



TRANSFORMERS COMMITTEE



September 8, 2005

Dear Committee Members and Guests:

You and your companion are cordially invited to Memphis, Tennessee to attend the Fall 2005 Meeting of the IEEE/PES Transformers Committee to be held October 23-27, at the spectacular Peabody Memphis Hotel. ABB is the host of this meeting and it promises to be an event that will long be remembered!

The Peabody Memphis Hotel (www.peabodymemphis.com) is located in Downtown Memphis (149 Union Ave). The reduced group rate is US\$149 for single & double occupancy. The guest rooms are reserved under the group name "IEEE/PES Transformers Committee" and can be reserved by calling (800) PEABODY or (901) 529-4000. The room block cut-off date is September 21. After that date, all remaining rooms will be released. It is anticipated that the meeting will be very well attended, and you are encouraged to make your reservation as soon as possible.

For ground transportation, we suggest taking a taxi from the Memphis International Airport (airport code "MEM") to The Peabody. A one-way trip from the airport to Downtown Memphis is approximately US\$35.

October is a beautiful time in Memphis, but temperatures can be cool, so dress appropriately. Temperatures range from an average high of 60°F (16C), to an average low of 49°F (9C). Attire for the meetings is business casual.

ON-LINE REGISTRATION

We again have a full agenda planned for this meeting. Use the on-line registration system to register for all tours and events. The on-line registration system can be accessed at www.transformerscommittee.org. Register by September 21 to receive a US\$20 early-registration discount. Note that the cost of walk-up registration at the hotel is substantially higher than previous meetings.

SPECIAL EVENTS

The **Sunday Evening Reception** will be held on the rooftop of The Peabody. The Sunset Reception will begin at 5:30 pm (30 minutes earlier so that you can enjoy the sunset). We will be entertained by the one and only "Queen of Beale Street", Ms. Ruby Wilson. Ms. Wilson and her Beale Street Big Band are the house band at the legendary BB King's Memphis location. The evening promises to be magical!

The speaker for the **Tuesday Luncheon** is Mr. Angelo Lucchesi, from Jack Daniel's Tennessee Whiskey. Mr. Lucchesi is an amusing character and has been with Jack Daniels since 1953. He was the first salesman to market and sell the product outside of Tennessee. During his many years with Jack Daniels, Mr. Lucchesi has collected many interesting stories about the evolution of Jack Daniels. This is a lunch you will not want to miss!

On **Wednesday**, you and your companion will get "*all shook up*" at the spectacular Graceland Mansion, the home of the late Elvis Presley. We will have exclusive use of the property. Take a journey back in time to the sights and sounds of the King of Rock 'n Roll! The tour will take you on an adventure through the house, memorabilia museum, Sincerely Elvis, the grounds, The Presley Automobile Museum, and several of Elvis' airplanes. A sit-down buffet dinner will be included.

COMPANION TOURS

Monday, October 24 -- We begin our day with a tour of the Pink Palace Museum, Tennessee's most visited museum. We will view an IMAX movie, followed by lunch at Pat O'Brien's. Following lunch, we will continue with a tour of the Mississippi Riverfront, Cotton Row, and other interesting sites. We will be treated to a private tour of the Woodruff Fontaine Home and the Memphis Rock 'n' Soul Museum. We will return back to the Peabody for an afternoon tea, and hold a drawing for the lucky companion to be The Peabody's "Honorary Duck Master".

Tuesday, October 25 -- We will begin with a tour of the National Civil Rights Museum, the site where Martin Luther King, Jr. was assassinated. We will then move to the Viking Culinary Arts Center to participate in cooking class from chefs that are the absolute best at their craft. And the best part is we get to eat what we prepare!

TECHNICAL TOURS

We will have three tours of manufacturing plants scheduled:

Sunday Morning, October 23 -- Tour ABB Inc.'s Components and Insulation Materials Plant in Alamo, Tennessee. All attendees and companions are invited to attend. More information is available on ABB's flyer. Indicate your intention to attend with the on-line meeting registration system, or ... fax in the form to ABB.

Monday Evening, October 24 -- Tour Reinhausen's LTC manufacturing facility in Humbolt, Tennessee. All attendees and companions are invited to attend. More information is available on Reinhausen's flyer. Indicate your intention to attend with the on-line registration system, or ... fax or email Reinhausen.

Thursday Afternoon, October 27 -- Tour ERMCO's transformer manufacturing facility in Dyersburg, Tennessee. This tour is by invitation only. Contact ERMCO for more information.

ADDITIONAL INFORMATION

The following additional information comprises the Meeting Invitation Package. This information can be found on the Committee's website (www.transformerscommittee.org).

1. Meeting Registration Form. You may mail or fax this form with payment (must be received by September 21 to be eligible for the US\$20 early registration discount) or register on-line using a major credit card. On-line registration is encouraged and is available at www.transformerscommittee.org.
2. Detailed Meeting Schedule. An updated schedule will be posted on the Committee's web-site approximately one week before the meeting.
3. Information Flyers:
 - Tuesday Speaker Luncheon
 - Wednesday Evening Dinner Social
 - Companion Tours
 - Technical Tours (ABB & Reinhausen only)
 - Technical Presentations

Note: The flyers for the technical presentations will be posted on the web-site the week of September 19.

ABB is very pleased to host this event in Memphis, the *"Birthplace of Rock 'n Roll"*. We know your visit will be enjoyable and memorable. If you require further information or assistance, please phone me at (731) 696-5328, or email me at randy.williams@us.abb.com. If I am not available, contact Ms. Beverly Jenkins at (919) 856-3807 or at beverly.a.jenkins@us.abb.com.

We look forward to seeing you in Memphis!

Randy Williams
Fall 2005 Meeting Host
ABB Inc.

**IEEE/PES TRANSFORMERS COMMITTEE
FALL 2005 MEETING -- OCTOBER 23-27, 2005
Memphis, Tennessee, USA**

Pre-register for meeting and/or purchase Meeting Minutes using a credit card: www.transformerscommittee.org

Attendee's Name _____

Name to appear on your nametag (nickname, etc.) _____

Company / Institution _____

Street Address _____

City _____ State / Prov. _____ Postal Code _____ Country _____

Telephone _____ Fax _____ E-mail _____

PES Member? ☐ Yes ☐ No IEEE Standards Association Member? ☐ Yes ☐ No IEEE Membership #: _____

Will a companion accompany you? ☐ Yes ☐ No Full name of companion (for nametag) _____

Indicate if vegetarian meal(s) are required for: Attendee: ☐ Yes ☐ No Companion: ☐ Yes ☐ No

Other special requirements (special diets, wheelchair, etc.): _____

Attendee Registration Fee Includes: Meeting Attendance, Sunday Evening Reception, and 4 breakfasts (M, T, W, Th)

Companion Registration Fee Includes: Sunday Evening Reception and 4 breakfasts (M, T, W, Th)

-- Refund provided **ONLY** if request is received by **October 19** (by snail-mail or fax, or confirmed email to the contact below) --

-- There is a US\$25.00 service charge on a full refund of the entire registration (US\$10 for a partial refund) --

NOTE: Meeting registration (with fees) is necessary to attend ANY event!

Meeting Registration Fees (all fees in US\$ funds)	On or Before Sept. 21	After Sept. 21 Before Oct. 19	At the Meeting	Total
Attendee - IEEE Member (will be verified with IEEE)	\$140	\$160	\$250	_____
Attendee - non-member	\$165	\$185	\$275	_____
Attendee - IEEE Life or Committee Emeritus (will be verified)	\$20	\$40	\$100	_____
Companion, including children age 12 and over	\$65	\$85	\$150	_____

Sunday Evening Reception (cost included in registration fee) Attendee: ☐ Yes ☐ No Companion: ☐ Yes ☐ No **-0-**

Monday Luncheon - Stds Develop Process Review Mtg (all WG & TF Chairs encouraged to attend) # ____ @ \$20

Tuesday Luncheon - Speaker: Mr. Angelo Lucchesi, from Jack Daniel's Tennessee Whiskey # ____ @ \$30

Indicate selection for Tuesday Luncheon: Beef ____, Chicken ____, Vegetarian ____

Wednesday Evening Event - Dinner Social at Graceland, including dinner and access to museums # ____ @ \$65

Companion Tours: Monday - Pink Palace Museum, IMAX, Rock 'n Soul Museum, etc., with lunch # ____ @ \$45

Tuesday - Civil Rights Museum, Culinary Arts Center, Shopping, with lunch # ____ @ \$45

Technical Tours: Sunday Morning - ABB Alamo Facility ☐ Yes ☐ No Companion: ☐ Yes ☐ No **-0-**

Monday Evening - Reinhausen Humbolt Facility ☐ Yes ☐ No Companion: ☐ Yes ☐ No **-0-**

Thursday Afternoon - ERMCO Dyersburg Facility (by invitation only, contact ERMCO)

Meeting Minutes, Fall 2005 Meeting ** (can be purchased with or without meeting registration) # ____ @ \$20

** - The primary source for Meeting Minutes is the Committee's web-site. Printed minutes (in paper format) can be purchased and will be mailed to the above address at a later date.

TOTAL REMITTED -- \$ _____

Method of Payment - All funds in US dollars only! (IEEE Tax ID No. 13-1656633)

Money order or check - Make check payable to: "IEEE/PES Transformers Committee"

- Checks not issued by a US Bank **MUST** add US\$20.00 for processing fee.

Mailed or faxed registrations without proper payment will not be accepted.

Credit Card: ☐ Visa ☐ MasterCard ☐ American Express ☐ Diners Club

Card Number _____ Expiration Date _____ Name as it appears on card _____ Signature (Important) _____

Pre-register on-line, or mail completed form with payment to:

IEEE/PES Transformers Committee, c/o Greg Anderson;
13110 Birch Drive, Suite 148, PMB 330; Omaha, Nebraska 68164-4160 USA
fax: (816) 222-0828, email: transformers@ieee.org

IEEE/PES TRANSFORMERS COMMITTEE
www.transformerscommittee.org
Fall 2005 Meeting; October 23-27, 2005
Hosted by Randy Williams and ABB Inc.
The Peabody Memphis Hotel; Memphis, Tennessee, USA

NOTES: See Page 5 for a key to the abbreviations. A vertical line in the left margin indicates a noteworthy revision since last issue.

<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>
Saturday, October 22					
No Meetings. No Meeting Registration. No technical tours.					
Sunday, October 23					
<u>7:30 am</u> - 1:30 pm	Technical Tour #1: ABB Components & Insulation Materials Plant, Alamo, TN. -- All attendees & companions welcome. Bus leaves from The Peabody at <u>7:30 am</u> and returns by 1:30 pm. -- Please register on-line, or contact Lisa Q. Cotten at 731/696-5289 or lisa.q.cotten@us.abb.com. -- Snacks provided on the bus (eat breakfast beforehand). Lunch provided at the factory.				
1:00 pm - <u>5:00 pm</u>	Meeting Registration (only until 5:00 pm)			L-shaped table	Ballroom Foyer
2:00 pm - 5:30 pm	Administrative SC -- Closed meeting, by invitation only	Admin.	K. Hanus	25 US P (w/snack buffet)	Venetian
2:00 pm - 5:30 pm	NEMA Transformers -- Closed meeting, by invitation only	++	C. Drexler	25 US P (w/beverages)	Forest
<u>5:30 pm</u> - 8:00 pm	Hospitality Reception (starting at 5:30 pm to enjoy the sunset!) -- All members, guests & companions are welcome -- Advance registration please			300 Recept.	Plantation Rooftop
Monday, October 24 -- Monday Breaks Sponsored by Reinhausen USA ***					
7:00 am - 5:00 pm	Meeting Registration			L-shaped table	Ballroom Foyer
7:00 am - 4:30 pm	Internet Cafe'			10 SQ	Salon F
7:00 am - 8:00 am	Breakfast - Attendees (no companions please)			250 RT (8)	Continental Ballrm
8:00 am - 9:00 am	Breakfast - Companions (no attendees please)			50 RT (8)	Jackson (3rd Flr)
9:15 am - 4:00 pm	Companion Tour: <u>Memphis Area Attractions, Pink Palace Museum, Rock 'n' Soul Museum</u> . Includes lunch. -- Advance registration required. The bus will leave the Peabody at 9:15 am and return around 4:00 pm.				
<u>7:00 am</u> - 7:50 am	<u>Newcomers Orientation</u> Breakfast Meeting -- All Newcomers & Guests are encouraged to attend. Food is in back of room.		D. Fallon	80 CL P (food in back of room)	Louis XVI
<u>7:00 am</u> - 7:50 am	Distribution SC Coordination Meeting (closed mtg)		E. Smith	15 CONF	Boardroom
	TF Winding Temperature Indicators	IL	Canceled, will meet in the spring		
8:00 am - 9:15 am	TF Arc Furnace Transformers C57.17	Power	D. Corsi	40 CL	Hernando Desoto
8:00 am - 9:15 am	WG 3-ph UG Distribution Transformers C57.12.24	UTNP	G. Termini /J. Sullivan	50 CL P	Forest
8:00 am - 9:15 am	TF Dry-Type Reactors	Dry	R. Dudley	75 CL P	Venetian
8:00 am - 9:15 am	WG Electronic Test Data Reporting PC57.12.37	Dist	T. Callsen/ R. Hollingsworth	75 CL	Grand Salon DE
8:00 am - 9:15 am	TF Electrical Partial Discharge Measurements Guide C57.113	DiTests	E. Lemke	125 CL S3, P	Grand Salon C
8:00 am - 9:15 am	TF Core Overexcitation Requirements	PCS	C. Stiegemeier	150 CL S3, P	Grand Salon AB
9:15 am - 9:30 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	

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

<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 24 (continued)					
9:30 am - 10:45 am	WG Liquid-immersed Secondary Network Transformers C57.12.40	UTNP	B. Klaponski	40 CL P	Hernando Desoto
9:30 am - 10:45 am	WG Thermal Evaluation of Power and Distribution Trans. C57.100	IL	R. Wicks	50 CL P	Forest
9:30 am - 10:45 am	WG PCS Rev. to Test Code C57.12.90	PCS	M. Perkins	75 CL P	Venetian
9:30 am - 10:45 am	WG 1-ph OH Dist. Trans. C57.12.20	Dist	A. Wilks/ T. Cooper	75 CL	Grand Salon DE
9:30 am - 10:45 am	WG Acoustic PD Measurements	DiTests	J. Harley	125 CL S3	Grand Salon C
9:30 am - 10:45 am	WG Transformer Monitoring C57.143	Power	D. Chu/A. Lux	150 CL S3, P	Grand Salon AB
10:45 am - 11:00 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
11:00 am - 12:15 pm	TBD			40 CL P	Hernando Desoto
11:00 am - 12:15 pm	WG Temp. Rise Test Procedures in Section 11 of C57.12.90	IL	P. Payne	50 CL P	Forest
11:00 am - 12:15 pm	WG Shunt Reactors C57.21	PCS	R. Dudley	75 CL	Venetian
11:00 am - 12:15 pm	WG 1-ph Padmount Distribution Transformers C57.12.25	Dist	A. Ghafourian/ I. Ares	75 CL	Grand Salon DE
11:00 am - 12:15 pm	WG Revision to Low Frequency Tests	DiTests	B. Poulin	125 CL S3, P	Grand Salon C
11:00 am - 12:15 pm	WG Standard for Control Cabinets	Power	J. Watson	150 CL S3, P	Grand Salon AB
12:15 pm - 1:30 pm	Lunch Mtg - Standards Develop. Process Review -- All WG & TF Chairs are encouraged to attend. -- Advance reservation necessary (\$20 for box lunch). -- Paper tickets will not be provided. Admission to the event and meal selection will be verified with a registration list at the door.			80 RT (8) P (same set from bkfst, set food for guarantee)	Continental Ballrm
1:45 pm - 3:00 pm	WG Sec. Network Protectors C57.12.44	UTNP	D. Mulkey	40 CL	Hernando Desoto
1:45 pm - 3:00 pm	WG Thermal Evaluation C57.12.56 and C57.12.60	Dry	R. Provost/ R. Wicks	50 CL P	Forest
1:45 pm - 3:00 pm	SC HVDC Converter Transformers and Smoothing Reactors	HVDC	R. Dudley	75 CL P	Venetian
1:45 pm - 3:00 pm	WG 3-ph Padmount Distribution Transformers C57.12.34	Dist	R. Stahara/ S. Shull	75 CL	Grand Salon DE
1:45 pm - 3:00 pm	WG PCS Revisions to C57.12.00	PCS	S. Snyder	125 CL S3 P	Grand Salon C
1:45 pm - 3:00 pm	WG LTC Performance C57.131	Power	W. Henning	150 CL S3	Grand Salon AB
3:00 pm - 3:15 pm	<i>Break (beverages and treats)</i>			Grand Ballroom Foyers	
3:15 pm - 4:30 pm	NEMA ST-1/ST-20 Revision	++	G. Morehart	15 US	TBD
3:15 pm - 4:30 pm	WG 1-ph Submersible Distribution Transformers C57.12.23	UTNP	A. Traut/ B. Basu	40 CL	Hernando Desoto
3:15 pm - 4:30 pm	Joint WG Optical ITs C57.13/PSIM P1601	IT/PSIM	Rahmatian/ Gilleland	50 CL P	Forest
3:15 pm - 4:30 pm	WG Semiconductor Rectifier Transformers C57.18.10	PCS	S. Kennedy	75 CL P	Venetian
3:15 pm - 4:30 pm	TBD			75 CL	Grand Salon DE
3:15 pm - 4:30 pm	WG Revision of Impulse Guides C57.98 and C57.138	DiTests	A. Molden	125 CL S3, P	Grand Salon C
3:15 pm - 4:30 pm	WG Transf. Life Extension PC57.140	Power	R. James/ W. Bartley	150 CL S3	Grand Salon AB
4:30 pm - 4:45 pm	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
4:45 pm - 6:00 pm	Tutorial/Presentation #1: "Corrosive Sulfur", by Tom Lundquist and others **			200 TH S3, P	Grand Salon AB
6:30 pm - 11:15 pm	Technical Tour #2: Reinhausen Manufacturing Facility, Humbolt, TN. -- All attendees & companions welcome. Bus leaves from the hotel at 6:30 pm and return around 11:15 pm. -- Includes dinner. Register on-line or contact Mr. John Gamane at 731/784-7681, or RM@BestLTC.com				

** Contact N. Kent Haggerty (n.kent.haggerty@ieee.org) if you are interested in making a technical presentation 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>
Tuesday, October 25 -- Tuesday Breaks Sponsored by HICO America, Inc. ***					
7:00 am - <u>12:00 pm</u>	Meeting Registration			L-shaped table	Ballroom Foyer
7:00 am - 4:30 pm	Internet Cafe'			10 SQ	Salon F
7:00 am - 8:00 am	Breakfast - Attendees (no companions please)			250 RT (9)	Continental Ballrm
8:00 am - 9:00 am	Breakfast - Companions (no attendees please)			50 RT (8)	Jackson (3rd Flr)
9:15 am - 4:00 pm	Companion Tour: <u>National Civil Rights Museum, Culinary Arts Center.</u> Includes lunch. -- Advance registration required. The bus will leave the Peabody at 9:15 am and return around 4:00 pm.				
	TF West Coast	Power	No scheduled meeting for West Coast TF.		
	TF Joint/PSIM Low PF Measurement	PCS	Cancelled		
8:00 am - 9:15 am	WG Test Requirements for HV Instrument Transformers C57.13.5	IT	R. McTaggart/ P. Riffon	40 CL P	Hernando Desoto
8:00 am - 9:15 am	WG Frequency Response Analysis (FRA) Guide PC57.149	PCS	C. Sweetser	50 CL P	Forest
8:00 am - 9:15 am	WG Revision Installation Guide C57.93	Power	M. Lau	75 CL P	Venetian
8:00 am - 9:15 am	WG Enclosure Integrity C57.12.28, C57.12.29, C57.12.31, C57.12.32	Dist	R. Olen/ D. Mulkey	75 CL	Grand Salon DE
8:00 am - 9:15 am	WG Guide for DGA in LTCs C57.139	IF	F. Jakob	125 CL S3	Grand Salon C
8:00 am - 9:15 am	WG Switching Transients Induced by Transformer/Breaker Interaction	PCS	R. Degeneff	150 CL S3, P	Grand Salon AB
9:15 am - 9:30 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
9:30 am - 10:45 am	WG Dry-Type Gen. Require. C57.12.01	Dry	J. Sullivan	40 CL P	Hernando Desoto
9:30 am - 10:45 am	WG Neutral Ground. Devices PC57.32	PCS	S. Schappell	50 CL, P	Forest
9:30 am - 10:45 am	WG Std Terminology C57.12.80	Stds	T. Raymond	75 CL	Venetian
9:30 am - 10:45 am	TF Transformers for Wind Farms	TBD	J. Watson	75 CL	Grand Salon DE
9:30 am - 10:45 am	WG Natural Ester-based Fluids C57.147	IF	P. McShane	125 CL S3, P	Grand Salon C
9:30 am - 10:45 am	TF Functional Life Tests, De-energized Tap Changers (DETC)	Power	P. Hopkinson	150 CL S3, P	Grand Salon AB
10:45 am - 11:00 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
11:00 am - 12:15 pm	TF Rev. to Temp. Ratings in C57.12.00	IL	D. Marlow	40 CL P	Hernando Desoto
11:00 am - 12:15 pm	WG Loss Tolerance and Measurement	PCS	E. teNyenhuis	50 CL P	Forest
11:00 am - 12:15 pm	WG Phase-shift Trans. Guide C57.135	Power	J. Mclver	75 CL	Venetian
11:00 am - 12:15 pm	WG Dist. Substation Transf. C57.12.36	Dist	Aho/Rossetti	75 CL P	Grand Salon DE
11:00 am - 12:15 pm	WG Revision of Oil Guide C57.106	IF	J. Thompson/ T. Oommen	125 CL S3	Grand Salon C
11:00 am - 12:15 pm	TF Bushing Applicat. Guide C57.19.100	Bush	T. Spitzer	150 CL S3	Grand Salon AB
12:15 pm - <u>1:30 pm</u>	<u>Speaker Luncheon.</u> Mr. Angelo Lucchesi, from Jack Daniels -- Advance registration is necessary. -- Paper tickets will not be provided. Admission to the event and meal selection will be verified with a registration list at the door.			200 RT (8) P add <u>elevated</u> tbl for 5, add lectern w/mic & lapel	Continental Ballrm
1:45 pm - 3:00 pm	WG Instrument Transformer Standard Requirements C57.13	IT	T. Nelson	40 CL P	Hernando Desoto
1:45 pm - 3:00 pm	WG Rev. Transf. for Non-sinusoidal Loads C57.110	PCS	R. Marek	50 CL P	Forest
1:45 pm - 3:00 pm	WG Revision of C57.12.10	Power	J. Arteaga	75 CL P	Venetian
1:45 pm - 3:00 pm	WG Voltage Step Regulators C57.15	Dist	C. Colopy/ G. Kennedy	75 CL P	Grand Salon DE
1:45 pm - 3:00 pm	WG Revision to Loading Guide C57.91	IL	T. Raymond	125 CL S3, P	Grand Salon C
1:45 pm - 3:00 pm	WG Dielectric Test Tables, Liquid-filled	DiTests	P. Hopkinson	150 CL S3, P	Grand Salon AB
3:00 pm - 3:15 pm	<i>Break (beverages and treats)</i>			Grand Ballroom Foyers	

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Tuesday, October 25 (continued)					
3:15 pm - 4:30 pm	WG for Bar Coding Distribution Transformers C57.12.35	Dist	L. Matthews/ G. Termine	40 CL P	Hernando Desoto
3:15 pm - 4:30 pm	WG Dry-Type Test Code C57.12.91	Dry	D. Foster	50 CL P	Forest
3:15 pm - 4:30 pm	TBD			75 CL	Venetian
3:15 pm - 4:30 pm	WG Sound Level Measurement Guide	ASV	J. Puri	75 CL P	Grand Salon DE
3:15 pm - 4:30 pm	WG Revision to Impulse Tests	DiTests	P. Riffon/ P. Heinzig	125 CL S3, P	Grand Salon C
3:15 pm - 4:30 pm	WG Transportation Issues Guide	Power	G. Anderson/ E. Schweiger	150 CL S3, P	Grand Salon AB
4:30 pm - 4:45 pm	<i>Break (beverages only)</i>			Grand Ballroom & Foyers	
4:45 pm - 6:00 pm	Tutorial/Presentation #2: "Transformer Insulation Upgrading and The Loading Guide Life Equations", by T. Prevost and TV Oommen **			200 TH S3, P	Grand Salon AB
No Evening Activity Planned					

Wednesday, October 26 -- Wednesday Breaks Sponsored by Baron USA, Inc. ***

No Meeting Registration, No Companion Tours					
7:00 am - 5:30 pm	Internet Cafe'			10 SQ	Salon F
7:00 am - 8:00 am	Breakfast - Attendees (no companions please)			250 RT (8)	Continental Ballrm
8:00 am - 9:00 am	Breakfast - Companions (no attendees please)			50 RT (8)	Jackson (3rd Flr)
7:00 am - 7:45 am	WG Web-page Development Breakfast Meeting		Will not meet.		
8:00 am - 9:15 am	EL&P Delegation -- Users only meeting	++	K. Hanus	50 CL	Grand Salon E
8:00 am - 9:15 am	SC Audible Sound & Vibration	ASV	J. Puri	50 CL P	Grand Salon D
8:00 am - 9:15 am	SC Instrument Transformer	IT	J. Smith	80 CL S3, P	Grand Salon C
8:00 am - 9:15 am	SC Insulation Life	IL	D. Platts	200 CL S3	Grand Salon AB
9:15 am - 9:30 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
9:30 am - 10:45 am	TBD			80 CL S3	Grand Salon C
9:30 am - 10:45 am	SC UG Transf. & Network Protectors	UTNP	C. Niemann	50 CL	Grand Salon D
9:30 am - 10:45 am	SC Dielectric Tests	DiTests	L. Wagenaar	200 CL S3, P	Grand Salon AB
10:45 am - 11:00 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
11:00 am - 12:15 pm	TBD			50 CL	Grand Salon D
11:00 am - 12:15 pm	SC Insulating Fluids	IF	F. Gryszkiewicz	80 CL S3	Grand Salon C
11:00 am - 12:15 pm	SC Performance Characteristics	PCS	R. Girgis	200 CL S3, P	Grand Salon AB
12:15 pm - 1:30 pm	Lunch (open)				
1:30 pm - 2:45 pm	TBD			50 CL	Grand Salon D
1:30 pm - 2:45 pm	SC Dry Type	Dry	C. Johnson	80 CL S3	Grand Salon C
1:30 pm - 2:45 pm	SC Power Transformers	Power	T. Lundquist	200 CL S3, P	Grand Salon AB
2:45 pm - 3:00 pm	<i>Break (beverages and treats)</i>			Grand Ballroom Foyers	

** Contact N. Kent Haggerty (n.kent.haggerty@ieee.org) if you are interested in making a technical presentation at a future meeting.

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

FUTURE COMMITTEE MEETINGS

SPRING 2006 - March 19-23; Costa Mesa, California; Hilton Costa Mesa. Hosted by Mike Lau and SCE.

FALL 2006 - October 22-26; Montreal, Quebec; Delta Center-Ville. Hosted by Thang Hochanh and HQ/IREQ.

SPRING 2007 - March 11-15 (tentative)

KEY
> -- activity continued into another session / from another session
++ -- not a Transformers Committee activity TBD = to be determined
P = PC projector (all rooms have OH projector); F = flip chart; S1 = sound (see note)
S2 = stand mic in front only; S3 = stand mic in front & 1 stand mic at mid-room
CL -- classroom seating (w/head table for 2-3)
TH -- theater seating (with head table for 2-3)
RT -- multiple roundtable (8-10/table)
US -- one hollow square or U-shape

<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>
Wednesday, October 26 (continued)					
3:00 pm - 4:15 pm	IEC TC-14 Technical Advisory Group (all interested parties welcome)	++	P. Hopkinson	50 CL P	Grand Salon E
3:00 pm - 4:15 pm	SC Meetings Planning	Mtgs	G. Anderson	50 CL P	Grand Salon D
3:00 pm - 4:15 pm	SC Distribution Transformers	Dist	E. Smith	80 CL S3	Grand Salon C
3:00 pm - 4:15 pm	SC Bushings	Bush	F. Elliott	200 CL S3	Grand Salon AB
4:15 pm - 4:30 pm	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
4:30 pm - 5:30 pm	SC Transformer Standards	Stds	B. Chiu	80 CL S3, P	Grand Salon C
6:00 pm - 9:30 pm	Dinner Social at <u>Graceland</u> . Advance registration is necessary. -- Buses begin departing at 5:45 pm. Last bus will depart at 6:15 pm. Return to the hotel around 9:30 pm. -- Paper tickets will not be provided as in the past. Admission to the event will be verified with a registration list as you enter the bus.				

Thursday, October 27

No Meeting Registration, No Companion Tours, <u>No Internet Cafe'</u>					
7:00 am - 8:00 am	Breakfast - Attendees (no companions please)			250 RT (8)	Continental Ballrm
8:00 am - 9:00 am	Breakfast - Companions (no attendees please)			50 RT (8)	Jackson (3rd Flr)
8:00 am - 9:45 am >	Transformers Committee -- <u>All attendees</u> are encouraged to attend. -- See separate document for meeting agenda.		K. Hanus	300 CL S1, P <u>elevat.</u> table for 4 lectern w/mic, one floor mic in each isle	Salon ABC
9:45 am - 10:00 am	<i>Break (beverages only)</i>			Grand Ballroom Foyers	
> 10:00 am - 11:30 pm	Transformers Committee		K. Hanus	300 CL S1, P	Salon ABC
12:30 pm - 8:30 pm	Technical Tour #3: <u>ERMCO Distribution Transformer Facilities</u> , in Dyersburg, TN. -- <u>By invitation only</u> . Includes dinner after the tour (eat lunch beforehand). -- For more information, contact Alan Wilks at 731/285-9121 or awilks@ermco-eci.com. -- The bus will leave from The Peabody at 12:30 pm and return around 8:30 pm.				

NEMA ST-1/ST-20 Meeting moved to Monday afternoon

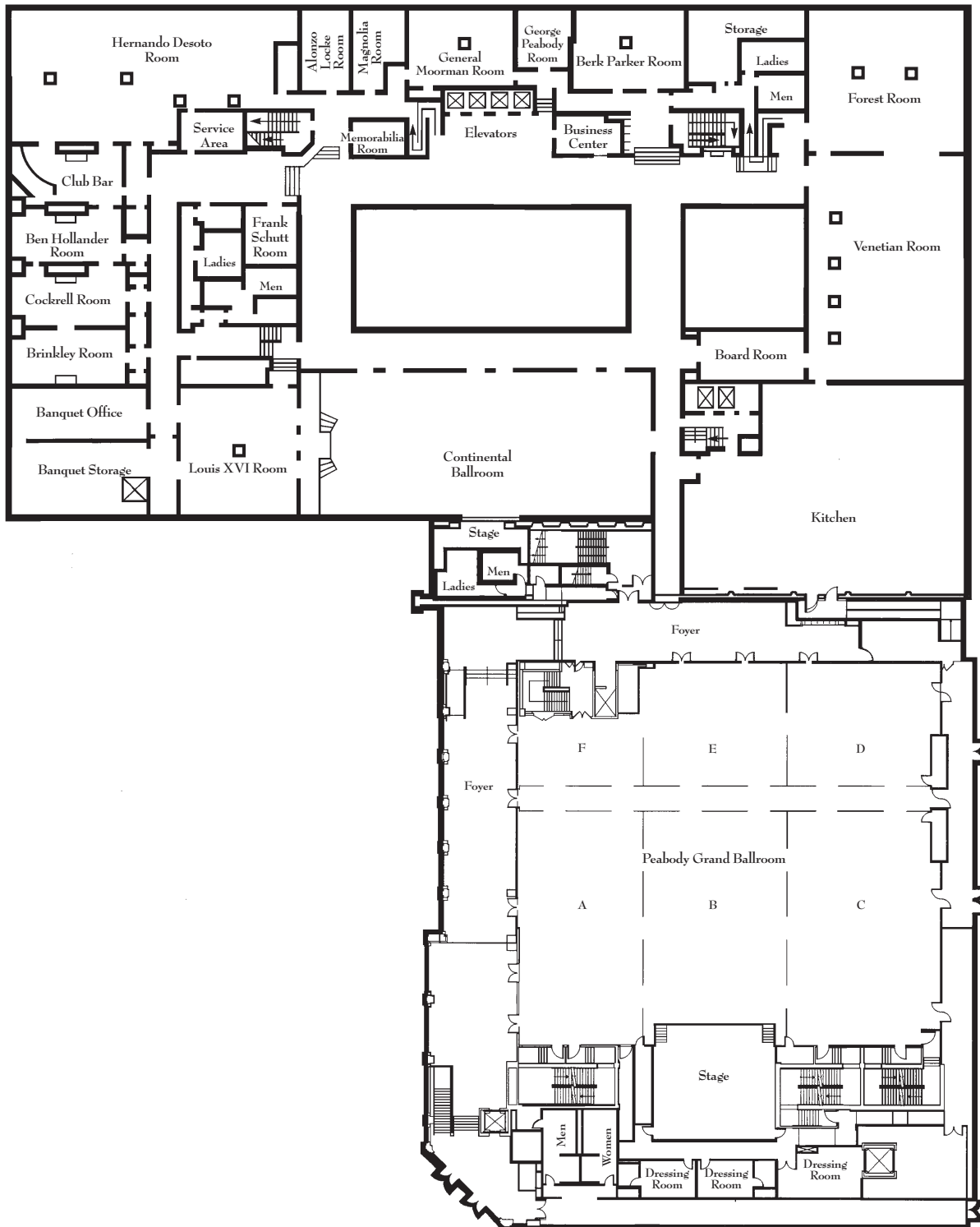
1:00 pm - 3:00 pm >	EPRI Power Transformer Project Review	++	B. Ward	50 CL need screen & power strip only	Forest
3:00 pm - 3:15 pm	<i>Break (beverages only)</i>				
> 3:15 pm - 5:00 pm >	EPRI Power Transformer Project Review -- Continued into Friday morning	++	B. Ward	50 CL	Forest

Friday, October 28

No Transformer Committee Meetings. No Internet Cafe'					
7:30 am - 8:00 am	Breakfast - EPRI members only	++		50 RT	Louis XVI
> 8:00 am - 10:00 am >	EPRI Power Transformer Project Review -- Closed meeting, EPRI members only -- Continued from Thursday afternoon	++	B. Ward	50 CL need screen & power strip only	Forest
10:00 am - 10:15 am	<i>Break (with beverages)</i>				
> 10:15 am - 12:00 pm	EPRI Power Transformer Project Review	++	B. Ward	50 CL	Forest



Mezzanine Level Floor Plan



IEEE/PES TRANSFORMERS COMMITTEE

TRANSFORMERS COMMITTEE - FALL 2005 MEETING THURSDAY, OCTOBER 27, 2005

Chair: Kenneth S. Hanus

Vice-chair: Donald J. Fallon

Secretary: Thomas A. Prevost

- | | | |
|-------|---|----------------------------|
| 1. | Chair's Remarks and Announcements | Kenneth S. Hanus |
| 2. | Approval of Minutes from Spring 2005 Meeting | Kenneth S. Hanus |
| 3. | Administrative Subcommittee | Kenneth S. Hanus |
| 4. | Vice-chair's Report | Donald J. Fallon |
| 5. | Transformer Standards | Bill Chiu |
| 6. | Recognition and Awards | H. Jin Sim |
| 7. | Report of Technical Subcommittees | |
| 7.1. | HVDC Converter Transformers & Reactors | Richard F. Dudley |
| 7.2. | Instrument Transformers | James E. (Jim) Smith |
| 7.3. | Insulating Fluids | Frank J. Gryszkiewicz |
| 7.4. | Insulation Life | Donald W. Platts |
| 7.5. | Performance Characteristics | Ramsis S. Girgis |
| 7.6. | Power Transformers | Thomas G. Lundquist |
| 7.7. | Underground Transformers & Network Protectors | Carl G. Niemann |
| 7.8. | Audible Sound and Vibration | Jeewan L. Puri |
| 7.9. | Bushings | Fred E. Elliott |
| 7.10. | Dry Type Transformers | Charles (Chuck) W. Johnson |
| 7.11. | Distribution Transformers | James E. (Ed) Smith |
| 7.12. | Dielectric Tests | Loren B. Wagenaar |
| 8. | Editor's Report | Stephen Antosz |
| 9. | Meetings Planning Subcommittee | Gregory W. Anderson |
| 10. | Reports of Liaison Representatives | |
| 10.1. | Standard Coordinating Committee No. 4 | Paulette A. Payne |
| 10.2. | IEC TC-14 Technical Advisor to USNC | Philip J. Hopkinson |
| 10.3. | CIGRE | Jean-Christophe Riboud |
| 11. | Old Business | Kenneth S. Hanus |
| 12. | New Business | Kenneth S. Hanus |

COMPANIONS TOUR

Monday, October 24, 2005

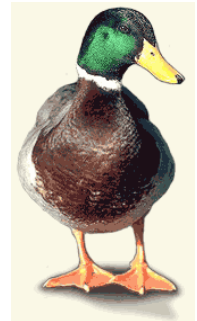
Our first touring day will consist of a typical "tourist tour" of Memphis. We will begin our day with a tour of the Pink Palace Museum, Tennessee's most visited museum. The Museum offers a fascinating look at the history of the Mid-South. Displays include a re-creation of the first Piggly Wiggly grocery store, a miniature circus, and exhibits charting the course of Memphis from colonial times to the Civil War and beyond. The Museum has been voted one of the top five museums in the South by the readers of "Southern Living" magazine. The Museum is also home to the IMAX theatre where we will have the pleasure to view the film, "Mysteries of the Nile".



In the afternoon, we will continue to tour the city with a Mississippi Riverfront tour, Cotton Row and other interesting sites. We will get a private tour of the Woodruff Fontaine Home, which is located on "Millionaires Row" and is filled with period antiques and a renowned textile collection. Then we're on to the Memphis Rock 'n' Soul Museum, where you can feel the beat and discover the story of Memphis music and its unique impact on worldwide culture -- told as only the Smithsonian can.

We will return back to the Peabody at 4:00 pm for an afternoon tea. During the tea, we will hold a drawing for the lucky companion to be The Peabody's Honorary Duck Master.

- 9:15 am -- Board bus for the Pink Palace Museum
- 12:00 pm -- Lunch at Pat O'Brien's
- 4:00 pm -- Arrive back at The Peabody for an afternoon tea and drawing to be the Honorary Duck Master



COMPANIONS TOUR

Tuesday, October 25, 2005

We will begin with a tour of the National Civil Rights Museum, the site where Martin Luther King, Jr. was assassinated. The museum is the former Lorraine Motel, a small minority-owned business in the south-end of Memphis. The Museum includes an overview of some of the world's most crucial human rights movements and the achievements gained through the efforts and sacrifices of courageous individuals who stood by their convictions.

Next stop ... the Viking Culinary Arts Center to participate in cooking class from chefs that are the absolute best at their craft. This may be the most enjoyable school on earth -- even the homework is fun! The chefs will share their special techniques and demonstrate their favorite recipes in the participation kitchen. The best thing is that we get to eat our creations! You will have time to shop in the retail store -- which is amazing!!!



- 9:15 am -- Board bus for the National Civil Rights Museum
- 11:15 am -- Arrive at the Viking Culinary Arts Center
- 4:00 pm -- Arrive back at The Peabody

Speaker Luncheon

Tuesday, October 25, 12:15 pm

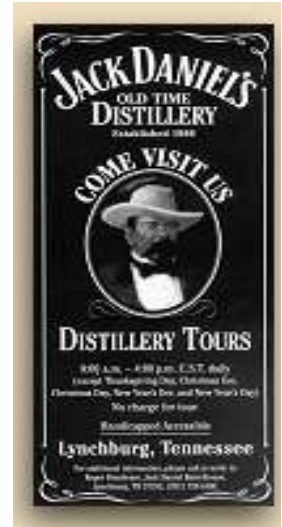
Guest Speaker: Mr. Angelo Lucchesi, Jack Daniel's Tennessee Whiskey

Join us for a wonderful lunch and speaker. We are delighted that **Mr. Angelo Lucchesi**, with Jack Daniel's Tennessee Whiskey will entertain us with stories about the evolution of his "hobby". Mr. Lucchesi has been with Jack Daniels since 1953. He was the first Salesman to market and sell the product outside of Tennessee. During his many years with the company, Mr. Lucchesi has collected many interesting stories about the evolution of Jack Daniels. This is a lunch you will not want to miss.

Luncheon Menu

All luncheon selections are served with house-baked rolls and sweet cream butter; coffee and tea. You have your choice of:

- Mesquite seared New York Strip,
- Seared lemon pepper chicken,
- Penne pasta with vegetables, portabella mushrooms and light cream sauce.



To join us for the luncheon, register on-line at www.transformerscommittee.org.

Indicate your meal selection (beef, chicken or vegetarian).

Paper tickets will not be provided. Admission to the event and meal selection will be verified with a registration list at the door.



"Hollywood helped introduce Jack Daniel's to the rest of America," said Roger Brashears, historian and Distillery spokesman. "Our whiskey was the preferred libation of Frank Sinatra and the rest of the Rat Pack back when this was an unknown little distillery in Tennessee. After that, Jack Daniel's became the honored member of many a household."

Wednesday Evening Dinner Social An Evening at Graceland!

Most kings had castles. Elvis had a home ...

On Wednesday, you and your companion will get "*all shook up*" at the spectacular Graceland Mansion, the home of the late Elvis Presley. We will have exclusive use of the property for touring. The tour will take you on an adventure through the house, memorabilia museum, Sincerely Elvis Museum, the grounds, The Presley Automobile Museum, and several of Elvis' airplanes. Graceland is the second most visited home in America, following the White House.



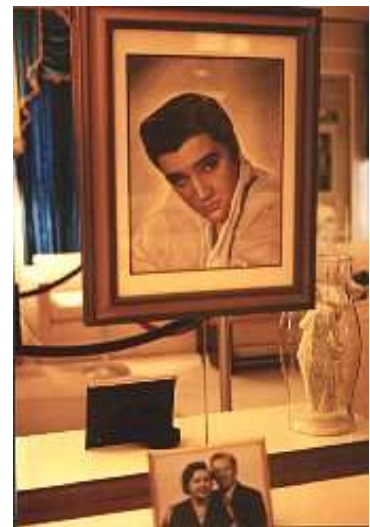
This is truly a journey back in time to the sights and sounds of the King of Rock 'n Roll! A sit-down buffet dinner will be included.

Schedule

5:45 pm	Buses begin departing from the front of The Peabody (Union Avenue entrance)
6:15 pm	The <u>last bus</u> will leave The Peabody.
9:30 pm	Buses return to The Peabody

Register on-line. Advance registration is necessary.

Paper tickets will not be provided as in the past. Admission to the event will be verified with a registration list as you enter the bus.





IEEE/PES Transformers Committee Technical Tour
Fall 2005 Meeting

ABB Inc.'s Components and Insulation Materials Plant

Sunday Morning, October 23, 2005

All Attendees are invited to the tour -- including companions!!

**Advance registration is required*

What you will see in Alamo!

Distribution Products

- Tap Changers/Switches
- Draw Out Fuse Holders
- Expulsion Fuses
- Protective Links
- Load Break Switches
- Current Limiting Drywell Cannisters

Power Products

- Condenser Bushings
- Bulk Bushings
- On-Load Tap Changers
- Off-Load Tap Changers
- Sudden Pressure Relays
- Bushing Potential Devices
- Nitrogen Blanket Regulation Systems
- Control Cabinets

Tour Schedule

7:30 am	Depart The Peabody Hotel
9:00 am	Arrive at Alamo Plant
	Tour Plant and Lunch
12:00 pm	Depart for The Peabody
1:30 pm	Arrive at The Peabody

To join us on the ABB plant tour, register on-line at www.transformerscommittee.org, or complete the registration form below and fax to Beverly Jenkins at 919-856-3810 before October 14.

Name: _____ Company: _____

Phone: _____ Email: _____

Companion Name (if attending): _____

Reinhausen



REINHAUSEN OPEN HOUSE

Reinhausen, the leading manufacturer of Load Tap Changers in North America and Worldwide, cordially invites you to our facility Monday evening, October 24, 2005. Your tour bus will depart the Peabody 6:30 PM. for our Strawberry Festival hometown of Humboldt, TN.

We'll dine together, talk a little shop, and let you meet some of the folks responsible for the success story that y'all helped create.

A Dinner Program will take place from 8-9 P.M. followed by a tour of the Reinhausen Factory. You will arrive back at the Peabody around 11:15 PM.

Of course, it wouldn't be a Reinhausen function without a surprise or two, so PLEASE, come to Humboldt and let us share some Reinhausen magic with you. Bring a guest.

One last thing.....regarding cameras.....

IT IS STRICTLY FORBIDDEN

to leave your cameras at home. All of our products, processes and especially our employees are highly photogenic.

Snap, snap, snap to your heart's content.

Your friends at Reinhausen

Advance registration is requested by October 5, 2005. Please complete the form below and RSVP by fax (731-784-7682) or E-mail (RM@BestLtc.com) attn: John Gamane.

Name:
Company:
Phone:
Fax:
E-mail:
Companion's name:

Reinhausen Manufacturing Inc.
2549 North 9th Avenue
Humboldt, Tennessee 38343, U.S.A.

Phone +1 731 784 7681
Fax +1 731 784 7682
www.reinhausen.com



IEEE/PES Transformers Committee
Fall 2005 Meeting
Memphis, Tennessee, USA



" The Evolving Problem of Corrosive Sulfur in Transformer Oil"
-- Panel Presentation & Discussion --
Monday, October 24; 4:45 to 6:00 p.m.

By Clair Claiborne, Anne Goldsmith, Lance Lewand, Tom Lundquist, and others

1. Abstract

Transformer oils meeting industry standards have historically proven to be essentially excellent products. Recent transformer failures attributed to corrosive sulfur have resulted in a reevaluation of present specifications and testing methods for transformer oil. New oils placed in transformers have been found to be corrosive when tested by proposed new test methods. Preventing or stopping the corrosive effect of sulfur contained in some oils is a challenge. This "panel presentation" will discuss:

- Crude oil selection and what decisions are made by the refiner regarding sulfur content.
- How corrosive sulfur attacks copper and how it impacts paper insulation and leads to transformer failure.
- A discussion of oil specifications and the investigation and testing of transformer oils regarding corrosion.
- What one might expect when tests are conducted on a large population of transformers.

2. Learning Objectives

This panel discussion will introduce the engineer to the corrosive sulfur problem with the intent the participant will leave the discussions with the following accomplishments:

- Basics of oil refining and how the refiner deals with sulfur in oil
- What corrosive sulfur can do in a transformer
- What new test methods are proposed to detect potentially harmful levels of sulfur
- How to prevent corrosive sulfur from being introduced into a transformer
- Steps that are available to stop the damage process
- What is a passivator (metal deactivator) and how it works

3. Learning Outcomes

Attendees at this presentation will gain a fundamental understanding of oil refining and the corrosive sulfur issue. They will also learn why careful consideration should be given to determine the level of corrosive sulfur in each transformer, particularly those transformers less than 5 or 6 years old. Participants will also gain insight into what is not well known about the issue and what steps are going on in the industry to further investigate these unknowns. They will get a summary of the results of tests conducted on over 100 transformers at one utility.

Participants will be given relevant facts that will prepare them to contribute to the industry as the solutions to the corrosive sulfur problem are addressed.

4. Presenter's Biographies

C. Clair Claiborne: Dr. Clair Claiborne received his B.A. in chemistry from the University of Kansas, Lawrence in 1973. He was employed by Sued-Chemie A.G. for two years and then obtained his Ph.D. in materials science and engineering from Northwestern University in 1984. Prior to completing his PhD, he was employed as a research chemist with Phillips Petroleum Co. for two years. In 1984, he joined Westinghouse Electric Corp and transferred to ABB Inc. in 1989, where he is a principal consulting R&D scientist and Environmental Specialist. He has worked on thermal analysis of insulating materials, combustion product determination, and a reclassification process for PCB transformers. His work has dealt in general with structure-property relationships of materials, insulating fluids and analysis and development of insulating materials, together with many related factory technical assistance issues. Dr. Claiborne is a member of the American Chemical Society, a senior member of the Society of Plastics Engineers, a member and committee officer of the American Society of Testing Materials and a member of IEEE. He is the co-inventor of six U.S. patents, and the author or co-author of more than 30 technical papers, and two books, "Working with Non-Metals in the Plant", and "Working with Metals in the Plant." In addition, he has been honored with the ASTM Award of Merit and the American Chemical Society's 54th Southeast Regional Industrial Innovation Award and shared an IR100 award for a natural ester based dielectric fluid. Clair lives in Apex, NC with his wife, Patricia.

Anne Goldsmith, CQM: Anne Goldsmith has over 20 years experience in research, production and operations planning for the plastics and petroleum industry. Originally a plastics research & development scientist, Anne helped develop and implement a corporate operations assessment program for use in synchronizing R&D-to-shipment processes. By using basic business and scientific tools, Anne is able to re-align products, product lines, operations and sales strategies. Anne has taught seminars and provided technical training to over 1500 in-house and industry research, sales and operations professionals. Her experience with specialty products and process development projects include military, automotive and environmental (EPA) specific products. As the Marketing Technical Services Manager for Calumet Lubricants Co., Anne currently oversees the technical data management and product line education of Calumet Lubricants' diverse petroleum product offering including aliphatic solvents, specialty oils such as refrigeration oils and transformer oils, motor oils, and waxes. Anne holds degrees in Biology and Psychology from Bowling Green State University and is an American Society for Quality Certified Quality Manager. She is an active technical member of ASTM, API, ILMA and is an officer of the EPA's Horticultural Spray Oil Task Force.

Lance Lewand: Lance Lewand is the Laboratory Manager for the Doble Materials Laboratory. The Materials Laboratory is responsible for routine and investigative analyses of liquid and solid dielectrics for electric apparatus. Since joining Doble in 1992, Mr. Lewand has published numerous technical papers pertaining to testing and sampling of electrical insulating materials and laboratory diagnostics. Mr. Lewand was formerly Manager of Transformer Fluid Test Laboratory and PCB and Oil Field Services at MET Electrical Testing Company in Baltimore, MD for seven years. His years of field service experience in this capacity provide a unique perspective, coupling laboratory analysis and field service work. Mr. Lewand received his Bachelor of Science degree from St. Mary's College of Maryland. He is actively involved in professional organizations such as ASTM D-27 since 1989 and is a sub-committee chair. He is also the secretary of the Doble Committee on Insulating Materials.

Thomas G. Lundquist: Mr. Lundquist is an Executive Engineer, in the Electric System Engineering Department at Salt River Project in Phoenix, Arizona. Work assignments include special projects involving EHV equipment, consulting for system grounding and shielding, and transformer applications in utility facilities. He worked for Westinghouse Electric Corporation as a district engineer and as a service center manager. He is a recipient of the ASTM International Award of Merit and is Chairman of ASTM International D27 Electrical Insulating Liquids and Gases Committee. He is a senior member of IEEE, and Chairman of the Power Transformer Subcommittee. He received a BS degree in Electrical Engineering from the University of Arizona and an MBA -Technology Management from the University of Phoenix. He is a registered Professional Engineer in Arizona and Colorado.



IEEE/PES Transformers Committee
Fall 2005 Meeting
Memphis, Tennessee, USA



"Transformer Insulation Upgrading and the Loading Guide Equations"

-- Technical Presentation --
Tuesday, October 25; 4:45 to 6:00 p.m.

By T. V. Oommen, Thomas A. Prevost, and others

1. Abstract

Thermal upgrading of transformer insulation paper is done since the 1960s to raise insulation life, and therefore transformer life of oil-filled power transformers. Upgraded papers are used mostly in North American transformers. The superiority of upgraded insulation over non-upgraded insulation has been demonstrated through aging studies.

The IEEE Loading Guides published up to 1995 contained Arrhenius life plots for both non-upgraded and upgraded insulation used in transformers classified as 55C and 65C rise units respectively. The basis for construction of the life-plots was the end-point criteria in aging, taken as 50% retention of tensile strength of paper for power transformers, and passing the functional life tests for distribution transformers. The life predicted by these two end-points differed considerably by a factor close to 3. It was recognized that power transformers lasted much longer than the predicted end of life. This was part of the background that led to the revision of the Loading Guides in 1995, which equated the predicted life at a reference hot-spot temperature of 110C to 180,000 hours for both power and distribution transformers. In place of the tensile strength basis, the end-point was set as the degree of polymerization (DP) of the paper decreasing to a value of 200, which was roughly equivalent to a life of 150,000 hours. The 1995 Loading Guide dropped Arrhenius life plots, but instead, gives now equations and plots for per-unit life, based on life at 110C hot-spot temperature.

IEC has adopted the IEEE definition of thermally upgraded paper. They have also incorporated a sub-clause that illustrates the difference in aging rate between upgraded and non-upgraded paper.

2. Learning Objectives

Three areas will be covered:

- A short description of thermal upgrading and agents -- definition, chemical composition, how they work, upgrading process, and assay in upgraded paper. Some issues in quality control and consequences will also be discussed.
- Arrhenius Life Plots. How they are constructed; and a discussion of life-plots based on the tensile strength, life tests and 1995 Loading Guide criteria for both the 55C and the 65C rise units (although the former is not covered in the 1995 Loading Guide). The DP end-point criterion will be discussed in more detail.
- A short summary of IEC activities regarding use of thermally upgraded insulation.

3. Learning Outcomes

Attendees at the presentation will gain:

- A better understanding of thermal upgrading and its importance
- An understanding of why the need for including the old fashioned Arrhenius plots in the upcoming revised Loading Guide, in addition to the equations provided in the existing 1995 Loading Guide.
- An understanding of the activities of IEC to incorporate thermally upgraded paper into their loading guide.

4. Presenter's Biographies

T.V. Oommen: Mr. Oommen is a consultant, mainly with ABB Power Technology Division of ABB Inc. He worked as R&D Engineer/Scientist for 24 years at the Westinghouse Electric and ABB power transformer divisions and retired in October of 2000. During this period, he led research projects related to insulation degradation, gas generation, moisture equilibrium in transformers, bubble generation from overload, and biodegradable natural ester fluids. He earned his bachelors and masters degrees in chemistry in India, and his doctorate degree in chemistry at the University of Washington in 1970. He did postdoctoral work in spectroscopy and electrochemical synthesis at the University of Washington and the Southern Illinois University in Carbondale before he joined Westinghouse in 1977.

Dr. Oommen has published over 70 technical papers in IEEE and CIGRE electrical journals and magazines, and has presented symposia and seminars on electrical insulation and transformer diagnostics. He is a Senior Member of IEEE, a member of PES and DEIS, and is also member of Insulation Life and Insulating Fluids subcommittees of the IEEE/PES Transformers Committee. He and his wife reside in Raleigh, North Carolina.

Thomas A. Prevost: Mr. Prevost is an active member of IEEE. He is currently the secretary of the IEEE/PES Transformers Committee. He is a past-chair of the IEEE/PES Standards Coordinating Committee and served on the IEEE-SA Board of Governors from 2002 until 2004. Tom is the Vice President of Technical Service at EHV Weidmann Industries in St. Johnsbury, Vermont where he has been employed since 1985. Prior to that, he worked at Tampa Electric Company as an engineer in distribution and production.

Tom received his BSEE from Virginia Polytechnic Institute. He is also active in ASTM D-9 Committee on Solid Insulating Materials and has written several technical papers on the subject of electrical insulation materials. He and his wife and children reside in Vermont.