

**Minutes**  
**Electrical Power Working Group**  
Friday 20 July 2012  
Hilton New York

**Chairman:** Ken Vannice; Leviton Manufacturing Co., Inc.; P; MP

**Recording secretary:** Karl G. Ruling; PLASA

**Members attending:**

James Davey; AC Power Distribution Inc.; P; CP  
Richard Cadena; Academy of Production Technology; P; G  
Wendy Holt; AMPTP/CSATF, representing the Alliance of Motion Picture and Television Producers; P; G  
Stephen (Steve) Brock; Bender ET Inc. (Bender GmbH & Co. KG); A; MP  
Larry Schoeneman; DesignLab Chicago, Inc.; P; DR  
Steve Terry; Electronic Theatre Controls, Inc.; P; MP  
Ian Foulds; IATSE Local 873, representing the Entertainment Electrical Safety Committee of Ontario; P; G  
Ed Garstkiewicz; Harting Inc., North America (Harting KGAA); P; G  
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U  
Roger Lattin; I.A.T.S.E. Local 728; P; U  
Alan M. Rowe; IATSE Local 728; A; U  
Keith S. Woods; Lakhri Impressions Ltd., representing IATSE Local 891; P; U  
Tyrone Mellon Jr.; Lex Products Corp.; A; CP  
Vincent J. Cannavale; Motion Laboratories; P; CP  
Michael Lay; Philips Color Kinetics (Royal Philips Electronics); P; MP  
Jerry Gorrell; Theatre Safety Programs; P; U

**Visitors:** None

**1 Opening remarks**

Ken Vannice called the meeting to order at 14:01. He welcomed all to New York City.

**2 Attendance and membership**

**2.1 Introduction of those present and taking attendance**

A screaming orange sign-in sheet was circulated while those present introduced themselves.

**2.2 Determination of quorum**

Ken Vannice asked for a show of hands of voters. He counted them and then announced that a quorum is present.

**2.3 Recognition of alternate voting members**

Ty Mellon was recognized. Alan Rowe said he's an alternate, but will not be voting since the principal for IATSE Local 728 is present.

**2.4 Requirements for membership**

Vannice reminded those present that membership is open to all who are affected by the work of the group. Voters who would be in the designer or dealer/rental company interest category in particular are encouraged to become members. Voting members are required to attend meetings and to vote on letter ballots. Voting members and their alternates may not miss three consecutive meetings or three consecutive letter ballots without a loss of voting status.

**2.5 Changes to observer status**

Members who have missed the previous two meetings and who will not have met the minimum attendance requirement for voters if this meeting is missed:

None

## 2.6 Processing of new membership requests

Eddie Kramer moved that Jared Saltzman be accepted as an Observer in the User interest category. Saltzman had applied as an Individual voting member, but was not present. The motion was seconded and then approved with a show of hands.

Larry Schoeneman asked to be moved to voting status from Observer.

Wendy Holt moved that Larry Schoeneman be accepted as a Principal voting member in the Dealer/Rental interest category. The motion was seconded and then approved with a show of hands.

## 2.7 Consensus body

The full consensus body during this meeting, including those not present, was:

Name	Representing	Voting status	Int. cat.
James Davey	AC Power Distribution Inc.	P	CP
Greg Mayberry	AC Power Distribution Inc.	A	CP
Richard Cadena	Academy of Production Technology	P	G
Jeff deRecat	Actuant Corporation	P	MP
William Drake	Actuant Corporation	A	MP
George Long	Aggreko	P	DR
Wendy Holt	Alliance of Motion Picture and Television Producers	P	G
Nathan Leonard	Bender GmbH & Co. KG	P	MP
Joe Boardman	Bender GmbH & Co. KG	A	MP
Torsten Gruhn	Bender GmbH & Co. KG	A	MP
Stephen (Steve) Brock	Bender GmbH & Co. KG	A	MP
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR
Jody Williquette	Electrivers, Inc.	P	CP
Steve Terry	Electronic Theatre Controls, Inc.	P	MP
Ian Foulds	Entertainment Electrical Safety Committee of Ontario	P	G
Art Wanuch	Entertainment Electrical Safety Committee of Ontario	A	G
Ed Garstkiewicz	Harting KGAA	P	G
Howard Forryan	Harting KGAA	A	G
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
Roger Lattin	I.A.T.S.E. Local 728	P	U
R. Bruce Prochal	I.A.T.S.E. Local 728	A	U
Patric J. Abaravich	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Keith S. Woods	IATSE Local 891	P	U
Ken Vannice	Leviton Manufacturing Co., Inc.	P	MP
Bill Grande	Leviton Manufacturing Co., Inc.	A	MP
Bob Luther	Lex Products Corp.	P	CP
Tyrone Mellon Jr.	Lex Products Corp.	A	CP

Sean Sloat	Lex Products Corp.	A	CP
Louis Bradfield	Louis Bradfield	P	U
W. G. Krokaugger_PE	Mole-Richardson Co.	P	CP
Alex Yoon	Mole-Richardson Co.	A	CP
Vincent J. Cannavale	Motion Laboratories	P	CP
Peter Herrmann	Motion Laboratories	A	CP
David Herrmann	Motion Laboratories	A	CP
Ron Bonner	PLASA EU	P	U
Michael Lay	Royal Philips Electronics	P	MP
Jerry Gorrell	Theatre Safety Programs	P	U
Mitch Hefter	USITT	P	U
<b>Total possible</b>		<b>23</b>	
Votes by interest categories		5	CP
		5	MP
		2	DR
		7	U
		4	G
		0	DE

### 3 Approval of the minutes from the previous meeting

See the draft minutes of the 28 March 2012 meeting, *EPmin03-2012.pdf*.

Keith Woods moved that the draft minutes be accepted as written. The motion was seconded and then approved with a show of hands. All the votes were in favor, except for one abstention from the assembly and another from the Chairman.

### 4 Reading of the call for patents

Ken Vannice read the following aloud to the assembly:

"PLASA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. PLASA uses a process of open patent and copyright disclosures to implement its intent. PLASA does not conduct patent or copyright searches and does not warrant that its standards contain no protected intellectual property.

"In keeping with the open disclosures policy, I ask if anyone present wishes to notify this working group of the existence of a patent or copyright or other intellectual property that might protect material in a standard being developed by this working group. You need not be the holder of the patent or copyright to notify this working group of its existence."

Nothing was reported.

### 5 Reading of the anti-trust statement

Ken Vannice read the following aloud to the assembly:

"The PLASA Board of Directors, the Technical Standards Council, and the leadership of this working group will reject or nullify any actions that unlawfully restrain trade. Anyone who feels that such an action is being or has been taken is requested to bring that matter to the attention of the chair immediately. Anyone who feels that actions in restraint of trade have been taken and not properly annulled is requested to notify the TSC chair or PLASA chairman immediately.

"PLASA legal counsel has informed us that violations of the anti-trust laws can have serious consequences. Individuals engaged in certain unlawful conduct can be found criminally liable. An individual convicted of a

criminal violation of the Sherman Act may be fined as much as \$1,000,000 and imprisoned for up to ten years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager."

Karl Ruling, the Technical Standards Manager, held up some copies of the pamphlets to show that they were available at this meeting.

No restraint of trade problems were reported.

## **6 Approval of agenda**

Eddie Kramer moved that the draft agenda be accepted. The motion was seconded and then approved with a show of hands.

## **7 Old business - task group reports**

### **7.1 EMC task group**

Ken Vannice reported that the IEEE power-line emissions harmonics standards -writing process is plodding along. He's working to maintain the entertainment lighting exemption in the current ANSI standard in the North American version of IEC 61000-3-2. He and others are working around opposition from the Canadian utilities. Has been told by the project leaders that only consumer products will be within the scope, that professional equipment will be exempt. However, this exemption has not been written into the document yet. Vannice will make sure that the scope has this exemption in it.

Vannice said that an email dialogue he has been having with Ron Bonner about what things mean in IEC 61000-3-2 show that European English is not the same as American English. Also, the European understanding of the standard is in the context of the whole suite of 61000 standards. Only this one part is being considered for adoption in North America, so it will not be read or understood in the context of all the other parts.

Vannice said that the big drive for the utilities is a fear harmonics from self-ballasted CFLs. These often have very poor power factors and high harmonic current emissions.

There was a discussion of line-voltage LED lamps and their possible emissions. Richard Cadena said that his measurements of an assortment of consumer products on the market has show that either they have very poor power factors and horrible harmonics or are not bad.

### **7.2 ANSI E1.16-2002 (R2007)**

Ruling reported that the working group and TSC had voted to reaffirm it. He now needs to pass the motion to the PLASA NA Executive Committee and then on to ANSI. There were no public review comments, so acceptance should be easy and fast.

### **7.3 BSR E1.18 portable feeder cable selection and use**

*Report by task group on public review comments, draft resolutions, and revised draft standard.*

Jerry Gorrell reported. He said that the document is a mess. He wants to rewrite it, then readdress the comments and respond to them.

Steve Terry spoke against the proposal. E1.18 has been a thing we have been trying to fix for over a decade, so the probability of success with a thorough re-write is virtually nil.

Alan Rowe objected to the lack of a defined purpose for the document.

There was further discussion of how we could move forward, if it is possible.

Steve Terry moved that we abandon the E1.18 project. The motion was seconded. The motion was approved on a roll call ballot with more than half the entire consensus body voting to terminate the project.

Name	Representing	Voting status	Int. cat.	Yes	Yes with comments	No	Abstain
James Davey	AC Power Distribution Inc.	P	CP	X			
Greg Mayberry	AC Power Distribution Inc.	A	CP				
Richard Cadena	Academy of Production Technology	P	G	X			
Jeff deRecat	Actuant Corporation	P	MP				
William Drake	Actuant Corporation	A	MP				
George Long	Aggreko	P	DR				
Wendy Holt	Alliance of Motion Picture and Television Producers	P	G	X			
Nathan Leonard	Bender GmbH & Co. KG	P	MP				
Joe Boardman	Bender GmbH & Co. KG	A	MP				
Torsten Gruhn	Bender GmbH & Co. KG	A	MP				
Stephen (Steve) Brock	Bender GmbH & Co. KG	A	MP	X			
Larry Schoeneman	DesignLab Chicago	P	DR	X			
Jody Williquette	Electrивert, Inc.	P	CP				
Steve Terry	Electronic Theatre Controls, Inc.	P	MP	X			
Ian Foulds	Entertainment Electrical Safety Committee of Ontario	P	G	X			
Art Wanuch	Entertainment Electrical Safety Committee of Ontario	A	G				
Ed Garstkiewicz	Harting KGAA	P	G	X			
Howard Forryan	Harting KGAA	A	G				
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U			X	
Roger Lattin	I.A.T.S.E. Local 728	P	U			X	
R. Bruce Prochal	I.A.T.S.E. Local 728	A	U				
Patric J. Abaravich	I.A.T.S.E. Local 728	A	U				
Alan M. Rowe	I.A.T.S.E. Local 728	A	U				
Keith S. Woods	IATSE Local 891	P	U	X			
Ken Vannice	Leviton Manufacturing Co., Inc.	P	MP				X
Bill Grande	Leviton Manufacturing Co., Inc.	A	MP				
Bob Luther	Lex Products Corp.	P	CP				
Tyrone Mellon_Jr.	Lex Products Corp.	A	CP	X			
Sean Sloat	Lex Products Corp.	A	CP				
Louis Bradfield	Louis Bradfield	P	U				
W. G. Krokaugger_PE	Mole-Richardson Co.	P	CP				
Alex Yoon	Mole-Richardson Co.	A	CP				
Vincent J. Cannavale	Motion Laboratories	P	CP	X			
Peter Herrmann	Motion Laboratories	A	CP				

Name	Representing	Voting status	Int. cat.	Yes	Yes with comments	No	Abstain
David Herrmann	Motion Laboratories	A	CP				
Ron Bonner	PLASA EU	P	U				
Michael Lay	Royal Philips Electronics	P	MP	X			
Jerry Gorrell	Theatre Safety Programs	P	U	X			
Mitch Hefter	USITT	P	U				
<b>Total</b>		<b>23</b>		<b>14</b>	<b>0</b>	<b>2</b>	<b>1</b>
Subtotals by interest categories		5	CP	3			
		0	DE				
		2	DR	1			
		4	G	4			
		7	U	2		2	
		5	MP	3			

## 7.4 GFCI and GFP

### 7.4.1 ANSI E1.19 – 2009, Recommended Practice for the Use of Class A Ground-Fault Circuit Interrupters (GFCIs) Intended for Personnel Protection in the Entertainment Industry

From the draft March minutes:

"As a way forward, Mellon said he will look at the 20 mA trip-point for higher current systems and possibly suggest a revision to E1.19. At the July meeting he will have a proposal to revise or not to revise E1.19."

Ty Mellon said that he doesn't see a viable way of raising the trip point for personnel protection above 6 mA. However, we could make the trip response be slower than it often is in products, while still complying with the UL 943 GFCI standard. Most products on the market now trip almost instantaneously, and this makes for lots of false tripping. Slower response would make trips from noise less frequent. How do we push for products that have a slower response time, but that are still UL 943-compliant?

There was a discussion of changing E1.19 to recommend a particular response curve for noisy environments where false-tripping is a problem.

Mellon suggested we also could use GFP for higher ampacity circuits, with a trip point of 20 mA.

There was further discussion of the usefulness of GFP. Keith Woods said it worked well with a 30 mA threshold. Then trips only occur with truly defective bad equipment.

Tyrone Mellon moved that we put together a group to propose changes to E1.19 to recommend slower response curves. The motion was seconded and then approved with a show of hands. Vannice appointed a task group consisting of Steve Brock, Roger Lattin, Wendy Holt, Tyrone Mellon, and Karl Ruling.

### 7.4.2 Ground Fault Protection Study Group

See item 7.4.1 above, in which GFP was discussed. There was no further discussion and no motions.

## 7.5 ANSI E1.24 - 2012, pin connectors

Steve Terry reported that the proposal to reference E1.24 in UL 498 has met the Yes threshold for approval by the STP voting in favor. The ballot closes on July 24th. Unless someone changes a vote, it has passed.

Ty Mellon said that Bill Krokaugger is retiring at the end of July, and plans to have Mole-Richardson's pin connectors fully compliant before he does.

## **7.6 BSR E1.32 luminaire inspection guidance**

Ruling reported that it had been approved by ANSI. He needs to publish it.

## **7.7 UL Stage and Studio Luminaire standard**

*Task group report on revision proposals. From the March draft minutes:*

*"Steve Terry said that the big need is for a reasonable leakage current standard in UL 1573. He doesn't have the time to develop this, but that this issue would affect a number of automated luminaire and LED luminaire manufacturers. He identified a few: Martin Professional, Altman Stage Lighting, Philips, High End Systems (Barco), Mole-Richardson, German Light Products, Robe, Clay Paky, and Elation.*

*"Steve Terry moved that we draft a letter and send it to identified people at these organizations to ask them to work on a 1573 revision. The motion was seconded and then approved with a unanimous show of hands.*

*"Terry said he will identify the senior person at each of these companies to whom the letter should be sent."*

Not done yet, said Steve Terry.

## **7.8 Grounding and Bonding on portable structures and electrical systems**

Richard Cadena said he had hoped to have a draft for this meeting, but didn't make it. The task group almost has a rough draft, but it needs to be assembled and edited. He plans to have it ready for the next meeting.

## **7.9 Fixing the strain relief requirement in UL 1691**

*Update on the tri-national strain relief saga.*

Terry reported that a request for comment on the strain relief proposal has been posted on the UL 1691 CSDS. To get to this point, he had to modify the proposal to make it acceptable with Canadian practice. That modification was to remove the separate strain relief requirement for #6 and smaller and the two set screw requirement. He urged all UL 1691 STP members in the working group to submit a supporting comment (i.e., "Yes, good idea.").

## **8 New business**

None.

## **9 Other business**

### **9.1 Load control relays for emergency transfer purposes**

Steve Terry reported on activity to allow some types of UL 924 load control relays to be used as branch circuit emergency transfer switches (BCELTSS). The NEC, in multiple sections, prohibits the use of UL 924 load control relays as emergency transfer switches. However, there was a recent UL 1008 proposal to allow load control relays to be used as transfer switches. It was not approved. A UL task group has been formed to consider the issues and make a recommendation to STP 1008. Terry said, "The battle continues."

### **9.2 NEC Report on Proposals**

Vannice reported that the NEC ROP has been issued. Comments on them are due by 17 October 2012. Steve Terry said there are changes proposed for Article 520, and he suggested we look at the proposals.

## **10 Schedule for future meetings**

Vannice announced that the next working group meeting is scheduled for Friday 19 October 2012, from 19:00 to 23:00 at the Las Vegas Hotel (formerly called the Las Vegas Hilton) in Las Vegas, NV.

## **11 Adjournment**

Jerry Gorrell moved that the meeting adjourn. The motion was seconded and then approved with a show of hands. Ken Vannice declared the meeting adjourned at 16:17.

**Working Group Membership as of 1 August 2012**

<b>Name</b>	<b>Company</b>	<b>Representing</b>	<b>Voting status</b>	<b>Int. cat.</b>
Patric J. Abaravich	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Daniel Ayers	Norcostco (Sales-Midwest)	Norcostco	O	DR
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	DR
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Joe Boardman	Bender Inc.	Bender GmbH & Co. KG	A	MP
Ron Bonner	PLASA Technical Resources Office	PLASA EU	P	U
Eric Bouchard	Cirque du Soliel	Cirque du Soliel	O	CP
Louis Bradfield	Louis Bradfield	Louis Bradfield	P	U
Stephen (Steve) Brock	Bender ET Inc.	Bender GmbH & Co. KG	A	MP
André Broucke	André Broucke	André Broucke	O	G
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Richard Cadena	Academy of Production Technology	Academy of Production Technology	P	G
Vincent J. Cannavale	Motion Laboratories	Motion Laboratories	P	CP
Michael J. Carnaby	Mikan Theatricals	Mikan Theatricals	O	DR
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	U
James Davey	AC Power Distribution Inc.	AC Power Distribution Inc.	P	CP
Kenny Delahoussaye	Aggreko	Aggreko	O	DR
Jeff deRecat	Marinco	Actuant Corporation	P	MP
Jim Digby	The Collaborative Endeavor Group	Linkin Park Touring/The Collective	O	U
William Drake	Marinco	Actuant Corporation	A	MP
Marsha DuBois	Pintech Stage Connectors, Inc.	Pintech Stage Connectors, Inc.	O	CP
Steve DuBois	Pintech Stage Connectors, Inc.	Pintech Stage Connectors, Inc.	O	CP
James Eade	PLASA	PLASA	O	G
Don Earl	Earl Girls, Inc.	Earl Girls, Inc.	O	DR
Jose J. Flores	Kino Flo, Inc.	Kino Flo, Inc.	O	MP



<b>Name</b>	<b>Company</b>	<b>Representing</b>	<b>Voting status</b>	<b>Int. cat.</b>
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Howard Forryan	Harting Ltd.	Harting KGAA	A	G
Ian Foulds	IATSE Local 873	Entertainment Electrical Safety Committee of Ontario	P	G
Phillip M. Gallo	TMB	TMB	O	DR
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	P	G
Richard B. Glickman	Gliconen Corporation	Rosco Laboratories	O	MP
Reuben Goldberg	Technic Services	Technic Services	O	U
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	P	U
Bill Grande	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	A	MP
Torsten Gruhn	Bender Inc.	Bender GmbH & Co. KG	A	MP
Mitch Hefter	Mitch Hefter	USITT	P	U
Peter Herrmann	Motion Laboratories	Motion Laboratories	A	CP
David Herrmann	Motion Laboratories	Motion Laboratories	A	CP
Jim Holladay	Luxence	Luxence	O	G
Wendy Holt	AMPTP/CSATF	Alliance of Motion Picture and Television Producers	P	G
Simon Hunt	IATSE Local 891	IATSE Local 891	O	U
Richard L. Eberth_Jr.	North Shore Safety	Airpax Corporation	O	MP
Tyrone Mellon_Jr.	Lex Products Corp.	Lex Products Corp.	A	CP
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Wayne Kowalski	Coleman Cable Inc.	Coleman Cable Inc.	O	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Charles (Chuck) Kurten	Underwriters Laboratories, Inc.	Underwriters Laboratories, Inc.	O	G
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Michael Lay	Philips Color Kinetics	Royal Philips Electronics	P	MP
Marty Lazarus	Chicago Spotlight, Inc.	Chicago Spotlight, Inc.	O	DR
Nathan Leonard	Bender Group	Bender GmbH & Co. KG	P	MP

<b>Name</b>	<b>Company</b>	<b>Representing</b>	<b>Voting status</b>	<b>Int. cat.</b>
Dave Lester	Clair Global	Clair Global	O	U
George Long	Aggreko Event Services	Aggreko	P	DR
Bob Luther	Lex Products Corp.	Lex Products Corp.	P	CP
William L. Maiman	William L. Maiman	William L. Maiman	O	U
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Greg Mayberry	AC Power Distribution Inc.	AC Power Distribution Inc.	A	CP
Pat Miller	Hubbell Wiring Devices	Hubbell Inc.	O	MP
Martin Moore	Martin Moore	Martin Moore	O	DE
David Murray	IPC Resistors Inc.	IPC Resistors Inc.	O	CP
Kevin O'Brien	Bestek Lighting & Staging	Bestek Lighting & Staging	O	U
Natti Pierce-Thomson	North American Theatre Technology	North American Theatre Technology	O	U
Elizabeth E. (Lizz) Pittsley	Elizabeth Pittsley	Elizabeth Pittsley	O	U
R. Bruce Prochal	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Jared Saltzman	Jared Saltzman	Jared Saltzman	O	U
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	P	DR
Michael Scudday	SSRC, Inc.	SSRC, Inc.	O	CP
Ford Sellers	Cornell University	Cornell University	O	U
Mike Skinner	CBS Studio Center	Alliance of Motion Picture and Television Producers	O	U
Sean Sloat	Lex Products Corp.	Lex Products Corp.	A	CP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	O	G
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	P	MP
Eric Tishman	Rosco Laboratories	Rosco Laboratories	O	MP
Stephen Vanciel	Stephen Vanciel	Stephen Vanciel	O	U
Ken Vannice	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	P	MP
Art Wanuch	Entertainment Electrical Safety Committee of Ontario	Entertainment Electrical Safety Committee of Ontario	A	G

Name	Company	Representing	Voting status	Int. cat.
Colin Waters	TMB	TMB	O	DR
Jody Williquette	Electrvert, Inc.	Electrvert, Inc.	P	CP
Richard Wolpert	Union Connector Company (MO)	Union Connector Company	O	CP
Keith S. Woods	Lakhri Impressions Ltd.	IATSE Local 891	P	U
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Alex Yoon	Mole-Richardson Co.	Mole-Richardson Co.	P	CP

**Key to codes:**

P principal voting member  
A alternate voting member  
I individual voting member  
O observer, non-voting

MP mass-market producer interest category  
CP custom-market producer interest category  
DR dealer or rental company interest category  
U user interest category  
G general-interest interest category  
DE designer interest category