

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

PRC-004-3 Status

Protection System Misoperation Standard Drafting Team

February 20, 2014

RELIABILITY | ACCOUNTABILITY



- Industry
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- NERC
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- Administrative Items
 - Antitrust & Disclaimer
 - Project Background
- Standard – PRC-004-3
 - NERC Glossary Definitions
 - Applicability & Requirements
 - Application Guidelines
- Implementation Plan
- Response to Industry Concerns
- Section 1600 – Data Request
- Closing Remarks
 - Questions & Answers Session



Administrative Items

- NERC Antitrust Guidelines

- It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

- Disclaimer
 - Participants are reminded that this meeting is public. Notice of the meeting was widely distributed. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

- Webinar is intended to provide a general industry update
- Informal Question and Answer (Q&A) at the end
 - Q&A session is intended to improve overall understanding
 - Submit questions and comments via the chat feature
 - Some questions may require future team consideration
 - Please reference slide number, standard section, etc.
 - Presenters will attempt to address each question
 - Webinar and chat comments are not a part of the official project record
- Presentation Material
 - Wording in this presentation is used for presentation purposes and may not reflect the official posted draft of the standard

- FERC Order No. 693 (dated March 16, 2007)
 - PRC-003-1
 - Identified as a “fill-in-the-blank” standard
 - Commission did not approve or remand
 - As unenforceable, would not support PRC-004-2
 - Procedures are not standardized among the regions
 - Lack of consistent metrics for measuring Protection System performance
- Project 2010-05.1 Protection System (Misoperation)
 - Addresses only Protection Systems
 - Does not apply to:
 - SPS – Special Protection Systems (See Project 2010-05.2)
 - RAS – Remedial Action Schemes (See Project 2010-05.2)
 - UVLS – Undervoltage load shedding (See Project 2008-02)

- BES – Bulk Electric System
- CAP – Corrective Action Plan
- CEA – Compliance Enforcement Authority
- ERCOT – Electric Reliability Council of Texas
- GO – Generator Owner
- TO – Transmission Owner
- SDT – Standard Drafting Team
- TPL – Transmission Planning (standards)
- WECC – Western Electricity Coordinating Council

- Today's important takeaways
 - New and revised definitions
 - Applicability
 - What's in and what's out
 - Structure of the standard
 - One reliability activity per Requirement
 - Application Guidelines
 - Clarifications
 - Special Cases
 - Examples
 - Implementation
 - WECC extension



Standard – PRC-004-3

- **Misoperation (Revised)**

Def: The failure of a Composite Protection System to operate as intended.

Any of the following is a Misoperation:

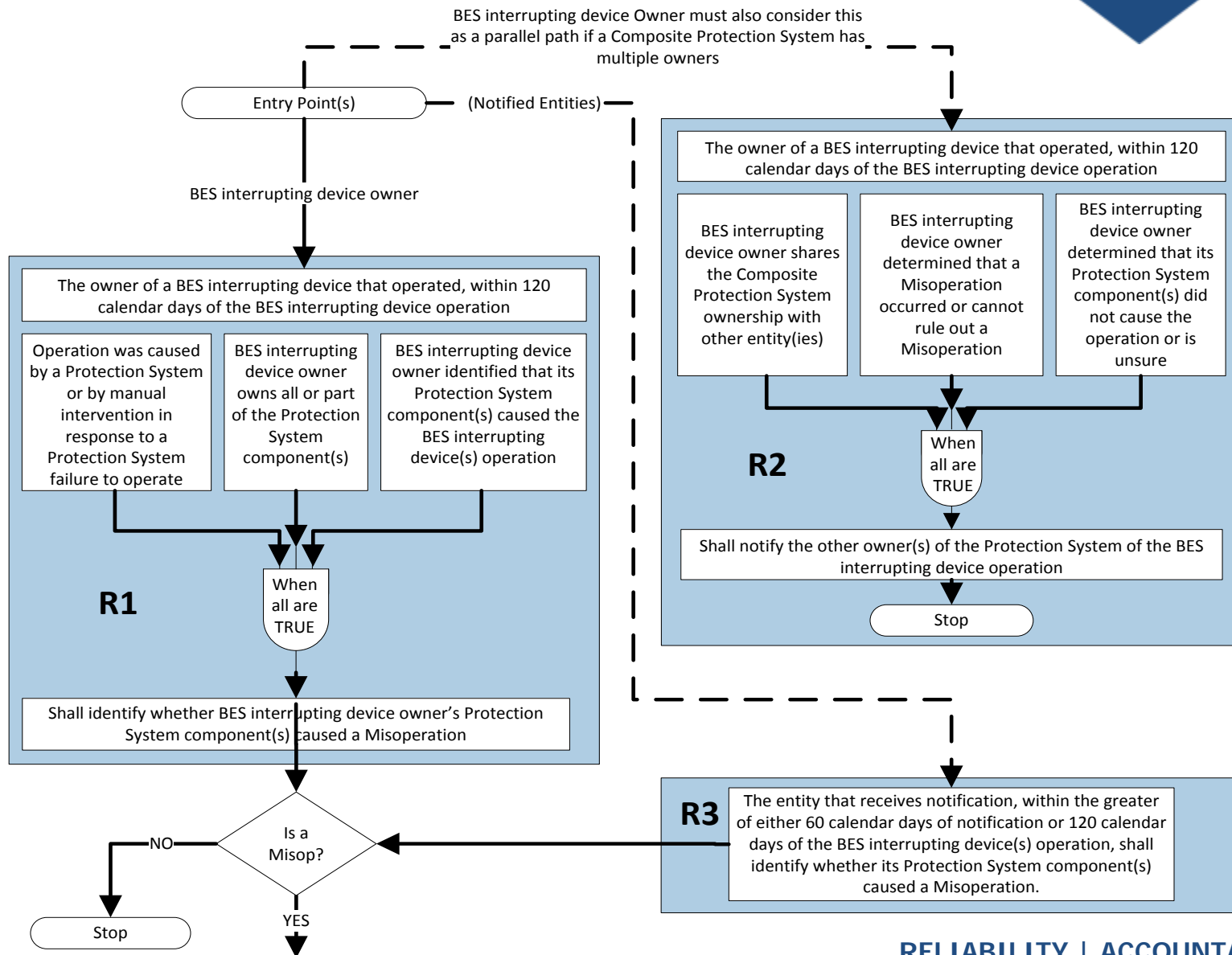
- 1) Failure to Trip – During Fault ...
 - 2) Failure to Trip – Other Than Fault ...
 - 3) Slow Trip – During Fault ...
 - 4) Slow Trip – Other Than Fault ...
 - 5) Unnecessary Trip – During Fault ...
 - 6) Unnecessary Trip – Other Than Fault ...
- Explicit use of “zone” and “TPL standards” removed
 - Intent remains within Misoperation definition
 - If intended performance is achieved – not a Misoperation

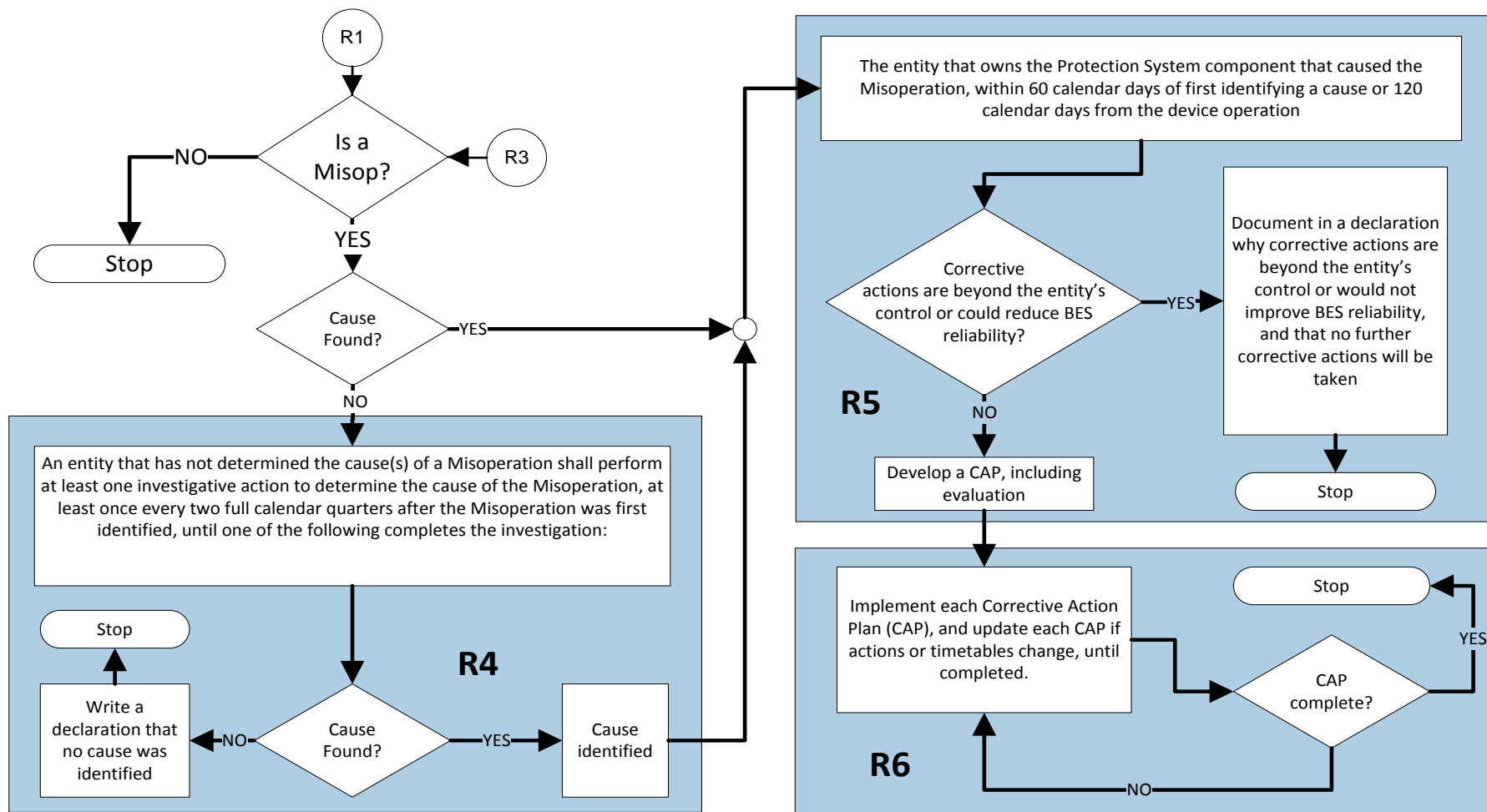
- Composite Protection System (New-Proposed)
 - Def: The total complement of the Protection System(s) that function collectively to protect an Element, such as any primary, secondary, local backup, and communication-assisted relay systems. Backup protection provided by a remote Protection System is excluded.
 - Introduced this concept in the last posting
 - Addresses overall performance of the Protection System
 - Supported by NERC SPCS Assessment of Standards: (PRC-003, 004, & 016)¹
 - Formally defining based on stakeholder comments

¹<http://www.nerc.com/comm/PC/System%20Protection%20and%20Control%20Subcommittee%20SPCS%20DL/PRC-003-004-016%20Report.pdf>

- Functional Entities
 - Transmission Owner
 - Generator Owner
 - Distribution Provider
- Facilities
 - Protection Systems for BES Elements. Non-protective functions that are embedded within a Protection System are excluded. Protective functions intended to operate as a control function during switching are excluded.
 - Underfrequency load shedding (UFLS) that is intended to trip one or more BES Elements.
- SPS, RAS, and UVLS are not applicable; therefore, not listed

- R1 – BES interrupting device owner initiates review
 - All three criteria (1.1-1.3) must be met to be a reviewable operation
 - Includes manual intervention in response to protection failure
 - Provides 120 calendar days to review operations
- R2 – BES interrupting device owner make notification(s)
 - All three criteria (2.1-2.3) must be met to require notifying others
 - Avoid burdening others (e.g., unnecessary notifications)
- R3 – Notified entity reviews for Misoperation
- R4 – If no cause found in R1 or R3, take investigative action
 - At least one action every two full calendar quarters
- R5 – For an identified cause, develop a CAP (or declaration)
- R6 – Implement the CAP





- Single reliability goal in each requirement
 - Previous draft had multiple activities of varying risk
 - Simplifies the Violation Severity Levels
- Provides a clear starting point
- Clarifies BES interrupting device operations that are in scope
- Allows sufficient time to identify Misoperations
- Provides responsibility to notify others
- Entities may continue investigation for Misoperation cause(s)
 - (removed “Action Plan” from previous draft)
- CAP not required when reliability would not be improved
- Measures streamlined for clarity

- Provides additional context
 - BES interrupting device
 - The six categories of Misoperation
 - Examples
- Special Cases (when not a Misoperation)
- Non-protective functions
- Control functions
- Extenuating Circumstances
- Requirements
 - Examples (prefixed with an “R”)
 - R5/R6 examples aligned to show CAP development and implementation
- Flowchart



Implementation Plan

- Implementation according to Interconnection
 - Standard and definitions become effective together
 - Misoperation reporting starts upon applicable effective date
 - Time periods provides entities sufficient time
 - To update review processes
 - To adjust for new/revised definitions
- In the Eastern and ERCOT Interconnections
 - 12 calendar months after applicable adoption/approvals
- In the Western Interconnection
 - 24 calendar months after applicable adoption/approvals
 - Allows time for WECC to modify PRC-004-WECC-1
 - Remove potential compliance overlap
 - Make consistent with continent-wide proposed standard (PRC-004-3)



Response to Industry Concerns

- GOs concerned routine operations are subject to standard
 - Use of the reverse power relay as a control function is not subject to the standard (See Applicability 4.2.1 and Application Guidelines)
- Minimum time for the “notified entity” to review operations
 - Later of 60 days from notification or 120 days from the operation
- Clarified the use of “control” and “non-protective” functions
- Confusion between the “CAP” and “action plan”
 - Concept of an “action plan” was replaced by “shall perform investigative action(s)”

- BES interrupting device initiates the review for Misoperation
 - Device contains the trip coil (a component of the Protection System)
 - Device owners are in the best position to be aware of operations
- Extenuating circumstances (e.g. natural disasters)
 - Difficult to provide specific criteria in standard
 - Cases should be rare
 - Entity can explain unique case to CEA
- GO's relay that operates a TO's BES interrupting device
 - TO communicates with GO to determine applicability to standard
 - If applicable, TO initiates review for Misoperation (R1)
- Disturbance Monitoring Equipment (DME)
 - DME is not required by the standard, but is beneficial in identifying Misoperations



Section 1600 – Data Request

- Reporting of Misoperations has been removed from PRC-004-3
- NERC Rules of Procedure, Section 1600
 - Will allow Misoperations to be reported outside of the standard
 - NERC is reviewing industry comments on the data request
 - Will present data request to the Board of Trustees concurrent with PRC-004-3



Closing Remarks

- The SDT meets March 18-21, 2014 in Atlanta (NERC HQ)
 - See www.nerc.com Standards calendar for details
- If accepted by industry and does not required substantive changes
 - Final ballot in April
 - Present to NERC Board of Trustees in May
- If substantive changes are required based on stakeholder input
 - Possibly hold a technical conference in April
 - Hold an additional comment and ballot in late April or early May
 - Final ballot July
 - Present to NERC Board of Trustees in August

- Effective feedback:
 - Specific to question, brevity is best
 - Provide suggestions or alternative approaches
 - Indicating agreement with others is preferred over copying the comments (e.g., “ABC agrees with XYZ’s comments...” or “ABC agrees with XYZ’s comments except for...”)
 - Provide proposed change and rationale
- Less effective feedback:
 - Repeating same comment multiple times
 - No reference to where suggested change should occur
 - Non-specific concerns (e.g., “This change is not needed.”)

- Please submit your questions via the chat window
 - This session is intended to help general understanding
 - Please reference slide number, standard section, etc.
 - Presenters will respond to as many questions as possible
 - Some questions may have to be deferred to the team
- Comments for the official record
 - Comments must be submitted via the project page during the open comment period (**ends Monday, March 3, 2013 at 8:00 p.m. ET**)
 - Webinar and chat comments are not a part of the official project record

- NERC Standard Developer, Scott Barfield-McGinnis
 - Email at scott.barfield@nerc.net
 - Telephone: 404-446-9689
 - To receive project announcements and updates
 - Request to be added to PSMSDT_Plus
- Timeline
 - PRC-004-3 ballot begins February 21, 2014 (tomorrow)
 - 45-day comment/ballot period – **ends March 3 – 8:00 p.m. Eastern**
- RSAW Development
 - Comment period ends Wednesday, March 19 at 8:00 p.m. Eastern
- Webinar slides and recording will be posted to project page
 - See “Standards Bulletin” for link (should be next Monday)