PES/NPEC SC-4: Working Group 4.6 - Preferred Power Supply
Meeting Minutes for S13 -02

Mystic, CT
July 30, 2013

1. **Welcome and Introduction**
   Chairman George Attarian called the meeting to order at 1:30, July 30, 2013. See Attachment 1 for a list of members and guest who were in attendance.

2. **Review of Meeting Minutes and Agenda**
   The Meeting Minutes for S13-01 and S13-02 agenda were reviewed and approved.

3. **Review of Membership Action Items**

Item #	Assigned to	Action	Due	Status
12-3	Leake/ Miller	Review the documents that reference grid frequency relaxation. Harvey to provide initial published information while Ken will get further information/confirmation from FERC	14-01	
13-2	Simon	Update on the INPO reliability factors for offsite power to include as a reference into 1792	13-02	Complete
13-3	WG All	Review all comments to determine inclusion into revision of 1792	13-02	Complete
13-4	Koshy	Presentation of examples of ways to prevent LOOP	13-02	Complete
13-5	Lyon	Determine a problem statement for the transmission requirements regarding restoration after blackout	13-02	Complete
13-6	Womack	Send updated matrix of changes to IEEE 1792, based on the review of comments received to working group members responsible for implementing changes	8-30-13	
13-6	Womack	Send updated IEEE 1792 word document (utilizing tracked changes) with editorial changes agreed upon by the working group to members responsible for implementing changes based on review of comments	9-27-13	
13-7	WG	Individuals complete changes based on review comments and send to secretary send to working group members for review.	1-10-14	
13-8	Womack	Coordinate all received changes into 1 document and send to working group members for review.	14-01	
13-8	Roy Lyon / Shawn Simon	Coordinate on section 6.3 additions to incorporate considerations/requirements for restoration during black start	14-01	

4. **Specific Items Related to Standard 765**
   IEEE 765 requires no further revisions at this time.

5. **Specific Items Related to Standard 1792**
   IEEE 1792 revisions based on comments received during the balloting process are documented in Attachment 2.

   Additional topics of discussion included:
   - Additional clarification of action item 12-3. Harvey Leake, Kenn Miller, and George Attarian to resolve the FERC requirements for frequency relaxation on the grid.
   - Black start requirements and their inclusion in the standard
   - All members should take note of any best practices which could be included as part of this revision.
   - Additional discussion within the working group will need to include if and/or how items such as single phasing could be incorporated into the recommended practice document.

6. **General Items of Discussion**
   Shawn Simon reviewed INPO's process of determining the index for LOOP. Members identified a concern of how this could be applied to PRA analysis and requested a review to ensure the numbers be comparable. It was discussed that the INPO metric index is intended to be a forward looking (i.e. predictive) measure to indicate, based on component performance data, whereas the PRA value was based on operating experience. This new metric is intended to be published and reviewed in 2014 with the intention of becoming a goal for operating nuclear plants in 2020.

7. **Next Working Group Meeting**
   Next working group meeting will be held in conjunction with SC-4 14-01 meeting.

8. **Meeting Closing Remarks/Adjournment**
   Closing remarks detailed the need to move forward with the incorporation of comments and working group member participation. Meeting adjourned at 4:47.

ATTACHMENT 1

IEEE NPEC SC-4 Working Group 4.6 (13-02 Mystic, CT)

*Status: (M) Member, (G) Guest, (CM) Corresponding Member

Attendance: (X)Present, (A) Absent

Name	Email Address	Status	Attendance
George Attarian	george.attarian@pgnmail.com	M	X
Ijaz Ahmald		M	A
Mark Bowman	mdbowman@tva.gov	M	X
Bob Carruth		M	A
Paul Colaianni	paul.colaianni@duke-energy.com	M	X
John Disosway	john.disosway@dom.com	M	A
Ken Fleischer	kenneth_fleischer@fpl.com	M	A
Dave Gladey	dlgadey@pplweb.com	M	A
Chris Georgeson	cgeorgeson@ieee.org	M	X
Kali Hara	haraks@ieee.org	M	A
Evan Heacock	evansheacock@dpengineering.com	M	X
Edvin Kozo	edvin.kozo@aps.com	M	A
Ayodele Ishola-Salawu	ayodele.ishola-salawu@fpl.com	M	A
Justin Lane	justin.lane@pseg.com	M	A
Harvey Leake	hleake@earthlink.net	M	A
Roy Lyon	rrlyon@southernco.com	M	X
John Mallanda		M	A
Singh Matharu	gurcharan.matharu@nrc.gov	M	A
Kenn Miller	kenn.miller@nrc.gov	M	A
Gene Poletto	gpoletto@performancepower services.com	M	X
Gregg Reimers	gar0@pge.com	M	A
Myat San	myat.san@exeloncorp.com	M	X
David Sehi	dsehi@enercon.com	M	A
Shawn Simon	SimonsSM@INPO.org	M	X
Tammy Womack	tawomack@tva.gov	M	X
Oon-Pyo Zhu		M	A
Lindsay Hopf	lbhopf@tva.gov	G	X
Hideki Tanaka	hideki_tanaka@mnes-us.com	G	X
Farouk Baxter		CM	
Alan Bysfield		CM	
Bill Mindick		CM	
Jerry Nicely	jnconulting@epbfi.com	CM	
Tom Sims	t.r.sims@ieee.org	CM	
Mike Tucker	mike.tucker@ieee.org	CM	

ATTACHMENT 2

IEEE 1792 Changes / Owner

Location	Changes to the issued standard:	Owner
Page 3, Section 3	Add "etc" after "(RAT)"	Tammy W.
Page 3, Section 3	LTC - Add this may also be called an on load tap changer (OLTC) UAT - Add etc. (To include other types)	Tammy W.
Page 4, Originally Section 4.2	Original Comment/Fix: Installation of the Lightning protection system in the switchyard etc. will enhance PPS reliability. It is generally provided as part of the design. However, it should be required / discussed in this recommended practice. Include a section requiring/discussing lightning protection system. **Response: Move to another section and figure out what to say. But use examples of grounding, etc.**	Myatt S.
Page 5, Section 4.2.1.b	Original Comment: Add "Insufficient HVAC in Switchyard Relay House." **Response: Inadequate/adverse environmental condition for installed equipment (Recommend - proper environment (seals, temperature, etc.), proper equip such as filters, etc.)**	Shawn S.
Page 5, Section 4.2.1.b	Add: "Insufficient independence and separation of redundant Switchyard batteries." **Response: Need to be aware that we need to change both 4.2.1 and 4.2.2**	Shawn S.
Page 5, Section 4.2.1.b	Add: "Common right-of-way of two or more PPS credited transmission lines." **Response: Change to say common lines or right of way or sharing of tower, etc.**	Shawn S.
Page 5, Section 4.2.2.a	Original Comment: Add a new line after last example on Page 5, section 4.2.2.a which states: "Ensure that "real time operational" studies are performed at least every 15 minutes in order to alert the NPGS operators to any potential low voltages on the transmission system if the Nuclear Power Generating Station tripped off line." **Response: Mark to call commenter to ensure we know his comment.**	Mark B.
Page 7, Section 5.1	Add to Normal Op: Class 1E and BOP loads remain on the SST (NPGS designs without a UAT)	Tammy W.
Page 7, Section 5.1	Add to Unit Trip: Class 1E and BOP loads remain on the SST (NPGS designs without a UAT)	Tammy W.
Page 7, Section 5.1	Add to Unit Start Up: Class 1E and BOP loads remain on the SST (NPGS designs without a UAT)	Tammy W.
Page 8, Section 5.2	Change "event" to "accident", for DBA	Tammy W.

ATTACHMENT 2

IEEE 1792 Changes / Owner

Location	Changes to the issued standard:	Owner
Page 9, Section 5.2.1.a (after #3)	Original Comment: Add the following: "The above contingencies should not be considered to occur simultaneously with a Design Basis Event but rather to have occurred 30 minutes prior to the Design Basis Event. Thirty minutes is the standard time period by which the transmission system operators have taken corrective actions to offset the consequences of the indicated contingency" **Response: Review document to ensure this simultaneous rule is clear (is in EMS, may need to be before). There might be more in the 2006 records**	George A.
Page 9, Section 5.2.1.a., after 1st paragraph	Original Comment: Add a new line after 19 in order to address the point in time that we expect the transmission system to have reached the designated voltage. In the example, I am using the value of 1 second but that is not necessarily an appropriate value for every situation. By specifying a time we are effectively defining what automatic voltage improvement capabilities the TSS can take credit for when running the "real time operational" studies. A value in the 1 to 2 second range would typically allow generator AVR equipment to be credited but would not allow for transmission system LTC's to operate. The time specification also allows the NPGS engineers to evaluate if the LOV or DVR relay would inadvertently operate. We will have to be careful to define T = 0. My experience suggests that Time = 0 should be defined when the generator breakers open up as opposed to when the turbine valves close. Closing the turbine valves does not seem to impact the transmission voltage very much but the tripping of the generator and the associated VAR support does.Original Fix comment:It is important to specify a time requirement as well as a voltage magnitude and/or voltage drop requirement (i.e. minimum steady state voltage must be established within 1 second of the NPGS generator tripping offline). The time requirement establishes the potential corrective actions that the TSS can take credit for when running the "real time operational" studies. It also allows the NPGS engineer to evaluate the performance of the accident mitigation equipment as well as any associated protective relays. **Response: This needs to be enhanced in EMS. Establish a notification time period. What would be an acceptable time frame, if it's less than the LOV relay. Analysis that shows you go below your criteria. If this is less than the LOV relay would be ok, don't call? This may be a new NPIR to state we can be "anywhere" as long as I recover? Clarify the calling process, predictive system? Is it based on the post contingent SS voltage that doesn't pass?**	Mark B.(UtilizeTVA Transmission Group)
Page 9, Section 5.2.1.a.2	Change intertie to element.	Tammy W.
Page 9, Section 5.2.2	Original Comment/Fix: Voltage stability may be considered a NERC TPL System Category C or D event. Up to this point document has been discussing Category A and B events. Consider additional Category C and D events such as Small Signal Analysis, Cascading Events and Islanding.	PJM can review Ken Petroff Justin Lane
Page 10, Section 5.2.2.1	Change "associated with unexpected reactor trips" to "associated with unexpected plant transients and unit trips"	Tammy W.

ATTACHMENT 2

IEEE 1792 Changes / Owner

Location	Changes to the issued standard:	Owner
Page 10, Section 5.2.2.1,	Insert "regional" in front of topology.	Tammy W.
Page 10, Section 5.2.2.1, last item in second list	Change to "Changes in dynamic characteristics of the main generator voltage regulator (and if applicable, associated power system stabilizer (PSS)), governor..."	Tammy W.
Page 10, Section 5.2.2.2	Creating complete P-V curves is overkill for the purpose at hand. The main goal of P-V curves is to assure that you are at least some percentage, (5%?) away from the nose of the curve. For example, if the system load is 10,000 MWs, you want to know that a voltage collapse doesn't occur at 10,500. Instead of running a series of load flows we should suggest that they run the most significant scenario at a load level of 10,500. This accomplishes the same thing without the added overhead of a complete P-V analysis. **Response: One way instead of The system voltage stability is usually determinedfrom the transmission system's P–V …** The word Minimum should be better defined. For a station with several lines, the minimum level would be all lines except for one in service, along with all nearby generators off line, even though this could be Highly unlikely to ever occur. **Response: Can't find minimum so not sure where it would be referring to**	Tammy W.Further Clarification from Individual who made the Comment
Page 10, Section 5.2.3 (last paragraph "for this purpose, the minimum short-circuit …")	Original Comment/Fix: Normally, short circuit studies are completed with different files than those used in the load flow study. These fault cases are optimized to give the highest fault level. In the TSS studies, however, we normally bias the cases to be the weakest that we can expect in the area. The reduced fault level should represent this weakened load flow case. For this purpose, a reduced short-circuit level in the NPGS switchyard should be provided in the TSS. This reduced level should represent the level corresponding to the weakest configuration used in the load flow study. Use of this reduced short circuit (higher impedance) value is recommended for NPGS ...	PJM can review Ken Petroff Justin Lane
Page 15, Section 6	Delete, "do not use a common language or have a common understanding". Replace with "may have a different understanding of technical terminology	Tammy W.
Page 19, Section 7.2	Add to list "Conditional testing protocols (e.g. thermography standards, power factor test criteria, sound level reading criteria, transformer turns ratio tests, diagnostic timing tests, dissolved gas in oil analysis criteria, power frequency off-line partial discharge standards etc.)"	Tammy W.
Page 27	Change "local disturbances spreading with" to "local disturbances becoming widespread with"	Tammy W.

ATTACHMENT 2

IEEE 1792 Changes / Owner

Location	Changes to the issued standard:	Owner
Page 11, Section 5.2.5	Original Comment: This section does not present a clear case or intent for its inclusion as part of the overall discussion on analytical studies. As there are probably many EMS and/or state estimators in use, some with passive algorithms others with more active algorithms, for the purposes of providing more accurate post event or steady state voltage conditions more justification is needed for singling them out. Promoting these types of analysis as substitute for more traditional programs with the reason given is not adequate. For example real time data can provide trending information that could be used to refine assumptions or inputs in traditional static or dynamic transmission study models but it is not clear how EMS or state estimators alone provides for more accurate post contingency data. This section does not have a clear audience ie for whose benefit is the discussion presented...the transmission entity or NPGS? Original Fix Comment: Provide more clarification on how exactly EMS or state estimators substitute as separate analyses for providing post contingency steady state system voltages. Also item b) does not make sense for the reasons stated in my comment..."if EMS cannot account for NPGS automatic load increases, transfers...then NPGS studies should account for the impact of this load"? What load, whose study? Transmission system, class 1E and BOP? **Response: Review this section to see if post trip load is described. We need to add so much more possibly? Just some detail? Need to get various EMS "how to's" from different companies. Is there a recommended? Reconcile the post trip load condition in the study, understand how transmission models your plant, if you are going to use, then you need to make these consideration.**	Mark B. and Tammy W.