NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Meeting Notes
Disturbance Monitoring SDT — Project 2007-11

Tuesday, May 5, 2009 | 8 a.m.–5 p.m. EDT
Wednesday, May 6, 2009 | 8 a.m.–5 p.m. EDT
Florida Power & Light

1. Administrative

Roll Call
Stephanie Monzon conducted roll call. Those present are listed below:

- **Navin B. Bhatt — American Electric Power (Chair)**
- James R. Detweiler — FirstEnergy Corp.
- Barry G. Goodpaster — Exelon Business Services Company (on phone)
- Steven Myers — Electric Reliability Council of Texas, Inc.
- Jeffrey M. Pond — National Grid (on phone)
- Jack Soehren — ITC Holdings
- Stephanie Monzon — North American Electric Reliability Corporation
- Alan D. Baker — Florida Power & Light Company
- Bharat Bhargava — Southern California Edison Co.
- Daniel J. Hansen — Reliant Energy, Inc.
- Charles Jensen — JEA
- Tracy M. Lynd — Consumers Energy Co. (on phone)
- Susan McGill — PJM (on phone)
- Larry E. Smith — Alabama Power Company
- Felix Amarh — Georgia Transmission Corporation
- Robert (Bob) Millard — ReliabilityFirst Corporation
- Charlie Childs — Ametek Power Instruments
- Willy Haffecke — Springfield Missouri City Utilities

Observers:

- Anthony Jablonski — RFC
- Richard Ferner — WAPA
- Sherry Goiffon — Oncor
- Greg Bradley — APP Engineering

- Bob Cummings — North American Electric Reliability Corporation
- Bruce Pickett — FPL

2. NERC Antitrust Compliance Guidelines

Stephanie Monzon reviewed the NERC Antitrust Compliance Guidelines with the group.

3. Regional Data Analysis — Chuck Jensen

Chuck Jensen presented a summary of comments and issues identified in the past several months.

Data shows that 200 kV and above does not cover critical busses. Chuck pointed out that the data shows that the team needs to include 100 kV.

Bob C. stated that the SPCS group is working (or will be working on) on a technical paper that discusses a lot of the same issues this team is discussing including what the purpose of the devices are and suggestions for locations. Bob will see if we can add a topic to the next SPCS meeting (John S. from Hydro One is the chair) to discuss the issues this team is discussing including the data analysis. Also, Jim Ingelson has retired from National Grid but still is working/consulting. Bob may be able to contract with Jim to begin a first draft of the technical paper but would need to talk with Standards, Gerry Adamski, to fund the contract. Bob C. indicated that forming a task group (a sub group of the SPCS) would be the best way to perform data analysis and integrate it with the technical paper. Chuck Jensen, Larry Smith, Jeff Pond, Felix Amarh, and Tracy Lynd volunteered to be on the task group.

Stephanie is to send Bob C. the outline of the technical paper.

Stephanie will also add Sherry to the DMSDT plus list (completed as of May 6, 2009).

Felix offered alternatives: DFRs and SOEs

- For all lines 200 kV and above use the five lines criteria
- From 100 to 200 kV use the 10,000 MVA criteria

4. Discussion of Major Issues Identified in Comments:

Question # 1 — No substantial issues although there were comments that addressed issues brought up in other questions. Small group will recommend responses to be reviewed by the team over e-mail.

- DDR Location
- Criteria for disturbance monitoring (PNNL)

Question #2 —

- Implementation schedule
- Moving requirements to additional compliance section of the standard
- Maintenance and testing requirements
- Generator size (MRO)
- Imposing new requirements on GO's — E ON US
- Relationship between TO and GO — ownership issue (Jim will take the lead on drafting a response to these comments and/or make suggested revisions to the draft standard — see action items list)
- Bus potential (ring buses — line and bus potentials) SERC PCS (to be handled by this sub team. Jim suggested that we look at the RFC DME standard to leverage language that addresses similar requirements)

Question #3 —

- Maintenance and testing requirements
- Allow for missing data — FPL
- Time gap if M&T requirements are included in another standard
- DME is not as important as Protection and Control equipment

Team Discussion — The following topics were identified as requiring team discussion (Issues List)

Table 1-1 Description of Issues From First Posting

Description	Discussion and Resolution	Comments
Purpose of Standard		
DME Location	The team discussed integrating some of the concepts in the Events Analysis categories. In Category 2 — the team needs to add SPS and dc converter station size	Notes from May 5-6 Meeting — FPL
Threshold (200 kV, 7 lines, etc.) the number of lines are included because it limits the location to the ones that have the largest impact (both short circuit and number of elements combined). Introducing Fault current in the criteria would help. Autotransformers used at substations count as	The team discussed making the threshold 10,000 MVA at the bus. Does not apply to all categories - and no kV threshold. This captures the major buses. The team is trying to accommodate industry recommendation of other voltage levels other than 200 kV (below) and recommending that 10,000 MVA as criteria because it is directly related to the impact that these busses will have on the region from a stability perspective. **For SOE and DFR:** **Option 0:** 200 kV and above with three lines (as in the first posting of the standard) – this is no longer an option based on the data analysis by region conducted by the team.	Notes from April Meeting — Tampa Notes from May 5-6 Meeting — FPL ***For the options laid out, the team concluded that they are recommending the framework in Option 1. The

one element regardless of the number of transformers. Bob suggested a tiered approach. Jim D. suggested that instead of using a MVA criteria in the standard we use a kV threshold with lines and use the MVA threshold to conduct the data analysis to justify the selected kV level. Bob suggested focusing on the following examples for substations (when the team is **defining the term substation**): **break point** **pinnacle peak** **four corners**	**Option 1**: • 100 kV and above with nine or more lines • 200 kV and above with five lines or more • 300 to < 500 kV with four lines or more • ≥ 500 kV with one line or more At a substation with multiple voltages, line count starts at the lowest voltage. (the words highlighted indicate the need for additional discussion) or **Option 2:** MVA Factor 60% of the highest MVA bus or **Option 3**: For all lines 200 kV and above use the five lines criteria and from 100 to 200 kV use the MVA factor 60% of the highest MVA bus The team will select an option based on a multi-regional data analysis. This option will be included in the standard. **For DDR:** **Option 1**: • 100 kV and above with ten or more lines • 200 kV and above with nine lines or more • 300 to < 500 kV with six lines or more • ≥ 500 kV with two lines or more At a substation with multiple voltages, line count starts at the lowest voltage. (the words highlighted indicate the need for additional discussion)	team will suggest that the MVA factor framework be used to determine the values in Option 1 (as the technical "tenet for Option 1).
Substation Definition	Bus is defined as the representation in short circuit program of the node that indicated you have interconnected lines and join have a short circuit capacity– that node occurs at a voltage level. A substation can have several buses and several bus elements. The standard should not refer to substations but rather buses. The point of interconnect should be defined as the high side of the GSU. The team continued discussing Substation definition. Chuck drew a substation representation and tabled several topics for discussion: 1. Two entities 2. Multiple owner 3. Busses not tied (influence line count) 4. DME owner 5. Bus tied (operational)	Notes from April Meeting — Tampa Notes from May Meeting

	6. Multiple kV levels 7. Switchyard 8. Influence of control cables 9. size, distance, natural boundaries (rivers, etc.) 10. electrical connectivity 11. z impedance delta (x%)	
Disturbance/Event Definition	The FAQ should include a reference to EOP-004's reference to Disturbance. The team decided not to define Disturbance since it is already defined in the NERC Glossary (albeit very vague). The team felt that if they clarified the location and threshold that it was not necessary to define Disturbance	Notes from April Meeting — Tampa
DDR 20 lowest impedance buses for each TO and GO was proposed.	Need several proposals for the DDR Threshold – Chuck, Alan, Felix, Jack, Richard & Jim. Need regions to provide short circuit data. We need a data request to TOs and GOs for short circuit data (voltage, amps and MVA). This sub team will work on a spreadsheet including the information to be provided in the request. Stephanie will work with Gerry to issue the data request to the Regions.	Notes from April Meeting — Tampa
SOE	Larry to come up with proposal for SOE threshold for Day 3 discussion. Larry began the discussion on Day 3 by asking if the team had concerns with the 10,000 MVA criteria for SOE. In addition, Larry asked if circuit breaker status is sufficient. Some comments indicated that it is not adequate to do SOE on circuit breaker status only. The team; however, feels that circuit breaker status is sufficient to analyze the event. Discussion on location – where do we want SOE? The same as the location (10,000 MVA) for FR?	Notes from April Meeting — Tampa
GO's	Generator Owners connected to BES Substation buses having available three phase short circuit MVA of 10,000 MVA or above (calculated under normal operating conditions with all facilities and units in service) and either of the following • A generating unit of 20 MVA or higher nameplate rating or • Generating plants with an aggregate plant total nameplate capacity of 75 MVA or higher	Notes from April Meeting — Tampa
Fault Recording	10,000 MVA (irrespective of the number of elements connected) and above for TOs: Exceptions considered on Day 3- • Radial lines that do not have generation are excluded (if the team decides to use a number of lines) – keep as reference but don't include exception in standard • And don't have to monitor both ends of the line • Exempt entire bus if all lines connected to the bus are monitored at the next bus at the same voltage level.	Notes from April Meeting — Tampa

	Transmission Owners with BES Substation buses having available three phase short circuit MVA of 10,000 MVA or above (calculated under normal operating conditions with all facilities and units in service)	
Maintenance and Testing Discussion:	The team reviewed the suggestion made by WECC to move R6 from PRC-018-1 into the proposed standard. The team decided that this was a feasible approach to addressing the maintenance and testing requirements. Richard suggested that we should reword Requirement R6. Richard volunteered to reword for review by the team.	Notes from April Meeting — Tampa
Allow for Missing Data		
Unclear what is 50% compliance in the implementation plan		
Issues with Triggering		
Integration to Legacy Equipment		
Derived Data	• Chuck asked Bob to comment on the team's approach using derived Data. • Bob indicated that the less you have to derive is preferred but derived data does work.	Notes from May Meeting

DFR, SOE and FR Discussion — Bob C.

PRC-004 and EOP-004
Event Analysis five categories for event classifications (operating security events and resource adequacy events) — on the NERC Website:
(http://www.nerc.com/page.php?cid=5|63|252)

Categories 3 or 4 would require DDR information. Categories 1 or 2 would require DFR and SOE information

*** Standard should include wide area SPS and RAS — want to include in the location criteria and loss of DC converter (specify station size)**

Category 1: An event results in any or combination of the following actions:

a. the loss of a bulk power transmission component beyond recognized criteria, i.e. single-phase line-to-ground fault with delayed clearing, line tripping due to growing trees, etc.

b. frequency below the Low Frequency Trigger Limit (FTL) more than 5 minutes.

c. frequency above the High FTL more than 5 minutes.

d. partial loss of dc converter station (mono-polar operation)

e. inter-area oscillations

Category 2: An event results in any or combination of the following actions:

a. the loss of multiple bulk power transmission components.

b. the loss of load (less than 500 MW)

c. system separation with loss of less than 5,000 MW load or generation.

d. SPS or RAS misoperation

e. the loss of generation (between 1,000 and 2,000 MW in the Eastern Interconnection or Western Interconnection and between 500 MW and 1,000 MW in the ERCOT or Québec Interconnections).

f. the loss of an entire generation station or 5 or more generators.

g. the loss of an entire switching station (all lines, 100 kV or above).

h. complete loss of dc converter station.

Category 3: An event results in any or combination of the following actions:

a. the loss of generation (2,000 MW or more in the Eastern Interconnection or Western Interconnection and 1,000 MW or more in the ERCOT or Québec Interconnections).

b. the loss of load (from 500 to 1,000 MW)

c. system separation or islanding with loss of 5,000 MW to 10,000 MW of load or generation.

d. UFLS or UVLS operation.

Category 4: An event results in any or combination of the following actions:

a. system separation or islanding of more than 10,000 MW of load

b. the loss of load (1,000 to 9,999 MW)

Derived Data Approach:

- Chuck asked Bob to comment on the team's approach using derived Data.
- Bob indicated that the less you have to derive is preferred but derived data does work.

5. Implementation Plan

- Bob C. indicated that basing the implementation schedule giving special consideration to nuclear units should not be a high priority.

- July 2010 is the team's "guess" as to when this proposed standard will be BOT approved. This is important considering the phased in implementation schedule and the impact on reliability on the lagged installation permitted by the implementation schedule.
- Proposed implementation plan:
  i. 50% of locations fully (all the data requirements at the location as identified in RXX elements required at the given location) monitored or 50% of the total required monitored elements within three years
  ii. 100% of locations fully (all the elements required at the given location) monitored and all total monitored elements within six years
- The team discussed the need to define "locations". Some team members think it is clear to define as a site.
- Bruce P. suggested a definition for DDR location as follows:
  iii. The physical point of mounting location within a substation, control room, power plant, etc. of a DFR, DFM, SER can be referred to as the "DDR location".

6. RFC DDR Requirements

The team did not discuss the DDR Requirements at this meeting.

7. First Pass Response to Comments

The first draft of the proposed standard was posted for industry comment. The comment period closed March 18, 2009. The team did not discuss the response to comments but agreed that once the major issues were vetted the response to comments should easily fall out.

8. Action Items

Action Items	Status:	Assigned To:
The group must resolve how to develop requirements for maintenance and testing of disturbance monitoring equipment (DME). Possible options include, adding maintenance and testing requirements to the draft PRC-002 standard, asking the Standards Committee to transfer the maintenance and testing requirements to the standard drafting team (SDT) for Project 2007-17 Protection System Maintenance and Testing, or some other solution. Ultimately, the maintenance and testing requirements for DME should "look and feel" like the maintenance and testing requirements developed by the SDT for Project 2007-17 **Protection System Maintenance and Testing.**	**In Progress** **This issue will be addressed in the comment form to solicit industry feedback on how to proceed.** **Discussed at the 12/08/08 call:** **The team reviewed the status of the issue clarifying that the team was going to post the standard and solicit industry feedback on omitting these requirements. The team would use this feedback to propose an alternate to the SC or NERC staff — possibly create a supplemental to SAR to the Maintenance project.** **5/6/09 :** **Bob Cummings will take a proposal to the June SC meeting that the requirements for**	All

Action Items	Status:	Assigned To:
	maintenance and testing be removed from Project 2007-11 and be included elsewhere (PRC-005). The team has reviewed an initial proposal of requirements for maintenance and testing that can be used once the team has direction regarding where to include these requirements.	
Navin to lead a small group in drafting the **measures** for the requirements. Jack Soehren, Felix Amarh, and Barry Goodpaster volunteered to assist Navin.	**Closed**	Navin Bhatt, Jack Soehren, Felix Amarh, and Barry Goodpaster
Steve Myers and Bob Millard to draft the **VRFs and VSLs.**	**Will Remain Open**	Steve Myers, Larry Brusseau, and Bob Millard
Chuck, Jim and Alan will be proposing language for R5.1 and R5.2.	**Completed**	Chuck, Alan and Jim.
Willy will review the comment form to ensure that references to the standard are still correct.	**Completed**	Willy H.
Jim will look over the mapping form to ensure that references to the standard are still correct.	**Completed**	Jim D.
Jim D. will take the lead on drafting a response to these comments and/or make suggested revisions to the draft standard	**Created 4/1**	Jim D.
Threshold Short Circuit Level — Chuck will propose a defined term to be applied to this standard	**Created 4/1**	Chuck J.
The team reviewed the suggestion made by WECC to move R6 from PRC-018-1 into the proposed standard. The team decided that this was a feasible approach to addressing the maintenance and testing requirements. Richard suggested that we should reword Requirement R6. Richard volunteered to reword for review by the team.	**Created 4/1** **5/6/09:** **Richard proposed requirements (5/3 e-mail to the team) that the team reviewed on 5/6/09. See action item above regarding maintenance and testing requirements.**	Richard F.
Need several proposals for the DDR Threshold — Chuck, Alan, Felix, Jack, Richard & Jim. Need regions to provide short circuit data. We need a data request to TOs and GOs for short circuit data (voltage, amps and MVA). This sub team will work on a spreadsheet including the information to be provided in the request. Stephanie will work with Gerry to issue the data request to the Regions if the team determines this is best approach (issuing a data request).	**Created 4/1**	Chuck, Alan, Felix, Jack, Richard & Jim.
The sub teams will prepare draft responses to the questions that were assigned to the teams. They will email their draft response to the team by April 20, 2009 in preparation for the team conference call on April 27,	**Created 4/1**	Team

Action Items	Status:	Assigned To:
2009.		

9. Next Steps

10. 2009 Schedule

Date and Time	Location	Comments
February 18, 2009	Conference Call	To discuss the technical paper
March 2, 2009	Conference Call	Webinar presenters and NERC staff required on this call to prep for the webinar
March 12, 2009 11 a.m.–12:30 p.m. EST	Industry Webinar	Need to confirm date with team and speakers
March 30, 2009 — 1–5 p.m. EST March 31, 2009 — 8 a.m.–5 p.m. EST April 1, 2009 — 8 a.m.–5 p.m. EST	FRCC Offices Tampa, FL	Confirmed by Chuck.
April 27, 2009	Conference Call	To identify the comments that require discussion with the entire team during our May 5-6 meeting.
May 5, 2009 — 8 a.m.–5 p.m. EST May 6, 2009 — 8 a.m.–5 p.m. EST	FPL Juno Beach	Confirmed
June 3, 2009 — 1–4 p.m. EST	Conference Call	The team decided to conduct a conference call on June 3 from 1–4 p.m. EST
July 13, 2009 — 9–11:30 a.m. EST	Conference Call	

11. Other

12. Adjourn

Attachment 1 Antitrust Guidelines

I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment. Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees

and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.