PES/NPEC SC-4: Working Group 4.6 - Preferred Power Supply
Meeting Minutes for S17-01

New Orleans, LA
February 6, 2017

1. **Welcome and Introduction**
   Chairman Tamatha Womack called the meeting to order at 8:39 AM, February 6th, 2017.

2. **Review of Meeting Minutes and Agenda**
   The Meeting Minutes for S16-02 were reviewed and approved as written. The meeting minutes of 16-02 will be sent to the webmaster to be uploaded to the website.

   Motion to approve 16-02 Minutes: John Disosway
   Second: Tim Lensmire

   The 17-01 agenda:

	July 12th, 1:00 PM – 3:00 PM *Location: Renaissance Denver Stapleton Hotel*	**Presenter**
1.	Welcome and Introductions	Tamatha Womack
2.	Identification of Members and Quorum	Jason Bellamy
3.	Opening Remarks and Approval of Agenda	Tamatha Womack
4.	Review and Approval of Previous Meeting Minutes	Jason Bellamy
5.	Status of Action Items	Tamatha Womack
6.	Presentation: P1792 Recirc-Ballot Status	Jason Bellamy
7.	P765 Update / PAR Development Discussion	Tamatha Womack
8.	New Action Items	Jason Bellamy
9.	Next Working Group Meeting	Tamatha Womack
10.	Closing Remarks/Adjournment	Tamatha Womack
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   Motion to approve Agenda: John Disosway
   Second: Tim Lensmire

3. **Action Items**

Item #	Assigned to	Action	Due	Status
16-1	Working Group Members	Review 1792 for possible impacts to frequency descriptions due to effects of NPIRs.	17-02	Assigned
17-1	Jason Bellamy	To send information to working group on Working Group K11, “Open Phase Detection for Nuclear Generating Stations,”	17-02	Assigned
17-2	Jason Bellamy	To send out consolidated comments on P765 prior to 17-02	17-02	Assigned

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4. Review of Membership/Attendance

The membership roster was reviewed and updated. See Attachment 1 for an updated list of members and guests who were in attendance. 17 of the 24 working group members were present to establish a quorum.

5. Specific Items Related to Standard 765

Discussed relaxation of frequency requirements and PRC-24. Further review for potential impacts to the standard will be discussed in 17-02. Additional review of published transmission requirements (NERC Stds. NUC-001 and PRC-024) will be required in order to determine if changes are required. BL standards should also be considered for impact of frequency requirements.

Discussed need to develop PAR for 765 in 17-02. Received comments from several individuals on 765. Members should review 765 and have all comments provided by 17-02, to develop scope of PAR.

6. Specific Items Related to Standard 1792

P1792 completed the recirculation ballot with the required approval votes.

As with Standard 765, Standard 1792 will have further evaluation for changes associated with relaxing the frequency requirements.

7. General Items/New Business

Discussed that white papers on possible topics will be discussed in 17-02 to be developed.

Jeff Weibelt and Tania Martinez Navedo have attended two meetings and were added as members of the working group.

8. Next Working Group Meeting

Next working group meeting will be held in conjunction with SC-4 17-02 meeting. Next meeting will begin drafting PAR for Standard 765 since it has come up on its 5 year cycle. The next meeting will be held in Buffalo, NY with tentative dates being July 17-18.

9. Meeting Closing Remarks/Adjournment

Meeting adjourned at 10:00 AM.

ATTACHMENT 1
Attendance/Membership

Member #	Member Name	Email Address	In Attendance
1	George Attarian	george.attarian@pgnmail.com	No
2	Jason Bellamy	jbellamy@enercon.com	Yes
3	Mark Bowman	mdbowman@tva.gov	No
4	Paul Colaianni	paul.colaianni@duke-energy.com	Yes
5	John Disosway	john.disosway@dom.com	Yes
6	Ken Fleischer	fk700@bellsouth.net	Yes
7	Chris Georgeson	cgeorgeson@ieee.org	No
8	Evan Heacock	evansheacock@dpengineering.com	Yes
9	Steve Hutchins	steven.hutchins@exeloncorp.com	Yes
10	Ayodele Ishola-Salawu	ayodele.ishola-salawu@fpl.com	Yes
11	Edvin Kozo	edvin.kozo@aps.com	Yes
12	Harvey Leake	hleake@earthlink.net	No
13	Tim Lensmire	timothy.lensmire@nee.com	Yes
14	Kevin Littrell	klittrell@enercon.com	Yes
15	Roy Lyon	lyonengr@gmail.com	No
16	Singh Matharu	gurcharan.matharu@nrc.gov	No
17	Kenn Miller	kenn.miller@nrc.gov	Yes
18	John Minley	jeminley@southernco.com	Yes
19	Gene Poletto	gpoletto@performancepowerservices.com	Yes
20	Gregg Reimers	gar0@pge.com	Yes
21	Shawn Simon	SimonsSM@INPO.org	No
22	Tom Solinsky	solinskyt@zhi.com	Yes
23	Sudhir Thakur	sudhir.thakur@exeloncorp.com	Yes
24	Tamatha Womack	tawomack@tva.gov	Yes
25 (new)	Jeff Weibelt	jbweiel@southernco.com	Yes
26 (new)	Tania Martinez Navedo	tania.martinez-navedo@nrc.gov	Yes

Guests in Attendance	Email Address
Roy Mathew	roy.mathew@nrc.gov
Shinji Kawanago	shinji_kawanago@nseng.mhi.co.jp
Hideki Tanaka	hideki_tanaka@mhi.co.jp
Ken Kawaguchi	
Tiffany Hicks	
David Runowski	david.runowski@dteenergy.com
Ken Netzel	
Keith Bush	kbush@enercon.com
Nader Eldeiry	neldeiry@enercon.com

ATTACHMENT 2

Initial Comments on IEEE Std. 765

Several comments for consideration for IEEE Std. 765 were received during the meeting as well as via email after the meeting. See below for all initial comments on IEEE Std. 765:

1. It appears there is a lot of confusion or lack of complete understanding of the scope of this standard on the part of the WG members. In order to avoid this condition, it is recommended that ***the scope of the standard be re-defined*** such that any ambiguity in its scope is removed and the limitations or the Std. are clearly defined/understood.
2. Re-write applicable sections of the Standard to either provide more detailed discussions of the applicability/instruction in the section or reference applicable standards where IEEE Std. 765 is not sufficient or is not fully/directly applicable.
3. Open phase discussion (Detection and isolation) should be limited to offsite power source(s) to the offsite power transformer or the main transformer as the case may be. IEEE Std. 308 should be referred to for the class 1E protection against open phase condition.
4. Scope 1.2: Do not change intent of scope. Clarify as:
    a. design criteria of PPS circuits
    b. Interface criteria
    c. Transmission network
    d. Class 1E distribution system
    e. Non-Class 1E distribution system
    f. Station Blackout AAC
5. Revision of Fig 1 to illustrate PPS/Transmission Network interface is in the switchyard, not part way into the transmission system (i.e. interface is within the switchyard)
6. Definitions: Should consider individually defining “capacity” and “capability” in Section 3, Definitions
7. Consider discontinuing Fig 2 as it is obsolete since both PPS circuits fall short of going all the way “to” the Class 1E distribution system per Section 5.3.1 and GDC-17.
8. Safety Classification 4.2: Do not try to describe what is not required
9. Function 4.2:
    a. Provide adequate 3-phase voltage to Class 1E distribution system
    b. Identify non-Class 1E interface functional requirements
10. Capacity and Capability 4.4:
    a. Repeating generic GDC-17 requirements adds no value; basic requirement is to supply Class 1E distribution system while maintaining adequate voltage (and frequency?) to operate ESF loads
    b. Recover from anticipated unit transients before transfer to onsite power required (minimum)
    c. Recover from anticipated unit transients before actuating IEEE 308 protective functions (design margin)

   d. Regardless of the "sharing" of a PPS circuit, should transmission interface consider multi-unit impacts based on coincident IEEE 308 design basis events?

11. Availability 4.5: Start from the position of what "Good" looks like (i.e. two immediately available PPS circuits). IEEE should consider not endorsing a delayed access source unless three PPS circuits available.
12. Independence 4.6: Needs more detail. The terms "minimize" and "likelihood" are too vague (i.e. do not expand/clarify regulatory requirements) . Should there be any distinction between design basis event active component operation to support PPS "capability" versus major equipment asset protection (i.e. loss of the PPS circuit).
13. (Transmission) Description 5.1.1: The "PPS transmission system" needs clarification. Does the inclusion of the transmission lines as part of the PPS (versus an interface) depend upon the NPGS switchyard being on a radial feed versus being looped into the transmission network?
14. (Transmission) Independence 5.1.3: Consider adding a "tie-line" as a new term (Section 3) to refer to that portion of the PPS circuit that operates at a transmission voltage level. Need to distinguish from the transmission lines that are part of the transmission network that terminate at the NPGS switchyard (i.e. not part of PPS).
15. Transmission System Studies 5.1.4: Define "unnecessary challenges" (e.g. partial LOOP, unit trip, or anticipatory DG start). Clarify that enumerated events a) thru d) are independent NPGS design basis events except NPGS unit trip.
16. Connections 5.3.3: A "good" design would not require a bus transfer of a non-Class 1E bus in order to deliver power to a Class 1E bus. Any transfer of Class 1E buses would be addressed by IEEE 308.
17. Degradation 5.3.4: As written, this is an IEEE 308 requirement. That is, source selection is a Class 1E system function. Any unique requirements for Standby PPS circuit? Any unique requirements to consider effects of main generator voltage support?
18. AAC 5.4: Single failure is an undefined term for non-safety systems.
19. Surveillance requirements 6.1:
    a. Does indication requirement apply to all/some switchyard breakers?
    b. Does DC alarm apply to switchyard batteries?
    c. What PPS voltage should be indicated, the source (i.e. switchyard), load side of regulating devices (e.g. LTC Xfmr), and/or point of delivery to Class 1E system?
    d. Can turbine speed satisfy frequency indication requirement?
    e. Split individual requirements in separate paragraphs.
    f. Reasons to indicate PPS/Transmission boundary in the figures.
20. Control requirements 6.2: Is this intended to be all series devices within each PPS circuit, or just the final device that connects the PPS to the Class 1E bus?
21. Sharing of PPSs 7.1: Should not allow entire PPS to be shared. At most, only one PPS circuit may be shared.

ATTACHMENT 2

Initial Comments on IEEE Std. 765

22. Shared capability 7.2: What if each unit has dedicated PPS circuits (i.e. from switchyard to Class 1E system), any transmission network requirements?
23. Protective systems 7.4: The term “minimize” is too subjective. Adds no value beyond GDC-17.
24. Beyond scope of meeting discussion, but sympathetic inrush magnetization current of large transformers will also generate negative sequence currents and 5th order harmonics that may challenge some plants options for OPC detection. Do depending on how we address OPC we may want to keep this in mind also.
25. Section 3.2 c) should this be modified/changed from station blackout to loss of offsite voltage supply or PPS? This would also apply to 3.2 d).
26. Section 4.1 and Figures, received comment for additional plant configuration. Discuss if this should be added.
27. Section 4.3 Function statement. Possibly add note that excluded beyond design basis events i.e. FLEX.
28. Update Figures
29. 5.2.4 could expand section to include open phase detection.
30. Add 741 to bibliography