EH&S NA TC Chapter

Meeting Summary and Minutes

NA Spring Standards Meeting

Thursday, March 31, 2022

9:00 AM – 3:00 PM Pacific

SEMI HQ, Milpitas CA.

**TC Chapter Announcements**

Next TC Chapter Meeting

Thursday, July 14, 2022 in conjunction with SEMICON West in San Francisco, 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), Laura Nguyen (SEMI) | | | | | |
| **Company** | **Last** | **First** | **Company** | **Last** | **First** |
| *KLA* | *Brick* | *Clifton* | *APS - Arizona Public Service* | *Leech* | *John* |
| *Lam Research* | *Crane* | *Lauren* | *ASML* | *Luijten* | *Carlo* |
| *Applied Materials* | *D'Agostino* | *Mark* | **Tokyo Electron** | **Mashiro** | **Supika** |
| *VAD Consulting* | *DeGiorgio* | *Vincent* | *SCREEN* | *Nishimura* | *Takayuki* |
| *Intel* | *Dishayne* | *Garcia* | **Tokyo Electron** | **Petraszak** | **Andrew** |
| *Salus Engineering* | *Evanston* | *Chris* | *GlobalFoundries* | *Petry* | *William* |
| *Cymer, ASML* | *Frankfurth* | *Mark* | **ASML** | **Planting** | **Bert** |
| *Intel* | *Geoghegan* | *Kevin* | *Texas Instruments* | *Schwab* | *Paul* |
| *Nikon Precision* | *Girlea* | *Lucian* | *GlobalFoundries* | *Sgoifo* | *Andrew* |
| *Safety Maven* | *Greenberg* | *Cliff* | *Veeco* | *Trout* | *Steve* |
| **Tokyo Electron** | **Hayashi** | **Haruna** | *Salus Engineering* | *Visty* | *John* |
| *Lam Research* | *Larsen* | *Sean* | *Cymer, ASML* | *Yakimow* | *Byron* |
| *Safety Guru* | *Sklar* | *Eric* |  |  |  |

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

| Leadership Changes | | |
| --- | --- | --- |
| WG/TF/SC/TC Name | Previous Leader | New Leader |
| None |  |  |

Committee Structure Changes

| Previous WG/TF/SC Name | New WG/TF/SC Name or Status Change |
| --- | --- |
| None |  |

Ballot Results

|  |  |  |
| --- | --- | --- |
| *Document #* | *Document Title* | *Committee Action#1,#2* |
| 6651C | Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing |  |
| Line Item 1 – Delayed Revision Related to Pressure System | Passed with technical changes. Ratification will be issued. |
| 6831A | Revision of SEMI S1-1015, Safety Guideline for Equipment Safety Labels | Failed and returned to TF for rework and reballot. |
| 6885 | Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (invocation of S12) |  |
| Line Item 1 – Delayed Revision Related to the Invocation of SEMI S12 | Failed and returned to TF for rework and reballot. |
| 6887 | Revision to SEMI S10-1119, Safety Guideline for Risk Assessment and Risk Evaluation Process | Failed and returned to TF for rework and reballot. |
| 6888 | Revision of SEMI S12-0211e, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination | Failed and returned to TF for rework and reballot. |
| SEMI S2- 0821 | Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment  (Unballoted editorial changes - Clarification on section 23.5.7) | 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* |
| --- | --- | --- | --- |
| None |  |  |  |

#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* |
| --- | --- | --- | --- |
| R6651C | cycle 4, or 5 -2022 | S2 Pressure Guideline TF | Ratification Ballot, Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Re: Addition of Pressure section) |
| 6830 | cycle 4, or 5 -2022 | S3 Revision TF | Revision of SEMI S3, Safety Guideline for Process Liquid Heating Systems |
| 6831B | cycle 4, or 5 -2022 | S1 Revision TF | Revision of SEMI S1, Safety Guideline for Equipment Safety Labels |
| 6884 | cycle 4, or 5 -2022 | S2 Mechanical TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) |
| 6887A | cycle 4, or 5 -2022 | S10 Revision TF | Revision to SEMI S10, Safety Guideline for Risk Assessment and Risk Evaluation Process |
| 6907 | cycle 4, or 5 -2022 | S7 Revision TF | Revision to SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications |
| tbd | cycle 4, or 5 -2022 | S2/S22 Revision TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) and SEMI S22, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment |

Granted a One-Year Extension

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

SNARF(s) Abolished

| # | TF | Title |
| --- | --- | --- |
| None |  |  |

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

| New Action Items | | |
| --- | --- | --- |
| Item # | Assigned to | Details |
| 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. |
| Mar31-2022#2 | Kevin Nguyen  (SEMI Staff) | To discuss the S1 (labels) pictograms copyright issue with James Amano. |
| Mar31-2022#3 | Kevin Nguyen  (SEMI Staff) | To inform SEMI IT on SVM issue for presiding chair’s view |

| Previous Meeting Action Items | | |  |
| --- | --- | --- | --- |
| Item # | Assigned to | Details | Status |
| Dec09-2021#1 | Kevin Nguyen  (SEMI Staff) | Kevin Nguyen to ask Shannon Austin (SEMI Publication staff) to include total # of standards vs # of inactive for each committee. | Completed |
| Dec09-2021#2 | Kevin Nguyen  (SEMI Staff) | Kevin Nguyen to distribute S7 SNARF for global EH&S members for two weeks review and request for GCS approval. | Completed |
| Dec09-2021#3 | Sean Larsen  (Lam Research) | Sean Larsen to email EH&S TF leaders for confirmation of NA Spring Meeting schedule confirmation by early February 2022. | 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: Lucian Girlea / Nikon Precision Inc. |
| **Discussion:** | None |
| **Vote:** | 17-0. Motion passed. |

Attachment: EHS NA TC Minutes 12092021\_es31mar22a

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. 6651C,*** ***Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Re: Addition of Pressure section)***
* Line Item 1 - Delayed Revision Related to Pressure System
  + Ballot **passed** TC Chapter review with technical changes. Ratification Ballot will be issued in cycle 4-2022.
* **Attachment: SEMI S2 pressure addition Spring 2022**
* **Attachment: 6651C ballot report rev1**
  1. ***Doc. 6887, Revision to SEMI S10-1119, Safety Guideline for Risk Assessment and Risk Evaluation Process***
* The ballot response form was prepared. However, considering the time will take to go over all negatives and their technical changes, Eric Sklar requested for a straw poll for a sense of the committee on whether or not to proceed with the ballot review.
* A straw poll was conducted.
  + Proceed to Ratification ballot - 13 in favor.
  + Return to the TF for rework and reballot - 10 in favor.
* Based on the results of the straw poll, a motion was made.
  + Motion: To find TEL AJP-1 Negative is related and persuasive. (Needs > 1/3 votes to pass.)
  + By: Eric Sklar / Safety Guru, LLC
  + Second: Lauren Crane / Lam Research Corporation
  + Result: 18-Y 0-N Voting Result: Pass - 100.00%
* Ballot failed and returned to TF for rework and reballot.
* **Attachment: 6887\_CompiledResponses\_tf03mar22a\_es09mar22a**
  1. ***Doc. 6831, Revision of SEMI S1, Safety Guideline for Equipment Safety Labels***
* Ballot failed due to insufficient ballot return rate 3 days before the TC Chapter meeting.

* 1. ***Doc. 6885, Line Item Revision to SEMI S2-0821, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (invocation of S12)***
* Ballot failed due to insufficient ballot return rate 3 days before the TC Chapter meeting.
  1. ***Doc. 6888, Revision of SEMI S12-0211e, Environmental, Health and Safety Guideline for Manufacturing Equipment Decontamination***
* Ballot failed due to insufficient ballot return rate 3 days before the TC Chapter meeting.

1. **Subcommittee & Task Force Reports**
   1. ***Manufacturing Equipment Safety Subcommittee (MESSC)***
      1. Lucian Girlea reported.

* Tara Collins has very limited bandwidth due to work responsibilities. Sean Larsen volunteered as backup when Lucian Girlea is not available.
* Periodic Maintenance Requirements
  + Customer postponing or bypassing periodic maintenance
    - The main goal is reducing equipment overall downtime
  + MESSC: A manufacturing company decision to expose personnel, not a technical thing, cannot fix via S\* guidelines. Use service or commercial contracts to persuade end user to follow service requirements.
* Low Voltage (LV) vs High Voltage (HV) work
  + ICRC discussion on NFPA 70E:
    - Engineers may work on LV circuits physically in the areas of HV
    - HV presence can require Arc Flash PPE
  + Suggestion:
    - Consider or require ME design for keeping “LV” and “HV” separate
  + MESSC: Not clear is the types of electrical work cover the concern. Maybe this should be a S2/S22 item.
    - Propose: Add note into S2 and S22 for ME design consideration: separate circuits to avoid the burden of donning PPE for “LV” adjustment work while in proximity to “HV” circuits.
  + Discussion:
    - Bill Petry, speaking from an end user, said a normal maintenance job normally takes 2-3 minutes in the LV area, but the burden of donning PPE takes up to ½ hr. So having the split enclosure with separated LV and HV doors makes sense. He strongly requests the industry to consider. He realizes that the end user may share the cost, but the ROI is great. Not only it will save time, but it will also mitigate risk to electrical worker.
    - Chris Evanston said the S2/22 TF will take this issue via a new Related Information or adding a note for clarification after the next ballot.
    - Bill Petry reiterated that there is no question on the benefit of a split enclosure, but it is just a matter of how we can implement it.
    - Andy Petraszak asked if the intent is to separate from the main power box? Bill confirmed as 95% of electrical components are on the LV side, excluding the primary power distribution.
    - Bert Planting said NFPA 79 may have cover this area, and Bill responded that it does not appear to specifically address this issue.
    - Supika Mashiro tried to get a clarification of HV. HV stands for High Voltage or Hazardous Voltage? Bill said NFPA defines HV is anything over 50 volts to take cautionary measure.
    - Chris Evanston suggested this topic to be discussed in the S2/22 TF rather than hammering out the details in the committee meeting.

**Attachment: MESSC Notes - SEMI 2022 Spring**

* 1. ***S2 Interlocks Design TF***
     1. Lucian Girlea reported. Of note:
* Background
  + Work triggered by concerns with S2 “fail safe” and “fault tolerant” definitions.
  + Some of other concerns:
    - Interpretation difficulties, unclear definitions, and S2 lack of consistency
    - An S2 compliant interlock system could not meet safety requirements
    - Situations where reliability is compared to failure mode
    - Increased risk deemed unacceptable by default
    - Unclear interlock requirements during maintenance modes
  + 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.
  + 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”
    - Moved away from “increased hazard” (or similar) to “unacceptable risk”
    - Clarified definitions for “fail safe” and “fault-tolerant”
    - Introduced “accumulation of faults” instead of “single point failure”
    - Introduced and working on consistent use of Hierarchy of Controls in S2
    - Working on “hazardous chemicals” defining with GHS instead of NFPA 704
    - Working on consistent use of “safety interlock systems”
    - Replace “hazard labels” with “safety labels” (considering - see S1 TF)
    - Future consideration: new interlock devices & technologies
* Next step
  + Likely moving toward S2 Rewrite/Major Revision : Scope creep.
  + Discussion:
    - Sean Larsen: Initially, the TFOF was chartered for interlock, but the activity appears to evolve beyond interlock scope. There are changes that are not interlock related.
    - Eric Sklar: Disagreed, all changes appear to be interlock related.
    - Chris Evanston: These changes affect all parts of S2, so it should be a S2 major rewrite rather than interlock. He has no objection to activity being proposed, but its scope should be broadened.
    - Sean Larsen: Line-item ballot will not work because these are major revisions. Also, planning and coordination should be synchronized since one can’t issue conflicting S2 changes with several ballots. Also, once a major revision is balloted, all other line-item ballots for S2 will also be on hold.
    - Andy Petraszak: It appears most of us are on board with the S2 rewrite, but how do we document it?
    - Sean Larsen: The TFOF is vague, but the SNARF should clearly list the intended changes and what sections that impact.
    - Chris Evanston suggested SEMI staff to promote S2 interlock activity with other EHS regions and ask them to join if possible.
    - Action Item #1 – Kevin to coordinate with EHS cochairs and Lucian on S2 Interlock Topic for the next NA Liaison report. The purpose is to get attention and encourage participation from other regions.
    - Lucian Girlea: The TF will continue with the next step and address it at the next meeting.
    - Chris Evanston: The last time S2 major rewrite was done 20 years ago, so maybe it is due now.
    - Clifton Brick: While the scope has creeped, the interlock concept should be kept as the backbone of the major revision.
    - Chris Evanston: The interlock revision effort was tried years ago, but it was dropped because it is not possible to revise the interlock section without impacting the whole document.
    - Lauren Crane: Anything in the Regulations to protect unchanged sections from voting? Or once a major revision is balloted, all sections are open?
    - Sean Larsen: A specific change is permitted in a line-item ballot. But when you are defining the risk to be considered as discussed in the S2 interlock TF, it may be hard. So all sections are opened for voting once it is a major revision.
    - Eric Sklar: Voters may raise issues outside of the interlock revision, but the committee will have the opportunity to vote not persuasive.
    - Bert Planting: We will have to consider all other settled line item changes for S2, not to mention the delayed revision in progress.
    - Eric Sklar: Also, if there is a line item change ballot is issued, it will also prevent major revision, so it impacts both ways.
    - Chris Evanston: As of now, the TF is not asking for a ballot. As the TF progresses, we will have a better idea of planning and coordination.
    - Sean Larsen: If the TF is planning for Fall of 2024, they should not have any issues because the official S2 version will be published by July 2024, which does not have any pending delayed revisions.
    - Lucian Girlea: After all the discussions, it appears we may have a plan, so we will discuss and move forward.
    - Cliff Greenberg: To keep in perspective, when the last major revision was completed, we had over 50 people in the meeting. Today, we have 20 people, so we have less resource now than we did 20 years ago.

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

* 1. ***S3 Revision TF***
     1. Andy Petraszak reported.
* TF Progress
  + TF held telecons and work through the topic list.
    - Completed draft work on Gas Heating Systems.
    - Completed draft work on updates to Liquid Heating Systems.
    - Reviewed ‘Parking Lot’ list of items and determined those to be addressed in this ballot.
* TF Next Steps
  + Complete draft ballot for TF review based on the completed work.
  + TF review of the draft ballot and address any identified items.
  + Submit for balloting.

**Attachment: S3report Spring2022**

* 1. ***S2 Mechanical TF***
     1. Andy Petraszak reported.
* TF held telecons and worked through alignment document
  + Many changes of moving around sections to align layout between these two sections.
  + Completed work on identified technical changes.
  + Completed draft ballot based on the overall work and sent for TF review.
  + Working through additional items identified through TF review.
* TF Next Steps
  + TF complete review of additional items identified in draft ballot.
  + Submit for balloting.

**Attachment: S2 Mech report Spring2022**

* 1. ***S2 Chemical Exposure TF***
     1. John Visty reported.
* The TF wants to issue a line item ballot to modify section 23.5.7 in S2, but Eric Sklar suggested that it could be done via type 2 editorial changes. The Publication Change Request (PCR) was presented and approved.

**Attachment:**  **23.5.7 PCR Form\_v1 Feb 2020\_jv30mar22b\_es30mar22c**

**Attachment: S2\_ProceduralReview-EditorialChangeType2**

* 1. ***S6 Ventilation TF***
     1. John Visty reported.
* Discussed approval of gas sensor, passed communication with gas sensor providers, Glenn to review IEC 62990 -1 and -2 as well as UL gas sensor standard and determine if applicable to S6 and if so where a note could be added for information purposes as a proposed staring point
* Reviewed draft of ASM/Intel proposed line change – Voted 7-0 to consider change and work on proposal
* Looked at adding clarification on mixed gases releases/calculations into S6.
* Proposed line-item change from ASM/Intel to be sent out to committee by end of week
* Glenn may set up phone call with team committee members before summer standard meeting depending on committee availability

**Attachment:**  **SEMI S6 - Spring 2022 - Summary**

* 1. ***S23 Global TF***
     1. Lauren Crane reported.
* Editorial action was taken at last NA TC Chapter meeting to correct a table in S23.
  + That action passed review and the revised S23 is available (S23-1021E)
* Discussed splitting S23 (a Guide) into a Test Method and Guide
* How to split - particularly Mashiro-san mentioned the regs allow a mixed document (e.g., Guide and Test Method).
* We took a straw poll and confirmed the TF had a will to take a splitting action, but pending confirmation of the reg allowance, not clear on how to split.
* After reviewing the regs regarding mixed documents, and the documents that have are mixed, it does not seem appropriate to me to pursue a mixed document.
* Document subordination (e.g., having S23.1) implies one document is subordinate to another, and I do not think that is a useful way to characterize the foreseen guide from the foreseen test method.
* In light of this I intend to pursue leading TF to split the document into two separate S-type documents – S23 Guide and a new S-document as a Test Method.
* Discussion:
  + Chris Evanston: Since there are many energy reports out there, any thought about the structure of the document ? so its name should be S23 report?
  + Lauren Crane: The TF will consider this recommendation and invite Chris to join the TF for further discussion.

**Attachment: S23 TF Report Mar2022**

* 1. ***S2 Seismic Liaison TF***
     1. Lauren Crane reported.
* A concern was raised in MESSC during the Dec 2021 Standards meetings
  + Summary: The old S2 Seismic RI, shows a step in the derivation of the horizontal force factor that is not present in the current RI, which changes the output of the general force equation from 1.32 WP to .94WP, the latter being the value in use now (and then) for anticipated horizontal force acting on the CG of the equipment under consideration.
* Further review of the concern occurred in the TF this week.
  + Since the goal is to provide a force value that is acting in the equipment CG, it is not clear how the ‘ultimate’ to ‘yield’ “conversion” support that goal.
  + We did not yet know where the ‘yield’ – ‘ultimate’ subscripts originated. FP, is “total design lateral seismic force” per UBC 1997 (1632.2).
  + .94WP (and .63 for equip. w/o HPMs) is presented in the current S2 as the least horizontal force value that should be the anticipated to be experienced by the equipment with a note referencing RI 4 for a discussion of how the value was selected.
  + The current code in common use, ASCE7, would conclude that the horizontal force is 1.32 WP
* Mashiro-san raised a point that the Seismic TF is a Global TF and some Taiwan EHS TC Chapter members have an interest in participating. Mashiro-san will reach out to Taiwan to invite them to provide a co-chair for this GTF.
* Lauren will research in old task force records to see if there was any discussion of the yield/ultimate equation as well as a more thorough reading of ASCE7 and UBC 1997 to see if there are helpful references to such factors (e.g., FP(yield), FP(ultimate)
* After that research is completed, Lauren will call meetings of the task force to discuss next steps.

**Attachment: S2 Seismic TF Report Mar2022**

* 1. ***S1 Labels TF***
     1. Eric Sklar reported.
* Recommendations to NA EHS TCC regarding Document 6831A, Revisions to SEMI S1
  + Ballot was conducted in 2022 Cycle 2
  + Did not achieve the required 60% return rate
  + Received (as of 28 March) 14 Negatives and 1 Comments:
  + TF has begun its review of these, but has not agreed on responses:
  + The largest apparent concern relates to pictograms, specifically: Whether S1 reproduces pictograms from documents published by other SDOs.
  + Discussion:
    - Lauren Crane: In the early days of S1, Mike Sherman created these pictograms and donated to the TF. No paper trail was documented. He believes those pictograms were later taken up by Clarion.
    - Eric Sklar: He believes these are separate pictograms published in S1, which may belong to other SDOs.
    - Andy Petraszak: How do you answer the IP question? It may be uncomfortable, but at some point, it will have to be unraveled.
    - Lauren Crane: How many SDOs are involved? Eric Sklar said ANSI, IEC, and ISO came to mind.
    - Lauren Crane: If we can tweak these pictograms and avoid copyright, but we do not have expertise to do so.
    - Cliff Greenberg: Back in the days, Geoff Peckham suggested discontinuing S1 and ask S2 to refer to ISO 7010.
    - Eric Sklar: Most members disagreed with Geoff Peckham’s suggestion, so he left the program.
    - Mark Frankfurth: These symbols have added value and we should align with the SDOs.
    - Supika Mashiro: Reproduction of someone copyright in S1, in this case, there are a number of them. If the committee they want every single one of them, and if reproduction is justified, SEMI should ask copyright owner for release
    - Eric Sklar: The question is: Are these pictograms are copyrighted by ISO?
    - Kevin Nguyen: When it is time for ballot adjudication, the committee will be asked to answer whether or not these pictograms are copyrighted, and proper procedures should then be ensued.
    - Lucian Girlea: If the answer is yes, and we suspect theses are copyrighted, then we should ask copyright releases.
    - Lauren Crane: Relying on the committee, who are not the experts, for the copyright judgement is something that he is uncomfortable. Perhaps SEMI lawyer should take a look.
    - Action Item # 2 : Kevin will discuss the copyright issue with James Amano.
* TF held telecons and worked through alignment document
* TF Next Steps
  + TF complete review of additional items identified in draft ballot.
  + Submit for balloting.

**Attachment: S1report\_es31mar22a**

* 1. ***Fire Protection TF***
     1. Eric Sklar reported.
* Old Business
  + Proposal from Matt Wyman (KFPI) regarding fire detection systems
  + Proposal 1 - This proposed change is to a NOTE (so it is not normative) and clarifies the basis on which some jurisdictions require connection to building systems and compliance with fire alarm codes.

**14 Fire Protection**

14.5 Fire Detection and Suppression Systems

14.5.1 Fire Detection — The following criteria apply to any fire detection system determined to be appropriate for fire protection by the fire risk assessment:

NOTE 68: Heat detectors, smoke sensing devices, and other devices used solely for monitoring equipment status may not need to meet these requirements. Some local jurisdictions, however, may require that all smoke detectors be connected to building systems and be compliant with all applicable fire alarm codes, if the detection devices are listed or certified for use as fire detection.

* + - The TF discussed and voted not to make this change.
  + Proposal 2 - Adding several Exceptions in section 14.5.1.7 through 14.5.1.9.

14.5.1.7

EXCEPTION: Operability is not required when the EMO has been activated if the fire risk has been reduced to an acceptable level when the EMO has been activated.

14.5.1.8 A battery or other regulatory agency acceptable emergency power alternative, capable of sustaining the detection system for 24 hours, should be provided.

NOTE 75: Back-up power must be provided in accordance with local regulations. The requirements for back-up power vary among jurisdictions.

EXCEPTION: Fire detection devices may be powered by the equipment and without emergency backup power if the fire risk has been reduced to an acceptable level when there is no power to the equipment.

14.5.1.9 The fire detection system should remain active following EMO activation.

EXCEPTION: The fire detection system’s power may be removed by EMO activation if the fire risk has been reduced to an acceptable level when the EMO has been activated. One should consider incorporating a time delay between fire detection actuation and EMO activation so that signals can be sent before loss of power.

* + - The TF discussed and also voted not to make these changes.
  + Document 6784: Line Item Changes to SEMI S2 (S14 Applicability Flowchart)
    - No interest in further work at this time.

**Attachment: FPreport\_es30mar22a**

* 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
      * Mike Gordon will draft material for addition to S30.
    - Unreacted byproducts, such as in pump lines
      * Nothing, drop this item.
    - Topics TF believes should be addressed by a training program
      * Improper adoption of S30
        + Nothing
      * Cold traps accumulate material, creating a hazard that needs to be addressed.
        + Nothing

**Attachment: EMreport\_es31mar22a**

* 1. ***S10 Revision TF***
     1. Eric Sklar reported.
* Adjudication of Doc 6887, Revisions to SEMI S10
  + Ballot failed and returned to TF for rework and reballot.

**Attachment: S10report\_es30mar22c**

* 1. ***S2 Control of Hazardous Energy (CoHE) TF***
     1. Eric Sklar reported.
* Old Business
  + There are some older documents available, such as:
    - A draft ballot (5957) from August 2018:
    - Work done in an ICRC task force in support of ANSI’s latest iteration of Z244.1 Control of Hazardous Energy – Lockout/Tagout And Alternative Methods
    - Work done in an ICRC task force in response to an OSHA Request for Information (RFI) Docket No. OSHA-2016-0013
* New Business
  + Large changes that will take more time, such as:
    - Developing appropriate criteria to allow control circuits for HEI/CoHE/LOTO
    - Addressing appropriate controls for energies that need to remain on for some types of tasks
    - OSHA requirements that are much more restrictive than the US national standard (ANSI Z244) or international standards. Do we want S2 to support equipment having to meet the OSHA requirements or the national and international standards?
  + Changes for which we can’t meaningfully estimate the time required, such as:
    - Address appropriate group LOTO practices for a fab environment
    - Address whether control of energy restoration by presence (e.g. not locked but the plug is next to me) is appropriate for a generally chaotic fab environment
    - Add pretty blue labels with a lock on them next to all identified system LOTO points
    - Getting into the murky areas of ZEST and working to improve compliance
  + Other
    - How does NFPA 79 6.2.3.2 relate to CoHE?

**Attachment: CoHEreport\_es31mar22a**

* 1. ***S12 Decontamination TF***
     1. Eric Sklar reported.
* New Business
  + Recommendations to NA EHS TCC regarding Document 6888, Revisions to SEMI S12
    - Did not achieve the required 60% return rate
      * Responses:
        + Received (as of 28 March) 25 Negatives and no Comments
        + foresees substantial work in addressing some of them, therefore not requesting a ballot before the Summer Meetings.
  + Recommendations to NA EHS TCC regarding Document 6885, Line Item Revision to SEMI S2 regarding its invocation of SEMI S12
    - Did not achieve the required 60% return rate
      * Received (as of 28 March) 1 Negatives and no Comments:
      * Prefer to send this to reballot in the same Cycle as the S12 ballot, therefore not requesting a ballot before the Summer Meetings.

**Attachment: S12report\_es31mar22a**

* 1. ***S8 Ergonomics TF***
     1. Paul Schwab reported.
* Definition of “Human Error” is included in the SEMI-S8 definitions sections but is not used within the S8 document. Will submit a Publication Improvement Proposal (PIP) form for resolution.
* Discussed proposed NIOSH lifting equation risk rating system without resolution (will rework).
* Discussed the lack of specific acceptance criteria in SESC Section 1.1 (only documentation). Will work on a proposal (this “should” fit within the risk assessment SNARF item).
* Plan to resume task force meetings on April 21st (need time for action items).
* SEMI-S8 Task Force document site:
  + https://connect.semi.org/communities/community-home?CommunityKey=c1526656-40a4-4245-af86-34d3ecc68624

**Attachment: SEMI\_S8\_30MAR2021\_TF\_summary**

* 1. ***S2/S22 TF***
     1. Sean Larsen reported.
* List of item changes have been identified. However, these need to be wordsmithing prior to ballot submission. The TF will have teleconferences for review.
  1. ***S7 TF***
     1. Sean Larsen reported.
* The SNARF was submitted and approved. The TF will prepare the draft for the revision of S7.
  1. ***Other Interest Documents***
     1. Power Harmonic.
* Sean Larsen reported Power Harmonic TF under supervision of the NA Facilities, but it is dormant at the moment. Alex is retired, no one has taken over.
  + 1. F47 TF
* Sean Larsen mentioned F47 is still active. They are trying to characterize data from the power grid to tool level. They are also trying to define criteria for 3 phases sag, but the equipment for testing is heavy, not mobile.
* Also, the other issue is when a component is changed or a firmware is upgraded, equipment was once passed F47, but now no longer passed the test. Should equipment be rigorous tested or frequently tested?. So, it is unclear which direction the TF is going. It is not one way or the other.
* Bert Planting also chimed in and said there is a misconception on voltage sags on 3 phases vs 1 phase. These are two different things.
  + 1. BIM TF
* Sean Larsen mentioned the Building Information Modeling (BIM) activity. The goal is to get data package for tool installation. Eric Sklar stated that he is participating in the TF. Per Eric, massive changes are being developed in the document, and it will take a couple months to complete.

1. **Liaison Reports**
   1. *ICRC Liaison*
      1. Lauren Crane presented.

* Presentation from Vincent (Vinnie) DeGiorgio about the Semiconductor Manufacturing Risk Handbook he is forming with contributions from industry EHS professionals.
* Change of ICRC NA Chapter leadership
  + No candidates yet. Lauren will work with SEMI staff to cover with Bert in the meantime.
* Discussion of new SEMI US PFAS working group topic regarding the developing CA PFAS reporting rule.
  + Brief discussion of SIA administrated Semiconductor Industry PFAS Consortium (with due consideration of confidentiality agreements)
* MD and AI wg update
* Brief refresh on ICRC Charter review status
* Review of Regulatory Dashboard

**Attachment: ICRC Liaison Report March 2022**

* 1. *Japan EH&S TC Chapter*
     1. Supika Mashiro reported.
* Last meeting
  + January 26, 2022
    - Web
* Next meeting
  + May 26, 2022
    - Web
* Authorized Activities
  + Doc. 6909, Withdrawal of SEMI S26 Environmental, Health, and Safety Guideline for FPD Manufacturing System
  + Doc. 6910, Revision of S19, Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel
* Authorized Ballots for cycle 2 and 3 of 2022.
  + Doc. 6909, Withdrawal of SEMI S26 Environmental, Health, and Safety Guideline for FPD Manufacturing System
  + Doc. 6910, Revision of S19, Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel
* Ballot Results
  + Doc. 6776, Reapproval of SEMI S19-0311 (Reapproved 0816): Safety Guideline for Training of Manufacturing Equipment Installation, Maintenance and Service Personnel
  + Doc. 6777, Reapproval of SEMI S26-0516: Environmental, Health, and Safety Guideline for FPD Manufacturing System
  + Both ballots failed.
* SEMI S2 tutorial seminar completed in August 2021.
  + Web on-demand seminar in Japanese
* **Attachment: JA\_EHS\_Liaison\_20220215\_v1.2r1**
  + 1. *RSC/Co-chairs report*
    2. Chris Evanston reported.
* During the NARSC meeting, it was noted that Korea standards activities in Facilities and FDP are diminishing. However, Korea Semiconductor is very much present, it is important to take notes that there aren’t standards activities.
  1. **SEMI Staff Report**
     1. Kevin Nguyen (SEMI) reported.
* SEMI upcoming event
  + 2022 Calendar of Events
  + Upcoming NA Meetings
    - SEMICON West
      * July 11-14, 2022
      * San Francisco, CA
    - NA Standards Fall Meetings
      * Nov 7-10, 2022
      * SEMI HQ in Milpitas, California
* Ballot Formatting
  + For revision to an existing Standard, make sure to use the current published version.
    - Obtain the current MS Word version from staff
    - Highly recommend to turn on revision tracking when editing
  + For Line-Item ballots, clearly show what changes are proposed in each Line Item and include an explanation for each Line Item in the required background statement (Procedure Manual ¶3.5.3.1).
* 2022 Critical Dates for SEMI Standards Ballots
  + <https://www.semi.org/en/collaborate/standards/ballots>
* SEMI Standards Publications
  + Total SEMI Standards in portfolio: 1,060
    - Includes 308 Inactive Standards

**Attachment: Staff Report March 2022 v5 SA EHS**

1. **Old Business**
   1. None
2. **New Business**
   1. Upcoming Ballot Authorization
      1. The following ballots are authorized for the before next meeting.

| *#* | *When* | *TF* | *Details* |
| --- | --- | --- | --- |
| R6651C | cycle 4, or 5 -2022 | S2 Pressure Guideline TF | Ratification Ballot, Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Re: Addition of Pressure section) |
| 6830 | cycle 4, or 5 -2022 | S3 Revision TF | Revision of SEMI S3, Safety Guideline for Process Liquid Heating Systems |
| 6831B | cycle 4, or 5 -2022 | S1 Revision TF | Revision of SEMI S1, Safety Guideline for Equipment Safety Labels |
| 6884 | cycle 4, or 5 -2022 | S2 Mechanical TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) |
| 6887A | cycle 4, or 5 -2022 | S10 Revision TF | Revision to SEMI S10, Safety Guideline for Risk Assessment and Risk Evaluation Process |
| 6907 | cycle 4, or 5 -2022 | S7 Revision TF | Revision to SEMI S7, Safety Guideline for Evaluating Personnel and Evaluating Company Qualifications |
| tbd | cycle 4, or 5 -2022 | S2/S22 Revision TF | Line Item Revision to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment (Mechanical) and SEMI S22, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment |

**Motion:**  To authorize above documents for letter ballot in cycle 4 or 5 of 2022.

**By:** Andrew Petraszak / TEL Technology Center America

**Second:** Bert Planting / ASML Netherlands BV

**Discussion:** None.

**Result:** 10-Y 0-N

**Voting Result:** Pass - 100.00%

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

**Attachment: Teleconferences Spring 2022**

* 1. **Next Meeting Schedule.**
     1. The schedule for July 11-14, 2022 in conjunction with SEMICON West will be prepared offline.

1. **Next Meeting and Adjournment**
   1. The next meeting is scheduled for Thursday, July 14, 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 2:30 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 12092021\_es31mar22a | S2 Seismic TF Report Mar2022 |
| SEMI S2 pressure addition SEMI-con Spring 2022 | S1report\_es31mar22a |
| 6651C ballot report rev1 | FPreport\_es30mar22a |
| 6887\_CompiledResponses\_tf03mar22a\_es09mar22a | EMreport\_es31mar22a |
| MESSC Notes - SEMI 2022 Spring | S10report\_es30mar22c |
| S2 Interlocks Design TF NOTES - SEMI 2022 Spring | CoHEreport\_es31mar22a |
| S3report Spring2022 | S12report\_es31mar22a |
| S2 Mech report Spring2022 | SEMI\_S8\_30MAR2021\_TF\_summary |
| 23.5.7 PCR Form\_v1 Feb 2020\_jv30mar22b\_es30mar22c | ICRC Liaison Report March 2022 |
| S2\_ProceduralReview-EditorialChangeType2 | JA\_EHS\_Liaison\_20220215\_v1.2r1 |
| SEMI S6 - Spring 2022 - Summary | Staff Report March 2022 v5 SA EHS |
| S23 TF Report Mar2022 | Teleconferences Spring 2022 |

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.