

**IEEE Distribution Subcommittee
Meeting Minutes
July 28, 2010
Minneapolis, MN**

The meeting convened at 1:00 p.m. with 25 members and 6 guests present.

ADMINISTRATIVE

Vice Chair John McDaniel called the IEEE Distribution Subcommittee meeting to order. The notes from our January 2010 meeting were approved.

CHAIR REPORT – Cheri Warren, *Distribution Subcommittee*

No Chair Report was available.

VICE CHAIR REPORT – John McDaniel, *Distribution Subcommittee*

Between January 2010 and July 2010, the subcommittee has been assigned a total of 26 transactions grade papers to review. Of these, 13 were new papers and 13 were revisions. This is below the number of papers from same period last year. The web site for the process is located at: <http://mc.manuscriptcentral.com/tpwr-d-pes> .

Within the past year, PES has started two new journals. The first one is: IEEE Transactions on Smart Grid. The other is IEEE Transactions on Sustainable Energy. These journals are now receiving a good number of papers that the Distribution SC had been receiving.

There are now two PES awards associated with the Distribution area. The first is the Excellence in Distribution Engineering and this years recipient is Phil Barker. The second is a new award for 2009 and it is the Douglas Staszkesy Distribution Automation. We need to make sure worthy candidates are nominated for these awards. If we do not submit nominations, no one will win these awards. So please consider nominating worthy candidates for these awards. For the Excellence in Distribution, contact Jim Burke (DistJimB@aol.com) and for the DA Award, contact Larry Clark (glclark@ieee.org).

WORKING GROUP REPORTS

DISTRIBUTION RELIABILITY – Cheri Warren, Chair

39 members were present. Chair Cheri Warren and Secretary Rodney Robinson could not attend. Vice Chair John McDaniel ran the meeting and Val Werner took notes for the minutes.

The meeting was called to order at 1:10 PM by John McDaniel. The minutes from the JTCM were reviewed and three corrections were recorded. The minutes were accepted as amended.

TF on Catastrophic Days

Heide Caswell did a verbal presentation on the Catastrophic Days TF. (See the presentation on the Rel. WG website) In the discussion that followed:

Jim Bouford: Goals should be on SAIDI, not on T-MED, catastrophic day has some impact but not a lot. (Projector available at 1:40 PM) 4.15 Beta method is best if you need to have one. The methods will point out problems, e.g. six to seven catastrophic events out of ten years shows there is a problem.

At this point the U47 representative pointed out the minor storm data was not included in the earlier years and that an OMS was added in 2005.

Jim Bouford: The primary reason a catastrophic event was being defined was for benchmarking purposes.

The TF on Catastrophic Days will have a recommendation by the 2011 JTCM.

2009 Benchmarking Results

Heide Caswell presented the 2009 Benchmarking Results. (See the presentation on the Rel. WG website)

More small entities participated; about 25 Municipalities/REA's which may have changed the results for some of the questions
2009 improvements for the 2, 3 and 4th quartiles
Review of how data was assembled
A rousing round of applause for all of Heide's hard work

NRECA Benchmark Study Presentation

Presented by Alvin Razon, NRECA (See the presentation on the Rel. WG website)

Jim Bouford: 2009 SAIDI vs. 5 Year Average only 3 above the 5 Year Average, Alvin will review that information.

Joe Viglietta: Wanted to ask before adjournment of the afternoon meeting if utilities kept inactive customers (i.e. disconnected customers) active in their OMS. He wanted to discuss at the next morning's session.

Presentation: How to Estimate the Value of Service Reliability Improvements

Joe Eto, Staff Scientist, LBNL – Gave introduction, explaining this was sponsored by the DOE. Surveys were relevant to customer value of reliability. Put in a form usable by everyone. DOE funded to make information available in a spreadsheet. We would like the WG to participate as Beta test users. Want to know how to make it better. (A lot of suggestions were given during the presentation on how to make it better.)

John Schllenberg was the actual presenter. Again stated they are looking for improvements.

A suggestion might include adding O&M as this only has capital. They want reasonable parameters to run program. USB drives were made available that had the spreadsheet and presentation slides.

Regulatory Updates

John McDaniel stated the Regulatory Updates were handled by email before the meeting to leave more time during the meeting. Everyone agreed it was a good idea, and there was no need to go around the room.

Proposed Changes to the P1366 Guide

First discussed Joe Viglietta's questions on how utilities active vs. inactive accounts are handled. There were responses that the event was handled as a hazard only and not recorded as an interruption. Some recorded the event but not the interruption. Joe asked for a show of hands for how each represented utility recorded. Nine responded that they recorded only active, four recorded active and inactive.

Discussion of Momentary Interruption "5 minutes or less"

Bob Saint: Suggested it be aligned with Power Quality's definition (1 minute)

Heide Caswell: Transmission uses one minute

Val Werner: Pointed out that many PUC's and PSC's have it as 5 minutes as part of their laws. Also utilities have goals/targets for Reliability Indices which may not be met by the utility if the definition is changed. Also not all utilities have fully updated to faster equipment.

Discussion continued and John deduced most of the Working Group present preferred it to be left at 5 minutes.

Discussion about Indices

Group agreed CELID should be added to the guide. Also, two definitions of CELID were discussed, one for a single interruption duration and another for total interruption duration during a timeframe. It was decided there should be a CELID-S for single and CELID-T for total.

TF on Interruption Reporting Practices, P1782

Heide Caswell and Joe Viglietta gave a verbal description of their work with the OMS vendors.

Val Werner, with help from Heide Caswell showed some of the additions to the guide. Val showed the P1782 Change Assignment list and discussed what was left to finish in the guide. He asked for volunteers for some of the remaining work but there was no response. He will have Rodney send out to the group to review and get volunteers. There will be a Web meeting this fall then final work must be done by December and routed to the Working Group by the 2011 JTCM. Final comments will be accepted at that meeting, vote taken to go to ballot, adjustments made, and then it will be put into IEEE Format and submitted for ballot.

Dan Ward presentation: Reliability Planning at Dominion

(See the presentation on the Rel. WG website)

Dan had made this presentation on Tuesday afternoon at a panel session. This panel was the same time as the WG meeting.

Lee Taylor moved for adjournment after the presentation and questions. Mike Pehosh seconded the motion and it was passed unanimously.

SWITCHING AND OVERCURRENT PROTECTION – Lee Taylor, Chair

Lee Taylor, *Chair*, (lee.taylor@duke-energy.com) called the meeting to order at 8:00 AM with 15 members including 3 new members. No guests were present.

1. Lee Taylor started the meeting with a safety discussion, including the location of fire exits and defibrillators.
2. The IEEE required slides for Working Groups were presented.
<http://standards.ieee.org/board/pat/pat-slideset.pdf>
3. The minutes of the January 12, 2010 WG meeting were approved, as edited.
4. Liaisons to other working groups were identified or reiterated as follows:
 - Effects of Distribution Automation on Protective Relaying Working Group– Fred Friend
 - Smart Distribution Working Group – Larry Clark
 - Faulted circuit indicators working group(s) – John Banting
 - Underground networks working group(s) – Betty Tobin
 - Sensors for the Smart Grid Working Group – TBD
5. Betty Tobin pointed out that a new guidebook on underground systems design will be available soon from EPRI.
6. Lee Taylor presented the preliminary stages of a strawman for P1806, Guide for Placement of Overhead and Underground Switching and Overcurrent Protection Equipment. Lee will add some more detail and circulate the strawman to the working group for their contributions. Attendees suggested the following for that inclusion in the guide or other future work for the WG:
 - Fused vs. solid bypass choices for protective devices
 - Reference to computer models
 - Seasonal or storm/non-storm changes in device settings or system performance
 - Allowance for future changes to circuits at the time initial design, and possibly a predetermined review schedule and criteria for reassessment of schemes.

7. A roundtable was conducted to generate ideas for future working group activities. The following suggestions were provided:
 - Seasonal or storm/non-storm changes in settings or switching algorithms
 - Tutorials and/or panel sessions. Probably begin with panel sessions near term and plan on tutorials when the guide is done or nearly done.
 - Determination of the scope and purposed of the first panel session will be an agenda item for the Jan 2011 WG meeting.
 - Changes in practices when distributed energy resources are added.
 - Sponsor forum for sharing of utility best/recommended practices.

The meeting was adjourned at 10:00 a.m.

SMART DISTRIBUTION – Georges Simard, Chair

Both the SDWG combo meeting and VVTF were very well attended, with 60 attendees at the SDWG combo meeting and 43 attendees at the VVTF.

VVTF meeting was chaired by Herve Delmas (VVTF vice chair); Tom Rizy (VVTF Chair) was absent due to a medical emergency. Herve made a presentation about the vision and scope of the task force, and numerous comments and suggestions were received from the meeting participants. Herve also presented the results of a Hydro Quebec survey on Volt-VAR control practices by North American electric utilities. The VVTF sponsored a panel session during the 2010 meeting: “Volt/Var Control - Present and Future” : Chair Tom Rizy. VVTF members were encouraged to attend the session on Tuesday, July 27. The Task Force discussed possible topics for topical panel sessions for next year’s meeting; two topics were suggested and members were asked to submit additional ideas to the VVTF officers. Several excellent presentations were made during the meeting. Larry Conrad described experiences with conservation voltage reduction and Nokhum Markushevich made a brief presentation on the challenges and benefits of volt-VAR optimization. Bob Uluski presented a brief summary of the recent EPRI conference/workshop on Volt-VAR Control. All presentations will be posted to the website.

The SDWG combo meeting began with two presentations on the subject of the Common Information Model (CIM); one by Terry Neilsen and one by Eric Lambert. Both presentations were well received, with many questions, comments, and lively conversation.

The SDWG meeting was chaired by Georges Simard. The SDWG is sponsoring a panel session at the Minneapolis IEEE PES General meeting: “Distribution Automation Foundation for The Smart Grid”; Chair: Larry Clark, which was conducted on Tuesday July 27. The session was very well attended, with numerous questions and answers and lively discussion. SDWG also sponsored a tutorial on Distribution Automation (Smart Distribution) which was conducted on Tuesday July 27. The tutorial was very well attended (45 attendees), and based on the number of questions and answers, was very well received.

The SDWG and VVTF propose four panel sessions for the IEEE PES General Meeting, Detroit, Michigan, July 24-28, 2011:

1. "Smart Distribution Grid Applications and Components" (Chair: Larry Clark)
2. "Smart Distribution Demonstration Projects Applications and Results" (Chair Georges Simard)
3. "Impact of DGs on Smart Distribution" (Chair: Avnaesh Jayantilal) Note: the title could be reviewed by the chair
4. "Benefits and Challenges of Volt-VAR Optimization" (Chair: Nokhum Markushevich or Bob Uluski)

SDWG members were encouraged to support papers to be included in these panel sessions. Georges Simard indicated that he would be adding material this fall to the WIKI web facility for Smart Distribution; members were asked to contribute to this important information resource. Larry Clark announced that Bob Uluski is the winner of the Doug Staszkesky DA award for 2010. Nominations for the 2011 award are being accepted. The SDWG heard three excellent presentations: Lee Taylor : "Benefits of Conservation Voltage Reduction"; Carl Brenner: "Distribution Fault Location and Anticipation", and Francisc Zavoda: "IEDs for Smart Distribution". All presentations will be posted to the website.

After the meeting we had comments to add the Smart Distribution website link and the Smart Distribution Wiki to the IEEE Smartgrid website that was mentioned at the plenary session.

DISTRIBUTED RESOURCES INTEGRATION – Bob Saint, Chair

There were 40 attendees at the meeting and we had one Paper Presentation (which made it a Combo Session). The Working Group is planning to sponsor a Panel Session at the 2012 T&D Conference on Distribution System Impacts of High Penetration DG Interconnection. There will be two Paper Presentations for Detroit General Meeting WG meeting.

We reviewed Status of the IEEE 1547 series of standards, discussing the formation of the new P1547.8 working Group and of the proposed changes that may be incorporated in the P1547.7 Draft 4.0 document.

LIGHTNING PERFORMANCE OF DISTRIBUTION LINES – John McDaniel, Chair

The Working Group reviewed the comments from 1410 Distribution Guide ballot. The ballot received a 97% approval. Most of the comments were editorial in nature and were accepted.

VOLTAGES IN PRIVATELY AND PUBLICLY ACCESSIBLE LOCATIONS – Chuck DeNardo, Chair

The Working Group on Voltages at Publicly and Privately Accessible Locations (aka the Stray & Contact Voltage Working Group) met during the IEEE PES General Meeting at the Minneapolis Convention Center in Minneapolis, Minnesota from 2:00 p.m. to 5:00 p.m. on July 26, 2010. There were approximately 30 people in attendance. Following presentation of the mandatory patent infringement and litigation slides there was a brief discussion concerning a third party

request for a Letter of Assurance from Power Survey Company. This discussion was followed by approval of the previous meeting minutes (Web and JTCM meetings) and introduction of attendees. The chair then provided an update concerning the resignation of Russ Ehrlich, the group's secretary, and appointed Aaron Prazan acting secretary until an election is held. The chair also provided an update concerning an on-line member vote that led to a minor change in the group's Policies and Procedures.

A discussion concerning this year's expiration date of the P1695 PAR followed. A motion was made and passed to withdraw the existing PAR and submit a new PAR request that would allow the working group 4 additional years to complete its assigned project.

Three presentations followed:

- Giancarlo Leone demonstrated the working group's Google Documents literature review process and solicited three additional volunteers. Relevant and important documents that can be used as normative references will soon be placed in a member only access folder located on the group's web site.
- Stu Hanebuth and Sal Martino discussed the stray and contact voltage program costs and investigation findings of the New York State Stray Voltage Task Force member utilities. They suggested reasonable regulatory and utility actions based on these findings.
- Doug Dorr presented the results of recent EPRI swimming pool deck bonding and grounding tests. The tests clearly show that the most effective stray and contact voltage mitigation occurs when a bonded wire mesh is installed in the pool deck surface. Since this requirement was removed from the NEC in 1995, meeting attendees were asked to support on-going efforts to re-instate the 1995 requirement.

Prior to adjournment Jim Bouford presented a table indicating his recommendations for allowable voltage exposures at specific locations. There was a thought provoking exchange regarding both the concept and the numbers provided. Nothing was decided, and additional discussion will be required.

WILDLIFE PROTECTORS – Caryn Riley, Chair

The Wildlife Protective Products working group did not meet at the July 2010 General Meeting. The next planned meeting is at the January Joint Technical Committee Meeting to discuss the publishing of the guide and next steps on January 11, 2011 at 3:00 pm.

LIAISON REPORTS

Insulated Conductors – John Banting

The ICC met in Nashville, TN on March 21 - 24th. Fran Angerer is now the Chair and Jerry Harness is the new Vice Chair of the ICC Faulted Circuit Indicator Discussion Group (B17D). The Group has started the preliminary work on a new guide for faulted circuit indicators for overhead applications. Work on the outline for the document as well as the PAR has begun. Some work on sections of the document has begun. The Working Group continues to look for

volunteers to assist with the writing assignments. Additionally, the Discussion Group continues to look for comments on future work of the group.

The ICC will meet next in Fountain Springs/Scottsdale, AZ on October 18-20, 2010.

Power System Relay Committee/Broadband on Power Lines – John Banting

The BPL Working Group preparing P1775 EMC Requirements / Testing and Measurement methods has completed the document which was balloted with a number of negatives. Several meetings have been held since balloting to resolve the negative ballots. The Document remains in the ballot resolution stage.

P1901, the Draft Standard for Broadband over Power Line Networks: Medium Access Control and Physical Layer Specifications Guide is presently in the balloting /resolution process.

Power System Relaying Committee

The following highlights work in the PSRC related to Distribution. More detail can be found from the PSRC web site <http://www.pes-psrc.org/> , following the subcommittee / working group links.

SYSTEM PROTECTION SUBCOMMITTEE

Scope: Evaluate protection system responses to abnormal power system states. Evaluate and report on special protection schemes, remedial actions schemes, monitoring and control systems and their performance during abnormal power system conditions. Recommend corrective strategies and develop appropriate standards, guides, or special publications. Evaluate and report on new technologies which may have a bearing on protection system performance during abnormal power system conditions.

Working Group C2: The Role of Protective Relaying in Smart Grid

Assignment and scope for a report focusing on information or services from protective relaying in support of the Smart Grid are still under development

Working Group C5: Guide for Synchronization, Calibration, Testing, and Installation of Phasor Measurement Units (PMU) applied in Power System Protection and Control

Develop a guide for Synchronization, Calibration, Testing, and Installation of Phasor Measurement Units (PMU) applied in Power System Protection and Control.

Working Group C9: Application of Protective Relays used for Abnormal Frequency Load Shedding & Restoration

Develop a Guide for the application of protective relays used for load shedding and restoration during electric power system abnormal conditions. It will present background information, bibliography, and recommendations. It discusses abnormal frequency power system behavior, existing load shedding and restoration practices, the abnormal frequency of typical protective relays, and possible new methods for improving load

shedding and restoration. This project is limited to electric power system applications and will not include Abnormal Frequency Protection for Power Generating Plants

Working Group C11: Guide for Protection System Testing

This guide is intended for power system protection professionals. It will include a reference listing of type tests for protective devices as well as overall protection scheme performance tests for various types of protection schemes. The Guide will describe the methods, extent, and types of protection scheme tests. Interlocking and control functions inherent to the protective schemes are included. This assignment encompasses overall system testing procedures, data collection requirements, as well as the test procedure definitions. This Guide is an approved Guide under IEEE Publishing.

Working Group C13: Undervoltage Load Shedding

This working group produced a report on the implementation of undervoltage load shedding (UVLS) in electric power systems. It presents background information, guidance in implementing UVLS schemes and a bibliography. Voltage instability, voltage and reactive power management, emergency actions to avoid load shedding, UVLS philosophy and methods, voltage collapse detection, existing practices, settings and coordination between UVLS and UFLS are discussed

LINE PROTECTION SUBCOMMITTEE

Scope: Investigate and report on the relaying techniques and systems used for T&D line protection. Develop statistics and recommend protection practices for improving line relaying performance. Develop and maintain standards for line protection.

Working Group D2: Revision of C37.104 Transmission and Distribution Reclosing Guide

Assignment: Revise and update the IEEE Guide C37.104 - Guide for Automatic Reclosing of Line Circuit Breakers for AC Distribution and Transmission Lines

Working Group D11: Effect of Distribution Automation on Protective Relaying

Assignment: Prepare a special report to the PSRC that describes the effect of Distribution Automation on Protective Relaying

Working Group D26: Revision of C37.114 Guide for Determining Fault Location on AC Transmission and Distribution Lines

Assignment: Update and revise C37.114: IEEE Guide for Determining Fault Location on AC Transmission and Distribution Lines to include new developments in fault location methods and techniques.

H: RELAYING COMMUNICATIONS SUBCOMMITTEE

Scope: Evaluate and report on the characteristics and performance of protective relaying communications. Recommend communication requirements and operating and test procedures, which assure reliable performance of the overall protective system. Report on new relaying equipment designs tailored to specific communication requirements.

Working Group H1: Guide for Power System Protective Relay Applications over Digital Communication Channels

Assignment: Develop a guide for application of digital communications for protective relaying systems and schemes, including transmitting and receiving equipment, digital

channels, application principals, performance, installation, troubleshooting, testing and maintenance.

Working Group H2: Relay Applications Using the Smart Grid Communications Infrastructure

Assignment: Create a working group report to the Relaying Communications Subcommittee that describes example protective relay applications that can make use of the communication infrastructure provided by the Smart Grid. Protective relay applications will include potential capabilities and the communication requirements necessary to provide suitable communication architectures, services, capabilities, and any other pertinent characteristics.

Working Group H3: Timetagging in Protection and Disturbance Recording IEDs

Assignment: Develop a recommended practice for time tagging of power system protection event, analog, and derived data. This will include methodology for description of measurements and transport delays and for stating the resulting time accuracy. and receivers. Sources and receivers can be IED configuration programs, net study programs, data bases, coordination programs and automated test programs

Working Group H9 Understanding Communications Technology for Protection

Assignment: Prepare a document that would assist engineers in understanding the communications technology for protective relaying.

Working Group H10 Naming Installed Intelligent Electronic Devices (IEDs)

Assignment: Create a Report that describes a convention to uniquely identify (name) installed Intelligent Electronic Devices (IEDs) including measured and calculated quantities for the purpose of sharing data collected by these devices.

Working Group H11 C37.118 Standard for Synchrophasors for Power Systems

Chair: K. Martin

Assignment: Revise the IEEE Synchrophasor standard, C37.118-2005, by adding measurement extensions, communication harmonization, and other improvements according to the PAR issued 27 March 2008.

Working Group H18: Cyber Security for Protection Related Data Files

Assignment: Develop a report on security for data files used for configuration, management, and analysis of protective relaying systems. The group agreed that this is a significant issue because such data files include relay settings, access parameters, and fault records (all of which are critical and are often submitted in legal proceedings).

I: RELAYING PRACTICES SUBCOMMITTEE

Scope: Develop, recommend and establish standards on protective relaying practices which are compatible with the electrical environment, including but, not limited to; relay withstand capabilities to electromagnetic interference, characteristics and performance of instrument transformers, testing procedures, applications, performance criteria, and definitions of relays and relay systems. Evaluate and report on pertinent aspects of protective relaying not addressed by other PSRC Subcommittees. Maintain applicable protective relaying standards.

Update on IEEE and IEC joint activities in support of Smart Grid standards needs:

C37.111/60255-24 COMTRADE – the completed draft revision from PSRC WG H4 has been completed by WG and will be circulated to IEC member countries on a fast track for approval of the IEC version.

C37.118 Synchrophasor Standard – to achieve compatibility with IEC standards organization, PSRC is splitting into C37.118.1 measurement part, that can be dual logo or dual standard when completed. There will be a separate C37.118.2 communications part that will make minor fixes to existing C37.118 communications; IEC TC 57 WG 10 has already started working on in IEC 61850-90-5 transport services for synchrophasor values that would become the ultimate international solution based on Ethernet.

C37.239 COMFEDE common format for event data exchange – has been a Trial Use Standard in its PAR, but was just elevated at SC H to full standard so it can be tracked for IEEE/IEC dual logo.

SCC 21 – Bob Saint

Work is being done on this series of Standards for interconnecting distributed resources to the distribution system. The newest proposed Standard, P1547.8, will address innovative designs, processes and operational procedures that will help enable the interconnection of distributed resources to the distribution system.

STANDARDS

NESC – Rusty Soderberg

Comments on the Preprint were due by May 1, 2010. The NESC subcommittees will meet again in September 2010 to discuss the comments that were received and to vote on the change proposals.

The TP&C NESC WG did not meet in Minneapolis.

If your state has adopted the 2007 NESC, then Table 253-2, “Alternate load factors for wood and reinforced (not prestressed) concrete structures to be used with the strength factors of Table 261-1B,” and Table 261-1B, “Strength factors for structures, crossarms, and braces for use with load factors of Table 253-2” shall not be used after July 31, 2010.

The scope of the NEC and NESC continues to be a topic in joint discussions between the two groups. Two of the scope issues include the definition of the service point and what installations are under the exclusive control of the utility.

An NESC working group has been set up to address the addition of solar panels on electric utility poles. The addition of solar panels in some areas has made it difficult for utility workers (electric and communication) to access and work on their lines. Solar panel clearance to communication lines is also an issue. The working group will attempt to address issues such as these with appropriate wording additions in the Code.

NEC – Greg Obenchain

There was no report at this meeting.

PRESENTATIONS

There were two presentations at the Subcommittee Meeting:

Waveform Characterization Faults and Underground Cable Failures, presented by Surya Santoso

OVP – A Simple Solution a Complex Problem, presented by Dan Ward

Both presentations were well received by the Subcommittee. These presentations are posted at the Distribution Subcommittee website:

<http://grouper.ieee.org/groups/td/dist/presentations/>

Appendix: Current Membership Roster

Chair: Warren, C., Waltham, MA
Vice Chair: McDaniel, J., Syracuse, NY
Secretary: Tobin, E., Everett, WA

Arden, D., Minneapolis, MN
Asgharian, D., Portland, OR
Banting, J., Pewaukee, WI
Bouford, J., Augusta, ME
Burke, J., Cary, NC
Carroll, P. Milwaukee, WI
Caswell, H., Portland, OR
Christie, R., Seattle, WA
Clark, L., Birmingham, AL
Cole, J., Bozeman, MT
Delmas, H., Montreal, QC
DeNardo, C., Milwaukee, WI
Ehrlich, R., Newark, DE
Friend, F., Charleston, WV
Frost, K., Oakbrook Terrace, IL
Gilmer, D., Craig, CO
Goodfellow, J., Redmond, WA
Hall, D., Newark, DE
Hayes, H., St. Louis, MO
Jones, J., Salt Lake City, UT
Khodaie, M., Albuquerque, NM
Lambert, F., Forest Park, GA
McDermott, T., Pittsburgh, PA
McGranaghan, M., Knoxville, TN
Moran, N., San Francisco, CA
Nielsen, T., Minneapolis, MN

Obenchain, G., Washington, DC
Pahwa, A., Manhattan, KS
Patterson, M., Boise, ID
Pehosh, M., Arlington, VA
Razon, A., Arlington, VA
Riley, C., Forest Park, GA
Robinson, R., Topeka, KS
Russo, D., Seattle, WA
Sabin, D., Knoxville, TN
Saint, B., Arlington, VA
Schwalm, A., Victor, NY
Short, T., Ballstonspier, NY
Siew, C., Burnaby, BC, Canada
Simard, G., Montreal, QC, Canada
Smith, J., Phoenix, AZ
Soderberg, R., Jackson, MI
Taylor, L., Charlotte, NC
Thatcher, M., Kansas City, MO
Venkata, S.S., Oro Valley, AR
Viglietta, J., Philadelphia, PA
Walling, R., Schenectady, NY
Wang, D., New York, NY
Ward, D., Richmond, VA
Welch, G., Raleigh, NC
Williams, C., Maitland, FL
Yuen, D., Bellevue, WA