
	© ISO New England, Inc. 2004	Master/ LCC Procedure # 8 Coordination of Generator Voltage Regulator and Power System Stabilizer Outages
		Revision Number: 6 Revision Date: 11/16/06
Contact: ISO Manager, Operations		Approved by: M/LCC Heads Review Due Date: October 1, 2007

Master/Local Control Center Procedure No. 8

(M/LCC 8)

Coordination of Generator Voltage Regulator and Power System Stabilizer Outages

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1. References

ISO New England Operating Procedure No. 1 – Central Dispatch Operating Authority of ISO New England, the Local Control Centers and Market Participants (OP 1)

Master/Local Control Center Procedure No. 2 - Abnormal Conditions Alert (M/LCC 2)

ISO New England Operating Procedure No. 12 - Voltage and Reactive Control (OP 12)

ISO New England Operating Procedure No. 14 - Technical Requirements for Generators, Demand Resources and Asset Related Demands

NERC Standard VAR-001 - Voltage and Reactive Control


2. Purpose

This is a procedure for approval/disapproval and coordination of outages for generator automatic voltage regulators and power system stabilizers. It establishes a procedure for reporting and tracking their in/out of service status.

3. Introduction

ISO New England Operating Procedure No. 12 - Voltage and Reactive Control (OP 12) and ISO New England Operating Procedure No. 14 Technical Requirements for Generators, Demand Resources and Asset Related Demands establish the guidelines to ensure that reliable and desirable voltage levels are maintained on the New England Transmission System. The reliability of the system is dependent upon the automatic operation of generator controls, such as voltage regulators and power system stabilizers. If these devices are removed from service, the ability of the power system to respond dynamically to normal power changes and abnormal conditions will be impacted. If an automatic voltage regulator outage or an outage of a power system stabilizer, which is required to be in service, is avoidable, it should not be removed from service when Master/Local Control Center Procedure No. 2 - Abnormal Conditions Alert (M/LCC 2) is implemented. If an automatic voltage regulator or power system stabilizer must be removed from service, the ISO New England Control Room Staff must be notified immediately so that contingency actions can be developed. The simultaneous removal from service of several automatic voltage regulators in any one area or any power system stabilizer should be avoided.

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4. Definitions

Automatic Generator Voltage Regulator (AVR):

A voltage-regulating device designed to hold a set voltage by comparing the generator terminal voltage to the reference voltage. The set voltage is maintained by varying the excitation current to the generator field.

Power System Stabilizer (PSS):

An electronic control system applied at a generator that helps to dampen out dynamic oscillations and is an integral part of how power plants respond to dynamic disturbances of the power system.

5. Applicability

This procedure applies to all Market Participant Generators, which are required to have automatic voltage regulating devices unless reliability studies dictate otherwise and all Generators required having a PSS, as determined in their System Impact Study (SIS). Attachment A – Generators without an AVR and are Grandfathered and Attachment B – Generators Requiring PSS devices in/out of Service, have been developed to provide information on AVR and PSS devices used in the New England Transmission System.


6. Approval for a Scheduled Outage

Normal Operating Conditions:

The ISO New England Control Room Staff are responsible for approving or disapproving, based upon the ISO Technical Studies group analysis with the concurrence of the Local Control Center/SCADA Center System Operator, a request to remove from service an automatic voltage regulator or power system stabilizer.

Abnormal Operating Conditions:

If abnormal operating conditions (M/LCC 2) are anticipated, or during M/LCC 2 conditions, the Generating Station Operator or their designee shall obtain the concurrence of the ISO New England Control Room Staff prior to removing from service an automatic voltage regulator or power system stabilizer.


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7. Procedure

The following steps outline the responsibilities of the Market Participant Generating Station Operator or their designee, the Local Control Center/SCADA System Operator, and the ISO New England Control Room Staff:

1. Market Participant Generating Station Operator or their Designee are responsible to:
 - A. Monitor the status of automatic generator voltage regulators and power system stabilizers. If such equipment becomes inoperative unexpectedly, the Generating Station Operator or their designee shall log the status of the device, notify the ISO New England Control Room Staff, and initiate a request for repairs.
 - B. Request the ISO New England Control Room Staff and Local Control Center/SCADA Center System Operator approval if a planned outage of an automatic generator voltage regulator or power system stabilizer is required.
 - C. Report any voltage regulator or power system stabilizer related generator operating constraints, such as restricted availability, restricted response rates, or MW or MVAR output limitations to the ISO New England Control Room Staff and Local Control Center/SCADA Center System Operator.
 - D. Project the expected return to service--time/date.
 - E. Manually control the generator exciter to maintain the appropriate voltage schedule.
 - F. Provide the ISO New England Control Room Staff with a daily update on the status of the defective automatic generator voltage regulator or power system stabilizer.
2. Local Control Center/SCADA Center System Operator are Responsible to:
 - A. Coordinate with the ISO New England Control Room Staff, outages for generator voltage regulators and power system stabilizers as required by Section 6 'Approval for a Scheduled Outage'.
 - B. Receive notification from ISO New England Control Room Staff that an automatic generator voltage regulator or power system stabilizer is out of service.
 - C. Review the voltage regulator or power system stabilizer related operating restrictions and limitations imposed on the Generator and its impact on voltage and reactive control in your area of jurisdiction.
 - D. Note the notification on the appropriate Local Control Center/SCADA Center log.

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3. ISO New England Control Room Staff are responsible to:

- A. Notify the ISO Technical Studies group immediately if a generator automatic voltage regulator or power system stabilizer is to be removed from service or is to be returned to service.
- B. Approve/disapprove automatic generator voltage regulator or power system stabilizer outages based upon the ISO Technical Studies group analysis during normal and abnormal operating conditions as required in Section 6 ‘Approval for a Scheduled Outage’.
- C. During abnormal operating conditions, receive notification from the Generating Station Operator or their designee that a generator automatic voltage regulator or power system stabilizer is out of service or has returned to service.
- D. During M/LCC 2, evaluate the overall impact that the defective equipment could have on the safe and reliable operation of the New England Transmission System.
- E. Develop contingency actions, as appropriate, and alert the appropriate Local Control Center/SCADA Center System Operator of the contingent actions required to ensure system reliability and voltage control.
- F. Notify appropriate Local Control Center/SCADA Center of all voltage regulator outages or power system stabilizers covered by this procedure.


8. Logging requirements

NOTE

All logging, as defined in this Section shall be retained for a minimum period of 12 rolling months for consistency with NERC and NPCC standards.

1. The Market Participant Generating Station Operator or their designee and the Local Control Center/SCADA Center System Operator are responsible for logging and tracking the status of automatic voltage regulators and power system stabilizers.
2. During normal and abnormal operating conditions, the ISO New England Control Room Staff shall maintain records of automatic voltage regulators and power system stabilizers.

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9. Revision History

Rev. No.	Date	Reason
1	06/01/90	
2	09/07/01	
3	09/01/04	Standardize procedure format and incorporate RTO language changes
4	03/24/05	Update to NERC Version 0 Standards
5	5/19/05	Added notification to the ISO Technical Studies group immediately if a generator automatic voltage regulator or power system stabilizer is to be removed from service or is to be returned to service
6	11/16/06	Revised procedure titles and nomenclature as part of the annual review

10. Attachments

Attachment A – Generators without an AVR and are Grandfathered

Attachment B – Generators Requiring PSS devices in/out of Service

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