

North America EHS Committee Meeting Summary and Minutes

NA Standards Spring 2014 Meetings
 3 April 2014, 0900 – 1525 Pacific Time
 SEMI Headquarters in San Jose, California

Next Committee Meeting

North America Standards Meetings at SEMICON West 2014
 Thursday 10 July 2014, 0900 – 1600 Pacific Time
 San Francisco Marriott Marquis in San Francisco, California

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Chris Evanston (Salus Engineering), Sean Larsen (Lam Research AG), 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>
Applied Materials	Karl	Ed	<i>Product EHS Consulting</i>	<i>Brody</i>	<i>Steven</i>
ASML	Planting	Bert	Safety Guru, LLC	Sklar	Eric
Cymer	Frankfurth	Mark	Salus	Evanston	Chris
Cymer	Yakimow	Byron	Salus	Visty	John
DECON Environmental Services	Belk	William	Seagate	Layman	Curt
EORM	McIntyre	Andy	SEMATECH	Ferrell	Jackie
ESTEC	Mills	Ken	SEMATECH	Trammell	Steve
<i>IBM</i>	<i>Petry</i>	<i>Bill</i>	Tokyo Electron	Fessler	Mark
KLA-Tencor	Crockett	Alan	Tokyo Electron	Kuntz	Matt
<i>KLA-Tencor</i>	<i>Crane</i>	<i>Lauren</i>	Tokyo Electron	Mashiro	Supika
<i>Koetter Fire Protection</i>	<i>Wyman</i>	<i>Matt</i>	TUV Rheinland	Barsky	Joe
Lam Research	Claes	Brian	TUV Rheinland	Pochon	Stephan
Lam Research	Kryska	Paul	TUV SUD	Derbyshire	Pauline
Lam Research AG	Larsen	Sean			
Nikon Precision	Greenberg	Cliff	SEMI EHS	Baliga	Sanjay
Pilz GmbH	Pilz	Thomas	SEMI Standards	Trio	Paul

Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
S2 Fail-Safe Fault-Tolerant Task Force has been disbanded.	Chris Evanston (Salus) and Lauren Crane (KLA-Tencor) stepped down.	
Fire Protection Task Force		Eric Sklar (Safety Guru, LLC) has been appointed as new TF co-leader serving with Matt Wyman (Koetter Fire Protection)

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
None		

Table 4 Authorized Activities

#	Type	SC/TF/WG	Details
5718	SNA RF	S10 TF	Revision to SEMI S10, <i>Safety Guideline for Risk Assessment and Risk Evaluation Process</i> . Line items changes to SEMI S10 to solve some clarification issues and update to latest standards (ISO 12100). This revision will not affect the Risk Ranking tables of Appendix 1. These will be done as a separate effort. This SNARF is available at: http://downloads.semi.org/web/wstdsbal.nsf/18a679096dfd445188256d35007d447d/1e1a262c953deeca88257cbc0065039b!OpenDocument

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

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

Table 5 Authorized Ballots

#	When	SC/TF/WG	Details
4449E	Cycle 3 or 4, 2014	S2 Ladders & Steps TF	Delayed Line Item Revision to SEMI S2-0712, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> . Line Item Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders
4683C	Cycle 3 or 4, 2014	S2 Chemical Exposure TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> Delayed Revisions related to Chemical Exposure
5591	Cycle 3 or 4, 2014	Fire Protection TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> Delayed Revision related to Fire Protection
5625	Cycle 3 or 4, 2014	S2 Non-ionizing Radiation TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> Delayed Revisions related to non-ionizing radiation
4316K	Cycle 3 or 4, 2014	S22 TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> , and SEMI S22, <i>Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment</i> Delayed Revision related to Programmable Safety Circuits
5649A	Cycle 3 or 4, 2014	S22 TF	Delayed Line Item Revisions to SEMI S22, <i>Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment</i> Alignment with IEC 60204-33 and provide the additional flexibility that is allowed in that document
5009C	Cycle 3 or 4, 2014	S8 Ergonomics TF	Line Item Revisions to SEMI S8-0712, <i>Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment</i> . Delayed Revisions on Multiple Topics
5718	Cycle 3 or 4, 2014	S10 TF	Revision to SEMI S10, <i>Safety Guideline for Risk Assessment and Risk Evaluation Process</i> . Line items changes to SEMI S10 to solve some clarification issues and update to latest standards (ISO 12100). This revision will not affect the Risk Ranking tables of Appendix 1. These will be done as a separate effort.

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 October 31 in conjunction with the NA Standards Fall 2013 meetings.

Motion: NA EHS Committee approves to accept the NA EHS Fall 2013 Committee meeting as amended.

By / 2nd: Bert Planting (ASML) / Alan Crockett (KLA-Tencor)

Discussion: None

Vote: 7-1 in favor. Motion passed.

Motion: NA EHS Committee requests staff to send draft copies of the meeting minutes to Eric Sklar, in addition to the NA committee chairs, before the draft minutes are posted on the web.

By / 2nd: Sean Larsen (Lam Research AG) / Cliff Greenberg (Nikon Precision)

Discussion: None

Vote: 10-0 in favor. Motion passed.

Motion: NA EHS Committee agrees that when doing ballot adjudication unused statements in the ballot adjudication forms be deleted in front of the committee meeting.

By / 2nd: Bert Planting (ASML) / Ed Karl (Applied Materials)

Discussion: Paul Trio also requested for TFs to assist in deleting the unused sections in the TF column of the ballot adjudication forms.

Vote: 10-0 in favor. Motion passed.

Attachment: 02, Amended NA EHS Fall 2013 meeting (October 31) minutes

3 Leadership and Liaison Reports

3.1 Japan EHS Committee

Supika Mashiro reported for the Japan EHS Committee.

- Next meeting: April 17 in conjunction with the Japan Summer 2014 Meetings (SEMI Japan, Tokyo)
- Upcoming Ballots
 - Doc. 5513A, Revision to SEMI S23-0311, *Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment* for Cycle 3 or 4, 2014 (line item 1 only) [S23 Revision TF]
 - 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* for Cycle 4, 2014 [Seismic Protection TF]
- S23 Revision TF
 - Working on Doc. 5513A (see above)

- Under Preparation of the expansion of RI2 (Temperature Control Unit)
- Adding the section of the energy efficiency road map was proposed at the NA Standards Fall 2013 meetings. The TF will review this proposal.
- Introduced the details of revision of SEMI S23 at energy saving meeting by JEITA and SEAJ for promotion of effective use.
- Greenhouse Gas (GHG) Emission Characterization Task Force
 - TF is promoting the usage of S29, in cooperation with SEAJ
 - EPA will be requiring Device Manufacturers to report about GHG, and it seems to be important that S29 contents can be used. TF will need to check whether S29 contents comply with EPA's GHG Report requirements.
- FPD System Safety Task Force
 - TF started S26 revision activities to harmonize non-ionizing ionization section with the latest S2 from January, 2014.
- Seismic Protection Task Force
 - Working on Doc 5556 (see above), on target to submit for Cycle 4, 2014.
- STEP Planning Working Group
 - STEP/ SEMI S2 was held on November 15 at SEMI Japan (Tokyo), attracted 68 attendees
- Other activities
 - Program for SEMICON Japan 2013
 - SEMI EHS Standards Workshop: EHS Challenges for 450mm was held on December 4 at Makuhari Messe, attracted 62 attendees
- SEMI staff contact: Naoko Tejima (ntejima@semi.org)

Additional Discussion:

- With regard to the Document 5556 activity, Sean Larsen asked how many line items are expected. Supika Mashiro responded that only one item is being developed. She pointed out that the TF is not aware of the Delayed Revision format, but is happy to follow the preference of the committee. Supika stated that she recommended for them to adopt/use the DR format.
- With regard to the SEMI S2 STEP attendance, Sean Larsen asked why there were “only” 68 attendees. Supika Mashiro responded that “only” 68 attended because of the limited room, seating availability at the SEMI Japan office.
- Also, with regard to Document 5556, Chris Evanston pointed out that Taiwan and Korea were supposed to be working together with Japan on this effort. He asked whether there was any progress on the collaboration. Supika Mashiro responded that Japanese leaders tried to contact Taiwan leaders for inputs, but did not receive any responses. Paul Trio pointed out that the Taiwan Seismic TF met earlier in the week (April 1, 2014) and he had sent the TF the latest NA/Japan Seismic TF files. He stated that he will keep the NA and JA TF leaders posted as soon as he receives the response from Taiwan.

Attachment: 03, Japan EHS Committee Report

3.2 Korea EHS Working Group

Paul Trio reported that the WG is currently inactive.

3.3 RSC / Committee Leadership Report

Sean Larsen provided the cochaIRS report.

- Other Committee Activities
 - PV Systems
 - There is an effort to start-up a PV systems Technical Committee to address the complete PV power assemblies
 - Being championed by China group working to become the first TC Chapter
 - Activities have already been discussed but determined to be outside the scope of existing PV TC Charter
 - This would require expanding the scope of what SEMI Standards address
 - They also mentioned needing an EHS standard. Accepted suggestion to put on back burner for now. Is unclear how they are thinking of proceeding
 - China has also started an HB-LED TC Chapter
 - Their goals included an EHS document, but they agreed to table for now and work to address HB-LED charter with the rest of the Committee
 - Information & Control (I&C) is having significant issues with software-related IP issues
 - Reportedly has over a dozen documents held in limbo at the moment
 - Regulations Discussion
 - The regulations have not been revised since March 2013
 - The next revision is planned for before SEMICON Japan

Revision topics under discussion:

- SNARF Review Period
 - Proposal will be for a review period of 2 weeks for all SNARFs for new documents and “major revisions”
 - If sent to all TC members for prior review, it can be approved in the TC meeting
 - If not reviewed prior to TC meeting, it is reviewed in TC and agreed to send to GCS for approval
 - The GCS then reviews the SNARF, review comments and responses and either approves or rejects
- SNARFs will have a specific life
 - Projects are expected to be completed in 3 years
 - If the activity is still actively progressing, it can be given 1 year extensions by the TC
- Changes to the adjudication process
 - There is a concern that the discussion of ballot responses and adjudication decisions are being made only by the people that attend the TC meeting
 - The general idea being discussed is that documents that “clean” ballots are approved, but if negatives are received, it goes out for a second “simpler” voting cycle
 - No idea how this would relate to existing voting cycles

- No idea on review or adjudication of feedback
- This would also allow a “simpler” method for allowing “limited” technical changes
- Virtual meetings are still being discussed
 - Reportedly awaiting some changes to the teleconference infrastructure
 - Other issues still needing resolution are how to address language issues and addressing things being voted upon

Other topics for later revisions:

- Handling of minority reports in GCS and ISC
- More definition of interest categories
 - To address PV and other industry models
 - Interpretation of voting interest for subsidiaries
- PG guidance on SNARFs
 - When can revise and when to create new
- WG definition

Additional Discussion:

- With regard to changes to the adjudication process, Alan Crockett pointed out that the Regulations SC should consider the possibility that if someone is not happy with the ballot, they can simply vote reject again in the second voting cycle. Alan also asked whether the Regulations SC was aware of the PIC committee’s process where a motion is made to be agreed upon in the next meeting. He pointed out that this process seems to work for the PIC committee.
- With regard to “working group” definition, Supika Mashiro pointed out that WG is intended to describe a TC (technical committee) Chapter that has yet to be formed. However, she reported that “working group” is used in other areas, for other purposes. The Regulations SC’s goal is to determine a new name for group that will eventually become a TC.

Attachment: 04, Leadership Report

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

Mark Frankfurth reported.

- Regulatory Dashboard Review
 - Difficulty with information on Korea regulations
 - Directives affected by NLF (New Legislative Framework) recasts published
 - China Energy & Environmental rules coming
- RoHS WG Update
 - Working the New Substance Submission Process
 - Monitoring WEEE for impact on service parts
 - Korea RoHS & KECO organization affecting parts
- Industry Response to Large-Scale Incident Exposures

- Hazardous Energy/Remote Lockout

Additional Discussion:

- Mark Frankfurth reported that a Hazardous Energy/Remote Lockout WG has been newly formed to update corresponding OSHA guidelines.
- Alan Crockett asked whether there was any NFPA 79 feedback on wire. Mark Frankfurth pointed that it is too late to get feedback at this time.
- Sanjay Baliga also reported that SEMI is putting together a Sustainable Manufacturing Forum at SEMICON West. The purpose of this forum is to share information about the latest technologies, products, and management approaches that promote sustainable manufacturing. More information about this program can be found on the SEMICON West microsite (www.semiconwest.org). Some committee members recommended recording these sessions so that they can be accessed at a later time.

Attachment: 05, ICRC Report

3.5 SEMI Staff Report

Paul Trio gave the SEMI Staff Report.

- 2014 Global Calendar of Events
 - European 3D TSV Summit (January 21-22, Grenoble, France)
 - SEMICON Korea / LED Korea (February 12-14, Seoul)
 - SEMICON China (March 18-20, Shanghai)
 - SEMICON Singapore (April 23-25, Marina Bay Sands)
 - SEMICON Russia (May 14-15, Moscow)
 - SEMI Advanced Semiconductor Manufacturing Conference [ASMC] (May 19-21, Saratoga Springs, New York)
 - SEMICON West (July 8-10, San Francisco, California)
 - SEMICON Taiwan (September 3-5, Taipei)
 - SEMICON Europa / Plastic Electronics (October 7-9, Grenoble, France)
 - SEMICON Japan (December 3-5, Tokyo)
- NA Standards Spring 2014 Meetings (March 31 – April 3)
 - Committees meeting at SEMI Headquarters (San Jose)
 - 3DS-IC | EHS | Facilities & Gases | Information & Control | Metrics | PV Materials
 - SEMI thanks Intel (Santa Clara) for hosting the PIC and Silicon Wafer meetings
- Upcoming North America Meetings (2014)
 - NA Compound Semiconductor Materials in conjunction with CS MANTECH 2014 (May 21, Denver, Colorado)
 - NA Standards Meetings at SEMICON West 2014 (July 7-10, San Francisco, California)
 - NA Standards Fall 2014 Meetings (November 3-6, San Jose, California)

- Standards Publications Report

Cycle	New	Revised	Reapproved	Withdrawn
November 2013	1	6	3	0
December 2013	2	11	4	0
January 2014	3	3	0	1
February 2014	4	5	0	1

- o Total in portfolio – 901 (includes 99 Inactive Standards)

- Official SEMI Standards Groups

- o LinkedIn
 - <http://www.linkedin.com/groups/Official-SEMI-Standards-Group-1774298/about>
- o Twitter
 - @SEMI_standard

Attachment: 06, SEMI Staff Report

4 Subcommittee & Task Force Reports

4.1 Manufacturing Equipment Safety Subcommittee (MESSC)

Cliff Greenberg reported.

- SEMATECH presentation: “*Energetics in Semiconductor Processing – Best Known Methods and Standardization*”
 - o SEMATECH teleconferences will be scheduled with materials and equipment suppliers to continue gathering feedback on the BKM
 - Teleconferences are open to all SEMI EHS Standards TC members
 - These meetings will also help formulate a TFOF for presentation to the GCS for approval (June timeframe)
 - If this can be done, a TF meeting at West
- Obsolete standards listing in OSHA website
 - o <https://www.osha.gov/SLTC/semiconductors/index.html>
 - o Obsolete revisions of most standards are shown
 - o SEMI Staff to communicate with OSHA to remove publication dates and a sentence with link to www.semi.org
 - Also suggestion to include how our documents are created and used: industry consensus

Attachment: 07, SEMATECH Presentation: “*Energetics in Semiconductor Processing – Best Known Methods and Standardization*”

Attachment: 08, MESSC Report

4.2 *Fail-Safe / Fault-Tolerant Task Force*

Chris Evanston reported that the TF has held several meetings and while there is value in refining definitions for “fail-safe” and “fault-tolerant,” the TF found that such an effort would likely create more problem than solution. Hence, he recommended that the TF be disbanded. Alan Crockett objected and stated that the issue that the TF was trying to address always comes up whenever there is a problem. Chris Evanston agreed, but reiterated that such an effort would create more problems (e.g., impact on energetics) than solution.

Motion: NA EHS Committee approves to disband the S2 Fail-Safe Fault-Tolerant Task Force.
By / 2nd: Chris Evanston (Salus) / Bert Planting (ASML)
Discussion: None
Vote: 10-1 in favor.

4.3 *Fire Protection Discussion*

Eric Sklar reported. Current activities:

- Doc 5591 proposed to be balloted in Cycle 3: Line Item Changes to S2, specifically to:
 - 14.4.4.4
 - 14.4.4.5
 - 14.4.5.5
 - 14.4.5.14
- Eric Sklar added as TF Leader
- Work Plans
 - Address Negatives from Document #5590 (S14 Re-Approval)
 - Address Negatives from Document #4495B (Alignment of S14 with S10 Likelihood & Risk Tables)
 - Tiered Approach for Fire Risk Assessment between S2 and S14.
 - Future Ballots on Changes derived from responses to re-approval ballot

Additional Discussion:

- Committee members were asked whether there were any objections to approving Eric Sklar as Fire Protection TF co-leader. No objections were raised.

Attachment: 09, Fire Protection Task Force Report

4.4 *Hazardous Energy Isolation Devices Task Force*

Mark Fessler reported.

Hazardous Energy Isolation (HEI) TF History:

- Originally Created at SEMICON West 2013: (July 2013)
 - Based on SEMI Hazardous Energy Isolation Survey results on how industry perceives HEI, and applies HEI in their own companies, the results were all over the map...
 - Enough people in MESSC meeting felt there was a need to provide clarification in SEMI S2 because not everyone agrees.

- More discussion needed on various topics... S2 definitions?, non-electrical energy clarification, S13, gas panel interlock? etc.)

3 Previously Raised HEI Concerns

- Concern #1 - Remote HEI Challenges:
 - OSHA's Control of Hazardous Energy Regs do not allow the use of Remote HEI devices (remote HEI = low voltage control circuit isolation) unless it meets the minor service exemptions and the alternate HEI methods via ANSI Z244.1. What if used not just for minor service but for all potential HEI.
 - Human foreseeable misuse error rate versus the safety circuit failure rate??
- Concern #2 - SEMI S2 Section 17: Hazardous Energy Isolation:
 - Additional Gaps in SEMI S2 for Chemical HEI: Within Section 17, the concept of isolation de-energization and verification of de-energization is clarified well for electrical but has gap for ... chemical hazardous energies.
- Concern #3 - SEMI S2 Section 11: Interlocks:
 - Safety Interlocks: - should SEMI S2 specify the need for safety interlock for pressurized chemical/gas access doors?

TF Next Steps

- Continue Reoccurring Monthly Teleconferences – active involvement so far (> 10 per teleconference)
- Edit proposed changes to SEMI S2 Section 17
- Transfer Collaboration with Other Industry Standards Organizations to the ICRC (i.e., RIA, ANSI, others?)

Attachment: 10, Hazardous Energy Isolation Devices Task Force Report

4.5 NA Seismic Liaison Task Force

Lauren Crane reported.

- There are new questions of how and whether to set a standard appropriately for our industry, roughly summarized as follows:
 - 1) Is there a clear problem statement being “solved” by revising section 19?
 - 2) Should S2 have stricter criteria as a general matter of “improved standard of care”?
 - 3) Should S2 contain the strictest criteria (e.g., perhaps based on Taiwan building code) for all typical production locations?
 - 4) Should S2 have a means of deviation or alternate values if equipment will be sold into more benign regions only, or if the customer accepts such equipment?
 - 5) Seismic load force criteria are based not only on installation geographic location, but also on equipment design characteristics and the placement in buildings. Should any deviations be allowed for these potential variations?

What appeared to have been general support for the Japan TF plans has now reverted to some fundamental questions. NA TF would like Japan TF to delay balloting while these questions are considered further.

Motion: NA EHS Committee requests the Japan EHS Committee to delay submission of their ballot to change section 19 (Seismic issues) of SEMI S2 to at least after SEMICON West. Questions and concerns raised, documented in the NA Seismic Liaison TF report, will still need to be discussed and agreed upon by the NA Liaison TF.

By / 2nd: Lauren Crane (KLA-Tencor) / Alan Crockett (KLA-Tencor)

Discussion:

- NA concerns, not only with regard to aligning the force figures with current industry values, but also on equations used to arrive at these force figures.
- NA Seismic Liaison TF is there to assist Japan TF with discussing these issues now rather than the Document to get rejected during ballot time.
- NA EHS Committee request to delay is simply for more time to review concerns.
- It is unclear whether proposed ballot contains the most stringent requirements (e.g., requirements used in Taiwan).
- Concern seems to come from the reasoning for why these numbers are being changed.

Vote: 9-0 in favor.

Attachment: 11, NA Seismic Liaison Task Force Report

4.6 *S1 Revision Task Force*

Ed Karl reported.

- Background
 - On July 11, 2013, SNARF and TFOF were submitted to the NA EHS Committee to:
 - Prepare revision ballot(s) to improve SEMI S1 as prompted by reject comments to the re-approval ballot.
 - Scope of the SEMI S1 TF is to review and, where feasible, address the negative and comments received during the ballot of SEMI Draft Document #5521. This may include changes to achieve more harmony with national and international hazard alert labeling standards (i.e., ANSI Z535, ISO 3864, etc.)
 - NA EHS Committee approved the SNARF and TFOF on July 11, 2013.
- SEMI S1 TF Leaders emailed Geoffrey Peckham (past co-chair of SEMI S1) to seek his assistance with the issuance of an updated copyright release to SEMI for the purpose of updating SEMI S1 to align with ANSI Z535.4.
- G. Peckham responded on August 8th, 2013, *"I believe SEMI S1 should be retired and SEMI S2 should refer to the above standards to direct equipment manufacturers to regarding current best practices related to product safety labeling... It is my personal opinion that their time will be better spent working on SEMI standards that are relevant to specifically to semiconductor industry instead of putting time and effort into constantly revising SEMI S1."*
- Some of the basis outlined in G. Peckham's letter included:
 - ISO 3864-2 and ANSI Z535.4 have now harmonized to a large degree. It would take SEMI S1 a lot to be brought up to date, and even then, it would be playing a constant game of catch-up.
 - ISO 7010 has become the global source for standardized safety symbols. ANSI Z535 committee made a major modification to the 2011 version of ANSI Z535.3 safety symbol standard by removing all symbol examples from the standards and instead, referencing ISO 7010 as the primary resources for safety symbols.
 - ISO 3864-3 is an excellent standard pertaining to the design of new symbols.

- Referencing the ANSI and ISO standards will serve your industry better in the long run because they have been created by experts in visual safety communication.
- Based on input from Geoffrey Peckham, TF consensus: Keep SEMI S1 as-is and only address those ‘low-hanging-fruit’ negatives through line item ballots that do not involve copyright matters.
- Milestones
 1. TF Co-chairs reviewed negatives & comments to Ballot 5521
 2. TF Co-chairs redlined SEMI S1 based on negatives & comments
 3. Redlined SEMI S1 was emailed to SEMI S1 TF in 1/22/14 and again 3/24/14.
 4. Submitted redlined SEMI S1 to P. Trio on 3/24/14 and 4/2/14 requesting clarification from SEMI Legal whether any of the revisions would require copyright release.
 5. Reviewed redlined SEMI S1 with SEMI S1 TF on 4/2/14.
 6. Request approval from EHS Committee to submit line item ballot for Cycle 5, 2014 (Ballot submission date of 7/18/14, Voting Period between 7/25/14 and 8/25/14).

Action Item: 2014Apr #02, Paul Trio to report on SEMI response to S1 Revision TF request for guidance on copyright issues.

Attachment: 12, S1 Revision Task Force Report

4.7 S2 Chemical Exposure Task Force

John Visty reported. Current activities:

- The Tech Editor’s day job did not allow the ballot to be prepared as previously requested
- This ballot was reviewed and edited during the TF meeting and will be prepared for cycle 3 or 4, 2014.
- Other discussions
 - More explanation of surrogate testing
 - Defining “representative” testing conditions
- Future Plans / Timeline
 - Will submit a ballot for the prepared changes in cycle 3 or 4, 2014.
 - Will address additional items after successful ballot
 - Will have “irregular” conference call(s) prior to West.

Attachment: 13, S2 Chemical Exposure Task Force Report

4.8 S2 Ladders & Steps Task Force

Sean Larsen reported that there was a disconnect in getting the 4449E ballot out. Submission of ballot 4449E is planned for the Cycle 3 or 4, 2014 voting period for adjudication at SEMICON West.

4.9 S2 to Machinery Directive Mapping Task Force

Lauren Crane presented the task force's output of the S2 mapping into the Machinery Directive (2006/42/EC) Essential Health and Safety Requirements. The report will be sent to all EHS Standards committee members with a request to review the document and provide feedback within 30 days. Once reviewed and approved, this report will be published as an AUX document. The report includes a cover letter which provides background information, expected outcome (i.e., publish as an AUX document), and SEMI Standards Regulations citations of the approval process.

- Motion:** NA EHS Committee approves the cover letter for the S2 MD Mapping Task Force, pending updates to the Regulations citations, and for staff to send the proposed SEMI AUX draft to EHS committee members for feedback within 30 days.
- By / 2nd:** Lauren Crane / Bert Planting
- Discussion:** None
- Vote:** 10-0 in favor.

Additional discussion:

- Supika Mashiro pointed out that the existing EHS committee by-laws may actually require new AUX documents be approved by each represented EHS TC Chapter. Sean Larsen checked his copy of the by-laws and reported that the process that Supika mentioned was intended for the approval of RIs (Related Information).

Action Item: 2014Apr #01, Paul Trio and Chris Evanston (with Lauren Crane) to draft EHS committee by-law on how AUX documents are approved.

Attachment: 14, S2 Mapping into the Machinery Directive (2006/42/EC) Essential Health and Safety Requirements

4.10 S2 Non-Ionizing Task Force

Sean Larsen reported. Current activities:

- The Tech Editor's day job got in the way of getting the planned ballot out
 - The plan is to get this out in either cycle 3 or 4 to revise the RI to provide the graphs that were included in the ballot background statement to better show the differences and similarities in the various requirements
- It was noticed that the EU WP directive for EM Fields was revised and the values appear to have changed
 - There was also a comment that the ACGIH TLVs have also changed, but still need to confirm
 - If this is true, it is out of normal practice as there was no Notice of Intent to Change in 2013
- Future Plans / Timeline
 - The Tech Editor will work to get out a single line item to modify the RI with the graphs either cycle 3 or 4.
 - An effort will be started to review the new requirements and determine what changes to the S2 criteria are appropriate to suggest
 - Teleconferences will be set up to start this comparison
 - No attempt to get something together to ballot before West.

Attachment: 15, S2 Non-ionizing Task Force Report

4.11 S6 Revision Task Force

John Visty reported. Current activities:

- Based on ballot results – Realistic worst case release scenarios and release rate calculations
 - TF evenly divided so decision made to look at design requirements that could be used to reduce risk factors possibly leading to testing at a lower release rate for S6 validation
 - Design criteria could be incorporated as line items, appendix or RI that would identify controls and risk reduction factors
- Other discussions
 - PDCB use and low TLV chemistry
 - Gas detector approval/listing requirement
- Future Plans / Timeline
 - Continue to discuss criteria to address “worst case release”
 - Will have “irregular” conference call(s) prior to West

Additional Discussion:

- John Visty reported that he was trying to get gas detection vendors to attend the meetings at SEMICON West 2014.

Attachment: 16, S6 Revision Task Force Report

4.12 S8 Ergonomics Task Force

Paul Trio reported.

- Proposed 2014 Cycle 4 Ballot Items
 - Line item 1 – Ergonomics clearances clarification. These changes are intended to better define ergonomics related clearances for equipment design and installation.
 - Line item 2 – Modify Appendix 1, SESC checklist to expand whole body clearance criteria to include equipment operation tasks and provide design criteria for a seated posture. Whole body clearance recommendations are separated into two categories: walking/crawling and working postures. Existing recommendations that are specific to maintenance and service tasks are moved to a new section “11.”
- Current Activities
 - Hand-object coupling point definition
 - Lighting for maintenance activities
 - Rework Section 6 handle design guidelines
 - Risk characterization
- Future Plans / Timeline
 - Continue teleconference efforts (Wednesdays @ 1:00 pm Pacific DST)
 - Rework line items in preparation for Cycle 4 submission May 9, 2014

- Prepare additional material for ballot consideration (line item changes) up to a maximum of ten line items

Attachment: 17, S8 Ergonomics Task Force Report

4.13 *S10 (Safety Guideline for Risk Assessment and Risk Evaluation Process) Revision Activity*

Bert Planting presented a SNARF for S10 revision

- **Rationale:** Line items changes to SEMI S10 to solve some clarification issues and update to latest standards (ISO 12100)
- **Scope:** Update of the SEMI S10 with small changes. Not affecting the Risk Ranking tables of Appendix 1. These will be done as a separate effort.

Additional Discussion:

- Bert Planting reported that since the S10 revision activity will include the risk sections of ISO 12100, a copyright release will need to be obtained. Supika Mashiro pointed out that, per the Regs, the copyright release is usually obtained after the ballot has been approved by the committee. [It is only at this point where the Document is in its final form which the copyright owner can then use to determine whether to provide the release or not]. Supika cautioned that obtaining a release prior to ballot approval is not covered by the Regs and is therefore not advisable. Bert Planting stated that rather than including small portions of ISO 12100 in S10, it will simply reference the ISO document.

Motion: NA EHS Committee approves SNARF for S10 line item revision

By / 2nd: Bert Planting / Thomas Pilz

Discussion: None

Vote: 10-0 in favor.

4.14 *S22 Electrical Safety Task Force*

Chris Evanston reported. Current activities:

- Due to the Tech Editor's day job, the planned ballot did not go out in preparation for this meeting
- The TF cleaned up items for 3 line items in two ballots:
 - S22 – 1 item to allow disconnect timing method for grounding
 - S2/S22
 - Modify UPS output disconnect requirements
 - Modify the FECS criteria
- Future Plans / Timeline
 - Tech Editor to do final clean-up and prepare ballots for submission, targeting cycle 3.
 - These will be e-mailed to task force to allow for initial review and clean-up

Additional Discussion:

- Chris Evanston further reported that arc flash is also being addressed in the TF.

Attachment: 18, S22 Electrical Safety Task Force Report

4.15 S23 Task Force

Lauren Crane reported.

- TF activities:
 - Temperature Control Unit (TCU) Related Information (RI) on hold pending volunteer resources
 - Small modification proposal to clarify “energy efficiency improvement” idea.
- Modification Proposal
 - Idea proposed by NA side of TF at Fall 2013 meetings.
 - Text drafted by TF NA co-leader (Crane) March 2014.
 - Draft text reviewed, modified and supported by TF Japan co-leader (Hoshi) March 2014.
 - Draft reviewed, modified, and supported by NA TF group April 1, 2014.
 - NA draft text sent to Japan side of TF on April 2, 2014 with a request to ballot as soon as possible.
- Future Plans
 - Support Japan side of TF as needed to ballot proposal.

Additional Discussion:

- Lauren Crane reported that the ballot will likely be authorized at the next Japan EHS TC Chapter meeting, perhaps for Cycle 4, 2014, for adjudication during the Japan Fall 2014 meetings

Attachment: 19, S23 Task Force Report

4.16 EMC Task Force (under the NA Metrics Committee)

Mark Frankfurth reported.

- Development of Facility EMC Document - SNARF Doc. 5596

SEMI Staff Note: Rationale of SNARF 5596:

Release of the latest revision of E33 provides guidance for electromagnetic compliance for semiconductor manufacturing equipment, but it leaves a gap for managing electromagnetic environment in the fabrication facilities where electromagnetic compliance of the equipment is only one component. The fabrication facility environment with the components such as power and ground wiring, equipment colocations, and alike influences the electromagnetic environment, and as such, yield, quality, and equipment uptime. Some aspects, such as EMI Audit, are already a part of the E33 Document.

The beneficiaries of the new Guide Document will be semiconductor fabrication facilities and similar semiconductor manufacturing plants. This new Document will provide guidance on assessment, establishment, and maintenance of a manageable electromagnetic environment in a production environment.

- Vladimir Kraz [TF leader] presented information in support of the proposed Facilities EMC document.
 - Vladimir will draft document with input from TF participants and industry concerned parties.
 - Target draft for April 2015.
 - Teleconferences and e-mail will be utilized to coordinate inputs and communicate draft output.
- TF Discussion:
 - Alan Crockett asked for information on what problems and susceptible tools chipmakers are seeing to guide and justify this effort.

- Mark Frankfurth expressed the opinion that guidance or expectations for noise measurements inside of equipment will be impractical and unpopular.

Additional (NA EHS committee) Discussion:

- Mark Frankfurth explained that customers are complaining about broken equipment. He pointed out that what if the customer is using the equipment in an environment that is inappropriate for the equipment. This activity is intended to help equipment makers.
- Alan Crockett reiterated that he wanted to hear from chipmakers to see whether there is really a problem. Mark Frankfurth reported that stories of problems are currently anecdotal. He pointed out that the underlying effort is trying to understand the issue.

Attachment: 20, EMC Task Force Report

4.17 Energy Saving Equipment Communication Task Force (under the NA Information & Control Committee)

Paul Trio reported that the TF is looking into phase II work which would focus on the energy savings mode communication between semiconductor equipment and sub-systems. The SNARF for this activity is still being discussed in the TF.

5 Old Business

None

6 New Business

6.1 NA EHS Discussion on Standards/SEMIViews

NA EHS committee members raised concerns on SEMI Standards and SEMIViews usage. List of concerns were captured as follows:

- Reinstate member access for personal use of Standards / free standards for people who contribute to standards
- Other organizations allow public to view (only) their standards (e.g., NFPA)
- UL allows access to employees of clients
- SEMI should provide bulk standards purchase pricing for individual downloads
- Ability to highlight or add notes to PDF files
- SEMIViews should provide account managers ability to see how many times a standard gets viewed/downloaded

6.2 Ballot Authorization

#	When	SC/TF/WG	Details
4449E	Cycle 3 or 4, 2014	S2 Ladders & Steps TF	Delayed Line Item Revision to SEMI S2-0712, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> . Line Item Revisions related to Work at Elevated Locations and Design Criteria for Platforms, Steps, and Ladders
4683C	Cycle 3 or 4, 2014	S2 Chemical Exposure TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> Delayed Revisions related to Chemical Exposure
5591	Cycle 3, 2014	Fire Protection TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> Delayed Revision related to Fire Protection
5625	Cycle 3 or 4, 2014	S2 Non-ionizing Radiation TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> Delayed Revisions related to non-ionizing radiation
4316K	Cycle 3 or 4, 2014	S22 TF	Line Item Revisions to SEMI S2, <i>Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment</i> , and SEMI S22, <i>Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment</i> Delayed Revision related to Programmable Safety Circuits
5649A	Cycle 3 or 4, 2014	S22 TF	Delayed Line Item Revisions to SEMI S22, <i>Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment</i> Alignment with IEC 60204-33 and provide the additional flexibility that is allowed in that document
5009C	Cycle 3 or 4, 2014	S8 Ergonomics TF	Line Item Revisions to SEMI S8-0712, <i>Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment</i> . Delayed Revisions on Multiple Topics
5718	Cycle 3 or 4, 2014	S10 TF	Revision to SEMI S10, <i>Safety Guideline for Risk Assessment and Risk Evaluation Process</i> . Line items changes to SEMI S10 to solve some clarification issues and update to latest standards (ISO 12100). This revision will not affect the Risk Ranking tables of Appendix 1. These will be done as a separate effort.

Motion: NA EHS TC approves distribution of ballots as shown above

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

Discussion: None

Vote: 10-0. Motion passed.

6.3 NA EHS Standards due for Five-Year Review

Paul Trio reported that the following EHS Standards are due for five year review:

- S5-0310 – Safety Guideline for Sizing and Identifying Flow Limiting Devices for Gas Cylinder Valves
- S7-0310 – Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications
- S27-0310 – Safety Guideline for the Contents of Environmental, Safety, and Health (ESH) Evaluation Reports
- S6-0707E – EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment
- S14-0309 – Safety Guidelines for Fire Risk Assessment and Mitigation for Semiconductor Manufacturing Equipment
- S1-0708E – Safety Guideline for Equipment Safety Labels

Motion: NA EHS Committee approves to send S5 for reapproval for the first available cycle after the NA Fall 2014 meetings.

By / 2nd: Eric Sklar / Bert Planting

Discussion:

Vote: 9-0 in favor.

Motion: NA EHS Committee approves to send S27 for reapproval for the first available cycle after the NA Fall 2014 meetings.

By / 2nd: Pauline Derbyshire / Chris Evanston

Discussion:

Vote: 9-0 in favor.

Action Item: 2014Apr #03, Chris Evanston to submit S7 TFOF before SEMICON West.

Action Item: 2014Apr #04, Paul Trio to submit S7 TFOF for GCS approval.

Action Item: 2014Apr #05, Paul Trio to send S5 reapproval ballot for the first available cycle after the NA Fall 2014 meetings.

Action Item: 2014Apr #06, Paul Trio to send S27 reapproval ballot for the first available cycle after the NA Fall 2014 meetings.

6.4 NA EHS Proposed Meeting Schedule at SEMICON West 2014

North America Standards Meetings at SEMICON West 2014

July 7-10, 2014

San Francisco Marriott Marquis Hotel

780 Mission Street

San Francisco, California 94103

U.S.A.

Monday, July 7

- S22 (Electrical Safety) TF (9:00 AM to 10:30 AM)
- Hazardous Energy Control Isolation Devices TF (10:30 AM to 12:00 Noon)
- 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 5:00 PM)
- NA Seismic Liaison TF (5:00 PM to 6:00 PM)

Tuesday, July 8

- Fire Protection TF (9:00 AM to 10:30 AM)
- S10 TF (10:30 AM to 12:00 Noon)
- S7 Revision TF (1:00 PM to 2:00 PM)
- S1 Revision TF (2:00 PM to 3:30 PM)
- S8 Ergonomics TF (3:30 PM to 5:00 PM)
- S23 Revision Japan TF (5:00 PM to 6:00 PM)

Wednesday, July 9

- [International Compliance and Regulatory Committee (ICRC) (8:00 AM to 11:00 AM)]
- EHS Leadership Meeting (11:00 AM to 12:00 Noon)
- S2 Machinery Directive Mapping TF (1:00 PM to 2:00 PM)
- Manufacturing Equipment Safety Subcommittee [MESSC] (2:00 PM to 4:00 PM)
- S2 Ladders & Steps TF (4:00 PM to 5:30 PM)

Thursday, July 10

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

For more information about the NA Standards meetings at SEMICON West 2014, please visit: 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 Standards meeting schedule at SEMICON West 2014 is June 9, 2014.

6.5 New Action Items

Item #	Assigned to	Details
2014Apr #01	Paul Trio, Chris Evanston, Lauren Crane	Draft EHS committee by-law on how AUX documents are approved.
2014Apr #02	Paul Trio	Report on SEMI response to S1 Revision TF request for guidance on copyright issues.
2014Apr #03	Chris Evanston	Submit S7 TFOF before SEMICON West 2014.
2014Apr #04	Paul Trio	Submit S7 TFOF for GCS approval.
2014Apr #05	Paul Trio	Send S5 reapproval ballot for the first available cycle after the NA Fall 2014 meetings.
2014Apr #06	Paul Trio	Send S27 reapproval ballot for the first available cycle after the NA Fall 2014 meetings.

7 Next Meeting and Adjournment

The next meeting of the North America Environmental, Health, and Safety committee is scheduled for July 10 in conjunction with SEMICON West 2014. Adjournment was at 3:25 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 AG), Co-chair	
Bert Planting (ASML), Co-chair	June 1, 2014

Table 6 Index of Available Attachments #1

#	<i>Title</i>	#	<i>Title</i>
01	SEMI Standards Required Meeting Elements	11	NA Seismic Liaison TF Report
02	Amended NA EHS Fall 2013 Meeting (October 31) Minutes	12	S1 Revision TF Report
03	Japan EHS Committee Report	13	S2 Chemical Exposure TF Report
04	Leadership Report	14	S2 Mapping into the Machinery Directive (2006/42/EC) Essential Health and Safety Requirements
05	ICRC Report	15	S2 Non-ionizing TF Report
06	SEMI Staff Report	16	S6 Revision TF Report
07	SEMATECH Presentation: “Energetics in Semiconductor Processing – Best Known Methods and Standardization”	17	S8 Ergonomics TF Report
08	MESSC Report	18	S22 Electrical Safety TF Report
09	Fire Protection TF Report	19	S23 TF Report
10	Hazardous Energy Isolation Devices TF Report	20	EMC TF Report

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

<http://downloads.semi.org/standards/minutes.nsf/91eeb64567db378c88256dcf006a4252/20f7f9df5aa66d4688257d010073b121!OpenDocument>

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