



FALL 2014 TRANSFORMERS COMMITTEE MEETING



September 10, 2014

Dear Committee Members and Guests:

You and your companion are cordially invited to attend the upcoming Fall 2014 meeting of the IEEE/PES Transformers Committee, to be held October 19-23 in the Washington DC Metro Area. Fall is an especially beautiful time of year in the Nation's Capital. Pepco, my husband and I consider the opportunity to host this meeting in Tysons Corner, Virginia a distinct honor and privilege.

Our meeting will be held at the Sheraton Tysons Hotel, 8661 Leesburg Pike, Tysons, Virginia. The hotel is located near the western portion of the "Beltway", making travel easy and convenient to the meeting as well as to many attractions and restaurants.

HOTEL INFORMATION: The Sheraton is sold out. We recommend two overflow hotels: Marriott Residence Inn, \$159 per night, located within a 10-minute walk of the Sheraton and the Embassy Suites, \$179 per night, within a 15-minute walk to the Sheraton. Visit the Committee's website for reservation links.

GETTING THERE: The Sheraton Hotel is centrally located between Washington Dulles Airport (IAD) and Reagan National Airport (DCA), a short 15-minute taxi ride from IAD. The hotel is also only one block from the new Metro Silver Line "Spring Hill" Station. This station is 30 minutes from the City of Washington DC, and 45 minutes from DCA Airport. Note that rail service is NOT provided from Dulles.

REGISTRATION: Register on-line at www.transformerscommittee.org for tours, social events and meeting registration. Register by Friday, September 26 to receive the \$50 early registration discount. The on-line registration system will be disabled on Wednesday, October 15 to print name badges and finalize counts. The cost to register on-site is substantially higher than the advance registration price.

WEATHER: Fall weather in the DC area is fabulous! Typically, you can expect daytime highs to be in the lower 70s (mid to upper teens °C) with nighttime lows in the 50s (~10°C). With the possibility of wide temperature swings from day to day, even being inside restaurants and other attractions may require long sleeves and a light jacket to be comfortable. Please keep this in mind when you are packing for your trip. Dress for the meeting is business casual.

SATURDAY EARLY BIRD EVENT: Join us for a fun evening at the **Iris Lounge** for dinner, drinks, dancing and billiards. The Lounge is located about a mile from the hotel, so it's a 15-20 minute walk or short hotel shuttle or cab ride. See the website flyer for details and to register. PLEASE NOTE THAT REGISTRATION CUT-OFF FOR THIS EVENT IS MONDAY, OCTOBER 13.

SUNDAY EVENING RECEPTION: Be sure to join us at the Sunday evening reception in the **Tysons Ballroom** in the Sheraton Hotel for this renewal of old friendships and formation of new ones. A cash bar and TONS of fabulous food will be provided, along with a contemporary trio for your listening enjoyment. Indicate your intention to attend this event during the on-line registration process.

SPECIAL SOCIAL EVENT: At this meeting, we are offering a special **Monuments by Moonlight** tour on Monday evening. Perhaps the most enchanting way to enjoy the sights of Washington DC is to do so by moonlight. The night sky glows with the sights of Washington's many memorials lit with thousands of lights. Guests will be treated to champagne (or sparkling cider upon request) and desserts while an experienced tour guide shares fascinating facts about the city's monuments and landmarks. See website flyer for more details. PLEASE NOTE THAT REGISTRATION CUT-OFF FOR THIS EVENT IS MONDAY, OCTOBER 13.

TUESDAY AWARDS LUNCHEON: Join fellow meeting attendees for an Awards Luncheon to recognize the hard work of your peers.

WEDNESDAY DINNER SOCIAL: We invite you to enjoy dinner at the Sunset Room at National Harbor Marina. Wolfgang Puck Catering will provide a wonderful fall buffet while we enjoy breathtaking views of the Potomac River and National Harbor Marina. With staggered bus arrival and departure options, plenty of time is allotted to explore the area. See the website flyer for more details.

SPOUSE/COMPANION TOURS: Join us on Monday to tour **historic Mount Vernon, Old Town Alexandria, Arlington National Cemetery** and several monuments. On Tuesday, you can tour the **Smithsonian American History Museum** and visit **Georgetown for a Food Tasting Tour** at three local, acclaimed restaurants. See the website flyers for more details.

SEEING WASHINGTON DC: Washington DC is the capital city of the United States government, providing visitors with some of the world's most famous landmarks, including the U.S. Capitol building, the White House, the Smithsonian Institution and a plethora of monuments and other attractions. Rich history, wonderful views, fantastic shopping, delicious food — the DC Metro area has it all! A good starting point to plan your trip is www.visitdc.com. Other links to several helpful websites are also available on the Committee website.

ADDITIONAL MEETING INFORMATION: Along with this invitation letter, additional meeting information can be downloaded from the Committee's website at www.transformerscommittee.org:

- Meeting registration form. Use this as a guide to review the fees for each activity before you begin the on-line registration process. Instructions for individual event registrations and payment can be found on this page.
- Detailed meeting schedule and general session agenda. If any noteworthy changes are made, an updated schedule will be posted on the Committee's website a few days prior to the meeting.
- Other informational flyers, including those for the Saturday early bird event, Monday Monuments by Moonlight tour, Tuesday luncheon, Wednesday dinner social, spouse/companion tours and technical presentations.

We look forward to seeing you at the Fall 2014 meeting and know you will enjoy autumn in the Washington DC metro area!

Best regards,

Jane & Dan Verner
Fall 2014 Meeting Hosts
Potomac Electric Power Co.



IEEE/PES TRANSFORMERS COMMITTEE
Fall 2014 Meeting; Washington DC Metro Area USA
-- Meeting Registration Summary and Fees --

Register on-line with credit card at www.transformerscommittee.org ("Next Meeting" page).

Contact the Committee at transformers@ieee.org if an alternate form of payment is necessary.

Each individual must register for meeting (with registration fee) to attend Sunday Reception or any social event or tour.

Print a receipt at the end of the registration process. Paper receipts will NOT be provided at the meeting.

Refund provided only if the request is received by Wednesday, October 15. Valid once confirmation email is received.

US\$25 service charge for a refund of entire registration; or US\$10 for a partial refund.

US Tax ID No. 13-1656633, Canadian Business No. 12563 4188, Euro Tax Registration No. EU826000081

REGISTRATION FEES -- all fees in US\$ dollars -- all fees stated are "per person"	On or Before Sept 26	After Sept 26, on or before Oct 15	On-site, at Meeting
MEETING REGISTRATION			
Attendee, IEEE member (will be verified with IEEE)	\$275	\$325	\$425
Attendee, not IEEE member	\$300	\$350	\$450
Attendee, IEEE Life or Committee Emeritus (will be verified)	\$100	\$150	\$250
Spouse or Companion, and children age 12 and over	\$100	\$150	\$250
Attendee Registration Fee Includes: Entry into Meeting Area, Sunday Reception, coffee breaks, 4 breakfasts (M, T, W, Th) Spouse/Companion Registration Fee Includes: Sunday Reception, 4 breakfasts (M, T, W, Th)			
A Companion is a "significant other", boy/girlfriend, who is attending for <u>non-commercial</u> reasons, i.e., not attending the technical meetings, etc.). Spouses/companions & children (age 12 and over) must be registered for the meeting - with above fees - to attend any tour or social event.			
RECEPTION & LUNCHEONS			
Sunday Evening Welcome Reception -- Indicate your plan to attend the reception when you register.	-- cost included in meeting registration fee --		
Monday Standards Development Luncheon -- All SC, WG, TF leaders are encouraged to attend. -- Buffet lunch; no need to choose a meal selection.	\$20	\$20	\$20
Tuesday Awards Luncheon -- Indicate a meal selection: beef, chicken, or vegetarian.	\$30	\$30	\$30
SOCIAL EVENTS (see flyers for details)			
Saturday Evening Early-Bird Event: Iris Lounge ** -- Dinner, music & fun! 3-minute taxi or hotel shuttle from hotel	\$35	\$35	--
Monday Special Event: Monuments By Moonlight ** -- with champagne and desserts	\$40	\$40	--
Wednesday Dinner Social: Sunset Room, National Harbor Marina -- Buffet dinner; no need to choose a meal selection.	\$85	\$85	\$85
** Attendance limited. Register early!			
SPOUSE/COMPANION TOURS (see flyers for details)			
Monday: Mount Vernon, Alexandria, Arlington Cemetery ***	\$85	\$85	--
Tuesday: Smithsonian American Hist. Museum, Georgetown ***	\$75	\$75	--
*** Both spouse/companions tours include lunch. Attendance limited. Register early!			
TECHNICAL TOURS			
There are no technical tours planned at this meeting.			

IEEE/PES TRANSFORMERS COMMITTEE
www.transformerscommittee.org
Fall 2014 Meeting; October 19-23
Hosted by Potomac Electric Power Co. (Pepco)
Sheraton Tysons Hotel; Washington DC Metro Area, USA

NOTES: See Page 4 for a key to abbreviations.

<u>DATE/TIME</u>	<u>ACTIVITY</u>	<u>SUB-COM</u>	<u>ACTIVITY CHAIR</u>	<u>ROOM CAP/ARR/AV</u>	<u>MEETING ROOM</u>
Friday, October 17					
1:00 pm - 5:00 pm >	WG Wind Turbine Transf. P60076-16	PCS	D. Buckmaster	26 US	Great Falls
1:00 pm - 5:00 pm >	IEEE/IEC Joint Review WG Step-Voltage Regulators C57.15 / 60076-21	Dist	C. Colopy	22 US	Potomac
Saturday, October 18					
> 8:00 am - 5:00 pm >	WG Wind Turbine Transf. P60076-16	PCS	D. Buckmaster	26 US	Great Falls
> 8:00 am - 5:00 pm >	IEEE/IEC Joint Review WG Step-Voltage Regulators C57.15 / 60076-21	Dist	C. Colopy	22 US	Potomac
7:00 pm until ??	<u>Early Bird Event:</u> Dinner, music & fun at Iris Lounge. Advance registration necessary. See flyer for details. -- Meet there any time after 7:00 pm. Your name will be on a "will call list" there. Dinner served at 8:00 pm. -- The Iris Lounge is a 3-minute taxi or hotel shuttle ride from the hotel (or 20-minute walk).				
Sunday, October 19					
1:00 pm - <u>5:30 pm</u>	Meeting Registration				Fairfax Foyer (Lobby Level)
2:00 pm - 5:30 pm	Administrative SC -- Closed meeting, by invitation only	Admin.	D. Platts	26 US	Great Falls
<u>3:00 pm</u> - 5:30 pm	NEMA Transformers -- Closed meeting, by invitation only	++	C. Drexler	22 US	Potomac
6:00 pm - 8:00 pm	Welcome Reception			450 Reception	Tysons Ballroom (Upper Lobby Level)
Monday, October 20 -- Monday Breaks Sponsored by BROCKHAUS MESSTECHNIK **					
7:00 am - <u>4:00 pm</u>	Meeting Registration				Fairfax Foyer
<u>7:00 am</u> - 7:50 am	Newcomers Orientation -- Breakfast Meeting; arrive early! -- Newcomers & Guests are encouraged to attend!		S. Antosz	60 CL	Ash Grove BC
7:00 am - 7:50 am	Distribution SC Leaders Coordination -- Closed breakfast meeting, by invitation only		S. Shull	16 BD	Premiere Ballroom (Upper Lobby Level)
7:00 am - 8:00 am	Breakfast - Attendees (no spouses/companions please)			270 RT (9/tbl)	Tysons Ballroom
8:00 am - 9:30 am	Breakfast - Spouses/Companions (no meeting attendees please)			96 RT (8/tbl)	McLean / Vienna
<u>8:45 am</u> - 4:30 pm note early departure!	<u>Spouses/Companions Tour:</u> Mount Vernon, Old Town Alexandria, Arlington National Cemetery, and lunch at Mount Vernon Inn. Advance registration required. Limited attendance. -- Bus departs Sheraton Hotel at <u>8:45 am</u> , and returns approx 4:30 pm.				
8:00 am - <u>9:10 am</u> >	Opening Session -- <u>All attendees</u> are encouraged to attend -- See separate document for meeting agenda -- Attendance recorded as eligibility for Committee membership		D. Platts	300 CL S1 250 TH	Fairfax Ballroom (combined rooms)
9:10 am - 9:30 am	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	

** Contact Joe Watson (joe_watson@ieee.org) if you are interested in sponsoring a coffee-break at a future meeting.

<u>DATE/TIME</u>	<u>ACTIVITY</u>	<u>SUB-COM</u>	<u>ACTIVITY CHAIR</u>	<u>ROOM CAP/ARR/AV</u>	<u>MEETING ROOM</u>
Monday, October 20 (continued)					
9:30 am - 10:45 am	WG 3-ph UG Dist. Transf. C57.12.24	UTNP	G. Termini	60 MX	Ash Grove A
9:30 am - 10:45 am	TF Winding Temp. Indicators	IL	P. McClure	80 MX	Great Falls
9:30 am - 10:45 am	WG External Dielectric Clearances	DiTests	E. Davis	100 CL	Presidential Theat.
9:30 am - 10:45 am	TF Consolidation of Oil Guides	IF	T. Prevost	120 MX S2 (add 60 TH)	Ash Grove BC
9:30 am - 10:45 am	WG Tertiary/Stabiliz. Windings PC57.158	PCS	E. Betancourt	275 MX S3	Fairfax Ballroom A
9:30 am - 10:45 am	WG Failure Analysis & Report. C57.125	Power	W. Binder	275 MX S3	Fairfax Ballroom B
10:45 am - 11:00 am	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	
11:00 am - 12:15 pm	WG Ventilated Dry Type C57.12.51 New!	Dry	S. Som	60 MX	Ash Grove A
11:00 am - 12:15 pm	WG Moisture in Insulation PC57.162	IL	T. Prevost	80 MX	Great Falls
11:00 am - 12:15 pm	WG Overhead Distr. Transf. C57.12.20	Dist	A. Traut	100 CL	Presidential Theat.
11:00 am - 12:15 pm	WG PD Acoustic Detection C57.127	DiTests	D. Gross	120 MX S2	Ash Grove BC
11:00 am - 12:15 pm	WG PCS Rev. to Test Code C57.12.90	PCS	M. Perkins	275 MX S3	Fairfax Ballroom A
11:00 am - 12:15 pm	WG Installation of Power Transf. C57.93	Power	M. Lau	275 MX S3	Fairfax Ballroom B
12:15 pm - 1:30 pm	<u>Lunch Meeting:</u> Standards Development Review		B. Bartley	240 RT (8/tbl)	Tysons Ballroom
	-- <u>Everyone</u> is welcome to attend. All SC/WG/TF leaders are <u>highly encouraged</u> to attend.				
	-- Doors actually open ~12:00 pm. Come early, get a good seat, and start eating.				
	-- Registration necessary. No paper tickets. Admission verified at the door.				
1:45 pm - 3:00 pm	WG Secondary Network Protectors C57.12.44	UTNP	B. Wimmer	60 MX	Ash Grove A
1:45 pm - 3:00 pm	WG Dry-Type Gen. Require. C57.12.01	Dry	T. Holdway	80 MX	Great Falls
1:45 pm - 3:00 pm	WG 1-ph Padmount Dist. Transformers C57.12.38	Dist	A. Ghafourian	100 CL	Presidential Theat.
1:45 pm - 3:00 pm	WG Less-Flammable Hydrocarbon Insulating Liquid Guide C57.121	IF	D. Sundin	120 MX S2	Ash Grove BC
1:45 pm - 3:00 pm	TF Audible Sound Revision to Test Code	PCS	R. Girgis	275 MX S3	Fairfax Ballroom A
1:45 pm - 3:00 pm	WG Tank Rupture & Mitigation PC57.156	Power	P. Zhao	275 MX S3	Fairfax Ballroom B
3:00 pm - 3:15 pm	<i>Break (beverages and treats)</i>			Fairfax / Ash Grove Foyer	
3:15 pm - 4:30 pm	SC HVDC Converter Transformers and Smoothing Reactors	HVDC	M. Sharp	60 MX	Ash Grove A
3:15 pm - 4:30 pm	WG Milli-amp Current Transf. C57.13.7	IT	H. Alton	80 MX	Great Falls
3:15 pm - 4:30 pm	WG 3-ph Padmount Distribution Transformers C57.12.34	Dist	R. Stahara	100 CL	Presidential Theat.
3:15 pm - 4:30 pm	WG Natural Ester-Based Fluids C57.147	IF	P. McShane	120 MX S2	Ash Grove BC
3:15 pm - 4:30 pm	WG Dielectric Freq. Response PC57.161	DiTest	A. Naderian	275 MX S3	Fairfax Ballroom A
3:15 pm - 4:30 pm	WG Transformer Capability with Non-sinusoidal Loads PC57.110 New!	PCS	R. Marek	275 MX S3	Fairfax Ballroom B
4:30 pm - 4:45 pm	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	
4:45 pm - 6:00 pm	WG Dry-Type O&M Guide C57.94	Dry	D. Stankes	60 MX	Ash Grove A
4:45 pm - 6:00 pm	WG PD in Bushings & PT/CTs PC57.160	DiTests	T. Hochanh	80 MX	Great Falls
4:45 pm - 6:00 pm	WG Step-Voltage Regulators C57.15 / 60076-21	Dist	C. Colopy	100 CL	Presidential Theat.
4:45 pm - 6:00 pm	WG Oil Accept & Maint. Guide C57.106	IF	B. Rasor	120 MX S2	Ash Grove BC
4:45 pm - 6:00 pm	WG PCS Revisions to C57.12.00	PCS	T. Ansari	275 MX S3	Fairfax Ballroom A
4:45 pm - 6:00 pm	TBD			275 MX S3	Fairfax Ballroom B
7:00 pm - 10:00 pm	<u>Social Event:</u> "Monuments By Moonlight", with champagne and desserts. See flyer for details. -- Space is limited, so register soon! Indicate desire to attend when you register on-line for the meeting. -- Bus begins loading at the hotel at 6:45 pm, and departs at 7:00 pm. Returns to hotel at ~10:00 pm.				

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Tuesday, October 21 -- Tuesday Breaks Sponsored by Doble Engineering Co. **					
7:00 am - 12:00 pm	Meeting Registration				Fairfax Foyer
7:00 am - 8:00 am	Breakfast - Attendees (no spouses/companions please)			270 RT (9/tbl)	Tysons Ballroom
8:00 am - 9:30 am	Breakfast - Spouses/Companions (no meeting attendees please)			96 RT (8/tbl)	McLean / Vienna
7:00 am - 7:50 am	EL&P Delegation (end-users only please) -- Breakfast Meeting; arrive early		J. Murphy	40 CL	Potomac
9:15 am - 4:00 pm	Spouses/Companions Tour: Smithsonian American History Museum and Georgetown Food Tour. Advance registration required. Limited attendance. -- Bus departs Sheraton Hotel at 9:15 am, and returns approx 4:00 pm.				
8:00 am - 9:15 am	WG Req. for Instrument Transf. C57.13	IT	R. McTaggart	60 MX	Ash Grove A
8:00 am - 9:15 am	WG Oil Reclamation Guide PC57.637	IF	J. Thompson	80 MX	Great Falls
8:00 am - 9:15 am	WG Enclosure Integrity C57.12.28, C57.12.29, C57.12.31, C57.12.32	Dist	R. Olen	100 CL	Presidential Theat.
8:00 am - 9:15 am	TBD			120 MX S2	Ash Grove BC
8:00 am - 9:15 am	WG Geomagnetic Disturbances PC57.163	Stds	J. Verner	275 MX S3	Fairfax Ballroom A
8:00 am - 9:15 am	WG Functional Life Tests, De-energized Tap Changers (DETC) PC57.157	Power	P. Hopkinson	275 MX S3	Fairfax Ballroom B
9:15 am - 9:30 am	Break (beverages only)			Fairfax / Ash Grove Foyer	
	WG DGA Natural Ester Fluids PC57.155	IF	Work is complete. Guide submitted to REVCOM.		
9:30 am - 10:45 am	WG 1-Ph Submersible Transf. C57.12.23	UTNP	A. Traut	60 MX	Ash Grove A
9:30 am - 10:45 am	WG Station Service Voltage Transformers	IT	D. Wallace	80 MX	Great Falls
9:30 am - 10:45 am	TF Committee History	Mtgs	P. Balma	100 CL	Presidential Theat.
9:30 am - 10:45 am	WG Std Require for Bushings C57.19.01	Bush	S. Zhang	120 MX S2	Ash Grove BC
9:30 am - 10:45 am	WG Shunt Reactors C57.21	PCS	S. Som	275 MX S3	Fairfax Ballroom A
> 9:30 am - 10:45 am	WG Wind Turbine Transf. P60076-16 -- continued from Friday/Saturday	PCS	D. Buckmaster	275 MX S3	Fairfax Ballroom B
10:45 am - 11:00 am	Break (beverages only)			Fairfax / Ash Grove Foyer	
11:00 am - 12:15 pm	WG Liquid-immersed Secondary Network Transformers C57.12.40	UTNP	B. Klaponski	60 MX	Ash Grove A
11:00 am - 12:15 pm	WG Phase Shift Transf. 60076-57-1202	Power	R. Ahuja	80 MX	Great Falls
11:00 am - 12:15 pm	WG Impulse Tests C57.138 (Distribution)	DiTests	TBD	100 CL	Presidential Theat.
11:00 am - 12:15 pm	WG GSU Bushings PC57.19.04	Bush	C. Arpino	120 MX S2	Ash Grove BC
11:00 am - 12:15 pm	WG Guide for DGA in LTCs C57.139	IF	D. Wallach	275 MX S3	Fairfax Ballroom A
11:00 am - 12:15 pm	WG Loss Evaluation Guide C57.120	PCS	M. Miller	275 MX S3	Fairfax Ballroom B
12:15 pm - 1:30 pm	Awards Luncheon -- Doors open ~12:00 pm. Come early, get a good seat, and start eating. -- Advance registration is necessary. Paper tickets are not provided. Admission verified at the door.		B. Chiu	240 RT (8/tbl)	Tysons Ballroom
	WG Distr. Substation Transf. C57.12.36	Dist	Will not meeting. Document out for ballot.		
1:45 pm - 3:00 pm	TF Fluid Terms Normalization	Stds	P. McShane	60 MX	Ash Grove A
1:45 pm - 3:00 pm	TF Tap-Changer C57.131 / 60214-1	Power	C. Colopy	80 MX	Great Falls
1:45 pm - 3:00 pm	WG 3-ph Transf. Connections C57.105	PCS	A. Bromley	100 CL	Presidential Theat.
1:45 pm - 3:00 pm	WG Revision to Low Frequency Tests	DiTests	B. Poulin	120 MX S2	Ash Grove BC
1:45 pm - 3:00 pm	WG DGA Factory Temperature Rise Tests PC57.130	IF	J. Thompson	275 MX S3	Fairfax Ballroom A
1:45 pm - 3:00 pm	WG DPV Grid Transformers PC57.159	PCS	H. Shertukde	275 MX S3	Fairfax Ballroom B
3:00 pm - 3:15 pm	Break (beverages and Pretzels!)			Fairfax / Ash Grove Foyer	

** Contact Joe Watson (joe_watson@ieee.org) if you are interested in sponsoring a coffee-break at a future meeting.

KEY

Note: A PC projector will be furnished in each meeting room. Arrive early to ensure that equipment operates/syncs correctly.

Overhead projectors are available from the hotel with advance notice.

> -- activity continued into another session / from another session

++ -- not a Transformers Committee activity TBD = "To Be Determined"

FC = flip chart; S1 = sound (special set-up)

S2 = stand mic in front only; S3 = one stand mic in front & stand mic(s) at mid-room

BD -- boardroom

US -- U-shape

RT -- multiple roundtables

CL -- classroom seating (w/head table for 2)

TH -- theater seating (w/head table for 2)

MX -- mix classroom & theater (w/head table)

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Tuesday, October 21 (continued)					
3:15 pm - 4:30 pm	WG Dry-Type Test Code C57.12.91	Dry	D. Foster	60 MX	Ash Grove A
3:15 pm - 4:30 pm >	WG Tap-Changer Applic. Guide 60214-2 -- continued to Thursday pm	Power	C. Colopy	80 MX	Great Falls
3:15 pm - 4:30 pm	WG Test Data Reporting C57.12.37	Dist	T. Callsen	100 CL	Presidential Theat.
3:15 pm - 4:30 pm	WG Application of High-Temp Insulation Materials, IEEE P-1276	IL	M. Franchek	120 MX S2	Ash Grove BC
3:15 pm - 4:30 pm	TF Core Gassing & Grounding	PCS	D. Buckmaster	275 MX S3	Fairfax Ballroom A
3:15 pm - 4:30 pm	TF Switching Transients Induced by Transf/Breaker Interaction C57.142	PCS	J. McBride	275 MX S3	Fairfax Ballroom B
4:30 pm - 4:45 pm	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	
4:45 pm - 6:00 pm	WG Neutral Grounding Devices PC57.32	PCS	S. Kennedy	60 MX	Ash Grove A
4:45 pm - 6:00 pm	TF for Cross Reference of IEEE to IEC	Stds	V. Mehrotra	80 MX	Great Falls
4:45 pm - 6:00 pm	WG Tank Pressure Coordinat. C57.12.39	Dist	C. Gaytan	100 CL	Presidential Theat.
4:45 pm - 6:00 pm	WG Transf. Paralleling Guide PC57.153	Power	T. Jauch	120 MX S2	Ash Grove BC
4:45 pm - 6:00 pm	WG Revision to Gas Guide C57.104	IF	R. Ladroga	275 MX S3	Fairfax Ballroom A
4:45 pm - 6:00 pm	WG Revisions to Impulse Test Sections of C57.12.00 and C57.12.90	DiTests	P. Riffon	275 MX S3	Fairfax Ballroom B

Wednesday, October 22 -- Wednesday Breaks Sponsored by Delta-X Research **

No Meeting Registration, No Technical Tours, No Spouse/Companion Tours					
7:00 am - 8:00 am	Breakfast - Attendees (no spouses/companions please)			270 RT (9/tbl)	Tysons Ballroom
8:00 am - 9:30 am	Breakfast - Spouses/Companions (no meeting attendees please)			88 RT (8/tbl)	McLean / Vienna
7:00 am - 7:50 am	SC Meetings Planning	Mtgs	G. Anderson	30 CL	Great Falls
7:00 am - 8:30 am	IEC TC-14 Technical Advisory Group -- Breakfast Meeting; arrive early -- All interested individuals welcome	++	P. Hopkinson	80 CL S2	Ash Grove BC
8:00 am - 9:15 am	SC Instrument Transformers	IT	R. McTaggart	40 CL 20 TH	Potomac
8:00 am - 9:15 am	SC Insulation Life	IL	B. Forsyth	300 CL S3 100 TH	Fairfax Ballroom
9:15 am - 9:30 am	<i>Break (beverages only)</i>			F Fairfax / Ash Grove Foyer	
9:30 am - 10:45 am	SC Bushings	Bush	P. Zhao	140 MX S2 (add 60 TH)	Ash Grove ABC
9:30 am - 10:45 am	SC Distribution Transformers	Dist	S. Shull	400 MX S3	Fairfax Ballroom
10:45 am - 11:00 am	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	

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Wednesday, October 22 (continued)					
11:00 am - 12:15 pm	SC UG Transf. & Network Protectors	UTNP	D. Mulkey	140 MX S2	Ash Grove ABC
11:00 am - 12:15 pm	SC Dielectric Tests	DiTests	M. Franchek	400 MX S3	Fairfax Ballroom
12:15 pm - 1:30 pm	Lunch (on your own)				
1:30 pm - 2:45 pm	SC Dry Type	Dry	C. Johnson	140 MX S2	Ash Grove ABC
1:30 pm - 2:45 pm	SC Power Transformers	Power	J. Watson	400 MX S3	Fairfax Ballroom
2:45 pm - 3:00 pm	<i>Break (beverages <u>and</u> treats)</i>			Fairfax / Ash Grove Foyer	
3:00 pm - 4:15 pm	SC Insulating Fluids	IF	D. Wallach	140 MX S2	Ash Grove ABC
3:00 pm - 4:15 pm	SC Performance Characteristics	PCS	E. teNyenhuis	400 MX S3	Fairfax Ballroom
4:15 pm - 4:30 pm	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	
4:30 pm - 5:45 pm	SC Standards	Stds	B. Bartley	400 MX S3	Fairfax Ballroom
6:00 pm - 10:00 pm	Dinner Social: Sunset Room at National Harbor Marina. Advance registration required. See flyer for info. -- Buses begin loading at Sheraton at 5:00 pm, last bus departs at 6:00 pm. Dinner served 7:30 pm. -- Buses start loading National Harbor at 8:30 pm. Last bus departs at 9:30 and returns ~10:00 pm.				

Thursday, October 23

No Meeting Registration, No Spouses/Companions Tours, No Technical Tours					
7:00 am - 8:00 am	Breakfast - Attendees (no spouses/companions please)			270 RT (9/tbl)	Tysons Ballroom
8:00 am - 9:30 am	Breakfast - Spouses/Companions (no meeting attendees please)			80 RT (8/tbl)	McLean only
8:00 am - 9:15 am	Technical Presentation #1: "TBD", by TBD ** Sponsored by TBD SC. See flyer on website			300 CL S1 150 TH	Fairfax Ballroom (combined rooms)
9:15 am - 9:30 am	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	
9:30 am - 10:45 am	Technical Presentation #2: "TBD", by TBD ** Sponsored by TBD SC. See flyer on website			450 MX S1	Fairfax Ballroom
10:45 am - 11:00 am	<i>Break (beverages only)</i>			Fairfax / Ash Grove Foyer	
> 11:00 am - 12:00 pm	Closing Session -- <u>All attendees</u> are encouraged to attend -- See separate document for meeting agenda		D. Platts	450 MX S1	Fairfax Ballroom
Lunch (on your own)					
> 1:30 pm - 5:00 pm	WG Phase Shifting Transformers 60076-57-1202	Power	R. Ahuja	18 US	Ash Grove A
> 1:30 pm - 5:00 pm >	IEEE/IEC Joint Review WG Tap-Changer Application Guide 60214-2	Power	A. Kraemer	100 CL	Presidential Theat.
1:30 pm - 5:00 pm >	IEEE/IEC HVDC Transformers -- continued into Friday	HVDC	U. Radbrandt	18 US	Ash Grove B
1:30 pm - 5:00 pm	EPRI Transformers Task Force -- closed meeting, by invitation only	++	L. Van der Zel	18 US	Ash Grove C

Friday, October 24

> 8:00 am - 5:00 pm	IEEE/IEC Joint Review WG Tap-Changer Application Guide 60214-2	Power	A. Kraemer	100 CL	Presidential Theat.
> 8:00 am - 5:00 pm	IEEE/IEC HVDC Transformers	HVDC	U. Radbrandt	18 US	TBD

** Contact Tom Prevost (tprevost@ieee.org) if you are interested in making a technical presentation at a future meeting.

FUTURE COMMITTEE MEETINGS

Spring 2015 - April 12-16; San Antonio, Texas

Fall 2015 - November 1-5; Memphis, Tennessee

8661 Leesburg Pike; Tysons, Virginia 22182
(703) 448-1234



McLean & Vienna (spouses/companions breakfasts)

Falls Church / Westwood / Wolf Trap

Fairfax Ballroom

Great Falls

Potomac

Presidential Theater

Madison Boardroom

Montpelier Boardroom

Monticello Boardroom

IEEE/PES TRANSFORMERS COMMITTEE
Fall 2014 Meeting; Washington DC Metro Area, USA
Agenda - General Session

Chair: Don Platts **Vice Chair:** Stephen Antosz **Secretary:** Sue McNelly
Treasurer: Greg Anderson **Awards Chair/Past Chair:** Bill Chiu **Standards Coordinator:** Bill Bartley

Opening Session

Monday, October 20; 8:00 am - 9:10 am

(rosters circulated and attendance recorded as eligibility for Committee membership)

1. Welcome and Announcements Don Platts
2. Approval of Agenda Don Platts
3. Approval of Minutes from Spring 2014 Meeting Don Platts
4. Chair's Report Don Platts
5. Vice Chair's Report Stephen Antosz
6. Secretary's Report Sue McNelly
7. Treasurer's Report Greg Anderson
8. Report from Administrative Subcommittee Meeting Don Platts
9. Standards Report Bill Bartley
10. Editor's Report Sanjib Som
11. Reports from Liaison Representatives
 - 11.1. Standards Coordinating Committee, SCC No. 4 (Electrical Insulation) Paulette Payne Powell
 - 11.2. Standards Coordinating Committee, SCC No. 18 (NFPA/NEC) Ned Brush
 - 11.3. IEC TC-14 Technical Advisor to USNC Phil Hopkinson
 - 11.4. CIGRE Raj Ahuja
12. Hot Topics for the Upcoming Week Subcommittee Chairs
13. New Business & Wrap-up Don Platts

Closing Session

Thursday, October 23; 11:00 am - 12:00 pm

1. Chair's Remarks and Announcements Don Platts
2. Meetings Planning Subcommittee Greg Anderson
3. Reports from Technical Subcommittees (decisions made during the week)
 - 3.1. Dielectric Tests Mike Franchek
 - 3.2. Distribution Transformers Steve Shull
 - 3.3. Dry Type Transformers Chuck Johnson
 - 3.4. HVDC Converter Transformers & Reactors Mike Sharp
 - 3.5. Instrument Transformers Ross McTaggart
 - 3.6. Insulating Fluids David Wallach
 - 3.7. Insulation Life Bruce Forsyth
 - 3.8. Performance Characteristics Ed teNyenhuis
 - 3.9. Power Transformers Joe Watson
 - 3.10. Underground Transformers & Network Protectors Dan Mulkey
 - 3.11. Bushings Peter Zhao
4. Additional Report from Standards Subcommittee (issues from the week) ... Bill Bartley
5. New Business (continued from Monday) and Wrap-up Don Platts



EARLY BIRD EVENT

Saturday, October 18, 2014

Iris Lounge – Tysons Corner



The Iris Lounge is the only place in Tysons Corner where you will find drinks, dancing, billiards and unmatched VIP treatment.



The Iris Lounge is Tysons' newest hot spot with

A LITTLE SOMETHING FOR EVERYONE.

If great music and dance floors, eye-catching bars with amazing drink specials, great tasting food and an overall atmosphere that has yet to be seen around the Tysons area sounds like a place you would enjoy, then come and hang with us.

Located about a mile from the hotel, the Iris Lounge is a 15-20 minute walk. For those who would prefer to ride, a cab or the hotel shuttle can get to the Lounge in 3-5 minutes. If you require shuttle service, please schedule this in advance with the hotel bell stand. www.irisloungeva.com



7:00pm: Arrival time

Hors d'oeuvres and cash bar

- Vegetable Crudite
- BBQ Meatballs
- Spanikopita
- Salmon Ceviche

8:00pm: Dinner

Buffet dinner consisting of the following:

- Tenderloin beef
Herb crusted and slow roasted with sautéed mushrooms ragout, caramelized onions and thyme red wine au jus (with sauce on the side)
- Stuffed flounder
Stuffed with spinach and shallots, topped with white wine lemon-butter sauce
- Penne pasta with sautéed spinach, Kalamata olives, mushrooms, julienne red peppers and feta cheese, lightly tossed with extra virgin olive oil

PLUS:

- House salad
- Sautéed vegetables
- Roasted potatoes
- Mini assorted pastries
- Coffee and tea



***Advance registration required NO LATER THAN
Monday, October 13, 2014.***

Sign up on-line when registering for the meeting.



SPOUSE/COMPANION TOUR Monday, October 20, 2014 Experience Historic Washington DC



Your day begins with a guided tour of **Mount Vernon** – George Washington's home, gardens and farm. One of the nation's most beloved historic sites, Mount Vernon offers a glimpse into 18th-century plantation life through beautiful gardens and grounds, intriguing museum exhibits and programs honoring George Washington's life and legacy. After the tour, savor the flavors of early America in a colonial-inspired setting at the Mount Vernon Inn. www.mountvernon.org



Mount Vernon

After lunch, visit the quaint seaport town of **Old Town Alexandria** to see some of the most amazing historic sites in Virginia. Step off the bus and visit **Christ Church**, attended by George Washington and Robert E. Lee. www.historicchristchurch.org Next, you will see historic 17th and 18th century homes on the way to **Arlington National Cemetery**. Once there, board the lectured tram to the Tomb of the Unknown Soldier, view the unforgettable Changing of the Guard ceremony and witness the eternal flame that lights up the Kennedy Gravesite. www.arlingtoncemetery.mil



Christ Church

Take advantage of a number of photo opportunities along the way!

Itinerary (all times except morning departure and lunch are approximate)

- 8:45 am: Depart hotel for Mount Vernon
- 9:30 am: Arrive at Mount Vernon
- 11:30 am: Lunch at Mount Vernon Inn (see menu choices below)
- 12:30 pm: Leave Mount Vernon for Old Town Alexandria
- 2:15 pm: Arrive at Arlington National Cemetery
- 4:30 pm: Return to hotel

Lunch Menu — Choice of One of the Following*:

* An IEEE representative will contact you for your lunch choice prior to the tour.

Caesar Salad with Salmon Served with Soup of the Day

Crisp romaine, shaved Parmesan, garlic Parmesan croutons and homemade Caesar dressing

Bacon Wrapped Meatloaf Served with Garden Salad

Topped with tomato sauce and served with chef's choice of potato and vegetable

Vegetable Lasagna Served with Garden Salad

Seven layers of fresh garden vegetables, cheese and herbs

All lunches include the following:

- Apple pie for dessert
- Iced tea or coffee



Tomb of the Unknown Soldier &
Old Town Alexandria



Eternal Flame

Attendance will be limited... REGISTER EARLY!





SPOUSE/COMPANION TOUR

Tuesday, October 21, 2014

Smithsonian & Georgetown Food Tour



Spend the morning on a tour of the Smithsonian's National Museum of American History. Opening to the public in 1964 as the Museum of History and Technology, it was the sixth Smithsonian building on the National Mall in Washington, DC. In 1980, the Museum's name was changed to the National Museum of American History to better represent its basic mission — the collection, care and study of objects that reflect the experience of the American people. americanhistory.si.edu Next, on to Georgetown.



Smithsonian

Your Food Tour will take place in the heart of historic Georgetown, combining history, architecture and culture with cuisine from some of the area's best restaurants. The result is a three-hour dining experience that will expand and challenge the palette with an array of flavors, tastes and textures.



American History Museum

Itinerary

- 9:15 am: Board bus for the National Museum of American History
- 10:00 am: Tour the Museum (with escort or on your own)
- 12:00 pm: Leave Museum for Georgetown
- 12:30 pm: Start Food Tour (coffee or tea at each stop—see menu items below)
- 3:30 pm: Board bus for hotel
- 4:00 pm: Return to hotel (approx. time)

Georgetown Food Tour Includes the Following Restaurants:

Restaurants subject to change based on availability.

Café Bonaparte — “A bit of Paris on the Potomac.” Bonaparte has been a Georgetown staple for over 30 years and known for their rustic dishes, signature pastries and quaint ambiance. www.cafebonaparte.com

Crepe Florentine with savory roma tomatoes, pine nuts, ricotta and pesto

Paolo's Ristorante — This classic Italian Georgetown restaurant showcases fresh, modern “Californian” cuisine. Paolo's focuses on featuring an ever-changing menu of new tastes and fusions. Paolo's flagship location in the heart of Georgetown in Washington, DC, opened in 1987 and quickly became known as the place to dine for lunch, cocktails and dinner. Twenty-two years later, Paolo's is still bustling with energy and excitement, where conversations are lively and the offerings exceptional. www.paolosristorante.com/georgetown

Tomato, Avocado, Mozzarella: Twist on the caprese with aged balsamic and basil

Cayenne and Espresso Rubbed Skirt Steak: Served with caramelized cauliflower and an arugula salad lightly dressed in a miso vinaigrette

Baked & Wired — One of the best bakeries in DC, Baked and Wired specializes in a variety of handcrafted baked goods, fresh ground coffee and specialized teas. Housed in a 100 year old converted print shop, the ambience is both modern and comfortable, catering to a variety of customers. Since opening, it has consistently won awards for its innovative and delicious desserts. www.bakedandwired.com

Bee Stings: Shortbread cookies topped with honey and almonds

OMG Caramel S'mores: Handmade dessert bar that includes a decadent chocolate glaze, centered with marshmallow with a delicious graham cracker crust



Georgetown Neighborhood

Attendance will be limited... REGISTER EARLY!





SPECIAL SOCIAL EVENT
Monday, October 20, 2014
Monuments by Moonlight



Capitol Building



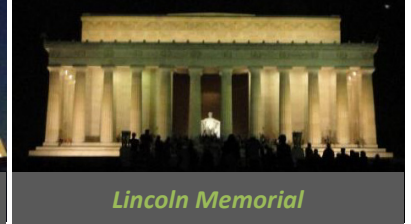
Washington Monument



Iwo Jima Memorial



Jefferson Memorial & Tidal Basin



Lincoln Memorial

Perhaps the most enchanting way to enjoy the sights of Washington DC is to do so by moonlight. The night sky glows with the sights of Washington's many memorials lit with thousands of lights.

Your experienced tour guide will share fascinating facts on the city's illuminated monuments and landmarks as you enjoy champagne (or sparkling cider upon request) and delicious desserts. In this all-encompassing evening tour of Washington DC, guests will pass such sights as the **White House**, the **U.S. Capitol Building**, the **Old Post Office Building**, the **Washington Monument**, **Smithsonian Museums** and **World War II Memorial**, **Tidal Basin** and **Jefferson Memorial**.

Guests will circle the inspiring **Iwo Jima Memorial** and then make a stop at the **Lincoln Memorial** to explore the tribute to President Abraham Lincoln and enjoy the stunning views down the National Mall and Potomac River. A short walk from the Lincoln Monument are the **Vietnam** and **Korean War Memorials** — both moving tributes to our countrymen who served in these conflicts and stunning to see cast in an amber glow at night.



Vietnam War Memorial

This evening tour serves as a truly elegant way to see this magnificent city!

Itinerary

- 6:45 pm: Guests begin boarding motor coach – wait staff serves champagne (or sparkling cider upon request) and desserts to guests
- 7:00 pm: Bus departs hotel and tour begins
- 10:00 pm: Return to hotel (approximate)



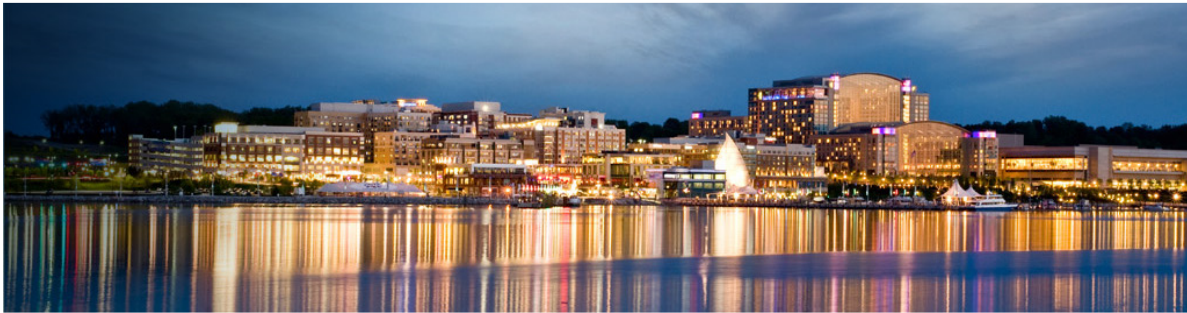
Korean War Memorial

Attendance will be limited... Advance registration is required
NO LATER THAN *Monday, October 13, 2014.*





DINNER SOCIAL
Wednesday, October 22, 2014
National Harbor with Dinner
in the Sunset Room



Join your fellow meeting attendees at National Harbor's Sunset Room for Wednesday evening's dinner social, where you'll be treated to a night of fabulous food and entertainment. Upon arrival, all guests will have the opportunity to explore the National Harbor area in Maryland before returning to the Sunset Room, featuring Wolfgang Puck Catering and breathtaking views, for drinks (cash bar), dinner and live music.

National Harbor is not so much a *destination* as it is an *experience*! Committed to providing visitors with a never-ending variety of things to do, you can immerse yourself in the sights, scents and sounds of 350 premium acres along the shimmering Potomac. From more than 70 enticing shops and restaurants to the unique views offered on the only large-scale observation wheel in the northeastern region of the U.S., the Capital Wheel, National Harbor is a great place to experience the waterfront. www.nationalharbor.com

Advance registration required. Sign up on-line when registering for the meeting.

Itinerary (approximately 30 minutes travel time each way)

- 5:00 pm: First bus departs the Sheraton for National Harbor
- 6:00 pm: Last bus departs the Sheraton for National Harbor
- 7:30 pm: Buffet dinner is served in the Sunset Room
- 8:30 pm: Buses begin shuttling back to the Sheraton
- 9:30 pm: Last bus departs for the Sheraton

Buffet Dinner Menu by Wolfgang Puck Catering

Artisan Breads and Lavosh with Sweet Cream Butter
Traditional Caesar salad with aged parmesan
Marinated haricots vert (baby greens, crumbled goat cheese, pine nuts, basil vinaigrette)
Italian ricotta gnocchi with vodka tomato sauce and Fiore Sardo (cheese)
Pan-roasted organic chicken with sun dried tomato and garlic cream
Slow-braised beef short ribs with caramelized shallots and mustard glaze
Roasted root vegetables with chestnuts and apples
Whipped Yukon Gold potato puree
Water, freshly brewed iced tea and coffee
Dessert





Guide for the Application and Interpretation of Frequency Response Analysis for Oil Immersed Transformers C57.149

— Technical Presentation —
Thursday, October 23, 2014

Mark Lachman, Kirk Robbins, Charles Sweetser, and Peter Werelius

1. Abstract

Frequency Response Analysis (FRA) is a valuable, non-intrusive diagnostic tool for verifying the mechanical integrity and other associated properties of power transformers. Our industry has been practicing FRA in the field for a decade without an official document or guide. The Working Group C57.149 successfully published the first FRA testing guide in March 2013. This presentation presents the general concepts, current practices, and analysis strategies associated with frequency response analysis testing, including the history and creation of the C57.149 FRA testing guide. Representatives from both the utility and OEM communities will discuss their FRA perspectives and experiences which will focus on FRA test application and analysis, helping to bring out the relevant importance of the FRA test.

Four topics will be covered:

- History of C57.149 from PAR to Publish (Charles Sweetser)
- FRA Theory and Application (Peter Werelius)
- FRA Measurement and Analysis (Mark Lachman)
- Utility Perspective and Experiences (Kirk Robbins)

2. Learning Objectives

This presentation plans to

- Provide history related to the creation of the C57.149 FRA testing guide.
- Provide FRA fundamentals as they relate to test application and analysis (when and why FRA diagnostics are applied).
- Investigate and focus on how FRA tests are performed: factory, commissioning, relocation, and post event.
- Review analysis strategies associated with incipient failure modes.
- Present utility and manufacturer's perspectives and experiences.

3. Learning Outcomes

As a result of attending this session, members will gain an understanding of the following:

- Lessons learned from the C57.149 Working Group experiences.
- Fundamentals of frequency response analysis testing.
- Theory, application, and test procedures.
- Interpretation of the data and basic analysis strategies.
- Utility's perspective regarding the recently published guide.

4. Presenters' Biographies

Mark Lachman, Ph.D., P.E. has been with the power industry for over 30 years. His experience includes development of off-line and on-line diagnostics (Doble 1988–2001) as well as factory testing of power transformers (Delta Star, San Carlos, CA, 2005–2011). He returned to Doble in 2011 as Director of Diagnostic Analyses and is contributing to advancing interpretation of apparatus diagnostic data.

Kirk Robbins served in the US Navy submarine service from 1976–1990. Kirk worked as a research assistant at Salem Nuclear Generating Station from 1991–1992. He was employed by Exelon at the Dresden Nuclear Power Station from 1992–2001. In 2001, Kirk was transferred to the Corporate Office as a transformer subject matter expert. Currently, Kirk holds the position of Corporate Lead Engineer for the strategic Main Power Transformer Replacement project and Open Phase Detection project. He earned a BS in Physics from Lewis University in 1995 and holds a Senior Reactor Operator Certification.

Charles Sweetser received a BSEE in 1992 and a Master of Science Degree in Electrical Engineering in 1996 from the University of Maine. He joined OMICRON electronics Corp. USA, in 2009, where he presently holds the position of PRIM Engineering Services Manager for North America. Prior to joining OMICRON, he worked 13 years in the electrical apparatus diagnostic and consulting business. He has published several technical papers for IEEE and other industry forums. As a member of IEEE Power & Energy Society (PES) for 14 years, he actively participates in the IEEE Transformers Committee and is also a member of several other working groups and subcommittees. Additional interests include condition assessment of power apparatus and partial discharge.

Peter Werelius was born in Stockholm, Sweden and works as an application expert and Product Manager at Megger Sweden. He has a M.Sc. in Electrical Engineering (1991) and a Ph.D. in Electrical Engineering (2001), both from KTH (Royal Institute of Technology) in Stockholm, Sweden. He began his professional career starting up a spin-off company, WaBtech, in 1996, manufacturing FDS/DFR (Frequency Domain Spectroscopy/Dielectric Frequency Response) test equipment. From 1999, he continued work on the FDS/DFR application with Programma Electric and later with GE Energy Services. In 2005, he worked with others to found Pax Diagnostics which was acquired by Megger in October 2008. He has published a number of papers and articles, mainly related to FDS/DFR measurement techniques and application. He is member of IEEE and CIGRE and actively participates in working groups and task forces, especially those related to FDS/DFR and SFRA.



Proposed IEEE GIC Guide and Upcoming NERC Documents on Geomagnetic Disturbance Mitigation

— Technical Presentation —
Thursday, October 23, 2014
Ramsis Girgis, Frank Koza, and Jane Verner

1. Abstract

Geomagnetically induced currents (GIC) can cause partial-cycle core saturation, depending on the magnitude of the GIC and the design of the transformer. This core saturation leads to additional VAR demand and injects current harmonics into the grid. When large enough, a geomagnetic disturbance (GMD) can result in voltage instabilities and subsequent blackouts. Another consequence of partial cycle saturation of a core is additional heating of transformer windings and structural parts.

In May 2013, FERC issued Order 779 which directs NERC to submit Reliability Standards which address the impact of GMD on the reliable operation of the bulk power system. Also, the IEEE Transformers Committee formed a working group to develop a guide associate with the subject.

This presentation has three parts. Frank Koza, who is the chairman of the drafting team of the NERC documents, will provide an overview of the content of these documents. Jane Verner, who is chairman of the IEEE GDM working group, will give an overview of the content of the proposed IEEE GIC Guide. Finally, Ramsis Girgis will present some of the main technical differences between the content of the NERC documents and the IEEE GIC Guide.

2. Learning Objectives

This presentation plans to

- Explain how the different NERC documents help in mitigating the effects of strong GMD storms on the power grid and power transformers.
- Describe how the proposed IEEE GIC Guide helps in proper evaluation and specification of the GIC capability of new and existing power transformers.
- Identify the factors used in appropriate evaluation of the GIC capability of power transformers.

3. Learning Outcomes

As a result of attending this session, members will gain an understanding of the following:

- Means of evaluating and mitigating the GMD vulnerability of power systems as proposed by the NERC GMD Task Force.
- Appropriate means of evaluating and confirming the GIC withstand capability of power transformers, as proposed by the proposed IEEE GIC Guide.
- Technical differences between the content of the IEEE GIC Guide and the content of some of the NERC documents.

4. Presenters' Biographies

Dr. Ramsis Girgis (IEEE Life Member) is presently the leader of ABB's global R&D activities in the areas of Transformer Core Performance and Low Noise Transformers. He has led Westinghouse's and now ABB's investigations in the area of GIC effect on power transformers since the 1989 GMD event. Over the past three years, he has contributed to the activities of the NERC GMD TF and is presently a contributor to the IEEE WG developing the IEEE GIC Guide. Ramsis received his PhD degree in Electrical Power Engineering from the University of Saskatchewan, Canada in 1978. In 2013, he was awarded the IEEE Standards Medallion for Significant Contributions to the Transformer Industry and Transformer Standards. In the mid-eighties, Dr. Girgis was the Technical Advisor, representing the US National Committee in the IEC Power Transformers Technical Committee 14.

Mr. Frank J. Koza is Executive Director of Infrastructure Planning at PJM Interconnection, where he is responsible for the technical staff supporting transmission and generation interconnection projects. He is Vice Chair of the NERC Geomagnetic Disturbance Task Force, and was formerly Chair of the NERC Operating Reliability Subcommittee. He received a BSME degree from the University of Pennsylvania and a MEng degree from Widener University. Prior to being employed at PJM, he was employed by Exelon for 29 years in a variety of positions in transmission maintenance, construction, system operations, and system planning.

Ms. Jane Ann Verner is the Manager of Pepco's Grid Operations Center. She formerly managed Substation Engineering and Substation Standards Teams for Pepco Holdings Inc. (Atlantic City Electric, Delmarva and Pepco). Jane is a licensed Professional Electrical Engineer in Maryland, PA and the District of Columbia. She is a member of IEEE and the IEEE PES. She recently chaired the working group of the newly published IEEE Power Transformer Field Test Guide, C57.152. She is presently chairing the IEEE working group, developing the IEEE GIC Guide for Power Transformers. Jane has a Bachelor of Science Degree in Electrical Engineering from the University of Pittsburgh.