

**IEEE PES Substations Committee
Gas-Insulated Substations Committee – K0
Chair – George Becker, EPRI
Vice Chair – Pat Fitzgerald, CGIT Systems
Secretary – Scott Scharf, TVA**

**Meeting Minutes
January 12, 2015 (8 – 9am)
JTCM - Anaheim, CA**

Attendees

George Becker
John Brunke
Mythili Chaganti
Peter Grossmann
Anthony Ho
Allan Jacobs
Wolfgang Jung
Hermann Koch

Hua Ying Liu
Jorge Marquez-Sanchez
Dave Mitchell
William Munn
Volkan Özsökmen
Mansour Pourcrysous
Lukas Rothlisberger
Pravakar Samanta

Scott Scharf
Behzad Sharifi
Hamid Sharifnia
Devki Sharma
Dave Solhtalab

Introduction

- George Becker welcomed everyone to Anaheim
- Introduction of attendees

Business

- Discussion of K0 project work plan and subcommittee report (See Attachment A)
 - K1 – Standard for High Voltage GIS Rated Above 52kV (C37.122)
Chair – John Brunke
 - John Brunke will remain as chair for revision of C37.122 for publishing in 2020. He will generate a PAR and working group list.
 - John will check with Ryan Stone about him remaining as Vice Chair. If not, then Dave Solhtalab has volunteered.
 - C37.100.1 Common Clauses is under revision and IEC 62271-203, -100, and -200 should also be consulted during the working group process.
 - Work on the revision of this standard will commence at PAR approval which is expected by the 2015 Substation Committee Meeting, May 17-21 in Minneapolis.
 - K2 – GIS Tutorials and Panel Sessions
Chair – Hermann Koch
 - The next tutorial is planned for the 2016 T&D Expo in Dallas, TX (2016).

- Complete revision of the tutorial is under way.
 - Change the format of the tutorial to make it align with the subject matter in the GIS Handbook.
 - Limit number of slides per section & make content on slides explainable in 30 sec – 1 min.
 - Have presenters present their slides and then go to a white board or post-it board and engage the audience to provide their questions and experiences.
 - Hermann will produce a work plan for the tutorial modules based on the review of the modules and assignments created at this 2015 JTCM.
- K3 – Guide for Application of GIS 1kV to 52kV (C37.122.2)
Chair – George Becker
 - The Guide was approved by IEEE Standards Board in 2011.
 - The Guide is presently complete and available through IEEE-SA.
 - Working group formation and PAR generation for revision of this guide is expected to begin in 2016.
 - K4 – Guide for SF6 Gas Handling for High Voltage Equipment (C37.122.3)
Chair – Luke van der Zel
 - The Guide was approved by IEEE Standards Board in 2011.
 - The Guide is presently complete and available through IEEE-SA.
 - Working group formation and PAR generation for revision of this guide is expected to begin in 2016.
 - K5 – Guide for Application of GIL rated above 72.5kV (C37.122.4)
Chair – Pat Fitzgerald
 - Pat has applied for a 1 year PAR extension to December 2015.
 - The draft document is in the comment resolution phase and has survived a first round of comments.
 - It is expected that the document will be submitted based on recirculation comments to REVCOM February 2015.
 - The goal is to have an approved Guide, ready for publication by the 2015 Substation Committee Meeting, May 17-21 in Minneapolis.
 - K6 – Users Group Meetings
Chair – Dave Mitchell
 - Dave Mitchell has agreed to be the Chair of K6 since Venkatesh Minisandram has not been able to be actively involved consistently. George Becker will speak with Venkatesh and ask him if he would agree to be Vice Chair.
 - Technical presentations or facilitated sessions should be added to the meetings.

- Possibly change the name to “GIS and GIL Forum of Users and Future Users”, Dave Mitchell and working group members to brainstorm options.
 - Topics to include; failure issues, condition assessment, rupture disc operation issues etc.
 - Possibly split the “Forum” into 2 parts
 - Vendors are present and do non-sales related presentations in the first hour
 - Vendors leave for the second hour user forum.
 - Planning here at JTCM – Possible “Trial” (revised) Forum at the Substation Committee Meeting in May 2015.
- K7 – Standard for Bushings for High-Voltage Circuit Breakers and GIS (C37.017)
Chair – Devki Sharma
- Devki Sharma gave an update on the standard and the work to harmonize all IEEE and IEC standards with respect to cantilever strength of bushings.
- K8 – Guide for Moisture Measurement & Control in SF6 GIS (C37.122.5)
Chair – Dave Giegel
- The Guide was approved by the IEEE Standards Board in 2013.
 - The Guide is presently complete and available through IEEE-SA.
 - Working group formation and PAR generation for revision of this guide is expected in 2018.
- K9 – Recommended Practice for GIS Interface (C37.122.6)
Chair – Arnaud Ficheux
- The Guide was approved by the IEEE Standards Board in 2013.
 - The Guide is presently complete and available through IEEE-SA.
 - Working group formation and PAR generation for revision of this guide is expected in 2018.
- K10 – GIS Handbook
Chair – Hermann Koch
- The GIS Handbook was published during August of 2014. It is available to the general public through Wiley Publishing.
 - The second edition is expected to be worked on beginning at the 2015 Substation Committee Meeting, May 17-21 in Minneapolis, as there is almost 20% content revision at this point.
- K11 – Guide for GIS (C37.122.1)
Chair – Dave Solhtalab
- The Guide was approved by the IEEE Standards Board in December of 2014.

- The Guide is presently complete and available through IEEE-SA.
 - Thanks to Dave and the entire Working Group for their hard work and dedication on this 5 year venture.
- K12 – Guide for Specification of High Voltage GIS above 52kV (C37.123)
Chair - George Becker
- George has applied for a PAR extension to 12/31/2015, the extension was approved in December of 2014.
 - The working group met at the 2014 Substation Committee Meeting Portland, OR to review the final draft document before submission to REVCOM.
 - The balloting group is presently being formed.
 - Balloting and comment resolution is expected to begin in February of 2015.
 - Comment resolution is expected to end by the 2015 Substation Committee Meeting, May 17-21 in Minneapolis, though this may be aggressive.
- **K13 – Proposed Standard for GIS 1kV – 52kV (C37.122.xx)
Chair – Allan Jacobs
- IEEE Switchgear Committee WG has developed the scope and a draft document of C37.20.9 Standard for Metal Enclosed Gas Insulated Switchgear Rated (1 kV—52 kV).
 - George Becker is the Vice Chair of the C37.20.9 working group in Switchgear Committee to maintain the joint focus.
 - If the C37.20.9 draft sufficiently addresses fully partitioned GIS 1kV to 52kV in conjunction with C37.122.2, then K0 will continue to jointly work with Switchgear Committee to develop C37.20.9.
 - If the final document C37.20.9 does not sufficiently address fully partitioned GIS 1kV to 52kV in conjunction with C37.122.2, then K0 reserves the right to create a separate Standard for Gas-Insulated Substations 1kV to 52kV
 - A meeting was held at the JTCM under the direction of Eldridge Byron. Those meeting minutes will be distributed to K0.
- **K14 – Proposed Guide for Condition Assessment of GIS (C37.122.xx)
Chair – Pat Fitzgerald
- This is a potentially new working group with the goal of creating a scope for the new document and to generate a PAR.
 - Possible CIGRE document reference.
 - The working group plans to harmonize with any similar documents that exist.
 - Plans to have an outline ready for the standard to work on at the 2015 Substation Committee Meeting, May 17-21 in Minneapolis.

- **K15 – Proposed Recommended Practice for Field Testing of GIS (C37.122.xx)
Chair – Dave Giegel
 - This is a potentially new working group with the goal of creating a scope for the new document and to generate a PAR.
 - Dave provided an outline of the scope of the document and solicited for working group members.
 - Dave will create a PAR based on the scope and expects to get approval of the PAR to start by the 2015 Substation Committee Meeting, May 17-21 in Minneapolis.

- **K16 – Proposed Advanced Current & Voltage Sensors in GIS
Chair – Peter Grossman
 - This working group is determining if this subject warrants a Guide or a Panel Session with the generation of a Panel Session Paper or a Technical Brief.
 - Peter Grossmann will have a proposal at the 2015 Substation Committee Meeting, May 17-21 in Minneapolis.

- **K17 – Proposed Physical Security Advantages of GIS Equipment
Chair – Peter Grossman
 - It was determined that this subject may be too narrow to create a Guide or Panel Session to stand alone.
 - There is presently an E0 working group which is addressing Physical Security in Substations.
 - The working group will decide whether to move forward with a Panel Session or provide supporting documentation to the E0 working group.

- **K18 – Proposed Guide or Standard for Mobile Gas-Insulated Substations
Chair – Scott Scharf
 - This was a completely new idea produced at the 2015 JTCM.
 - Dave Mitchel agreed to serve as Vice Chair.
 - Scott will work on development of a scope for approval at the 2015 Substation Committee Meeting, May 17-21 in Minneapolis.
 - The subcommittee felt there is a strong need for a Standard for Mobile Gas-Insulated Substations.

CIGRE Update

John Randolph visited the K0 Subcommittee meeting on Tuesday, January 13th and provided an update on CIGRE B3 work. Scott Scharf will distribute the full presentation out to the K0 subcommittee.

New Business / Ideas / Concerns

- Definite need for Standard or Guide for Mobile GIS. As this technology seems to be growing in the United States, users currently have limited resources in reference to purchasing/maintaining mobile units.

Future Meetings

Substations Committee Meeting
Minneapolis, MI – May 17-21, 2015

Adjournment

Meeting Time – Approx. 39 minutes

K0 Meeting ended, went right into K2 Tutorial meeting

Attachment A

Key for Attachment A:

IEEE Status	
	Approved
	Ongoing
	Comment Resolution
	New Work

Document	Title	Working Group	Working Group Chair/Vice Chair/Sec'y	PAR Status	IEEE Status	Activity
C37.122	IEEE Standard for High Voltage Gas-Insulated Substations Rated Above 52kV	K1	CH-John Brunke	Completed	Approved 2010 Expires 2020	The standard revision is complete. Begin work on revision for 2020.
Tutorial	GIS/GIL/SF ₆ Tutorials and Panel Sessions	K2	CH-Hermann Koch	No PAR	Ongoing	A GIS/GIL tutorial was done at the IEEE T&D Expo in April 2014 and it was well attended, the tutorial was sold out. Major revisions planned for
C37.122.2	IEEE Guide for the Application of Gas-Insulated Substations 1kV to 52kV	K3	CH-George Becker VC-Peter Blohm Sec-Pat Fitzgerald	Completed	Approved 2011 Expires 2021	The new guide is complete.
C37.122.3	IEEE Guide for Sulphur Hexafluoride (SF ₆) Gas Handling for High-Voltage (over 1000 Vac) Equipment	K4	CH-Luke van der Ziel	Completed	Approved 2011 Expires 2021	The guide revision is complete.
C37.122.4	Guide for the Application for Gas-Insulated Transmission Lines (GIL), Rated 72.5kV and Above	K5	CH-Patrick Fitzgerald	Open - PAR approved to End 2014	NESCOM Approved, Submit to REVCOM	Applied for a 1 year PAR extension to December 2015. Expect to submit document based on recirculation comments to REVCOM February 2015.
GIS/GIL Users Group	GIS/GIL Users Group Meetings	K6	CH-Venkatesh Minisandram	No PAR	Ongoing	The GIS Users' Group meeting occurred in Portland, OR and was well attended
C37.017	IEEE Standard for Bushings for High-Voltage [over 1000V (ac)] Circuit Breakers and Gas-Insulated	K7	CH-Devki Sharma	Completed	Approved 2010 Expires 2020	The standard is complete. Switchgear Committee is looking to update and a new PAR is needed in Switchgear to do this.
C37.122.5	Guide for Moisture Measurement and Control in SF ₆ Gas-Insulated Equipment	K8	CH-Dave Giegel	Completed	Approved December 2013 Expires	The standard is complete.
C37.122.6	Recommended Practice for the Interface of New Gas-Insulated Equipment in Existing Gas-Insulated Substations	K9	CH-Arnaud Fichoux	Completed	Approved 2013 Expires 2023	The standard is complete.
GIS/GIL Handbook	GIS Handbook	K10	CH-Hermann Koch	No PAR	Published	K10 the GIS/GIL Handbook Published during August 2014

Document	Title	Working Group	Working Group Chair/Vice Chair/Sec'y	PAR Status	IEEE Status	Activity
C37.122.1	IEEE Guide for Gas-Insulated Substations	K11	CH-Dave Solntalab VC-Godwin Dhuru Sec-Pat Fitzgerald	Open - PAR approved to End 2014	Ongoing - Second Recirculation	The Guide was approved by the IEEE-SA Board 11/3/2014.
C37.123	Guide for Specifications for High Voltage Gas-Insulated Substations Rated Above 52 kV	K12	Becker VC-Devki Sharma Sec-Pat Fitzgerald	Approved 02-Nov-2012 PAR Expiration 31-Dec-2014	Ongoing	WG met at the 2014 Substation Committee Meeting Portland, OR. Applied for PAR extension to 12/31/2015. On December 10, 2014 the IEEE-SA Standards Board approved the extension.
C37.122.XX	Standard for Gas-Insulated Substations 1kV to 52kV	K13	CH- Allan Jacobs VC-Dave Mitchell	No PAR	New	Switchgear Committee WG has developed scope and draft document of C37.20.9. If the C37.20.9 draft sufficiently addresses GIS 1kV to 52kV in conjunction with C37.122.2, then K0 will jointly work with Switchgear Committee to develop C37.20.9. To be determined at the 2015 JTCM.
C37.122.XX	Guide for Condition Assessment of Gas-Insulated Substations	K14	CH-Pat Fitzgerald VC-Dave Solntalab Sec'y-Scott Scharf	No PAR	New	Scope development ongoing.
C37.122.XX	Recommended Practice for Field Testing of Gas-Insulated Substations	K15	CH-Dave Giegel	No PAR	New	Scope development ongoing.
Panel Session	Advanced Current and Voltage Sensors in Gas-Insulated Substations	K16	CH-Peter Grossman VC-Arnaud Fichoux, Dave Mitchell, Phil Bolin	TBD	New	Scope development ongoing.
Panel Session	Physical Security of GIS Equipment	K17	CH-Peter Grossman VC-Dave Solntalab	TBD	New	Scope development ongoing.
C37.122.XX	Mobile Gas-Insulated Substations	K18	CH-Scott Scharf VC-Dave Mitchell	TBD	New	Scope development ongoing.