

Minutes of WG PC37.04
Standard for High Voltage Circuit Breaker
Monday, 24 April, 2017
1:30 – 5:30 pm
Hilton University Place, Charlotte, NC

Stephen Cary – Chair - Roy Alexander – Vice Chair - John Webb - Secretary

- I Welcome – IEEE C37.04 revision to include addendums, C37.06 and NEMA SG-4
- II Introductions
Meeting opened with 102 individuals in attendance: 39 of 51 members and 63 guests. A quorum was present.
- III A call for additions or corrections to the published minutes was made without comment from those present.
- IV Old Business
 - a. Discussion of ballot group composition. Once the Ballot Group is formed, no additional individuals may be added. Comments from individuals outside of the ballot group could be reviewed and accepted, but these individuals may not be added to the ballot group.
 - b. The PAR is valid through 2019, but current document expires at the end of 2018, at which time IEEE will administratively withdraw the standard and there will be no standard. It is important that the work finish before the document expires.
 - c. Results of initial ballot were reviewed. 72% affirmative, 90% returned.
- V New Business: Comment Resolution
 - a. Reviewed Manual Release to Close – Revised I-599 with accepted. Wording from IEEE standard for easy to open cover with possible warning will be added for next draft.
 - b. Manual Trip: Accepted negative ballot - Manual open release is now mandatory for S1 circuit breaker. It may remain optional for exterior handle on S2 breakers as previously agreed. Rating for test of manual release is continuous current not T100s, and markings may be added to satisfy maximum number comments.
 - c. Nameplate information: Shall we require that the peak and duration of the last half-loop be on the nameplate? Working group voted it was not requirement to satisfy several negative ballots. It however, was mentioned by the Vice Chair, this is a requirement for manufacturers to retain the data and release it for the application guide use for circuit breaker interruption analysis. The negative ballot comment also agreed it shall be retained.
 - d. Remove optional 2nd reclosing 15s. This had been added early at the revision process, but given the number of negative ballots – the working group agreed to remove the 15 s. WG had one objection or note, that some manufacturers offer it. It was noted the

application guide provides specific criteria for ratings, and modern interrupters have capabilities, as does the charging system for the mechanisms.

- e. Lines 1295 – 1296 were removed for next ballot. This was a edition, of out-of-phase wording for interrupting time that was not part of 1999 revision.
- f. WG is studying if 5.8.2 is applicable, and agreed to will revise accordingly.
- g. The rest of 5.9.1 accepted in principle. To be clarified if change is more than deleting the last sentence. The CO time may be extended and wording will be reviewed by WG.
- h. Updates on contact parting (5.9.3) to be further worked by R. Alexander and D. Dufournet
- i. 5.5.2.5.1 Through 5.5.2.5.3 have been coordinated with C37.09 so both are harmonized.
- j. Temperature discussion tabled for later. Temperature requirement with switchgear considered, silver plating on one side of connections, and measuring points were discussed but no resolution. Most negative votes resulted from not having table in C37.04 to reference previous table, so Dave Stone provided the table C37.100.1 and modify it accordingly. WG will continue to resolve table for next ballot draft
- k. Grounding pad – physical description removed. This was item from NEMA SG 4 outdoor requirements, while pattern was OK, the thickness of pad varies today depending on design of the circuit breaker.
- l. To allow separate testing of bushings for wet dielectric tests – removed. Requirement is to test on breaker. Subject was discussed, and WG decided to resolve negative ballot on this item
- m. Will add M1 & M2 to C37.04, this will be part of the table to align with test procedure reference in C37.09. The requirements of C37.04 – 1999 are preserved when the requirement as more stringent as most modern interrupters and mechanism can meet either IEC or IEEE for the endurance ratings.
- n. 5.5.2.3 TRV corrections (line 693) specific proposed wording submitted to be incorporated.
- o. 5.5.2.3 peak of 2.7 for time constant > 45 ms
- p. What is reason for overpressure of 20% was discussed as this was a negative ballot? Based on boiler pressure vessel code. Mauricio will investigate the requirements and report.
- q. Alternate capacitor switching ratings: Table 20 values are based on CIGRE survey.
- r. Some Trip-Free remains unchanged. While it may be related from momentary contact time, the CO definition may be extended. The definition for contact momentary touch is allowed for gas circuit breakers that have pre-arcing contacts, and sliding continuous current contacts to assure proper operation of the circuit breaker.
- s. Alternative mechanism requirements are applicable to all types of mechanisms. This is to validate if a change, resulted in any change in performance and if outside the tolerance windows – certain tests are required. The WG agreed to add requirements on additional

- test beyond IEC definition to assure closing and momentary performance that cannot always be verified by travel recordings.
- t. J. Webb to propose draft of consolidated operating mechanism requirements
 - u. WG group agreed to correct editorial re: missing 5.4.2
 - v. Alternate mechanism – import wording from 62271-100 (see r above)
 - w. Comment noted that Guides were not among the normative references. It was noted that references shall remain in bibliography as references.
 - x. Clarified that E2 will be among be one of three options, but calculations will be made to make sure that all the lists have equal or higher endurance as IEEE C37.04 requirement (discounting by power of 1.8 and lower shots may impact total). To revise to satisfy comment and report decision to include into the revision.
 - y. Discussion that new calculation of electrical requirements (effectively) raises the requirement for endurance on breakers 72.5 kV and below by approximately 33%. J. Webb to post calculation of Table 1 duties. S. Cary to calculate the E2 duty based on new calculation methodology. I-389 comment was noted for endurance and it would also be revised.
 - z. It was noted that the third option will only apply to Electrical Endurance Class E2 only and for circuit breakers 100 kV and below.
 - aa. TLF is not applicable to all, and revision will be made accordingly as posted in comment resolution
 - bb. Clarification for sound level testing. D. Sigmon / S. Cary to improve the wording to indicate value is to make sound check with dBA meter of mechanism for maintenance hearing protection using lower cost meter with ambient noise break ground. If value exceeded during evaluations, then additional testing required in acoustical sound room to assure peak value or dB requirements are not exceed.
 - cc. Clause 7.5 clarify energy discharge requirements – need for 15 seconds was questioned
 - dd. WG agreed to add 3000 A to 25 kA preferred ratings
 - ee. WG agreed that reclosing applies to higher ratings, and the note of limit 1200 A from description of Class S1 reclosing time as agreed for revision on next draft.
 - ff. Revisit and consider removal of all definitions that are acceptable and covered in C37.100.5 and C37.20.10. Keep only items which are specific for IEEE C37.04. Definition of trip free and spring discharge behavior was discussed.
 - gg. Harmonization for wet withstand voltage tests – to be considered depending upon the test voltages. A. Bosma / C. Chow to review.
 - hh. Establishment of class C1 C2 for cable charging: chair to inquiry with commenter
 - ii. Rejecting 1200 kV due to time constraints on the WG.
 - jj. Convention on numbering of bushings is being reviewed.
 - kk. Decided to keep ‘indoor’ when discussing environmental conditions.
 - ll. Will retain Annex E information in order to ensure information is not lost.
 - mm. Line 2019 – Rejecting IP; also intention is to replace references to NEMA 250 with requirements for weatherproofing of C37.100.1.

Chair adjourned meeting at 5:25

Attachments: (1) Membership and Attendance list.

(1) Latest resolution form (Excel file)

| Role | First Name | Last Name | Company | City | State | 4/26/2016 | 10/11/2016 | 4/24/2017 |
|------------|-------------|-------------|------------------------------------|-------------------|-------|-----------|------------|-----------|
| Chair | Stephen | Cary | GE Energy Management | Chapel Hill | NC | X | X | X |
| Vice-Chair | Roy | Alexander | RWA Engineering | Cranberry Twp. | PA | X | X | X |
| Secretary | Michael | Crawford | Mitsubishi Electric | Cranberry Twp | PA | X | | |
| Member | Mauricio | Aristizabal | ABB | Pittsburgh | PA | X | X | X |
| Member | Jean-Marc | Biasse | Schneider Electric | Grenoble cedex 09 | Other | X | X | |
| Member | J | Billings | John S Billings Consulting | Murrysville | PA | | X | |
| Member | Anne | Bosma | ABB AB | Ludvika | Other | X | X | X |
| Member | Steven | Brown | Allen & Hoshall | Bartlett | TN | X | X | |
| Member | Arben | Bufi | Hitachi T&D Solutions, Inc. | Suwanee | GA | X | X | X |
| Member | Ted | Burse | Powell Industries, Inc | Houston | TX | X | X | X |
| Member | Eldridge | Byron | Schneider Electric | Smyrna | TN | X | X | X |
| Member | Gilbert | Carmona | Southern California Edison | Pomona | CA | X | | |
| Member | Steven | Chen | Eaton Corporation | MOON TOWNSHIP | PA | X | X | X |
| Member | Chih | Chow | PEPCO | Washington | DC | X | X | X |
| Member | Michael | Christian | ABB | Lake Mary | FL | X | | X |
| Member | Lucas | Collette | Mitsubishi Electric | Warrendale | PA | X | X | X |
| Member | Patrick | Di Lillo | Consolidated Edison Co. of NY, Inc | New York | NY | X | X | X |
| Member | Denis | Dufournet | Retired | Sathonay-Camp | Other | X | X | X |
| Member | Leslie | Falkingham | Vacuum Interrupters Limited | Rugby | Other | X | X | X |
| Member | Robert | Foster | Megger | Paradise | CA | X | X | X |
| Member | Douglas | Giraud | Powell Electrical Systems | Houston | TX | | X | |
| Member | John | Hall | Tennessee Valley Authority | Chattanooga | TN | X | | X |
| Member | Helmut | Heiermeier | ABB | Baden | Other | X | X | X |
| Member | Christian | Heinrich | Siemens AG | Berlin | Other | X | X | |
| Member | Victor | Hermosillo | GE Grid Solutions | Charleroi | PA | X | X | |
| Member | Roy | Hutchins | Southern Company Services | Birmingham | AL | X | X | X |
| Member | Todd | Irwin | GE Grid Solutions | Smithville | MO | X | X | X |
| Member | Hua Ying | Liu | Southern California Edison | Pomona | CA | X | X | X |
| Member | Albert | Livshitz | CE Power Solutions | Loveland | OH | X | | X |
| Member | Vincent | Marshall | Southern Company Services | Forest Park | GA | X | X | |
| Member | Gary | Martin | Entergy | Kenner | LA | X | X | X |
| Member | Peter | Marzec | S&C Electric Co. | Chicago | IL | X | X | X |
| Member | Dave | Mitchell | Dominion | Richmond | VA | X | X | X |
| Member | Tom | Mulcahy | Dominion Virginia Power | Richmond | VA | X | X | X |
| Member | Andrew | Peterson | ABB | Sanford | FL | X | X | X |
| Member | Anthony | Ricciuti | Eaton Corporation | Moon Township | PA | X | X | X |
| Member | Roderick | Sauls | Southern Company Services | Birmingham | AL | X | | |
| Member | Victor | Savulyak | DNV GL KEMA Laboratory | Chalfont | PA | X | X | |
| Member | Daniel | Schiffbauer | Toshiba International Corporation | Oliver | PA | X | X | X |
| Member | Carl | Schuetz | American Transmission Company | Waukesha | WI | X | X | X |
| Member | Devki | Sharma | Consultant | Byram | MS | X | | X |
| Member | Harish | Sharma | Southern Company | Birmingham | AL | X | | X |
| Member | Sushil | Shinde | ABB Inc. | Mt Pleasant | PA | X | X | X |
| Member | Dean | Sigmon | Eaton Corporation | Greenwood | SC | X | X | X |
| Member | Michael | Skidmore | AEP | Pickerington | OH | X | X | X |
| Member | Robert | Smith | Retired | Ithaca | NY | X | | |
| Member | Vernon | Toups | Siemens | Richland | MS | X | X | X |
| Member | James | van de Ligt | CANA High Voltage Ltd. | Calgary | AB | | X | X |
| Member | John | Webb | ABB | Florence | SC | X | X | X |
| Member | Xi | Zhu | GE Energy Management | Atlanta | GA | X | X | X |
| Guest | Syed Shahab | Ahmed | Siemens Energy Inc | Madison | MS | | | |
| Guest | Brad | Armstrong | Meramec Instrument Transforms | Cuba | MO | | | X |
| Guest | Koustubh | Ashtekar | Eaton Corporation | Moon Township | PA | | | X |
| Guest | Aasim | Atiq | Siemens Industry | Madison | MS | | X | |
| Guest | Roy | Ayers | Nashville Electric Service | Nashville | TN | X | | X |

| Role | First Name | Last Name | Company | City | State | 4/26/2016 | 10/11/2016 | 4/24/2017 |
|-------|------------------|-----------------|--------------------------------------|---------------|-------|-----------|------------|-----------|
| Guest | Ganesh | Balasubramanian | Eaton Corporation | Horseheads | NY | | | |
| Guest | Robert | Barnett | Tennessee Valley Authority | Chattanooga | TN | | | |
| Guest | Allan | Bartek | C-K Composites Co., LLC | Mt Pleasant | PA | | | X |
| Guest | George | Becker | POWER Engineers | Guilford | CT | | | |
| Guest | Robert | Behl | ABB | Lake Mary | FL | | X | X |
| Guest | W.J. (Bill) | Bergman | PowerNex Associates Inc. | Calgary | AB | | | |
| Guest | Kofi | Boadi-Boateng | Pepco | Laurel | MD | | | |
| Guest | Mike | Boening | Plansee Powertech AG | Seon | Other | | | |
| Guest | Antone | Bonner | PAS Consulting | Oconomowoc | WI | | | |
| Guest | Russell | Boyce | Eaton | Greenwood | SC | | | X |
| Guest | Douglas | Brandt | Eaton Corporation | Moon Township | PA | | X | |
| Guest | Cody | Brehm | | Milwaukee | WI | | | |
| Guest | Jeffrey | Brogdon | Georgia Transmission | Suwanee | GA | X | | X |
| Guest | Raymond | Browning | FirstEnergy Corp. | Copley | OH | X | | |
| Guest | John | Brunke | Dr. John H. Brunke, P.E. | Freeland | WA | | | |
| Guest | Donald | Cantrelle | Georgia Power | Atlanta | GA | X | | |
| Guest | Vincent | Chiodo | HICO | Pittsburgh | PA | | X | X |
| Guest | Roggero | Ciofani | Altalink | Calgary | AB | | | |
| Guest | Sterlin | Cochran | Hubbell Power Systems | Leeds | AL | | | |
| Guest | Robert | Cohn | Powercon Corp. | Severn | MD | | | X |
| Guest | Dave | Collette | Mitsubishi Electric | Warrendale | PA | | | |
| Guest | Jason | Cunningham | Hitachi HVB, Inc. | Suwanee | GA | X | X | X |
| Guest | Jerod | Day | Vacuum Interrupters, Inc. | Carrollton | TX | | | |
| Guest | Jeffrey | Door | H-J Family of Companies | High Ridge | MO | | X | |
| Guest | Randall | Dotson | Lakeland Electric, City of Lakeland | Lakeland | FL | | | |
| Guest | Edgar | Dullni | ABB | Ratingen | Other | | | X |
| Guest | Bernie | Dwyer | PECO | Berwyn | PA | | | |
| Guest | John | Eastman | INCON | Saco | ME | | X | |
| Guest | Ken | Edwards | Bonneville Power Administration | Vancouver | WA | | | |
| Guest | Doug | Edwards | Siemens Industry, Inc. | Wendell | NC | | | X |
| Guest | Tanner | Esco | Eaton Corporation | Greenwood | SC | X | X | |
| Guest | Lawrence | Farr | Eaton Electrical | Arden | NC | | | |
| Guest | David | Feldmann | HICO America | Pittsburgh | PA | | X | |
| Guest | Howard | Fennell | Nashville Electric Service | Nashville | TN | | | X |
| Guest | Thomas | Field | Energy | Jackson | MS | | | |
| Guest | Michael | Flack | Southern Company Generation | Birmingham | AL | | | X |
| Guest | Sergio | Flores | Schneider Electric Inc. USA | SMYRNA | TN | | | X |
| Guest | Marcel | Fortin | BPR Energy Inc | Sainte-Julie | QC | | | |
| Guest | Paul | Fox | Schneider Electric | West Chester | OH | | | X |
| Guest | Raymond | Frazier | Ameren | St. Louis | MO | | | X |
| Guest | Richard | Frye | Eaton | Franksville | WI | | X | |
| Guest | Sahadev | Gohil | AZZ Switchgear Systems | Fulton | MO | | | X |
| Guest | Jonathan | Goldberg | IEEE Standards Association | Piscataway | NJ | | | X |
| Guest | Anne | Good | Netshape Technologies, Inc. | Bell Buckle | TN | X | | |
| Guest | Paul | Grein | Circuit Breaker Sales, Co, Inc. - Gr | Gainesville | TX | X | | X |
| Guest | Ronald | Hartzel | Eaton Corporation | Moon Township | PA | | | |
| Guest | Charles | Hendrickson | Arizona Public Service Company | Phoenix | AZ | | | |
| Guest | Jeremy | Hensberger | Mitsubishi Electric Power Product | Warrendale | PA | X | | X |
| Guest | Tyler | Holp | Eaton | Pittsburgh | PA | | X | |
| Guest | Alexander | Hoover | Siemens Industry | Richland | MS | | X | X |
| Guest | Jingxuan (Joa Hu | | RBJ Engineering Corporation | Winnipeg | MB | | X | |
| Guest | Carl | Hummel | HICO America | Pittsburgh | PA | | | X |
| Guest | Jennifer | Hunter | MEPPI | Warrendale | PA | | | |
| Guest | Richard | Jackson | Detroit Edison | Detroit | MI | | | |
| Guest | Joseph | Jasinski | ITC Holdings Corp. | Novi | MI | X | X | |

| Role | First Name | Last Name | Company | City | State | 4/26/2016 | 10/11/2016 | 4/24/2017 |
|-------|--------------|------------|-----------------------------------|------------------|-------|-----------|------------|-----------|
| Guest | David | Johnson | Self-Employed | Pittsburgh | PA | X | | |
| Guest | Jacob | Joseph | Toshiba International Corporation | Houston | TX | | | |
| Guest | Joe | Kausek | FirstEnergy | Akron | OH | | X | |
| Guest | Thomas | Keels | Salt River Project | Phoenix | AZ | X | | X |
| Guest | Amir | Khosravi | BC Hydro | Burnaby | BC | X | | X |
| Guest | SangTae | Kim | HICO/HYOSUNG | Pittsburgh | PA | | | X |
| Guest | Boris | Kogan | Schneider Electric | West Chester | OH | | | X |
| Guest | Sandeep | Kulkarni | CG | MUMBAI | Other | | | |
| Guest | Carl | Kurinko | ABB Inc. | North Huntingdon | PA | | | |
| Guest | Michael | Lafond | General Electric | Plainville | CT | | | X |
| Guest | Stephen | Lambert | Shawnee Power Consulting, LLC | Williamsburg | VA | | | |
| Guest | Scott | Lanning | S&C Electric | Libertyville | IL | | X | X |
| Guest | Carl | LaPlace | GE Industrial Solutions | Raleigh | NC | | | |
| Guest | Matthew | Lawrence | Doble Engineering | Baldwinsville | NY | | | |
| Guest | Brad | Leccia | Eaton | Moon Township | PA | | X | X |
| Guest | Werner | Lesse | Siemens AG | Berlin | MS | | | |
| Guest | Paul | Leufkens | Power Projects Leufkens | Wayne | PA | | | |
| Guest | Russell | Long | Retired | Pittsburgh | PA | | | |
| Guest | Antonio | Mannarino | PSE&G | Springfield | NJ | | | |
| Guest | Ricardo | Martinez | CFE-LAPEM | IRAPUATO, GTO | GU | | | |
| Guest | Joel | Mathewson | Siemens | Richland | MS | | | |
| Guest | Frank | Mayle | Technibus, Inc. | Canton | OH | | | X |
| Guest | Neil | McCord | Southern States | Hampton | GA | X | | |
| Guest | Timothy | McGee | Siemens Energy | Richland | MS | | | |
| Guest | Steven | Meiners | GE | Plainville | CT | | | X |
| Guest | Peter | Meyer | S&C Electric Company | Chicago | IL | | | |
| Guest | Oscar | Montano | Salt River Project | Phoenix | AZ | | X | |
| Guest | Georges | Montillet | GFM Consulting LLC | Canonsburg | PA | | | |
| Guest | Charles | Morse | Siemens Industry, Inc. | Arden | NC | | | X |
| Guest | Volney | Naranjo | GERS USA | Mansfield | TX | | | |
| Guest | Raj | Nayar | Siemens Energy Inc. | Heber Springs | AR | X | | |
| Guest | Terry | Neighbours | ABB Inc. | Lake Helen | FL | | | X |
| Guest | Jeffrey | Nelson | Tennessee Valley Authority | Chattanooga | TN | | | |
| Guest | Joachim | Oemisch | Siemens AG | Berlin | Other | | | |
| Guest | T | Olsen | Siemens Industry, Inc. | York | PA | | | X |
| Guest | Brian | ONeil | CE Power Engineered Services | Silverton | OH | | | X |
| Guest | Nicholas | Orlando | IEEE-SA | Piscataway | NJ | | | X |
| Guest | Justin | Palmer | ELECTRONSYSTEM MD | Clearwater | FL | | | X |
| Guest | Shawn | Patterson | US Bureau of Reclamation | Denver | CO | X | | |
| Guest | Thomas | Pellerito | DTE Energy | Detroit | MI | | | X |
| Guest | Lise | Phan | Parcific Gas and Electric Company | Oakland | CA | | | |
| Guest | John | Phouminh | PEPCO HOLDINGS, INC. | WASHINGTON | DC | | | X |
| Guest | Anton | Poeltl | ABB | Mount Pleasant | PA | | X | |
| Guest | Iulian | Profir | Rockwell Automation | Cambridge | AZ | | | X |
| Guest | Ahmad | Qasem | Bechtel | Houston | TX | | | X |
| Guest | Syed | Rahman | The United Illuminating Company | Orange | CT | X | | X |
| Guest | Samala Santo | Reddy | Powell Industries | Houston | TX | | X | X |
| Guest | Frank | Ricard | FirstPower Group LLC | Twinsburg | OH | | | |
| Guest | Anthony | Ricci | FirstEnergy | Akron | OH | | X | |
| Guest | Bobby | Rich | Dominion Virginia Power | Richmond | VA | | | X |
| Guest | Dave | Riffe | Westinghouse Electric Company | New Stanton | PA | | | |
| Guest | Brian | Roberts | Southern States, LLC | Hampton | GA | X | | X |
| Guest | Jon | Rogers | Siemens Energy, Inc | richland | MS | | | |
| Guest | Richard | Rohr | Powell Electrical Systems | North Canton | OH | | | |
| Guest | Ian | Rokser | Eaton Corp | South Milwaukee | WI | | X | |

| Role | First Name | Last Name | Company | City | State | 4/26/2016 | 10/11/2016 | 4/24/2017 |
|---------------|-------------|-------------|-----------------------------------|--------------|-------|-----------|------------|-----------|
| Guest | Robert | Sazanowicz | The United Illuminating Company | Wallingford | CT | | | |
| Guest | Carl | Schneider | Schneider Electric | Smyrna | TN | | | X |
| Guest | Jon | Schumann | American Transmission Company | Waukesha | WI | X | | X |
| Guest | John | Shullaw | Retired | Butlington | IA | X | | |
| Guest | Sunita | Singh | Bechtel OG&C | Houston | TX | | | |
| Guest | Christopher | Slattery | FirstEnergy | Fairlawn | OH | | | |
| Guest | Erin | Spiewak | IEEE | Piscataway | NJ | X | | X |
| Guest | James | Stacy | Schneider Electric | Nashville | TN | | | |
| Guest | Don | Steigerwalt | Duke Energy | Charlotte | NC | X | | |
| Guest | Donald | Swing | Hubbell Power Systems | Leeds | AL | | | |
| Guest | Humayun | Tariq | American Electric Power | Gahanna | OH | | | |
| Guest | Henk | te Paske | KEMA Netherlands | Arnhem | Other | | | X |
| Guest | Jey | Thayalan | Schneider Electric | Mason | OH | | | X |
| Guest | Lin | Tong | SYET Corporation | escondido | CA | | | X |
| Guest | Marcelo | Valdes | GE | Plainville | CT | | | X |
| Guest | Jeffrey | Ward | Doble Engineering Company | Watertown | MA | | | X |
| Guest | Robert | Warren | DNV GL - KEMA Laboratories | Chalfont | PA | | | X |
| Guest | Casey | Weeks | Siemens Energy | Richland | MS | | | |
| Guest | Jan | Weisker | Siemens AG | Berlin | Other | X | | X |
| Guest | Jerry | Wen | BC Hydro | Burnaby | Other | | X | |
| Guest | Matt | Westerdale | Bureau of Reclamation | Denver | CO | | | X |
| Guest | Matthew | Williford | Schneider Electric | Nashville | TN | | | |
| Guest | Torsten | Wirz | ABB AG | Ratingen | Other | | | X |
| Guest | Joseph | Wisnewski | UL LLC | Hurdle Mills | NC | | | X |
| Guest | Terry | Woodyard | Siemens Industry Inc. | Wendell | NC | | | X |
| Guest | Jason | Wright | Staubli electrical Connectors | Windsor | CA | | | X |
| Guest | Dong Sun | Yoon | HICO America | Greensburg | PA | | | |
| Guest | Richard | York | Mitsubishi Electric Power Product | Pittsburgh | PA | X | X | X |
| Guest | Lukas | Zehnder | ABB Switzerland | Baden | Other | | | |
| Guest | Jiong | Zhang | MEPPI | West Covina | CA | | | |
| Guest | Wei | Zhang | Hitachi HVB, Inc. | Suwanee | GA | | | X |
| Corresponding | David | Stone | DTS Technical Services | Reading | MA | | X | X |

| | |
|---------------------|-----|
| Meeting Attendance: | |
| Members: | 51 |
| Guests: | 146 |

| | | |
|----|----|-----|
| 71 | 66 | 102 |
| 47 | 42 | 39 |
| 24 | 24 | 63 |