

**Minutes**  
**Fog and Smoke Working Group**  
Friday, 23 January 2009  
Marriott Solana  
Westlake, TX

**Presiding chairman:** Larry Schoeneman; Designlab Chicago, Inc.; P; DR

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

**Members attending:** M. Brad Dittmer; Downhome Productions; P; U  
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U  
Mike Wood; Mike Wood Consulting LLC; P; G  
Ron Bonner; PLASA; P; G

**Visitors:** None

**1 Opening remarks**

Larry Schoeneman called the meeting to order at 19:08. He welcomed all to the Marriott Solana.

**2 Attendance and membership**

**2.1 Introductions of those present**

Those present introduced themselves.

**2.2 Determination of quorum**

Schoeneman announced that a quorum was present, but too few people to pass a motion requiring a supermajority vote.

**2.3 Recognition of alternate voting members**

There were none to recognize.

**2.4 Requirements for membership**

Schoeneman reminded those present that working group membership is open to all who are affected by the work of the group. Voting members must vote on letter ballots and attend meetings. A member's voting status will be changed to observer if he and his alternate miss three consecutive letter ballots or three consecutive meetings. Voting status change due to failure to vote will be done at the conclusion of the ballot period. Voting status change due to lack of attendance will be done at the beginning of the third meeting missed. Reinstatement of voting status may be requested at the next meeting attended.

**2.5 Processing of new membership applications**

None.

**2.6 Processing of changes to observer status if this meeting is missed**

The following voting members had missed the last two consecutive meetings and were warned that they will be moved to observer status if this meeting is also missed:

Adrian Segeren, Don Phillips, & Marnie Styles; Le Maitre Special Effects  
Florian von Hofen; VPLT

Schoeneman announced that they were now observers.

It was noted that the Martin Professional representative also had missed the previous two meetings, but he had not received the required written warning, and therefore were not moved to observer status at this time, although he also was not present.

## 2.7 Consensus body

The consensus body during this meeting was:

Name	Company	Representing	Voting status	Int. cat.
Wendy Holt	AMPTP	Alliance of Motion Picture and Television Producers	P	U
Larry Schoeneman	Designlab Chicago, Inc.	Designlab Chicago, Inc.	P	DR
M. Brad Dittmer	Downhome Productions	Downhome Productions	P	U
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Greg Meeh	Jauchem & Meeh, Inc.	Jauchem & Meeh, Inc.	P	DR
Patrick Boyd	Jauchem & Meeh, Inc.	Jauchem & Meeh, Inc.	A	DR
Ulrich Borup Hansen	Martin Professional A/S	Martin Professional A/S	P	MP
Martin Michaud	MDG Fog Generators Ltd.	MDG Fog Generators Ltd.	P	MP
Mike Wood	Mike Wood Consulting LLC	Mike Wood Consulting LLC	P	G
Ron Bonner	PLASA	PLASA	P	G
Eric Tishman	Rosco Laboratories	Rosco Laboratories	P	MP
		Total votes	10	
		Votes by interest categories	0	CP
			3	MP
			2	DR
			3	U
			2	G

## 3 Approval of minutes from the previous meeting, the meeting of 18 July 2008

(See document F&S/2008-3008, file name FSmin07-2008.pdf.) Eddie Kramer moved that the draft minutes be approved as written. The motion was seconded and then approved with a voice vote.

## 4 Approval of agenda

Eddie Kramer moved that the agenda be approved. The motion was seconded and then approved with a voice vote.

## 5 Reading of the call for patents

The following statement was read aloud to the assembly by the chairman:

"ESTA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent and copyright disclosures to implement its intent. ESTA 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."

No protected intellectual property was brought to the attention of the assembly.

## 6 Reading of the anti-trust statement

The following statement was read aloud to the assembly by the chairman:

"The ESTA Board of Directors, the Technical Standards Committee, 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 ESTA president immediately.

"ESTA 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."

The Technical Standards Manager held up one of the easy-to-read pamphlets. No restraint of trade issues were reported.

## **7 Old Business**

### **7.1 BSR E1.5 - 200x (a revision of ANSI E1.5 - 2003)**

Addressing the public review comments received from David Adams, the chairman of the ABTT Safety Committee, the only commenter. See BSR\_E1-5r9.pdf and ABTT5.pdf

#### **Comment 1**

*Within its extremely tight limitations this seems to us to be a fine and workable standard. However we continue to worry about what the producer/manager should do if there are children or old age pensioners present during a performance where fog/haze is created, given the limitation related to healthy persons 18 – 64 of age. Since pantomime is once again upon us in the UK we do need some help in finding an appropriate standard.*

Mike Wood provided the following draft response, which was received favorably by the working group:

*Thank you for the comment. The request is understood and appreciated but this is a chicken-and-egg issue. E1.5 is written around available published exposure studies and therefore includes the stated restrictions on applicability of those studies. If a study is published for the populations you mention then it would be considered for inclusion.*

#### **Comment 2**

*3.2 It would greatly assist if a cross reference were provided to indicate how to measure the concentrations stated in 3.2.1 and 3.2.2. Are there meters available to confirm that the fog does not exceed the specified concentrations of 3? I suspect this is part of the ESTA scheme but help is needed here.*

Mike Wood provided the following draft response, which was received favorably by the working group:

*Make no change. This is outside the scope of this standard. E1.5 serves to recommend concentrations and not how to measure those concentrations. It is not proper to constrain a performance based standard to any specific measurement technique.*

*ABTT may be interested in an ESTA document entitled "How To Monitor Glycol Glycerin Mineral-Oil" which details one method for measuring glycol concentration. It is freely available on the ESTA website at [http://www.esta.org/tsp/safety/fog\\_measuring.html](http://www.esta.org/tsp/safety/fog_measuring.html).*

Brad Dittmer moved that the suggested resolutions from Mike Wood be accepted and that BSR E1.5 be accepted as an American National Standard. The motion was seconded. The motion will be decided by letter ballot, in order to meet the ANSI requirement that all working group voting members have an opportunity to vote on the final approval of a document, and—since a majority of the voters were not present—so that enough people might vote to meet the supermajority requirement for approving a set of comment resolutions.

### **7.2 BSR E1.23-200x, Entertainment Technology - Design and Execution of Theatrical Fog Effects**

Addressing the public review comments received from David Adams, the chairman of the ABTT Safety Committee, the only commenter. See BSR\_E1-23r11.pdf and ABTT23.pdf

#### **Comment 1**

*3.5.1.1 A cross reference to 3.5.3.2 would help here.*

The working group discussed the comment and devised the following resolution:

*Make no change. The two clauses deal with different hazards. They are not related and the means of control are different.*

**Comment 2**

*3.5.1.3 The difference between 'fog' and 'haze' is not clear. Suggest definitions might be useful. Where fog and/or smoke is used it is generally necessary to consider the degree of obscuration and drifting of the effect in various situations as air flows are particularly prone to vary depending upon numbers and behaviour of audiences. This could be expanded as part of the Annex but we think reference is needed in this clause to draw attention to observing and acting where necessary.*

The working group discussed the comment and devised the following resolution:

*We will add the definitions of fog and haze published in the Introduction to Modern Atmospheric Effects, 4th edition:*

*Haze: An accumulation in the atmosphere of very fine, widely dispersed, solid or liquid particles giving the air an opalescent appearance.*

*Fog: A mixture of liquid droplets in air that reduces visibility and reflects light.*

*Notes on monitoring the effect would be inappropriate for the section of the Standard covering the design and planning of the effect. Monitoring is covered in 4.2.1, part of section 4 "Operation of the Effect."*

**Comment 3**

*3.5.3.2 Suggest these read '... adopted to control and monitor ...'*

*There needs to be some note of the remedial action required if the exposure limit is exceeded, which will presumably vary depending on health and safety issues.*

The working group discussed the comment and devised the following resolution:

*Make no change. The clause says "monitor and control," which is the correct order in which one identifies a situation and then controls it. The requirement to control it already suggests that remedial action must be taken if there is a problem. There are many ways to control the situation, and this document does not need to get into the extreme detail of a how-to manual.*

**Comment 4**

*5 The name of the Effect Designer should be included.*

The working group discussed the comment and devised the following resolution:

*We will add the name of the Effect Designer.*

**Comment 5**

*5.4 and 5.5 It is not clear as to why 'the number, names and ages of all assistant who are to be present' are to be detailed but the same does not apply to Effect Operator(s).*

The working group discussed the comment and devised the following resolution:

*Section 5 shall be modified to read:*

*5.1 Name of the person, group, or organization sponsoring the production.*

*5.2 Date and time of day of the production.*

*5.3 Exact location of the production.*

*5.4 Name of the Effect Operator or Operators and Assistants*

*5.5 Number, and names, and ages of all assistants who are to be present.*

*5.6 Qualifications of the Effect Designer. ~~Operator or Operators~~.*

*5.7 Number and types of fog effect devices and materials to be used, the Operator's experience with those devices and effects, and a definition of the general responsibilities of Assistants.*

*5.8 A diagram of the grounds or facilities where the production using the fog effect or effects is to be held. This diagram shall show the point at which the fog effect devices are to be situated and the paths of egress that might be affected by the fog effect.*

*5.9 Manner and place of storage of the fog effect materials and devices.*

*5.10 Material safety data sheet (MSDS) for the fog effect materials to be used.*

*5.11 A narrative description of the risks identified by section 3 and the remedies used to abate them.*

*5.12 A narrative description of operating procedures as determined by section 4.*

*5.13 A statement of who is responsible for the effect and contact information for this person.*

*5.14 Name and signature of the Effect Designer.*

*Please see the existing definitions of "competent" and "qualified" for explanations of what those terms mean.*

#### **Comment 6**

*5.6 In 2.2 the Effect Operator and the assistants are required to be competent persons. Why is this changed to 'qualifications' in this clause and what is the appropriate qualification(s).*

The working group discussed the comment and devised the following resolution:

*The requirements in 5 have been changed. Only the Effect Designer shall be required to be qualified. The others shall be competent.*

Mike Wood moved that we accept the resolutions and offer the revised BSR E1.23 document for public review. The motion was seconded. Since a majority of the working group was not present, and a majority is needed to decide a resolution or public review motion, the vote will be decided by letter ballot.

#### **7.3 BSR E1.29 - 200x, fog equipment product safety standard**

Addressing the public review comments received from David Adams, the chairman of the ABTT Safety Committee, the only commenter. (See E1-29\_2007-3004r5.pdf and ABTT29.pdf.)

#### **Comment 1**

*2.2.6.2.2 b) We would much prefer for the machine to be arranged so that it cannot operate until the required temperature/time is achieved. To rely upon the operator is too onerous and could be dangerous, especially if the temperature drops off.*

Mike Wood provided the following draft response, which was received favorably by the working group:

*Make no change. This standard is a standard to offer guidance to the product testing laboratory, not to the fog machine operator.*

*2.2.6.2.2 refers to a means to allow exemption from the bacteria and fungus tests detailed in 2.2.6.2.1. Clauses (a) to (c) of this section detail the requirements if the manufacturer wishes to exempt the product from the testing procedure. Clause (a) is the master clause and provides strict*

*performance based requirements to meet this exemption. Most importantly please note that the manufacturer must show compliance with all clauses (a) to (c) individually as they are cumulative restrictions combined with 'and', not options. With performance based clauses like this one the means for meeting the exemption may properly be left to the manufacturer.*

**Comment 2**

*2.2.7 Annex A (?) and Annex B seem to have been omitted.*

Mike Wood provided the following draft response, which was received favorably by the working group:  
*Make no change. 2.2.7 refers to the referenced document ANSI/UL 998 and Annex B is part of that document.*

Mike Wood moved that we accept the resolutions and accept the draft BSR E1.29 standard as an American National Standard. The motion was seconded. The motion will be decided by letter ballot.

**8 New business**

None.

**9 Other business**

None.

**10 Liaison Reports**

**10.1 PLASA**

"No news," reported on Bonner.

**10.2 NFPA**

Larry Schoeneman reported that our proposal to offer a session about our standards work at the June NFPA meeting was rejected.

**10.3 VPLT**

Florian von Hofen was not present; there was no VPLT report.

**11 Schedule for future meetings**

There are no future meetings scheduled as of the time of this meeting, but the consensus of the working group was that we will need a meeting in July to address the public review comments on the E1.23 revision.

**12 Adjournment**

Brad Dittmer moved that the meeting adjourn. The motion was seconded and then approved with a voice vote. Larry Schoeneman declared the meeting adjourned at 20:19.

**Membership and Contact Information as of Wednesday, 18 February 2009**

Name	Company	Representation (This is the sort field.)	Voting status	Int. cat.
Wendy Holt	AMPTP	Alliance of Motion Picture and Television Producers	P	U
Gary Crawford	C I T C	C I T C	O	MP
Julie Rogers	City of Phoenix Civic Plaza	City of Phoenix	O	G
Stephanie Kelly	Phoenix Stages/Convention Center	City of Phoenix	O	G
Gary Fails	City Theatrical, Inc.	City Theatrical, Inc.	O	MP
Larry Schoeneman	Designlab Chicago, Inc.	Designlab Chicago, Inc.	P	DR
M. Brad Dittmer	Downhome Productions	Downhome Productions	P	U
Norman Wright	Group One Ltd.	Group One	O	DR
Lowell Fowler	High End Systems Inc.	High End Systems Inc.	O	MP
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
Kent H. Jorgensen	IATSE Local 80	IATSE Local 80	O	G
Greg Meeh	Jauchem & Meeh, Inc.	Jauchem & Meeh, Inc.	P	DR
Patrick Boyd	Jauchem & Meeh, Inc.	Jauchem & Meeh, Inc.	A	DR
Adrian Segeren	Le Maitre Special Effects	Le Maitre Special Effects	O	MP
Don Phillips	Le Maitre Special Effects	Le Maitre Special Effects	O	MP
Marnie Styles	Le Maitre Special Effects (Canada)	Le Maitre Special Effects	O	MP
Nathan Kahn	Look Solutions USA Ltd.	Look Solutions USA Ltd.	O	MP
Ulrich Borup Hansen	Martin Professional A/S	Martin Professional A/S	P	MP
Martin Michaud	MDG Fog Generators Ltd.	MDG Fog Generators Ltd.	P	MP
Mike Wood	Mike Wood Consulting LLC	Mike Wood Consulting LLC	P	G
Monona Rossol	Arts, Crafts & Theater Safety	Monona Rossol	O	G
Ron Bonner	PLASA	PLASA	P	G
Douglas Franz	QVC Network	QVC Network	O	U
Eric Tishman	Rosco Laboratories	Rosco Laboratories	P	MP
Marty Clausen	SHAPE	Safety & Health in Arts Production Entertainment	O	G
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Stephen Vanciel	Stephen Vanciel	Stephen Vanciel	O	U
Reuben Goldberg	Technic Services	Technic Services	O	U
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Colin Waters	TMB	TMB	O	G
Thomas V. Korder	Krannert Center for the Performing Arts	University of Illinois	O	U
Peggy Lee Martindale	University of Texas, Austin	University of Texas, Austin	O	G
Jim Cooper	Palomar College	USITT	O	U
Florian von Hofen	VPLT	VPLT	O	G

Name	Company	Representation (This is the sort field.)	Voting status	Int. cat.
Mark Elliott	Walt Disney Company	Walt Disney Company	O	U

**Key to codes:**

P	principal voting member	MP	mass-market producer interest category	G	general-interest interest category
A	alternate voting member	CP	custom-market producer interest category		
I	individual voting member	DR	dealer or rental company interest category		
O	observer, non-voting	U	user interest category		