

**NERC**

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# Consideration of Comments Summary

Project 2007-17.3 Protection System  
Maintenance and Testing

July 30, 2014

**RELIABILITY | ACCOUNTABILITY**



3353 Peachtree Road NE  
Suite 600, North Tower  
Atlanta, GA 30326  
404-446-2560 | [www.nerc.com](http://www.nerc.com)

Introduction.....	3
Purpose.....	3
Consideration of Comments.....	4
Sudden Pressure Relay Directive .....	4
Sudden Pressure Relaying – Inclusion of Dispersed Generation Facilities .....	6
Sudden Pressure Relaying in PRC-005 .....	6
Why PRC-005-X.....	8
Administrative.....	8
PRC-005 Supplementary Reference and FAQ Document .....	8
Standards Authorization Request (SAR) .....	9
NERC Glossary of Terms.....	9
Definition of Terms Used in Standard.....	9
Applicability Section.....	10
Requirement R1 .....	10
Requirement R3 and R4 .....	10
Requirement R6.....	11
Data Retention.....	11
Violation Risk Factors (VRFs).....	11
Violation Severity Levels (VSLs) .....	11
Implementation Plan .....	11
Misc. additional items:.....	11
Attachment A – SDT Members .....	14

# Introduction

---

The Project 2007-17.3 drafting team thanks everyone who submitted comments on the draft PRC-005-X standard. This standard was posted for a 45-day public comment period from April 17, 2014, through June 3, 2014. The ballot was extended by one day to achieve quorum. NERC asked Stakeholders to provide feedback on the standard and associated documents through a special electronic comment form. There were 56 sets of responses, including comments from approximately 166 people from approximately 117 companies, representing all 10 Industry Segments.

All comments submitted may be reviewed in their original format on the standard's [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Director of Standards Valerie Agnew at 404-446-2560 or at [valerie.agnew@nerc.net](mailto:valerie.agnew@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>1</sup>

## Purpose

The Protection System and Maintenance Testing (PSMT) standards drafting team (SDT) appreciates industry's comments on the PRC-005-X standard. The SDT reviewed all comments carefully and made changes to the standard accordingly; however, the new Standards Process Manual (SPM) does not require the SDT to respond to each comment if a successive ballot is needed. The following pages are a summary of the comments received and how the PSMT SDT addressed them. If a specific comment was not addressed in the summary of comments, please contact the NERC standards developer or one of the SDT members to discuss.

---

<sup>1</sup> The appeals process is in the Standard Processes Manual: [http://www.nerc.com/files/Appendix\\_3A\\_StandardsProcessesManual\\_20120131.pdf](http://www.nerc.com/files/Appendix_3A_StandardsProcessesManual_20120131.pdf)

# Consideration of Comments

---

## Sudden Pressure Relay Directive

One commenter with several supporters stated that “[t]here has been some misinformation floating in industry as to whether FERC directed inclusion of sudden pressure relays in PRC-005.” Other commenters asserted that sudden pressure relays do not impact the reliable operation of the Bulk Electric System; therefore, should not be included in PRC-005. Below is additional background regarding the FERC directive and why Sudden Pressure Relays are being added to PRC-005-X.

### FERC NOPR Proposing to Approve PRC-005 Interpretation

In the NOPR, the Commission proposed to accept NERC’s proposed interpretation of Reliability Standard PRC-005-1 Requirement R1. However, the Commission stated that the proposed interpretation highlights a gap in the required Protection System maintenance and testing pursuant to Requirement R1 of PRC-005-1. To prevent a gap in reliability, FERC stated that any component that detects any quantity needed to take an action, or that initiates any control action (initial tripping, reclosing, lockout, etc.) affecting the reliability of the Bulk-Power System should be included as a component of a Protection System. Accordingly, to address FERC’s concern, pursuant to section 215 (d)(5) of the FPA, FERC proposed to direct NERC to develop a modification to the Reliability Standard to include *any component or device that is designed to detect defective lines or apparatuses or other power system conditions of an abnormal or dangerous nature and to initiate appropriate control circuit actions.*

### NERC NOPR Comments (pgs. 6-7)

“Regarding FERC’s proposed directive to include in the Reliability Standard any device, including auxiliary and backup protection devices, that is designed to sense or take action against any abnormal system condition that will affect reliable operation, NERC states that it understands FERC’s concerns related to protective relays that do not respond to electrical quantities and agrees that sudden pressure relays which trip for fault conditions should be maintained in accordance with NERC Reliability Standard requirements. However, NERC is not aware of any existing documents that establish a technical basis for either minimum maintenance activities or maximum maintenance intervals for these devices. NERC expressed concern that the scope of this proposed directive is so broad that any device that is installed on the bulk power system to monitor conditions in any fashion may be included. In fact, many of these devices are advisory in nature and should not be reflected within NERC Standards if they do not serve a necessary reliability purpose. NERC therefore proposed to develop, either independently or in association with other technical organizations such as IEEE, one or more technical documents which:

- i. Describe the devices and functions (to include sudden pressure relays which trip for fault conditions) that should address FERC’s concern; and
- ii. Propose minimum maintenance activities for such devices and maximum maintenance intervals, including the technical basis for each.

These technical documents will address *those protective relays that are necessary for the reliable operation of the bulk power system* and will allow for differentiation between protective relays that detect faults from other devices that monitor the health of the individual equipment and are advisory in nature (e.g., oil temperature). Following development of the above-referenced document(s), NERC would propose a new or revised standard (e.g., PRC-005) using the NERC Reliability Standards development process to include maintenance of such devices, including establishment of minimum maintenance activities and maximum maintenance intervals. NERC did not believe it is necessary for the Commission to issue a directive to address this issue. Rather, NERC proposed to add this issue to the reliability standards issues database for inclusion in the list of issues to address the next time the PRC-005 standard is revised.”

**Order No. 758 (Para. 12-15)<sup>2</sup>**

[Summary of NERC’s NOPR comments in P 12-14 have been omitted here for brevity]

“15. The Commission accepts NERC’s proposal, and directs NERC to file, within sixty days of publication of this Final Rule, a schedule for informational purposes regarding the development of the technical documents referenced above, including the identification of devices that are designed to sense or take action against any abnormal system condition that will affect reliable operation. NERC shall include in the informational filing a schedule for the development of the changes to the standard that NERC stated it would propose as a result of the above-referenced documents. NERC should update its schedule when it files its annual work plan.”

**NERC April 12, 2012 Informational Filing<sup>3</sup>**

Summary: NERC’s filing included a schedule for preparing the necessary technical documents through the SPCS and a schedule for the SPCS work. However, the filing did not include a schedule for the standard development as FERC had required. FERC noted that NERC should update its schedule for the standard development when it files its annual work plan. NERC’s RSDP has included the development work schedule. Because NERC filed the item as “informational”, FERC did not issue an order accepting or rejecting the filing as it would have done for a “compliance” filing. NERC submitted a further informational filing in July 2012 addressing reclosing relays, but did not include any additional discussion of sudden pressure relays.

**Sudden Pressure Relays and Other Devices that Respond to Non-Electrical Quantities**

SPCS Input for Standard Development in Response to FERC Order No. 758 – December 2013.

In developing this report, the SPCS evaluated all devices on the IEEE list of device numbers to identify which devices that respond to non-electrical quantities may impact reliable operation of the Bulk-Power System. As a result of this analysis, the SPCS concludes the only devices responding to non-electrical quantities that should be included in the applicability of PRC-005 are sudden pressure relays utilized in a tripping function. When applied in a tripping function, these devices initiate actions to clear faults to support reliable operation of the Bulk-Power System. The other devices evaluated respond to abnormal equipment conditions and take action to protect equipment from mechanical or thermal damage, or premature loss of life, rather than for the purpose of initiating fault clearing or mitigating an abnormal system condition to support reliable operation of the Bulk-Power System.

From SPCS Report:

<b>Table 1: Classification of Devices</b>		
<b>Initiate Actions to Clear Faults or Mitigate Abnormal System Conditions to Support Reliable Operation of the Bulk-Power System</b>	<b>Initiate Action for Abnormal Equipment Conditions for Purposes other than Supporting Reliable Operation of the Bulk-Power System</b>	<b>Monitor the Health of Individual Equipment and Provide Information that is Advisory in Nature</b>
Sudden Pressure (63) (when utilized in a trip application)	<ul style="list-style-type: none"> <li>• Overspeed Device (12)</li> <li>• Underspeed Device (14)</li> <li>• Apparatus Thermal Device (26)</li> <li>• Flame Detector (28)</li> <li>• Bearing Protective Device (38)</li> <li>• Mechanical Condition Monitor (39)</li> </ul>	<ul style="list-style-type: none"> <li>• Apparatus Thermal Device (26)</li> <li>• Bearing Protective Device (38)</li> <li>• Mechanical Condition Monitor (39)</li> <li>• Atmospheric Condition Monitor (45)</li> </ul>

<sup>2</sup> Interpretation of Protection System Reliability Standard, 138 FERC ¶ 61,094 (Order No. 748) (2012) [http://www.nerc.com/files/Order\\_Interp\\_Protection\\_Sys\\_RS\\_2011.2.3.pdf](http://www.nerc.com/files/Order_Interp_Protection_Sys_RS_2011.2.3.pdf)

<sup>3</sup> Informational Filing in Compliance with Order No. 758 – Interpretation of Protection System Reliability Standard, FERC Docket No. RM10-5-000, (2012) [http://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Order%20758%20Letter%20Filing\\_complete.pdf](http://www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/Order%20758%20Letter%20Filing_complete.pdf)

	<ul style="list-style-type: none"> <li>• Atmospheric Condition Monitor (45)</li> <li>• Machine or Transformer Thermal Relay (49)</li> <li>• Density Switch or Sensor (61)</li> <li>• Pressure Switch (63) (other than sudden pressure relays utilized in trip application)</li> <li>• Level Switch (71)</li> </ul>	<ul style="list-style-type: none"> <li>• Machine or Transformer Thermal Relay (49)</li> <li>• Density Switch or Sensor (61)</li> <li>• Pressure Switch (63) (other than sudden pressure relays utilized in trip application)</li> <li>• Level Switch (71)</li> </ul>
--	--	--

Following the issuance of the report by the Planning Committee, Project 2007-17.3 was proposed for the 2014-2016 RSDP, and adopted by the NERC Board. The SDT added sudden pressure relays to PRC-005-X in accordance with the technical recommendations from the SPCS report.

### Sudden Pressure Relaying – Inclusion of Dispersed Generation Facilities

Comments were received expressing concern that the current applicability wording does not clearly indicate the applicability of sudden pressure relaying to dispersed generation facilities. Project 2014-01 (Standards Applicability for Dispersed Generation Resources (DGR) Project) is reviewing the applicability of certain Reliability Standards that apply to a Generator Owner and Generator Operator to recognize the unique technical and reliability aspects of DGR in order to ensure the applicability of the standards is consistent with the reliable operation of the Bulk Power System. The project is related to the revised definition of the BES from Project 2010-17. NERC will assign the appropriate version number at the time the items are presented to the NERC Board of Trustees for adoption. Separating the changes is necessary for the DGR SDT to petition applicable governmental authorities for the applicability changes on a separate timeframe from the other technical changes in this version of PRC-005-X.

Comments relating to Dispersed Generation were forwarded to the Project 2014-01 drafting team along with recommended changes. The PRC-005-X SDT will coordinate with the DGR SDT to ensure no unintended consequences result from changes proposed by the DGR SDT.

### Sudden Pressure Relaying in PRC-005

One commenter requested clarification and/or justification of the requirement to test the function of sudden pressure relay actuators based on the fact that such actuators can be difficult to access, and the devices may need to be removed from the transformer. Based on the SDT’s knowledge and experience, testing of the devices typically would not require the devices to be removed from the transformer to “verify the pressure or flow sensing mechanism is operable.” The SDT developed an FAQ on this subject that is in Section 2.4.1 of the Supplementary Reference and FAQ document.

Several commenters questioned the six-year interval in Table 5 regarding fault pressure relays. The SDT established the six-year maintenance interval for fault pressure relays (see Table 5, PRC-005-X) based on the recommendation of the System Protection and Control Subcommittee (SPCS). The technical experts of the SPCS were tasked with developing the technical documents to:

- i. Describe the devices and functions (to include sudden pressure relays which trip for fault conditions) that should address FERC’s concern; and
- ii. Propose minimum maintenance activities for such devices and maximum maintenance intervals, including the technical basis for each.

Excerpt from the [SPCS technical report](#): “In order to determine present industry practices related to sudden pressure relay maintenance, the SPCS conducted a survey of Transmission Owners and Generator Owners in all eight Regions requesting information related to their maintenance practices. The SPCS received responses from 75 Transmission Owners and 109 Generator Owners. Note that, for the purpose of the survey, sudden pressure relays included the following: the “sudden pressure relay” (SPR) originally manufactured by Westinghouse, the “rapid pressure rise relay” (RPR) manufactured by Qualitrol, and a variety of Buchholz relays.

Table 2 provides a summary of the results of the responses:

<b>Table 2: Sudden Pressure Relay Maintenance Practices – Survey Results</b>		
	<b>Transmission Owner</b>	<b>Generator Owner</b>
Number of responding owners that trip with Sudden Pressure Relays:	67	84
Percentage of responding owners who trip that have a Maintenance Program:	75%	78%
Percentage of maintenance programs that include testing the pressure actuator:	81%	77%
Average Maintenance interval reported:	5.9 years	4.9 years

Additionally, in order to validate the information noted above, the SPCS contacted the following entities for their feedback: the IEEE Power System Relaying Committee, the IEEE Transformer Committee, the Doble Transformer Committee, the NATF System Protection Practices Group, and the EPRI Generator Owner/Operator Technical Focus Group. All of these organizations indicated the results of the SPCS survey are consistent with their respective experiences.

The SPCS discussed the potential difference between the recommended intervals for fault pressure relaying and intervals for transformer maintenance. The SPCS developed the recommended intervals for fault pressure relaying by comparing fault pressure relaying to Protection System Components with similar physical attributes. The SPCS recognized that these intervals may be shorter than some existing or future transformer maintenance intervals, but believed it to be more important to base intervals for fault pressure relaying on similar Protection System Components than transformer maintenance intervals.

The maintenance interval for fault pressure relays can be extended by utilizing performance-based maintenance thereby allowing entities that have maintenance intervals for transformers in excess of six years, to align them.

One commenter questioned the different maintenance intervals associated with control circuitry in the PRC-005 tables. The SDT reviewed the tables and disagrees that an inconsistency exists related to control circuitry. The maximum maintenance interval in Table 1-5 for control circuitry does not indicate 6 years.

One commenter suggested modifying the definition of Sudden Pressure Relaying – Fault pressure relay Component – to make it plural. The SDT chose not to make the change because it is inherently understood that the term can refer to a single device or multiple devices.

One commenter expressed concern that it should be made clear that Table 1-5 and Table 2 do not include maintenance activities for Sudden Pressure Relaying Components. The SDT agrees and made a change to the

headers of Table 1-5 and Table 2 (and also to the component attribute for alarm paths in Table 2) to direct attention to Table 5 for the maintenance activities associated with Sudden Pressure Relaying Components. The SDT also added a clarifying note to the header of Table 5.

One commenter expressed concern regarding the testing of the sensing mechanism of sudden pressure relays. The SDT notes that Table 5 requires the owner to verify that the pressure or flow sensing mechanism of the fault pressure relay is operable, but does not specify how to perform the maintenance. As such it is up to the entity to determine how to implement the required maintenance activities. Additionally, the SDT revised the FAQ on this topic and directed the commenter to Section 15.9.1 of the Supplementary Reference and FAQ document.

One commenter requested clarification as to which devices would fall under the classification of Sudden Pressure Relaying, specifically the Buchholz relay and the load tap changer protective device. The SDT's response is that if the device actuation results in the tripping of the transformer, then PRC-005 would be applicable to that device, and also referred the commenter to Section 2.4.1 of the Supplementary Reference and FAQ document.

## **Why PRC-005-X**

This version of PRC-005 is temporarily assigned the numbering "PRC-005-X" because the applicability of PRC-005 may be modified by Project 2007-17.3 (Protection System Maintenance and Testing (PSMT)) and Project 2014-01 (Standards Applicability for Dispersed Generation Resources (DGR)) during 2014.

## **Administrative**

The SDT appreciates the feedback regarding the correction of 4.2.7 in the Supplementary Reference and FAQ document, and the change has been made.

A few comments were received regarding the capitalization of "Part." The SDT appreciates this being brought to our attention and the term Part has been capitalized.

## **PRC-005 Supplementary Reference and FAQ Document**

Several commenters pointed out typographical errors that were corrected.

One commenter asked for the inclusion of the phrase "These are examples and never intended to be an all-inclusive list" in two locations within the Supplementary Reference and FAQ document. The SDT points out that the suggested language is already included in the document; however, changes were made to these write-ups to provide additional clarity.

One commenter indicated that in Section 2.4.1 of the Supplementary Reference and FAQ document, the phrase "Sudden Pressure Relaying can limit damage to equipment" is misleading. The SDT disagrees and no change was made.

One commenter wondered where the "frequently asked questions" were sourced from. The FAQs were developed from numerous comments received from stakeholders and those anticipated by the SDT.

One commenter requested that an FAQ be added to the Supplementary Reference and FAQ document regarding the IEEE device numbers related to Automatic Reclosing. Although the SDT did not address the issue verbatim, the SDT added an FAQ that provided discussion on IEEE device 79 and 25. Additionally, please see Section 2.4.1 of the Supplementary Reference and FAQ document.

One commenter quoted the following legacy statement in the Supplementary Reference and FAQ Document (page 3, section 2.3): "...if the Element is a BES Element, then the Protection System protecting that Element



should then be included within this standard.” The commenter suggested that this statement expanded the scope of maintenance to an unreasonable level. The SDT reviewed the statement and disagreed with the commenter’s assertion. No change was made.

## Standards Authorization Request (SAR)

One commenter questioned why there was no response to comments related to the SAR. The SDT notes that the Standards Process Manual (SPM) states in section 4.2: “[f]or SARs that are limited to addressing regulatory directives, or revisions to Reliability Standards that have had some vetting in the industry, authorize posting the SAR for a 30-day informal comment period with no requirement to provide a formal response to the comments received.”<sup>4</sup>

## NERC Glossary of Terms

One commenter requested that Sudden Pressure Relaying and Automatic Reclosing be added to the NERC Glossary of Terms. The SDT indicates that those terms were developed specifically for purposes of PRC-005 and does not see any benefit from including them in the NERC Glossary of Terms.

One commenter asked why this revision of the standard did not include a revision to the definition of Protection System. During the development of PRC-005-3, the SDT chose not to revise the definition of a Protection System to include Automatic Reclosing and carried that philosophy forward into the development of PRC-005-X.

## Definition of Terms Used in Standard

### *Protection System Maintenance Program (PSMP)*

A few commenters questioned the need to modify the definition of the term Component. The SDT notes the Rationale box which states: “The SDT determined that it was explanatory in nature and adequately addressed in the Supplementary Reference and FAQ Document.”

One commenter asked why there are two separate definition sections. Page 1 of this standard includes NERC Glossary terms that are being revised while Section A.6 has terms and definitions used within the standard.

One commenter suggested revising the definition of Sudden Pressure Relaying to make it more inclusive of other equipment that the Sudden Pressure Relaying may clear. The SDT response is that the definition is applicable regardless of whether the Sudden Pressure Relaying isolates only the monitored equipment or additional equipment, and declined to make the suggested change.

One commenter suggested defining the term “control circuitry.” The definition of Protection Systems sufficiently describes control circuitry as: “Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.” The maintenance activities associated with control circuitry are included in Table 1-5. Additionally, see Section 15.3 of the Supplementary Reference and FAQ document.

One commenter offered an alternative definition for the term Component. The SDT does not agree that the alternative definition provided further clarity and respectfully declined to adopt the suggested change.

Several commenters suggested modifying the definition of Countable Event to include relay settings different from specified settings. Countable Events are only associated with Attachment A which is focused on performance-based maintenance. Countable Events are limited to hardware failures or calibration failure; therefore, the SDT declined to make the change.

---

<sup>4</sup> NERC SPM: [http://www.nerc.com/pa/Stand/Documents/Appendix\\_3A\\_StandardsProcessesManual.pdf](http://www.nerc.com/pa/Stand/Documents/Appendix_3A_StandardsProcessesManual.pdf)

## Applicability Section

One commenter questioned the items listed under the Facilities Section 4.2 in that they do not meet the criteria included in the definition of the term Facility as defined in the NERC Glossary of Terms. Section 4.2 titled “Facilities” within the standards template is capitalized because it is the title of a section. It should not be equated to the defined term “Facilities” within the NERC Glossary of terms.

Additionally, “The SDT revised section 4.2.6.1 of the Applicability to address situations where Balancing Authorities participate in a Reserve Sharing Group. In these cases, a group of Balancing Authorities share reserves to cover any contingency within the boundaries of the group; therefore, generation loss within a Reserve Sharing Group would not impact reliability of the Bulk-Power System unless the aggregate capacity loss exceeds the largest unit within the Reserve Sharing Group. This change is consistent with the rationale described in the SAMS-SPCS report for basing applicability on the “largest unit in the Balancing Authority Area.” As such, the references to the “largest BES generating unit within the Balancing Authority Area” were changed to the “largest BES generating unit within the Balancing Authority Area or, where applicable, the Reserve Sharing Group.”

Related to these decisions, the following associated changes were also incorporated into the latest version:

- 4.2.6.1 was modified to include the Reserve Sharing Group
- Footnote #1, Page 4 was modified to include the Reserve Sharing Group
- Requirement 3, Part 3.1 and 3.1.1 was modified to include the Reserve Sharing Group
- Requirement 4, Part 4.1 and 4.1.1 was modified to include the Reserve Sharing Group

Several commenters had questions regarding identification of applicable facilities due to configurations where multiple BA Areas are involved. The SDT notes that it is the entity’s responsibility to identify the applicable facilities that fall under the requirements of PRC-005. For Automatic Reclosing, sections 4.2.6.1 and 4.2.6.2 describe specific criteria that are used to identify these applicable facilities. Entities must also consider neighboring facilities that may have been identified by another applicable entity in 4.2.6.1 using another BA’s largest generating unit.

One commenter suggested adding Sudden Pressure Relaying to the Applicability Section 4.2.5.3. The SDT added Sudden Pressure Relaying to Applicability Section 4.2.5.3 based on the comment and further added Sudden Pressure Relaying to Applicability Section 4.2.5.

## Requirement R1

### *Part 1.2 Table 5*

One commenter requested clarification regarding whether or not an entity is required to have a PSMP for all Section 4.2 Facilities or just those Facilities that they own. The SDT response is that Requirement R1 does not specifically require the PSMP to include sections for Facilities listed in Section 4.2 that the entity does not own.

## Requirement R3 and R4

Several commenters questioned the formatting of Requirement R3 and R4 regarding the sub-parts 3.1.1 and 3.1.2. NERCs general practice is to use bullets for optional lists and numbering for all-inclusive lists. However, these Parts and sub-parts of Requirement R3 and R4 were ultimately removed.

Other questions were raised regarding Requirement R3 and R4 subparts. However, in the last posting, the SDT included language in the standard that was originally in the implementation plan that required completion of maintenance activities within three years for newly-identified Automatic Reclosing Components following a notification under Requirement R6, which has been removed. After further discussion, the SDT determined that a separate shorter timeframe for maintenance of newly-identified Automatic Reclosing Components created unnecessary complication within the standard. The SDT agreed that entities should be responsible for maintaining the Automatic Reclosing Components subject to the standard, whether existing, newly added

or newly within scope based on a change in the largest generating unit in the BA or, if a member of a Reserve Sharing Group, the largest generating unit within the Reserve Sharing Group according to the timeframes in the maintenance tables. Therefore, 3.1, 4.1 and their subparts have been removed, and have not been reinserted into the implementation plan.

## Requirement R6

After considering industry comments which included various alternatives and much discussion within the SDT, Requirement R6 and all associated references to Requirement R6 were removed from the standard.

Associated with this change the following response was provided to several commenters: The Automatic Reclosing equipment "owner" is responsible for identifying Automatic Reclosing Components that must be included in their PSMP. The SDT eliminated Requirement R6; therefore, the owner is responsible for obtaining the largest generating unit information.

## Data Retention

It is noted that the majority of respondents agreed with the changes to the data retention for Requirements R1 – R5.

A few commenters had concerns regarding the data retention for Requirement R6 but with the elimination of Requirement R6, these concerns were rendered moot.

Two commenters requested clarification for cases where the maintenance intervals are longer than the audit period. The SDT added language to account for those cases where the maintenance intervals are longer than the audit period as well as where the maintenance intervals are shorter than the audit period.

## Violation Risk Factors (VRFs)

No comments were received regarding VRFs.

## Violation Severity Levels (VSLs)

One commenter pointed out typographical errors. The SDT thanks the commenter and notes that the typographical error has been corrected.

## Implementation Plan

One commenter requested a change in Section 9 of the Implementation Plan. The SDT response is that the commenter was apparently referencing the redlined version of the Implementation Plan since the clean version reflected the suggested change.

## Misc. additional items:

A commenter questioned why newly identified Sudden Pressure Relaying is not included in the Parts and sub-Parts of Requirement R3. The response is that Sudden Pressure Relaying that are brought into scope with this revision to the standard are treated the same as the initially-identified Automatic Reclosing Relays per PRC-005-3.

Several commenters noted that the rationale for Requirement R6 references Section 4.2.7, Applicability. The Applicability section does not contain a Section 4.2.7 and we believe the reference should instead be Section 4.2.6. Covered by the Summary. The response noted that with the removal of Requirement R6 the noted references were no longer applicable. Additionally, the references to 4.2.7 in Footnote #1 were corrected.

Several commenters recommended that a 1500 MW threshold would be an alternative to the ‘largest unit in the Balancing Authority Area’. The SDT notes that they used the criteria recommended by the SPCS and SAMS groups in the [technical report](#).

Several commenters asked for clarification to be added in cases where Sudden Pressure Relaying and Protection System control circuitries share components. The SDT added a note to the header of Table 5 to clarify that in such cases, the shared components need only be tested once in any distinct maintenance interval. Additionally, the Title in Table 1-5 was modified to exclude Automatic Reclosing and Sudden Pressure Relaying.

One commenter questioned whether the term gross capacity refers to nameplate capacity or something else. The SDT directs the commenter to Section 2.4.1 in the Supplementary Reference and FAQ document for the answer.

One commenter questioned whether the term unit refers to an individual generating unit or overall plant. The SDT response is that the term "unit" as used in the comment refers to a single generating unit and directed the commenter to Section 2.4.1 in the Supplementary Reference and FAQ document.

Automatic Reclosing relays that are initially applicable with the approval of PRC-005-3 would be included in the staggered Implementation plan. However, those that are identified as applicable because of the change in the largest generating unit in the Balancing Authority Area or Reserve Sharing Group. The SDT contends that the three calendar years is appropriate because of the limited quantity of applicable Automatic Reclosing Relays.

One commenter requested clarification from the drafting team on the responsibilities of an entity in the event that the entity decides to block or remove a Sudden Pressure Relay device from service after the standard has taken effect. The SDT notes that PRC-005-X is applicable to Protection System, Automatic Reclosing, and Sudden Pressure Relaying components that are in-service; however, the SDT suggests that entities maintain records for components removed from service during the audit period.

One commenter questioned the basis for the 10 circuit-mile parameter included in the previous version of the standard for Automatic Reclosing. This question is out of scope for this revision of the standard. However, please see the Supplementary Reference and FAQ document Section 2.4.1 for a discussion on the 10 circuit-mile issue.

One commenter requested the rationale for adding Sudden Pressure Relaying be memorialized in the standard itself and not just in the change history so future drafting teams understand the circumstances leading to the addition. The drafting team disagreed and made no change to the standard.

Several commenters suggested Section 4.2.1 should only apply to Sudden Pressure Relaying devices required to initiate fault clearing action. The SDT contends that the intent of the comment is reflected in the definition of Sudden Pressure Relaying: “A system that trips an interrupting device(s) to isolate the equipment it is monitoring...”

One commenter suggested including Sudden Pressure Relaying in the Applicability 4.2.4 which currently reads: “Protection Systems installed as a Special Protection System (SPS) for BES reliability” because they contend SPR could be part of an SPS. Based on its knowledge and experience, the SDT could not identify any instances where Sudden Pressure Relaying would be used as part of an SPS, and therefore declined to make the change. In cases where the input logic to an SPS involves the loss of a BES transformer, whether tripped by the Sudden Pressure Relaying or other protective devices, the components involved are covered by PRC-005.

One commenter suggested reordering the maintenance activities listed in Table 1-1. The SDT’s response is that the activities in the tables are not intended to indicate any specific order for performance of individual maintenance tasks and declined to make a change to the table.

One commenter pointed out a disparity between Measure M1 and Table 5 regarding monitored control circuitry of Sudden Pressure Relaying. The SDT modified Table 5 to include component attributes and a maintenance activity for monitored Sudden Pressure Relaying control circuitry.

## Attachment A – SDT Members

Table 7: Standard Drafting Team Members		
	Participant	Entity
Chair	Charles W. Rogers	Consumers Energy
Member	John Anderson	Xcel Energy, Inc.
Member	Forrest D. Brock	Western Farmers Electric Cooperative
Member	Aaron Feathers	Pacific Gas and Electric Company
Member	Samuel Francis	Oncor Electric Delivery
Member	Ervin David Harper	NRG Texas Maintenance Services
Member	James M. Kinney	FirstEnergy Corporation
Member	Mark Lukas	Commonwealth Edison Co.
Member	Kristina Marriott	ENOSERV
Member	John E. Schechter	American Electric Power
Member	William D. Shultz	Southern Company Generation
Member	Eric Udren	Quanta Technology, LLC
Member	Scott Vaughan	California ISO
Member	Mathew J. Westrich	American Transmission Co.
Member	Philip B. Winston	Southern Company Transmission
NERC Staff	Jordan Mallory (Standards Developer Specialist)	NERC
NERC Staff	Al McMeekin (Standards Developer)	NERC
NERC Staff	Phil Tatro (Technical Advisor)	NERC