

**APPROVED MEETING MINUTES
MIDWEST RELIABILITY ORGANIZATION
Reliability Assessment Committee
Holiday Inn Select, Bloomington, MN
May 20, 2009 – 8:30am – 3:30pm**

1. Call to Order

Chairman Nguyen called the meeting of the Reliability Assessment Committee to order at 8:30am.

Mr. Nguyen asked for introductions from the committee members and guests.

2. Determination of Quorum

Secretary Seidel determined that a quorum was present at 8:45am.

The following members, guests and staff were present:

Members:

Hoa Nguyen, MDU	Jay Porter, GRE
Dennis Florom, LES	Mike Garton, DOM
Hamish Wong, WPS	Ron Mazur, MH
Dave Rudolph, BEPC (phone)	Gayle Nansel, WAPA
Dale Burmester, ATC (phone)	

Guests:

Deven Bhan, WAPA	Alan Burbach, LES
Wenchun Zhu, ATC (phone)	Dave Duebner, MISO
Stuart Hughes, SPC	Jodi Jensen, WAPA
Neal Balu, WPS (phone - joined at 10:12am)	Larry Brusseau, MAPPCOR
Mark Lauby, NERC	Larry Larson, OTP (phone - Liaison from Standard Committee)
	Larry Van Wyhe, MEC (Liaison from Compliance Committee)

Staff:

John Seidel	Dan Jesberg
Salva Andiappan	Jo Anne McNabb
Carol Gerou	

Members Absent:

Kavita Maini, WIEG	Gerry Steffens, RPU
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3. Standards of Conduct and Anti-Trust Guidelines

Mr. Nguyen reviewed the Standards of Conduct and Anti-Trust Guidelines with the Committee.

4. Consent Agenda

a. *Approve Meeting Minutes of March 4, 2009 Meeting*

Mr. Nguyen noted that, in a number of approval vote recordings, the names of the committee members who had made motions and seconds were left blank. The committee looked at those recordings and filled in the blanks with the missing names.

Upon motion duly made by Mr. Mazur and seconded by Mr. Garton, the Reliability Assessment Committee unanimously approved the minutes of the March 4, 2009 Reliability Assessment Committee Meeting as amended.

b. *Approve Meeting Minutes of March 27, 2009 Conference Call.*

Upon motion duly made by Mr. Garton and seconded by Mr. Wong, the Reliability Assessment Committee unanimously approved the minutes of the March 27, 2009 Conference Call.

Mr. Seidel informed the committee that the final draft of the MRO Summer 2009 Assessment, as rewritten by him and Mr. Nguyen as members of the NERC Reliability Assessment Subcommittee (RAS), was accepted by the RAS without any significant changes.

5. Chairman's Report

Hoang Nguyen

Mr. Nguyen outlined his chairman report, highlighting the Board approval of the leadership of the MRO Standing Committees and the appointment of the MRO representatives on various NERC committees. Mr. Nguyen also informed the committee that the Board approved the Reliability Plan of SPP to include parts of Nebraska.

Mr. Nguyen informed the committee that Mr. Mazur will start transitioning to the RAC chairmanship by chairing the RAC November 18, 2009 meeting and attending, along with Mr. Nguyen, the December 3, 2009 Board of Directors meeting.

6. MRO Regional Disturbance Reporting Procedure for EOP-004

Deven Bhan

Mr. Bhan presented to the committee the draft of the MRO Regional Disturbance Reporting Procedure for NERC Standards EOP-004 as prepared by the Protective Relay Subcommittee. The draft was provided as a handout to committee members and is included in these minutes as Attachment #1. Mr. Bhan then asked for the committee's input to the content of the procedure.

Comments from the committee members and guests regarding the proposed procedure indicated that there were concerns that needed to be addressed and the proposed procedure was not ready to be endorsed by the committee at this meeting. Mr. Nguyen strongly urged that the draft of this procedure be sent out by the PRS a month in advance of the next RAC Meeting so that the RAC members can make comments. Once all comments are received and

incorporated, the final document will be brought before the RAC at the next meeting in September for approval.

Mr. Mazur reminded the committee that it has established the RAC Process for Approving MRO Regional Procedures for Supporting NERC BOT-Approved Standards. The process was developed by Mr. Nguyen in June 2007 and was subsequently discussed, reviewed, and endorsed by the RAC at its September 5, 2007 meeting. (*Note: This process is included as Attachment #3 to the minutes of the RAC September 5, 2007 meeting*). As a result, it was decided that RAC subcommittees, working groups, and task forces must use the established process in developing their procedures/guidelines for supporting relevant NERC Standards. The MRO Regional Disturbance Reporting Procedure for NERC Standards EOP-004 will also need to use this process.

7. MRO Regional Procedure/Guideline for PRC-002-01

John Seidel
Deven Bhan

Mr. Seidel brought the committee up to date with respect to the MRO Regional Procedure/Guideline for PRC-002 that was created by the Protective Relay Subcommittee in 2007 to establish regional criteria for disturbance monitoring equipment and reporting. This document was finalized, distributed and posted in the MRO Manual, and it was to be used by applicable entities (Transmission Owners and Generation Owners) that are subject to PRC-018-1, who are responsible for installing equipment per the PRC-002-1 MRO Guideline. The MRO Guideline for PRC-002-1 was approved and posted in the MRO Manual with a 01-15-08 date. Since PRC-018 calls for disturbance monitoring equipment to be installed per the MRO criteria established in this Guideline and calls for phasing it in over four years, the 01-15-08 date on the MRO Guideline for PRC-002-1 has the appearance of "started the clock" on this four-year phase-in period. This has been confusing to the MRO members because criteria laid out in the regional procedure for PRC-002-1, which is not FERC-approved, has the appearance of being mandatory, since PRC-018, which is FERC-approved, points toward PRC-002-1.

To reduce this confusion, and to eliminate a fill-in-the-blank Standard, NERC has drafted a new proposed standard, PRC-002-2, that will ultimately replace both PRC-002-1 (the fill-in-the-blank standard that applies to the MRO) and PRC-018-1 (the standard that applies to Transmission Owners and Generation Owners but has no criteria and instead points to PRC-002-1). NERC Standard PRC-002-2 is expected to be approved by both NERC and FERC sometime in late 2010 or early 2011.

Mr. Seidel informed the committee that an e-mail had been sent to the Transmission Owners and the Generation Owners indicating that until NERC Standard PRC-002-2 is approved, the MRO guideline for PRC-002-1 is voluntary and is encouraged to be followed as good utility practice only.

The Committee took a short recess at 10:50am

The Committee resumed the meeting at 11:00am

8. Review Process for MRO Regional Procedures/Guidelines John Seidel

Mr. Nguyen briefed the committee on the initiative behind this agenda item. It

is important that we have a clear process on how MRO procedures and guidelines are to be written. In addition, please refer to the discussion on the RAC Process for Approving MRO Regional Procedures for Supporting NERC BOT-Approved Standards above.

9. NERC Assessments

- a. *Reliability Assessment Process- Status of Neb, future of TRAWG* All

Mr. Mazur questioned whether the MAPP Transmission Reliability Assessment Working Group (TRAWG) will still be in existence in the future. He asked if the MRO will need to play a bigger part in the long-term transmission assessment. Mr. Mazur asked about whether it would be prudent for the MRO to take a look at it in more detail; in other words, do we want the MRO to have its own capability to obtain this information? To respond to this concern, Mr. Brusseau, who is the TRAWG secretary, stated that TRAWG would continue to exist and function within MAPP, despite a comment from Mr. Larson that all Minnesota utilities have given MAPP withdrawal notices and would withdraw from MAPP in three years.

As the MRO representative on the NERC Reliability Assessment Subcommittee (RAS), Mr. Nguyen mentioned the Midwest ISO members on the RAS has expressed a desire to report the MRO assessments for its MRO members in a manner somewhat similar to what it has been doing for ReliabilityFirst. At the last RAS meeting, those MISO representatives were asked by the RAS to develop a proposal and bring back for the RAS consideration at its next meeting in Toronto in June. Mr. Lauby stated the concern he has is that the ISOs do not have all the information and in many cases don't have the right to ask for information. In essence what NERC will get is data that is not complete; citing capacity information is lacking as well. If we don't have accurate information, then we can't make adequate assessments and recommendations. We need to make sure the information we receive is accurate.

Agreeing with Mr. Lauby, Mr. Nguyen stated that the MRO has a delegation agreement with NERC and is held accountable for NERC reliability assessments. Regarding MISO's future proposal to the NERC RAS, Mr. Mazur expressed concern that the MISO doesn't cover everyone, so we need to find out who will cover other assessments. Ms. Nansel suggested we keep this subject on the agenda as a recurring agenda item so that we can continue ongoing discussions. Mr. Nguyen will report back to the committee and make a recommendation after having MISO proposal.

- b. *2009 Long Term Reliability Assessment* John Seidel

Mr. Seidel reported that there had been several phone conference calls of the Transmission Assessment and Resource Assessment Subcommittees recently regarding the LTRA. He noted that the data collection portion went very well. The overall progress of the LTRA is going well.

**The Committee recessed for lunch at 12:00pm
The Committee reconvened at 12:45pm**

c. *2008-2009 MRO Scenario Analysis*

i. *MRO-U.S. Subregion*

Wenchun Zhu/John Seidel

Ms. Zhu updated the committee on the base and scenario cases undertaken by the SATF. The group has been focusing on transmission and operational issues.

ii. *MRO-Canada Subregion*

Hoa Nguyen/Ron Mazur

Mr. Mazur briefly discussed the scenario analysis for the Canadian subregion.

10. Midwest ISO Updates

Dave Duebner

Mr. Duebner provided his oral report to the committee. He highlighted the MTAP which includes subregional planning meetings, reliability analysis and targeted studies performed throughout 2009. Mr. Duebner also highlighted the various studies with which MISO is currently involved.

11. Compliance Committee Activity

Larry Van Wyhe

Mr. Van Wyhe outlined the current activity of the Compliance Committee. A Compliance Workshop was held on March 25, 2009. The workshop was well-attended, and much interest was generated. The Mid-Continent Compliance Forum (MCCF), a mainly information exchange forum for the NERC Registered Entities within the Mid-Continent area of the Eastern Interconnection, has been formed. MAPPCOR is serving as the facilitator for MCCF.

12. Standard Committee Activity

Larry Larson

Mr. Larson informed the RAC Committee that several standards will be the topic for the upcoming Standards meeting.

13. Vacancies on NERC Subcommittees and Task Force

Hoa Nguyen

Mr. Nguyen identified the vacancies on NERC groups to which the MRO might be interested in appointing its representatives: Demand Response Data Task Force (DRDTF), Data Coordination Subcommittee, LOLE Working Group (LOLEWG), Resource Subcommittee (RS), and Climate Change Initiatives Task Force. It was agreed that an MRO representative is needed for the DRDTF. In addition, another MRO representative is needed to replace Mr. Balu on the RS. Mr. Balu has volunteered to be the MRO representative on the Resource Issues Subcommittee (RIS) and is holding on the RS position until his RS replacement is found.

As the committee's vice chairman, Mr. Mazur will be heading the recruiting effort for the MRO representatives on the DRDTF and RS. In addition, the MRO staff needs to touch base with Mr. Greg Pieper to see if he is aware of his MRO representation and will serve on the Reliability Metrics Working Group.

14. Subcommittee and Task Force Reports

- a. *Generator Testing Review Task Force* Dave Kral

Mr. Kral's presentation is given in Agenda item 13a of the agenda package.

- b. *Model Building Subcommittee* Alan Burbach

Mr. Burbach provided an oral report to the committee highlighting the MRO 2009 model development series, emphasizing the completed tasks and identifying the remaining tasks.

Based on the recommendation of the MBS members and the consent of the RAC members (at this meeting), Mr. Nguyen will appoint Mr. Wayne Haidle (BEPC) to be the MBS vice chairman.

- c. *Protective Relay Subcommittee* Deven Bhan

Mr. Bhan informed the committee that the PRS has not meet since the last RAC meeting. Mr. Bhan also informed the committee that Don Raveling, currently a Dakotas Area representative on the PRS and its vice chairman, will be retiring from MDU in September 2007. Mr. Bhan will remain as PRS chairman, and a new PRS member and PRS vice chairman are to be nominated.

Mr. Mazur made a motion to approve Mr. Rob Frank of MDU as a member of the PRS Committee.

Upon motion duly made by Mr. Mazur and seconded by Mr. Garton, the Reliability Assessment Committee unanimously approved the appointment of Rob Frank as a Dakotas Area representative on the Protective Relay Subcommittee.

i. *Special Protection Systems Review Team*

Mr. Bhan briefly outlined the work done by the SPSRT as supported by his handout to the committee, the MRO SPS Review Team Log, which is included as Attachment #2. He commented on the excellent work done by Mr. Dan Jesberg of the MRO staff.

- d. *Resource Assessment Subcommittee* Dave Rudolph

Mr. Rudolph provided a brief overview of his report which is included as Agenda item 13d of the agenda package.

- e. *Scenario Assessment Task Force* Wenchun Zhu

Ms. Zhu updated the committee on the MRO Scenario Assessment conducted by the SATF which are outlined in her handout to the committee, which is included in Attachment #3. In her presentation, Ms. Zhu identified the two sets of base and scenario cases. She also outlined the transmission and operational challenges and issues that the task force

is working on.

- f. *Transmission Assessment Subcommittee* Wenchun Zhu

Ms. Zhu presented a brief update on TAS activities since the last RAC meeting as outlined in her handout to the committee, which is included as Attachment #4. The TAS has had two conference calls to discuss the summer assessment and the MRO 2009 LTRA assessment drafts.

Ms. Zhu also discussed the MRO procedures for NERC PRC-014 and NERC PRC-012, which were handed out to the committee and are included in these minutes as Attachment #5, and asked for committee endorsement. Mr. Nguyen asked if these procedures needed immediate approval. Ms. Zhu responded by stating that these procedures are currently in use and posted on the MRO website. Mr. Nguyen instructed the TAS to use the established RAC Process for Approving MRO Regional Procedures for Supporting NERC BOT-Approved Standards for these two procedures (PRC-012 and PRC-014). In the mean time, the current procedures, as posted, could still be used.

15. Eastern Interconnection Reliability Assessment Group Reports

- a. *ERAG Management Committee* Gayle Nansel/John Seidel

Ms. Nansel informed the committee that there has only been one conference call since her appointment to the committee. Mr. Seidel reported that the ERAG Management Committee approved their 2010 budget on the conference call.

- b. *Multiregional Modeling Working Group* Adam Flink/Salva Andiappan

Mr. Andiappan reported there is not much activity to report at this time and that going forward Mr. Adam Flink from the MRO will be spokesperson for this working group.

16. NERC Reports

- a. *Data Coordination Working Group* Dan Jesberg

Mr. Jesberg updated the committee briefly on the initiatives of the Data Coordination Working Group.

- b. *Demand Response Data Task Force* Laura Elsenpeter

Mr. Seidel reported that Ms. Elsenpeter will be attending these meetings as the MRO staff representative. As indicated in Item 13 above, Mr. Mazur will be heading the recruiting effort for another individual from the MRO members to serve on the DRDTF.

- c. *Disturbance Analysis Working Group* Salva Andiappan

No report.

- d. *Load Forecasting Working Group* Dan Jesberg

Mr. Jesberg, who is the MRO staff member on the LFWG, provided the committee with a brief update of LFWG activities. The team is working out issues with load forecasting techniques. The newly appointed MRO-U.S. and MRO-Canada representatives on the LFWG, Dennis Jackson (MH) and Dean Hjelle (OTP), have not attended LFWG meetings yet.

- e. *Operating Committee* Larry Larson

Mr. Larson referred the committee to Agenda item 15e of the agenda package.

- f. *Operations Review Subcommittee* Steve Sanders

No report

- g. *Planning Committee* Dale Burmester

Mr. Burmester referred the committee to the Agenda item 15g of the agenda package.

- h. *Reliability Assessment Subcommittee* Hoa Nguyen/John Seidel

Mr. Nguyen referred the committee to the Agenda item 15h of the agenda package.

- i. *Reliability Metrics Working Group* Greg Pieper

As indicated in Item 13 above, Mr. Seidel will contact Mr. Pieper to confirm his membership on this working group.

(Note: After the RAC meeting, Mr. Pieper sent in his belated RMWG report, which is included in these minutes as Attachment #6.)

- j. *Resource Issues Subcommittee* Neal Balu

Bill Kunkel, the MRO staff representative on the RIS, provided a report, which was handed out to the committee and is included in these minutes as Attachment #7. Mr. Balu, the MRO member representative on the RIS, has not attended RIS meetings.

- k. *Resource Subcommittee* Neal Balu

Mr. Balu provided a report, which was handed out to the committee and is included in these minutes as Attachment #8. As indicated in Item 13 above, a replacement for Mr. Balu on the RS is to be found.

- l. *System Protection and Control Subcommittee* Rich Quest

Mr. Quest's report is contained as Agenda item 15l of the Agenda package.

- m. *Transmission Issues Subcommittee* Wenchun Zhu

Ms. Zhu provided a report, which was handed out to the committee and is

included in these minutes as Attachment #9.

17. Other Business

Mr. Nguyen asked for a volunteer to attending the next compliance committee meeting. If any committee member is interested, please let him know.

18. 2009 Committee Meeting Dates

June 17,	Reliability & Compliance Workshop
June 18	Board of Directors
September 1	Compliance Committee
September 2	Reliability Assessment Committee
September 3	Standards Committee
November 17	Compliance Committee
November 18	Reliability Assessment Committee
November 19	Standards Committee

19. Adjourn

Having no further business, Mr. Nguyen adjourned the meeting at 3:21 pm.

Upon motion duly made by Mr. Florom and seconded by Mr. Garton, the Reliability Assessment Committee unanimously approved to adjourn the meeting.

Respectfully submitted

Jo Anne McNabb
Administrative Assistant
Midwest Reliability Organization

Draft Midwest Reliability Organization Guideline for Disturbance Reporting

A. Introduction

Purpose: To ensure that NERC standard EOP-004-1 is enforced within the Midwest Reliability Organization (MRO) Region; to establish a Regional Disturbance reporting procedure and ensure prompt analysis of Bulk Electric System (BES) Disturbances.

Reference - NERC Standard EOP-004-1 "Disturbance Reporting"

Applicability: The BES within the area under the MRO.

1. Reliability Coordinators.
2. Balancing Authorities
3. Transmission Operators.
4. Generator Operators.
5. Load Serving Entities.
6. Region Reliability Organizations (MRO).

Most Recent Update: 04/03, 2009

Applicable Events:

Disturbance reports are to be made for any events identified in the attachments of NERC standard EOP-004.

B. MRO Procedure:

1. Applicable entities are responsible for the preparation of a preliminary and a final disturbance report whenever their system experiences a Reportable Incident.
2. Applicable entities shall promptly analyze Bulk Electric System disturbances on its system or facilities.
3. Applicable entities experiencing a reportable incident shall provide a preliminary written report to the MRO and NERC consistent with the latest revision of NERC Standard EOP-004.
4. When a Bulk Electric System disturbance occurs, the MRO shall make its representatives available for the purpose of providing any needed assistance in the investigation and to assist in the preparation of a final report.

When more than one entity is involved in the disturbance, or when there is a significant disturbance in one entity's system, the disturbance will be analyzed by an investigation team with sub-teams as needed. The investigation team may be a joint team with NERC or only MRO as the case may be. The MRO Reliability

Assessment Committee (RAC), with the help of its subgroups, will coordinate the Regional and joint investigation with NERC if applicable.

5. The MRO RAC or one or more of its sub-committees shall track and review the status of all final report recommendations in a manner consistent with latest revision of NERC Standard EOP-004.
 6. The status of the implementation of recommendations will be reported to MRO Board and NERC.
 7. A Final Report shall be in a format and provide data consistent with the following:
-

MRO Final Disturbance Report Format

Company Name
Power System Detailed Disturbance Report

(Brief descriptive title of the disturbance)

(Time of the disturbance)

(Date of disturbance)

Date of Report

Report Body

I. INTRODUCTION

Provide a brief narrative that includes the following information.

1. A brief description of the disturbance stating the time and date of its occurrence.
2. Identify who prepared the subject report.
3. Give the cause and impact of the incident;
 - a. List the duration of the incident and the time that the system was essentially returned to normal.
 - b. Briefly describe the magnitude of load lost, number of customers affected, extent of transmission loss and/or islanding and significant frequency and/or voltage excursions.

II. CONCLUSIONS

List the conclusions that were formulated from the analysis of the incident. Include conclusions regarding compliance with established procedures and/or operating criteria.

Comment on the following topics as appropriate:

1. Impact on the bulk electric system
2. Consequences of the event
3. Relay Actions – did relays operate correctly? Did the correct relays operate, etc?
4. Operational Guidelines – were operators properly provided with studies and guides?
5. Operator Actions – did operators follow guides provided and did they respond properly to the changing system?
6. Communications – did personnel communicate with each other according to protocols?
7. Thermal Loadings – how was the transmission system impacted by the event?
8. Dynamics Factors - how was system stability impacted by the event?
9. Root Cause Analysis – what were the basic causes for actions that occurred?

III. RECOMMENDATION

List the recommendations that were formulated from the analysis of the disturbance. Recommendations should be as specific and detailed as possible to facilitate the follow-up action.

IV. CONDITIONS PRIOR TO THE DISTURBANCE

Provide information that is pertinent to the incident.

- a. System Generation – Give the on-line individual plant capability and actual output in the general area of the disturbance and in those areas which ultimately experienced a generation deficiency/surplus.
- b. Generation out of Service – List each unit out of service and its capability.
- c. Transmission out of Service – List each line out of service, providing the name and operating voltage.
- d. Interchange summary – List interchange schedules and actual power flows to other control area. Also list actual power flows across the points of separation.
- e. Voltages at key substations – If noteworthy, list voltages at key substations.
- f. Abnormal system conditions – Describe abnormal system conditions which may have contributed to the occurrence or impact of the disturbance. Describe abnormal system conditions that adversely impacted system restoration.

V. DESCRIPTION OF THE DISTURBANCE

Expand on the information provided in the introduction to provide a detailed description of the disturbance. Include the following as applicable:

1. Describe the initiating disturbance and the cause of the disturbance.
2. Describe and give reasons for transmission outages and/or islanding that occurred as a result of the disturbance.
3. Describe and give reasons for loss of generation. Give the magnitude of voltage and/or frequency excursions.
4. Describe and give reasons for loss of load. Provide details regarding magnitude and duration of load lost and number of customers affected.
5. Assess the performance of under frequency load shedding programs. Identify locations where automatic under frequency load shedding should have occurred but was inadequate or failed to operate as planned.
6. Describe the operation or misoperation of any Special Protection Scheme associated with the disturbance.
7. Describe any misoperation of relays or other equipment that contributed to the event.
8. Describe system restoration and any significant problems that were encountered in returning the system to normal. Give the time that system operation returned to normal.

VI. SEQUENCE OF EVENTS

Provide a chronological listing of the events that occurred beginning with the disturbance and ending with the system restored to normal. Include the following:

1. Sequence of automatic actions
2. sequence of operator actions
3. facilities and load lost
4. intermediate system configuration(s)
5. mitigating actions taken

VII SUPPORTING DATA

Supply one-line diagrams, system maps of the affected area, sequence of event data, disturbance recordings, and any other data as appropriate.



Attachment #3

Activity Report Scenario Assessment Task Force (SATF)

Wenchun Zhu
May 20, 2009



Subcommittees and Task Forces

- Scenario Assessment Task Force (SATF)

Face-to-face meetings on 2-9-09, 3-5-09 and 5-4-09. Conference call on 4-3-09.

Two sets of base and scenario cases

- Base case 1: 2008 LTRA generation and demand data
- Scenario case 1a: The wind needed for 15% energy above 4000 MW Existing
- Scenario case 1b: The wind needed for 15% energy above 4000 MW Existing less 5% load reduction for energy efficiency.
- Scenario 1c: The wind needed for 15% energy above 20,500 MW (Existing+Planned+Adjusted Proposed) in 2017.
- Scenario 1d: The wind needed for 15% energy above 20,500 MW (Existing+Planned+Adjusted Proposed) in 2017 less 5% load reduction for energy efficiency.
- Base case 2: JCSP Reference Future (in average 5% energy served by wind in Eastern Interconnect)
- Scenario case 2: JCSP 20% Wind Future



Subcommittees and Task Forces

- Scenario Assessment Task Force (SATF)

Face-to-face meetings on 2-9-09, 3-5-09 and 5-4-09. Conference call on 4-3-09. (continued)

- **Focus on transmission and operational issues and challenges.**

- The 2nd set of base and scenario cases (JCSP scenarios) are used for transmission related discussions.
- Discussion of operational issues are not specific to any defined scenario case. These discussions are general considering high wind penetration.

- **Generation, Demand and Resource Adequacy related discussions are streamlined.**

- For the first set of base and scenario cases, only wind generation is varied in the scenario cases compared to 2008 LTRA base case. Generation of other fuel types stay the same.





Attachment #4

Activity Report Transmission Assessment Subcommittee (TAS)

Wenchun Zhu
May 20, 2009



Midwest Reliability Organization

Subcommittees and Task Forces

- Transmission Assessment Subcommittee
 - Meeting Highlights
 - March 12, 2009 conference call
 - **Review MRO 2009 summer assessment draft**
 - May 13, 2009 conference call
 - **Review MRO 2009 LTRA assessment draft.**
 - **Discuss GRE questions regarding the upcoming GRE Coal Creek SPS review.**



Subcommittees and Task Forces

- Transmission Assessment Subcommittee (continued)
 - Draft MRO procedures for PRC-012 and 014
 - Joint work of PRS, TAS and MRO staff. Completed in 2008.
 - Currently posted on MRO site.
 - Need RAC endorsement.



Midwest Reliability Organization Procedure For NERC PRC-012

A. Introduction – The following procedure developed by the MRO Protective Relay Subcommittee (PRS) and Transmission Assessment Subcommittee (TAS) is considered a technical guideline and should be followed as good utility practice.

- 1. Title: Special Protection System (SPS) Review**
- 2. Reference:** NERC Standard PRC-012-0
- 3. Purpose:** To ensure that NERC Standard PRC-012-0 is implemented within the MRO Region; to obtain and review documentation on the design, performance, coordination, maintenance and testing of Special Protection Systems; to ensure SPS operations and misoperations are properly analyzed and that corrective action plans are developed.

4. Applicability: Midwest Reliability Organization (MRO)

5. Background:

NERC Reliability Standard PRC-015-0 requires that a Transmission Owner, Generator Owner, or Distribution Provider that owns an SPS within the MRO region shall have evidence that it reviewed new or functionally modified SPS in accordance with the MRO's procedure for NERC PRC-012 prior to being placed into service. Furthermore, NERC Reliability Standard PRC-015-0 also states that these same entities must also provide the MRO with documentation of SPS data and study results that demonstrate that new or functionally modified SPSs are compliant with NERC Reliability Standards and MRO regional guidelines.

NERC Reliability Standard PRC-014-0 requires that the MRO shall assess the operation, coordination, and effectiveness of all SPSs installed in the MRO Region at least once every five years.

6. Most Recent Update: November 20, 2008

7. Effective Date: April 1, 2009

B. Requirements

R1. If a Transmission Owner, Generator Owner, or Distribution Provider owns, or is planning to own or install an SPS, they shall be considered an SPS owner for the purposes of this procedure. This procedure applies to SPS owners who are:

- Planning to install a new SPS.
- Planning to modify an existing SPS.
- Planning to retire an existing SPS.
- Scheduled for a review of an existing SPS.

The SPS Owner that meets the above conditions shall submit a report containing the necessary information to support the requirements below. The MRO shall review the data contained within the report to determine if the SPS meets the requirement of the NERC Reliability Standards.

R1.1. The following submittal process shall be followed by SPS owners:

- R1.1.1** For a new or functionally modified SPS, the SPS owner shall submit a report to the MRO, at least 90 calendar days prior to installation or modification going into service.

- R1.1.2** For an existing SPS, the SPS owner shall submit a report to the MRO, within 90 calendar days following an MRO request for review.
- R1.1.3** For an existing SPS, the SPS owner shall submit a report to the MRO, at least 90 days prior to the end of the fifth year following the previous review, or at least 90 days prior to an MRO scheduled review date, whichever comes first.
- R1.1.4** For the retirement of an existing SPS, the SPS owner shall notify the MRO of the planned retirement, state the reason for the retirement, and provide the planned date of the retirement at least 30 calendar days prior to the retirement.
- R1.2.** The SPS owner shall provide to the MRO for review, data which describes the design, operation, and modeling of an SPS. This data shall include the following:
 - R1.2.1** Block Diagram of the SPS.
 - R1.2.2** Detailed description of the modeling assumptions used for the SPS.
 - R1.2.3** Analysis detailing acceptable system performance as defined in NERC Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.
- R1.3.** The SPS owner shall provide to the MRO for review, data which demonstrates that the SPS is designed so that a single SPS component failure, when the SPS intends to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in NERC Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.
- R1.4.** The SPS owner shall provide to the MRO for review, data which demonstrates that the inadvertent operation of the SPS shall meet the same performance requirement (TPL-001-0, TPL-002-0, and TPL-003-0) as that required of the contingency for which it was designed, and not exceed TPL-003-0.
- R1.5.** The SPS owner shall provide to the MRO for review, data which demonstrates that the existing or proposed SPS will coordinate with other protection and control systems and applicable MRO and Reliability Coordinator emergency procedures. The data shall include the following:
 - R1.5.1** Details of how the SPS interacts with other SPSs.
 - R1.5.2** Details of how the SPS interacts with other system protection and control schemes.
- R1.6.** The SPS owner shall reference the definition of a misoperation in Section C of this procedure when providing data for Requirement R1.7.
- R1.7.** To fulfill the requirements for the MROs review of existing SPSs and to comply with NERC Reliability Standard PRC-016-0, the SPS owners shall provide to the MRO on a quarterly basis, no later than the end of the following calendar month, documentation of the analysis of all SPS misoperations and the associated corrective action plans.

SPS owners shall also provide to the MRO on a quarterly basis, no later than the end of the following calendar month, documentation of all normal SPS operations.

The SPS Owner shall submit its documentation of SPS normal operations and misoperations in accordance with the instructions in Appendix A of this procedure.
- R1.8.** The review of SPSs is the joint responsibility of the MRO Protective Relay Subcommittee and MRO Transmission Assessment Subcommittee. The MRO PRS and MRO TAS have delegated this responsibility to an SPS Review Team consisting of members designated by each group and

representation from the regional Reliability Coordinator. The MRO Procedure for SPS Review shall be reevaluated by the MRO PRS and MRO TAS at least every five years.

The initial approval of this procedure and the approval of future amendments shall be made by the MRO Reliability Assessment Committee before going into affect.

R1.9. In accordance with NERC Reliability Standard PRC-017-0, SPS owners shall have system maintenance and testing program(s) in place. The SPS owner shall provide documentation of the program(s) and its implementation to the MRO within 30 calendar days of request.

R2. The MRO shall provide affected Regional Reliability Organizations and NERC with documentation of its SPS review procedure on request and within 30 calendar days.

C. Definitions

Special Protection System (SPS) – The NERC definition of an SPS shall apply when determining the existence of an SPS in the MRO region.

The NERC definition of an SPS is:

“An automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability. Such action may include changes in demand, generation (MW and MVar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) underfrequency or undervoltage load shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). Also called Remedial Action Scheme.”

Misoperation –The following conditions shall apply when determining if an event is a misoperation:

- Failure to Operate – Any failure of operation when it is required.
- Incorrect Operation – Any operation performed by the SPS that was not as the system design intended.
- Slow Operation – SPS operates slower than the system design intended.
- Unnecessary Operation – Any operation for system conditions for which the SPS was not required to operate.

These events do not include operations caused by human error during system installation and maintenance (not considered an indication of deficiency in the SPS).

Appendix A

Special Protection System Quarterly Report Instructions

In accordance with MRO Procedure for NERC PRC-012, these instructions will be used to document SPS operations and misoperations. These instructions will be accompanied with a data collection spreadsheet during the quarterly data request.

COLUMN	INSTRUCTIONS
ID	Leave this column blank - - assigned by MRO staff
Date of Operation	Enter the date of the operation in MM/DD/YY format
Time of Operation	Enter the time of the operation in (24 hr.) HH:MM:SS format
Identification of SPS	Identify the name and location of the SPS
Operation Category	Enter the type of operation, use only the following categories : "R" - Under Review - Add comments under "Description of Operation" "0" - Correct Operation "1" - Failure to Operate "2" - Incorrect Operation "3" - Slow Operation "4" - Unnecessary Operation
Description of operation	Enter brief comments if further explanation is needed
Summary of Analysis	Provide comments as appropriate
Impact on the BES	Discuss why or why not the SPS misoperation impacts the reliability of the BES
Corrective Action Taken/proposed	Identify the corrective action taken or being taken
Proposed Completion	If corrective actions are not complete, estimate when they will be complete MM/DD/YY
Completion Date	If corrective actions are complete, enter the completion date MM/DD/YY
Reported by	Enter your name - the person filling out this report
Date	Enter today's date MM/DD/YY
Phone	Enter your phone number
E-Mail	Enter your E-MAIL address

Appendix B

MRO Procedure for Special Protection System Review

In accordance with MRO Procedure for NERC PRC-012, the MRO will perform a review on all new or functionally modified SPS in its region. The MRO will also review all SPS in its region on a five year basis in accordance with the MRO Procedure for NERC PRC-014. The retirement of an SPS will be handled as a special case whereas no review shall be performed. Lastly, the MRO reserves the right to review any SPS in its region at any time for the purposes of assessing regional reliability or for event analysis research. Any scheduled date of a review will allow for at least 90 days for the SPS Owner to prepare an SPS information package.

For the review of a Special Protection System (SPS), the review process shall be:

- The SPS Owner prepares an SPS information package containing the necessary information to support Requirements R1.1 through R1.5 of the MRO Procedure for NERC PRC-012. The attached checklist can serve as a guide for the SPS Owner to compile their SPS information package.
- The SPS Owner submits the SPS information package electronically to spsreview@midwestreliability.org.
 - For new or functionally modified SPS, the SPS information package must be submitted at least 90 calendar days prior to the expected in-service date.
 - For a scheduled review, the SPS information package must be submitted at least 90 calendar days prior to the scheduled date of review.
- MRO review of the SPS information package has been delegated to an SPS Review Team. The composition of this review team is described in R1.8 of the MRO Procedure for NERC PRC-012. MRO staff will provide administrative support for the SPS Review Team and serve as coordinator with the group and the SPS Owner.
- The SPS Review Team will hold a conference call within 14 days of receiving the SPS information package submittal to review the material for completeness.
- After the SPS information package is determined to contain the necessary information to support requirements R1.1 through R1.5 of the MRO Procedure for NERC PRC-012, the SPS Review Team will schedule a meeting, if necessary, with the SPS owner no later than 45 calendar days after the SPS information package was submitted. The purpose of this meeting will be to give the SPS Owner an opportunity to present the SPS to the review team and to answer any questions the review team members may have.
- Once the SPS review is completed, the SPS Review Team will prepare and submit a summary report to the MRO PRS and MRO TAS.
- Once the SPS Review Team's review is endorsed by the MRO PRS and MRO TAS, MRO staff will notify the SPS Owner that the SPS review process has been completed in accordance with MRO Procedure for NERC PRC-012.

Upon completion of the review process, MRO staff will update the MRO SPS database. This database is described in MRO Procedure for NERC PRC-013.

Before the review process is concluded, the SPS Review Team will establish the next review date for the SPS in question. This review date will be scheduled in accordance with the MRO Procedure for NERC PRC-014. The SPS Owner will be informed of this scheduled date when notified that the SPS review process has been completed.

For the retirement of an existing SPS, the process shall be:

- The SPS Owner shall inform the MRO of the planned retirement of an existing SPS by sending an email to spsreview@midwestreliability.org at least 30 calendar days prior to the retirement. The SPS Owner shall include the reason for the retirement and the planned date of the retirement.
- The MRO will acknowledge the receipt of the planned retirement and update the MRO SPS database to record the retirement.

It is up to the SPS Owner to ensure that the system resulting from the retirement of an SPS remains in compliance with NERC Standards.

The review process laid out in this appendix shall not serve in lieu of reviews or review processes that may be performed by other organizations. If an SPS Owner must also obtain approval for the addition, modification or retirement of an SPS from their Planning Authority, Regional Transmission Organization or Regional Transmission Group, they will need to obtain this outside of this review process.

SPS Information Package Checklist

ITEMS	DESCRIPTION	INCLUDED (Y/N)
Owner:	The name of the company which owns and maintains the SPS.	
Affected Parties:	The names of any other parties who maybe directly affected by the installation of the SPS.	
Location:	Where the SPS is located; generally a substation or power plant and included maps, substation drawings, etc. as necessary to ensure that the reader is able to understand the physical and electrical location of the SPS and related facilities.	
Date of installation:	Planned or scheduled in-service date.	
Description:	A brief narrative overview on how the SPS operates, such as intentional generator tripping and/or transmission bus sectionalizing, etc.; its design objectives; the contingencies and/or operating scenarios for which the SPS is intended to operate; a one-line diagram or sketch showing the associated facilities. Includes functional logic block diagram of the SPS.	
Separate VT secondary Sources:	A single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in TPL-001, TPL-002, and TPL-003.	
Separate CT secondary Sources:	A single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in TPL-001, TPL-002, and TPL-003.	
Redundant Logic Devices:	A single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in TPL-001, TPL-002, and TPL-003.	
Redundant Control Outputs:	A single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in TPL-001, TPL-002, and TPL-003.	
Redundant Communication Channels:	A single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in TPL-001, TPL-002, and TPL-003. Shall have physically separate communication paths.	
Coordination:	A description that shows how the SPS coordinates with other protection and control schemes. Are they coordination issues with other schemes?	
Study report summary demonstrating MRO and NERC compliance:	A brief narrative or executive summary of the results of planning studies demonstrating the need for the SPS; description of what will happen if the SPS operates when it shouldn't.	

Operating guides:	With the associated one line diagrams; functional drawings and descriptions.	
Summary description of functional testing:	With methods and schedules or a statement that this scheme is tested along with all other protective relays.	
SPS settings:	Existing and/or proposed settings that will control its operation including all intentional and operational delays and relay application documentation.	
Modeling information:	Allowing analysis of the scheme in power flow and dynamic stability evaluations.	
Detailed drawings:	Showing hardware and/or logical connections.	

Midwest Reliability Organization Procedure For NERC PRC-014

- A. Introduction** – The following procedure developed by the MRO Protective Relay Subcommittee (PRS) and Transmission Assessment Subcommittee (TAS) is considered a technical guideline and should be followed as good utility practice.
- 1. Title: Special Protection System (SPS) Assessment**
 - 2. Reference:** NERC Standard PRC-014-0
 - 3. Purpose:** To ensure that all Special Protection Systems (SPS) are properly designed, meet performance requirements, and are coordinated with other protection systems.
 - 4. Applicability:**
 - 4.1.** Midwest Reliability Organization (MRO)
 - 5. Most Recent Update:** November 20, 2008
 - 6. Effective Date:** April 1, 2009
- B. Requirements**
- R1.** The MRO shall assess the operation, coordination, and effectiveness of all SPSs installed in its Region at least once every five years for compliance with NERC Reliability Standards and MRO Regional criteria. The assessment shall be performed as described in MRO Procedure for NERC PRC-012.
 - R2.** The MRO shall provide a summary report of its assessment of the operation, coordination, and effectiveness of all SPSs installed in its Region to affected Regional Reliability Organizations or NERC on request (within 30 calendar days).
 - R3.** The documentation of the MRO's SPS assessment shall include the following elements:
 - R3.1.** Identification of group conducting the assessment and the date the assessment was performed.
 - R3.2.** Study years, system conditions, and contingencies analyzed in the technical studies on which the assessment is based and when those technical studies were performed.
 - R3.3.** Identification of SPSs that were found not to comply with NERC standards and MRO Regional criteria.
 - R3.4.** Discussion of any interaction problems found between a SPS and other protection and control systems.
 - R3.5.** The MRO compliance office will ensure that corrective action plans for non-compliant SPSs are executed.

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Draft

Reliability Metrics Working Group (RMWG) Reliability Performance Metric Recommendation 2009

NERC Planning and Operating Committees

Toronto, Canada

June 9-10, 2009

to ensure
the reliability of the
bulk power system

- Statistics
- Approach
 - SMART Method and Rating
 - Adequate Levels of Reliability Basis
- Second recommended slate of metrics
- Metric Suggestions
- Roadmap

Statistics relative to the metrics development effort through June 2009

- 4 RMWG group conference calls
- Three Teams formed – each assigned to two Adequate Level of Reliability categories
 - 26 Team conference calls
 - 20 participants
 - About 260 participant hours
 - 42 potential ALR metrics proposed and evaluated
- Two face-to-face RMWG meetings
 - 23 participants per meeting
 - 600 participant hours
 - Industry Travel Cost: \$26,000
- Outreach
 - Coordinated and received input from 9 of 15 subgroups through our outreach plan.
 - Will continue outreach to 6 committees/subgroups to achieve consensus between now and the decision date meetings

SMART Method and Rating*

R a t i n g	S - Specific/Simple	M - Measurable	A - Attainable	R - Relevant	T - Tangible/Timely
	<ul style="list-style-type: none"> - Be easily understood and not driven by commercial factors (i.e. tariff) - Identify factors that positively or negatively impact reliability - Address reliability problems and solutions 	<ul style="list-style-type: none"> - Be easily measured with regularly collected information - Measure past and current reliability - Measure progress in ensuring reliability - Measure effectiveness of reliability standards and enforcement programs 	<ul style="list-style-type: none"> - The industry can provide the right resources (i.e. funding, time and ability) to improve reliability - Reliability will be measurably improved 	<ul style="list-style-type: none"> - Linked to reliability goals - Provide meaningful information - Provide feedback for improving the Reliability Standards 	<ul style="list-style-type: none"> - Reflect current top priority issues and possess a sense of urgency - Identify reliability gaps and point to existing standards that need to be modified or new standards that need to be developed
	<p>3</p> <ul style="list-style-type: none"> • Defined in a NERC Standard • Not driven by commercial factors • Addresses specific reliability issues 	<ul style="list-style-type: none"> • Easily measured and reported regularly • Historical data exists at REs and/or NERC and is currently required in NERC Standard • Directly measure effectiveness of standard and enforcement programs 	<ul style="list-style-type: none"> • Compelling business case suggests good chance of being approved through business planning and tariff approval processes • Reliability improvements will be easily seen 	<ul style="list-style-type: none"> • Direct link to reliability goals • Focus on failures and possible solutions or improvements • Provide direct feedback for improving the Reliability Standards 	<ul style="list-style-type: none"> • Directly links to current top priority reliability issues and possess a sense of urgency • Clearly identifies reliability gaps and points to standard improvement needs
	<p>2</p> <ul style="list-style-type: none"> • Defined within the industry • Not driven by commercial factors • Addresses reliability issues 	<ul style="list-style-type: none"> • Easily measured and reported on occasions • Some historical data exists at REs and/or NERC and is currently required in NERC standard • Measure effectiveness of standard and enforcement programs in a long run 	<ul style="list-style-type: none"> • Additional resources will be required and have a reasonable chance of being approved through business planning and tariff approval processes • Reliability improvements will be apparent within a reasonable period of time (months) 	<ul style="list-style-type: none"> • Some link to reliability goals • Not directly focus on failures and possible solutions or improvements • May provide feedback for improving the Reliability Standards in a long run 	<ul style="list-style-type: none"> • Some link to current top priority reliability issues • May reveal reliability gaps in a long run
<p>1</p> <ul style="list-style-type: none"> • Defined somewhere • May have some commercial factors • May relate to reliability issues 	<ul style="list-style-type: none"> • Easily measured and not reported • Some historical data exists at REs and/or NERC • No link to effectiveness of standard and enforcement programs 	<ul style="list-style-type: none"> • Significant resources will be required well beyond normal business planning and tariff approval levels • Reliability improvements will only marginal, or evident over an extended period of time (years) 	<ul style="list-style-type: none"> • No link to reliability goals • Not Focus on failures and possible solutions or improvements • Not tied to a standard improvement 	<ul style="list-style-type: none"> • No link to current top priority reliability issues and does not possess a sense of urgency • Does not identify reliability gaps. 	

* SMART Score = S rating + M rating + A rating + R rating + T rating

Adequate Level of Reliability Basis

No.	Characteristic	Adequate Level of Reliability
1	Boundary	The System is controlled to stay within acceptable limits during normal conditions. - The planner must design the System so it can be operated within all limits (voltage, frequency and System Operating Limits), but the operator must operate within limits in real time that are based upon existing conditions.
2	Contingencies	The System performs acceptably after credible contingencies. – The planners and operators design and operate the System to minimize the risk that credible Contingencies will result in unacceptable performance.
3	Integrity	The System limits the impact and scope of instability and Cascading Outages when they occur. - System planners design the System so that events such as transmission line and transformer faults, breaker and switch failures, and generator trips, are contained from Cascading and causing the system to lose its integrity.

Adequate Level of Reliability Basis

No.	Characteristic	Adequate Level of Reliability
4	Protection	The System's Facilities are protected from unacceptable damage by operating them within Facility Ratings. – The failure to protect equipment could result in unacceptable reliability for weeks or months due to long lead-time for replacing and repairing equipment.
5	Restoration	The System's integrity can be restored promptly if it is lost – System operators must have a restoration plan ahead of time, and know from studies and training, on-line tools and experience the operating limits they need to stay within while restoring the system, and how those limits change through the stages of reestablishing system integrity, and up to normal interconnected operations.
6	Adequacy	The System has the ability to supply the aggregate electric power and energy requirements of the electricity consumers at all times, taking into account scheduled and reasonably expected unscheduled outages of system components.

Recommended Metrics

- ALR2-4 DCS Failures
- ALR2-5 DCS Events Greater than MSSC
- ALR1-4 Events Resulting in Unplanned Loss of Load
- ALR3-5 Operating Limit Excursion
- ALR4-1 Correct Protection System Operations
- ALR6-2 EEA3
- ALR6-3 EEA2
- ALR6-1 Transmission Constraint Mitigation
- ALR1-3 Reserve Margin

More on 9 Recommended Metrics

ALR2-4 Disturbance Control Standard Failures (DCS Failures)	Measures ability to utilize contingency reserve to balance resources and demand and return the Interconnection frequency within defined limits following a Reportable Disturbance
ALR2-5 Disturbance Control Events Greater than Most Severe Single Contingency (DCS Events Greater than MSSC)	Disturbance Control Events Greater than Most Severe Single Contingency, measure how much risk the system is exposed to for extreme/unusual contingencies.
ALR1-4 Events Resulting in Unplanned Loss of Load	Number of events in a year, excluding events caused by factors other than the performance of the transmission system
ALR3-5 Operating Limit Excursion (OL Excursion)	Measure frequency of flows on an interface exceeding the defined limit
ALR4-1 Correct Protection System Operations	Percent of correct protection system trips (i.e. automatic facility trips) that properly cleared faults; compared to all trips (including misoperations)
ALR6-2 Energy Emergency Alert Level 3 (EEA 3)	Measure the number of time EEAs results in firm load interruption due to capacity and energy deficiency
ALR6-3 Energy Emergency Alert Level 2 (EEA 2)	Number of EEA 2 alerts called for each season, indicate how robust the system is in being able to supply the aggregate load requirements
ALR6-1 Transmission Constraint Mitigation	Number of individual mitigation plans in regional transmission assessments, i.e. special protection schemes, remedial action schemes, and documented operating procedures specific to transmission constraint mitigation.
ALR1-3 Reserve Margin	Percent of total capacity in excess of load forecast,

11 Suggestions from Industry Stakeholders

- Index of Transmission Reliability
- Simultaneous TLRs
- Breaker Failures
- Exposure to Cascading Events
- Integral of Negative Frequency Excursions
- LMP Divergence
- Magnitude of IROL Exceedance
- Number of Negative Frequency Excursions
- Simultaneous EEAs
- Standard Deviation of Frequency Error
- Average Frequency Error

2009 Tasks

Mar 2009	June 2009	July 2009	Sept 2009	Dec 2009
Provide PC/OC a list of ALR metrics and other reliability measures for consideration	Recommend first set of ALR metrics and obtain PC/OC approval of preliminary report	Obtain PC / OC endorsement of final metrics recommendation report	Recommend data collection guidelines and an implementation plan	Present recommended report of metrics definitions for implementation and data collection
			Review and recommend leading indicators and event classification	Begin implementation of data collection assuming endorsement of PC/OC
			Enhance and update metrics definitions on the NERC website	Proposal for development of a centralized benchmarking repository

**Agenda 15.j.
NERC Reports**

Resource Issues Subcommittee

NERC RIS,

An LOLE WG has been approved NERC will be seeking nominations in the near future.
Resource Adequacy Assessment Standard Drafting Team – NERC Project 2009 – 05 SAR is moving forward and is in need of participants.

RIS has provided write ups on the following Emerging Issues:

Assuring sufficient ancillary services to accommodate non-dispatchable variable renewable resources (wind, solar PV)

- a. The reliability impacts in organized markets
- b. The reliability impacts in bilateral markets

Forecasting the Impact of Growth in Demand Response and Energy Efficiency Programs

Rapid Demand Growth after Flat Period

Bill Kunkel

**Agenda 15.k.
NERC reports
Resources Subcommittee**

Date: May 11, 2009

TO: Reliability Assessment Committee

FROM: Neal Balu

RE: NERC Resources Subcommittee meeting, Albuquerque, NM
April 29-30, 2009

Summary of actions Taken by NERC Resources Subcommittee

- Discussed the purpose statements for the Tools under development for Real Time Balancing Authority Ace Limit (BAAL) performance monitoring, with initial focus on the impact of ACE on power flows for transmission planning.
- Discussed the frequency model document prepared by the Frequency WG that describes Primary (Seconds), secondary (Minutes), and Tertiary (hours) controls. Primary controls include LFR, Governor Response, on-line reserve deployment, delta frequency response devices (storage devices); secondary controls include AGC, Load Following, contingency reserve deployment; and Tertiary controls include Reserve restoration, Load following.
- Discussed Reliability Metrics WG scope and agreed that the NERC-RS should get involved in the Metrics development since the SMEs for many of the Metrics such as DCS events greater than Mean Severe Single Contingency (MSSC), DCS failures, Frequency Performance metric, IROL needs, etc., are in the NERC-RS.
- Reviewed the Disturbance Control Standard, DCS, (BAL-002 R1 Compliance Monitoring process) reports sent by different REs and it was noted that one sub-region did not meet the DCS value. MRO DCS report was sent to NERC and there were no issues with it.
- Two Under-frequency event reports in the Eastern Interconnect were presented. The September 18, 2007 event in the MRO resulted in several BAs separating from the eastern Interconnect, and it was questioned whether the BAs that separated and formed an island have overstated the bias that might have influenced the recovery.
- On April 6, 2009, loss of a 640 MW unit in KCPL in the early morning (around 6:00 AM) resulted in frequency excursions in the range of 59.94 to 60.03 Hz, caused a frequency drop of 70 Milli-Hz in the Interconnect. One of the reasons for frequency drop is that CRSG did not fully respond when asked for assistance, and the KCPL ACE was down to (-400 MW) but tailed off to (-1200 MW). Although the frequency came back up

15 minutes later, it was asked whether this event is a near miss as far as Reliability Standard compliance is concerned. In RFC, loss of 1300 MW generation resulted in frequency drop to 59.91 Hz, and recovered in 7 minutes.

- Discussed NERC application program status that includes intelligent alarms, Resource Adequacy, Frequency response data collection.
- ERCOT presented CPS 1 report for each month, giving a 15-minute average.
- RFC presented time error corrections from 1998 to 2009.
- WECC presented average frequency and error for the period 2001 to 2008.
- NERC staff compiled CPS 2 data for the last 12 months, for all REs. There are 67 BAs in the Eastern Interconnect. No CPS 2 failures were reported. SPP had no failures in the last 12 months; however, SPP data are high for CPS2.

Summary of Direction Provided by the Reliability Assessment Committee

Summary of MRO Positions/Actions needed on the items considered by the NERC body:

- MRO shall review the Real Time BAAL tool for performance monitoring when completed.
- MRO shall review the Frequency model document (April 28, 2009 Version) prepared by the Frequency WG for comment. The document is also a good educational tool for system operations staff.
- MRO shall provide its comments on the Balancing Concepts Document when it is made available by the NERC-RS.
- MRO shall evaluate the NERC application tools developed for intelligent alarms, and Resource adequacy and start using them as appropriate.

Next Steps

Future actions by NERC Resources Subcommittee on which MRO input is needed

- Balancing Concepts document.
- NERC-CERTS projects and applications on Resource adequacy and intelligent alarms.
- NAESB Time and Inadvertent Management Business Practice Standards

NERC Transmission Issues Subcommittee (TIS) activity report

TIS had a face-to-face meeting on April 21 and 22, 2009. Major topics discussed at the meeting are listed in the following.

1. Fault Induced Voltage Delayed Voltage Recovery (FIDVR) Report status update
Bob Cummings reported that the Planning Committee approved the revised FIDVR report containing the definition prepared at the January TIS meeting. The system protection related discussions in Chapter 5 of the white paper is being revised by SPCS. He also noted that it will be helpful to integrate the WECC load modeling work into the NERC FIVDR work. He suggested that the report become a “living document” and that it be posted in its various versions as it progresses. TIS discussed holding another FIDVR symposium in the September timeframe including the load modeling work of WECC, and invite air conditioner manufacturers, at least to keep them informed. Bob Cummings suggested the idea that NERC co-sponsor the event with DOE.

2. Reactive Support & Control Sub-team (RCSC) update
Eric Mortenson reported that Jim Robinson and the RSCS were nearing completion of the draft Technical Paper on Reactive Support & Control. TIS agreed the white paper will be discussed further on a conference call set up for May 8.

3. GO/TO issue

Eric Mortenson reported that the Planning Committee and Operating Committee have formed a joint task force to help determine what elements related to generation station interconnections should be considered “transmission” for purposes of applicability of NERC standards. Mortenson is a member of the task force, which had its first meeting in March in association with the Standing Committee meetings in Phoenix.

4. Standards related issues

a. Dana Walters reported that revision 2 of the TPL-001 Standard is going to be posted in about two week. Any comments from TIS will be discussed at a conference call set up for May 18.

b. Protection System Redundancy issue. If fast clearing is critical, then there should be redundancy. If there is no redundancy, then a delayed clearing should be studied. A SAR is posted regarding this issue.

5. TIS work plan

The group reviewed and revised the 3 year TIS work plan, as part of the PC work plan.

6. Reliability Assessment improvement plan

Mark Lauby participated in the TIS meeting. He presented the following three topics. TIS input are expected relating to these issues.

a. Reliability Assessment Improvement Task Force (a PC Task Force). The mission of this task force is to make the LTRA the authoritative information source for North American electricity users, owners and operators to assess bulk power system reliability. Final report of the TF can be found through the following link:

<http://www.nerc.com/files/Reliability%20Improvement%20Report%20RAITF%20100208.pdf>

- b. Emerging issues. NERC identified ten 2009 emerging issues. The three that are considered having most impact/urgency are: 1) Renewable Resource Transmission; 2) CO2 and Greenhouse Gas Legislation; 3) Transmission: Impacts of Economic Downturn/Siting. Mark Lauby is asking TIS input for other emerging issues, such as Reactive Support, FIDVR, AGC, etc.
- c. Reliability Assessment Guide Book. The goal of the guide book is to improve consistency and transparency, increase granularity and provide guidance to assessment of emerging industry issues. Approved at the December PC Meeting. Posted for 45-day industry-wide open comment period as directed by the PC Guideline Approval Process. Comments received were incorporated into the current Version 1.2 of the Guidebook. Version 2 is expected to be approved by PC in September, 2009. Mark expects TIS input to future revisions of the Guide Book.

7. Reliability Metrics Working Group update

Jessica Ban, NERC Manager of Benchmarking and staff coordinator for the Reliability Metric Working Group, presented a status update of the Reliability Metrics Working Group (RMWG, a PC WG). There are 12 metrics currently. Comments are due in two weeks. Bob Cummings stated that ultimately NERC would like to see some metrics included in Standards. (I have a copy of Jessica's presentation if anyone wants to see it.)

8. Modeling issues

Dynamic modeling issues in west and east interconnections, such as generator modeling, HVDC modeling, etc.

9. Smart Grid task force

TIS will form a smart grid working group to provide suggestions/comments. Bob Cummings' comments: we want smart grid to succeed. We want to enable smart grid as such as possible without jeopardizing reliability.

10. Quarterly meeting schedules for TIS

The quarterly face-to-face meeting schedules were determined for the next year. The meeting in August will be sponsored by ATC in Madison area. Two conference calls were also schedule for May 8th and May 18th.