

Southwest Power Pool
SYSTEM PROTECTION AND CONTROL WORKING GROUP
MEETING

April 25 & 26, 2018
AEP Offices, Renaissance Building
Dallas, TX

• M I N U T E S •

Agenda Item 1: Administrative Items

Call to Order and Introductions

Vice Chair, Steve Wadas, called the meeting to order at 1pm and welcomed everyone. There were 22 participants, 10 in person and 12 via webex. (Attendance List Attached).

Proxies

Michael Fleck proxy for Tom Miller (ITC)

Approve minutes of previous meetings

The minutes for the January, 2018 meeting were reviewed. Rick Gurley motioned to approve the minutes and Jeff Beasley seconded the motion. The group unanimously approved the motion.

Approve agenda

The agenda for the meeting was reviewed. Various revisions were made as per member input. (Final Agenda Attached)

Agenda Item 2: Antitrust Statement

SPP strictly prohibits use of participation in SPP activities as a forum for engaging in practices or communications that violate the antitrust laws. Please avoid discussion of topics or behavior that would result in anti-competitive behavior, including but not limited to, agreements between or among competitors regarding prices, bid and offer practices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that might unreasonably restrain competition

Agenda Item 3: Review of Past Action Items

Doug Bowman reviewed the past action items through item #97. A few of the open items were marked as complete and the remaining ones were on the agenda to be discussed.

Agenda Item 4: RE Status Update

Thomas noted the RE's plan is to complete the transition by July 1. Data is being transferred to MRO at this time. Thomas will be employed by MRO. The SPCWG will need to contact MRO to get misoperations information going forward. Doug will be the SPP contact. SPCWG will need to be plugged into the MRO group meetings. Mike Bocovich is the Secretary of the MRO group. Steve Wadas read the meeting minutes from their last meeting. Doug, Louis, and Steve were given action items (see attached) to get with MRO and SERC to help gain understanding into what will happen with misoperations.

Agenda Item 5: Status Update Lebrock Tripping Scheme

On April 4, Rick attended the ORWG meeting for the purpose of understanding why the two groups came to different conclusions on the tripping scheme and to hopefully gain resolution. The results were the ORWG still maintains it should be a RAS because even though it trips generator breakers, they are part of the BES. Their opinion is that since it trips 3 generators, exception e of the definition does not apply. Neither the working groups nor SPP staff will be willing to make a recommendation to AEP, believing AEP should make the determination. AEP is discussing in-house to decide if it will be considered a RAS.

Agenda Item 6: Basin RAS Drawings Review

Lucas Kirkpatrick, provided the DC schematic for the Basin Rapid City RAS. The drawings show two separate DC power supplies. The drawings accurately reflect the redundancy the SPCWG requested. The associated action item is considered complete. Jeff Beasley motioned to amend the original RAS approval to include language that the approval contingency has been resolved and the RAS is fully approved. Forrest Brock seconded the motion and the motion was fully approved.

Agenda Item 7: NERC SPC Update

Forrest Brock provided information on discussions at the most recent SPCS meeting (see attachment).

Agenda Item 8: Disturbance Monitoring Standard PRC 002-2, R3 Discussion

Ken Zellefrow said we need to provide capability of installing FR at three locations on the system. It appears the standard requires more data than just the data at the fault. Discussion centered on the sentence, "FR data must be determinable from each terminal of a BES Element connected to the applicable BES buses". A picture (example) may clear up the confusion, however it is noted that the guideline is not enforceable. R3 is what's enforceable. Jonathan Hayes noted that it is possible to ask for NERC interpretation. Many companies will use their digital relays to meet this requirement. The group did not agree that data is required at each terminal connected to the applicable bus. More consideration and discussion is required to resolve the issue. Michael Fleck will contact Jack Soehren, ITC Holdings PRC-002-2 drafting team member, concerning interpretation of Requirement 3.

Agenda Item 9: Criteria Section 8 Review

Forrest Brock reviewed the recent work done to clean up this criteria. He discussed the revisions, deletions, additions, etc. that he, Ken Z., and Doug B discussed. Additional work is needed as action items were given in a number of the criteria sections. Jonathan H will be working with this smaller group. The group that is working on this will get together in about 6 weeks to make the final changes and an RR will be presented to the group in the next meeting.

Agenda Item 10: Misoperations

- a) Misoperations Report: Thomas Teafatiller reviewed the member misoperations for Q4 2017.
- b) Misoperations Flowchart Tool – The group reviewed the tool and determined the only issue was to add the “Composite Protection System for a” into the upper right hand green block on page 1 of the tool. Also need to add “trip” before operation. Steve Wadas will update the chart and send to Louis. Much discussion occurred around the page 1 block “Investigate to determine correct operation or Misoperation”.
- c) EPRI research into their Categorization Tool: Tool will make life easier to categorize misoperations. Take the flowchart to develop a tool and bring it back to us. Macro-enabled excel workbook. Each page in the flowchart tool would be a separate worksheet. The group thought it would be a useful tool. The Midas revisions wouldn't be a problem since the tool would be updated accordingly. It should be available to all of our SPCWG members. Two months to build a first pass and report back to the group at our next meeting. Louis will provide Adrian the final update on the flowchart so he can get started.
- d) 2018 Summit: No information available. Doug will touch base with Louis about dates, times, etc for the 2018 Misoperations Summit

Agenda Item 11: Discussion of Future Meetings (Proposed Meeting Dates)

- Future Meeting Dates and locations
 - July 25, 26 Denver, CO, Downtown Xcel Office
 - October 24,25 Dallas, TX, Downtown AEP Office

Agenda Item 12: Closing Administrative Duties

The action item list was updated to reflect eleven (11) new action items and these were summarized by Doug Bowman (Action Items Attached). Steve asked for possible topics for next meeting and a number of them were provided (see attached final agenda) Steve asked for additional discussions and none occurred. The meeting was adjourned.

Respectfully Submitted,

**Douglas Bowman
SPCWG Staff Secretary**

Attendance:

First Name	Last Name	Attending Through	Company	Title	
P	Adrian	Kelly	Web/Phone Conference	EPR	Mr
A	Allen	Halling	Web/Phone Conference	Kansas City Power and Light	System Protection Engineer
P	David	Oswald	Web/Phone Conference	Empire District Electric Company	Sr. Protection Engineer
P	David	Wheeler	In person	Xcel Energy	System Protection Engineering Supervisor
P	Douglas	Bowman	In person	Southwest Power Pool	Lead Engineer, Research, Development, and Manager
P	Evan	Estes	In person	Quanta Technology	Manager, Transmission & Distribution Services
P	Forrest	Brock	In person	Western Farmers Electric Coop	
P	Gary	Condict	Web/Phone Conference	Sunflower Electric Power Corp	Senior Engineer
P	Jeff	Beasley	In person	Grand River Dam Authority	Relay Engineer
P	Jeff	McDiarmid	Web/Phone Conference	SPP	Senior Compliance Specialist
P	John	Anderson	In person	Westar Energy	Manager, Substation Protection and Control
P	Jonathan	Hayes	In person	Southwest Power Pool	Senior Compliance Engineer
P	Ken	Zellefrow	Web/Phone Conference	City Utilities Springfield Missouri	Supervisor-Substation Engineering
P	Kevin	Goolsby	Web/Phone Conference	GDS Associates	Senior Project Manager
P	Louis	Guidry	In person	Cleco	Manager NERC Compliance and Training
P	Mathew	Thykkuttathil	In person	Sunflower Electric Power Corporation	Senior Transmission Engineer
P	Michael	Fleck	Web/Phone Conference	ITC Holdings	Sup
P	Neil	Robertson	Web/Phone Conference	Southwest Power Pool	Senior Operations Engineer
P	Rick	Gurley	In person	American Electric Power	Manager, Protection & Control Engineering Member
P	Shawn	Jacobs	In person	Oklahoma Gas and Electric Co	Lead Compliance Analyst
P	Sing	Tay	In person	Oklahoma Gas & Electric	Engineering Supervisor - System Protection
P	Stephen	Wadas	In person	NPPD	
P	Thomas	Teatallier	Web	SPP RE	
P	Bob	Soper	Web	WAPA	
P	Chris	Angland	Web	OPPD	
P	Lucas	Kirpatrick	Web	Corp of Engineers	
P-present					
A-absent					

P → **P**
FOR
Tom
Miller

Southwest Power Pool, Inc.
 SYSTEM PROTECTION AND CONTROL WORKING GROUP
 April 25-26, 2018
 AEP Office, Downtown, Dallas, TX

• A G E N D A •

1. Administrative Items Steve Viadas
 - a. Call to Order
 - b. Prayers
 - c. Approve minutes of January 24-25, 2017 meeting;
 - d. Approve agenda
2. Approval of Minutes
3. Review of Action Items O'Connell
4. Status Update SPPRE Mwe, Thomas Teafiler
5. Status Update Tripping Scheme: Uckley
6. SAMRAS Operations Kripard COE, All
7. NERC SIC Update. Fonest Brock
8. Distribution Reliability Standard R3 Discussion Ken Zefrow
9. Criteria Section 8 Revisions Ketil Ziefrow, Forren Brock
10. Information
 - a. MG Operations Report for Q4 2017 Thomas Teafiler
 - b. Flow Chat Tool Review
 - c. EPRI Research to categorization tool
 - d. 2018 Summit
11. WECC Meeting Announcement Steve Viadas
12. Fast Forward Status and Reliability Clearing time: > O'Connell
13. Division of future meetings (Scheduled Meeting Dates) Steve Viadas
 - a. 2018 Dates and Locations
 - i. July 25 & 26, 2018 in CO, TX
 - ii. October 24 & 25, 2018 in Dallas, TX, TSO
14. Closing Administrative Issues Steve Viadas
 - a. Summarize Action Items
 - b. Open Issues
 - i. PRC0122 Implementation

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- i. SPC\VG\ar::rRev
 - ii. Draft AA for Criteria Section 8
 - iv. AA for Generation Criteria Section 8 v. 2018 JCI Summit
 - vi. EPRI A'9 Classification Tool
 - vii. Update on PRC 002 2 pg 31 essay
 - viii. Update for UFLS el. AA potential changes
 - ix. Data Transition (URC call)
- c. AdP, mrr, eellfg

Working Group Action Items				
Action Item	Date Originated	Action Item	Comments	Status (Not Started, In Progress, Closed, Pending)
72.	11/05/15	DB to forward missing Basin RAS info to the group when received. Group to vote via email on its sufficiency. Submit for full approval for 1/12 MOPC.	DB has requested the drawings on a number of occasions. COE has done the work but the drawings haven't arrived. DB to escalate at app.	complete
94	01/24/18	LG, S'W, and FB will reach out to SERC and MRO to get their misoperation review processes.	Steve contacted MRO. Email sent to Louis from MRO.	ongoing
95	01/24/18	Forrest, Ken and Doug will put together language for an RR for DB to initiate a revision to criteria 8.4.	Draft RR will be printed at the April SPC'WG	ongoing
96	01/24/18	Forrest, Ken, Doug to initiate an RR to remove criteria as per SPC'WG recommendation.	Draft RR will be printed at the April SPC'WG	ongoing
97	01/24/18	DB to determine method by which PRC-027 comments are submitted (deadline 1/23)	DB to discuss with Shannon or Charles	complete
98	04/26/18	DB to notify OR'WG and T'WG that the Basin RAS is fully approved		
99	04/26/18	DB, LG, S'W, and TT to set up a call with MRO to initiate discussions concerning delivery of misoperations data		
100	04/26/18	DB, LG, and S'W to set up a call with SERC to initiate discussions concerning delivery of misoperations data		
101	04/26/18	S'W will contact Louis to get comments on the misoperations flowchart per the questions that have arisen. As clarifications are needed on page 1.		
102	04/26/18	LG to provide Adrian Kelly (EPRI) with a final version of the misoperations flowchart to start building the tool		
103	04/26/18	Adrian Kelly (EPRI) to present a draft version of the misoperations tool to the group at the next SPC'WG meeting in Denver.		
103	04/26/18	DB to touch base with LG about dates, times, etc for the 2018 Misoperations Summit		
104	04/26/18	Michael Fleck to contact Jack Soehren, ITC Holdings PRC-002-2 drafting team member, concerning interpretation of Requirement 3		
105	04/26/18	JH to get with Operations to see if 8.2 of the red-lined version of Criteria is covered by the EOP and BAL standard		
106	04/26/18	JB to review the criteria section on 8.5 and 8.6 and make recommendations at the next meeting		
107	04/26/18	FB to touch base with the M'WG and get feedback on section 8.7 of the Criteria.		

Attachment

Agenda Item 7: NERC SPC UPDATE

System Protection and Control Subcommittee

April 24, 2017 | 12:00 p.m.–5:00 p.m. Central

April 25, 2017 | 8:00 a.m.–12:00 p.m. Central

Oncor Electric

115 W 7th St

Fort Worth, TX 76102

Click: [Join WebEx meeting](#)

Meeting number (access code): 734 097 984

Join by phone: +1-415-655-0002 US Toll or +1416-915-8942 Canada Toll

Assembly and Setup

- Setup of seating, computers, conference call, and WebEx session
- Coffee, meet and greet

Administrative

1. **Introductions and Chair's Remarks** – Mark Gutzmann
2. **Host Arrangements and Safety** – Sam Francis
3. **NERC Antitrust Compliance Guidelines and Public Announcement** – Jack Norris
4. **Approve Agenda**– Mark Gutzmann

Agenda Items

5. **Document Review** – All
 - a. Previous Meeting Minutes
 - b. **Steven Hataway (FPL) requested an agenda item be added to discuss a unique operation they experienced on their system.**
 - i. **Zone 1 ground distance misops – set quad for line less than 25 miles. Had some issues with pole scatter, so added 10 ms delay. Asking for experiences/advice from SPCS. Most members do not employ quad schemes – use mho instead.**
 - c. **SPCS Roster – Each member – discussion of each addition below, including brief bios of each. 1st four were approved. John Babu was not able to participate, so his addition will be addressed at a later date. See note for Louis Guidry.**
 - i. Discuss addition of Brian Kasmarzik for SERC alternate
 - ii. Discuss addition of Steven Hataway for FRCC alternate
 - iii. Discuss addition of Glenn Hargrave for Texas RE representative
 - iv. Discuss addition of Armin Klusman for Texas RE alternate
 - v. Discuss addition of John Babu for NPCC alternate
 - vi. Discuss position of Louis Guidry following SPP dissolution – **Louis will retain his position – Title yet to be determined.**
6. **MIDAS Documentation Group** – Jack Norris/All
 - a. Provide information on the purpose of the group

- i. Jack awaiting further direction from PC – including his role with this team. Will send out more information when he gets it. Team will likely become a MIDAS subcommittee.
 - ii. Purpose is to draft a MIDAS Data Reporting Instruction (DRI)
 - iii. Discussed various regions' work on this issue to-date.
 - b. Solicit volunteers
 - i. SPCS volunteers include
 - 1. Bill Middaugh
 - 2. Steven Hataway
 - 3. Phil Winston
 - 4. Forrest
 - 5. Louis
 - 6. Probably missed one or two...

7. PRC-019 Implementation Guidance Document – Jason Espinosa

- a. Talked about possibly including discussion of:
 - i. Steady-state stability limit for a synchronous generator
 - ii. Black-start generator
 - iii. Wind turbines

8. Update on PRC-024 Guidance Document – Rich Bauer

- a. Document revised to address a couple issues brought up at PC meeting in January
- b. PC approved by email vote in Feb
- c. Document submitted to ERO for consideration as implementation guidance.
 - i. ERO will follow its process to determine whether the document should be accepted, but Rich is getting feedback that it is not being very well accepted. Concern is steady state condition is being applied to a dynamic situation. SDT response was that the standard does not preclude using either simulation method. Still trying to gain consensus.
 - ii. Rich's opinion is that since this is a voltage protective relay setting standard, steady-state analysis is more appropriate. Dynamic, in Rich's opinion, would be much more burdensome.
 - iii. Debate ongoing (at NERC) whether standard applies to inverters. **Compliance group may likely interpret an inverter as a protective relay.** Momentary cessation would be determined a trip via "protective relay/protective function".
 - 1. Issue started due to event in WECC. Voltage drop below setpoint causes several large, solar inverters to go into "momentary cessation". Group studied event, offered two SARs as options (both currently tabled).
 - a. Create new standard specific to inverters
 - b. Modify PRC-024 to include inverters
 - 2. Solar inverter manufacturers are looking for you to tell them how you want the inverter to act – then they build it.

Generally, follow 1547. Recently set to match curve in PRC-024 – don't have to employ momentary cessation.

3. Phil Winston & Jonathan Sykes recommended the SPCS add an agenda item to review the two SARs submitted by the Task Force and potentially submit a SAR sponsored by the SPCS.

9. Delayed Current Zero Crossing Lessons Learned – Jack Norris/Rich Bauer

- a. Theory, not actual event - Long 345 kV line, two reactors on, close breaker, have full DC-offset issue for up to 8 seconds with no zero-crossing, so breaker doesn't operate.
 - i. Propose this could be addressed via Lessons Learned document. Does SPCS agree an LL would be appropriate & does any of the membership have any similar experiences to share? MRO rep relayed an entity had a similar experience but hasn't received further information.
 - ii. Rich shared a paper that was written on this – one conclusion was to equip breakers that would energize the line with “pre-insertion resistors”.
 - iii. Determination by SPCS not to compose a LL, but let the issue follow process – entity that experienced submits to NERC EA...

10. PC Proposed Risk Work Plan Items

- a. Discuss appropriateness of items proposed for SPCS
 - i. Misoperations review? - Rich Bauer mentioned NERC sees commissioning as an area of improvement to focus on.
 - ii. SPCS assigned 5 items from Risk report – Rich Bauer & Jack Norris will craft language to answer each, which will be distributed to the group for review before providing a response to the PC.
 1. This item (row 2), in part, falls into the inverter issue already discussed. Other IEEE/NERC work being done regarding relay settings/schemes associated with the changing resource mix. NERC Inverter Based Resource Performance Task Force (IBRPTF) is working on a paper to address inverter settings/performance to improve inverter reliability.
 2. This item regards a recognition that new relays have shorter life spans than electromechanicals and need to implement replacement programs to do not impact BPS reliability. After much discussion, SPCS questioned whether there was not already awareness in the industry and that entities already have programs in place to address/upgrade protective relays, regardless of type, in their systems. If NERC determines a white paper is a prudent and necessary approach, SPCS believes it would require specific focus of the group. Basically, SPCS does not agree it is a high-risk issue.

3. This item regards the need to work with industry experts and forums to promote the development of industry guidelines on protection and control system management to improve performance. SPCS believes current membership is involved with forums and other technical groups that are addressing the issue at both regional and national levels. Also, PRC family of standards is driving some management practices, simply for entities to achieve and maintain compliance.
4. This item regards determination of whether enhancements are required to the current family of PRC standards or related NERC guidance materials. SPCS remains active in this regard, as identified by the ERO Enterprise. The group had a discussion of the potential need for guidance related to implementing 61850 and how that fits into PRC-005 (control circuitry vs communications system).
5. This item regards human performance. Entities represented by the SPCS membership recognize the issues and are actively working to solve them. Some of these issues are further complicated by the need to use contract services for engineering/commissioning. Also discussed turnover of experienced engineers and time/issues involved in getting new P&C engineers up to speed.

b. Discuss unassigned items that fall within SPCS subject matter expertise

11. Feedback on Proposed Protection Generator Model

- a. SPCS members discussed feedback provided by various members of the group. Jack will compile and send back out to group for final review.

12. (Proposed by Phil Winston) Re-visit status of SPCS archived document “cleanup effort” – if time allows. Jack will send something out after the meeting regarding this.

13. Review of Actions/Assignments – Jack Norris

14. Plan Future Meetings

- a. Late July/early August – Atlanta, San Francisco, or Minneapolis

15. Short Discussion of Misoperation Examples

- a. Seeking group’s input on improving diagrams for clarity.

16. Adjourn