EH&S NA TC Chapter

Meeting Summary and Minutes

SEMICON West Standards Meeting

Thursday, July 14, 2022

9:00 AM – 3:00 PM Pacific

Moscone Center, San Francisco CA.

**TC Chapter Announcements**

Next TC Chapter Meeting

Thursday, November 10, 2022 in conjunction with NA Fall Standards Meetings at SEMI HQ, Milpitas, CA. Check [www.semi.org/en/standards](http://www.semi.org/en/standards) for the latest update.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Meeting Attendees  **Co-Chairs:** Chris Evanston (Salus Engineering International), Sean Larsen (Lam Research), Bert Planting (ASML)  **SEMI Staff:** Kevin Nguyen (SEMI), James Amano (SEMI) | | | | | |
| **Company** | **Last** | **First** | **Company** | **Last** | **First** |
| *Axcelis Technologies* | *Alliegro* | *Richard* | *Lam Research* | *Larsen* | *Sean* |
| *Axcelis Technologies* | *Brick* | *Clifton* | *ERM West* | *Layman* | *Curt* |
| *TUV* | *Chan* | *Lennard* | **KLA** | **McDaid** | **Raymond** |
| *Lam Research* | *Crane* | *Lauren* | **Tokyo Electron** | **Mashiro** | **Supika** |
| *Applied Materials* | *D'Agostino* | *Mark* | **SCREEN** | **Nishimura** | **Takayuki** |
| *Salus Engineering* | *Evanston* | *Chris* | **Tokyo Electron** | **Rosen** | **Hannah** |
| *Cymer, ASML* | *Frankfurth* | *Mark* | **Tokyo Electron** | **Petraszak** | **Andrew** |
| *Nikon Precision* | *Girlea* | *Lucian* | **ASML** | **Planting** | **Bert** |
| *Safety Maven* | *Greenberg* | *Cliff* | *Texas Instruments* | *Schwab* | *Paul* |
| **Applied Materials** | **Gross** | **Ben** | *Safety Guru* | *Sklar* | *Eric* |
| *Tokyo Electron* | *Hayashi* | *Haruna* | *MURATA Machinery* | *Tominaga* | *Tadamasa* |

*Italic* indicates online participant. Bold indicates in person participant.

| Leadership Changes | | |
| --- | --- | --- |
| WG/TF/SC/TC Name | Previous Leader | New Leader |
| Global Seismic Protection TF |  | Lauren Crane (Lam Research) |

Committee Structure Changes

| Previous WG/TF/SC Name | New WG/TF/SC Name or Status Change |
| --- | --- |
|  | Environmental Performance Rating (EPR) Task Force (New)   * Leader - Ben Gross (Applied Materials) |
|  | Hydrogen Safety Task Force (New)   * Leader - Bert Planting (ASML) |
|  | Seismic Liaison Task Force (Disbanded) |
|  | S2 Pressure Guidelines Task Force (Disbanded) |

Ballot Results

|  |  |  |
| --- | --- | --- |
| *Document #* | *Document Title* | *Committee Action#1,#2* |
| 6831B | Revision of SEMI S1-1015, Safety Guideline for Equipment Safety Labels | Failed and returned to TF for rework and reballot. |
| 6884 | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment |  |
| Line Item 1 – Delayed Revisions related to lifting equipment and hinged loads (§§ 5, 18.6, and 18.7) | Failed and returned to TF for rework and reballot. |
| 6887A | Revision to SEMI S10-1119, Safety Guideline for Risk Assessment and Risk Evaluation Process | Passed with technical changes. Ratification will be issued. |
| SEMI S23-1021E | Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment  ((Unballoted editorial changes - Modification of equation in Note 63) | Passed. |

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

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Activities Approved by the GCS between meetings of the TC Chapter | | | | | --- | --- | --- | --- | | # | Type | SC/TF/WG | Details | | None |  |  |  |   Authorized Activity |

| *#* | *Type* | *SC/TF/WG* | *Details#1* |
| --- | --- | --- | --- |
| 6885 | SNARF | S12 (Equipment Decon) Review TF | Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (invocation of S12) (SNARF was modified) |
| 6940 | SNARF | Energetic Materials EHS TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding S30 and S18) |
| 6941 | SNARF | Energetic Materials EHS TF | Line Item Revision to SEMI S30, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (Regarding heating of piping) |
| 6942 | SNARF | Control of Hazardous Energy (CoHE) TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Related to CoHE/LOTO section of S2) |
| 6943 | SNARF | Ergonomics TF | Line Item Revisions to SEMI S8, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |
| 6944 | SNARF | Fire Protection TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Related to CoHE/LOTO section of S2) |

#1 SNARFs and TFOFs are available for review on the SEMI web site at: [http://downloads.semi.org/web/wstdsbal.nsf/tfofsnarf](http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF)

Authorized Ballots

| *#* | *When* | *TF* | *Details* |
| --- | --- | --- | --- |
| 6831C | Cycle 6 or 7-2022 | S1 Revision TF | Revision of SEMI S1-1015, Safety Guideline for Equipment Safety Labels |
| 6884A | Cycle 6 or 7-2022 | S2 Mechanical TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) |
| 6885A | Cycle 6 or 7-2022 | S12 (Equipment Decon) Review TF | Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (related to equipment decommisioning) |
| 6888A | Cycle 6 or 7-2022 | S12 (Equipment Decon) Review TF | Revision of SEMI S12-0211e, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination |
| 6907 | Cycle 6 or 7-2022 | S7 Revision TF | Revision to SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications |
| 6940 | Cycle 6 or 7-2022 | Energetic Materials EHS TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding S30 and S18) |
| 6941 | Cycle 6 or 7-2022 | Energetic Materials EHS TF | Line Item Revision to SEMI S30, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (Regarding heating of piping) |
| 6942 | Cycle 6 or 7-2022 | Control of Hazardous Energy (CoHE) TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Related to CoHE/LOTO section of S2) |
| 6943 | Cycle 6 or 7-2022 | Ergonomics TF | Line Item Revisions to SEMI S8, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |
| 6944 | Cycle 6 or 7-2022 | Fire Protection TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding Fire Protection) |
| R6887A | Cycle 6 | S10 Revision TF | Ratification Ballot, Revision to SEMI S10-1119, Safety Guideline for Risk Assessment and Risk Evaluation Process |

Granted a One-Year Extension

| # | TF | Title | Expiration Date |
| --- | --- | --- | --- |
| None |  |  |  |

SNARF(s) Abolished

| # | TF | Title |
| --- | --- | --- |
| 5996 | Ergonomics TF | Line Item Revision to S8-0915, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |

| Standard(s) to receive Inactive Status | |
| --- | --- |
| Standard Designation | Title |
| None |  |

| New Action Items | | |
| --- | --- | --- |
| Item # | Assigned to | Details |
|  |  |  |

| Previous Meeting Action Items | | |  |
| --- | --- | --- | --- |
| Item # | Assigned to | Details | Status |
| Mar31-2022#1 | Kevin Nguyen (SEMI Staff)  Lucian Girlea | To coordinate with EHS cochairs on S2 Interlock Topic on the NA Liaison report. The purpose is to get attention and encourage participation from other regions. | Completed |
| Mar31-2022#2 | Kevin Nguyen  (SEMI Staff) | To discuss the S1 (labels) pictograms copyright issue with James Amano. | Completed |
| Mar31-2022#3 | Kevin Nguyen  (SEMI Staff) | To inform SEMI IT on SVM issue for presiding chair’s view | Completed |

1. **Welcome, Reminders, and Introductions**
   1. Sean Larsen called the meeting to order at 9:00 AM. The meeting reminders on antitrust issues, intellectual property issues, and holding meetings with international attendance were reviewed. Attendees introduced themselves.
2. **Review of Previous Meeting Minutes**
   1. The TC Chapter reviewed the minutes of the previous meeting. Several typographical changes were suggested by Eric Sklar who sent a markup MS Word file to Kevin Nguyen.

|  |  |
| --- | --- |
| **Motion:** | Accept the minutes as amended. |
| **By / 2nd:** | By: Eric Sklar / Safety Guru, LLC  Second: Lauren Crane / Lam Research Corporation |
| **Discussion:** | None |
| **Vote:** | 15-0. Motion passed. |

Attachment: EHS NA TC Minutes 03312022\_es14jul22a

1. **Ballot Review**

**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.

* 1. TC Chapter adjudication on ballots reviewed is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment file name for each balloted document is provided under each ballot review section below.
  2. ***Doc. 6831B,*** ***Line Revision of SEMI S1-1015, Safety Guideline for Equipment Safety Labels***
* Motion: Move to find negative (Murata-1) is related and persuasive.    
  By: Eric Sklar / Safety Guru, LLC  
  Second: Lauren Crane / Lam Research Corporation  
  Discussion:  
  Result: 15-Y 0-N Voting Result: Pass - 100.00%
* Motion: This Document failed TC Chapter review and will be returned to the TF for rework.  
  By: Andrew Petraszak / TEL Technology Center America  
  Second: Bert Planting / ASML Netherlands BV  
  Discussion:  
  Result: 16-Y 0-N Voting Result: Pass - 100.00%
* Ballot failed and returned to TF for rework and reballot.
* On a separate note, Eric Sklar pointed out that SEMI has received the permission from ISO to reproduce pictograms.
* **Attachment: 6831B\_Responses\_tf07jul22a\_es10jul22a**
* **Attachment: S1report\_es14jul22a**
  1. ***Doc. 6887A, Revision to SEMI S10-1119, Safety Guideline for Risk Assessment and Risk Evaluation Process***
* This ballot **passed the** TC Chapter review with technical changes. Ratification Ballot will be issued in cycle 6-2022.
* **Attachment: 6887A ballot report rev2**
* **Attachment: 6887A\_Responses\_es10jul22b\_tf12jul22b**
* **Attachment: 6887A\_Markup\_tf12jul22a\_es13jul22b**
* **Attachment: S10report\_es14jul22a**

* 1. ***Doc. 6884, Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Delayed Revisions related to lifting equipment and hinged load)***
* Line Item 1 - Delayed Revisions related to lifting equipment and hinged load
  + Motion: Move to find SG1-2 negative is related and persuasive.   
    By: Lauren Crane / Lam Research Corporation  
    Second: Bert Planting / ASML Netherlands BV  
    Result: 15-Y 0-N Voting Result: Pass - 100.00%
  + Motion: Line item [1] failed TC Chapter review and will be returned to the TF for rework.  
    By: Lauren Crane / Lam Research Corporation  
    Second: Bert Planting / ASML Netherlands BV  
    Discussion:  
    Result: 16-Y 0-N Voting Result: Pass - 100.00%
  + Ballot failed and returned to TF for rework and reballot.
* **Attachment: S2 Mech Report Summer 2022**

1. **Subcommittee & Task Force Reports**
   1. ***S2 Pressure Guidelines TF***
      1. Bert Planting reported:

* Doc. R6551C, Ratification ballot, Line Item Revision to SEMI S2-0821 Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Re: Delayed Revision Related to Pressure Guideline)
  + Passed and pending publication.
  + Thanks to those who contributed on this effort, especially those participated in the teleconferences.
* Motion: Disband the S2 Pressure Guidelines TF  
  By: Lauren Crane / Lam Research Corporation  
  Second: Bert Planting / ASML Netherlands BV  
  Discussion: The Ratification ballot passed A&R, and publication is pending.  
  Result: 11-Y 0-N Voting Result: Pass - 100.00%
* What is next?
  + Start a section on Hydrogen
    - Lot of legislation in different countries
    - Can we base this on the IEC-EX 60079 series?
    - Some countries have their own interpretation
    - Some countries require to use approved component
  + A TFOF was prepared.
  + Motion: Approve the Hydrogen Safety TFOF  
    By: Bert Planting / ASML Netherlands BV  
    Second: Hannah Rosen / TEL Technology Center America  
    Discussion:  
    Result: 11-Y 1-N Voting Result: Pass - 91.67%

**Attachment: Pressure addition SEMI-con west 2022**

**Attachment: TFOF\_Hydrogen safety and regulations**

* 1. ***Manufacturing Equipment Safety Subcommittee (MESSC)***
     1. No meeting, no report.
  2. ***S2 Interlocks Design TF***
     1. Lucian Girlea reported. Of note:
* Background
  + TF started with concerns on S2 “fail safe” and “fault tolerant” definitions
  + TFOF July 2021: “Many of the MESSC members consider the current definitions and guidelines for safety interlock systems inadequate.”
  + No reports of equipment failing S2 assessments because of current S2 wording or S2-conforming interlocks having been proven unsafe.
* TF Activity
  + TF has very good attendance, with weekly meetings scheduled.
    - Eric Sklar is the TF Technical Editor
  + Topics addressed, work in progress or proposed:
    - S2 Purpose and S2 Scope clarifications
    - Definitions for “acceptable risk”, “accumulation of faults”, “foreseen”, “hazardous chemical”, “hazardous gas”, “human error”, “reasonably foreseeable”, “residual hazard”, “residual risk”, “safe”, “safety interlock”, “unacceptable risk”, “unsafe”
    - Replaced “increased hazard” (or similar) with “unacceptable risk”
    - Attempt to clarify definitions for “fail safe” and “fault-tolerant”
    - Introduced “accumulation of faults” instead of “single point failure”
    - Consistent use of Hierarchy of Controls in S2
    - Manufacturer vs. Supplier vs. Documentation requirements clarification
    - “Hazardous chemicals” (substances, materials) define per GHS instead of NFPA 704
    - Replace “hazard labels” with “safety labels”
    - Eventually: “safety interlock systems”, new interlock devices & technologies
* July meeting summary
  + Discussed concerns expressed by TF leads on this work failing due to increasing number of changes made and sheer volume of work.
  + This should go to ballot as a major revision due to changes to different paragraphs in S2, including terminology. Very low chances to pass as a clever line item.
  + Having one TF for the entire S2 is not likely to succeed; the S2 work in 2000 was divided into several TFs working on separate sections.
  + Should do this work because not being able to maintain S2 will cause it to become irrelevant (and S2 will eventually die).
  + Found that using a primary + subordinate document structure is not a permitted procedure for safety guideline, allowed only for standards.
  + There are situations where S2 uses other standards by reference only and the respective standards carry the technical contents (S3, S8). Thus, we probably can split interlocks into a separate S\*.
  + For now, we will continue working on all issues as we did since Spring 2022; the TF discuss possible strategies offline and present a proposal for discussion in SEMI NA Fall 2022.

**Attachment: S2 Interlocks Design TF - NOTES - SEMI 2022 West**

* 1. ***S3 Revision TF***
     1. Andy Petraszak reported.
* Current Projected Path Forward:
  + Include TF discussion into a draft ballot.
  + Have the TF review the draft ballot.
  + Correct any items found by the TF of the draft ballot.
  + Submit for balloting.

**Attachment: S3 Report Summer 2022rev1**

* 1. ***S2 Chemical Exposure TF***
     1. No meeting, no report.
  2. ***S6 Ventilation TF***
     1. There was a meeting, but TF leader was not present to report and no report was submitted.
  3. ***S23 Global TF***
     1. Lauren Crane reported.
* Near Term History
  + An editorial error was identified by Carlo Luijten and Eric Sklar has drafted a PCR (Publication Change Request) for review in the TC meeting.
    - S23 RI 2 Note 63. The CoP cited should instead be “refrigeration CoP”
    - Motion: To approve the PCR for S23 as written  
      By: Lauren Crane / Lam Research Corporation  
      Second: Eric Sklar / Safety Guru, LLC  
      Discussion: The note is in section R2-3.4.6  
      Result: 10-Y 0-N Voting Result: Pass - 100.00%
  + The TF has decided to pursue the calving of a test method from the S23 guide. Eric has been working on the details.
    - Lauren Crane presented the SNARF, but Eric Sklar said a SNARF for new standard will require two weeks review by members.
    - Supika Mashiro said two SNARFs are required since one SNARF covering two ballot actions is not allowed. One SNARF is to revise S23 and the other is creating a new Guide.
    - Lauren said he will try to create two SNARFs and submit to staff.
    - Sean Larsen asked how would one cover adjudication when some materials are deleted from S23 and some are created in a new Guide? And two ballots may not happen at the same time. Supika said such issue can be mentioned in the SNARF to inform voters as a special circumstance.
    - Eric Sklar said there is no evidence that in the Regulations prohibit doing this in one single ballot.
    - Supika Mashiro is open to changing the rules which allows one SNARF covering two ballot actions, but that needs a change in SEMI Regulations.
    - Base on the discussions, Lauren Crane will table this issue and discuss in the task force.
  + A proposal has arisen from the SEMI Environmental Sustainability Advisory Council for a sort of “energy star” standard for manufacturing equipment.
    - In the SEMI Environmental Sustainability Advisory Council a proposal has arisen for a sort of “energy star” standard for manufacturing equipment with an aim of first developing a 1 to 5 star rating for pumps.
    - I (L.Crane) have recommended to Ben that this not be designed into S23, but that it instead be proposed as a separate standard with reference to S23 (as the test method) as needed.
    - The effort is currently being led by Benjamin Gross (AMAT). The TFOF was prepared and will be presented by Ben.

**Attachment: 2022 July S23 TF mtg & rpt Crane r2**

* 1. ***S2 Seismic Liaison TF***
     1. Lauren Crane reported.
* This is officially a meeting of the S2 North American Seismic Liaison Task Force under the umbrella of the NA EHS TC Chapter.
  + Motion: Disband the NA S2 Seismic Liaison TF  
    By: Lauren Crane / Lam Research Corporation  
    Second: Lucian Girlea / Nikon Precision Inc.  
    Discussion:  
    Result: 9-Y 0-N Voting Result: Pass - 100.00%
* There is also an S2 Seismic Global Task Force that was forming just prior to March 2020.
  + Motion: To nominate L. Crane as a co-leader of the S2 Seismic Global Task Force  
    By: Lauren Crane / Lam Research Corporation  
    Second: Lucian Girlea / Nikon Precision Inc.  
    Discussion:  
    Result: 9-Y 0-N Voting Result: Pass - 100.00%
* Near Term Plans
  + Continue meetings to decide how to address the formula issue.
  + As part of our fun, we found “the experts” have changed their view of the correct force/design load formula – particularly puzzling is the change in the height of equipment in the factory factor.

**Attachment: 2022 July Seismic TF mtg & rpt Crane r1**

* 1. ***Fire Protection TF***
     1. Eric Sklar reported.
* Old Business
  + Proposal from Matt Wyman (KFPI) regarding fire detection systems
    - Motion: Approve the SNARF for LI Revisions to SEMI S2 regarding Fire Protection  
      By: Eric Sklar / Safety Guru, LLC  
      Second: Lauren Crane / Lam Research Corporation  
      Discussion:  
      Result: 11-Y 0-N Voting Result: Pass - 100.00%
  + Adding performance criteria (Such as effectiveness, fire size to be considered) for detection
  + Adding design criteria (Such as treatment of pyrophoric materials) for detection and protection systems
  + Should exhaust ventilation be reduced or stopped if a fire is detected?
* New Business
  + FM 4910 materials availability
    - “Somewhat limitted these days”
    - Not easy to determine, when SME is delivered to fab, whether FM4910 compliant material was used or some non-compliant material was substituted
    - There are also shortages of PTFE and PFA (both generically considered to be FM 4910 compliant)
    - Shortage is unofficially attributed to testing backlog at FM, which is, in turn, attributed to COVID-19
    - The above is for information, there’s nothing the TF can think to do to fix this.

**Attachment: FPreport\_es14jul22a**

**Attachment: SNARFdraft\_FPS2\_es14jul22a**

* 1. ***Energetic Materials TF***
     1. Eric Sklar reported.
* Old Business
  + Topics Discussed at previous TF Meetings and Updates
    - Addition of guidance, by function (such as pump line heater blanket undertemperature), as to what interlocks should be considered
      * Motion: Approve a SNARF for LI Revision to SEMI S30 regarding heating of piping  
        By: Eric Sklar / Safety Guru, LLC  
        Second: Lucian Girlea / Nikon Precision Inc.  
        Discussion:  
        Result: 11-Y 0-N Voting Result: Pass - 100.00%
    - Topics TF believes should be addressed by a training program
    - Still no report of an integrated risk assessment having been done.
    - Some S30 related questions have been raised by 1 or 2 device manufacturers.
    - Should S2 invoke S30 (and S18) by reference?
      * Motion: Approve SNARF for LI Revisions to SEMI S2 regarding S30 and S18  
        By: Eric Sklar / Safety Guru, LLC  
        Second: Lucian Girlea / Nikon Precision Inc.  
        Discussion:  
        Result: 9-Y 0-N Voting Result: Pass - 100.00%

**Attachment: SNARFdraft\_EMS30\_es13jul22b**

**Attachment: SNARFdraft\_EMS2\_es14jul22a**

**Attachment: EMreport\_es14jul22a**

* 1. ***S2 Control of Hazardous Energy (CoHE) TF***
     1. Sean Larsen reported.
* Current Activities
  + Should we fix everything or just pick a few topics and start making smaller fixes
    - Eric Sklar support major fix at once
    - Or will we get a volunteer to start picking smaller topics?
    - Hand off to interlock effort?
    - Is there anything in S20 that is worth picking up?
  + Items to work on
    - Align 17.3.1 and 17.4.3 related to ability to lock valves in open position – Are clamshells still allowed?
  + Control panel with lockable cover panel – is this allowable? – OSHA position (and NFPA interpretation) allows lockable panels if the people exposed to the hazard have a key
    - Draft a SNARF for discussion at TC
    - Motion: To approve a SNARF for Line Item related to CoHE/LOTO section of S2  
      By: Lauren Crane / Lam Research Corporation  
      Second: Eric Sklar / Safety Guru, LLC  
      Discussion:  
      Result: 9-Y 0-N Voting Result: Pass - 100.00%
* Future Plans / Timelines
  + (Re)Start weekly TF meetings (to be scheduled later
  + Intent is to have at least one line item for cycle 7

**Attachment: S2 CoHE SNARF\_14Jul2022**

**Attachment: S2 CoHE TF Report July2022**

* 1. ***S12 Decontamination TF***
     1. Eric Sklar reported.
* Old business
  + Document 6888A, Revisions to SEMI S12
  + Document 6885A, LI Revision to SEMI S2 regarding invocation of SEMI S12
    - Modify SNARF 6885 SNARF, 2a from “references to S12” to “material pertaining to equipment decontamination”.
    - Motion: To approve revision of SNARF 6885  
      By: Eric Sklar / Safety Guru, LLC  
      Second: Lauren Crane / Lam Research Corporation  
      Discussion: Ref: add normative and informative material pertaining to equipment decommissioning ~~references to S12~~.  
      Result: 12-Y 0-N Voting Result: Pass - 100.00%

**Attachment: SNARF6885change\_es14jul22b**

**Attachment: S12report\_es14jul22a**

* 1. ***S8 Ergonomics TF***
     1. Paul Schwab reported.
* Items to be included in new SNARF:

|  |  |
| --- | --- |
| **Section** | **Proposed change** |
| Main body, Section 8 Related Documents | Update references and dead hyperlinks |
| Appendix 1, Section 1 | Add push-pull analysis guidance |
| Appendix 1, Section 6 | Add knob criteria |
| Appendix 1, Section 6 | Add hand crank criteria |
| Appendix 1, Section 9 | Add toe clearance criteria to reaches |
| Appendix 2 | Add guidance for assessing multi-person lifts (team lifts) |

* Motion: Approve a SNARF for Line Item Revisions to SEMI S8  
  By: Paul Schwab / Texas Instruments, Inc  
  Second: Lucian Girlea / Nikon Precision Inc.  
  Discussion:  
  Result: 10-Y 0-N Voting Result: Pass - 100.00%
* SEMI Document Storage
  + <https://connect.semi.org/communities/community-home?CommunityKey=c1526656-40a4-4245-af86-34d3ecc68624>

**Attachment: SEMI-S8\_TF\_summary\_14JUL2022**

**Attachment: SNARF\_SEMI-S8\_2022**

* 1. ***S7 TF***
     1. Sean Larsen reported.
* Inputs received for doc. 6907, Revision to SEMI S7-0515 Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications.
* Will distribute to the TF for commenting before submitting to SEMI staff for cycle 6.
  1. ***S2/S22 TF***
     1. Sean Larsen reported.
* List of item changes have been identified, but it is a bit complicated. The document may be ready for cycle 7.
  1. ***Other Interest Documents***
     1. F47 TF
* Sean Larsen mentioned F47 is continuing to have discussion on voltage sags on 3 phases vs 1 phase.
* F47 compliance – the issue is when a component is changed or a firmware is upgraded, equipment was once passed F47, but now no longer passed the test. So, it is unclear which direction the TF is going. It is not one way or the other.
* Also, SEMI Korea is kicking off with F47 liaison TF. It will be interesting to see how the two TFs are coordinating.
  + 1. BIM TF
* Sean Larsen reported the Building Information Modeling (BIM) activity. The goal is to get data package for tool installation. Various facilities have various requirements, so it is not sure how it will be resolved.
* Eric Sklar stated that he is participating in the TF, but he has not seen any updates for the next teleconference.

1. **Liaison Reports**
   1. *ICRC Liaison*
      1. Bert Planting presented.

* ICRC: organization presentation of Mark Tsuru.
* Machinery Directive & AI:
  + Update by Andrew Petraszak. Most amendments are heading in the right direction. Accepting the concept of risk.
  + Annex 4: third party need for certification ‎→ moved to annex 1. Now moving to a more self-evolving behavior using machine learning aspect in it.
* AI regulation changes a lot in favor, Now 2 aspects:
  + Self-evolving behavior
  + Cyber security (including data logging)
* US Chemical updates
  + PFAS: EU and US (Intel is leading EU)
  + California: has new legislation for PFAS (production or introduce in the market) product manufacturer has to report in a database.
  + Other states: legiscscan.com is a program following the regulations
* TMAH transport Classification (Kevin McLaughlin)
* Third Parties in SEMI evaluations
* ICRC charter
* ICRC leadership
  + Request for a second co-chair (preferred with knowledge what is on-going in the US)

**Attachment: ICRC SEMI-con west 2022**

* 1. *Japan EH&S TC Chapter*
     1. Supika Mashiro reported.
* Last meeting
  + May 26, 2022
    - Web
* Next meeting
  + September 8, 2022
    - Web
* S19 Revision TF
  + Disband after Document #6910 was published
* Ballot Results
  + Doc. 6909, Withdrawal of SEMI S26 Environmental, Health, and Safety Guideline for FPD Manufacturing System
    - Passed, as balloted
  + Doc. 6910, Revision of S19, Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel
    - Passed, with Editorial changes
* SEMI S2 tutorial seminar will be held in August and September 2022.
  + Web on-demand seminar in Japanese
* **Attachment: JA\_EHS\_Liaison\_20220613\_v1.1**
  1. *Taiwan EH&S TC Chapter*
     1. Kevin Nguyen reported.
* Last meeting
  + July 7, 2022
    - Web
* Next meeting
  + TBD
* Seismic Task Force
  + Disbanded
* Equipment Safety TF
  + Discussed topics
    - Safety guideline for cobot or collaborative robot
    - Safety guideline for energy storage system
    - Safety Hydrogen energy/fuel cell
* **Attachment: EHS Taiwan TC Liaison report\_2022\_July v3**
  + 1. *RSC/Co-chairs report*
    2. Sean Larsen reported.
* SEMI publication is dealing with backlog issue. They are looking ways to reduce the bottle neck. Also, they are looking for a headcount increase to help speeding up the publication process.
  1. **SEMI Staff Report**
     1. Kevin Nguyen (SEMI) reported.
* SEMI upcoming event
  + 2022 Calendar of Events
  + Upcoming NA Meetings
    - NA Standards Fall Meetings
      * Nov 7-10, 2022
      * SEMI HQ in Milpitas, California
* 2022 Critical Dates for SEMI Standards Ballots
  + <https://www.semi.org/en/collaborate/standards/ballots>
* SEMI Standards Publications
  + Total SEMI Standards in portfolio: 1,064
    - Includes 320 Inactive Standards
* NEW! SEMI Corporate PPT Template
  + SEMI launched a new corporate PPT template earlier this year
    - Standards is among the first to use the new template ⭐
  + We encourage TFs to begin transitioning over to the new template
    - Please reach out to your Staff contact for assistance
    - Templates will be sent out by Staff and can be found on the SEMI Web site
* SNARF 3-Year Status
  + Doc. 5996, Line Item Revision to S8-0915, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment
    - Expiration: July 14, 2022
    - Per Paul Schwab, the new SNARF may address topic covered in this SNARF. There is no intention to seek for a 1 year project extension.

**Attachment: Staff Report July 2022 v7**

1. **Old Business**
   1. None
2. **New Business**
   1. 5 year review (S1, S7, S12)
      1. These standards are due for 5 year review. Various task forces are reviewing at the moment. No further action is needed.
   2. Upcoming Ballot Authorization
      1. The following ballots are authorized for the before next meeting.

| *#* | *When* | *TF* | *Details* |
| --- | --- | --- | --- |
| 6831C | Cycle 6 or 7-2022 | S1 Revision TF | Revision of SEMI S1-1015, Safety Guideline for Equipment Safety Labels |
| 6885A | Cycle 6 or 7-2022 | S12 (Equipment Decon) Review TF | Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (pertaining to equipment decommisioning) |
| 6884A | Cycle 6 or 7-2022 | S2 Mechanical TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) |
| 6888A | Cycle 6 or 7-2022 | S12 (Equipment Decon) Review TF | Revision of SEMI S12-0211e, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination |
| 6907 | Cycle 6 or 7-2022 | S7 Revision TF | Revision to SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications |
| 6940 | Cycle 6 or 7-2022 | Energetic Materials EHS TF | Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding S30 and S18) |
| 6941 | Cycle 6 or 7-2022 | Energetic Materials EHS TF | Line Item Revision to SEMI S30, Safety Guideline for Use of Energetic Materials in Semiconductor R&D and Manufacturing Processes (Regarding heating of piping) |
| 6942 | Cycle 6 or 7-2022 | Control of Hazardous Energy (CoHE) TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Related to CoHE/LOTO section of S2) |
| 6943 | Cycle 6 or 7-2022 | Ergonomics TF | Line Item Revisions to SEMI S8, Safety Guideline for Ergonomics Engineering of Semiconductor Manufacturing Equipment |
| 6944 | Cycle 6 or 7-2022 | Fire Protection TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Regarding Fire Protection) |
| R6887A | Cycle 6 | S10 Revision TF | Ratification Ballot, Revision to SEMI S10-1119, Safety Guideline for Risk Assessment and Risk Evaluation Process |
|  |  |  |  |

Motion: Authorize these documents for Letter Ballot in cycle 6 or 7 as shown  
By: Eric Sklar / Safety Guru, LLC  
Second: Lucian Girlea / Nikon Precision Inc.  
Discussion: Lauren Crane: Worth to include S23 split ballot even though the SNARF has not been approved? Sean Larsen: It’s problematic when the SNARF has not been formally approved.

Eric Sklar: S10 Ratification ballot should be in cycle 6 as the Regulations states the earliest cycle. His preference is also to have the ballot list approved, if any ballot is ready to be submitted, it can be issued at the appropriate cycle.

The list of ballots consists of S2 Decommisioning, S2 Energetc Materials, S7, Ratifications S10,  S2 Fire Protection, S12, S2 Mech, S30, S1, S2 CoHE, and S8.

Result: 10-Y 0-N Voting Result: Pass - 100.00%

* 1. **Equipment Energy Efficiency Ranking TFOF**
     1. Ben Gross (AMAT) presented rationale for forming Component Ratings for Environmental Performance task force.
* “Sustainability” in Semiconductor Manufacturing
  + Stakeholder interest in “sustainable” or “green” solutions in semi manufacturing
  + No standing definition for “green”
  + Need a standardized way of rating sustainability
* Equipment decision process
  + Price, performance, services
  + Today, environmental performance is part of the decision-making process
* Environmental Performance is not a precise metric
  + Example: Physics mid-term
    - Starts with a precise metric (i.e. percent on a test)
    - Use less precise (letter grade) for more accurate measure
    - Ranges can acknowledge uncertainty and distinguish meaningful differences in performance
  + Discussion:
    - Eric Sklar: Lowering level of precision does not necessarily add anything to accuracy.
    - Chris Evanston: This is just a high level presentation. Diving deep in the detail should take place in the task force, not in the TC Chapter meeting.
    - Eric Sklar: The presented motivation is to reduce precision. He objects to that approach in the standard.
    - Ben Gross: S23, is narrowly focus on energy, and it does a good job of capture energy usage. There are other elements of sustainability that tailored specially into component types that should be looked into.
* Efficiency Rating for Components to Drive Selection
  + Similar concept to consumer product ratings (DOE, EPA, FTC)
* No one said our job is easy…
  + Desired Attributes
    - Accurate measure of Environmental Performance
    - Meaningful results useful for driving decisions to more energy/materials efficient solutions
  + Challenges
    - Identifying most relevant metrics
    - Buy-in
    - Data integrity and availability
    - Staying up to date
* SME Component Environmental Performance Rating
  + Component-level scoring – Example Use Case
    - Simple – i.e. points or “grade” or “star” based
    - Component-specific performance criteria
    - Downselect by application requirements, then combine with efficiency
* Potential System for Vacuum Pump
  + 1. Ben Gross also presented a TFOF for Environmental Performance Rating (EPR).

**Motion:** Approve the Environmental Performance Rating (EPR) TFOF  
**By:** Ben Gross / Applied Materials, Inc.  
**Second:** Lauren Crane / Lam Research Corporation  
**Discussion:**

Supika Mashiro: Should consider creating a global task force. She can be the leader in Japan. When the next meeting in September in Japan, we can bring this up.

Ben Gross: The global concept is ok, but the ballot is issued globally anyway.

Supika Mashiro: If the global task force is formed, the consensus is needed before issuing the ballot. The advantage is that the ballot can be reviewed at any region.

Eric Sklar: Global task force creates an administrative burden. It will only add pressure to two other locations (Japan and Taiwan). All task forces are global. Anyone can participate.

**Result:** 8-Y 1-N Voting Result: Pass - 88.89%

**Attachment: 20220714 TFOF\_Semi-Star DRAFTJuly14 2022rev1**

**Attachment: 20220714 Component Sustainability Rating**

* 1. **Teleconferences**
* The following TF teleconferences are planned. Refer to attachment. All are in Pacific time zone.

**Attachment: Teleconferences Fall 2022**

* 1. **Next Meeting Schedule.**

The draft schedule for NA Fall Standards Meetings, November 7-10, 2022, is shown below.

**Attachment: FALL 2022 EHS Draft Schedule rev1**

1. **Next Meeting and Adjournment**
   1. The next meeting is scheduled for Thursday, November 10, 2022. Refer to <http://www.semi.org/standards> for the current list of meeting schedules.

There being no further business, a motion was made to adjourn. Adjournment was at 6:30 PM.

Respectfully submitted by:

Kevin Nguyen,

SEMI Standards Operations Manager

Phone: 408-943-7997

Email: [knguyen@semi.org](mailto:knguyen@semi.org)

Minutes tentatively approved by:

|  |  |
| --- | --- |
| Sean Larsen (Lam Research) | <Date approved> |
| Chris Evanston (Salus Engineering International) | <Date approved> |
| Bert Planting (ASML) | <Date approved> |

| Index of Available Attachments#1 | | |
| --- | --- | --- |
| Title | Title |
| EHS NA TC Minutes 03312022\_es14jul22a | SNARFdraft\_EMS2\_es14jul22a |
| 6831B\_Responses\_tf07jul22a\_es10jul22a | EMreport\_es14jul22a |
| S1report\_es14jul22a | S2 CoHE SNARF\_14Jul2022 |
| 6887A ballot report rev2 | S2 CoHE TF Report July2022 |
| 6887A\_Responses\_es10jul22b\_tf12jul22b | SNARF6885change\_es14jul22b |
| 6887A\_Markup\_tf12jul22a\_es13jul22b | S12report\_es14jul22a |
| S10report\_es14jul22a | SEMI-S8\_TF\_summary\_14JUL2022 |
| S2 Mech Report Summer 2022 | SNARF\_SEMI-S8\_2022 |
| Pressure addition SEMI-con west 2022 | ICRC SEMI-con west 2022 |
| TFOF\_Hydrogen safety and regulations | JA\_EHS\_Liaison\_20220613\_v1.1 |
| S2 Interlocks Design TF - NOTES - SEMI 2022 West | EHS Taiwan TC Liaison report\_2022\_July v3 |
| S3 Report Summer 2022rev1 | Staff Report July 2022 v7 |
| 2022 July S23 TF mtg & rpt Crane r2 | 20220714 TFOF\_Semi-Star DRAFTJuly14 2022rev1 |
| 2022 July Seismic TF mtg & rpt Crane r1 | 20220714 Component Sustainability Rating |
| FPreport\_es14jul22a | Teleconferences Fall 2022 |
| SNARFdraft\_FPS2\_es14jul22a | FALL 2022 EHS Draft Schedule rev1 |
| SNARFdraft\_EMS30\_es13jul22b |  |

1. Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at www.semi.org. For additional information or to obtain individual attachments, please contact Kevin Nguyen at the contact information above.