

Meeting Agenda

Protective Relay Subgroup (PRS)

Tuesday, June 11, 2024
9:00 a.m. to 3:00 p.m. Central

*MRO Corporate Offices, King Conference Center
St. Paul, MN & Webex*



**MIDWEST
RELIABILITY
ORGANIZATION**

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Public

MRO PROTECTIVE RELAY SUBGROUP MEETING AGENDA

Agenda Item	
1	Call to Order and Determination of Quorum <i>Dennis Lu, PRS Chair</i>
2	Standards of Conduct and Antitrust Guidelines <i>Jake Bernhagen, Manager of Reliability Performance, MRO</i>
3	Safety Briefing <i>Shawn Keller, Outreach Coordinator, MRO</i>
4	Chair’s Remarks <i>Dennis Lu, PRS Chair</i>
5	Consent Agenda <i>Dennis Lu, PRS Chair</i>
6	NERC Activities <ul style="list-style-type: none"> a. NERC SPCWG Update <i>Lynn Schroeder, System Protection Engineer, Sunflower Electric Power Corporation</i> b. NERC MIDASUG Update <i>Jake Bernhagen, Manager of Reliability Performance, MRO</i> c. TADS <i>John Grimm, Principal Systems Protection Engineer, MRO</i>
7	NERC Announcement: Request for Comments SPCWG White Paper and Technical Reference Document <i>Jake Bernhagen, Manager of Reliability Performance, MRO</i>
8	PRS Business <i>Jake Bernhagen, Manager of Reliability Performance, MRO</i>
9	Action Item List Review <i>Dennis Lu, PRS Chair</i>
10	2024 Meeting Dates <i>Dennis Lu, PRS Chair</i>
Break – 10:00 a.m.	
11	Technical Presentation – Manitoba Hydro Misoperations <i>Dennis Lu, Principal System Protection Engineer, Manitoba Hydro and PRS Chair</i>
12	Technical Presentation – MidAmerican Energy Company <i>Rochelle Trefry, Principal Engineer System Protection, MidAmerican Energy Company</i>
13	Misoperations <i>Jake Bernhagen, Manager of Reliability Performance, MRO</i> Q2 2024 Update, Review and Discussion
Lunch – 12:00 p.m.	
14	Q2 2024 Misoperations Review – Breakout Sessions <i>Jake Bernhagen, Manager of Reliability Performance, MRO</i>
15	PRS Member Roundtable <i>Dennis Lu, PRS Chair</i>

Agenda Item

16	Other Business and Adjourn <i>Dennis Lu, PRS Chair</i>
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VIDEO AND AUDIO RECORDING

Please note that Midwest Reliability Organization (MRO) may make a video and/or an audio recording of this organizational group meeting for the purposes of making this information available to board members, members, stakeholders, and the general public who are unable to attend the meeting in person.

By attending this meeting, I grant MRO:

1. Permission to video and/or audio record the meeting including me; and
2. The right to edit, use, and publish the video and/or audio recording.
3. I understand that neither I nor my employer has any right to be compensated in connection with the video and/or audio recording or the granting of this consent.

MRO ORGANIZATIONAL GROUP GUIDING PRINCIPLES

These MRO Organizational Group Guiding Principles complement charters. When the Principles are employed by members, they will support the overall purpose of the organizational groups.

Organizational Group Members should:

1. Regularly attend meetings of the group(s) on which the member serves.
2. Competently prepare for, and be an active participant in, the meetings for the group(s) on which the member serves.
3. Collaborate with other organizational group members in support of the mission, vision, and strategic initiatives of MRO.
4. Support the Highly Effective Reliability Organization (HERO™) principles.

Call to Order and Determination of Quorum
Dennis Lu, Protective Relay Subgroup Chair

A current roster for the Protective Relay Subgroup is posted on MRO's public website [here](#).

Standards of Conduct and Antitrust Guidelines
Jake Bernhagen, Manager of Reliability Performance, MRO

Standards of Conduct Reminder:

Standards of Conduct prohibit MRO staff, committee, subcommittee, and task force members from sharing non-public transmission sensitive information with anyone who is either an affiliate merchant or could be a conduit of information to an affiliate merchant.

Antitrust Reminder:

Participants in Midwest Reliability Organization meeting activities must refrain from the following when acting in their capacity as participants in Midwest Reliability Organization activities (i.e., meetings, conference calls, and informal discussions):

- Discussions involving pricing information; and
- Discussions of a participant's marketing strategies; and
- Discussions regarding how customers and geographical areas are to be divided among competitors; and
- Discussions concerning the exclusion of competitors from markets; and
- Discussions concerning boycotting or group refusals to deal with competitors, vendors, or suppliers.

Safety Briefing Video
Shawn Keller, Outreach Coordinator, MRO

Action

Information

Report

A short video highlighting in-person meeting safety logistics will be played at the meeting.

Chair's Remarks
Dennis Lu, Protective Relay Subgroup Chair

Action

Information

Report

Chair Lu will provide an oral report during the meeting.

Consent Agenda
Dennis Lu, Protective Relay Subgroup Chair

Action

Approve the consent agenda.

Report

The consent agenda includes draft minutes from the meeting held on March 12, 2024. The meeting minutes as written start on the next page.



Draft Minutes of the Protective Relay Subgroup Meeting

Hybrid: St. Paul, MN and Webex

Tuesday, March 12, 2024, 9:02 a.m. to 3:03 p.m. Central

Notice for this meeting was electronically posted to the [MRO website](#) on February 13, 2024.
A final agenda, including advanced reading materials, was also posted on March 5, 2024.

1. Call to Order and Determination of Quorum

Protective Relay Subgroup (PRS) Chair Dennis Lu called the meeting to order at 9:02 a.m. Chair Lu welcomed everyone, and roundtable introductions were made. 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, MRO Principal Systems Protection Engineer, John Grimm, highlighted MRO's Standards of Conduct, Conflict of Interest, and Antitrust Guidelines.

3. Safety Briefing

MRO Outreach Coordinator, Shawn Keller, presented a safety video illustrating the steps to take if various emergency situations are encountered onsite at MRO.

4. Chair's Remarks

Chair Lu recognized PRS member and Vice Chair, Ryan Einer for his leadership role as Chair in 2023. He also thanked former member, Jeff Beasley for his service. Chair Lu welcomed the four new PRS members: Dylan Underwood, Nathan Gulczynski, Ryan Bissett and Tyler Porter. Chair Lu noted that John Grimm joined today's meeting as the PRS liaison in place of Jake Bernhagen.

5. New Members' Welcome Presentation

Reliability Analysis Administrator, Rebecca Schneider, provided an overview of the new members' welcome presentation. The new members were invited to introduce themselves to the subgroup.

6. Consent Agenda

The PRS reviewed the consent agenda, which included minutes from the December 6, 2023, meeting.

Upon a motion duly made and seconded, the PRS approved the consent agenda in its entirety.

7. NERC Activities

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

Lynn Schroeder, MRO representative on the NERC SPCWG and PRS member, provided an update. Schroeder outlined the process for drafting and approval and noted that members of the small group drafting team do not need to be members of the SPCWG. The SPCWG reports to the Reliability and Security Technical Committee (RSTC) who gives final approval before posting for industry.



Current projects include a whitepaper on footnote 13 of TPL001, a PRC024 IBR Whitepaper, a Technical Reference related to maintenance for ethernet based P&C, and a Technical Reference for “Transmission System Phase Backup Protection”. The “Determination of Practical Transmission Relaying Loadability Settings” Implementation Guide is pending RSTC final approval.

Schroeder stated concerns with entities having coordination issues related to FERC Order 881 and relay settings. Discussion ensued.

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

MRO Manager of Reliability Performance, Jake Bernhagen was absent, and no NERC MIDASUG update was provided at this meeting.

Transmission Availability Data System (TADS).

Grimm shared a NERC Load Loss presentation and a questionnaire which he instructed the PRS members to distribute to the individuals in their organizations responsible for reporting TADS data.

8. PRS Business

Updates.

Grimm highlighted a position paper on FERC Order 881 and a recent NERC Lesson Learned published on March 4, 2024, entitled “Protective Relay Solid-State Output Contact Voltage Leakage.”

Action Item List Review.

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

9. 2024 Meeting Dates

Chair Lu reviewed the proposed 2024 meeting dates for the PRS and the other councils and subgroups.

MRO Director of Reliability Analysis, Bryan Clark, discussed PRS activities that tie into the Reliability Advisory Council (RAC) Work Plan and MRO Regional Risk Assessment (RRA). Clark encouraged the PRS to consider expanding the quarterly technical presentations into an outreach effort, such as a webinar. Clark invited the subgroup members to attend the MRO Annual Reliability Conference scheduled for May 15, 2024.

10. Technical Presentation

OG&E Misoperations

Ryan Einer, OG&E and PRS Vice Chair, gave a presentation on a high-speed directional element misoperation OG&E experienced in August 2020. The misoperation occurred on a reverse fault on a backup relay. OG&E and the manufacturer worked together to analyze the data and determine the issue causing the relay to trip. OG&E discovered that some of their relay models required a firmware upgrade to correct the issue. They are in the process of deploying firmware updates across their entire system. Einer stressed the importance of partnering with manufacturers to leverage their support when trying to identify a root cause and develop a corrective action plan. Discussion ensued.



To accommodate scheduling conflicts, Chair Lu moved the Misoperations (Agenda Item 12) ahead on the agenda. These minutes reflect the order in which the reports were provided.

11. Misoperations

2023 Update, Review and Discussion

Grimm provided a summary of MRO's 2023 misoperations data. MRO's misoperations rate (8.43%) decreased slightly in 2023 compared to the previous year. In fourth quarter 2023 the number of misoperations during a fault (14) was at the lowest level in the last five years. Grimm noted that human error related misoperations continue to be an issue. There was discussion around the NERC Misoperation Impact Score developed by the ERO and MIDAS User Group to estimate the impact of a misoperation on the Bulk Electric System (BES).

12. Setting Development and Commissioning Best Practices – ATC

Greg Sessler, System Protection Team Leader, American Transmission Company (ATC), and Kevin Demeny, Senior Commissioning Engineer, ATC, gave a presentation on commissioning best practices and ATC's relay setting process and controls. Sessler described the electronic relay setting process tool called Cherwell. Peer review is completed for all changes in the setting process. Additionally, the protection specialist performs setting verification before the relay goes into service. ATC utilizes a relay setting database that can integrate with other databases in the organization.

Demeny gave an overview of ATC's commissioning best practices. The best practices highlighted included human performance tools used in the field, yellow lined schematics for contactors, weekly safety calls with construction, vegetation management and commissioning. Demeny noted that good catches and near misses are tracked by commissioning contractors and submitted quarterly. Discussion ensued.

Grimm highlighted a recent lesson learned pertinent to the PRS and demonstrated how to navigate to the lesson learned section on NERC's website.

To accommodate scheduling conflicts, Chair Lu moved the PRS Roundtable Discussion (Agenda Item 14) ahead on the agenda. These minutes reflect the order in which the reports were provided.

13. PRS Roundtable Discussion

Chair Lu invited member participants to share other relevant industry observations. No roundtable topics were shared.

14. Q4 2023 Misoperations Review

Breakout Sessions

The PRS members reviewed the fourth quarter 2023 misoperations in breakout sessions both in-person and via Webex. Discussion ensued.

15. Other Business and Adjourn

The PRS members reviewed the current PRS Charter, and no changes were recommended. Having no further business to discuss, the meeting was adjourned at 3:03 p.m.



Prepared by: Rebecca Schneider, Reliability Analysis Administrator
Reviewed and submitted by: John Grimm, Principal Systems Protection Engineer



Exhibit A – Meeting Attendees

PRS Members Present	
Name	Company
Dennis Lu, Chair	Manitoba Hydro
Ryan Einer, Vice Chair	Oklahoma Gas & Electric
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
Dylan Underwood	Southwestern Power Administration
Glenn Bryson	American Electric Power
Greg Hill	Nebraska Public Power District
Josh Erdman	Xcel Energy
Lynn Schroeder	Sunflower Electric Power Corporation
Nathan Gulczynski	American Transmission Company
Rochelle Trefry	MidAmerican Energy Company
Ryan Bissett	Central Iowa Power Cooperative
Sarah Marshall	Alliant Energy
Scott Paramore	Kansas City Board of Public Utilities
Tyler Porter	Great River Energy
MRO Staff Present	
Name	Title
John Grimm	Principal Systems Protection Engineer
Rebecca Schneider	Reliability Analysis Administrator
Shawn Keller	Outreach Coordinator



Bryan Clark	Director of Reliability Analysis
Eric Graftaas	Principal Power Systems Engineer
Sarah Wernette	Senior Systems Protection Engineer
Mark Tiemeier	Principal Technical Advisor
Max Desruisseaux	Principal Power Systems Engineer
Kristine Albrecht	Human Resources Generalist
Anna Martinson	RAM and External Affairs Administrator
Other Attendees	
Name	Company
Kevin Demeny	American Transmission Company
Greg Sessler	American Transmission Company
Allen Halling	Evergy
Catherine Jacobs	MidAmerican Energy Company
Elsammani Ahmed	ITC Midwest
Juan Placid	J J Power & Energy Inc.
Michael Grexa	Oglethorpe Power Corporation
Ricardo Rodriguez	City of Ames
Sonja Myers	CERTREC
Stephen Farnsworth	Basin Electric Power Cooperative
Tommy Shea	McPherson Board of Public Utilities

NERC Activities

Lynn Schroeder, Sunflower Electric Power Corporation

Jake Bernhagen, Midwest Reliability Organization

John Grimm, Midwest Reliability Organization

Action

Information

Report

- NERC System Protection and Control Working Group (SPCWG) – *Lynn Schroeder*
- NERC Misoperation Information Data Analysis System User Group (MIDASUG) – *Jake Bernhagen*
- Transmission Availability Data System (TADS) – *John Grimm*

**NERC Announcement: Request for Comments | SPCWG White Paper
and Technical Reference Document**
Jake Bernhagen, Manager of Reliability Performance, MRO

Action

Information

Report

Jake Bernhagen will lead this discussion during the meeting.

PRS Business Updates

Jake Bernhagen, Manager of Reliability Performance, MRO

Action

Information

Report

- Joint PRS meeting with WECC's Relay Working Group (RWG) on Oct. 3, 2024
- Special nominations meeting via Webex (September 2024)
- Eastern Interconnection Reliability Assessment Group (ERAG) Short Circuit Spreadsheet – sent on behalf of Bryan Clark on April 18, 2024

Action Item List Review
Dennis Lu, Protective Relay Subgroup Chair

Action

Discussion

Report

Chair Lu will lead this discussion during the meeting.

2024 Meeting Dates
Dennis Lu, Protective Relay Subgroup Chair

Action

Information

Report

Future meeting dates are listed below.

2024 PRS Meeting Dates

- October 3, 2024 – Joint Meeting with WECC RWG (Salt Lake City, UT)
- December 10, 2024 – Q4 PRS Meeting (Hybrid)

2024 MRO Conference Dates

- July 23-24, 2024 – CMEP Conference (Kansas City, MO)
- October 1-2, 2024 – Security Conference (St. Paul, MN)

Technical Presentation – Manitoba Hydro Misoperations
Dennis Lu, Manitoba Hydro and PRS Chair

Action

Information

Report

Chair Lu will provide an oral report during the meeting.

Technical Presentation – MidAmerican Energy Company
Rochelle Trefry, MidAmerican Energy Company and PRS Member

Action

Information

Report

Rochelle Trefry will provide an oral report during the meeting.

Misoperations

Jake Bernhagen, Manager of Reliability Performance, MRO

Action

Q2 2024 Update, Review and Discussion

Report

Jake Bernhagen will lead this discussion during the meeting.

Q2 2024 Misoperations Review
Jake Bernhagen, Manager of Reliability Performance, MRO

Action

Discussion

Report

Jake Bernhagen will lead this discussion during the meeting.

PRS Member Roundtable
Dennis Lu, Protective Relay Subgroup Chair

Action

Discussion

Report

Chair Lu will lead this discussion during the meeting.

Other Business and Adjourn
Dennis Lu, Protective Relay Subgroup Chair

Action

Discussion

Report

Chair Lu will lead this discussion during the meeting.