PSCC Main Committee Meeting Minutes

Meeting Location:	Meeting Time:	Meeting Date:	Minutes Revised:	Minutes Approved:
WebEx	2:00PM ET	2021/10/14	--	2022/05/12

Presiding Officer:	Recorded by:
Craig Preuss, Chair	Marc Benou, Secretary

Attendance:

Name	Affiliation	Attending via Phone (P) / Web (W) or Local (L)	M/CM/G
Craig Preuss	Black & Veatch	W	M
TW Cease	Consultant	W	M
Marc Benou	Iniven	W	M
Galina Antonova	ABB	W	M
Ed Cenzon	SEL	W	M
Tom Dahlin	SEL	W	M
Ken Fodero	SEL	W	M
Ron Farquharson	Mount Victoria Consulting	W	M
Del Khomarlou	Hydro One	W	M
Dennis Holstein	OCG	W	M
Vasudev Gharpure	Quanta Technology	W	M
Yi Hu	Quanta Technology	W	M
Tony Johnson	SCE	W	M
Corrine Dimnik	Kinectrics	W	M
Ken Martin	Electric Power Group	W	M
Theo Laughner	PowerGrid-Rx	W	M
Scott Mix	PNNL	W	M
Craig Palmer	PowerComm Solutions	W	M
Eric Thibodeau	Hydro Quebec	W	M
Benton Vandiver	ABB	W	M
Due to technical difficulties, Guest attendance was not recorded			

Item no.	Notes	Action by
CALL TO ORDER	Meeting called to order at 2:05PM Eastern Time.	
ROLL CALL, INTRODUCTIONS, AND QUORUM DETERMINATION	A quorum was eventually achieved. A roll call determined there were 20 of 38 members present.	

NEW BUSINESS	Application of Digital Line Current Differential Relays Using Digital Communication
	• PSRC Working Group D47 has the assignment to revise IEEE Std C37.243-2015, IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication
	• Concern was expressed regarding the scope that it may overlap the reach of the PSCC
	• Proposed solution is a joint WG with the PSRC and PSCC
	• A quick resolution is needed so that a PAR can be submitted
	
	Request: The D47 working group of the PSRCC D Subcommittee requests the PSCCC to be a Co-Committee (co-sponsor) for the Revision of IEEE Guide C37.243, IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication. The PSRC will be the lead committee in this work.
	
	Proposed Scope: This guide presents line current differential protection using digital communications. Operating principles, synchronization methods, communication channel design, current transformer (CT) issues, backup protection considerations, testing methods, and troubleshooting fundamentals are included. It also provides specific guidelines for various application aspects including multi-terminal lines, series compensated lines, mutually coupled lines, line charging current, in-zone transformers and reactors, single-phase tripping and reclosing, as well as communications technologies.
	
	Proposed Purpose: This guide is intended to assist engineers in applying line current differential protection using digital communications channels.
	
	Chair: Alla Deronja Vice-Chair: Steve Klecker
	
	Review of Existing C37.243
	• C37.243 was published just prior to the PES reorg
	  • PSRCC scope is to define the protection application requirements and PSCCC scope is to define the communication protocols and technologies that support those requirements
	• The published guide does not define “digital communications”
	  • IEEE dictionary has no entry for the term
	  • Common understanding of digital communications is applicable
	  • Several communication technologies are discussed (SDH/SONET seems to be the focus) so perhaps a common understanding of the term is acceptable
	• The new PAR changes the scope from “channel requirements” to “communication channel design” the proposed scope is now covering PSCCC scope, but the published work also covers communication channel design
	• Subclause 5.3 covers current measurement techniques, including only Rogowski coil and IEC 61850 process bus, where process bus does not measure current
	• Clause 6 goes into communications scheme design
	  • Subclause 6.1 as general, goes into different communications technologies, discussing nx64 channels without discussing the related standard on this topic and a bit about Ethernet,	

then talks about how the communication channel can be designed, this before even discussing the communication requirements – these are discussed in the next subclause
- Subclause 6.2 spends 1 page on requirements
  - General concerns for relay communications over digital channels, not line differential
  - Design issues that impact performance, which are not really performance requirements,
  - What impacts reliability, but does not come up with requirements on those items (e.g., temperature
  - A lot of concepts under reliability, including availability, latency, error rates, recovery delay, and security
- Subclause 6.3 is tutorial on the difference between voice and data communications
  - Presents requirements comparison between the two (perhaps for reference, as there is no stated reason why this comparison is used)
  - Provides line differential requirements
- Subclause 6.4 gets into a specific performance topic of reliability and each performance requirement listed in 6.2 is explained in more detail
- Subclause 6.5 discusses communications networks, under general only SDH/SONET are discussed, then there is a subclause on it
- Subclause 6.6 discusses interoperability requirements
- 6.7 addressing
- 6.8 time synch on channel time and channel asymmetry
- 6.9 external timing
- 6.10 discusses techniques for security against channel and synchronization impairments and mentions the solutions follow into two areas: relay design and application design with concerns being listed as well
- 6.11 discusses redundant channels, but really discusses how to improve upon single points of failure in the communication design
- 6.12 discusses communication channel selection and references a PSRC report
- 6.13 discusses IEC 61850 and references and unnamed TR that covers substation to substation communications, then covers tripping time requirements without discussing how that requirement applies to line current differential communication of analog values (there is confusion between tripping performance and channel performance)

- Clause 7 includes application considerations of line differential schemes and some impacts are covered on the communications design
- Clause 8 discusses testing and troubleshooting, with only general examples of how this could be accomplished with reference to only one technology
  - Several subclauses with a discussion of common communication channels, then only fiber is discussed
- An annex gives examples of Rogowski coil projects

- The existing C37.243 appears to cover communications channel

Item no.	Notes	Action by
	design to address line differential communications • PSCCC should consider becoming a co-committee with the PSRCC as lead committee • Motion to be made to support this analysis and request from the PSRCC? Motion: Tony Johnson, second: Ron Farquharson The vote was passed without objection by roll call.	
CLOSING COMMENTS/ ANNOUNCEMENTS	P0 was tasked with creating a WG	C. Preuss
TIME OF FINAL ADJOURNMENT	Meeting adjourned at 2:40PM Eastern Time	