

**Minutes**  
**Control Protocols Working Group**  
Thursday, 22 March 2001  
Westin Hotel  
Long Beach, CA

**Chairs:** Steve Carlson; High Speed Design, Inc.; High Speed Design, Inc.; principal; producer  
Steve Terry; Fourth Phase New Jersey; PRG; principal; user

**Recording secretary:** Karl G. Ruling, ESTA

**Members attending:** Wayne David Howell; Artistic Licence (UK) Ltd.; principal; producer  
Tobin Neis; Barbizon Companies; principal; user  
Doug Fleenor; Doug Fleenor Design, Inc.; principal; producer  
Milton Davis; Doug Fleenor Design, Inc.; alternate; producer  
Ed Jones; Edwin Jones Co., Inc.; principal; producer  
Greg Heinzle; Electronic Theatre Controls, Inc.; principal; producer  
Tracy Underhill; Electronics Diversified Inc.; principal; producer  
Philip Nye; Engineering Arts; principal; gen. interest  
Paul K. Ericson; Ericson Lighting Design; observer; user  
Robert Goddard; Goddard Design Co.; principal; producer  
Alan P. Symonds; Harvard College; observer; user (joined at this meeting)  
Scott Blair; High End Systems Inc.; principal; producer  
Edwin S. Kramer; IATSE, Local 1; principal; user  
John Huntington; IATSE Local 1; alternate; user  
Roger Lattin; IATSE Local 728; principal; user (changed voting status to  
principal at this meeting)  
Edward Paget; Jones & Phillips Associates, Inc.; principal; gen. interest  
Rick Leinen; (NSI Corporation) Leviton Manufacturing Co., Inc.; principal;  
producer  
Tim Bachman; (Leviton / Colortran) Leviton Mfg. Co.; alternate; producer (joined  
at this meeting)  
Ole Pedersen; Martin Professional A/S; principal; producer  
Dave Higgins; Pathway Connectivity Inc.; principal; producer  
Tim Cox; PLASA; principal; gen. interest  
Jon R. Farley; (Rosco/Entertainment Technology) Rosco Laboratories; principal;  
producer  
George Kindler; (SPL Integrated Solutions) Signal Perfection Ltd.; principal; user  
(joined at this meeting)  
David George; Spectrum Manufacturing Inc.; principal; producer  
Michael Lay; (Strand Lighting) Strand Lighting Ltd.; alternate; producer (joined at  
this meeting)  
Brian Dowd; TMB Associates; principal; user  
Mitch Hefter; (Rosco/Entertainment Technology) USITT; principal; user  
Charles Reese; Vari-Lite, Inc.; principal; producer  
Eckart Steffens; (SOUNDLIGHT) VPLT; principal; gen. interest  
Eric Cornwell; West Side Systems; observer; user  
Richard Thornton Brown; Zero 88 Ltd.; principal; producer

**Visitors:** Thomas Mish Jr.; ETL  
Arnold Tang

**1 Opening remarks**

Steve Terry called the meeting to order at 09:00.

**2 Attendance and membership**

A bright yellow and pink attendance sheet was passed for those present to note their attendance.

Ruling reported that Peter Willis of Howard Eaton Lighting Ltd., Trevor Forrest of Helvar Lighting Control, and Richard Lawrence of Strand Lighting had sent their regrets for being unable to attend the meeting. Each had cited a heavy workload as preventing him from attending.

**2.1 Introductions of those present**

Terry asked those present to introduce themselves, which they did, proceeding in a clockwise direction around the table.

**2.2 Determination of quorum**

Terry announced that we clearly had a quorum.

**2.3 Recognition of alternate voting members**

Terry asked that alternate voting members who would be voting on behalf of their organization identify themselves.

**2.4 Requirements for membership**

Carlson reminded people of the liberal requirements for membership. Membership is open to all who are materially affected by the work of the group. Membership in ESTA is not a requirement. Voting members must attend meetings and respond to letter ballots.

**2.5 Processing of new membership requests**

Karl Ruling reported that membership requests had been received from the following:

- Tim Bachman; Leviton; alternate; producer
- Roger L. Lattin; IATSE Local 728; principal, user (change of status from observer)
- George Kindler; Signal Perfection Ltd.; principal, user
- Michael Lay; Strand Lighting; alternate; producer
- Alan P. Symonds; Harvard College; observer; user

Ted Paget moved that all five applications be accepted. The motion was seconded. The motion was accepted unanimously by a show of hands.

The voting body for this meeting was thus:

Name	Company	Representing	Voting status	Int. cat.
John Sellers	AIM Northwest	AIM Northwest	P	G
Tony de Rijk	Amazing Controls! Inc.	Amazing Controls! Inc.	P	P
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	P
Tobin Neis	Barbizon Companies	Barbizon Companies	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	P
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	P
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	P	P
Greg Heinzle	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	P
Ed Prasser	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	P
Tracy Underhill	Electronics Diversified Inc. (Colorado)	Electronics Diversified Inc.	P	P
Scott Rempel	Electronics Diversified Inc.	Electronics Diversified Inc.	A	P
Philip Nye	Engineering Arts	Engineering Arts	P	G
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	P
Dexter McNeil	Goddard Design Co.	Goddard Design Co.	A	P
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	P	P
Scott Blair	High End Systems Inc.	High End Systems Inc.	P	P
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	P	P
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	P
Edwin S. Kramer	IATSE, Local 1	I.A.T.S.E. Local 1	P	U

John Huntington	IATSE Local 1	I.A.T.S.E. Local 1	A	U
Roger Lattin	IATSE Local 728	I.A.T.S.E. Local 728	P	U
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	P	G
Rick Leinen	NSI Corporation	Leviton Manufacturing Co., Inc.	P	P
Ken Vannice	NSI Corporation	Leviton Manufacturing Co., Inc.	A	P
Tim Bachman	Leviton / Colortran	Leviton Manufacturing Co., Inc.	A	P
Ole Pedersen	Martin Professional A/S	Martin Professional A/S	P	P
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	P
Michael (Sandy) Twose	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	P
Tim Cox	PLASA	PLASA	P	G
Tony Douglas-Beveridge	PLASA	PLASA	A	G
Steve Terry	Fourth Phase New Jersey	PRG	P	U
Robert Barbagallo	Proximo Inc.	Proximo Inc.	P	U
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	P	P
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	A	P
Jon R. Farley	Rosco/Entertainment Technology	Rosco Laboratories	P	P
George Kindler	SPL Integrated Solutions	Signal Perfection Ltd.	P	U
David George	Spectrum Manufacturing Inc.	Spectrum Manufacturing Inc.	P	P
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	P
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	P
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	P	G
Brian Dowd	TMB Associates (NJ)	TMB Associates	P	U
Mitch Heffer	Rosco/Entertainment Technology	USITT	P	U
Charles Reese	Vari-Lite, Inc.	Vari-Lite, Inc.	P	P
Eckart Steffens	SOUNDLIGHT	VPLT	P	G
Richard Thornton Brown	Zero 88 Ltd.	Zero 88 Ltd.	P	P
Peter Brooks	Zero 88 Ltd.	Zero 88 Ltd.	A	P
			34 votes	20 P 8 U 6 G

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

Paget moved that the draft minutes of the January meeting be approved as written. The motion was seconded. Unanimous by show of hands. There was no discussion.

**4 Call for patents**

Steve Carlson read the following:

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

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

No issues were identified by anyone present at this time.

**and Anti-Trust Statement**

Steve Carlson read the following:

"The ESTA Board of Directors, the Technical Standards Committee, and the leadership of this working group will reject or nullify any actions that restrain trade. Anyone who feels that an

action restraining trade is being or has been taken is requested to bring the 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 ESTA president immediately.

"ESTA legal counsel has informed us that any member of this working group may be found individually liable for any action that restrains trade taken by this working group. An individual convicted of a violation of the Sherman Act may be fined as much as \$100,000 and be imprisoned for up to three years. An easy to read pamphlet describing restraint of trade is available from the Technical Standards Committee."

Carlson held up some of the easy-to-read pamphlets and encouraged new members to read it.

No anti-trust issues were brought to the attention of the Chairs.

## **5 Approval of agenda**

Steve Terry asked for a report from Bob Goddard on DMX node capacitance under New Business. He also asked that there be a discussion of patent issues. Carlson also asked that 6.4.3 be added to cover structured cabling.

Mitch Hefter moved that the agenda with these additions be approved. The motion was seconded. The motion was approved unanimously by a show of hands.

## **6 Old business**

### **6.1 E1.11**

#### **6.2.1 Public review progress report**

Ruling reported that the public review period is open, but that few comments had been offered so far. A few of these are philosophical musings, but most of the comments offered have been specific and of reasonable length. Ruling said that he expect to get most of the comments in the last week before the comment period closes, which is April 24.

Terry and Carlson urged all to read the document and to offer comments.

#### **6.2.2 Recommended practice document for E1.11**

Mitch Hefter reported that the sub-task group hasn't submitted anything to him. He said that the topic would probably deal with it during the breakout session.

#### **6.2.3 Accessory power with E1.11**

Doug Fleenor reported that he had written a questionnaire and faxed to 71 ESTA members, and that a notice about the questionnaire had appeared in Standards Watch. He had received 12 replies. Of these, ten wanted to participate, and two did not. Six were willing to attend meetings. Fleenor asked, Is this sufficient interest to proceed?

The advice from the Chairs was that this was not a very precise indication of interest. They suggested that Fleenor should re-contact the people polled to get a measure of, not simply will they work on a standard, but how desirable they think a standard for accessory power might be.

Fleenor agreed to give a more complete report on the accessory power project at the next meeting.

#### **6.2.4 Polled talkback for E1.11**

Hefter reported that there had been no work done on this project so far. The task group would work on this during the breakout session.

#### **6.2.5 PICS for E1.11**

Ruling reported that he had done minimal work on the PICS for BSR E1.11.

Terry suggested that we table this project until we have a better sense of where the standard is going. Carlson said that the IEEE doesn't do a PICS until a standard is just about done. Ruling and Paget expressed relief at being released from the task until BSR E1.11 become ANSI E1.11.

## 6.2 CAT 5 Report

Hefter moved that the CAT 5 report distributed to the working group be published. The motion was seconded.

Karl Ruling read the email he'd recently received from David Timmins regarding the report:

"Downloaded, printed, read the document. Quite interesting - clearly the cat5 performs very well in all aspects apart from radiated emissions. I have a couple of comments:

"1. In this kind of report it would be nice to see a photograph of the test setup. Especially for the radiated emissions part, for which such a significant difference is apparent.

"2. The use of slew rate limited drivers clearly gives better results. I would be much happier to use them if their maximum data rate was quoted as 500KB or even 300KB. I realise this 250K limit is fairly arbitrary, however it still makes me nervous.

"3. I'm not sure I completely agree with the statement regarding the impedance of cat5 at 125KHz is what matters. I think the termination of the higher frequencies, say 250KHz to 2.5MHz, is equally important. Based on this I suggest a termination impedance of 110 ohms be the recommended value. I realise that no recommendation is actually made however its likely that one will be inferred from the results of this report.

"That's all. Good interesting report. Cat5 is clearly going to become a standard for DMX I think, especially when ACN comes along and everyone has spare cat5 cables lying around the place. As a matter of interest, do you know if anyone has tried plugging a cat5 cable with 10BaseT or 100BaseT Ethernet on it into a DMX device (and vice versa) to see how they cope when a wiring error is made?

"Good work."

The Chairs asked the working group members to consider if the comments would persuade them to vote against the motion to publish the report.

By show of hands, 24 voted in favor of publishing the report, none voted against the motion, and three people abstained.

## 6.3 E1.17 Task Group report

Steve Carlson reported that the Reference Platform Software Specification 1.0 almost complete. a Win32 thin client will be done in Visual Basic with direct calls to C language DLLs. The Reference Platform Hardware will be commercial single-board computer with a TCP/IP stack, reported Carlson.

A new ACN reflector and private FTP site are up and running, hosted by Martin. Carlson said that the first version of the ACN test code (written by Richard Lawrence of Strand Lighting) is on the private FTP site.

Carlson reported that substantial progress has been made, and some changes to the ACN architecture docs will be made based upon the results of working with the test code.

The ACN task group does not have a release date yet for the Reference Platform. The task group meetings at USITT will continue work on the project and should make setting a timeline for future milestones much easier.

Carlson reiterated his thanks to Richard Lawrence and Strand for developing the working source code and to Martin for providing the email reflector and FTP site for the task group

## **6.4 IEEE Report**

### **6.4.1 DTE power**

Carlson reported that the DTE power project is making progress, although there has been a change in the parties involved since some of the vendors that make equipment for methods that aren't going to be used have left the project. The 3.0 version to go to working group in July. This will be the task force's draft. Carlson said that he doesn't know how the working group will respond to the draft since most of the working group members are "bits and bytes guys" and this is a power topic.

The final standard will be Clause 33 in IEEE 802.3 AF. It will be published in June 2002 by the IEEE, if all goes as scheduled. Carlson noted that the IEEE 802 committee is moving toward publishing standards for free, which he considers a great thing.

Philip Nye noted that the AES is also discussing free standards.

### **6.4.2 Update on the CAT5 cable ESD problem**

Carlson says that the report he circulated last summer has become a hot item in the community of cabling manufacturers. He had reported that electrostatic discharges with some types of unterminated CAT 5 cable can be large enough to damage equipment. He has subsequently found that the insulation on all types of CAT 5 cable is the same, so that, if the problem exists, it exists with all types of CAT 5 cable. Research is being done to determine if unterminated cables can cause destructive electrostatic discharges, but in the meantime, Carlson suggests caution with all unterminated cables.

### **6.4.3 Structured cabling.**

Carlson reported that ISO/IES11801 is the international standard for structured cabling. The second edition deals with copper cabling, and references to CAT 5 have been dropped from this. Higher performance cabling is being specified in 11801 because the standard has to address video distribution. Carlson said that cable grades above CAT 5 will not be necessary for any form of Ethernet now implemented.

Carlson noted that there will be a new version of the RJ45 to handle higher data rates.

Carlson also reported on the "Ethernet in the first mile" project. This will use regular telephone wire for at least 10Mb/sec full frame Ethernet for at least a kilometer. Right now there are multiple protocol conversions being done to deliver Ethernet to a private residence. Carlson has been urging this project on behalf of the CPWG because it will allow us to send control data over low-quality data wiring in entertainment venues.

## **7 New business**

**7.1** Bob Goddard reported on a problem that he says is buried in the draft of E1.11: the minimum capacitance of a DMX node. No one knows what the right number should be. He suggested that if the physical layer of the transport medium is better defined, we could have better levels of reliability.

**7.2** Steve Terry pointed out that Tony Gottelier's article in Light & Sound International had raised issues regarding patents and standards work. Terry explained our patent policy. Terry explained that he was addressing this issue so that people will not feel that there are patent land mines waiting to explode our standards efforts.

**8 Other business**

None.

**9 Schedule for future meetings**

Ruling announced that the next meeting will be Saturday, July 14 at the Dallas/Ft. Worth Marriott in Irving, Texas.

**10 Adjournment**

Ted Paget moved that we adjourn. The motion was seconded. The motion was accepted unanimously by a voice vote. The meeting was declared adjourned at 10:59 by the Chairs.





### CPWG Membership After the 22 March 2001 Meeting

Name	Company	Representing	Voting status	Int. cat.
John Sellers	AIM Northwest	AIM Northwest	P	G
Tony de Rijk	Amazing Controls! Inc.	Amazing Controls! Inc.	P	P
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	P
Steve Friedlander	Auerbach & Associates, Inc.	Auerbach & Associates, Inc.	O	U
Sierk Janszen	Avenger Showcontrol	Avenger Showcontrol	O	P
J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	P
Shahid Anwar	Avolites Ltd.	Avolites Ltd.	O	P
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	P
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	P	U
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	P
Lee J. Bloch	Bloch Design Group Inc.	Bloch Design Group Inc.	O	G
Soo-Myong Chung	Bloch Design Group Inc.	Bloch Design Group Inc.	O	G
Bradley Klinkrad	Bradley Klinkrad	Bradley Klinkrad	O	G
Ted Fregon	Bytecraft Pty. Ltd.	Bytecraft Pty. Ltd.	O	P
Murray Mason	Bytecraft Pty. Ltd.	Bytecraft Pty. Ltd.	O	P
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Marty Lazarus	Chicago Spotlight, Inc.	Chicago Spotlight, Inc.	O	G
Tal Miron	Compulite R & D	Compulite R & D	O	P
Jason Friedman	Creative Realities, Inc.	Creative Realities, Inc.	O	G
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	P

Name	Company	Representing	Voting status	Int. cat.
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	P
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	P
Gary Dove	Dove Systems	Dove Systems	O	P
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	P	P
Bill Fehrmann	Electrol Engineering, Inc.	Electrol Engineering, Inc.	O	P
Ed Prasser	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	P
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	P
Greg Heinze	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	P
Paul Bennett	Electronics Diversified Inc.	Electronics Diversified Inc.	O	P
Scott Rempel	Electronics Diversified Inc.	Electronics Diversified Inc.	A	P
Tracy Underhill	Electronics Diversified Inc. (Colorado)	Electronics Diversified Inc.	P	P
Philip Nye	Engineering Arts	Engineering Arts	P	G
Paul K. Ericson	Ericson Lighting Design	Ericson Lighting Design	O	U
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	P
Dexter McNeil	Goddard Design Co.	Goddard Design Co.	A	P
Alan P. Symonds	Harvard College	Harvard University	O	U
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	P	P
Scott Blair	High End Systems Inc.	High End Systems Inc.	P	P
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	P	P

Name	Company	Representing	Voting status	Int. cat.
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	P
John Huntington	IATSE Local 1	I.A.T.S.E. Local 1	A	U
Edwin S. Kramer	IATSE, Local 1	I.A.T.S.E. Local 1	P	U
Roger Lattin	IATSE Local 728	I.A.T.S.E. Local 728	P	U
Peter Brooks	Zero 88 Ltd.	i Light Group PLC	A	P
Richard Thornton Brown	Zero 88 Ltd.	i Light Group PLC	P	P
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	P
Larry Schoeneman	Interesting Products, Inc.	Interesting Products, Inc.	O	G
David Timmins	Jands Electronics	Jands Electronics	O	P
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	P	G
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	P
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	P
Rick Leinen	NSI Corporation	Leviton Manufacturing Co., Inc.	P	P
Ken Vannice	NSI Corporation	Leviton Manufacturing Co., Inc.	A	P
Tim Bachman	Leviton / Colortran	Leviton Mfg. Co.	A	P
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	P
Gary Pritchard	LSC Lighting Systems PTY Ltd	LSC Lighting Systems PTY Ltd	O	P
J. P. Steiner	Lutron Electronics	Lutron Electronics	O	P
Tracy Schwenk	Martin Professional Inc.	Martin Professional A/S	O	P
Ole Pedersen	Martin Professional A/S	Martin Professional A/S	P	P

Name	Company	Representing	Voting status	Int. cat.
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	P
Geoffrey O. Thompson	IEEE 802.3 / Nortel Networks	Nortel Networks	O	G
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	P
William Benner	Pangolin Laser Systems	Pangolin Laser Systems	O	P
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	P
Michael (Sandy) Twose	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	P
Tony Douglas-Beveridge	PLASA	PLASA	A	G
Tim Cox	PLASA	PLASA	P	G
Mac Perkins	PNTA	PNTA Inc.	O	G
Steve Terry	Fourth Phase New Jersey	PRG	P	U
Robert Barbagallo	Proximo Inc.	Proximo Inc.	P	U
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	P	P
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	A	P
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	P
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	P
Jon R. Farley	Rosco/Entertainment Technology	Rosco Laboratories	P	P
Kenneth Mockler	Sceno Plus	Sceno Plus	O	U
Mick Martin	Showcad Control Systems	Showcad Control Systems	O	P
Andre Broucke	ADB - TTV Technologies	Siemens	O	P

Name	Company	Representing	Voting status	Int. cat.
George Kindler	SPL Integrated Solutions	Signal Perfection Ltd.	P	U
David George	Spectrum Manufacturing Inc.	Spectrum Manufacturing Inc.	P	P
Ujjal Kar	Standard Robotics & Lighting	Standard Robotics & Lighting	O	G
John Mitchell	Sterling Technical Services	Sterling Technical Services	O	U
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	P
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	P
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	P	G
Colin Waters	TMB Associates	TMB Associates	O	U
Brian Dowd	TMB Associates (NJ)	TMB Associates	P	U
Hans Leiter	Transtechnik GmbH	Transtechnik GmbH	O	P
Anders Ekvall	AVAB Scandinavia AB	Transtechnik GmbH	O	P
Mitch Hefter	Rosco/Entertainment Technology	USITT	P	U
Charles Reese	Vari-Lite, Inc.	Vari-Lite, Inc.	P	P
Eckart Steffens	SOUNDLIGHT	VPLT	P	G
Ken Wagner	Walt Disney Imagineering	Walt Disney	O	U
Eric Cornwell	West Side Systems	West Side Systems	O	U
Keny Whitright	Wybron, Inc.	Wybron, Inc.	O	P
John Sondericker III	Wybron, Inc.	Wybron, Inc.	O	P

Note that this table includes some changes that were made after the meeting was adjourned. Thom Weaver and Gerald Jones were deleted as observers because email to them had been returned and they did not respond to a letter asking if they wanted to continue as observers. The representatives from Zero 88 are now shown as representing the i Light Group because this is now the corporate parent of the company. Merlin Milner is no longer shown as representing Leax Lighting Controls because he has left that company to work for i Light.

#### Voting Status

- P Principal voting representative for a company or organization
- A Alternate voting representative for a company or organization
- I Individual representing no organization other than himself or herself
- O Observer, non-voting

#### Interest Categories

- P Producer (manufacturer) of control devices or products
- U User of control devices or products
- G General interest in control devices or products