



## North America EHS Technical Committee Chapter Meeting Summary and Minutes

**SEMICON West 2015 Meetings**  
17 July 2015, 0905– 1610 Pacific Time  
SEMI Headquarters in San Jose, California

### Next Committee Meeting

North America Standards Fall 2015 Meetings  
Thursday 5 November 2015, 0900 – 1600 Pacific Time  
SEMI Headquarters in San Jose, California

### Table 1 Meeting Attendees

*Italics indicate virtual participants*

**Co-Chairs:** Chris Evanston (Salus Engineering), Sean Larsen (Lam Research), Bert Planting (ASML)

**SEMI Staff:** Paul Trio

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Advanced Energy	Johnson	J.D.	SCREEN	Imamiya	Ryosuke
Applied Materials	Karl	Edward	Texas Instruments	Schwab	Paul
ASML	Planting	Bert	Tokyo Electron	Fessler	Mark
DECON Environmental Services	Belk	Bill	Tokyo Electron	Mashiro	Supika
<i>EORM</i>	<i>Trammell</i>	<i>Steve</i>	Tokyo Electron	McNair	Andrea
ESTEC Solutions	Ergete	Nigusu	Tokyo Electron	Rivera	Kalysha
<i>IBM</i>	<i>Petry</i>	<i>Bill</i>	TUV Rheinland NA	Barsky	Joe
KLA-Tencor	Crane	Lauren	TUV Rheinland NA	Pochon	Stephan
Lam Research	Claes	Brian	TUV SUD America	Holbrook	Glenn
Lam Research	Larsen	Sean	TUV SUD America	Ganon	Bart
Macklin & Associates	Macklin	Ron	TUV SUD America	Prasad	Ron
Nikon Precision	Greenberg	Cliff	Ultratech	Green	Paul
Safety Guru, LLC	Sklar	Eric	SEMI	Trio	Paul
Salus	Visty	John	SEMI	Baliga	Sanjay
Salus Engineering	Evanston	Chris	SEMI Taiwan	Chang	Dean

### Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
S10 Task Force		Mark Fessler (Tokyo Electron) and Eric Sklar (Safety Guru, LLC) have been appointed as TF co-leaders.
S1 Revision Task Force disbanded.	Lauren Crane (KLA-Tencor) and Edward Karl (Applied Materials) stepped down as TF leaders.	

**Table 3 Ballot Results**

**Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

**Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting.

Document #	Document Title	Committee Action
<i>Cycle 4, 2015 Ballots</i>		
<b>4316L</b>	Line Item Revision to SEMI S2-0715, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment, and SEMI S22-0715, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment. Delayed Revision related to Fail-to-safe Equipment Control Systems (FECS) and PM Alignment	
Line Item 1	Clarification/Improvement of the FECS criteria	<b>Failed</b> , to be reballoted
Line Item 2	Removing the list of sections from 2.2 of SEMI S22 and inserting a table of contents to replace it	<b>Passed</b> with editorial changes
<i>Cycle 5, 2015 Ballots</i>		
<b>4449E</b>	Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders	
Line Item 1	Addition of a Delayed Revisions Section Related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders	<b>Failed</b> , to be reballoted
<b>4683F</b>	Line Item Revision to SEMI S2-0715, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed Revisions Related to Chemical Exposure	
Line Item 1	Delayed Revisions Related to Chemical Exposure Criteria	<b>Failed</b> , to be reballoted
<b>5009D</b>	Line Item Revisions to SEMI S8-0712a, Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment with title change to: Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment	
Line Item 1	Change the Word "Guidelines" to "Guideline" in the Document Title	<b>Passed</b> as balloted
Line Item 2	Ergonomics Clearances Considerations	<b>Passed</b> as balloted. Superclean
Line Item 3	Changes to Appendix 1, Section 6: Handle Design Criteria, addition of an Appendix providing handle assessment criteria, and addition of several documents to §8 Related documents	<b>Passed</b> with editorial changes
Line Item 4	Changes to Appendix 1, Section 7: New Whole Body Clearance Criteria, Movement (within Appendix 1) of Select Criteria to a New Maintenance and Service Section, and addition of documents to §8 Related Documents	<b>Passed</b> with editorial changes
<b>5761</b>	New Standard: Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes	<b>Failed</b> , to be reballoted

**Table 4 Authorized Activities**

#	Type	SC/TF/WG	Details
TBA	SNARF	S23 Global TF	Revision to SEMI S23, <i>Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment</i> . New scope and small changes.
5917 <sup>1</sup>	SNARF	S8 Ergonomics TF	Line Item Revisions to SEMI S8, <i>Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment</i> . Addition of reference to a manual material-handling guide in SEMI-S8, Appendix 2, Lifting, Strength, and Materials Handling

TBA – to be announced

Note: SNARFs and TFOFs are available for review on the SEMI Web site at:

<http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF>

<sup>1</sup> SNARF # 5917 is available at:

<http://downloads.semi.org/web/wstdsbal.nsf/b8865fa87d9e7b57882579fb005c3cd7/72578a25ffb6c5d188257e900073c1b0!OpenDocument>

**Table 5 Authorized Ballots**

#	When	SC/TF/WG	Details
5761A	Cycle 7, 2015	Energetic Materials EHS TF	New Standard: Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes
4449F	Cycle 7, 2015	S2 Ladders & Steps TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> . Delayed Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders
4316M	Cycle 7, 2015	S22 TF	Line Item Revision to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> , and SEMI S22-0715, <i>Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment</i> . Delayed Revision related to Fail-to-safe Equipment Control Systems (FECS)
5892	Cycle 7, 2015	Flow Limitation (S5 Revision) TF	Line Item Revisions to SEMI S5, <i>Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves</i>
4683G	Cycle 7, 2015	S2 Chemical Exposure TF	Line Item Revision to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> . Delayed Revisions Related to Chemical Exposure

## 1 Welcome, Reminders, and Introductions

Chris Evanston called the meeting to order at 9:05 AM. Attendees introduced themselves. The SEMI meeting reminders on Standards membership requirement, antitrust issues, intellectual property issues, and effective meeting guidelines were presented. Finally, the agenda was reviewed.

**Attachment:** 01, SEMI Standards Required Meeting Elements

## 2 Review of Previous Meeting Minutes

The committee reviewed the minutes of the previous meeting held April 2 in conjunction with the NA Standards Spring 2015 meetings.

**Motion:** NA EHS Committee approves to accept the NA EHS Spring 2015 Committee meeting minutes as written.

**By / 2<sup>nd</sup>:** Bert Planting (ASML) / Lauren Crane (KLA-Tencor)

**Discussion:** None

**Vote:** 10-0 in favor. Motion passed.

**Attachment:** 02, NA EHS Spring 2015 meeting (April 2) minutes

## 3 Leadership and Liaison Reports

### 3.1 Japan EHS Committee

Supika Mashiro reported for the Japan EHS Committee.

- Last Meetings
  - April 17, 2015 during Japan Spring Meetings 2015 at SEMI Japan, Tokyo, Japan
  - June 5, 2015 during Japan Summer Meeting 2015 at SEMI Japan, Tokyo, Japan
- Next meeting: September 24, 2015 (SEMI Japan, Tokyo)
- Charter of Global EHS Technical Committee

<p><u>Current:</u></p> <ul style="list-style-type: none"> <li>• To identify and develop international environmental, health and safety (EH&amp;S) standards fulfilling the technical needs of the semiconductor, flat panel display and other related industries. The Committee will focus on:             <ul style="list-style-type: none"> <li>○ Standards that promote safe and environmentally responsible design, selection, facilitization, operation, maintenance, service, decommissioning, and disposition of equipment and materials</li> <li>○ EHS issues related to the SEMI Standards Program</li> <li>○ EHS support for other technical committees and SEMI divisions</li> <li>○ Promoting and facilitating the use of SEMI EHS documents</li> <li>○ Supporting technical educational programs on EHS-related subjects.</li> <li>○ Identify and consider non-SEMI documents as they relate to SEMI EHS documents.</li> </ul> </li> </ul>	<p><u>Proposed by Japan Chapter (need global discussion):</u></p> <ul style="list-style-type: none"> <li>• To identify and develop environmental, health and safety (EH&amp;S) Standards Documents fulfilling the technical needs of the semiconductor, flat panel display and other related industries internationally. The Committee will focus on:             <ul style="list-style-type: none"> <li>○ Safety Guidelines and Standards (Guide) that promote safe and environmentally responsible design, selection, facilitization, operation, maintenance, service, decommissioning, and disposition of equipment and materials</li> <li>○ EHS issues related to the SEMI Standards Program</li> <li>○ EHS support for other technical committees and SEMI divisions</li> <li>○ Promoting and facilitating the use of EHS related SEMI Standards Documents</li> <li>○ Supporting technical educational programs on EHS-related subjects.</li> <li>○ Identify and consider non-SEMI documents as they relate to EHS related SEMI Standards Documents.</li> </ul> </li> </ul>
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- Ballot Result (April 17 Meeting)
  - Doc. 5556: Line Item Revision to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Revisions to §19 “Seismic Protection”
    - Failed TC Chapter Review
- Ballot Result (June 5 Meeting)
  - Doc. 5874: Line Item Revision to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*
    - passed with editorial changes → Passed A&R → Completed Publication Proof
- Authorized Activities (April 17 Meeting)
  - SNARF
    - 5875: Revision to S26, *Environmental, Health, and Safety Guideline for FPD Manufacturing System* (Line Item Revision)
- Discontinued SNARF Activity (June 5 Meeting)
  - 5513: Revision to SEMI S23, *Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment*
- S23 Revision Global Task Force
  - 5513 is discontinued.
  - New SNARF is being prepared. To be discussed at SEMICON West 2015 meeting.
  - Coordinating with Energy Saving Equipment Communication (ESEC) TF under the NA Information & Control TC Chapter (e.g. E167, Doc#5821A *Specification for Subsystem Utilities Savings Mode Communication*)
- Greenhouse Gas (GHG) Emission Characterization Task Force
  - TF continuously checks compatibility of SEMI S29 and EPA.

- FPD System Safety Task Force
  - Doc. 5875: Revision to S26, *Environmental, Health, and Safety Guideline for FPD Manufacturing System* (Line Item Revision) for Cycle 6, 2015.
- Seismic Protection Task Force
  - Doc. #5556A, Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment Revisions*. Related to Section 19 Seismic Protection
    - To be submitted for Cycle 6, 2015 or later cycle.
- STEP Planning Working Group
  - STEP/ SEMI S2 was held on October or November, 2015 at the SEMI Japan, Tokyo.

Additional Committee Discussion:

- Supika Mashiro clarified that the SNARF #5513 activity that was discontinued focused on the expansion of Related Information (RI) 2 to include guidance on how to apply the principles of S23 to evaluating temperature control units intended to be part of semiconductor manufacturing equipment when used.
- With regard to S2 STEP, Supika Mashiro pointed out that the WG may consider adding more content to include new (or more recent) S2 changes/updates.
- With regard to ballot 5874, Supika Mashiro reported that the Japan EHS TC Chapter decided not to include the Delayed Revision (DR) listing in the TOC. Lauren Crane, however, pointed out that some documents actually refer to these DR sections so he considered them as sections that need to be included in the TOC. Supika responded that the Japan EHS TC Chapter can have SEMI Publications include the DR sections in the TOC if there is consensus in the committee to do so.

**Motion:** NA EHS TC Chapter requests SEMI Staff and the Japan EHS TC Chapter to include the Delayed Revision sections in tables of contents for Documents that apply with the understanding that SEMI Staff will update the TOCs to actually reflect the contents of the Documents.

**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Cliff Greenberg (Nikon Precision)

**Discussion:** Eric Sklar moved to amend the motion as follows:

**Motion:** NA EHS TC Chapter requests SEMI Staff ~~and the Japan EHS TC Chapter to include the Delayed Revision sections in tables of contents for Documents that apply with the understanding that SEMI Staff will~~ update the TOCs to actually reflect the contents of the Documents

**By / 2<sup>nd</sup>:** Eric Sklar (Safety Guru, LLC) / Bert Planting (ASML)

**Discussion:**

Mashiro – does not think this motion will work. Japan EHS TC Chapter took action based on negatives received on ballot (i.e., not to include the DR sections in the TOC).

Sklar – S2 belongs to NA EHS and it would be reasonable to ask SEMI Staff to include the DR sections in the TOC.

Crane – would want to have the DR sections included in the TOC as well as maintain good relations with Japan EHS TC Chapter.

Evanston – NA EHS asked Japan EHS to take on this activity.

Sklar – inclusion of DR section in S2 is considered moot as 0715 is an implementation cycle of S2 and will not contain any DR sections.

**Vote:** 4-7 motion failed.

The committee then proceeded to vote on the original motion.

**Vote:** 8-1 in favor. Motion passed.

**Action Item:** 2015Jul #01, Paul Trio to distribute proposed Japan EHS TC Chapter revisions to EHS Technical Committee charter to the global EHS TC membership for review and feedback.

**Attachment:** 03, Japan EHS Committee Report

### 3.2 SEMI Taiwan EHS Report

Paul Trio provided the Taiwan liaison report.

- Next meeting: October 2015 [tentative] (SEMI Taiwan Office)
- EHS & Sustainable Manufacturing Highlights
  - Continue to work on drafting SNARF in collaboration with the SEMI Taiwan High Tech Facility Committee:
    - IC Equipment Safety TF: New Guideline for Fire Smoke Control System in Semiconductor Fab
  - Held two S2 standard training courses with partners (SGS and TUV) on May 29 and July 3 respectively to promote broader adoption of SEMI safety standards in the local industry
  - Coordinating S23-related energy saving topic to be presented by recommended technical expert in SEMICON Taiwan 2015 Sustainable Manufacturing Forum
- Regional Staff Contacts: Dean Chang (dchang@semi.org), Andy Tuan (atuan@semi.org)

**Attachment:** 04, SEMI Taiwan EHS Report

### 3.3 SEMI Korea EHS Report

Paul Trio reported on EHS-related activities in Korea.

- Translation
  - Prioritized by industry survey
  - Targets: S-series (S6, S10, S14, and S21)
  - Expected Publication Date: mid-August
- Education program
  - (Completed) SEMI S2
    - Date/Venue: May 14, 2015 at Gyeonggi-do (1 day)
    - 55 attendees (vs 45 attendees in 2014)

#### Additional Committee Discussion:

- With regard to the S2 education program, Chris Evanston asked how such training programs are being conducted if Korea does not have an EHS Standards Committee. He for more information on the mechanism used for developing these courses. Supika Mashiro pointed out that a global decision was previously made that content used for STEP/training programs must be reviewed first by committee members.
- With regard to the translation efforts, Supika Mashiro reported that she had asked the Korea staff to translate one page and then have others take a look at (and evaluate) the translation.

**Action Item:** 2015Jul #02, Paul Trio and Natalie Shim to report on the mechanism used for developing/conducting STEP/education programs in Korea.

**Attachment:** 05, SEMI Korea EHS Report

### 3.4 RSC / Committee Leadership Report

Sean Larsen provided the cochaIRS report.

- Some Reminders from Recent Regulations Changes
  - Non-conforming titles should be corrected with next balloted change – See Appendix 4 of the Regs
    - Applies to S6, S8 and S12 for NA EHS documents
    - All can be corrected with a line item change
  - The list of sections is not allowed to be in the Scope section
    - If you remove it from the scope section and add a ToC, it can be changed as a LI
    - If just to be removed, requires a major revision ballot
    - If you wish to add a ToC, this can be done as an editorial change.
  - Membership
    - With the recent Regs changes, the voting interests have been redefined
    - It is now much more difficult to have different voting interests in subsidiaries
    - If you don't vote and TC membership gets removed, then you cannot rejoin TC or have a leadership position for 1 year
- A&R Feedback
  - 2 items of note from recent feedback from A&R during their ballot reviews
    - 1 ballot was rejected because they did not correct their non-conforming title with a line item at the same time
    - 1 ballot failed for a number of good reasons, but A&R claimed that misalignment with SNARF is grounds for failing the ballot

#### Additional Committee Discussion:

- Sean also reported that there are 19 Standards put on hold in the Information & Control Committee due to IP issues.

**Attachment:** 06, Leadership Report

### 3.5 SEMI EHS Division/ International Compliance and Regulatory Committee (ICRC) Report

Sanjay Baliga reported that the SEMI EHS Division will be setting up an online forum (eForum) for information sharing on EHS best practices, supply chain issues, regulatory topics, and other EHS-related discussions. The forum will be open to non-SEMI members, but some content/sections will be available to SEMI members only.

Sanjay also reported that he has received a number of inquiries related to the upcoming 0715 delayed revision implementation in SEMI S2. He recommended putting together a webinar explaining these upcoming changes in S2.

Sanjay also reported that one of the request from the SEMI EHS Standards Compliance Workshop held at SEMICON China (March 19) was for a STEP Program on guidance documents in Mandarin. He also reported that a Sustainable Manufacturing Forum was held in April at SEMICON Southeast Asia. Sanjay invited committee members to contact him if there is any interest in providing EHS-related guidance on back-end operation.

Sanjay also reported that SEMI members are concerned about the impact of regulatory requirements on components or parts that are used in their product or equipment. SEMI members are asking for guidance on what has been done in the past with regard to the supplier inquiry process. Sanjay pointed out that possible solutions could include developing a harmonized supplier inquiry process form or perhaps even creating a standard based on the form itself (or, at a minimum, define how information is communicated from the supplier).

Sanjay highlighted the circumstances surrounding the Wuxi fire. He reported that the ICRC is working on a white paper summarizing concerns for fab owners to take note based on inputs from suppliers. He suggested that perhaps this white paper can be made into a standard eventually. Nevertheless, while worker safety training documentation/materials can be further developed, though these documents already exist, the problem is in enforcement.

Finally, Sanjay reported that at the Sustainable Manufacturing Forum at SEMICON West 2015, Mike Czerniak (Edwards) presented on the recently developed SEMI E167 Standard (*Specification for Equipment Energy Saving Mode Communications*) as well as on the benefits of energy-saving idle modes enabling 15-17% in energy savings/year (with annual savings potential in millions of dollars). Supika Mashiro pointed out that there is the other side of this story. She argued that customers are not willing to pay to adopt E167, but want suppliers to implement instead without additional cost. Furthermore, she pointed out that device makers want suppliers to implement idle-mode without impacting the device makers' own processes. She pointed out that all of this will take time. Bert Planting that it may be possible to implement idle mode in new tools, but to do so with existing tools is a challenge. Supika urged SEMI to deliver the other side of the story in the E167/idle-more presentation. She stated that she is willing to present the other side's point of view.

### 3.6 SEMI Staff Report

Paul Trio gave the SEMI Staff Report.

- 2015 Global Calendar of Events
  - SEMICON West (July 14-16, San Francisco, California)
  - SEMICON Taiwan (September 2-4, Taipei)
  - European MEMS Summit (September 17-18, Milan, Italy)
  - Strategic Materials Conference [SMC] (September 22-23, Mountain View, California)
  - SEMICON Europa / Plastic Electronic Conference (October 6-8, Dresden, Germany)
  - SEMICON Japan (December 16-18, Tokyo)
- 2016 Global Calendar of Events (Jan to mid-July)
  - European 3D Summit (January 18-20, Grenoble, France)
  - Advanced Semiconductor Manufacturing Conference [ASMC] (May 16-19, Saratoga Springs, New York)
  - SEMICON West (July 12-14, San Francisco, California)
- Upcoming North America Meetings (2015)
  - 2015:
    - NA Standards Fall 2015 Meetings (November 2-5, San Jose, California)
  - 2016:
    - NA Standards Spring 2016 Meetings (April 4-7, San Jose, California)
    - SEMICON West 2016 Meetings (July 11-14, San Francisco, California)



- NA Standards Meetings at SEMICON West 2015 (July 13-16)
  - 3DS-IC | EHS | Facilities | Gases | HB-LED | Information & Control | Liquid Chemicals | MEMS/NEMS | Metrics | Microlithography | PV Materials | Physical Interfaces & Carriers | Silicon Wafer | Traceability
- Technical Ballot Critical Dates for NA Standards Fall 2015 meetings
  - Cycle 6: due July 22 / Voting Period: July 29 – August 28
  - Cycle 7: due August 17 / Voting Period: August 31 – September 30
- SEMI Standards Publications
  - Publications Report

Cycle	New	Revised	Reapproved	Withdrawn
March 2015	1	5	2	0
April 2015	3	2	0	0
May 2015	1	5	1	0
June 2015	4	3	15	0

▪ Total in portfolio – 937 (includes 110 Inactive Standards)

- New Standards

<i>Cycle</i>	<i>Designation</i>	<i>Title</i>	<i>Committee</i>	<i>Region</i>
March 2015	SEMI 3D12	Guide for Measuring Flatness and Shape of Low Stiffness Wafers	3D-IC	NA
April 2015	SEMI C86	Guide for Ethylene Glycol	Liquid Chemicals	NA
April 2015	SEMI E173	Specification for XML SECS-II Message Notation (SMN)	Information & Control	NA
April 2015	SEMI PV55	Data Definition Specification for a Horizontal Communication Between Equipment for Photovoltaic Fabrication System	Automation Technology	EU
May 2015	SEMI C87	Test Method for Determining Roughness of Polymer Surfaces Used in Ultrapure Water and Liquid Chemical Distribution Systems by Contact Profilometry	Liquid Chemicals	NA
June 2015	SEMI 3D14	Guide for Incoming/Outgoing Quality Control and Testing Flow for 3DS-IC Products	3D-IC	TW
June 2015	SEMI HB5	Test Method for Measurement of Saw Marks on Crystalline Sapphire Wafers by Using Optical Probes	HB-LED	NA
June 2015	SEMI HB6	Test Method for Measurement of Thickness and Shape of Crystalline Sapphire Wafers by Using Optical Probes	HB-LED	NA
June 2015	SEMI HB7	Test Method for Measurement of Waviness of Crystalline Sapphire Wafers by Using Optical Probes	HB-LED	NA

- New Requirements/Process Reminders for TC Chapter Meetings
  - Standards Document Development Project Period
    - Project period shall not exceed 3 years (Regs 8.3.2)
      - SNARF approval to TC Chapter approval
    - If document development activity is found to be continuing, but cannot be completed within the project period, TC Chapter may grant one-year extension at a time, as many times as necessary.
    - The TC Chapter should review the expiration dates for all applicable SNARFs at each TC Chapter meeting. (PM Note 10)
  - SNARF Review Period
    - A submitted SNARF for a new, or for a major revision to an existing, Standard or Safety Guideline is made available to all members of a TC Chapter's parent global technical committee for two weeks for their review and comment. (Regs 8.2.1)
      - If the SNARF is submitted at a TC Chapter meeting, the committee can review and approve, but the SNARF will need to be distributed for two weeks and then approved via GCS.
  - New SNARF & TFOF forms *{embedded in Staff Report, see Attachment 03 of these minutes}*
  - Procedures for Correcting Nonconforming Titles of Published Standards Document (PM Appendix 4)
    - Some Standards qualify for a special procedure where a line item change can be used to correct the titles. Otherwise, the corrective action will likely require a major revision.
- Nonconforming Titles
  - SEMI S6-0707E - EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment
    - Replacement terms
      - Safety Guideline for... or Environmental, Health, and Safety Guideline for ...
  - SEMI S12-0211 - Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination
    - Replacement terms
      - Safety Guideline for... or Environmental, Health, and Safety Guideline for ...

Refer to Procedure Manual (PM) Appendix Table A4-1 for details on nonconforming titles
- 5-Year Review
  - SEMI S19-0311, Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel
  - SEMI S12-0211, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination
- SNARF 3 year Status
  - 4975, Revision to SEMI S6, EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment (Line item revisions for addressing gas detectors and other concerns)



- o 4316, Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment and SEMI S22, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment (Coordinated Revisions to align electrical requirements in SEMI S2 and SEMI S22)
- o 4449, Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders)

TC Chapter may grant a one-year extension

**Action Item:** 2015Jul #03, Paul Trio to inform Junko Collins that SEMI S19 is due for 5-Year Review.

**Attachment:** 07, SEMI Staff Report

#### 4 Ballot Review

4.1 Document # 4316L, *Line Item Revision to SEMI S2-0715, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment, and SEMI S22-0715, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment. Delayed Revision related to Fail-to-safe Equipment Control Systems (FECS) and PM Alignment*

4.1.1 Line Item 1 – *Clarification/Improvement of the FECS criteria*

#### Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	55	Voting Interest Accept Votes (VIAccept)	39
Total Voting Interests	90	Interest Reject Votes (IReject)	2
Voting Interest Return %	61.11%	Approval % [VIAccept / (VIAccept + IReject)]	95.12%
Other Returns (Intercommittee, etc.)	19	# of Interest Rejects that Need to be not found Valid for	
Total Votes	74	Final Approval % >= 90%	0
Total Votes with Comments	3		
Total Reject Votes	2		

#### Rejects/Negatives

Company: Submitter	ID	Negs	Disp	Company: Submitter	ID	Negs	Disp
KLA-Tencor: Lauren Crane	KT	3		Safety Guru, LLC: Eric Sklar	SG	11	



**Negatives from < Safety Guru, LLC: Eric Sklar >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
SG-1	S2 revisions	Negative: Change the material in S2 to a pointer to the relevant material in S22.  Reason/Justification: Having the substance appear in only one document reduces the risk of divergence as well as the burden of maintaining the documents.	<b>X</b> Related & persuasive <b>Reason:</b> RP – 6-3 all in 1 document  6-3 all common material in S2	<b>X</b> Related & persuasive ( <b>ballot fails</b> )  By/2nd: Eric Sklar / Bert Planting Disc: None Vote: 3-1. <b>Motion passed</b>	

**Comments**

Company: Submitter	ID	#	Company: Submitter	ID	#
KLA-Tencor: Lauren Crane	KT	14	Lam Research: Sean Larsen	LMRC	2
Tokyo Electron: Mark Fessler	TEL	1	TUV SUD: Tomokatsu Sano	TUVS	1

**Followup Activity Authorization**

Move to:

Return ballot to the originating task force for rework

and authorize a follow-up ballot (C7-15)

By/2nd: Eric Sklar / Edward Karl

Disc: None

Vote: 4-0. Motion **passed**

**Attachment:** 08, 4316L-LI1 Compiled Responses



4.1.2 Line Item 2 – Removing the list of sections from 2.2 of SEMI S22 and inserting a table of contents to replace it

**Tallies at Close of Voting**

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	55	Voting Interest Accept Votes (VIAccept)	40
Total Voting Interests	90	Interest Reject Votes (IReject)	1
Voting Interest Return %	61.11%	Approval % [VIAccept / (VIAccept + IReject)]	97.56%
Other Returns (Intercommittee, etc.)	19	# of Interest Rejects that Need to be not found Valid for	
Total Votes	74	Final Approval % >= 90%	0
Total Votes with Comments	0		
Total Reject Votes	1		

**Rejects/Negatives**

Company: Submitter	ID	Negs	Disp	Company: Submitter	ID	Negs	Disp
Safety Guru, LLC: Eric Sklar	SG						

**Negatives from < Safety Guru, LLC: Eric Sklar >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
SG-1	ToC	<p><b>Negative:</b> Do not include RIs in the ToC.</p> <p><b>Reason/Justification:</b> Although it appears to me that modification of a ToC should be a purely administrative process (that is, it should be done without deliberate consideration or voting whenever the tabulated contents changes), the existence of this part of the ballot implies that a Letter Ballot is required to change a ToC. However, a Letter Ballot is not required to add, change, or remove an RI. Therefore, including RIs in the ToC makes it difficult to keep the ToC aligned with the RIs in the document. This could be fixed by:</p> <ul style="list-style-type: none"> <li>a) removing the RIs from the ToC or</li> <li>b) allowing ToC changes to be made without a formal vote.</li> </ul>	<p>Submitter agrees to withdraw based on feedback from Regs subcommittee chair and SEMI staff that the ToC contents will be updated to reflect changes in the documents.</p>	<p><b>X</b> Withdrawn by Subm. (Date: 13 July 2015)</p>	
SG-2	ToC	<p><b>Negative:</b> Do not include RIs in the ToC.</p> <p><b>Reason/Justification:</b> The rationale for creating the ToC is that Procedure Manual 3.2.3 states “No section of a Standard or Safety Guideline may contain a list of section and/or subsection numbers and/or their headings (e.g., similar to a Table of Contents).” However, an RI is not a “section or subsection” of a Standard or Safety Guideline. Furthermore, a NOTE listing “Related Information” parts would not be in violation of Procedure Manual 3.2.3, because what it lists is neither “sections” nor “subsections”.</p>	<p>See above.</p>	<p><b>X</b> Withdrawn by Subm. (Date: 13 July 2015)</p>	



**Comments**

There were no comments received for ballot 4316L-LI2.

**Safety Check**

Move to find that this document:

IS a safety document: when all safety-related information is removed, the document is not technically sound and complete.

The Safety Checklist (Regulations 13.3) for this document is complete and has accompanied the document through the balloting process.

*By/2nd:* Sean Larsen / Edward Karl

*Disc:* None

*Vote:* 7-0. **Motion passed**

**Intellectual Property Check**

The meeting chair asked those present in person or by electronic link, if they were aware of any patented or copyrighted material in the Standard or Guideline.

(Note: Such material might have become known since the Standard or Safety Guideline was last reviewed, or might become relevant due to this ballot.)

No patented or copyrighted material is known to exist in the Standard or Guideline. (no motion needed)

**Final Action**

Move to:

Pass this document with editorial changes and forward to the A&R for procedural review.

*By/2nd:* Sean Larsen / Lauren Crane

*Disc:* None

*Vote:* 6-0. **Motion passed**

**Attachment:** 09, 4316L-LI2 Compiled Responses



4.2 Document # 4449E, Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Delayed Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders

4.2.1 Line Item 1 – *Addition of a Delayed Revisions Section Related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders*

**Tallies at Close of Voting**

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	57	Voting Interest Accept Votes (VIAccept)	38
Total Voting Interests	89	Interest Reject Votes (IReject)	4
Voting Interest Return %	<b>64.04%</b>	Approval % [VIAccept / (VIAccept + IReject)]	<b>90.48%</b>
Other Returns (Intercommittee, etc.)		# of Interest Rejects that Need to be not found Valid for	
	14	Final Approval % >= 90%	<b>0</b>
Total Votes	71		
Total Votes with Comments	0		
Total Reject Votes	5		

**Rejects/Negatives**

Company: Submitter	ID	Negs	Disp	Company: Submitter	ID	Negs	Disp
Applied Materials: Edward Karl	AMAT	2					
KLA-Tencor: Lauren Crane	KT	8					
Lam Research:							
Brian Claes	LRBC	10					
Sean Larsen	LRSL	12					
Safety Guru, LLC: Eric Sklar	SG	5					

**Negatives from < Safety Guru, LLC: Eric Sklar >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
SG-1	5.2.3, 18.8.3.1	<p><b>Negative:</b> Do not embed the risk level conformance criterion in the definition.</p> <p><b>Reason/Justification:</b></p> <p>a) That's not only bad document style, it's often a prelude to one or more traps. For example, if you have a case where both a fall restraint and signage reminding people to use it are necessary to get the risk down to Low, neither of those measures would meet the definition of "fall protection".</p> <p>b) In addition to the concern with 18.8.3.1 (v.i.) I think we'd be better served by changing the definition to "engineered or administrative controls that reduce the risk of a fall to Low or Very Low Risk according to the risk assessment method of SEMI S10." and putting the performance criterion (risk no higher than Low, as assessed in accordance with S10) into Section 18.</p> <p>c) I suggest changing 18.8.3.1 to "If it is needed to achieve a risk, as assessed in accordance with SEMI S10, of Low or Very Low, fall protection should be specified or provided for work required at elevated locations."</p>	<p><b>x</b> Related &amp; persuasive</p> <p><b>Reason:</b> Vote 14-0 to fail document and return to TF for rework.</p>	<p><b>X</b> Related &amp; persuasive (<b>ballot fails</b>)</p> <p><b>Reason:</b> It's bad practice to tie assessment of risk and performance criteria to a definition. By Ron Macklin /2nd: Edward Karl Disc: None Vote: 12-0. <b>Motion passed</b></p>	



**Followup Activity Authorization**

Move to:

- Return ballot to the originating task force for rework
- and authorize a follow-up ballot Cycle 7

By/2nd: Ron Macklin / Lauren Crane

Disc: None

Vote: 10-0. Motion **passed**

**Attachment:** 10, 4449E-LI1 Compiled Responses

4.3 Document # 4683F, Line Item Revision to SEMI S2-0715, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Delayed Revisions Related to Chemical Exposure

4.3.1 Line Item # 1 – *Delayed Revisions Related to Chemical Exposure Criteria*

**Tallies at Close of Voting**

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	57	Voting Interest Accept Votes (VIAccept)	34
Total Voting Interests	89	Interest Reject Votes (IReject)	2
Voting Interest Return %	<b>64.04%</b>	Approval % [VIAccept / (VIAccept + IReject)]	<b>94.44%</b>
Other Returns (Intercommittee, etc.)	14	# of Interest Rejects that Need to be not found Valid for	
Total Votes	71	Final Approval % >= 90%	<b>0</b>
Total Votes with Comments	<b>3</b>		
Total Reject Votes	<b>2</b>		

**Rejects/Negatives**

Company: Submitter				ID	Negs	Disp	Company: Submitter				ID	Negs	Disp
Lam Research: Brian Claes				LRBC	6		Safety Guru, LLC: Eric Sklar				SG	5	

**Negatives from < Safety Guru, LLC: Eric Sklar >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
SG-2	DX-2.3 23.5.3	Negative: Delete "1% of". Reason/Justification: There is no apparent technical basis for reducing the generally-accepted standard by two orders of magnitude, nor is there any apparent technical basis for equating "lowest practical level" and 1% of OEL.	<b>XX</b> Not persuasive ( <b>assumes related</b> ) <b>Reason:</b> OEL applicable thresholds have previously went to line item ballots. Changes to the existing 1% & 25% failed.  Not Persuasive 5 Related & Persuasive 2	<input checked="" type="checkbox"/> Not persuasive ( <b>requires reason</b> ) <b>Reason:</b> OEL applicable thresholds have previously went to line item ballots. Changes to the existing 1% & 25% failed.  OELs over the years have continued to be lowered. There's variations in air collection that lead to analysis deviations that should be accounted for where the OELs are set.	





W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant

#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
				<p>Needs to address lowest practical level have been addressed by the TF and committee levels higher than 1% lead to ambient work area exposures that have not been accepted.</p> <p>By/2nd: John Visty / Edward Karl</p> <p>Disc:</p> <p>There is no practical evidence on how to get to 1%.</p> <p>If the assertion is that we need 1% and one person is subject to all of that emission, then it implies that this decision does not</p> <p>ACGIH identifies that this is possible.</p> <p>If measuring 1% is measured in the work zone, it would likely be less further away in the fab.</p> <p>Ambient argument pertains to the issue raised by the end user.</p> <p>Vote: 8-2. <b>Motion passed</b></p> <p><b>Committee Vote by Interest:</b></p> <p>AMAT: Abstain            ESTEC: Abstain            KFPI: In favor            KLA-Tencor: Against            Lam Research: In favor            Macklin &amp; Associates: Abstain            Nikon Precision: In favor            Safety Guru: Against            Salus: In favor            Screen: Abstain            Texas Instruments: Abstain            Tokyo Electron: In favor            TUV Rheinland: In favor            TUV SUD: In favor            Ultratech: In favor</p> <p>In favor – 8            Against – 2            Abstain - 5</p>	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <i>including Justification</i>	TF Finding <i>and Reason</i>	Motion <i>and Reason in Committee:</i>	Final
SG-3	DX-2.3 23.5.4	Negative: Delete "25% of". Reason/Justification: There is no apparent technical basis for reducing the generally-accepted standard by a factor of four, nor is there any apparent technical basis for equating "lowest practical level" and 25% of OEL..	<b>XX</b> Not persuasive ( <b>assumes related</b> ) <b>Reason:</b> For 10 Opposed 2  Rationale lowest practical level is a clarification of / or acknowledgement that minimized can be interpreted as none. 25% has been accepted as the conformance criteria	<b>X</b> Not persuasive ( <b>requires reason</b> ) <b>Reason:</b> Technician exposure over repeated maintenance task should not exceed a reasonable exposure level.  OEL applicable thresholds have previously went to line item ballots. Changes to the existing 1% & 25% failed.  OELs over the years have continued to be lowered. There's variations in air collection that lead to analysis deviations that should be accounted for where the OELs are set.  By/2nd: John Visty / Glenn Holbrook Disc: Lowest practical for operator is 1%, why is it 25% for a technician? B/c most maintenance is task is less than 8 hours.  Maintenance activities exposes worker shorter to the chemicals according to the current conformance paragraphs for OELs.  Section 23.4.4 changed from minimized to as low as practically achievable.  Suggest adding a note in the document that this applies to particular tool set.  Vote: 8-2. <b>Motion passed.</b>	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <i>including Justification</i>	TF Finding <i>and Reason</i>	Motion <i>and Reason in Committee:</i>	Final
SG-4	DX-2.3 23.5.5	Negative: Delete "25% of". Reason/Justification: There is no apparent technical basis for reducing the generally-accepted standard by a factor of four, nor is there any apparent technical basis for equating "lowest practical level" and 25% of OEL..	<b>XX</b> Not persuasive ( <b>assumes related</b> )  Reason: For 10 Opposed 2  See SG3 for rational	<b>x</b> Not persuasive ( <b>requires reason</b> )  Reason: Personnel exposure during a related fault condition should not exceed a reasonable exposure level.  OEL applicable thresholds have previously went to line item ballots. Changes to the existing 1% & 25% failed.  OELs over the years have continued to be lowered. There's variations in air collection that lead to analysis deviations that should be accounted for where the OELs are set.  By/2nd: John Visty / Paul Green Disc: Implication here is that the OELs are not reasonable.  Vote: 9-1. <b>Motion passed</b>	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <i>including Justification</i>	TF Finding <i>and Reason</i>	Motion <i>and Reason in Committee:</i>	Final
SG-5	DX-2.3 23.5.6	<p><i>Negative:</i> Remove the criterion that emissions be "minimized". Instead, use 25% of LFL as the criterion. At the worst, use a criterion of "at the lowest practical level", as is done above for toxic materials.</p> <p><i>Reason/Justification:</i> The currently-published limit has served the industry well and is consistent with other codes and standards. The minimum concentration, however, is 0% of the LFL, and it may not be practical to achieve that without removing the substance from the system or imposing unworkable controls.</p>	<p><b>XX</b> Related &amp; persuasive</p> <p><b>Reason:</b></p> <p>For 11 Opposed 0</p> <p>See section 23.5.6 edit to ballot that removes "minimized" and inserts controlled followed by LFL criteria.</p>	<p><b>Move to find this negative:</b></p> <p><b>x</b> Related &amp; persuasive</p> <p>Motion by/2<sup>nd</sup>: John Visty / Eric Sklar Vote: 13-0 in favor. Motion passed.</p> <p><b>Proposed Technical Change:</b></p> <p><del>23.5.4 Chemical emissions outside the enclosure during a realistic worst case system failure should be less than the lower of the following two values: 25% of the lower explosive limit (LEL), or 25% of the OEL. Concentrations of flammable or combustible SOCs from eEmissions of flammable or combustible chemistries during normal operations, maintenance and failure conditions should be minimized. Conformance to this section can be shown by demonstrating SOC concentrations to be less than 25% of the lower flammable limit (LFL) on the exterior of the equipment and also at the worst case representative potential ignition sources internal to the equipment, as identified as part of a fire risk assessment, during:</del></p> <ul style="list-style-type: none"> <li><del>• Normal equipment operation,</del></li> <li><del>• Maintenance activities and</del></li> <li><del>• During reasonably foreseeable, worst-case system failure.</del></li> </ul> <p>Motion: Negative addressed by the technical change as edited in the committee. Motion by/2<sup>nd</sup>: John Visty / Joseph Barsky</p> <p>Discussion: Lowest practical level does not apply here because we "trust" the LELs. Vote: 9-0</p>	



**Comments**

<i>Company: Submitter</i>	<i>ID</i>	<i>#</i>	<i>Company: Submitter</i>	<i>ID</i>	<i>#</i>
Safety Guru, LLC: Eric Sklar	SG	1	Seagate: Curt Layman	SGTE	1
Lam Research: Sean Larsen	LRSL	2			

**Followup Activity Authorization**

Move to:

- Fail the ballot, return ballot to the originating task force for rework
- and authorize a follow-up ballot

By/2nd: Lauren Crane / Carl Wong

Disc: None

Vote: 10-0. Motion **passed**

**Attachment:** 11, 4683F-LI1 Compiled Responses

4.4 Document # 5009D, Line Item Revisions to SEMI S8-0712a, *Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment* with title change to: *Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment*

4.4.1 Line Item # 1 – *Change the Word “Guidelines” to “Guideline” in the Document Title*

**Tallies at Close of Voting**

<b>Voting Return Data</b>		<b>Acceptance Rate Data</b>	
Voting Interest Returns	57	Voting Interest Accept Votes (VIAccept)	44
Total Voting Interests	89	Interest Reject Votes (IReject)	1
Voting Interest Return %	<b>64.04%</b>	Approval % [VIAccept / (VIAccept + IReject)]	<b>97.78%</b>
Other Returns (Intercommittee, etc.)	14	# of Interest Rejects that Need to be not found Valid for	
Total Votes	71	Final Approval % >= 90%	<b>0</b>
Total Votes with Comments	0		
Total Reject Votes	1		

**Rejects/Negatives**

<i>Company: Submitter</i>	<i>ID</i>	<i>Negs</i>	<i>Disp</i>	<i>Company: Submitter</i>	<i>ID</i>	<i>Negs</i>	<i>Disp</i>
Safety Guru, LLC: Eric Sklar	SG	1					



**Negatives from < Safety Guru, LLC: Eric Sklar >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
SG-1	Title	<i>Negative:</i> Do not make the proposed change. <i>Reason/Justification:</i> There are numerous guidelines within the document. Making the proposed change would introduce a grammatical error in the title.	<u>X</u> Not persuasive ( <b>assumes related</b> )  <b>Reason:</b> Motion to find SG-1 related and persuasive. Eric Sklar Second: Bert Planting In Favor: 1 Opposed: 5	<u>x</u> Not persuasive ( <b>requires reason</b> )  <b>Reason:</b> The TF felt that there was no real issue with changing the title and the TF was directed to do so.  <i>By/2nd:</i> Ron Macklin / Lauren Crane <i>Disc:</i> None <i>Vote:</i> 8-0. <b>Motion passed</b>	

**Comments**

There were no comments received for ballot 5009D, line item 1.

**Safety Check**

Move to find that this document:

x IS a safety document: when all safety-related information is removed, the document is not technically sound and complete.

x The Safety Checklist (Regulations 13.3) for this document is complete and has accompanied the document through the balloting process.

*By/2nd:* Ron Macklin / Edward Karl

*Disc:* None

*Vote:* 8-0. **Motion passed**

**Intellectual Property Check**

The meeting chair asked those present in person or by electronic link, if they were aware of any patented or copyrighted material in the Standard or Guideline.

(Note: Such material might have become known since the Standard or Safety Guideline was last reviewed, or might become relevant due to this ballot.)

x No patented or copyrighted material is known to exist in the Standard or Guideline. (no motion needed)

**Final Action**

Move to:

x Pass this document as balloted and forward to the A&R for procedural review.

*By/2nd:* Ron Macklin / Lauren Crane

*Disc:* None

*Vote:* 8-0. **Motion passed**

**Attachment:** 12, 5009D-LI1 Compiled Responses



#### 4.4.2 Line Item 2 – Ergonomics Clearances Considerations

##### Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	57	Voting Interest Accept Votes (VIAccept)	41
Total Voting Interests	89	Interest Reject Votes (IReject)	0
Voting Interest Return %	64.04%	Approval % [VIAccept / (VIAccept + IReject)]	100.00%
Other Returns (Intercommittee, etc.)		# of Interest Rejects that Need to be not found Valid for	
	14	Final Approval % >= 90%	0
Total Votes	71		
Total Votes with Comments	0		
Total Reject Votes	0		

##### Rejects/Negatives

There were no reject votes received for ballot 5009D, line item 2.

##### Comments

There were no comments received for ballot 5009D, line item 2.

##### Safety Check

Move to find that this document:

IS a safety document: when all safety-related information is removed, the document is not technically sound and complete.

The Safety Checklist (Regulations 13.3) for this document is complete and has accompanied the document through the balloting process.

*By/2nd:* Ron Macklin / Edward Karl

*Disc:* None

*Vote:* 8-0. **Motion passed**

##### Intellectual Property Check

The meeting chair asked those present in person or by electronic link, if they were aware of any patented or copyrighted material in the Standard or Guideline.

(Note: Such material might have become known since the Standard or Safety Guideline was last reviewed, or might become relevant due to this ballot.)

No patented or copyrighted material is known to exist in the Standard or Guideline. (no motion needed)

##### Final Action

Move to:

Pass this document as balloted and forward to the A&R for procedural review.

*By/2nd:* Ron Macklin / Lauren Crane

*Disc:* None

*Vote:* 8-0. **Motion passed**

**Attachment:** 13, 5009D-LI2 Compiled Responses



4.4.3 Line Item 3 – Changes to Appendix 1, Section 6: Handle Design Criteria, addition of an Appendix providing handle assessment criteria, and addition of several documents to §8 Related documents

**Tallies at Close of Voting**

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	57	Voting Interest Accept Votes (VIAccept)	38
Total Voting Interests	89	Interest Reject Votes (IReject)	2
Voting Interest Return %	64.04%	Approval % [VIAccept / (VIAccept + IReject)]	95.00%
Other Returns (Intercommittee, etc.)		# of Interest Rejects that Need to be not found Valid for	
	14	Final Approval % >= 90%	0
Total Votes	71		
Total Votes with Comments	2		
Total Reject Votes	2		

**Rejects/Negatives**

Company: Submitter	ID	Negs	Disp	Company: Submitter	ID	Negs	Disp
KLA-Tencor: Lauren Crane	KT	3		Safety Guru, LLC: Eric Sklar	SG	2	

**Negatives from < KLA-Tencor: Lauren Crane >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
KT-1	LI3 Section 6	<p>Negative</p> <p>Really unclear. The sentence starting “Provided forces are for hand-handle and hand-knob...” could be valid for the exception forces or for the forces later in the table (e.g. 6.7.1.)</p> <p>Proposed Solution</p> <p>Clarify to which the sentence applies such as</p> <p>“The forces <del>Provided</del> provided in the following table forees are for hand-handle and hand-knob...”</p>	<p><b>X</b> Not persuasive (assumes related)</p> <p><b>Reason:</b></p> <p>P. Schwab note:</p> <p>Alternatively suggest: “The forces provided in 6.7.1-6.9.1 and Appendix 3 are for hand-handle and hand-knob interface only and might exceed the maximum recommended forces for performing a task based on the appropriate analysis tool.”</p> <p>This looks like it might be an editorial change.</p> <p><b>Discussion:</b></p> <p>Consider addressing this with a note.</p> <p>Motion to find KT-1 related and persuasive made by Lauren Crane.</p> <p>Seconded by Ed Karl</p> <p>2 In favor</p> <p>5 Opposed</p> <p>TF recommends adding a note for clarification.</p>	<p><b>x</b> Withdrawn by Subm. (Date: July 16, 2015)</p>	



W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
KT-2	LI3 A3-1.6	Negative Table A1-2 is not relevant to this topic (and does not, I think, exist). It is table A3-2 that appears to have Ms and Os  Proposed Solution Reference the relevant table.	P. Schwab note: "Table A1-2" is a typo. It should be "Table A3-2."  <b>Discussion:</b> Motion. E. Sklar moved to correct all by an editorial change. Second: Ed Karl Vote: 9 In favor 0 Opposed	<u>x</u> <b>Withdrawn by Subm. (Date: July 16, 2015)</b>	
KT-3	LI3 Global	Negative Subjecting every possible service task to these criteria will be a huge burden to the industry and given the 'soft' science behind the criteria and the low frequency of most service tasks that can be envisioned for a tool, it does not seem to add sufficient value.  Proposed Solution Do not include reference to service tasks. Constrain only Operation and maintenance tasks.	<u>X</u> <b>Related &amp; persuasive</b>  <b>Reason:</b> P. Schwab notes: The design criteria are based on scientific research and anthropometric data, not "soft science" (see ballot background information). Numerous concessions have been made to the original handle criteria. Most of the enclosed handle criteria is <u>less stringent</u> than before (certainly for maintenance and service tasks). Specific provisions have been made to assess risk of handles that do not have ideal dimensions. There are now separate criteria for "operation" and service/maintenance tasks. Table 3-2 only applies to: "O" = operation activity, "M" = maintenance or service activity. <b>Discussion:</b> Motion made to find KT-3 related and persuasive: Lauren Second Ed Karl Vote: 5 In favor 4 Opposed	<u>x</u> <b>Withdrawn by Subm. (Date: July 16, 2015)</b>	

**Negatives from < Safety Guru, LLC: Eric Sklar >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
SG-1	A3-3.1	<b>Negative:</b> Correct table reference from "A2-1" to "A3-1" <b>Reason/Justification:</b> This appears to be a document preparation error and, as the intended reference is obvious, may be corrected by an editorial change.	P. Schwab note: "Table A1-2" is a typo. It should be "Table A3-2."  <b>Discussion:</b> See KT-2 above.	<u>x</u> <b>Not related (requires reason, follow)</b>  <b>Reason:</b> Error addressed as editorial change.  <i>By/2nd:</i> Eric Sklar / Lauren Crane <i>Disc:</i> None <i>Vote:</i> 11-0. <b>Motion passed</b>	

*W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant*

#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
SG-2	A3-4.1	<b>Negative:</b> Correct table reference from "A1-2" to "A3-2" <b>Reason/Justification:</b> This appears to be a document preparation error and, as the intended reference is obvious (The title of the correct table is in the sentence.), may be corrected by an editorial change.	P. Schwab note: "Table A1-2" is a typo. It should be "Table A3-2."  <b>Discussion:</b> See KT-2 above.	<input checked="" type="checkbox"/> <b>Not related (requires reason, follow)</b>  <b>Reason:</b> Error addressed as editorial change.  <i>By/2nd:</i> Eric Sklar / Lauren Crane <i>Disc:</i> None <i>Vote:</i> 9-0. <b>Motion passed</b>	

### Comments

Company: Submitter	ID	#	Company: Submitter	ID	#
KLA-Tencor: Lauren Crane	1		Applied Materials: Edward Karl	2	

#	Ref.	Comment	TF Response	Committee Action:
KT-1	LI3 Section 6	<b>Comment</b>  "less than the amounts below" is ambiguous Amounts of what? If one assume forces are the forces immediately below or much farther below (e.g. 6.7.1) the intended ones?  <b>Proposed Solution</b> "Dimensions of handles and knobs to which one needs to apply less than the <b>following force and torque</b> amounts <b>below</b> do not need to be assessed to the criteria in this section:"  I think this could be addressed with an editorial change.	P. Schwab note: The proposed wording is only a slight improvement.  See KT-2 above.	<input checked="" type="checkbox"/> Editorial Change: # <u>1</u> in ECs below
AMAT-1	A3-3.1	<b>Comment</b> Refer to Table A2-1 seems to be an error.  <b>Proposed Solution:</b> Correct reference to Table A3-1	P. Schwab note: "A1-2" is a typo. It should be "Table A3-2."	<input checked="" type="checkbox"/> Editorial Change: # <u>2</u> in ECs below
AMAT-2	A3-2.1 and A3-4	<b>Comment:</b> Table A1-2 is not included in the ballot. It's not clear if the reference to Table A1-2 in sections A3-2.1 and A3-4 are correct.  <b>Proposed Solution:</b> Please double-check to ensure that the references to Table A1-2 in Sections A3-2.1 and A3-4 are correct.	P. Schwab note: "Table A1-2" is a typo. It should be "Table A3-2."  <b>Discussion:</b> See KT-2 above.	<input checked="" type="checkbox"/> Editorial Change: # <u>3</u> in ECs below

### Summary of Editorial Changes

#	Ref.	Before	After	Motion to Approve: (if necessary)
KT-1	L13 Section 6	<p>(Handle dimensions are correct for use of bare hand or use of typical cleanroom gloves.)</p> <p>Dimensions of handles and knobs to which one needs to apply less than the amounts below do not need to be assessed to the criteria in this section:</p> <ul style="list-style-type: none"> <li>• Linear force: 13 N (3 lbf)</li> <li>• Torque: 0.43 N-m (3.8 lbf-in.)</li> </ul> <p>Sections 5.1 and 9 should be used to assess the location of all handles and knobs regardless of the force required.</p> <p>Unless otherwise noted, the provided dimensions are acceptable for use with or without gloves.</p> <p>If a handle is used for both machine operation and maintenance/service tasks then apply the operational criteria.</p> <p>Provided forces are for hand-handle and hand-knob interface only and might exceed the maximum recommended forces for performing a task based on the appropriate analysis tool. See Appendix 2 for a list of lifting, strength, and material handling analysis tools.</p>	<p>Dimensions of handles and knobs to which one needs to apply less than <del>the amounts below do not need to be assessed to the criteria in this section:</del></p> <ul style="list-style-type: none"> <li>• Linear force: 13 N (3 lbf)</li> <li>• Torque: 0.43 N-m (3.8 lbf-in.)</li> </ul> <p><del>do not need to be assessed to the criteria in this section.</del></p> <p>Sections 5.1 and 9 should be used to assess the location of all handles and knobs regardless of the force required.</p> <p>Unless otherwise noted, the provided dimensions are acceptable for use with or without gloves.</p> <p>If a handle is used for both machine operation and maintenance/service tasks then apply the operational criteria.</p> <p>Forces provided in §§6.7.1, 6.8.1, and 6.9.1 are for hand-handle and hand-knob interface only and might exceed the maximum recommended forces for performing a task based on the appropriate analysis tool. See Appendix 2 for a list of lifting, strength, and material handling analysis tools.</p>	<p>By/2nd: Lauren Crane / Bert Planting</p> <p>Disc: None</p> <p>Vote: 10-0. <b>Motion passed</b></p>
AMAT-1	A3-3.1	<p>Enclosed handle measurement conventions follow in <a href="#">Table A2-1</a> with cross section views shaded in blue. Hook and fingertip grip handles are measured differently depending on the direction of force applied by the hand (see green arrows below).</p>	<p>Enclosed handle measurement conventions follow in <a href="#">Table A3-1</a> with cross section views shaded in blue. Hook and fingertip grip handles are measured differently depending on the direction of force applied by the hand (see green arrows below).</p>	<p>By/2nd: Edward Karl / Lauren Crane</p> <p>Disc: None</p> <p>Vote: 10-0. <b>Motion passed</b></p>
AMAT-2	A3-4.1	<p><a href="#">Table A1-2</a>, Enclosed Handle Dimensions, provides recommended dimensions and maximum hand-handle contact forces for enclosed handles. Data in this table may be interpolated for intermediate values.</p>	<p><a href="#">Table A3-2</a>, Enclosed Handle Dimensions, provides recommended dimensions and maximum hand-handle contact forces for enclosed handles. Data in this table may be interpolated for intermediate values.</p>	<p>By/2nd: Lauren Crane / Edward Karl</p> <p>Disc: None</p> <p>Vote: 10-0. <b>Motion passed</b></p>

### Safety Check

Move to find that this document:

IS a safety document: when all safety-related information is removed, the document is not technically sound and complete.

The Safety Checklist (Regulations 13.3) for this document is complete and has accompanied the document through the balloting process.

By/2nd: Ron Macklin / Edward Karl

Disc: None

Vote: 8-0. **Motion passed**



**Intellectual Property Check**

The meeting chair asked those present in person or by electronic link, if they were aware of any patented or copyrighted material in the Standard or Guideline.  
 (Note: Such material might have become known since the Standard or Safety Guideline was last reviewed, or might become relevant due to this ballot.)

No patented or copyrighted material is known to exist in the Standard or Guideline. (no motion needed)

**Final Action**

Move to:

Pass this document with editorial changes and forward to the A&R for procedural review.

By/2nd: Ron Macklin / Lauren Crane

Disc: None

Vote: 8-0. **Motion passed**

**Attachment:** 14, 5009D-LI3 Compiled Responses

4.4.4 Line Item 4 – *Changes to Appendix 1, Section 7: New Whole Body Clearance Criteria, Movement (within Appendix 1) of Select Criteria to a New Maintenance and Service Section, and addition of documents to §8 Related Documents*

**Tallies at Close of Voting**

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	57	Voting Interest Accept Votes (VIAccept)	38
Total Voting Interests	89	Interest Reject Votes (IReject)	1
Voting Interest Return %	64.04%	Approval % [VIAccept / (VIAccept + IReject)]	97.44%
Other Returns (Intercommittee, etc.)	14	# of Interest Rejects that Need to be not found Valid for	
Total Votes	71	Final Approval % >= 90%	0
Total Votes with Comments	1		
Total Reject Votes	1		

**Rejects/Negatives**

Company: Submitter	ID	Negs	Disp	Company: Submitter	ID	Negs	Disp
KLA-Tencor: Lauren Crane	KT	1					

**Negatives from < KLA-Tencor: Lauren Crane >**

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	Ref.	Negative <u>including Justification</u>	TF Finding <u>and Reason</u>	Motion <u>and Reason</u> in Committee:	Final
KT-1	LI4 Global	Negative Subjecting every possible service task to these criteria will be a huge burden to the industry and given the 'soft' science behind the criteria and the low frequency of most service tasks that can be envisioned for a tool, it does not seem to add sufficient value.  Proposed Solution Do not include reference to service tasks. Constrain only Operation and maintenance tasks.	<b>X</b> Not persuasive (assumes related)  <b>Reason:</b> Motion made by Lauren Crane to find KT-1 related and persuasive. Second: Ed Karl 2 In favor 5 Opposed Motion fails.	<b>x</b> Withdrawn by Subm. (Date: <b>July 16, 2015</b> )	

**Comments**

Company: Submitter	ID	#	Company: Submitter	ID	#
KLA-Tencor: Lauren Crane	1				

#	Ref.	Comment	TF Response	Committee Action:
KT-1	LI4 sect. 7 intro	Comment "see for example SEMI S8 ????" is ambiguous  Proposed Solution Replace question marks with a more concrete reference.		<b>x</b> Editorial Change: # <b>1</b> in ECs below

**Summary of Editorial Changes**

#	Ref.	Before	After	Motion to Approve: (if necessary)
KT-1	Section 7 intro	If a horizontal dimension extends outside the envelope of the equipment, as provided, then the excursion should be included in the equipment ergonomics clearances (see for example SEMI-S8 ????, paragraph 7.3).	If a horizontal dimension extends outside the envelope of the equipment, as provided, then the excursion should be included in the equipment ergonomics clearances (see for example SEMI-S8, paragraph 7.3).	By/2nd: Eric Sklar / Edward Karl Disc: None Vote: 9-0. <b>Motion passed</b>



**Safety Check**

Move to find that this document:

- IS a safety document: when all safety-related information is removed, the document is not technically sound and complete.
- The Safety Checklist (Regulations 13.3) for this document is complete and has accompanied the document through the balloting process.

*By/2nd:* Ron Macklin / Edward Karl

*Disc:* None

*Vote:* 8-0. **Motion passed**

**Intellectual Property Check**

The meeting chair asked those present in person or by electronic link, if they were aware of any patented or copyrighted material in the Standard or Guideline.

(Note: Such material might have become known since the Standard or Safety Guideline was last reviewed, or might become relevant due to this ballot.)

- No patented or copyrighted material is known to exist in the Standard or Guideline. (no motion needed)

**Final Action**

Move to:

- Pass this document with editorial changes and forward to the A&R for procedural review.

*By/2nd:* Ron Macklin / Lauren Crane

*Disc:* None

*Vote:* 8-0. **Motion passed**

**Attachment:** 15, 5009D-LI4 Compiled Responses

*4.5 Approved Editorial Changes Outside of the Balloting Process*

*4.5.1 SEMI S12, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination*

**Summary of Editorial Change**

*Proposed Editorial Change:* Add a comma (,) between “Health” and “and” in the title of S12.

<i>Before</i>	<i>After</i>	<i>Motion to Approve:</i>
<b>Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination</b>	<b>Environmental, Health, and Safety Guideline for Manufacturing Equipment Decontamination</b>	<i>By/2nd:</i> Chris Evanston / Bert Planting <i>Disc:</i> None <i>Vote:</i> 5-0. Motion <b>passed</b>

**Justification:**

Editorial change proposed to correct nonconforming title of SEMI S12. The insertion of a comma between “Health” and “and” aligns with a Type of Document name allowed per section 4.2.5.1 of the SEMI Standards Regulations.

4.2.5 *Safety Guideline, n.* — A Type of Document that is advisory in nature and meets all of the requirements for approval for a Standard (see §§ 9, 10, 11, and 16) as well as the additional requirements of § 15.

4.2.5.1 *Discussion* — For a Safety Guideline that also includes environmental- and health-related content, an alternate Type of Document name of Environmental, Health, and Safety Guideline is allowed and may be used in its title. The term Safety Guideline is used throughout the *Regulations, Procedure Manual, and Style Manual* to mean both names for this Type of Document.

**Motion:** NA EHS TC Chapter approves editorial change to add “,” between “Health” and “and” in the title of S12.  
**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Eric Sklar (Safety Guru, LLC)  
**Discussion:** None  
**Vote:** 10-0 in favor.

## 5 Subcommittee & Task Force Reports

### 5.1 Manufacturing Equipment Safety Subcommittee (MESSC)

Lauren Crane reported.

- New Business Discussion
  - S22 TF is discussing relocating redundant material to either S2 or S22 and is looking for some Committee guidance.
  - Discussion:
    - Many topics are in S2 and also in related documents: S8, S14, S22
    - Ergo was moved to S8 and little/no items left in S2
    - S2 and S22 have duplicate information, thus need to stay aligned
    - S14 and S10 risk tables not aligned
    - Move “all” electrical into either S2 or S22?
- Some more discussion points
  - S22 TF was originally asking for direction on whether to put S2/S22 redundant information into one or the other, but in meeting it was noted that the S22 SNARF states intention to move such information to S22. MESSC believes this is sufficient guidance (SNARF 4316)
  - An initial motion proposed to instruct all TF’s as a general principle, to put design and test information into a separate document pointed to by S2 (performance or design)
    - Rationale: other document could more easily be fully reviewed, or ballot an entire section/topic of S2
    - Japan representative expressed concerns
- To EHS Committee
  - Original motion to “instruct all TF’s, as a general principle, to put design and test information into a separate document pointed to by S2”:
    - Passed: Crane, Sklar, 10-1

- But with further discussion voted to reconsider the motion: Crane, Sklar, 5-4
  - New Motion: “Move to instruct all TF’s to consider the feasibility of putting design and test information into a separate document pointed to by S2:”
  - Crane, Macklin: 7-1
- Notes: (performance or design)
  - Change to some TFOF’s and SNARF’s may be needed if actions are proposed arising from this feasibility consideration.
  - Guidance on how to differentiate performance criteria from design criteria may be needed.

**Motion:** NA EHS TC Chapter instructs all TF’s to consider the feasibility of putting design and test information into a separate document pointed to by S2.

**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Eric Sklar (Safety Guru, LLC)

**Discussion:** There is a desire to put design and test info outside of S2 than keeping it within S2. Existing related content would be moved out of S2. Glenn Holbrook supported the idea idea, similar to what was done with heated chemical baths. This motion provides guidance to TF looking for guidance.

**Vote:** 4-1 in favor.

**Attachment:** 16, MESSC Report

## 5.2 Energetic Materials EHS Task Force

- Meeting Summary
  - Two negatives formally found to be related and persuasive – ballot failed
  - Began work through negatives during an extended Task Force session
  - Remaining negatives and comments will be addressed during weekly Task Force conference calls
    - Tuesdays 12:00 – 2:00 Pacific
  - Goal is to have document ready for ballot for Cycle 7 (August 17th)
  - Request a meeting for Energetic Materials TF during Fall Standards Meeting

### Additional Committee Discussion:

- Eric Sklar reported that he will set-up an unofficial meeting calendar to help manage the TF meetings. He asked committee members to contact him if they wish to be included in this calendar group.

**Attachment:** 17, Energetic Materials EHS Task Force Report

## 5.3 Device Removal and Shipment (E34 Revision) Task Force

Eric Sklar reported.

- Current activities:
  - Preparation of Line Item ballot to address Negatives on the E34 Reapproval Ballot
    - Draft prepared by TF Leader.
    - Revised in e-mail conversation with the other two listed members of the TF.



- Presented at meeting
  - Suggestion was made that there may be little use of this document, so EHS Committee should consider making it “Inactive”
  - If EHS Committee does not make E34 Inactive, ballot proposed Line Item Revisions in Cycle 6.
- Future Plans / Timeline:
    - Option 1: EHS Committee makes E34 “Inactive”
      - Disband TF
    - Option 2: Line Item Ballot
  - For Committee Attention
    - Make E34 an “Inactive” Safety Guideline?
    - Authorize Line Item Ballot in Cycle 6.

**Motion:** NA EHS TC Chapter approves E34 to go into Inactive status..

**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Bert Planting (ASML)

**Motion withdrawn.**

**Motion:** NA EHS TC Chapter approves to Ballot E34 LI revision for C6-15.

**By / 2<sup>nd</sup>:** Eric Sklar (Safety Guru, LLC) / Carl Wong (AKT)

**Discussion:** Eric: I suspect that every company has a process for shipping MFC but these processes depend on E34. If there is a need for this, then people can show up and lead the TF.

Another committee member pointed out that there a number a facilities with MFCs without knowledge on how to return them safely. The companies that want them to be returned safely may want E34 available to specify to the companies returning them. However, there are usually instructions provided when these are returned. Placing this document into Inactive provides the impression that this document is not needed anymore.

**Motion:** Strike the first vote.

**By / 2<sup>nd</sup>:** Ron Macklin (Macklin & Associates) / Lauren Crane (KLA-Tencor)

**Discussion:** None

**Vote:** 4-5 in favor. Motion fails.

**Attachment:** 18, Device Removal & Shipment (E34 Revision) Task Force Report

#### 5.4 Fire Protection Task Force

Eric Sklar reported.

- Current activities:
  - Address Negatives from Failed Ballot #5590 (2014)
    - S14 5yr Renewal

- TF Future Plans / Timeline:
  - Alignment of S14 with S10
    - Future Line Item Ballot for S14 to Align Cell 4A of Risk Table with S10
    - Clarify Definition of Severities
  - Add a Flow Chart or Option for S14 “Lite”
    - For Equipment with Low Fire Risk
  - Move Detection & Suppression Design Criteria from S2 back to S14
    - Make Reference in S2 that compliance with this section is still required if detection/suppression system is provided
- Future Ballots on Re-Approval Changes
  - Date TBD

**Attachment:** 19, Fire Protection Task Force Report

### 5.5 Hazardous Energy Isolation Task Force

Mark Fessler reported.

- Section 17; “Control of Hazardous Energy”
  - Renamed/renumbered to improve readability and understanding, SEMI S2 Section 17 has been update to have the following 6 sub-sections:
    - 17.1 General
    - 17.2 Requirements for Isolation of Hazardous Energy
    - 17.3 Requirements for the De-Energizing (or Restraining) Hazardous Energies
    - 17.4 Requirements for Verification of De-Energization of Hazardous Energies
    - 17.5 Special Considerations For Non-Electrical Hazardous Energies
    - 17.6 Requirements for Installation and Maintenance Manuals
- Some of the key issues TF is currently dealing with:
  - “*readily accessible*” has current definition in SEMI terms, but TF may want to modify current or create new definition specific for LOTO locations... how easy is it to get to perform??
    - where to isolate/lock
    - where to de-energize
    - where to verify
  - “*integrated locking capability*” – how strict do we want to be about this?
  - “*special considerations for non-electrical*”
    - chemical isolation valve has a positive means of closure
    - positive indicators to show the status of the valve actuation
    - addition steps also important (chemical LOTO) related to draining, flushing and purging/drying lines

- Important new definitions need to define:
  - *integral locking capability*
  - *de-energization / zero energy state*
  - *readily accessible* currently states to not change levels, climb over or ladders) but do we want to expand this???
  - *durability of control*: what is minimum requirements – if I can remove without damage or use of tools - that is not desired!
  - *control reliable*:
  - *EID – energy isolation device* (or HEID?) hazardous energy isolation may be different than EID?
  - *Control of Hazardous Energy*; CoHE hazardous energy versus hazard (CoHE = unexpected release)

More expected....

- Goal: Planned teleconferences
  - every month – Wednesday’s 9am – 10:30am (Pacific Time);

**Attachment:** 20, Hazardous Energy Isolation Task Force Report

#### 5.6 Seismic Protection Liaison Task Force

Lauren Crane reported.

- Agenda: Continue Review of Ballot comments with a view to making a recommendation to the Japan Task force for the next ballot.
- Comments Review
  - Open compiled comments with TF review notes.
  - Open draft proposed next ballot.
- Plans
  - Continue developing ballot recommendation for Japan TF.
  - Aim for completion by end of Sept.
  - No NA Committee Chapter Actions

**Attachment:** 21, Seismic Protection Liaison Task Force Report

#### 5.7 S1 Revision Task Force

Ballot 5623 (line item revisions to SEMI S1) passed NA EHS TC Chapter review during the NA Standards Fall 2014 meetings as well as subsequent procedural review by the ISC Audits & Reviews Subcommittee. The ballot was processed by SEMI Standards Publications and the S1 Publication Proof was sent to the authors for review and approval. Lauren Crane presented to the committee the following editorial changes performed during the final document processing for review and approval:

- Note 21 following 11.3.4–

Move to make an editorial change to

“ANSI/[NEMA](#) Z535.4 specifies the signal word NOTICE to be italicized sans serif letters”

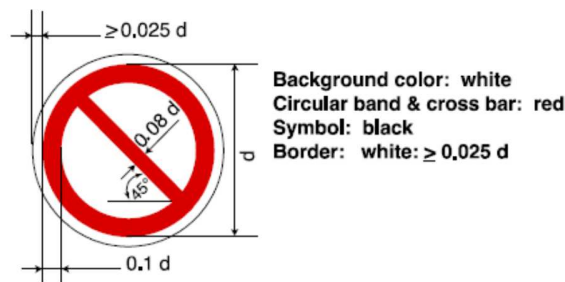
Rationale: “ANSI/NEMA Z535.4 is the proper designation of the document.”

- Motion:** NA EHS Committee approves to make the editorial change.
- By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Cliff Greenberg (Nikon Precision)
- Discussion:** None
- Vote:** 10-0 in favor.

- 9.10.2.1 and 9.10.3.1

Ballot passed with error - Move to make an editorial change to

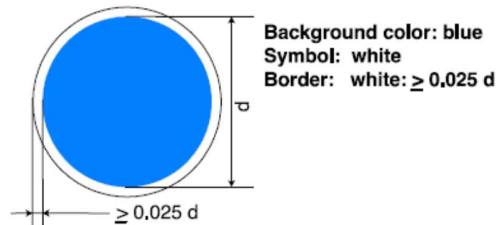
“9.10.2.1 *Format and Color* — The prohibition surround shape should be a circular band with a diagonal bar. The background color should be white. The circular band and diagonal bar should be red. The symbol representing the prohibited action should be black and is preferably shown behind the red slash. The border should be white; the border is optional if the surrounding background is white or yellow. See Figure ~~10~~9 for more information. Dimensions are nominal; any dimensions within +/- twenty percent of the values in the Figure below are acceptable.



**Figure 9**  
**Prohibition Symbol Surround Shape”**

and

“9.10.3.1 *Format and Color* — The background color should be blue. The symbol representing the mandatory action should be white. The border should be white; the border is optional if the surrounding background is white. See Figure ~~10~~10 for more information. Dimensions are nominal; any dimensions within +/- twenty percent of the values in the Figure below are acceptable.



**Figure 10**  
**Mandatory Action Symbol Surround Shape”**

**Motion:** NA EHS Committee approves to make the editorial change.  
**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Bert Planting (ASML)  
**Discussion:** None  
**Vote:** 8-0 in favor.

- Addition of ‘Safety’ in front of ‘Guideline’

Move to change ‘Guideline’ to ‘Safety Guideline’ in the 26 instances shown in Proof 1.

**Motion:** NA EHS Committee approves to make the editorial change.  
**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Eric Sklar (Safety Guru, LLC)  
**Discussion:** Expect to see more of these types of changes to come  
**Vote:** 7-0 in favor.

Lauren Crane requested the committee to approve disbandment of the S1 Revision TF:

**Motion:** NA EHS Committee approves to disband the S1 Revision TF.  
**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Ron Macklin (Macklin & Associates)  
**Discussion:** None  
**Vote:** 7-1 in favor.

### 5.8 S2 Ladders & Steps Task Force

Ron Macklin reported.

- Current activities:
  - Taskforce met to review results of ballot 4449E.
  - Total of 5 reject votes comprising of 37 negative received on last ballot.
  - Taskforce found one negative that was clear enough to fail the ballot and return it to TF for rework. This was addressed during ballot adjudication in committee.
- Future Plans / Timeline / Requests
  - Taskforce expressed the desire to continue to work toward consensus and get this material added to S2.
    - Taskforce plans to hold teleconferences in an effort to prep for ballot submission for Cycle 7 (submission deadline is August 17th).
  - Taskforce request Committee approval to Ballot (4449F) during Cycle 7 2015 voting cycle.
  - Taskforce plans to hold teleconferences on Wednesdays beginning July 22, 2015 at 1430 Pacific Time in effort to prepare material for sending out to ballot during Cycle 7 2015.

**Motion:** NA EHS TC Chapter finds SNARF # 4449 as continuing.  
**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Eric Sklar (Safety Guru, LLC)  
**Discussion:** None  
**Vote:** 11-0 in favor.

**Attachment:** 22, S2 Ladders & Steps Task Force Report

### 5.9 S2 Non-Ionizing Task Force

Sean Larsen reported.

- Current Activities
  - The TF leader/tech editor is still lagging in preparing the previously discussed line item to modify RI7
    - This is to get the graphs from the previous background statement and added to better explain how we set the previously completed limit values
  - Additionally, reviewing the relatively new EU Worker Protection directive for electromagnetic (EM) fields
- New EU EM Directive Summary
  - The new directive sets alarm levels and various exposure limit values
    - When the exposures are below the Action Levels, the employer is deemed to be in compliance
    - When the exposure levels are above the Alarm levels, the employer must either:
      - Complete an assessment with periodic reassessments, possibly including measurements and calculations, to demonstrate the exposure is below the exposure limit values (ELVs), or
      - When the exposure levels exceed the ELVs, the employer must establish an action plan with technical or organizational measures to reduce the exposures below the ELVs
  - With this position, I am guessing the Alarm Levels will be more accepted to align with
- Future Plans / Timeline
  - The TF is looking to generate two line item changes to S2
    - The overdue one, to add the cleaned up tables to RI7 to demonstrate how we developed the existing published levels
    - A comparison to the new EU Worker Protection directive and 2014 version of ACGIH to demonstrate we have reviewed against the updated external requirements and are still good.
      - If the directive is found to have lower values, this will be brought back to the TF to discuss.

### 5.10 S5 Revision / Flow Limitation Task Force

Eric Sklar reported.

- Current activities:
  - Preparation of Line Item ballot to address Negatives on the S5 Reapproval Ballot
    - Draft being prepared by TF Leader.
    - Presented at meeting
    - TF Leader asked TF's preference on inclusion of non-critical flow

- Excluded from previous document, as rarely relevant for cylinder valve outlet flow restrictors
- May however be relevant for flow limiting devices in process equipment or facility distribution systems
- Inclusion would require substantial technical development and complicate document somewhat
- TF voted 4:1 to exclude non-critical flow from balloted changes
  - Ballot proposed Line Item Revisions in Cycle 7.
- Future Plans / Timeline
  - Line Item Ballot in Cycle 7 to address concerns identified in failed S5 Reapproval ballot.

**Motion:** NA EHS TC Chapter authorizes submission of S5 LI ballot for Cycle 7-15.

**By / 2<sup>nd</sup>:** Eric Sklar (Safety Guru, LLC) / Lauren Crane (KLA-Tencor)

**Discussion:** None

**Vote:** 8-0 in favor.

**Attachment:** 23, S5 Revision / Flow Limitation Task Force Report

#### 5.11 S6 Revision Task Force

Glenn Holbrook reported.

- Current activities:
  - Realistic worst case release scenarios and release rate calculations
  - Line item balloting
  - Gas detector approval/listing requirement
  - White Paper or related information development for Gas Panel design
- Five Proposed Line Item Changes
  - #1 – Under Section 3 Limitations add (will require subsequent note re-numbering if passes):

Note 7: Based on the definition of this semiconductor manufacturing equipment (SME) (which does not include equipment if the equipment is part of a facility and can support more than one piece of SME) this guideline would not apply to gas purification systems, valve manifold boxes, gas cylinder cabinets, gas blending system, or other facility related equipment designed to support more than one SME. While this guideline could be useful in testing this equipment the selection of test parameters including “passing criteria” used during testing should be based upon a hazard analysis conducted by a trained professional such as an industrial hygienist, ventilation engineer, or chemical engineer.

- #2 – In Definitions modify

5.2.2.21 *flow volume rate, Q* — the volumetric flow rate of an effluent stream passing a given location in the ventilation system per unit of time. It is commonly expressed in cubic meters per hour (m<sup>3</sup>/hr). The US Customary unit is cubic feet per minute (cfm).

- #3 – In Section 7 modify

7.2.3.3 For testing of fault conditions ~~All~~ reasonably foreseeable, single fault conditions (e.g., overheating, overpressurization) should be considered. Additionally, for liquid and gas piping systems, the disconnection of each non-welded connection should be considered, ~~whether or not it is~~ if “reasonably foreseeable.” Releases from failure should be estimated as follows:

- #4 – In Section 7 modify

7.2.3.3.1 For foreseen failure points in gas and liquid piping systems (including each non-welded connection), the release rate specified herein is the rate at which the substance of concern would flow if the primary containment were disconnected or breached at the point of failure. This depends on the substance of concern, its pressure, and the flow limitation (deliberate, e.g., by flow limiting devices or incidental, e.g., by filters) imposed by the engineering controls in the fluid source and the primary containment system. Appendix 1 provides conservative models for estimating the release of a gas from a disconnected line and for estimating the vapor generation rate from release of liquids. These models should be used if the release or vapor generation rate has not been measured.

- #5 – In Section 7 modify

7.2.3.3.2 If the release rated used in not based upon appendix 1 it should be based upon a hazard analysis conducted by trained professionals such as an industrial hygienist, ventilation engineer, and/or chemical engineer. The hazard analysis should consider all realistic worst case release conditions including disconnection of non welded connections. The engineering controls ~~may be~~ incorporated in the SME or specified by the equipment supplier ~~may specify~~, in documentation provided to the user, ~~that the flow of a substance of concern from a facility to the SME be limited, by an engineering control, to a particular value~~ should be considered during the hazard analysis and be the basis for the determination of the release rate. The release rate used in determining conformance to this safety guideline should not depend on administrative controls, such as assembly and leak checking procedures. The release rate should not be less than the maximum process flow rate.

- Glenn Holbrook also mentioned that the TF is getting feedback on gas detectors.

**Motion:** NA EHS TC Chapter finds SNARF #4975 (Revision to SEMI S6, *EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment*. Line item revisions for addressing gas detectors and other concerns) as continuing.  
**By / 2<sup>nd</sup>:** Glenn Hollbrook (TUV SUD) / Joseph Barsky (TUV Rheinland NA)  
**Discussion:** None  
**Vote:** 4-0 in favor.

**Attachment:** 24, S6 Revision Task Force Report

### 5.12 S8 (Ergonomics) Task Force

Paul Schwab presented a new SNARF for S8 line item revisions since work through SNARF #5009 has been completed.

- SNARF for: Line Item Revisions to SEMI S8. Addition of reference to a manual material-handling guide in SEMI-S8, Appendix 2, Lifting, Strength, and Materials Handling.
- Rationale: There are areas within the current S8 document that need clarification or expansion. Some of these include:



1. Better define scope of operations, maintenance and service tasks to be assessed.
2. Definition for defining the hand-object coupling point so consistent analysis can be achieved.
3. Display heights guidance is outdated and needs to be updated to address the advances of technology in display technologies, formats and size.
4. Guidance on how to assess rotational knob torques needs development.
5. Guidance on hand access clearances needs to be refreshed and improved.
6. Guidance on toe clearance, once in the document, but now somehow absent, needs to be replaced.
7. Develop guidance on hand crank design and use, which has been requested for several years.
8. Improve and expand guidance concerning load port heights. Currently, the document only addresses wafer cassettes.
9. Explore/develop guidance for other areas of industry (A/T related equipment) which use other types of device carriers (JEDEC trays, lead frame cassettes, ring carriers, etc...).
10. Explore/develop guidance for the handling of items without handles since a supplier can avoid the handle design criteria in Section 6 by not using handles at all, which is not in the spirit of the SEMI-S8.
11. Explore/develop risk assessment guidance for non-compliant design criteria to aid equipment evaluators with completing consistent risk assessments.

Create a new Related Information section with details on how those guidelines that were not taken directly from their original sources were developed (for example, enclosed handle criteria). This will assist with any future revisions of the document and should help to reinforce the credibility of SEMI-S8.

• Scope:

1. Better define scope of operations, maintenance and service tasks to be assessed.
2. Improvements to SEMI-S8 Appendix 1 SESC including:
  - a. Revise service criteria to be more “precise”
  - b. Hand-object coupling point definition
  - c. Display height criteria revisions
  - d. Load port heights for things other than cassettes
  - e. JEDEC trays, lead frame cassettes, ring carriers, etc...
  - f. Rotational control knobs (almost complete)
  - g. Hand access clearance (almost complete)
  - h. Toe clearance
  - i. Hand cranks
  - j. Criteria for items without handles that are handled manually.
3. Add references to assist non-ergonomist with application of the material handling tools referenced in SEMI-S8 Appendix 2.
  - a. Areas of the current structure of S8 that will be affected:
    - i. SEMI S8 Section 8: Related Documents
    - ii. SEMI S8 Appendix 2 - Lifting, Strength, and Materials Handling
4. New Related Information Section with risk assessment guidance for non-compliant design criteria.

New Related Information section with details on how certain guidelines that were were developed (for example, enclosed handle criteria).

**Motion:** NA EHS TC Chapter approves new SNARF for S8 line item revisions.  
**By / 2<sup>nd</sup>:** Paul Schwab (Texas Instruments) / Ron Macklin (Macklin & Associates)  
**Discussion:** None  
**Vote:** 11-0 in favor.

**Attachment:** 25, S8 (Ergonomics) Task Force Report

### 5.13 S10 Task Force

Bert Planting reported.

- TF Leaders: Bert Planting (ASML), Thomas Pilz (Pilz, GmbH); Tech Editor: Eric Sklar (Safety Guru)
- Planning
  - 5-year reapproval ballot was sent out and received several negatives
  - Action plan
    - First solve several small issues by using line item ballots
    - Major discussion on use of risk ranking tables
- Doc 5718B
  - Sent for ballot – Cycle 2, 2015
  - Discussed at NA Spring 2015 meetings – One line item (approved)
- Next Steps
  - Disband the current task force
  - Do we want to address the risk ranking tables?
    - Yes – make new TFOF and SNARF
    - No – Stop activities until the next 5-year review cycle
- Discussion and decision
  - Discussion
    - Align S14 with S10
    - How to deal with ergonomic issues
    - Issues raised on severity table (E.g. What is major or minor)
    - Likelihood table (How are numbers assigned)
  - Taskforce meeting decided
    - Have taskforce meeting to prepare for fall meetings
- Have teleconferences Sept/Oct
  - Final decision to rework the tables fall meeting 2015
  - Decide how to continue

Bert Planting also reported that Eric Sklar and Mark Fessler will serve as TF co-leaders. Bert to confirm whether Thomas Pilz intends to step down.

**Motion:** NA EHS approves Mark Fessler and Eric Sklar as new TF co-leaders for the S10 TF.

**By / 2<sup>nd</sup>:** Bert Planting (ASML) / Lauren Crane (KLA-Tencor)

**Discussion:** None

**Vote:** 5-0 in favor.

**Attachment:** 26, S10 Task Force Report

#### 5.14 S22 (Electrical Safety) Task Force

- Motion:** NA EHS TC Chapter finds SNARF # 4316 (coordinated revisions to align electrical requirements in SEMI S2 and SEMI S22) as continuing.
- By / 2<sup>nd</sup>:** Glenn Hollbrook (TUV SUD) / Joseph Barsky (TUV Rheinland NA)
- Discussion:** None
- Vote:** 4-0 in favor.

#### 5.15 S23 Global Task Force

Lauren Crane reported.

- Agenda
  - Required meeting elements
  - Review GTF Implications
  - Review Proposed New SNARF
  - Agree on Ballot prep. Date Goal.
  - Agree on which TC to publish next ballot.
  - Agree on which TC to adjudicate next ballot.
  - Continue Review of Draft Ballot Proposal
  - E.g. “per transistor” metric
- Target Date and Decisions
  - Take revised SNARF to NA EHS TC for approval. – TF approved
  - Work on Draft with a view to completing prior to next JP EHS TC meeting (date = Sep – goal to finish draft by OCT)
  - Motion in NA EHS TC to ask JP TC to publish ballot and adjudicate (does this required TC motion or just informing them?)
  - After NA TC Chapter review check in with staff to make sure full TC review occur “TC Member Review”
  - Take SNARF to JP EHS TC for approval.
  - Go to ballot as soon as possible after next JP EHS TC.
- Draft Overview – Primary Focus of Changes
  - Changes related to ‘energy efficiency’ vs. ‘energy conservation’ [Subsystems Definitions from ESEC TF, under NA I&C TC Chapter]

Lauren then presented the proposed new SNARF for S23 revisions

- **SNARF for:** Revision to SEMI S23, *Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment*. New scope and small changes.
- **Rationale:** 1.) The TF has come to understand that equipment efficiency improvements may be more practicable than overall equipment energy reduction and would like to provide guidance for this topic in S23, and are advised by Japan TC that providing efficiency guidance requires a scope change because ‘energy efficiency’ is not quite the same as ‘energy conservation’. 2) The TF has prepared guidance on energy efficiency improvements for S23

section 12 and would like to ballot that guidance. 3) Efforts in the ESEC TF to create a subsystem 'sleep mode' communications protocol drive a need to better define and describe subsystems in S23.

- Scope:

- 1) The scope of S23 will be modified to include 'energy efficiency' (meaning a concept of energy used per unit of achieved work and which implies a conservation of energy), and related changes will be made throughout the document where 'conservation' is currently used, as needed.
- 2) Guidance will be provided related to the point that if the productive efficiency of a tool is increased at a greater ratio than the related rise in energy consumption, it can be beneficial to the overall energy conservation goal.
- 3) Some definitions related to subsystems and text explain how subsystems relate to main equipment.

Additional Committee Discussion on Proposed New SNARF for S23 Revision:

Since this activity will involve revising the scope section of S23, it is considered a major revision. The main concern raised was that a major revision ballot "opens up" the entire S23 Safety Guideline for scrutiny and there was a concern that this could potentially require a lot of resources if there is an abundance of negatives received. Supika Mashiro pointed out that the Japan TF already expects this effort to be a major revision activity. For the concern mentioned above, Supika also pointed out that the Ratification Ballot may be a viable option to address some of the negatives received (if appropriate). The committee also spent some time discussing whether it was really necessary to introduce 'energy efficiency' in the scope of S23 since section 2.5 already talks about "rate" which can be considered as already encompassing energy efficiency. This discussion would be addressed in detail within the GTF. Furthermore, the GTF will also need to address the definitions developed by the ESEC TF that the S23 TF felt belong in S23.

**Motion:** NA EHS TC Chapter approves S23 major revision SNARF as edited [*at this meeting, a copy of the approved SNARF is provided as Attachment 28 of these minutes*].

**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Cliff Greenberg (Nikon Precision)

**Discussion:** None

**Vote:** 5-3 in favor.

**Motion:** NA EHS TC Chapter asks JP EHS TC Chapter to publish S23 revision ballot and adjudicate in Japan.

**By / 2<sup>nd</sup>:** Lauren Crane (KLA-Tencor) / Bert Planting (ASML)

**Discussion:** None

**Vote:** 8-1 in favor.

**Action Item:** 2015Jul #04, Paul Trio to distribute proposed SNARF for S23 major revision to the global EHS TC membership for review and feedback.

**Attachment:** 27, Global S23 Task Force Report

**Attachment:** 28, S23 Revision SNARF

#### 5.16 S27 Revision Task Force

Chris Evanston reported that the task force is continuing its discussions towards the development of Ballot #5891, Revision to SEMI S27, *Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports*.

## 6 Old Business

### 6.1 SNARF Extensions

Per section 8.3.2 of the SEMI Standards *Regulations*, the Standard Document Development Project Period shall not exceed three years. The SNARF becomes invalid and the Document development activity defined by the SNARF must be discontinued after this period. However, if the Document development activity is found to be continuing, but cannot be completed within the current project period, the TC Chapter may grant a one-year extension at a time, as many times as necessary.

During the SEMI Staff Report {see section 3.6 of these minutes}, Paul Trio reported that committee action will be needed on whether document development extensions for the following SNARFs will be necessary:

- 4975, Revision to SEMI S6, EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment (Line item revisions for addressing gas detectors and other concerns)
- 4316, Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment and SEMI S22, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment (Coordinated Revisions to align electrical requirements in SEMI S2 and SEMI S22)
- 4449, Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders)

The NA EHS TC Chapter found all SNARFs listed above as continuing {see sections 5.8, 5.11, and 5.14 of these minutes}.

## 7 New Business

### 7.1 Review of Recent SEMI Standards Regulations Changes

Sean Larsen will schedule a meeting after SEMICON West to discuss the recent changes to the SEMI Standards *Regulations* and to identify issues for consideration by the NARSC Regulations Working Group during the NA Fall 2015 meetings.

**Action Item:** 2015Jul #05, Sean Larsen to schedule a meeting for NA EHS TC Chapter members to discuss recent changes to the SEMI Standards *Regulations*.

### 7.2 Ballot Authorization

#	When	SC/TF/WG	Details
5761A	Cycle 7, 2015	Energetic Materials EHS TF	New Standard: Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes
4449F	Cycle 7, 2015	S2 Ladders & Steps TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> . Delayed Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders
4316M	Cycle 7, 2015	S22 TF	Line Item Revision to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> , and SEMI S22-0715, <i>Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment</i> . Delayed Revision related to Fail-to-safe Equipment Control Systems (FECS)
5892	Cycle 7, 2015	Flow Limitation (S5 Revision) TF	Line Item Revisions to SEMI S5, <i>Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves</i>

#	When	SC/TF/WG	Details
4683G	Cycle 7, 2015	S2 Chemical Exposure TF	Line Item Revision to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> . Delayed Revisions Related to Chemical Exposure

**Motion:** NA EHS TC approves distribution of ballots as shown above.  
**By / 2nd:** Bert Planting (ASML) / Cliff Greenberg (Nikon Precision)  
**Discussion:** None  
**Vote:** 5-0. Motion passed.

### 7.3 NA EHS Proposed Fall 2015 Meeting Schedule

#### NA Standards Fall 2015 Meetings

November 2-5, 2015  
 SEMI Headquarters  
 3081 Zanker Road  
 San Jose, California 95134  
 U.S.A.

#### Monday, November 2

- S22 (Electrical Safety) TF (9:00 AM to 10:30 AM)
- S27 (Report Contents) Revision TF (10:30 AM to 11:30 AM)
- S2 Non-Ionizing Radiation TF (11:30 AM to 12:00 Noon)
- EHS Process Meeting (1:00 PM to 2:00 PM)
- S2 Chemical Exposure TF (2:00 PM to 3:30 PM)
- Flow Limitation (S5 Revision) TF (3:30 PM to 5:00 PM)
- NA Seismic Liaison TF (5:00 PM to 6:00 PM)

#### Tuesday, November 3

- S10 TF (10:00 AM to 11:00 AM)
- S6 Revision TF (11:00 AM to 12:00 Noon)
- Energetic Materials EHS TF (1:00 PM to 2:30 PM)
- S2 Ladders & Steps TF (2:30 PM to 4:00 PM)
- S8 Ergonomics TF (4:00 PM to 5:00 PM)
- S23 Revision Global TF (5:00 PM to 6:00 PM)

#### Wednesday, November 4

- {International Compliance and Regulatory Committee [ICRC] (8:00 AM to 12:00 Noon)}
- EHS Leadership Meeting (12:00 Noon to 1:00 PM)
- Hazardous Energy Control Isolation Devices TF (1:00 PM to 2:30 PM)
- Manufacturing Equipment Safety Subcommittee [MESSC] (2:30 PM to 4:00 PM)
- Fire Protection TF (4:00 PM to 5:00 PM)

#### Thursday, November 5

- EHS Committee (9:00 AM to 6:00 PM)

For more information, please visit: <http://www.semi.org/standards>

So that meeting attendees can plan their travel schedules accordingly, the committee agreed that the last day to make changes to the NA Fall 2015 meeting schedule is October 2, 2015.



7.4 New Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2015Jul #01	Paul Trio	Distribute proposed Japan EHS TC Chapter revisions to EHS Technical Committee charter to the global EHS TC membership for review and feedback.
2015Jul #02	Paul Trio, Natalie Shim	Report on the mechanism used for developing/conducting STEP/education programs in Korea.
2015Jul #03	Paul Trio	Inform Junko Collins that SEMI S19 is due for 5-Year Review.
2015Jul #04	Paul Trio	Distribute proposed SNARF for S23 major revision to the global EHS TC membership for review and feedback.
2015Jul #05	Sean Larsen	Schedule a meeting for NA EHS TC Chapter members to discuss recent changes to the SEMI Standards Regulations.

**8 Next Meeting and Adjournment**

The next meeting of the North America Environmental, Health, and Safety committee is scheduled for November 5 in conjunction with the NA Standards Fall 2015 Meetings in San Jose, California. Adjournment was at 6:10 PM.

**Respectfully submitted by:**

Paul Trio  
SEMI North America Standards  
Phone: +1.408.943.7041  
Email: ptrio@semi.org

Minutes approved by:

Chris Evanston (Salus Engineering), Co-chair	
Sean Larsen (Lam Research), Co-chair	
Bert Planting (ASML), Co-chair	September 6, 2015

**Table 6 Index of Available Attachments #1**

#	<i>Title</i>	#	<i>Title</i>
01	SEMI Standards Required Meeting Elements	15	5009D –LI4 Compiled Responses
02	NA EHS Spring 2015 Meeting (April 2) Minutes	16	MESSC Report
03	Japan EHS Committee Report	17	Energetic Materials EHS TF Report
04	Taiwan EHS Report	18	Device Removal & Shipment (E34 Revision) TF Report
05	Korea EHS Report	19	Fire Protection TF Report
06	Leadership Report	20	Hazardous Energy Isolation TF Report
07	SEMI Staff Report	21	Seismic Protection Liaison TF Report
08	4316L-LI1 Compiled Responses	22	S2 Ladders & Steps TF Report
09	4316L -LI2 Compiled Responses	23	S5 Revision / Flow Limitation TF Report
10	4449E-LI1 Compiled Responses	24	S6 Revision TF Report
11	4683F-LI1 Compiled Responses	25	S8 (Ergonomics) TF Report
12	5009D-LI1 Compiled Responses	26	S10 TF Report
13	5009D –LI2 Compiled Responses	27	S23 Global TF Report
14	5009D –LI3 Compiled Responses	28	S23 Revision SNARF

#1 A .zip file containing all attachments for these minutes is available at:

<http://downloads.semi.org/standards/minutes.nsf/91eeb64567db378c88256dcf006a4252/fe56c2f09a14ca3c88257eba00655783!OpenDocument>

For additional information or to obtain individual attachments, please contact Paul Trio at the contact information above.