating plants and their off-site power supplies.
Primary Interest Groups:	Plant Managers, Planning Engineers, and Operations Engineers

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Contact: Robert Cummings
Director of Event Analysis & Information Exchange
609.452.8060
bob.cummings@nerc.net

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North American Electric Reliability Corporation
116-390 Village Blvd.
Princeton, NJ 08540
609.452.8060 | www.nerc.com