

## Meeting Notes Project 2013-03 (Geomagnetic Disturbance) Standard Drafting Team

October 20, 2014 | 1:00 p.m. - 5:00 p.m. ET

October 21, 2014 | 8:00 a.m. - 4:00 p.m. ET

NERC Headquarters  
Atlanta, GA

Dial-in: 1.866.740.1260 | Access code: 6251541 | Security code: 1921

### Administrative

#### 1. Introductions

The chair called the meeting to order at 1:00 p.m. EDT, October 20, 2014. Participants were:

Members			
Name	Company	Name	Company
Frank Koza, Chair	PJM Interconnection	Randy Horton, Vice Chair	Southern Company
Donald Atkinson	Georgia Transmission Corporation	Emanuel Bernabeu	Dominion Resource Services, Inc
Kenneth Fleischer	NextEra Energy	Luis Marti	Hydro One Networks
Mark Olson	Standards Developer		

Observers			
Name	Company	Name	Company
Regis Binder	FERC	Berhanu Tesema	BPA
Ken Donohoo	Oncor	Tyler Giles	MISO
Stacey Tyrewala	NERC	Mike Gandolfo (Remote)	FERC
Mary Agnes Nimis (Remote)	FERC	Steve Shelemy (Remote)	Manitoba Hydro
		Habibou Maiga (Remote)	SDGE

**2. Determination of Quorum**

The rule for NERC Standard Drafting Team (SDT or team) states that a quorum requires two-thirds of the voting members of the SDT. Quorum was achieved with 6 of 8 total members participating.

**3. NERC Antitrust Compliance Guidelines and Public Announcement**

NERC Antitrust Compliance Guidelines and public announcement were reviewed by Mark Olson. There were no questions raised. Participant conduct policy was reviewed.

**4. Administrative and Safety**

Building evacuation plan, emergency procedures, and office layout were reviewed by Mark Olson.

**Agenda**

1. **Chair Introductory Remarks.** Frank Koza welcomed the drafting team and observers. He reviewed the agenda.
2. Ballot results were reviewed at this link: [http://www.nerc.com/pa/Stand/Project201303GeomagneticDisturbanceMitigation/Project\\_2013-03\\_GMD\\_TPL-007-1\\_Ballot\\_Results\\_10152014.PDF](http://www.nerc.com/pa/Stand/Project201303GeomagneticDisturbanceMitigation/Project_2013-03_GMD_TPL-007-1_Ballot_Results_10152014.PDF)
3. **Comment Review.** The SDT reviewed all comments from the formal comment period. Revisions were made to the draft standard, supporting materials, and Consideration of Comments document.
  - a. **Thermal screening and assessment.** SDT considered comments on model availability and recommendations to raise the screening criterion. Luis Marti presented simulation results of the benchmark GMD event on the three available transformer models described in the Thermal Impact Screening criterion white paper. (These simulation results are now included in the revised Thermal Screening Criterion white paper as figure 1). The team agreed that these results justified using 75 A per phase as a conservative screening criterion for thermal assessments and accepted this value for use in TPL-007-1. Luis Marti was assigned

responsibility for revising the Thermal Screening Criterion white paper. The SDT discussed how the simulations could be used for performing thermal assessments. Luis Marti explained that each point in the plot represented a modeled thermal assessment of the benchmark GMD event for a specific storm orientation. Therefore, an envelope representing the upper bound of the peak metallic hot spots could be obtained for all effective GIC values. The SDT agreed that a look-up table based on the upper bound envelope should be created and included in the Transformer Thermal Impact Assessment white paper. Luis Marti was assigned responsibility for this revision.

- 1)** Requirements R5 and R6 were revised to be consistent with 75 A threshold. The team agreed that GIC(t) should be provided by the planning entity upon request of the GO or TO. A 90 calendar-day time frame was accepted for providing GIC(t).
- b. Modeling Concerns for Underground Transmission lines.** The SDT considered comments recommending additional guidance or scaling factors for underground transmission lines. The SDT agreed that this should be addressed in revisions to technical guidance and would refer to NERC technical committees. The team did not support changes to the standard for this topic.
- c. Florida Ground Model.** The SDT considered comments from entities that the Florida ground model had not been produced or posted. Mark Olson contacted USGS and they reported that a web update was being developed that would include the model. As an interim the data files were available on a USGS FTP site.
- d. Requirement R4 Part 4.1.** The SDT considered comments to clarify the number and intent of 'On-Peak' and 'Off-Peak' studies. The rationale box was updated.
- e. Implementation of CAP.** The SDT considered comments to specifically require implementation of the CAP, or prescribe a deadline for CAP implementation. The SDT intends to preserve flexibility in implementation timelines afforded by R7 due to the various approaches for mitigation. The standard sufficiently addresses implementation in part 7.2. No substantive changes were made.
- f. Harmonics.** The SDT considered comments recommending removal of the table 1 constraint related to harmonics, and for the development of specific harmonics assessment guidance. The SDT recognized that a consideration of harmonics was important to evaluating the effects of GIC but that prescriptive approaches should not be part of the standard. Technical guidelines currently discuss effects broadly; more detailed techniques should be developed by technical committees or other groups.
- g. Space Weather concerns.** The team reviewed supplemental comments and draft comment responses. The team disagreed with comments asserting that geoelectric fields can be accurately calculated from GIC data without specific power system configuration and modeling information. The SDT supports this approach for validation of earth models but it must occur after system models are developed and GIC studies are conducted. The SDT considered comments recommending a benchmark based on conditions from the Carrington event or the 1921 Railroad Storm. Accurate measurement data is not available to support the

analysis for purposes of determining a benchmark. The team did not support changes to the benchmark event.

- h. Transformer manufacturer comments.** The SDT reviewed supplemental comments submitted by a group of transformer manufacturers. The SDT supported increasing the screening criterion as recommended and agreed that simulation data presented by Luis Marti provided adequate justification of a conservative value. The SDT agreed that a square-wave could provide a suitable wave form for thermal assessments if the parameters were appropriate. The thermal impact assessment white paper was revised to acknowledge that thermal assessment methods approved by standard-setting organizations such as IEEE or CIGRE should be acceptable provided the results can be demonstrated to be as conservative as the benchmark GMD event.
  - i. Clarifying changes.** The SDT accepted clarification and editorial suggestions for the draft standard proposed by commenters.
  - j. Comment responses.** The SDT reviewed all comments and draft responses and discussed necessary revisions. The SDT agreed that final approval of the Consideration of Comments would be accomplished by email.
4. The SDT reviewed the communications plan and discussed necessary outreach.
  5. The chair adjourned the meeting at 3:21 pm October 21.