



Minutes of the Protective Relay Subgroup Meeting

Webex

May 3, 2022, 8:02 a.m. to 11:12 a.m. Central

*Notice for this meeting was electronically posted to the MRO website on April 5, 2022.
A final agenda, including advanced reading materials, was also posted on April 26, 2022.*

1. Call to Order and Determination of Quorum

Protective Relay Subgroup (PRS) Chair Greg Sessler called the meeting to order at 8:02 a.m. Sessler welcomed everyone and brief introductions were made by those on the call. Rebecca Schneider, Reliability Analysis Administrator, advised the chair that a quorum of the PRS was present. A complete list of attendees is included as [Exhibit A](#).

2. Standards of Conduct and Antitrust Guidelines

Pursuant to Policy and Procedure 4, Senior Systems Protection Engineer, Jake Bernhagen highlighted MRO's Standards of Conduct, Conflict of Interest, and Antitrust Guidelines

3. Consent Agenda

The PRS reviewed the consent agenda, which included draft minutes from the February 22, 2022 open and closed meetings.

Upon a motion duly made and seconded, the Protective Relay Subgroup approved the consent agenda, which included minutes from the February 22, 2022 PRS meeting as written.

4. Chair's Report

Chair Sessler highlighted the desire for technical presentations at upcoming PRS meetings and encouraged subgroup members to contribute newsletter articles for Midwest Reliability Matters. He also noted that the upcoming PRS meeting in mid-August will be hybrid (in-person and virtual).

5. PRS Business

Updates.

Bernhagen invited members to reach out to MRO if they have an interesting topic to share with the region as a possible newsletter article.

PRS Charter Review.

The PRS reviewed the 2022 charter and no changes were recommended.

PRS Number of Members Discussion.

As a follow-up to a previous PRS discussion, Bernhagen provided an explanation as to why MRO did not support removing the limit on the number of PRS members at this time. He noted that the PRS could increase its membership by two members in fall 2022 during open nominations, if the group decided it was necessary or beneficial. Discussion ensued.



Action Item List Review.

Chair Sessler reviewed the action item list and updates were made accordingly.

6. NERC Activities

Update on NERC System Protection and Control Working Group (SPCWG).

Mark Gutzmann, MRO representative on the NERC SPCWG, provided an overview of the April 14, 2022 conference call. The February 2021 cold weather recommendation update was discussed. Two recommendations from that report were directed towards the SPCWG (recommendation 13 and 22). There was an inter-entity short circuit model update by Lynn Schroeder. There was a review of compliance implementation guidance for PRC-019 and PRC -024. There is a SAR being reviewed and discussed related to PRC-025 for hybrid plants. FERC order 881 was also discussed. Discussion ensued.

NERC Misoperation Information Data Analysis System User Group (MIDASUG) Update.

Bernhagen provided an update from the April 5, 2022 meeting. There was a discrepancy between the data reporting instructions and the website regarding fault type. NERC will update the Data Reporting Instructions (DRI) to reflect that fault type is not a required field. A regional entity asked about capacitor bank reporting requirements for misoperations during the April meeting. NERC reviewed changes to the MIDAS portal. Discussion ensued.

FERC/NERC Protection System Commissioning Program Review Update.

Senior Power Systems Engineer, Max Desruisseaux provided an update of the FERC/NERC Protection System Commissioning Program Review webinar tentatively scheduled for July 14, 2022. MRO has decided to include case studies and share best practices. NERC proposed discussing EA events tied to commission-related issues. Bernhagen will present MIDAS data tied to commissioning practices. PRS members, Sarah Marshall, Cody Remboldt and Ryan Einer are assisting with the webinar presentation. The PRS may be invited to attend a dry run of the webinar presentation. Discussion ensued.

Transmission Availability Data System (TADS).

Principal Systems Protection Engineer, John Grimm provided an update regarding TADS. Due to an application update, the deadline for Q1 and Q2 reporting is August 15, 2022. The update will affect the forms, but a prolonged outage is not expected. TADS training is scheduled for October 11-12, 2022. Discussion ensued.

7. Misoperations

Fourth Quarter 2021 Results and Review and Discussion.

MIDAS and Misoperations Q4 Update.

Bernhagen provided an overview of fourth quarter misoperations data. There were 30 total misoperations during the quarter. MRO's 2021 misoperation rate finished above the NERC average. Total operations were significantly lower than previous years, and misoperations are slowly trending downward. Bernhagen illustrated that the highest percentage of misoperations by cause subdivided by relay type were human error associated with microprocessor relays. He also noted that an apparent increase in overcurrent misoperations requires further investigation. Discussion ensued

Project Updates

Instantaneous Ground Overcurrent.



Bernhagen provided an update for this ongoing project. He solicited volunteers from the PRS to review the data to determine if there is enough information to pursue a white paper. PRS members and guests, Adam Daters, Greg Sessler and Kenneth Casperson, volunteered to work on the project.

Event Analysis Report

Bernhagen reviewed the misoperations review process at MRO and noted that he would like to improve the review process. He discussed the process that WECC used during a recent meeting where they performed misoperations review during a relay subgroup call in a closed session. Bernhagen proposed that the PRS try reviewing misoperations during the fourth quarter meeting in breakout groups during a closed session. There was a proposal to move the November 15, 2022 meeting to the first week of December to align with the MIDAS reporting due date. Discussion ensued.

Bernhagen provided an update of the events to date. There have been eight qualified events in 2022: six category 1a events (loss of three or more BES elements) and two category 1h events (loss of EMS/SCADA).

Review Lessons Learned.

Bernhagen led a discussion of the six new lessons learned posted on the NERC website. Discussion ensued.

Seek Input for T-Line Icing Lessons Learned.

Bernhagen reported that an entity asked NERC for best practices related to high wind events. He participated on a review team working on the lessons learned. They discussed the preparations and mitigations for wild fires and high winds in the West as well as icing in the Midwest and Northeast. The review team grouped the lessons learned into three parts: 1) high winds, 2) high winds and fire, and 3) high winds and icing. Bernhagen asked the PRS members to research what their organizations do to prepare for high wind events and provide feedback or reach out to him with the appropriate contact information.

8. Summer 2021 BES Events

Desruisseaux provided an overview of the summer 2021 BES events and the Energy Emergency Alerts. There were a total of 17 events in 2021. Six events during summer 2021 were highlighted, all involving protection system misoperations. Discussion ensued.

9. FERC Order 881 – Ambient Adjusted Ratings and FERC NOI – Dynamic Line Ratings

Principal Technical Advisor, John Seidel, provided an overview of FERC Order 881 at the meeting. He noted that FERC Order 881 ties into PRC-023. He explained that FERC made the ruling on Ambient Adjusted Ratings (AARs) because transmission line ratings can directly affect wholesale electricity rates. He mentioned that NERC standard FAC-008-5 may be revised to include the new ruling. Seidel noted that Dynamic Line Ratings (DLR) are still in the notice of inquiry phase, and the ruling has not been posted. Seidel also noted that DLRs may not be required for all BES facilities. Discussion ensued.



10. 2022 Dates

Chair Sessler reviewed the meeting dates for the PRS and the other councils and subgroups. A new date was proposed for the fourth quarter hybrid meeting, and there was no objection from the subgroup. The meeting will take place on December 6, 2022.

11. PRS Roundtable Discussion

The PRS members next participated in a roundtable discussion. The following topics were highlighted:

- PRC-004-6 – the NERC Inverter Based Resource Performance Subcommittee (IRPS) has created a draft SAR for PRC-004-6 to revise the standard to explicitly require IBR loss analysis and corrective action to identify misoperations.
- Switch-on-to-Fault (SOTF) – PRS member, Sarah Marshall surveyed the subgroup related to SOTF, which is a safety feature built into microprocessor relays designed to trip quickly when a breaker is inadvertently closed into a faulted line. Sarah was interested if any entities used SOTF on their distribution assets and, if so, how it is implemented. Alliant Energy uses SOTF protection on their distribution assets. Discussion ensued.

12. Other Business and Adjourn

Having no further business to discuss, the meeting was adjourned at 11:12 a.m.

Prepared by: Rebecca Schneider, Reliability Analysis Administrator

Reviewed and Submitted by: Jake Bernhagen, Senior Systems Protection Engineer



Exhibit A – Meeting Attendees

Subgroup Members Present	
Name	Company
Greg Sessler, Chair	American Transmission Company
David Wheeler, Vice Chair	Southwestern Public Services Co.
Adam Daters	ITC Holdings
Alex Bosgoed	Saskatchewan Power Corporation
Casey Malskeit	Omaha Public Power District
Cody Remboldt	Montana-Dakota Utilities
David Weir	Western Area Power Administration
Dennis Lu	Manitoba Hydro
Derek Vonada	Sunflower Electric Power Cooperative
Derrick Schlangen	Great River Energy
Greg Hill	Nebraska Public Power District
Jeff Beasley	Grand River Dam Authority
Josh Erdmann	Xcel Energy
Matt Boersema	Western Farmers Electric
Ryan Einer	Oklahoma Gas & Electric
Sarah Marshall	Alliant Energy
Scott Paramore	Kansas City Board of Public Utilities
Terry Fett	Central Iowa Power Cooperative
Subgroup Members Not Present	
Name	Title
Glenn Bryson	American Electric Power



MRO Staff	
Name	Title
Jake Bernhagen	Senior Protection Systems Engineer
Rebecca Schneider	Reliability Analysis Administrator
Lisa Stellmaker	Executive Administrator
John Grimm	Principal Systems Protection Engineer
John Seidel	Principal Technical Advisor
Max Desruisseaux	Senior Power Systems Engineer
Guests	
Name	Company
Mark Gutzmann	Xcel Energy
Allen Halling	Evergy
Terry Volkmann	Glencoe Light and Power
Catherine Jacobs	ITC Holdings
Steve Klecker	MidAmerican Energy
Chad Whisman	American Electric Power
Mark Hopkins	Evergy
Kenneth Casperson	ITC Holdings