

IEEE PES HVDC & FACTS SUBCOMMITTEE MEETING

2007 IEEE PES Summer Meeting

Minutes of Meeting

27 June 2007, Tampa

Amended and Approved: 23 June 2008

IEEE PES HVDC AND FACTS SUBCOMMITTEE
2007 SUMMER MEETING

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**IEEE HVDC AND FACTS SUBCOMMITTEE
2007 SUMMER MEETING**

1 MEETING INFORMATION

Time: 1:30PM-5:00PM, Wednesday June 27, 2007
Location: 2007 IEEE-PES General Meeting
Salon IV
Mariott Waterside Hotel
Tampa, Florida, USA

2 WELCOME AND ANNOUNCEMENTS

Ben Mehraban, Chair, welcomed everyone to the meeting, and made the following announcements:

- Peter Lips, who received the 2007 Uno Lamm award, was acknowledged.
- Ani Gole, who received the 2007 Nari Hingorani FACTS award, was acknowledged.
- Gene Wolfe, Chair of the T&D Committee presented the outstanding service award to Wayne Litzenberger

3 INTRODUCTIONS

The HVDC & FACTS Subcommittee members made introductions, and the sign-in sheet was sent around. The list of attendees is provided in Appendix A.

4 MEETING MINUTES

4.1 June 21, 2006

The minutes from the June 21, 2006 IEEE PES Summer Meeting were disbursed prior to the June 27, 2007 meeting.

The June 21, 2006 minutes were approved.

4.2 January 10, 2007

The minutes from the January 10, 2007 IEEE PES Joint Technical Meeting were also disbursed prior to the June 27, 2007 meeting.

The January 10, 2007 minutes were approved.

5 SUB-COMMITTEE GENERAL BUSINESS

5.1 HVDC and FACTS Sub-Committee Website Update

Brian Johnson provided a summary of the website activity. The HVDC and FACTS Subcommittee website is linked to the T&D Committee page. Brian is hoping to collect information from the WG chairs shortly, in addition to presentations from past meetings. He noted that the bibliography could be posted on the website as well.

5.2 Status of WG 15.05.13 Transmission System Application Requirements for FACTS Controllers Document

The above WG report was published. Thanks were given to Don Ramy and others on the committee. A panel session was held jointly with I5, and it was noted that there were 70 people in attendance.

6 WORKING GROUP REPORTS

6.1 WG 15.05.02 - Dynamic Performance and Modelling of HVDC Systems and Power Electronics for Transmission Systems

Ani Gole provided the following report for Ram Adapa. The Dynamic Modeling WG met on Monday, June 25th at 1:30 PM at this IEEE meeting. Dr. Adapa chaired the session. There were 16 people in attendance.

This WG is working on the following documents.

1. EMTP-type Models for Conventional DC Systems
2. EMTP-type Models for VSC based FACTS
3. EMTP-type Models for VSC based DC Transmission
4. Wind generation models for inclusion in Power Networks
5. Transient Stability simulations using the medium Test System for various FACTS devices

6.2 WG 15.05.08 - HVDC and FACTS Economics and Operating Strategies

The June 25, 2007 meeting was chaired by Wayne Litzenberger as the chair of the WG, Mark Reynolds, was unable to attend the meeting. A panel session is being planned on “plans and success stories on life extension and refurbishment.” It was proposed that this panel session will be held at the IEEE PES 2008 annual meeting.

6.3 WG 15.05.14 Education on HVDC and FACTS

There were 3 members and guests in attendance at the June 25, 2007 meeting chaired by Brian Johnson. The meeting was at the same time as a popular panel session unfortunately. The working group is hoping to repeat the HVDC Basics panel session at the T&D Conference and Exposition.

6.4 Awards Committees

6.4.1 Uno Lamm Award

Dave Fletcher, Chair of the Uno Lamm award committee was unable to attend this meeting. Robyn Taylor reported that nominations from the group are needed, and that the deadline for the 2008 award is November 2007. Information on the award and nomination forms are available on the IEEE PES awards website.

6.4.2 Nari Hingorani Award

Wayne Litzenberger, Chair of the Nari Hingorani award and the Custom Power award advised that nominations are due by the end of January. Wayne requested that the committee provide nominations from the group. He indicated that information on the award and nomination forms are available on the IEEE PES awards website.

6.5 WG 15.05.15 - Use of Power Electronics in Major Grid for Generation Requirements

There were 6 members and guests in attendance and the June 26, 2007 meeting chaired by Geza Joos.

The original scope of the paper was to facilitate the anticipated 2020 North American Power Grid by transferring the knowledge to power plant developers and system planners. The WG focus will be to prepare reports for power plant developers to use in planning generation interconnections to the Grid. The reports will consider a large hypothetical base load generation and a wind generation project utilizing various power electronic systems to obtain desired interconnection operation parameters. Liaison with entities preparing the 2020 Power Grid Models, Reliability Councils and appropriate IEEE and CIGRE Working Groups will be established to provide interconnection criteria.

It was discussed that the table of contents for the document entitled “Use of Power Electronics in Major Grids for Wind Generation Projects” be modified to focus on how to incorporate wind projects into a system rather than focusing on descriptions of the required equipment. It was suggested that case studies be included, in addition to focus on issues being faced by wind developers, such as thermal, impedance and circulating current.

Action Items:

- Geza to develop the new table of contents for the document, and provide the revised TOC and list of potential contributors to Dennis Woodford
- Dennis to set up teleconferences (every month was suggested) to keep “the document moving forward”
- The document is planned to be completed by the end of 2007

6.6 WG 15.05.17 - HVDC and FACTS Bibliography

Wayne Litzenberger provided the report for the Chair of this WG, Dr. Rajiv Varma. Eleven papers were issued at this meeting. A plea to the manufacturers and others to support this work was extended by Wayne, who advised that Electranix, AEP, and Areva had provided funding for this project in the past.

6.7 HVDC Projects List

Robyn Taylor provided paper copies of the June 2007 version of the HVDC Projects Listing to the Subcommittee attendees.

Further modifications to the list are required – modifications to be sent to Robyn Taylor, Ben Mehraban, or Wayne Litzenberger.

The list is provided in Appendix B (Excel spreadsheet).

ACTION (From Summer 2006 Meeting): Robyn to request that Dennis Woodford:

- Request that this Subcommittee be provided with the authority to link our website to the CIGRE B4 Compendium.
- Dennis will also coordinate our activities with the CIGRE SVC/FACTS device information lists.

7 SUBSTATIONS SUBCOMMITTEE

Minutes of the High Voltage Power Electronics Stations Subcommittee (IO), which were provided by Hubert Bilodeau, are provided in Appendix C.

8 LIAISON REPORTS

8.1.1 IEEE Standards Association (SA)

Karl Mortensen provided an update on the SA:

- There is an additional \$35 charge (in addition to IEEE membership dues) to be a member of the standards association.
- The SA is virtually all web-based
- Progress made on the metrification requirement as there were potential safety issues

8.1.2 CIGRE Liaison

Stig Nilsson reported that the next CIGRE meeting is scheduled for October 2007 the end of in Osaka, Japan. Bill Long and Stig Nilsson have further information on the program.

If interest in participating, send a note to be put on the expert advice committee or onto the CIGRE working groups. It is important to have representation in the US.

8.1.3 T&D Committee

Gene Wolf indicated that the T&D Committee are asking for input for electronic newsletters as young engineers are interested in reading web-based information.

The January meeting will be in San Antonio from January 7 – 10, 2008. Information is available on the website.

9 PERSPECTIVES IN THE DEVELOPMENT AND APPLICATION OF 800 KV HVDC

Presentations on 800 kV were provided by:

- Mike Bahrman, ABB
- Joerg Dorn, Siemens
- Chris Horwell, Areva

These presentations are provided in Appendix C.

10 ADJOURNMENT

The next meeting will be in June in Pittsburgh.

The IEEE PES HVDC & FACTS Subcommittee Meeting Adjourned at 4:00 PM.

APPENDIX A
LIST OF ATTENDEES

**IEEE HVDC & FACTS Subcommittee Meeting
Attendees**

No.	Name	Affiliation	E-mail Address	Member	Guest
01	Robyn Taylor	Teshmont Consultants	rtaylor@teshmont.com	X	
02	Duane Torgerson	Winfield Enterprise	drtorgerson@msn.com	X	
03	Jim McConnach	energy consultant	jsmconnach@ieee.org	X	
04	Peter Lips	Consultant	p.lips@t_online.de	X	
05	Wayne Litzenberger	Consultant	wayne@spiritone.com	X	
06	Joerg Dorn	Siemens	joerg.dorn@siemens.com		X
07	Michael Bahrman	ABB	mike.p.bahrman@us.abb.com	X	
08	Gerard Moreau	Hydro-Quebec Transenergie	moreau.gerard@hydro.qc.ca		X
09	Hubert Bilodeau	Hydro-Quebec Transenergie	bilodeau.hubert@hydro.qc.ca	X	
10	Chris Horwill	Areva T&D UK	chris.horwill@areva-td.com	X	
11	Brian Johnson	University of Idaho	b.k.johnson@ieee.org	X	
12	Bill Long	University of Wisconsin	willis@engr.wisc.edu	X	
13	John Vithayathil	Consultant	johnvithayathil@msn.com		X
14	Geza Joos	McGill University	geza.joos@mcgill.ca	X	
15	Stig Nillson	Exponent	snillson@exponent.com		X
16	Albert Keri	AEP	ajkeri@aep.com	X	
17	Paul Wilson	Manitoba Hydro HVDC RC	plwilson@hvdc.ca		X
18	Randy Wachal	Manitoba Hydro HVDC RC	rww@hvdc.ca		X
19	Ani Gole	University of Manitoba	gole@ee.umanitoba.ca	X	
20	Udaya Annakkage	University of Manitoba	udaya@ieee.org		X
21	Sandeep Bala	University of Wisconsin	sbala@cae.wisc.edu		X
22	Karl Mortensen	Great River Energy	kmortensen@greenergy.com	X	
23	Gene Wolfe	Lone Wolf Engineering	gw_engr@msn.com	X	
24	Ben Behraban	AEP	bmehraban@aep.com	X	
25	Mike Henderson	ISO-NE	mhenderson@iso-ne.com	X	

**IEEE HVDC & FACTS Subcommittee Meeting
Attendees**

No.	Name	Affiliation	E-mail Address	Member	Guest
26	Peter Lehn	University of Toronto	lehn@ecf.utoronto.ca	X	
27	John Paserba	Mitsubishi Electric	j.paserba@ieee.org		X
28	Ben Shperling	NYPA	ben.shperling@nypa.gov	X	
29	Jim Roedel	GE Energy	jim.roedel@ge.com		X
30	Gary Engmann	Burns & McDonnell	g.engmann@ieee.org		X
31	Per Lindberg	ABB	per.e.lindberg@se.abb.com		X

APPENDIX B
HVDC PROJECTS LIST

The HVDC Projects List was appended as an Excel document.

APPENDIX C

HIGH VOLTAGE POWER ELECTRONICS STATIONS SUBCOMMITTEE (I0)

**IEEE Power Engineering Society
GM Annual Meeting 2007**

**Tampa, FL
Summary Report**

Entity: HIGH VOLTAGE POWER ELECTRONICS STATIONS SUBCOMMITTEE (I0)

Chair: George Karady; karady@asu.edu

VICE-CHAIR: CHRIS HORWILL; CHRIS.HORWILL@AREVA-TD.COM

SECRETARY: HUBERT BILODEAU; BILODEAU.HUBERT@HYDRO.QC.CA

Subcommittee activities I0

The Subcommittee has met in Bellevue, WA in April. N. Hingorani gave a special report of the activities of WG I8; special publication, panel sessions, guide in preparation etc.

Std 857 Report from I1TF1 by Chair Dr. G. Karady:

The Std 857 "IEEE Recommended Practice for Test Procedures for High-Voltage Direct-Current Thyristor Valves" was reaffirmed in 2004 and a task force I1TF1 was created to start the harmonization process with IEC60700-1. Several attempts to draw comments from members failed. Chair of SC I0 G. Karady has been informed that the maintenance activities of IEC 60700 ended. Feedback from members recommended not to abolish the standard. I1TF1 is now of the opinion that Chair G. Karady should get in contact with secretary of IEC 22F to discuss various alternatives.

Std 1585-2002 IEEE Guide for the Functional Specification of Medium Voltage (1- 35kV) Electronic Series Devices for Compensation of Voltage Fluctuations is due for revision. It is recommended to reaffirm the standard and G. Karady Chair of WG I1 will initiate the process.

Std 1378-1997

Sponsor: IEEE Power Engineering Society/Substations

Reaffirmation status and year: 2002

Title: IEEE Guide for Commissioning High-Voltage Direct-Current (HVDC) Converter Stations and Associated Transmission Systems

Status: Due for revision

Technical Contact: Duane R Torgerson

Std 534-2002

Sponsor: IEEE Power Engineering Society/Substations

Title: IEEE Recommended Practice for Specifying Thyristor-Controlled Series Capacitors

Status: Approved Publication of IEEE , Published Date: Nov 20, 2002 Due for revision

Technical Contact: Duane R Torgerson

Collaboration with IEC

The subcommittee had previously renewed the desire to pursue its collaboration with IEC; SC I0 replied to the IEC invitation to participate in a working group on fire protection; No response has been received from IEC 22 secretary L. Travin. It was drawn to our attention that IEEE must not write standards on Fire Protection since these topics are regulated by local authorities. SC I0 still needs to Investigate the advantages of a liaison type A with IEC as suggested by L. Travin

WGI4 Static Var Compensators

Task Force Meeting

TF1WGI4 revision of guide 1031-2000 Functional Specification of Transmission Static Var Compensators (Chair: H. Tyll) . The Task Force met at the Substation annual meeting and at the GM 2007 in Tampa. Progress is estimated at 50%.

TF2WGI4 revision of guide 1303-1994 (R2000) Static Var Compensator Field Tests (Chair: C. Horwill) – The Task Force met at the Substation annual meeting and at the GM 2007 in Tampa . An informative annex will be added to the document to clarify some issues on testing methods. More than fifty per cent of the document has been revised. The next meeting will be at the Joined Meeting in San Antonio.

Working Group meeting

A tutorial on Static Var Compensators was presented all day on Sunday at the Substation Annual meeting in Bellevue in April with 14 participants. The tutorial will be presented again at the GM 2008 in Pittsburgh. WG activities were reviewed.

Reliability Survey - Results from the 2004 -2006 survey are being analyzed. Data from additional selected users are expected .

SVC Users List - The list for 2006 is in the process of being updated by H. Sharifnia

SVC Refurbishment – A complete draft document is being reviewed by all participants. Comments from all participants are expected before the meeting in San Antonio in January 2008.

WG I5 Voltage Sourced Converter

The working group document final draft was sent to R. Varma and G. Joos for editing. The document will be sent to IEEE for publication in September at the latest for final publication. A summary of the document was presented in a panel session at the GM 2007 in Tampa.

A tutorial on VSC based on the WG I5 document has been proposed by G. Joos. Two proposed outlines were presented. One proposal consists in the addition of a module on grid interconnection issues instead of a module on site design and installation. The tutorial should emphasize the equipment aspect of VSC. The first session for the preparation took place in Tampa and needs further discussion (conference call) to finalize the content. The first Tutorial could be presented first at the Substation Annual meeting in April 2008 in San Francisco.

WG I8 Power Electronics Building Block Concepts

Working Group i8 "Power Electronics Building Block Concepts" met in Tampa on Tuesday, June 26, 2007, 2:00 pm - 5:00 pm during the PES General meeting, with 10 attendees.

Task Force 1: Power Electronics Control Architecture, has made good progress on its draft guide P1662 and will need two or three more meeting to complete the document for balloting. A panel session at the IEEE PES General Meeting 2008, Pittsburgh (PA) has been proposed on the topic of: Control Architecture for High Power Electronic used in Power Systems. The scope of this special session is to analyze the current state of the art in the definition and characterization of control architectures for high power electronics from power semiconductor device levels to the power system level.

Task Force 2: Design Tools is working on an information document and continues to make progress. Special presentation was made on “Siemens new HVDC PLUS Technology” by Dorn Jeorg of Siemens

The Working Group and its Task Forces will meet on Mon. Jan. 8 and Tue. Jan. 9, during the PES Technical Committee Meetings in San Antonio TX. In addition there will be a joint meeting with IEEE IAS WG P1662 "Design and application of power electronics in electrical power systems on ships." Chaired by Dr. Yuri Khersonsky, on Wed. Jan. 9 and Thu. Jan. 10 for line by line review of P1662 document.

Submitted by: Hubert Bilodeau, Secretary SCIO

Date: 2007/06/27

APPENDIX D

**PERSPECTIVES IN THE DEVELOPMENT AND APPLICATION OF
EHVDC (800 KV) AND OTHER INNOVATIVE HVDC DEVELOPMENTS**

APPENDIX D-1	ABB
APPENDIX D-2	AREVA
APPENDIX D-3	SIEMENS