

## Request for an Interpretation of a Reliability Standard

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### Contact information for person requesting the interpretation:

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### Identify the standard that needs clarification:

*Standard Number:* PRC-005-1

### Identify specifically what needs clarification:

*Requirement Number and Text of Requirement:*

(The Glossary of Terms defines Protection Systems as follows: Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.)

**R1.** Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

**R1.1.** Maintenance and testing intervals and their basis.

**R1.2.** Summary of maintenance and testing procedures.

1. Does R1 require a maintenance and testing program for the battery chargers for the "station batteries" that are considered part of the Protection System?
2. Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays)
3. Does R1 require maintenance and testing of transmission line re-closing relays?
4. Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

**Identify the material impact associated with this interpretation:**

*Identify the material impact to your organization or others caused by the lack of clarity or an incorrect interpretation of this standard.*

This interpretation is needed to assure that the intent of the standard is supported through effective compliance monitoring. Protection Systems are a line of defense essential to the reliability of the BES and the failure of Protection Systems can cause catastrophic events.

**Project 2009-10: Response to Request for an Interpretation of PRC-005-1, Requirement R1 for the Compliance Monitoring Processes Working Group**

The following interpretation of PRC-005-1 – Transmission and Generation Protection System Maintenance and Testing, Requirement R1 was developed by the Protection System Maintenance and Testing Standard Drafting Team (assigned to Project 2007-17) on February 10, 2009.

**Requirement Number and Text of Requirement**

**R1.** Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:

**R1.1.** Maintenance and testing intervals and their basis.

**R1.2.** Summary of maintenance and testing procedures.

**Question #1**

Does R1 require a maintenance and testing program for the battery chargers for the “station batteries” that are considered part of the Protection System?

**Response to Question #1**

While battery chargers are vital for ensuring “station batteries” are available to support Protection System functions, they are not identified within the definition of “Protection Systems.” Therefore, PRC-005-1 does not currently require maintenance and testing of battery chargers.

**Question #2**

Does R1 require a maintenance and testing program for auxiliary relays and sensing devices? If so, what types of auxiliary relays and sensing devices? (i.e transformer sudden pressure relays)

**Response to Question #2**

The existing definition of “Protection System” does not include auxiliary relays; therefore, maintenance and testing of such devices is not explicitly required. Maintenance and testing of such devices is addressed to the degree that an entity’s maintenance and testing program for DC control circuits involves maintenance and testing of imbedded auxiliary relays. Maintenance and testing of devices that respond to quantities other than electrical quantities (for example, sudden pressure relays) are not included within Requirement R1.

**Question #3**

Does R1 require maintenance and testing of transmission line re-closing relays?

**Response to Question #3**

No. “Protective Relays” refer to devices that detect and take action for abnormal conditions. Automatic restoration of transmission lines is not a “protective” function.

**Question #4**

Does R1 require a maintenance and testing program for the DC circuitry that is just the circuitry

with relays and devices that control actions on breakers, etc., or does R1 require a program for the entire circuit from the battery charger to the relays to circuit breakers and all associated wiring?

#### **Response to Question #4**

PRC-005-1 requires that entities 1) address DC control circuitry within their program, 2) have a basis for the way they address this item, and 3) execute the program. PRC-005-1 does not establish specific additional requirements relative to the scope and/or methods included within the program.

#### **Question #5**

For R1, what are examples of "associated communications systems" that are part of "Protection Systems" that require a maintenance and testing program?

#### **Response to Question #5**

"Associated communication systems" refer to communication systems used to convey essential Protection System tripping logic, sometimes referred to as pilot relaying or teleprotection.

Examples include the following:

- communications equipment involved in power-line-carrier relaying
- communications equipment involved in various types of permissive protection system applications
- direct transfer-trip systems
- digital communication systems (which would include the protection system communications functions of standard IEC 61850<sup>1</sup> as well as various proprietary systems)

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<sup>1</sup> IEC61850 refers to IEC (International Electrotechnical Commission) Standard 61850 - Communication Networks and Systems in Substations