North America EHS Committee
Meeting Summary and Minutes

NA Standards Spring 2015 Meetings
2 April 2015, 0905–1500 Pacific Time
SEMI Headquarters in San Jose, California

Next Committee Meeting
North America Standards Meetings at SEMICON West 2015
Thursday 16 July 2015, 0900–1600 Pacific Time
San Francisco Marriott Marquis Hotel in San Francisco, 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

<table>
<thead>
<tr>
<th>Company</th>
<th>Last</th>
<th>First</th>
<th>Company</th>
<th>Last</th>
<th>First</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Energy</td>
<td>Johnson</td>
<td>J.D.</td>
<td>Salus Engineering</td>
<td>Evanston</td>
<td>Chris</td>
</tr>
<tr>
<td>ASML</td>
<td>Planting</td>
<td>Bert</td>
<td>Seagate</td>
<td>Layman</td>
<td>Curt</td>
</tr>
<tr>
<td>Hitachi Kokusai</td>
<td>Matsuda</td>
<td>Mitsuhiko</td>
<td>Tokyo Electron</td>
<td>Mashiho</td>
<td>Supika</td>
</tr>
<tr>
<td>IBM</td>
<td>Petry</td>
<td>Bill</td>
<td>Tokyo Electron</td>
<td>Fessler</td>
<td>Mark</td>
</tr>
<tr>
<td>KLA-Tencor</td>
<td>Crane</td>
<td>Lauren</td>
<td>TUV Rheinland NA</td>
<td>Pochon</td>
<td>Stephan</td>
</tr>
<tr>
<td>Lam Research</td>
<td>Claes</td>
<td>Brian</td>
<td>TUV SUD America</td>
<td>Prasad</td>
<td>Ron</td>
</tr>
<tr>
<td>Lam Research</td>
<td>Larsen</td>
<td>Sean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nikon Precision</td>
<td>Greenberg</td>
<td>Cliff</td>
<td>SEMI</td>
<td>Baliga</td>
<td>Sanjay</td>
</tr>
<tr>
<td>Product EHS Consulting</td>
<td>Brody</td>
<td>Steven</td>
<td>SEMI</td>
<td>Trio</td>
<td>Paul</td>
</tr>
</tbody>
</table>

Table 2 Leadership Changes

<table>
<thead>
<tr>
<th>Group</th>
<th>Previous Leader</th>
<th>New Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Task Force: Device Removal and Shipment TF</td>
<td></td>
<td>Eric Sklar (Safety Guru, LLC) will serve as TF leader.</td>
</tr>
<tr>
<td>New Task Force: Flow Limitation TF</td>
<td></td>
<td>Eric Sklar (Safety Guru, LLC) will serve as TF leader.</td>
</tr>
<tr>
<td>New Task Force: S27 Revision TF</td>
<td></td>
<td>Chris Evanston (Salus) will serve as TF leader.</td>
</tr>
<tr>
<td>S7 Task Force disbanded.</td>
<td>Chris Evanston (Salus) stepped down as TF leader.</td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Document #</th>
<th>Document Title</th>
<th>Committee Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle 8, 2014 Ballots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5825</td>
<td>Reapproval for SEMI E34-1110, Safety Guideline for Mass Flow Device Removal and Shipment</td>
<td>Failed, to be reballoted</td>
</tr>
<tr>
<td>5826</td>
<td>Reapproval for SEMI S27-0310, Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports</td>
<td>Failed, to be reballoted</td>
</tr>
<tr>
<td>5827</td>
<td>Reapproval for SEMI S5-0310, Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves</td>
<td>Failed, to be reballoted</td>
</tr>
<tr>
<td>Cycle 2, 2015 Ballots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4683E</td>
<td>Line Item Revisions to SEMI S2-0712c, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed Revisions Related to Chemical Exposure</td>
<td></td>
</tr>
<tr>
<td>5718B</td>
<td>Line Item Revisions to SEMI S10-0215, Safety Guideline for Risk Assessment and Risk Evaluation Process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Line Item 1 Add explanatory materials for valid air sampling and measurement methods and accredited laboratories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Line Item 1 Propose clarifications on risk estimation, remove benchmarking, place more emphasis on the use of risk ranking tables in Appendix 1, and provide other wording changes.</td>
<td>Passed with editorial changes</td>
</tr>
</tbody>
</table>

Table 4 Authorized Activities

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TFOF</td>
<td>New Task Force: Device Removal and Shipment TF</td>
<td>Charter: Line Item ballot to E34 to address concerns identified in the failed Reapproval ballot.</td>
</tr>
<tr>
<td></td>
<td>TFOF</td>
<td>New Task Force: Flow Limitation TF</td>
<td>Charter: Revisions to S5 to address concerns identified in the failed Reapproval ballot.</td>
</tr>
<tr>
<td></td>
<td>TFOF</td>
<td>New Task Force: S27 Revision TF</td>
<td>Charter: Revision and update of SEMI S27 [to address concerns identified in the failed Reapproval ballot]</td>
</tr>
<tr>
<td>5873</td>
<td>SNARF</td>
<td>Device Removal and Shipment TF</td>
<td>Line Item Revisions to SEMI E34-1110, Safety Guideline for Mass Flow Device Removal and Shipment</td>
</tr>
<tr>
<td>TBA</td>
<td>SNARF</td>
<td>Flow Limitation TF</td>
<td>Revisions to SEMI S5-0310, Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves</td>
</tr>
<tr>
<td>TBA</td>
<td>SNARF</td>
<td>S27 Revision TF</td>
<td>Revision to SEMI S27-0310, Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports</td>
</tr>
<tr>
<td>5871</td>
<td>SNARF</td>
<td>S8 Ergonomics TF</td>
<td>Line Item Revision to SEMI S8 (Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment) to add reference to a manual material-handling guide in SEMI-S8, Appendix 2, Lifting, Strength, and Materials Handling.</td>
</tr>
</tbody>
</table>

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

---

1 SNARF # 5873 is available at: http://downloads.semi.org/web/wstdsbal.nsf/bb8865fa87d9e7b57882579fb005c3cd7/76a777de6935f46a988257c2200089a87?OpenDocument
2 SNARF # 5871 is available at: http://downloads.semi.org/web/wstdsbal.nsf/bb8865fa87d9e7b57882579fb005c3cd7/3aa604e9a364c0f78257e22000b7185?OpenDocument
Table 5 Authorized Ballots

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>5871</td>
<td>Cycle 5, 2015</td>
<td>S8 Ergonomics TF</td>
<td>Line Item Revision to SEMI S8 (Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment) to add reference to a manual material-handling guide in SEMI-S8, Appendix 2, Lifting, Strength, and Materials Handling.</td>
</tr>
<tr>
<td>4683F</td>
<td>Cycle 5, 2015</td>
<td>S2 Chemical Exposure TF</td>
<td>Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment Delayed Revisions related to Chemical Exposure</td>
</tr>
</tbody>
</table>

1 Welcome, Reminders, and Introductions

Sean Larsen 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 November 6 in conjunction with the NA Standards Fall 2014 meetings.

Motion: NA EHS Committee approves to accept the NA EHS Fall 2014 Committee meeting minutes as written.

By / 2nd, Cliff Greenberg (Nikon Precision) / Chris Evanston (Salus)

Discussion: None

Vote: 8-0 in favor. Motion passed.

Attachment: 02, NA EHS Fall 2014 meeting (November 6) minutes
3 Leadership and Liaison Reports

3.1 Japan EHS Committee

Supika Mashiro reported for the Japan EHS Committee.

- Last meeting: December 5 in conjunction with SEMICON Japan 2014 (Tokyo Big Sight, Tokyo)
  - No ballot review at the last meeting
  - No SNARF approved at the last meeting
  - No TFOF approved at the last meeting
- Next meeting: April 17 in conjunction with the Japan Spring 2015 Meetings (SEMI Japan, Tokyo)

Leadership Changes of Task Force

- S23 Revision Global Task Force
  - Gorge Hoshi (Tokyo Electron) is assigned as the co-leader from Japan Chapter
  - Lauren Crane (KLA-Tencor) is assigned as the co-leader from North America Chapter

- Status of Doc. 5513A

- Future Activities
  - Need to revise S23 for better coordination with Documents developed under ESEC TF of NA I&CC TC Chapter. (e.g., E167, Doc#5821 Specification for Subsystem Utilities Savings Mode Communication)

Greenhouse Gas (GHG) Emission Characterization Task Force

- TF continuously checks compatibility of SEMI S29 and EPA.
- Contacted SEMATECH about GHG Reporting Rule

FPD System Safety Task Force

- No particular activities to be reported after Doc. 5719 and 5720 passed TC Chapter review
  - Doc. 5719, Line Item Revision to SEMI S26-0811, Environmental, Health, and Safety Guideline for FPD Manufacturing System, Delayed Revisions Related to Limitations
  - Doc. 5720, Line Item Revisions to SEMI S26-0811, Environmental, Health, and Safety Guideline for FPD Manufacturing System, General Harmonization to SEMI S2

Seismic Protection Task Force

- Doc. #5556, Line Item Revisions to SEMI S2-0712, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Revisions Related to Section 19 Seismic Protection
  - Submitted ballot for Cycle 2. Cycle 2 closed with 60% return rate.
  - Shared the TF’s review discussion for 5556 with NA Seismic Protection Liaison TF.
  - The Ballot Review (Adjudication) will be conducted at the next TC Chapter meeting on April 17.
• STEP Planning Working Group
  o STEP/SEMI S2 was held on October 17, 2014, at the SEMI Japan, Tokyo, and successfully finished, attracted 81 attendees.

• Workshop at SEMICON Japan 2014
    - **Abstract:** Energetics related incidents become one of the highest concerns as advancing semiconductor technologies are requiring development/use of new chemistries. In this Workshop, BKM from SEMATECH survey, recommendation and concerns of semiconductor equipment and subsystem suppliers will be shared. It also include applicability of SEMI Safety Guideline. Finally ongoing activity for developing new EHS Guideline for energetics handling will be shared with the participants to solicit inputs.

• Technical Committee Award
  o Hisashi Aihara (Aihara Office)

**Additional Discussion:**
• Chris Evanston asked whether there are any participants from Taiwan in the Seismic Protection TF. Supika Mashiro responded that the TF communicated with the Taiwan region several times during ballot drafting. However, when the actual ballot draft was sent for review, no responses were received.

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

3.2 SEMI Taiwan EHS Report
Paul Trio provided the Taiwan liaison report.

• Next meeting: October 2015 [tentative] (Hsinchu Science Park, Admin Building)
• Continue on drafting SNARF in collaboration with the SEMI Taiwan High Tech Facility Committee
  o IC Equipment Safety TF: New Guideline for Fire Smoke Control System in Semiconductor Fab
• EHS & Green Manufacturing Highlights
  o Completed SEMI Taiwan – Japan Joint EHS/Green Manufacturing Committee F2F Meeting in conjunction with SEMICON Japan.
  o Kicked off 2015 SEMI Taiwan Safety Standard Training Program preparatory work with partners (SGS, PMC, Belfor, TUV)
  o Started event planning work for SEMICON Taiwan 2015 Sustainable Manufacturing Forum
    - September 2, 2015 (Taipei Nankang Exhibition Center)
    - Theme: Sustainability of advanced technology

• Regional Staff Contact: Andy Tuan (atuan@semi.org)

**Action Item:** 2015Apr #01, Paul Trio to determine whether the Traditional Chinese translations are available in SEMIViews.

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

5
3.3 *SEMI Korea EHS Report*

Paul Trio provided the Korea liaison report.

- Safety Guideline translation plan in 2015
  - **Target:**
    - SEMI S6-0707E
    - SEMI S10-0215
    - SEMI S14-0309
    - SEMI S21-1106E (Reapproved 0612)
  - **Schedule:**
    - Translation: April 1 – June 1
    - Technical Review: June 2 – July 2
  - **Publication:** July 31

**Additional Discussion:**

- Supika Mashiro pointed out that the Korea EHS WG has had no activity for quite some time now. She asked whether there are any intentions of forming a Korea EHS TC Chapter. If so, she stated that a Committee Formation Group (CFG) needs to be established.

**Action Item:** 2015Apr #02, Paul Trio to contact Natalie Shim and determine whether Korea intends to form a TC Chapter. If so, a Committee Formation Group needs to be established.

**Action Item:** 2015Apr #03, Paul Trio to determine whether the Korean translation for S2 has been completed.

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

3.4 *RSC / Committee Leadership Report*

Sean Larsen provided the cochairs report.

- Regulations Changes
  - Since the last set of meetings, there have been two revisions of the Regulations and two revisions of the newly renamed Procedure Manual
    - First release was just prior to the SEMICON Japan meeting in December
    - Second release was on Friday, 27 March

- Changes
  - The changes that were implemented in December was discussed at the Fall meetings, and are not (generally) being discussed here
  - This is a summary of the changes of interest in the latest set of changes, although some changes will be mentioned

- Leadership Roles
  - In an attempt to get better voting results, if the 3 strikes rule removes someone from TC membership, they will not be able to be reinstated for 1 year
    - This would prevent the person from being a TF or TC chair for that time period
I expect that SEMI staff will exercise judgment for removing individuals who actively participate, but do not vote due to company policy

- SNARFs
  - There are two new requirements that will change how we operate related to SNARFs
    - A SNARF/document development now has a defined life of 3 years
      - If the TC determines the effort is still on-going, it can provide a 1-year extension (and repeat as necessary)
    - A line item SNARF is defined by the first set of line items submitted against it
      - If you want to do additional line items (new topics) later, a new SNARF is needed for the new line items

- Ballot Adjudication (alternate method)
  - There are now two methods for adjudicating ballots
    - The method we have been using for years
    - A new method that allows for technical changes to be made in committee, but requires the ballot to go back out for a ratification ballot
      - Technical change must be reviewed and approved in TC and agreed to with new approval criteria
      - Ratification ballots go out for another voting cycle, but do not require adjudication
        - Theoretically could allow for quicker publication

- Ratification Ballots
  - Ratification ballots will go out for an identical voting cycle as existing ballots, with choices of approve, disapprove, abstain
    - A technical reason is still required to justify the disapprove vote
  - Ratification ballot contents and voting criteria are different and called out in the Regs
    - For Line Item ballots, the changes specific to the Ratification ballot must be in the scope of the original line items
      - This is defined as well as “editorial” and is a TC decision that is audited by A&R
        - This potentially could help to publish documents quicker as the ballot is not adjudicated and A&R review can proceed sooner

- Additional Changes
  - Minority report process is changed somewhat
  - Clarification/consistency of some terms
  - Name change of “Procedure Guide” to “Procedure Manual” in ongoing effort to indicate that some requirements are included in this document
  - Clarification that NOTICES are owned by SEMI HQ and new or changes must be approved prior to balloting
    - I expect we will get input from publications staff soon regarding the variety of NOTICES in our documents
  - Some guidance is provided in PM related to referencing Appendices and RIs.
There are some “non-conforming” document titles indicated in the back of the PM that are expected to be fixed in the next ballot

- All of the NA EHS owned documents are allowed to use an easier version to change the title rather than re-balloting the entire document

Additional Committee Discussion:

- With regard to the three-strikes rule, Chris Evanston asked whether admins (or secretaries) can be included in the notifications/reminders. Supika Mashiro offered to look into whether there are companies with policy requiring that only one person can vote on ballots. Nevertheless, she emphasized the importance of this Regulations requirement.

- There was a request from some of the committee members for consideration by the ISC Regulations Subcommittee: can active participation in the committee (e.g., authoring a ballot; attend, participate and vote in TC Chapter meetings) be considered as a substitute for voting on ballots with regard to the three-strikes rule?

- With regard to documents with nonconforming titles, it was pointed out that S27 (Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports) appears to have a nonconforming title (“Environmental, Safety, and Health (ESH)” vs Environmental, Health, and Safety (EHS)) but is not included in Appendix 4 of the Procedure Manual.

- Paul Trio pointed out that section 3.2.3 of the Procedure Manual prohibits having a Table of Content-like section in the main body of the standard. He saw that S2 would be affected by this new requirement:

<table>
<thead>
<tr>
<th>3.2.3 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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.3.1 For existing Standards and Safety Guidelines that currently contain a list of section and/or subsection numbers and/or their headings in any section, that content shall be either:</td>
</tr>
<tr>
<td>3.2.3.1.1 Removed and added as a Table of Contents during its next revision or reapproval Letter Ballot (see Style Manual, 1.3-30), or</td>
</tr>
<tr>
<td>3.2.3.1.2 Removed during its next revision.</td>
</tr>
</tbody>
</table>

NOTE 17: The replacement of a list of section and/or subsection numbers and/or their headings in any section (e.g., scope) with a Table of Contents per Style Manual 1.3-30 is one of the allowed editorial changes during reapproval provided that no additional technical content contained within it is changed or deleted (see Regulations § 3.4.3 Note 20). If it is just removed from the purpose, scope, limitations, or any other section that affects the overall Standards Document, it requires a major revision and cannot be removed as a Line Item (see ¶ 3.5.1).

Attachment: 06, Leadership Report

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

Sanjay Baliga reported:

- SEMI EHS Standards Compliance Workshop (“Practical Considerations of SEMI S2 Compliance”) held at SEMICON China (March 19)
  - Presenters shared information about requirements of SEMI EHS (environment, health, and safety) guidance and standards, with a focus on SEMI S2. Presenters also addressed the practical consideration for compliance with the standards.

- Sustainable Manufacturing Forum at SEMICON West 2015 (July 13-15)
  - Day 1: Sustainable Regulatory Compliance
    - The first day of the Forum will take place on Monday, July 13 at the San Francisco Marriott Marquis Hotel. Experts will share the latest information on government legislation and
regulations from countries around the world where SEMI members and their customers and supply chains operate or market products and services. Experts will also address industry-wide approaches for compliance

- Day 2: Sustainable Technologies
  - The second day of the Forum will take place on Tuesday, July 14 at the Moscone Center. Experts will share the latest information on the environmental and social impacts of advanced technologies that are likely to be introduced into semiconductor manufacturing in the near future. Experts will also speak about technologies that address these impacts, to make manufacturing more sustainable.

- Day 3: Sustainable Supply Chains
  - The third day of the Forum will take place on Wednesday, July 15 at the Moscone Center. Experts will share the latest information on sustainable manufacturing concerns requiring customer / supply chain engagement. Experts will share approaches to engage supply chains and other relevant industry partners and stakeholders to promote the adoption of environmental and social factors into business manufacturing operations.

- Contact Sanjay Baliga (sbaliga@semi.org) for any inputs on the Sustainable Manufacturing Forum at West.

- EHS Division is setting up an electronic forum (similar to SEMI Needle). Communities focusing on different areas (e.g., EHS Standards Community) will be established. Target launch by SEMICON West. The forum will be open to non SEMI members, but some content/sections will be available to SEMI members only.

- ICRC (International Compliance and Regulatory Committee) meeting at SEMICON West 2015 is scheduled for Wednesday, July 15, 8:00 AM to 10:00 AM (U.S. Pacific Time).

### 3.6 SEMI Staff Report

Paul Trio gave the SEMI Staff Report.

- **2015 Global Calendar of Events**
  - SEMICON Southeast Asia (April 22-24, Penang, Malaysia)
  - Advanced Semiconductor Manufacturing Conference [ASMC] (May 3-6, Saratoga Springs, New York)
  - Intersolar Europe (June 10-12, Munich Germany)
  - SEMICON Russia (June 17-18, Moscow)
  - 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 (October 6-8, Dresden, Germany)
  - SEMICON Japan (December 16-18, Tokyo)

- **NA Standards Spring 2015 Meetings (March 29 to April 2)**
  - Committees meeting at SEMI Headquarters (San Jose)
    - 3DS-IC | EHS | Facilities & Gases | HB-LED | Information & Control | Liquid Chemicals | MEMS/NEMS | Metrics | PV Materials
• SEMI thanks Intel (Santa Clara) for hosting the Physical Interfaces & Carriers (PIC) committee and task force meetings.
• SEMI thanks KLA-Tencor (Milpitas) for hosting the Silicon Wafer committee and task force meetings.

• Upcoming North America Meetings (2015)
  o 2015:
    ▪ NA Compound Semiconductor Materials TC Chapter Meeting (May 20 in conjunction with CS MANTECH, Scottsdale, Arizona)
    ▪ NA Standards Meetings at SEMICON West 2015 (July 13-16, San Francisco, California)
    ▪ NA Standards Fall 2015 Meetings (November 2-5, San Jose, California)
  o 2016:
    ▪ NA Standards Spring 2016 Meetings (April 4-7, San Jose, California)

• Technical Ballot Critical Dates for NA Standards meetings at SEMICON West 2015
  o Cycle 4: due April 10 / Voting Period: April 21 – May 21
  o Cycle 5: due May 8 / Voting Period: May 22 – June 22

• Standards Publications Report

<table>
<thead>
<tr>
<th>Cycle</th>
<th>New</th>
<th>Revised</th>
<th>Reapproved</th>
<th>Withdrawn</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2014</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>December 2014</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>January 2015</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>February 2015</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

  o Total in portfolio – 928 (includes 110 Inactive Standards)

• New Requirements/Process Reminders for TC Chapter Meetings
  o 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 completed within the project period, TC Chapter may grant one-year extension at a time, as many times as necessary.
  o 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.
  o New SNARF & TFOF forms [embedded in Staff Report, see Attachment 03 of these minutes]
  o 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.
  - **Table of Content (TOC)**
    - No section of a Standard or Safety Guideline may contain a list of section numbers and titles (e.g., similar to a Table of Contents).
    - Table of content can be approved editorially during Reapproval.
  - **Assignment of Draft Document Numbers**
    - Upon successful publication of a Document, or termination of work on it by the TF, Standards staff retires the Document number and its associated SNARF, and they are not to be used for further Document development activity.
    - For a Document with Line Item(s) that passed while others failed, the same SNARF may be used to reballet only those failed Line Item(s).
    - A new SNARF is required to introduce new Line Item(s).
  - **SNARF**
    - SNARFs may be submitted and approved for new, revised, reapproved, or reinstated Documents that have been approved by the TC Chapter, but not yet published (i.e., no new Publication Date Code exists yet). (PM NOTE 8)
  - **Minority Report (MR)**
    - The motion passes if a simple majority of the total GCS voting membership (i.e., not just those who return votes) approve the motion (Regs 9.9)

- **Latest Approvals/Next Revisions**
  - Follow-up revisions of Regulations and Procedure Manual were published on 27 March, 2015 for use in NA Spring Standard meetings.

- **Regulations/PM Ballot Revisions**

<table>
<thead>
<tr>
<th>Group #</th>
<th>Title</th>
<th>Regs</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clarification on Standards Document Development Project Period</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>GCS Voting Period for Minority Reports</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>3</td>
<td>Improvement on Minority Report Handling for Shorter Time to Publication</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4</td>
<td>TC Membership Requirement</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>5</td>
<td>Ballot Adjudication Process Improvement</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>6</td>
<td>Revision to Procedural Review</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>7</td>
<td>Clarification of TC Chapter Review and Adjudication Term</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>8</td>
<td>Clarification of Procedure Guide to Procedure Manual</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>9</td>
<td>Miscellaneous Changes of Regulations</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>10</td>
<td>Add New Requirements Related to Notices</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>11</td>
<td>Add New Guidance Related to Note</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>12</td>
<td>Clarification on SNARF and TFOF submitter</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>13</td>
<td>Clarification on SNARF approval procedures for New Standards/Safety Guidelines and major revision of existing Standards/Safety Guidelines</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>14</td>
<td>Update Appendix 4 Related to Correction of Nonconforming Titles</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>15</td>
<td>Clarifications of Procedures Related to Table of Contents</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>16</td>
<td>Clarifications on Use of Shall, Must, and Should</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>17</td>
<td>Miscellaneous Changes to Procedure Manual</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>

*Indicates follow-up from Oct-Nov 2014 Regs ballot*
- Ballot Adjudication Process Improvement (Group 5)
  o Problem
    ▪ Publications of Documents can be delayed by the need to go through another cycle of Letter Ballot issuance and adjudication at a TC Chapter meeting to make any technical change.
  o Proposed Solution
    ▪ Allow TC Chapter to make technical changes on balloted Standard Document during its adjudication under certain conditions. Conduct a Ratification Ballot in order to ensure global consensus on supporting the technical changes made by the TC Chapter.
  o NOTE: This Group was originally proposed as Group 10 in the previous Regulations Ballot to ISC and failed.
    ▪ Taking suggestion of ISC at its SEMICON Japan 2014 meeting in December, the scope of the Ratification Ballot is now limited to technical changes made by TC Chapter during adjudication of a Letter Ballot.
• GCS Voting Period for Minority Report (Group 2)
  o Problem
    ▪ Voting period for Minority Report is too short to solicit sufficient votes from GCS voting members.
  o Proposed Solution
    ▪ To let GCS member have 2 weeks voting period, which is same length as the Minority Report submission window.
  o NOTE: This problem was raised by the NARSC at its Fall 2014 meeting at which the ISC Ballot on Regulations change was discussed. Following-up on this problem by additional changes in the Regulations was suggested by the Regulations SC Chair at the time.

• Improvement on Minority Report Handling for Shorter Time to Publication (Group 3)
  o Problem
    ▪ Despite the rare occurrence of MR submission, every Document approved by the TC Chapter has to wait at least a month before it qualifies for A&R procedural review, which in turn results in a longer time to publish.
  o Proposed Solution
    ▪ Expedite the process by allowing A&R procedural review to be commenced as soon as record of ballot review made available.
    ▪ If an MR is submitted on a Document, Publication will be on hold until responsible parties reach conclusion on the MR. If the Document is returned to the TF for rework based on consideration of the MR, A&R approval is nullified.
  o NOTE: This problem was raised by JARSC at its SEMICON Japan 2014 meeting. ISC members expressed their support on improvement toward faster publication.

Attachment: 07, SEMI Staff Report

4 Ballot Review

4.1 Document # 5825, Reapproval for SEMI E34-1110, Safety Guideline for Mass Flow Device Removal and Shipment

Tallies at Close of Voting

<table>
<thead>
<tr>
<th>Voting Return Data</th>
<th>Acceptance Rate Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting Interest Returns</td>
<td>55</td>
</tr>
<tr>
<td>Total Voting Interests</td>
<td>90</td>
</tr>
<tr>
<td>Voting Interest Return %</td>
<td>61.11%</td>
</tr>
<tr>
<td>Other Returns (Intercommittee, etc.)</td>
<td>40</td>
</tr>
<tr>
<td>Total Votes</td>
<td>95</td>
</tr>
<tr>
<td>Total Votes with Comments</td>
<td>1</td>
</tr>
<tr>
<td>Total Reject Votes</td>
<td>1</td>
</tr>
</tbody>
</table>

Acceptance Rate Data

- Voting Interest Accept Votes (VIAccept) = 26
- Interest Reject Votes (IReject) = 1
- Approval % = \left[ \frac{VIAccept}{VIAccept + IReject} \right] = 96.30%
- # of Interest Rejects that Need to be not found Valid for Final Approval % >= 90% = 0

Rejects/Negatives

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13
### Negatives from < Safety Guru, LLC: Eric Sklar >

<table>
<thead>
<tr>
<th>#</th>
<th>Ref.</th>
<th>Negative including Justification</th>
<th>TF Finding and Reason</th>
<th>Motion and Reason in Committee: Final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Replace the present definition with a document that describes a chemicals properties and hazards and provides appropriate safety precautions and protective measures for handling, storing, and transporting it. NOTE: The specific requirements are stated in regulations. In most jurisdictions of interest, the regulations are consistent with the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG-4</td>
<td>4.1.5</td>
<td>Related &amp; persuasive</td>
<td>Related &amp; persuasive (ballot fails)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Present definition, with editorial changes shown:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>material safety data sheet (MSDS) — written or printed material concerning chemical elements and compounds, including hazardous materials, prepared in accordance with applicable standards. [SEMI S2]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make change, add NOTE that GHS isn’t quite “H’d” yet, add footnote for GHS source, add GHS to RefDocs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not Persuasive (LC): That level of detail not necessary for the way term is used in this document.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NP: 1 P: 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Comments

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lam Research: Sean Larsen</td>
<td>LMRC</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Followup Activity Authorization

**Motion:** Send feedback to newly created Device Removal and Shipment TF [See section 7.4.1 of these minutes]

**By/2nd:** Sean Larsen / Bert Planting

**Disc:** None

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

**Attachment:** 08, 5825 Compiled Responses
4.2 Document # 5826, Reapproval for SEMI S27-0310, Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports

Tallies at Close of Voting

<table>
<thead>
<tr>
<th>Voting Return Data</th>
<th>Acceptance Rate Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting Interest Returns</td>
<td>55</td>
</tr>
<tr>
<td>Total Voting Interests</td>
<td>90</td>
</tr>
<tr>
<td>Voting Interest Return %</td>
<td>61.11%</td>
</tr>
<tr>
<td>Other Returns (Intercommittee, etc.)</td>
<td>40</td>
</tr>
<tr>
<td>Total Votes</td>
<td>95</td>
</tr>
<tr>
<td>Total Votes with Comments</td>
<td>2</td>
</tr>
<tr>
<td>Total Reject Votes</td>
<td>2</td>
</tr>
</tbody>
</table>

Rejects/Negatives

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Salus: Chris Evanston</td>
<td>SLUS</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Negatives from < Salus Engineering: Chris Evanston >

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

<table>
<thead>
<tr>
<th>#</th>
<th>Ref.</th>
<th>Negative including Justification</th>
<th>TF Finding and Reason</th>
<th>Motion and Reason in Committee: Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLUS-1</td>
<td>2.1</td>
<td>Change &quot;conformance to safety guidelines&quot; TO &quot;conformance to SEMI S2.&quot;</td>
<td>X Related &amp; persuasive</td>
<td>Related &amp; persuasive (ballot fails)</td>
</tr>
</tbody>
</table>

Reason:

Present Text:

2.1 This document applies to reports of evaluations of ME as to its conformance to SEMI Safety Guidelines.

6.1 Reports should conform to the reporting provisions, if any, of the Safety Guideline to which the evaluation is performed. The structure of the evaluation report should follow the structure of the Safety Guideline to which the ME has been evaluated. The reporting format should present results correlating to the criteria as they appear in the Safety Guideline.

CE: It "would be a nightmare" if this document were used for things other than S2.

LC: Recalls that this document was written for documents other than S2, because S2 internally addresses reporting.

ES: Should we withdraw S27, if it is not useful for S2 and to be restricted to nothing other than S2?

CE: Believes S27 is of value for S2 reports, as it provides specific guidance beyond that within S2. However, would be unnecessarily burdensome if applied to other Safety Guidelines.

P: 8 NP: 1

Vote: 9-0. Motion passed
Comments

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>1</td>
</tr>
<tr>
<td>Lam Research: Sean Larsen</td>
<td>LMRC</td>
<td>1</td>
</tr>
</tbody>
</table>

Followup Activity Authorization

Motion: Send feedback to newly created S27 Revision TF [See section 7.4.3 of these minutes]
By/2nd: Chris Evanston / Bert Planting
Disc: None
Vote: 9-0. Motion passed

Attachment: 09, 5826 Compiled Responses

4.3 Document # 5827, Reapproval for SEMI S5-0310, Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves

Tallies at Close of Voting

<table>
<thead>
<tr>
<th>Voting Return Data</th>
<th>Acceptance Rate Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting Interest Returns</td>
<td>55 Voting Interest Accept Votes (VIAccept)</td>
</tr>
<tr>
<td>Total Voting Interests</td>
<td>90 Interest Reject Votes (IReject)</td>
</tr>
<tr>
<td>Voting Interest Return %</td>
<td>61.11% Approval % [VIAccept / (VIAccept + IReject)]</td>
</tr>
<tr>
<td>Other Returns (Intercommittee, etc.)</td>
<td>40 # of Interest Rejects that Need to be not found Valid for</td>
</tr>
<tr>
<td>Total Votes</td>
<td>95 Final Approval % &gt;= 90%</td>
</tr>
<tr>
<td>Total Votes with Comments</td>
<td>2</td>
</tr>
<tr>
<td>Total Reject Votes</td>
<td>1</td>
</tr>
</tbody>
</table>

Rejects/Negatives

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
### Negatives from < Safety Guru, LLC: Eric Sklar >

<table>
<thead>
<tr>
<th>#</th>
<th>Ref.</th>
<th>Negative including Justification</th>
<th>TF Finding and Reason</th>
<th>Motion and Reason in Committee: Final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>X</strong> Related &amp; persuasive</td>
<td><strong>X</strong> Related &amp; persuasive (ballot fails)</td>
</tr>
</tbody>
</table>

**SG-1**

**Title, et al.**

**Negative:** Expand scope to include flow limiting devices for things other than gas cylinder valves.

**Reason/Justification:** This document has been used for other applications of flow limiting devices and it would reduce the risk of that being done improperly if the document were to address such things explicitly.

**Reason:**

- COMMENT by Lam Research: This would seem to be worth expanding to include facility supplies other than gas bottles as the topic comes up regularly when dealing with gas flow under fault conditions.

- Suggestion / Justification: Expand the document to include regular facility supplies rather than just limiting it to gas bottles.

- Review Meeting, 30 Mar: P: 8 NP: 0

**Followup Activity Authorization**

**Motion:** Send feedback to newly created Flow Limitation TF [See section 7.4.5 of these minutes]

**By/2nd:** Sean Larsen / Bert Planting

**Disc:** None

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

**Attachment:** 10, 5827 Compiled Responses
4.4 Document # 4683E, Line Item Revisions to SEMI S2-0712c, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed Revisions Related to Chemical Exposure

4.4.1 Line Item # 1 – Add explanatory materials for valid air sampling and measurement methods and accredited laboratories

<table>
<thead>
<tr>
<th>Tally at Close of Voting</th>
<th>Acceptance Rate Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting Interest Returns</td>
<td>51</td>
</tr>
<tr>
<td>Total Voting Interests</td>
<td>85</td>
</tr>
<tr>
<td>Voting Interest Return %</td>
<td>60.00%</td>
</tr>
<tr>
<td>Other Returns (Intercommittee, etc.)</td>
<td>43</td>
</tr>
<tr>
<td>Total Votes</td>
<td>94</td>
</tr>
<tr>
<td>Total Votes with Comments</td>
<td>2</td>
</tr>
<tr>
<td>Total Reject Votes</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLA-Tencor: Lauren Crane</td>
<td>KT</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Lam Research: Brian Claes</td>
<td>LMRC</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>QSES: Miki Hashimoto</td>
<td>QSES</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Voting Return Data
- **Voting Interest Accept Votes (VIAccept)**: 35
- **Interest Reject Votes (IReject)**: 4

Acceptance Rate Data
- **Approval % ([VIAccept / (VIAccept + IReject)]**: 89.74%
- **Final Approval % >= 90%**: 1

Other Returns (Intercommittee, etc.)
- **Interest Reject Votes (IReject)**: 4
- **Total Reject Votes**: 4

Total Votes with Comments: 2
Total Votes: 94
Total Votes with Comments: 2
Total Reject Votes: 4

Rejects/Negatives

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLA-Tencor: Lauren Crane</td>
<td>KT</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Lam Research: Brian Claes</td>
<td>LMRC</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>QSES: Miki Hashimoto</td>
<td>QSES</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
Negatives from < KLA-Tencor: Lauren Crane >

<table>
<thead>
<tr>
<th>#</th>
<th>Ref.</th>
<th>Negative including Justification</th>
<th>TF Finding and Reason</th>
<th>Motion and Reason in Committee: Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>KT-1</td>
<td>23.5.1.1</td>
<td>Technical Negative, The first bullet is technically ambiguous. It names three 'methods': 1. Integrated sampling methods 2. Analytical techniques 3. Validated methods The qualifier &quot;published by agencies or industrial hygiene...&quot; Appear to apply only to the third. I suspect this is not the intention of the task force. That is to say, I suspect both integrated sampling methods and analytical techniques should also be so published. What the minimum criteria are for considering a method to be 'validated' is also ambiguous, as three qualifying statements are given but it is not clear if one or all are required to establish 'validation' 1. published by agencies or industrial hygiene organizations such as NIOSH, OSHA, IOHA or ACGIH. 2. documented as a reviewed protocol for the collection and analysis of a sample 3. includes instructions on collection (media, efficiency, volume, flow rate, etc.), handling, analytical method, lower sensitivity and method error statistics. Proposed Solution: Correct the technical ambiguity. Make it very clear how to decide if a particular Integrated sampling method, Analytical technique or validated method is acceptable. The first bullet appears to be defining 'validated method' for use later (e.g., last bullet). Consider providing a definition of validated method in the terminology section.</td>
<td>X Related &amp; persuasive</td>
<td>X Related &amp; persuasive (ballot fails)</td>
</tr>
</tbody>
</table>

**Motion and Reason in Committee:**

- **Reason:**
  - By/2nd: Sean Larsen / Brian Claes
  - Disc: None
  - Vote: 6-0. Motion passed
  - **Final:**

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>#</th>
<th>Company: Submitter</th>
<th>ID</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLA-Tencor: Lauren Crane</td>
<td>KT</td>
<td>3</td>
<td>Safety Guru, LLC: Eric Sklar</td>
<td>SG</td>
<td>1</td>
</tr>
</tbody>
</table>
Followup Activity Authorization
Move to:
\checkmark Return ballot to the originating task force for rework

By/2nd: Sean Larsen / Steven Brody
Disc: None
Vote: 5-0. Motion passed

Attachment: 11, 4683E-LII Compiled Responses

4.5 Document # 5718B, Line Item Revisions to SEMI S10-0215, Safety Guideline for Risk Assessment and Risk Evaluation Process

4.5.1 Line Item # 1 – Propose clarifications on risk estimation, remove benchmarking, place more emphasis on the use of risk ranking tables in Appendix 1, and provide other wording changes.

Tallies at Close of Voting

<table>
<thead>
<tr>
<th>Voting Return Data</th>
<th>Acceptance Rate Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting Interest Returns</td>
<td>51</td>
</tr>
<tr>
<td>Total Voting Interests</td>
<td>85</td>
</tr>
<tr>
<td>Voting Interest Return %</td>
<td>60.00%</td>
</tr>
<tr>
<td>Other Returns (Intercommittee, etc.)</td>
<td>43</td>
</tr>
<tr>
<td>Total Votes</td>
<td>94</td>
</tr>
<tr>
<td>Total Votes with Comments</td>
<td>1</td>
</tr>
<tr>
<td>Total Reject Votes</td>
<td>1</td>
</tr>
</tbody>
</table>

Rejection/Negatives

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>Negs</th>
<th>Disp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lam Research: Sean Larsen</td>
<td>LMRC</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### Negatives from < Lam Research: Sean Larsen >

<table>
<thead>
<tr>
<th>#</th>
<th>Ref.</th>
<th>Negative including Justification</th>
<th>TF Finding and Reason</th>
<th>Motion and Reason in Committee: Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.5.3</td>
<td>While I do believe that an S10 risk assessment should use the S10 terms and definitions, I accept that there could be cases where another method is more appropriate.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggestion / Justification**

Add an EXCEPTION to 6.5.3 to the effect of the following:

**EXCEPTION:** Where another risk assessment methodology and ranking provides a more complete risk assessment, it can be accepted provided the following are met:

- A detailed rationale is provided that indicates why the other method is more appropriate.
- An explanation of the other risk assessment method is provided (possibly by reference)
- A best attempt at an S10 risk assessment is also provided, along with an explanation of why it is thought to not be the most applicable risk assessment methodology.

### Comments

<table>
<thead>
<tr>
<th>Company: Submitter</th>
<th>ID</th>
<th>#</th>
<th>Company: Submitter</th>
<th>ID</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLA-Tencor: Lauren Crane</td>
<td>KT</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Ref.</td>
<td>Comment</td>
<td>TF Response</td>
<td>Committee Action:</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>------</td>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Editorial Comment</strong>&lt;br&gt;think it is more common in the industry to refer to risk finding as &quot;levels&quot; rather than &quot;groups&quot;</td>
<td>Category is used in the normative text (6.5.2.4). A change of category might be considered as being technical. Change Group to category in note 5 can be considered as editorial. 9-0 in favor</td>
<td><em>X</em> Editorial Change: # <em>1</em> in ECs below</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Proposed Solution:</strong> &lt;br&gt;Change to &quot;The Risk groups levels are defined...&quot;</td>
<td>Note: after meeting looked how the document is using terms. Looks like we are inconsistent</td>
<td><em>X</em> Motion to act as indicated above: By/2nd: Bert Planting / Steven Brody &lt;br&gt;Diss: None &lt;br&gt;Vote: 5-0.  Motion passed</td>
<td></td>
</tr>
<tr>
<td>KT-1</td>
<td>LI 1B</td>
<td>Note 5</td>
<td>Note 4 (likelihood), Note 5 (severity) and note 6 (risk ranking) are all using groups. In the main body the following 19 references are found: 6.5.2.2. Group in relation with severity 6.5.2.3 Group are used for likelihood Multiple use in Appendix 1 in relation to severity groups and likelihood groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Category is used only once 6.5.2.4 in reference to Risk Ranking</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summary of Editorial Changes**

<table>
<thead>
<tr>
<th>#</th>
<th>Ref.</th>
<th>Before</th>
<th>After</th>
<th>Object? (Y/N)</th>
<th>Motion to Approve: (if necessary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comment 1</td>
<td>NOTE 5: The risk groups are defined in Appendix 1.</td>
<td>NOTE 5: The risk categories groups are defined in Appendix 1.</td>
<td>By/2nd: Bert Planting / Steven Brody &lt;br&gt;Diss: None &lt;br&gt;Vote: 5-0.  Motion passed</td>
<td></td>
</tr>
</tbody>
</table>

**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: Bert Planting / Cliff Greenberg*<br>*Disc: None*<br>*Vote: 6-0.  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 Patented or copyrighted material is known to exist in the Standard or Guideline but release for such material has been obtained or presented to the committee. (no motion needed)

Final Action
Move to:
  x Pass this document with editorial changes and forward to the A&R for procedural review.

By/2nd: Bert Planting / Steven Brody
Disc: None
Vote: 6-0.  Motion passed

Attachment:  12, 5718B-L11 Compiled Responses

4.6 Approved Editorial Changes Outside of the Balloting Process

4.6.1 SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications

Summary of Editorial Change
Proposed Editorial Change: Insert Note after section 7.8 of SEMI S7

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
<th>Motion to Approve:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.8 Data Retention – A description of how files related to an evaluation project (e.g., draft evaluation reports, equipment documentation from the evaluation requestor, etc.) are secured and backed up in the course of a project, particularly addressing the potential impact of failure or damage to an evaluators' work station (e.g., hard disk crash). Additionally, this description should address documentation handling after the project is completed, the method of and duration for which the records will be retained and how they will be destroyed.</td>
<td>7.8 Data Retention – A description of how files related to an evaluation project (e.g., draft evaluation reports, equipment documentation from the evaluation requestor, etc.) are secured and backed up in the course of a project, particularly addressing the potential impact of failure or damage to an evaluators' work station (e.g., hard disk crash). Additionally, this description should address documentation handling after the project is completed, the method of and duration for which the records will be retained and how they will be destroyed.</td>
<td>By/2nd: Chris Evanston / Bert Planting Disc: None Vote: 5-0. Motion passed</td>
</tr>
</tbody>
</table>

Note 10: It is suggested that the evaluation purchaser discuss record retention and availability for unexpected contingencies such as a change of business ownership, closure of business, other types of business interruptions, etc.

8 Evaluation Personnel Qualifications
5 Subcommittee & Task Force Reports

5.1 Manufacturing Equipment Safety Subcommittee (MESSC)
Cliff Greenberg reported. Discussions

- Section 12 on EMOs
- Consider having MESSC address correcting document titles [Procedure Manual, Appendix 4]

Additional Committee Discussion:

- Supika Mashiro reported that an IEC Working Group had started working on new requirements for control panels/switching gears for production equipment. There have been concerns from equipment suppliers not knowing where their machines end up and having to comply with these requirements. She commented that this could be a significant issue in the semiconductor industry. Supika reported that appeals have been submitted by the UK and Germany and Japan is not in favor of the new requirements. However, the National Committee insists that 16 countries, including the U.S., support the initiative. Since the appeals, a questionnaire was sent out to the TC44 National Committee asking to identify any gaps and if so, how it can be resolved. Supika was not sure whether this topic/issue would be best addressed in the MESSC, S22 TF, or perhaps even in the ICRC, but she suggested nonetheless that inputs be provided to this questionnaire. Supika suggested working with Chris Evanston on the questionnaire inputs as he is a member of this IEC committee. Chris Evanston explained that this effort is IEC’s equivalent to UL 508A, but included destructive testing to electrical panels. Therefore, this is not included in people’s standards (or excluded in people’s documents). Finally, Chris pointed out that the intention is to make this into an EN standard and harmonized directive.

5.2 Energetic Materials EHS Task Force
Mark Fessler reported that the TF has been meeting regularly, working on Document 5761 (New Standard: Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes). He also reported that a number of end users and equipment suppliers are participating. The TF is requesting the committee for authorization to go to ballot as there is a belief that it can be cleaned up in time for West adjudication.

5.3 Fire Protection Task Force
Sean Larsen reported.

- Current activities:
  - S14 Reapproval Ballot (5590) Failure
  - S14 Risk Assessment rankings, including alignment with S10 (last balloted as 4495B)
  - Tiered Approach for Fire Risk Assessment between S2 and S14
  - Move Fire Detection & Suppression Sections to S14 or Appendix

- Future Plans / Timeline:
  - TF meeting this week was poorly attended
  - No interest in working on any of these matters between now and SEMICON West
  - Meet at SEMICON West to determine order and scheduling of future work
  - Future Line Item Ballot or Major Revision

Attachment: 13, Fire Protection Task Force Report
5.4 Hazardous Energy Isolation Task Force

Mark Fessler reported. There were 2 related meetings that took place during the NA Spring meetings:

- **ICRC: Update-Control of Hazardous Energy WG:** (April 1st - Morning)
  - The ICRC WG Meeting is the “official” vehicle to discuss / interfaces with other standards organizations/agencies (e.g. OSHA, ANSI, RIA, NFPA, ISO, etc).
  - Coordination With New ANSI Z244 Revision Updates (Alternate LOTO Methods)
  - Understanding Of NFPA 79-2015 Handbook Updates (Functional Safety Analyses)
  - Coordination With RIA 15.06-2012 (Industrial Robot Integrators)
  - Investigating Actual OSHA 1910.147 Variances (Functional Safety Analyses)

- **SEMI Task Force – Control Of Hazardous Energy TF:** (April 1st @1:00-2:30pm)
  - The Task Force efforts will focus on the SEMI S2 document wording, and currently looking at least 2 potential sections to update/modify.
  - SEMI S2 Section 17: Hazardous Energy Isolation (Clean Up Chemical Wording others)
  - SEMI S2 Section 11: Interlocks (Functional Safety Analyses)

- **TF Next Steps**
  - We would like to formally request change in name to remove word “Isolation” from TF name and change simply to the “Control of Hazardous Energy TF”. Andy Giles to update new TFOF form.
    - WHY? We want to remove word “isolation” from current name as it is much more than just Hazardous Energy isolation design requirements that we are looking considering changes to. (e.g. verification, access requirements, chemical specific BKM’s, etc.)
  - In Conjunction with ICRC: Our related ICRC Control of Hazardous WG will be coordinating / considering to release another industry fingerprint survey focused on companies functional safety implementation status/plans.
    - Potential questions will be drafted related to getting the feedback from current equipment manufacturers, end users and 3rd Parties, and how they currently perceive/comply with the electrical functional safety requirements listed in NFPA 79 (2015) and EN 60204-33, as well as both electrical AND non-electrical design verification requirements as listed in ISO 13849-1, -2. (e.g. pneumatic, hydraulic, mechanical and electrical systems)
  - Hold at least 2 more monthly teleconferences to finalize draft changes to SEMI S2 Section 17:
    - Current Focus:
      - Tech editor (Sean L.) to bring current draft into SEMI format.
      - Continue to add clarifications to improve communication of and verification of design requirements.
      - Align non-electrical CoHE wording (as much as possible) with drafted wording within the current Energetics draft, as well as adding other “clarifications” as needed.
    - Future:
      - We will address “possible” additions to SEMI S2 Section 11 (Interlocks) to further align / extend more guidance on the international functional safety requirements. Recall Section 11’s its current focus is limited only to FECS (e.g., FECS = F/W, Safety PLC, etc.).
Additional Committee Discussion:

- Updated TFOF to be approved at West

**Attachment:** 14, Hazardous Energy Isolation Task Force Report

### 5.5 Seismic Protection Liaison Task Force

Lauren Crane reported.

- **Overview of NA Spring 2015 TF meeting:**
  - Review of preliminary Japan TF response to ballot comments and negative (not in full detail).
  - Recommendation to Fail Ballot
  - Suggestions to improve next ballot.

- **Ballot Response**
  - News from SEMI Japan regarding the Seismic ballot
    
    “… the task force (at least Nakatani-san) thinks it should be failed and rework the document.”

- **Liaison TF Request to Japan TF**
  - By email from L.Crane to E.Nakatani, cc: P. Trio, J. Collins, S. Mashiro
  - “There was a motion in the liaison task force to the effect of “Because of the number of negatives and comments received on the ballot the North American Task Force requests that the Japan Seismic Task Force propose to the Japan EHS Committee to send the ballot back to task force for additional work.” The motion passed by a vote of 13 to 0.”

- **Additional observations submitted to Japan TF**
  1. The background statement for the ballot should be improved to explain better the considerations the TF went through to derive the current ballot.
  2. It would help voters understand the ballot better if there was an informative section to the ballot that shows a clean section 19 (without add/delete markings) assuming the ballot passed.
  3. There needs to be stronger language on what may be assumed about the equipment when it undergoes the risk assessment suggested in 19.1 (e.g., some additional information in 19.1.4). This should particularly address the question of what assumptions are allowable regarding facility safety services (e.g., exhaust and drain availability), and how to consider risks present when accessing the equipment following the seismic event (for example the impact of broken glass).
  4. The changes should be balloted as delayed revision.

Not discussed in the LTF but submitted by L.Crane:

I propose we target the next ballot for cycle 6 so that we can ensure sufficient consensus prior to balloting.

- **Future Plans**
  - Work with Japan TF to draft a ballot that will be more successful.
  - There will probably be a few LTF telecons prior to ballot.

**Additional Committee Discussion:**

- Supika Mashiro asked Lauren to continue including the TC Chapter chairs in the discussion to help facilitate communication between the two regions.
5.6 S2 Ladders & Steps Task Force

Sean Larsen reported.

• Current activities:
  o Task Force did not meet during the Spring meetings due to schedule/job conflicts.
  o Some progress has been made during limited teleconferences up until now.
  o Task Force will restart teleconferences in an effort to prep for ballot submission for Cycle 5 (submission deadline is May 8th).

• Future Plans / Timeline / Requests
  o Task Force will restart teleconferences in an effort to prep for ballot submission for Cycle 5 (submission deadline is May 8th).
  o Task Force requests Committee reapprove SNARF 4449 for at least another year as activity is still ongoing.
  o Task Force request Committee approval to Ballot (4449E) during Cycle 5 2015 voting cycle.

Additional Committee Discussion:

• Lauren Crane expressed concern that the ballot is being rushed to be submitted. He recommended that the TF should meet first to make sure that the ballot is indeed ready for ballot submission. Curt Layman agreed, but pointed out that this is an important activity.

Attachment: 16, S2 Ladders & Steps Task Force Report

5.7 S2 Non-Ionizing Task Force

Sean Larsen reported.

• Current Activities
  o 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
  o Additionally, reviewing the relatively new EU Worker Protection directive for electromagnetic (EM) fields

• New EU EM Directive Summary
  o 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
  
  o With this position, I am guessing the Alarm Levels will be more accepted to align with

• Future Plans / Timeline
  
  o 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.

Attachment: 17, S2 Non-ionizing Task Force Report

5.8 S6 Revision Task Force

Sean Larsen reported.

• Current activities:
  
  o Based on ballot results - Realistic worst case release scenarios and release rate calculations
    ▪ Proposal made to edit worst case release criteria. Good discussion
    ▪ Glenn Holbrook to draft into a more ballot like draft for discussion at West

• Future Plans / Timeline
  
  o Continue to develop potential ballot line item (Glenn Holbrook)
  o Submit gas sensor / detection criteria to key contacts in order to engage gas detection vendors (John Visty)

Attachment: 18, S6 Revision Task Force Report

5.9 S7 Revision Task Force

Chris Evanston reported that the TF would like to address a feedback received during ballot 5760 which was adjudicated during the NA Fall 2014 meetings. The TF would like to add an editorial note to the new section 7.8 (Data Retention) introduced by ballot 5760.
**Summary of Editorial Change**

*Proposed Editorial Change: Insert Note after section 7.8 of SEMI S7*

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
<th>Motion to Approve:</th>
</tr>
</thead>
</table>
| 7.8 *Data Retention* – A description of how files related to an evaluation project (e.g., draft evaluation reports, equipment documentation from the evaluation requestor, etc.) are secured and backed up in the course of a project, particularly addressing the potential impact of failure or damage to an evaluators’ work station (e.g., hard disk crash). Additionally, this description should address documentation handling after the project is completed, the method of and duration for which the records will be retained and how they will be destroyed. | 7.8 *Data Retention* – A description of how files related to an evaluation project (e.g., draft evaluation reports, equipment documentation from the evaluation requestor, etc.) are secured and backed up in the course of a project, particularly addressing the potential impact of failure or damage to an evaluators’ work station (e.g., hard disk crash). Additionally, this description should address documentation handling after the project is completed, the method of and duration for which the records will be retained and how they will be destroyed. | By/2nd: Chris Evanston / Bert Planting  
Disc: None  
Vote: 5-0. Motion passed |

**8 Evaluation Personnel Qualifications**

As there no other future activities expected, Chris Evanston requested the committee to approve disbandment of the S7 Revision TF:

**Motion:** NA EHS Committee approves to disband the S7 Revision TF.  
**By / 2nd:** Chris Evanston (Salus) / Bert Planting (ASML)  
**Discussion:** None  
**Vote:** 6-0 in favor.

5.10 **S8 (Ergonomics) Task Force**

Sean Larsen reported.

- **Overview**
  - Requested a one-year extension to the original SNARF #5009 created in 2010.  
  - A total of 4 line items are proposed for Cycle 5 and should be ready in time for the deadline on May 8th.

- **Proposed 2015 Cycle 4 Ballot Items**
  - Line item 1 – Ergonomics clearances clarification  
    - These changes are intended to better define ergonomics-related clearances needed for equipment installation drawings provided by supplier.
Line item 2 – Enclosed handle criteria in SESC modified

- Enclosed handle size and force criteria replaced with new criteria based on a new assessment system.
- New Appendix 2 created based on the new assessment system that allows the evaluator to assess handles of differing sizes and shapes.
- Chart on the slide after next gives a side-by-side comparison of the existing and proposed design criteria.
  - Some dimensions are less restrictive while others are slightly less restrictive.
  - Force criteria is more restrictive for equipment operation tasks but much less restrictive for maintenance tasks.

Handle Design and Assessment System

- New handle design/assessment system is based on a combination of the following factors:
  - Finger clearances – anthropometric data
  - Finger joint angles – anthropometric data
  - Glove conditions – from measurements of gloved hands
  - Finger pressure – # of fingers, finger size, type of grip
  - Finger pressure tolerance – based on pain studies
  - Frequency – equipment operation vs. maintenance
  - Type of grip – power, hook, fingertip

Assumptions

- Pushing and pulling a handle requires squeezing the handle for control (2.3x the linear force)
- Handles with a rectangular cross section (even with rounded edges) create more contact stress than handles with a round or elliptical cross-section.
- There is less finger contact area with a hook grip than a power grip
- Grasping a rectangular handle with sharp corners using a hook grip is less painful than using a power grip

Line item 3 – Modify SESC Section 7 as follows:

- Expanded whole body clearance criteria to include equipment operation tasks.
- Whole body clearance recommendations have been separated into two categories: walking/crawling and working postures.
- Added design criteria for seated postures.
- Added recommendation for how to assess space needed to transition from a prone to a supine posture.
- Existing recommendations that are specific to maintenance and service tasks are updated and moved to a new section “11.”
Prone/Supine Posture Transition

- During Fall EHS meeting, members asked for way to determine space needed to assume a prone or supine position from a standing position (e.g. space needed outside the equipment footprint to get into a prone position)

Line item 4 – Add a new document to list of material handling resources in Appendix 2.


Current Activities

- Hand-object coupling point definition
  - Currently not defined in S8
- Risk characterization
  - Not an easy undertaking since S8 was originally intended as a design guideline, but we are trying
- New RI section with origins of existing criteria
  - Some criteria are taken directly from published design guides while others are an aggregate of various design guides or research studies
  - Exact origins of some criteria created by the creators of the original document are unknown

Prioritized Additions/Changes

1) Hand-object coupling point definition
2) Display height criteria revisions
3) Load port heights for things other than cassettes
   - JEDEC trays, lead frame cassettes, ring carriers, etc…
4) Rotational control knobs (almost complete)
5) Hand access clearance (almost complete)
6) Toe clearance
   - Was in S8 before. It’s unknown why it was removed.
7) Hand cranks

Future Plans

- Continue teleconference efforts
  - Thursdays @ 1:00 pm PST starting April 9th
- Finalize line items in preparation for Cycle 5 submission May 8th, 2015
- Prepare additional material for future ballot consideration (line item changes) up to a maximum of ten line items
Additional Committee Discussion:

- Since Line Item 4 was not included in the SNARF #5009 scope, the TF submitted a new SNARF to address this change
  - Line Item Revision to SEMI S8 (Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment) to add reference to a manual material-handling guide in SEMI-S8, Appendix 2, Lifting, Strength, and Materials Handling.
    - **Rationale:** Adding a reference to the SEMATECH material handling guide will assist non-ergonomist with application of the material handing tools referenced in SEMI-S8 Appendix 2.
    - **Scope:**
      - SEMI S8 Appendix 2 - Lifting, Strength, and Materials Handling
      - SEMI S8 Section 8: Related Documents

**Motion:** NA EHS Committee approves new SNARF for S8 LI revision add reference to a manual material-handling guide.

**By / 2nd:** Sean Larsen (Lam Research) / Bert Planting (ASML)

**Discussion:** None

**Vote:** 9-0 in favor.

**Attachment:** 19, S8 (Ergonomics) Task Force Report

5.11 **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 – start at SEMICON West
- Doc 5718B – one line item was balloted.
  - Rejects (one received)
    - Related to information on other risk ranking technologies withdrawn by submitter
  - Comment (one received)
    - Severity groups: better to call them “level”, Change to category because category is used in the main body of the document

**Attachment:** 20, S10 Task Force Report

5.12 **S22 (Electrical Safety) Task Force**

Chris Evanston reported that the LI on FECS (4316L) is ready to ballot. The TF meets regularly via teleconference.
5.13 S23 Global Task Force
Lauren Crane reported.

- **Agenda**
  - Required meeting elements
  - ESEC TF Status
  - A review of SESMC ballot definition proposals
  - A review of S23 mode scheme
  - Set goals for next ballot.

- **Background - Document 5821 New Standard: Specification for Subsystem Energy Saving Mode Communication (SESMC)**

  The ESEC TF put forward in the ballot definitions for:
  - Production equipment
  - Subsystem
  - Subsystem energy saving mode
  - Sleep mode
  - Sleep level
  - Subsystem idle mode
  - Subsystem process mode
  - Subsystem sleep mode

  The ballot failed.

- **In the S23 and ESEC TF Meetings this week**
  - The ESEC TF and S23 GTF leadership realized better collaboration is needed, and that S23 is probably the best place for high level concepts for energy efficiency/conservation such as this terminology.
  - In the S23 Meeting
    - Reviewed definitions from ESEC ballot and how they compare to similar definitions in S23.
    - Reviewed “item of interest” terminology in S23 (e.g., “Equipment”)
    - Reviewed existing text in S23 that deals with the concept of a subsystem
    - Reviewed the high level concepts of “Processing”, “Idle” and “Sleep” modes in S23 and how they might be understood differently in the context of subsystems.
    - Discussed some of the hardware handshaking that is currently provided on some abatement subsystems that can be understood as related to energy conservation (e.g., “flame on” signal to a burn box).
    - Discussed the fact that some subsystems serve to mitigate EHS risk (e.g., abatement), and so commanding sleep states in them can impact EHS risk. This needs to be highlighted appropriately but current goal is to defer to S2 (perhaps a line item), and not change S23 from a guide to a safety guideline.
Discussed idea that a subsystem might be embedded in another subsystem – but not wanting to force use of the SESMC protocol on all subsystem-internal architecture.

Discussed whether “Processing”, “Idle” and “Sleep” mode differentiation is needed/useful – aren’t they all just levels of energy efficiency/conservation?

- **Foreseen Future Activity**
  - Work with ESEC TF to develop a reasonable way of achieving
    - a successful Cycle 5 reballot of their document and
    - our goals to put key subsystem ideas into S23.
  - Telecons and emails to develop an S23 ballot (Cycle 5 or 6) that:
    - Provides better discussion of subsystems in the body of the document, with a view to support as appropriate, ESEC subsystem communication protocol.
    - Provides new or modified definitions to support subsystem energy consumption performance concepts.
    - Adds commentary and examples of efficiency improvement that can be understood as effective conservation methods.

- **For NA EHS Committee Discussion**
  - The full S23 global task force has not yet reviewed events of this week.
  - The GTF must choose a Technical Committee from which to run a ballot.
  - It may make sense to run the S23 ballot for adjudication in the same region as the ESEC ballot.
  - As co-leader of the S23 GTF I would like to request permission of the NA EHS TC to ballot an S23 line item revision with immediate effectivity in 2015 cycle 5 or 6.
  - The GTF might instead decide to run the ballot from the Japan EHS TC (contingent on their approval), because this has been the past practice for the S23 document.

**Additional Committee Discussion:**

- Lauren Crane asked whether the committee would authorize a line item revision ballot for S23 (with immediate effectivity) for submission in the Cycle 5 voting period. However, he also reported that this ballot may be done in Japan instead. The committee decided not to authorize the ballot submission at this meeting, but instead recommended obtaining GCS approval once the GTF has chosen a TC Chapter from which to run a ballot.

**Attachment:** 21, Global S23 Task Force Report

### 6 Old Business
None

### 7 New Business

#### 7.1 SNARF Extensions

Sean Larsen stated that 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.
The TC Chapter chairs wanted to give the TF leaders ample notice before taking any action on SNARFs affected by this Regulations requirement. Therefore, SNARFs requiring document development extensions will be voted on at SEMICON West 2015. Sean Larsen also pointed out that the S6 and S8 TF leaders will need to be notified that the titles will need to be updated for compliance with Appendix 4 of the Procedure Manual.

**Action Item:** 2015Apr #04, Paul Trio/ NA EHS Chairs to notify S6 Revision and S8 (Ergonomics) TF leaders that the titles for SEMI S6 and S8 will need to be corrected per Appendix 4 of the Procedure Manual.

7.2 **S2 Table of Contents in Scope Section**

The SEMI Standards Procedure Manual § 3.2.3 states:

<table>
<thead>
<tr>
<th>3.2.3 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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.3.1 For existing Standards and Safety Guidelines that currently contain a list of section and/or subsection numbers and/or their headings in any section, that content shall be either:</td>
</tr>
<tr>
<td>3.2.3.1.1 Removed and added as a Table of Contents during its next revision or reapproval Letter Ballot (see Style Manual, 1-30), or</td>
</tr>
<tr>
<td>3.2.3.1.2 Removed during its next revision.</td>
</tr>
</tbody>
</table>

It was pointed out that SEMI S2 contains a list of section headings in its Scope section. The committee discussed developing a line item ballot to bring S2 in compliance with section 3.2.3 of the Procedure Manual. Supika Mashiro kindly offered to carry out this activity under the Japan EHS committee. She will put together a TFOF and SNARF and submit to the EHS GCS for approval. She will also request authorization to submit for balloting at the next available cycle for adjudication at the next Japan EHS TC Chapter meeting.

**Motion:** NA EHS TC Chapter requests Japan EHS TC Chapter to ballot changes of removing section 2.2 of SEMI S2 and converting into a formal table of content as soon as possible.

**By / 2nd:** Chris Evanston (Salus) / Bert Planting (ASML)

**Discussion:** Supika Mashiro pointed out that the committee can choose to include second level headings in the TOC. The general sentiment of the NA EHS TC Chapter is to have the first level headings only. Nevertheless, Supika asked the committee to let her know if there is a desire to include the second-level headings in the TOC for S2.

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

**Action Item:** 2015Apr #05, Supika Mashiro to coordinate with EHS leadership on developing a ballot proposal that will remove section 2.2 of SEMI S2 and convert it into a formal table of content.

7.3 **NA EHS Standards due for Five-Year Review**

Paul Trio reported that SEMI S12-0211 (*Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination*) is due for five year review. Sean Larsen recommended consulting with Bill Belk (DECON) as he was the primary developer of SEMI S12.

**Action Item:** 2015Apr #06, Paul Trio to contact and inform Bill Belk (DECON) that S12 is due for five year review and that it has a nonconforming title that needs to be corrected per Appendix 4 of the Procedure Manual.

7.4 **New TFOFs & SNARFs**

7.4.1 **TFOF for: Device Removal and Shipment Task Force**
Charter: Line Item ballot to E34 to address concerns identified in the failed Reapproval ballot.

Motion: NA EHS approves Device Removal and Shipment TFOF.
By / 2nd: Sean Larsen (Lam Research) / Bert Planting (ASML)
Discussion: None.
Vote: 5-0 in favor.
Attachment: 22, Device Removal and Shipment TFOF

7.4.2 SNARF for: Line Item Revisions to SEMI E34-1110, Safety Guideline for Mass Flow Device Removal and Shipment

- **Rationale**: Reapproval ballot for E34 (5825) failed.
- **Scope**: Responses to 5825 ballot

Motion: NA EHS approves SNARF for line item revisions to SEMI E34.
By / 2nd: Sean Larsen (Lam Research) / Bert Planting (ASML)
Discussion: The committee discussed leaving the designation number as is as there are a lot of Documents that reference E34. The committee can change to an “S” designation at a later time.
Vote: 6-0 in favor.
Attachment: 23, SNARF for E34 Line Item Revisions

7.4.3 TFOF for: S27 Revision Task Force

Charter: Revision and update of SEMI S27

Motion: NA EHS approves S27 Revision TFOF.
By / 2nd: Chris Evanston (Salus) / Steven Brody (Product EHS Consulting)
Discussion: None.
Vote: 7-0 in favor.
Attachment: 24, S27 Revision TFOF

7.4.4 SNARF for: Revision to SEMI S27-0310, Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports

- **Rationale**: During the 5 year re-approval ballot the concern was raised about S27 being too burdensome if applied to the full suite of SEMI S documents – which is its current scope. This task force intends to consider reducing the scope of S27 to SEMI S2 reports only. Other considerations that may come to light with the implementation of this document will also be considered as impetus for modifications to SEMI S27.
- **Scope**: S27

Motion: NA EHS approves SNARF for S27 revisions.
By / 2nd: Chris Evanston (Salus) / Bert Planting (ASML)
Discussion: As this is a SNARF for major revision, a copy will be distributed to the global EHS technical committee for review and feedback. Per SEMI Standards Regulations section 8.2.1 and Procedure Manual section 2.2.5, prior
to submitting for approval, SNARF(s) for new or major revision shall be made available to all TC Members of
global technical committee for feedback.
Vote: 6-0 in favor.
Attachment: 25, SNARF for S27 Revision

7.4.5 TFOF for: Flow Limitation Task Force

Charter: Revisions to S5 to address concerns identified in the failed Reapproval ballot.

Motion: NA EHS approves Flow Limitation TFOF.
By / 2nd: Sean Larsen (Lam Research) / Bert Planting (ASML)
Discussion: None.
Vote: 5-0 in favor.
Attachment: 26, Flow Limitation TFOF

7.4.6 SNARF for: Revisions to SEMI S5-0310, Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves

- **Rationale:** Reapproval ballot for S5 (5827) failed.
- **Scope:** Responses to 5827 ballot

Motion: NA EHS approves SNARF for S5 revisions.
By / 2nd: Sean Larsen (Lam Research) / Bert Planting (ASML)
Discussion: As this is a SNARF for major revision, a copy will be distributed to the global EHS technical committee for
review and feedback. Per SEMI Standards Regulations section 8.2.1 and Procedure Manual section 2.2.5, prior
to submitting for approval, SNARF(s) for new or major revision shall be made available to all TC Members of
global technical committee for feedback.
Vote: 6-0 in favor.
Attachment: 27, SNARF for S5 Revision

7.5 Ballot Authorization

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>5871</td>
<td>Cycle 5, 2015</td>
<td>S8 Ergonomics TF</td>
<td>Line Item Revision to SEMI S8 (Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment) to add reference to a manual material-handling guide in SEMI-S8, Appendix 2, Lifting, Strength, and Materials Handling.</td>
</tr>
<tr>
<td>4683F</td>
<td>Cycle 5, 2015</td>
<td>S2 Chemical Exposure TF</td>
<td>Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment Delayed Revisions related to Chemical Exposure</td>
</tr>
</tbody>
</table>
Motion: NA EHS TC approves distribution of ballots as shown above.
By / 2nd: Cliff Greenberg (Nikon Precision) / Chris Evanston (Salus)
Discussion: None
Vote: 7-0. Motion passed.

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
</table>

Motion: NA EHS TC approves distribution of ballot 5761 for Cycle 5.
By / 2nd: Mark Fessler (Tokyo Electron) / Steven Brody (Product EHS Consulting)
Discussion: None
Vote: 3-0. Motion passed.

<table>
<thead>
<tr>
<th>#</th>
<th>When</th>
<th>SC/TF/WG</th>
<th>Details</th>
</tr>
</thead>
</table>

Motion: NA EHS TC approves distribution of ballots 4449E for Cycle 5.
By / 2nd: Bert Planting (ASML) / Cliff Greenberg (Nikon Precision)
Discussion: None
Vote: 5-0. Motion passed.

7.6 *NA EHS Proposed Meeting Schedule at SEMICON West 2015*

**SEMICON West 2015 Meetings**
July 13-16, 2015
San Francisco Marriott Marquis Hotel
780 Mission Street
San Francisco, California 94103
U.S.A.

Monday, July 13
- 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 (1:00 PM to 2:00 PM)
- S2 Chemical Exposure TF (2:00 PM to 3:30 PM)
- S6 Revision TF (3:30 PM to 4:30 PM)
- NA Seismic Liaison TF (4:30 PM to 5:30 PM)
Tuesday, July 14
- S2 Ladders & Steps TF (9:00 AM to 10:00 AM)
- S10 TF (10:00 AM to 11:00 AM)
- Flow Limitation (S5 Revision) TF (11:00 AM to 12:00 Noon)
- Energetic Materials EHS TF (1:00 PM to 2:00 PM)
- S1 Revision TF (2:00 PM to 3:00 PM)
- S8 Ergonomics TF (3:00 PM to 4:30 PM)
- S23 Revision Global TF (4:30 PM to 6:00 PM)

Wednesday, July 15
- [International Compliance and Regulatory Committee [ICRC] (8:00 AM to 10:00 AM)]
- Device Removal and Shipment (E34 Revision) TF (10:00 AM to 11:00 AM)
- EHS Leadership Meeting (11:00 AM to 12:00 Noon)
- Hazardous Energy Control Isolation Devices TF (1:00 PM to 2:30 PM)
- Manufacturing Equipment Safety Subcommittee [MESS C] (2:30 PM to 4:00 PM)
- Fire Protection TF (4:00 PM to 5:00 PM)

Thursday, July 16
- 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 meeting schedule at SEMICON West is June 12, 2015.

7.7 New Action Items

<table>
<thead>
<tr>
<th>Item #</th>
<th>Assigned to</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015Apr #01</td>
<td>Paul Trio</td>
<td>Determine whether the Traditional Chinese translations are available in SEMIViews.</td>
</tr>
<tr>
<td>2015Apr #02</td>
<td>Paul Trio</td>
<td>Contact Natalie Shim and determine whether Korea intends to form a TC Chapter. If so, a Committee Formation Group needs to be established.</td>
</tr>
<tr>
<td>2015Apr #03</td>
<td>Paul Trio</td>
<td>Determine whether the Korean translation for S2 has been completed.</td>
</tr>
<tr>
<td>2015Apr #04</td>
<td>Paul Trio, NA EHS TC Chapter Chairs</td>
<td>Notify S6 Revision and S8 (Ergonomics) TF leaders that the titles for SEMI S6 and S8 will need to be corrected per Appendix 4 of the Procedure Manual.</td>
</tr>
<tr>
<td>2015Apr #05</td>
<td>Supika Mashiro</td>
<td>Coordinate with EHS leadership on developing a ballot proposal that will remove section 2.2 of SEMI S2 and convert it into a formal table of content.</td>
</tr>
<tr>
<td>2015Apr #06</td>
<td>Paul Trio</td>
<td>Contact and inform Bill Belk (DECON) that S12 is due for five year review and that it has a nonconforming title that needs to be corrected per Appendix 4 of the Procedure Manual.</td>
</tr>
</tbody>
</table>

8 Next Meeting and Adjournment

The next meeting of the North America Environmental, Health, and Safety committee is scheduled for July 16 in conjunction with SEMICON West 2015 in San Francisco, California. Adjournment was at 3:00 PM.
Respectfully submitted by:
Paul Trio
Senior Manager, Standards Operations
SEMI North America
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                      |

<table>
<thead>
<tr>
<th>Table 6 Index of Available Attachments *1</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
</tr>
<tr>
<td>01</td>
</tr>
<tr>
<td>02</td>
</tr>
<tr>
<td>03</td>
</tr>
<tr>
<td>04</td>
</tr>
<tr>
<td>05</td>
</tr>
<tr>
<td>06</td>
</tr>
<tr>
<td>07</td>
</tr>
<tr>
<td>08</td>
</tr>
<tr>
<td>09</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>11</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>13</td>
</tr>
<tr>
<td>14</td>
</tr>
</tbody>
</table>

*1 A .zip file containing all attachments for these minutes is available at: http://downloads.semi.org/standards/minutes.nsf/91eeb64567db378c88256dcf0f06a4252/edb0fcd567a722488257c76000492f1!OpenDocument

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