North America EHS Committee
Meeting Summary and Minutes

NA Standards Spring 2013 Meetings
4 April 2013, 0900 – 1600 Pacific Time
SEMI Headquarters in San Jose, California

Next Committee Meeting
SEMICON West 2013
Thursday 11 July 2013, 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)
SEMI Staff: Paul Trio

Company	*Last*	*First*	*Company*	*Last*	*First*
Applied Materials	Karl	Edward	Nikon Precision	Greenberg	Cliff
ASML	Planting	Bert	*Product EHS Consulting*	*Brody*	*Steve*
ESTEC	Mills	Ken	Salus	Evanston	Chris
IBM	*Petry*	*Bill*	Salus	Visty	John
IBM	*Schmidt*	*Jeff*	Seagate Technology	Layman	Curt
Intertek, GS^3	Rai	Sunny	Tokyo Electron	Hoshi	George
Intertek, GS^3	Ergete	Nigusu	Tokyo Electron	Mashiro	Supika
KLA-Tencor	*Crane*	*Lauren*	Tokyo Electron	Fessler	Mark
KLA-Tencor	Crockett	Alan	TUV SUD America	Prasad	Ron
Lam Research	Claes	Brian	Ultratech	Green	Paul
Lam Research	Hughes	Stanley			
Lam Research	Kryska	Paul	SEMI	Trio	Paul
Lam Research AG	Larsen	Sean	SEMI	Baliga	Sanjay
Macklin & Associates	Macklin	Ron	SEMI Japan	Kanno	Hirofumi

Table 2 Leadership Changes

Group	*Previous Leader*	*New Leader*
NA EHS Committee	Eric Sklar (Safety Guru)	
FPD Safety System Liaison Task Force	This TF has been disbanded.	
	Carl Wong (AKT)	
S2 3.3 Limitations Task Force	This TF has been disbanded.	
	Lauren Crane (KLA-Tencor)	
	Cliff Greenberg (Nikon)	
S6 Revision Task Force	Eric Sklar (Safety Guru)	
S13 Support Task Force	This TF has been disbanded.	
	Eric Sklar (Safety Guru)	
S22 Revision Task Force	Ed Guild (---)	
S25 Revision Support Task Force	This TF has been disbanded.	
	Eric Sklar (Safety Guru)	

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*
	*** * * Cycle 1, 2013 Voting Period * * ***	
4316I	Line Item Revision to SEMI S2-0712a, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment, and SEMI S22-0712, Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment	
Line Item 1	Fail-to-safe Equipment Control Systems Revision	**Failed** and returned to task force.
5521	Reapproval of SEMI S1-0708E, Safety Guideline for Equipment Safety Labels	**Failed** and returned to task force.
5522	Reapproval of SEMI S6-0707E, EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment	**Failed** and returned to task force.
	*** * * Cycle 2, 2013 Voting Period * * ***	
4683B	Line Item Revisions to SEMI S2-0712a, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed Revisions Related to Chemical Exposure Criteria	
Line Item 1	Delayed Revisions Related to Chemical Exposure Criteria	**Failed** and returned to task force.
5000C	Line Item Revisions to SEMI S2-0712a, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Addition of Related Information to S2: Selection of Interlock Reliability (In Delayed Effective Date Format)	
Line Item 1	Addition of Related Information to S2: Selection of Interlock Reliability (In Delayed Effective Date Format)	**Passed** with editorial changes.
5357A	Line Item Revisions to SEMI S2-0712a, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed Revisions Related to Optical Radiation	
Line Item 2	Delayed Revisions Related to Optical Radiation	**Passed** with editorial changes.

Table 4 Authorized Activities

#	*Type*	*SC/TF/WG*	*Details*
5590	SNARF	NA EHS Committee, 5-Year Review	Reapproval of SEMI S14-0309, Safety Guidelines for Fire Risk Assessment and Mitigation for Semiconductor Manufacturing Equipment
5591	SNARF	International Fire Protection TF	Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed revisions related to fire code criteria
TBA	SNARF	S2 Non-ionizing Radiation TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment* Delayed revisions related to non-ionizing radiation

TBA – to be announced
Note: SNARFs and TFOFs are available for review on the SEMI Web site at:
http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF

Table 5 Authorized Ballots

#	*When*	*SC/TF/WG*	*Details*
5590	Cycle 3, 2013	NA EHS Committee, 5-Year Review	Reapproval of SEMI S14-0309, Safety Guidelines for Fire Risk Assessment and Mitigation for Semiconductor Manufacturing Equipment
4316J	Cycle 3, 2013 (or C4-13)	S22 TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*, and SEMI S22, *Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment* Revisions related to clarifying the FECS criteria of S2 and S22
TBA	Cycle 3, 2013 (or C4-13)	S2 Non-ionizing Radiation TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment* Delayed revisions related to non-ionizing radiation
4683C	Cycle 4, 2013	S2 Chemical Exposure TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment* Delayed Revisions Related to Chemical Exposure
4449E	Cycle 4, 2013	S2 Ladders & Steps TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Revisions related to stairs, ladders, platforms, and fall protection
5009B	Cycle 4, 2013	Ergonomics TF	Delayed Line Items Revisions to SEMI S8, *Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment*
5591	Cycle 4, 2013	International Fire Protection TF	Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed revisions related to fire code criteria

TBA – to be announced

1 Welcome, Reminders, and Introductions

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

Attachment: 01, SEMI Standards Required Meeting Elements

2 Review of Previous Meeting Minutes

The committee reviewed the minutes of the previous meeting held November 1 in conjunction with the NA Standards Fall 2012 meetings.

Motion:	Approve as written
By / 2nd:	Cliff Greenberg (Nikon Precision) / Brian Claes (Lam Research)
Discussion:	None
Vote:	11-0. Motion passed.

Attachment: 02, NA EHS Fall 2012 meeting (November 1) minutes

3 Leadership and Liaison Reports

3.1 *Europe EHS Committee*

Bert Planting reported for the Europe EHS Committee. Of note:

- Leadership: Bert Planting (ASML), Tom Pilz (Pilz GmbH)
- Next meeting: SEMICON Europa, October 2013
- Existing Activities: 2 EHS Standards published by European committee
    - SEMI S10 (risk assessment)
    - SEMI S25 (hydrogen peroxide)
- SEMI S25 revision ballot adjudicated at SEMICON Europa 2012 (Dresden)
- New RI to SEMI S2 (interlock reliability, #5000C) balloted in Cycle 2-13. Received a lot of negatives.
- New Activities
    - S10 reapproval ballot for Cycle 4, 2013. To be adjudicated at SEMICON Europa 2013.
    - Plan STEP programs on Interlock reliability after approval of Document 5000C.
- SEMI staff contact: Yann Guillou (yguillou@semi.org)

Additional Discussion:

- Bert Planting clarified that the EU EHS Committee plans to issue a reapproval ballot for S10.
- Lauren Crane asked whether there will be teleconferences scheduled to discuss changes/updates to S10. Bert Planting responded that no teleconferences are scheduled since, with reapprovals, the Document will be sent out as is.
- Bert Planting also clarified that the STEP programs planned once Document 5000C is approved will be web-based training.

Attachment: 03, Europe EHS Committee Report

3.2 *Japan EHS Committee*

Supika Mashiro reported for the Japan EHS Committee. Of note:

- Next meeting: April 18 during the Japan Spring Meetings 2013 (SEMI Japan office, Tokyo)
- S13 Revision TF
    - Doc. #4976C (S13 revision) passed committee and procedural reviews. Published as S13-0113. TF will be disbanded after translation into Japanese has been completed.

- S17 Revision TF
    - Doc. #5353 passed committee and procedural reviews. Published as S17-0113. TF will be disbanded after translation into Japanese has been completed.
- S18 Revision TF
    - TF currently has no activity.
- S23 Revision TF
    - Document #5513 (S23 revision) was submitted for Cycle 2-13 voting period and will be reviewed on April 18 meeting.
- FPD System Safety Task Force
    - TF currently has no activity.
- Seismic Protection Task Force
    - New SNARF (#5556) on S2 revisions related to section 19. The first draft document has been completed and is being reviewed by TW and NA EHS Technical Committee co-chairs and members. TF will discuss and improve Document based on feedback received.
- Greenhouse Gas (GHG) Emission Characterization Task Force
    - Discussing the promotion and practical use of SEMI S29 (*Guide for F-GHG Emission Characterization and Reduction*).
- STEP Planning Working Group
    - SEMI S2 STEP held on November 22 at the SEMI Japan office (Tokyo) attracting 89 attendees.
- Other activities
    - EHS Standards Program, "Trend of the current Safety Demands – SEMI Safety Guidelines comparison with Major Safety Standards" was held on December 5 during SEMICON Japan 2012 attracting 47 attendees.
- SEMI staff contact: Naoko Tejima (ntejima@semi.org)

Attachment: 04, Japan EHS Committee Report

3.3 *RSC / Committee Leadership Report*

Sean Larsen provided the cochairs report. Of note:

- Eric's Status
    - SEMI staff and NA RSC determined that Eric (Sklar) is no longer a co-chair for NA EHS due to the 3 strikes rule and requirement for committee chairs to be TC Members
        - We need to reassign the NA RSC alternate voting member – Chris Evanston is the primary

Motion:	The NA EHS Committee nominates Sean Larsen as the Alternate voting member for NA EHS at the NARSC.
By / 2nd:	Cliff Greenberg (Nikon Precision) / John Visty (Salus)
Discussion:	Supika Mashiro reminded the committee that if Sean Larsen is the presiding chair for the NARSC, he would be unable to vote for NA EHS. Sean pointed out that he can hand over the vote to Chris.
Vote:	11-0. Motion passed.

- Regulations & Procedure Guide
    - There have been two revisions of the Regulations and the Procedure Guide since the last meeting set
        - Regulations 28 November 2012
        - Procedure Guide 3 December 2012
        - Regulations 19 March 2013
        - Procedure Guide 28 March 2013
    - The last revisions were to address
        - I&C concern for XML schema files
        - A recent appeal

[SEMI Staff Note: See section 3.5 of these minutes for details on the Regulations and Procedure Guide changes.]

- PG Change Proposal related to Line Items and "Major Revisions

3.4.2.5 *Other Limitations* – Use Line Items only to make small, specific changes that do not affect any section of the Standard(s) or Safety Guideline(s) not included in the Line Item. The use of Line Items is not permitted for major revisions to published Standards or Safety Guidelines; these must be balloted as a single unit. (see § 3.5 for major revisions.)

3.5 *Major Revisions*

3.5.1 Major revisions are substantial changes to the text of published Standards or Safety Guidelines for the purpose of updating the Standard or Safety Guideline, modifying its application, clarifying the language, or correcting errors. As a practical matter, a major revision is one that:

- Requires more than 10 line items
- Involves technical revisions to the title (including change of Standard's Subtype), purpose, scope, limitations, or any other section that affects the overall Standards Document.

3.5.1.2 *Major revision vs. Line Item* – To resolve whether a revision to a published Standard(s) or Safety Guideline(s) is a 'major revision' or can be balloted as multiple Line Items, TC Chapter cochairs and TF leaders should review the purpose and scope of the Standard(s) or Safety Guideline(s) being revised and the nature and extent of the revisions themselves. If the proper resolution is not obvious, the Letter Ballot should be issued as a major revision.

    - To summarize the request: it is to allow more flexibility for the TC to determine what is appropriately a line item change.

- Standards Webinars
    - As both an outreach tool, and to provide a method to capture information and make it easier to reuse, SEMI is looking to develop webinars
        - Topics to include:
            - Standards process training
            - Specific or family of standards description or training similar to a STEP

- Outreach materials to attract new members

  - There will be a review process that is still being developed to ensure that the webinars are a consensus opinion and not one person's opinion
  - The length of the bio and advertising should be limited
  - Format is largely open as long as it supports the clear presentation of the material
  - We are looking to develop some pilot webinars to work out the kinks in the process
    - Overview of a standard, advertising of a new standard, delving into a technical issue are all possibilities
    - Interested parties should contact either Sean or Paul

Additional Discussion:

- Sean Larsen expressed concerns with regard to the recent Procedure Guide revision on the distribution of draft ballots by authors/TF leaders to all TF members 7 days prior to Letter Ballot submission. Chris Evanston asked whether rejects can be submitted against a ballot based on this recent Procedure Guide change. Paul Trio clarified that this is a recommendation only. Its goal is to establish TF consensus. Paul commented that while the decision would be up to the Audits & Reviews (A&R) Subcommittee during procedural review, an author or TF leader can defend his/her actions by showing proof that efforts were made to circulate the draft among the TF members prior to ballot submission. It was also pointed out that it is the TF leader's responsibility, not SEMI staff, to manage and maintain the TF distribution list (Procedure Guide, ¶ 6.4.4.3). Lauren Crane asked whether the same practice would be followed for reapproval ballots. Supika Mashiro pointed out that TFs are not needed when issuing reapproval ballots.
- With regard to the *Line Item vs Major Revision* proposal, Lauren Crane asked how section numbering is managed as additions/deletions are implemented. Sean Larson responded that SEMI Publications updates the section numbers during final processing. Ron Macklin also asked whether updates to terminology are considered major revisions. Supika Mashiro pointed out that in some cases, terminology may only affect certain sections of the Document. She added that, ideally, line item ballots should include the related sections, but, in practice, can be overwhelming for TFs. Chris Evanston commented that this committee, generally, has no issues with the Regulations because everything is documented. Finally, Ron Macklin pointed out that it is difficult to explain these Regulations and Procedure Guide to most people, especially new members. He asked staff to find a way to make the Regulations and Procedure Guide language clearer.
- With regard to webinars, Sanjay Baliga asked whether partnering with other organizations have been considered. Sean Larsen responded that while that is certainly a possibility, the main focus of the webinar project at the moment is on working out the kinks.

Attachment: 05, Leadership Report

3.4 *SEMI EHS Division Report*

Sanjay Baliga reported that the SEMI EHS Division has formed an interest group for 450 mm wafer manufacturing where one area of topic is on 450 EHS. Sanjay plans to work with the G450C on this effort.

Sanjay also reported that he is planning for a 450 EHS forum at SEMICON West. He pointed out that the 450 EHS working group (WG) will liaise with the EHS Standards Committee for standardization topics, but expects that the WG will have other discussions not related to standards.

Furthermore, Sanjay informed the committee that an Electrical Safety WG has been formed. He clarified that the WG will not address standards, but will focus on activities of interest to SEMI members.

Finally, Sanjay stated that the listing of EHS programs at SEMICON West can be found at: www.semiconwest.org (under Sessions/Events > EHS). He recognized that the EHS Division will have events that will conflict with the

EHS Standards meetings. He stated that staff is working to minimize, if not avoid, such conflicts, but will be inevitable.

Additional Discussion:

Alan Crockett expressed concern that these schedule conflicts at West between EHS Division and EHS Standards programs puts a strain on the already limited resources. He sees EHS Division programs as competition as they take people away from the EHS Standards meetings.

3.5 *SEMI Staff Report*

Paul Trio gave the SEMI Staff Report. Of note:

- 2013 Global Calendar of Events
    - SEMICON Singapore (May 7-9, Marina Bay Sands)
    - SEMICON Russia (June 5-6, Moscow)
    - Intersolar Europe (June 19-21; Munich, Germany)
    - Intersolar NA (July 8-11; San Francisco, California)
    - SEMICON West (July 9-11, San Francisco, California)
    - SEMICON Taiwan (September 4-6, Taipei)
    - SEMICON Europa (October 8-10; Dresden, Germany)
    - PE2013 – Plastic Electronics Exhibition and Conference (October 8-10; Dresden, Germany)
- NA Standards Spring 2013 Meetings
    - Committees meeting at SEMI Headquarters (San Jose)
        - 3DS-IC | EHS | Facilities & Gases | HB-LED | Information & Control | Liquid Chemicals | MEMS/NEMS | Metrics | PIC (TC only) | PV/PV Materials | Traceability
    - SEMI thanks Intel (Santa Clara) for hosting the PIC (TFs only) and Silicon Wafer meetings
- Upcoming NA Meetings
    - NA Compound Semiconductor Materials Committee (May 15 in conjunction with CS MANTECH; New Orleans, Louisiana)
    - NA Standards Meetings at SEMICON West (July 8-11; San Francisco Marriott Marquis Hotel in San Francisco, California)
- Technical Ballot Critical Dates for SEMICON West 2013 Meetings
    - Cycle 3: due April 17 / May 1 – May 31
    - Cycle 4: due May 20 / June 1 – July 1
- Revised SEMI Standards Regulations (March 2013 Revision)

  Major Items Included in this Revision:
    - Addition of a new category called Complementary File.
    - Its relationship to other types of material explicitly related to a Standard or Safety Guideline is presented in the following table.

TYPES OF OTHER PUBLISHED INFORMATION WITH AN EXPLICIT RELATIONSHIP TO A STANDARD OR SAFETY GUIDELINE		Relationship to Standard or Safety Guideline	
		Official Part	Not Official Part
How Published	Conjoined to S or SG	Appendix	Related Information
	Not conjoined to S or SG and not in .pdf	**Complementary File**	Various Materials

Required Actions by TC Chapters

- TC Chapters must take action on Standards that reference files in formats other than pdf (e.g., XML schema, WDSL, xls)
- All non-pdf files published prior to March 2013 Regulations are Various Materials.
- TC Chapters must decide if non-pdf files are required for implementation of the Standard, and if so, TC Chapter must issue a ballot to make the non-pdf files "Complementary Files".

SEMI Staff Note: Recommended wording for Complementary Files and Various Materials provided in the report. See attachment information at the end of this section.

Minor Items in Regulations revision:

- Some editorial changes have been made for improved clarity and better consistency with the Procedure Guide and Style Manual
  - Clarifying the voting/nonvoting designations for members of committees
  - Defining MR as the acronym for Minority Report
  - Defining Program as shorthand for SEMI Standards Program

- Procedure Guide Revision (March 2013)
  - Revision for consistency with the revised Regulations changes.
  - The PG revision also included:
    - Definition of Complementary Files
    - Addition of TFOF as Appendix 2
    - Addition of recommendation for author and/or the TF leader to distribute draft ballot to all TF members 7 days prior to Letter Ballot submission.
      - Goal is to establish TF consensus. Can also be done via TF meeting that all members were notified of.

- Revised SEMI Standards Regulations (November 2012 Revision)

  Major Items Included in this Revision:

  - Global TC Structure (RTC/LTC to TC Chapters under a Global Technical Committee)
    - All regional and local technical committees become chapters of a global technical committee and have equal standing and responsibilities with regard to their functions in it, regardless of their administrative tie with a RSC
  - Formation and Disbandment of Global Technical Committee

- Formation and Disbandment of TC Chapter under existing Global Technical Committee
- Elimination of Regional Standards
- IP Section (§ 15)
  - Exit mechanism from LOA in limbo
  - Clarification and additional guidance on Letter of Intent (LOI)
  - Restructuring the section in chronological order
    - From approval of activity to discovery after publication
- Redefine Supplementary Materials
  - Remove Appendices from "Supplementary Materials"
  - Redefine "Other Supplementary Materials" as "Various Materials"
    - Not official content of the Standard or Safety Guideline
    - Part of a standard but is published separately
- Miscellaneous Items
  - Response to NARSC re: clarification of "published"
  - (¶ 8.3.2.2) and voting by interest (¶ 7.2.3)

Minor Items:

- Add definitions to the Regs from PG (or create definition in the Regs)
- Consistent use of terms such as SEMI Standards Program, Standards Document
- Updated section and paragraph references
- Numerous editorial changes

- Future Tasks for the ISC Regulations Subcommittee
  - Virtual Meetings
    - Identify key concerns/issues
      - infrastructure, language, approval process.
    - Benchmark other SDOs
  - Official Liaisons with other SDOs
    - D liaisons for IEC and ISO
  - Redefine Interest Categories of TC Members
    - Currently based on IC, include PV/FPD/MEMS
  - Inclusion of regulatory requirement in SEMI Standards / Safety Guidelines
- Standards Publications Report
  - January 2013 Cycle
    - New Standards – 9, Revised Standards – 3, Reapproved Standards – 0, Withdrawn Standards – 0

  - February 2013 Cycle
    - New Standards – 0, Revised Standards – 8, Reapproved Standards – 0, Withdrawn Standards – 0
  - March 2013 Cycle
    - New Standards – 0, Revised Standards – 3, Reapproved Standards – 2, Withdrawn Standards – 0, Total in portfolio – 871 (includes 93 Inactive Standards)

- Global Activity Report (*details provided in the report*):
  - Current task forces
  - Active SNARFs
    - By Region
    - By Region, SNARF type (e.g., New Standard, Revision, Reapproval)
  - Ballots
    - By Region, year (2011, 2012, 2013 [YTD])
    - By Region, ballot type (e.g., New Standard, Revision, Reapproval)
    - By Committee
- Standards Usage Interview
  - Looking for details on how standards are actually used:
    - Development/Engineering
    - Procurement
    - Manufacturing
  - Interview should take less than 30 minutes – contact James or any Standards staff
- The Official SEMI Standards LinkedIn Group
  - http://www.linkedin.com/groups/Official-SEMI-Standards-Group-1774298/about

Additional Discussion:

- Alan Crockett asked whether there are any current activities in the Facilities Committee. He stated that a lot of Facilities documents are out of date. Paul Trio responded that the committee has been performing 5-year review on existing documents and may have been having difficulties finding volunteers. Paul also mentioned that the committee is working on a guide for building information modeling (BIM). Alan asked Paul to add him to the Facilities Committee distribution list.

Action Item: 2013Apr #01, Paul Trio to add Alan Crockett to the Facilities Committee distribution list.

Attachment: 06, SEMI Staff Report

4 Ballot Review

4.1 Document # 4316I, Line Item Revision to SEMI S2-0712a, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*, and SEMI S22-0712, *Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment*

4.1.1 *Line Item #1: Fail-to-safe Equipment Control Systems Revision*

Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	55	*Voting Interest Accept Votes (VIAccept)*	39
Total Voting Interests	89	*Interest Reject Votes (IReject)*	4
Voting Interest Return %	**61.80%**	*Approval % [VIAccept / (VIAccept + IReject)]*	**90.70%**
Other Returns (Intercommittee, etc.)	36	*# of Interest Rejects that Need to be not found Valid for Final Approval % >= 90%*	**0**
Total Votes	91		
Total Votes with Comments	3		
Total Reject Votes	4		

Rejects/Negatives

Company: Submitter	*ID*	*Negs*	*Disp*	*Company: Submitter*	*ID*	*Negs*	*Disp*
DNS: Naokatsu Nishiguchi	DNS	2		Lam Research: Tou Vang	LAM	2	
KLA-Tencor: Lauren Crane	KT	13		Sokudo: Eiji Nakatani	SKDO	2	

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

#	Ref.	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
KT-4	11.6.2	Negative: It is not clear which item "has been evaluated at test…." – the FECS or the safety interlocking sytem… Proposed Solution: Clarify this point Technical	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Replace "which" with ", and the FECS" as an editorial change due to the context of the rest of the sentence, specifically, the interlocking system cannot be evaluated as a device separate from the SME. EC2 Chris – RNP – the editorial change avoids the ambiguity and addresses the concern. 2nd Mark F 9-0	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) _x_Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: Cliff Greenberg / Ron Macklin *Disc*: *Vote*: 8-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Comments

Company: Submitter	*ID*	#	*Company: Submitter*	*ID*	#
KLA-Tencor: Lauren Crane	KT	1			
Tokyo Electron: Mitsuju Nambu	TEL	1			
Projects: George Rutherford	PROJ	1			

Followup Activity Authorization
Move to:

_x_ Return ballot to the originating task force for rework

_x_ and authorize a follow-up ballot

___ Transfer ballot to the (name) task force for rework

___ and authorize a follow-up ballot

___ Discontinue work on ballot.

By/*2nd*: Sean Larsen / John Visty
Disc:
Vote: 11-0. Motion passed

Attachment: 07, 4316I LI 1 Compiled Responses

4.2 Document # 5521, Reapproval of SEMI S1-0708E, *Safety Guideline for Equipment Safety Labels*

Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	55	*Voting Interest Accept Votes (VIAccept)*	47
Total Voting Interests	89	*Interest Reject Votes (IReject)*	2
Voting Interest Return %	61.80%	*Approval % [VIAccept / (VIAccept + IReject)]*	95.92%
Other Returns (Intercommittee, etc.)	36	*# of Interest Rejects that Need to be not found Valid for Final Approval % >= 90%*	0
Total Votes	91		
Total Votes with Comments	2		
Total Reject Votes	2		

Rejects/Negatives

Company: Submitter	*ID*	*Negs*	*Disp*	*Company: Submitter*	*ID*	*Negs*	*Disp*
KLA-Tencor: Lauren Crane	KT	12					
Lam Research AG: Sean Larsen	LMAG	2					

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

#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-1	6.5	SEMI S1 6.5 states *Durability* – Safety labels should have a reasonable useful life. Determination of reasonable useful life should take into consideration the expected life of the product and the intended environment of use. Similarly, SEMI S2 10.2 (and copied by S26) require labels to be durable and suitable for the use environment. Neither of these criteria provides clear guidance or evaluation criteria for label durability. **Suggestion / Justification** ANSI/UL 969 is one certification standard related to label durability. ISO 17398 is another such standard defining label durability requirements. S1 should be modified to either reference these external requirements or provide some evaluation criteria for durability requirements. My preference is	**(Select 1)** __Not related __Not persuasive (**assumes related**) __X__Related & persuasive **Reason:** Layman – RP – there should be a durability spec 2nd Breder 3-2	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __X__Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: Sean Larsen / Alan Crockett *Disc*: Chris Evanston (Salus) commented that label durability is more of a common sense, practical application and is not seen as a requirement in S1. Durability should not be a significant criteria. He added that calling out these standards would add extra burden. Finally, Chris stated that he sees S1 as a good document. Alan Crockett (KLA-Tencor) stated that, in his experience with wiping labels (using a solvent), he could see how adding additional information in S1 would be helpful. He also pointed out that he has used labels that have been certified by standards. Alan also stated that he has not received issues where these labels have introduced contamination issues.	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
				Sean Larsen clarified that the intent is not to have ISO certified labels, but more on guidance on basic tests that need to be considered for different types of environments. S2 or S1 do not provide guidance on this. Sean explained that he does not intend to have normative content, but more informative. Tou Vang (Lam Research) asked whether guidance is needed on the label adhesive or the label itself. Sean responded, "all of the above." It was also pointed out that there are requirements on the type of materials used for these labels. *Disc:* *Vote*: 7-4. **Motion passed** **Significance finding/method: (select 1)** ___Not significant by agreement ___Not significant by motion ___Significant by % of NP vote (>10%) ___Significant by agreement ___Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Comments

Company: Submitter	*ID*	*#*	*Company: Submitter*	*ID*	*#*
ASML: Bert Planting	ASML	2			
Cymer: Byron Yakimow	CYMR	1			

Followup Activity Authorization

Move to:

_x_ Return ballot to the originating task force for rework

___ and authorize a follow-up ballot

___ Transfer ballot to the (name) task force for rework

___ and authorize a follow-up ballot

___ Discontinue work on ballot.

By/2nd: Chris Evanston / Ron Macklin
Disc:
Vote: 9-0. Motion passed

Attachment: 08, 5521 Compiled Responses

4.3 Document # 5522, Reapproval of SEMI S6-0707E, *EHS Guideline for Exhaust Ventilation of Semiconductor Manufacturing Equipment*

Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	55	*Voting Interest Accept Votes (VIAccept)*	42
Total Voting Interests	89	*Interest Reject Votes (IReject)*	5
Voting Interest Return %	**61.80%**	*Approval % [VIAccept / (VIAccept + IReject)]*	**89.36%**
Other Returns (Intercommittee, etc.)	36	*# of Interest Rejects that Need to be not found Valid for Final Approval % >= 90%*	**1**
Total Votes	91		
Total Votes with Comments	1		
Total Reject Votes	5		

Rejects/Negatives

Company: Submitter	*ID*	*Negs*	*Disp*	*Company: Submitter*	*ID*	*Negs*	*Disp*
KLA-Tencor: Lauren Crane	KT	8		TUV Rheinland: David Sexton	TUVR	1	
QSES: Tomokatsu Sano	QSES	15		Lam Research AG: Sean Larsen	LMAG	5	
TUV SUD: Glenn Holbrook	TUVS	10					

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

#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
KT-2	6.3.1	Negative: S6 is not limited in scope to consideration of "process chemicals" (see, for example, 5.2.49). Therefore this section is inappropriately narrow. Proposed Solution: Change to the effect of "…should be compatible with the substances of concern specified by the SME supplier…." Technical	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Lauren motion / Glenn 2nd; to find related & persuasive By/2nd: Crane / Holbrook Disc: Vote: #-#-#. Motion passed failed 8-0	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) _x_Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: John Visty / Bert Planting *Disc*: *Vote*: 10-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Comments

Company: Submitter	*ID*	#	*Company: Submitter*	*ID*	#
Lam Research AG: Sean Larsen	LMAG	1			

Followup Activity Authorization

Move to:

_x_Return ballot to the originating task force for rework

__x_and authorize a follow-up ballot

___Transfer ballot to the (name) task force for rework

___and authorize a follow-up ballot

___Discontinue work on ballot.

By/2nd: John Visty / Bert Planting
Disc:
Vote: 12-0. Motion passed

Attachment: 09, 5522 Compiled Responses

4.4 Document # 4683B, Line Item Revisions to SEMI S2-0712a, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Delayed Revisions Related to Chemical Exposure Criteria

4.4.1 *Line Item #1: Delayed Revisions Related to Chemical Exposure Criteria*

Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	52	*Voting Interest Accept Votes (VIAccept)*	26
Total Voting Interests	83	*Interest Reject Votes (IReject)*	8
Voting Interest Return %	62.65%	*Approval % [VIAccept / (VIAccept + IReject)]*	76.47%
Other Returns (Intercommittee, etc.)	27	*# of Interest Rejects that Need to be not found Valid for Final Approval % >= 90%*	6
Total Votes	79		
Total Votes with Comments	3		
Total Reject Votes	10		

Rejects/Negatives

Company: Submitter	*ID*	*Negs*	*Disp*	*Company: Submitter*	*ID*	*Negs*	*Disp*
AMAT: Edward Karl	AMAT	5					
DNS: Ryosuke Imamiya	DNS	2					
KLA-Tencor:							
Alan Crockett	KTA	1					
Lauren Crane	KTB	10					
Lam Research:							
Brian Claes	LAMA	3					
Tou Vang	LAMB	6					
Lam Research AG: Sean Larsen	LMAG	5					
TEL: Mitsuju Nambu	TEL	3					
TUVSUD: Glenn Holbrook	TUVS	3					
TUV Rheinland: David Sexton	TUVR	1					

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
AMAT-N1	23.5.1.2	Negative The sentence does not make sense and seems to contain some inconsistencies: 1. If no method that meets 23.5.1.1 is known, how can one select from one of the methods of "these paragraphs" (23.5.1.1)? 2. It seems inconsistent to instruct someone to select "the most sensitive method that meets the criteria, other than sensitivity, of these paragraphs". It's not clear why "other than sensitivity" was inserted in this sentence. Proposed Solution: Revise this sentence to clearly identify what the Task Force is intending to communicate and, if applicable, include an exception to the concentration criteria.	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** See change within edited ballot Motion by Holbrook / 2nd Karl Reason as documented & edited 10 for 0 opposed	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) _X_Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: John Visty / Ed Karl *Disc*: *Vote*: 11-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Comments

Company: Submitter	*ID*	*#*	*Company: Submitter*	*ID*	*#*
AMAT: Edward Karl	AMAT	2	QSES: Tomokatsu Sano	QSES	2
KLA-Tencor: Lauren Crane	KTB	4			

Followup Activity Authorization

Move to:

_x_Return ballot to the originating task force for rework

__x_and authorize a follow-up ballot

___Transfer ballot to the (name) task force for rework

____and authorize a follow-up ballot

___Discontinue work on ballot.

By/2nd: Sean Larsen / John Visty
Disc:
Vote: 8-0. Motion passed

Attachment: 10, 4683B LI 1 Compiled Responses

11, Edited 4683B Ballot

4.5 Document # 5000C, Line Item Revisions to SEMI S2-0712a, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*

4.5.1 *Line Item #1: Addition of Related Information to S2: Selection of Interlock Reliability (In Delayed Effective Date Format)*

Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	52	*Voting Interest Accept Votes (VIAccept)*	35
Total Voting Interests	83	*Interest Reject Votes (IReject)*	6
Voting Interest Return %	**62.65%**	*Approval % [VIAccept / (VIAccept + IReject)]*	**85.37%**
Other Returns (Intercommittee, etc.)	27	*# of Interest Rejects that Need to be not found Valid for Final Approval % >= 90%*	**3**
Total Votes	79		
Total Votes with Comments	1		
Total Reject Votes	6		

Rejects/Negatives

Company: Submitter	*ID*	*Negs*	*Disp*	*Company: Submitter*	*ID*	*Negs*	*Disp*
AMAT: Edward Karl	AMAT	2					
KLA-Tencor: Lauren Crane	KT	5					
Lam Research: Brian Claes	LMRC	7					
Lam Research AG: Sean Larsen	LMAG	12					
QSES: Tomokatsu Sano	QSES	1					
Sokudo: Eiji Nakatani	SKDO	2					

Negatives from < AMAT: Edward Karl >

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

#	Ref.	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
AMAT-N1	R1-7.1.1	Negative Section A2.1 of ISO 13849-1 explicitly limits the estimation of risk arising from a failure of a safety function to only "Severity of Injury S1 and S2". The statement in R1-7.1.1 has been somewhat generalized (or vague), which could lead to misapplication. Proposed Solution: Revised sentence to state, "When estimating the risk arising from a failure of a safety function, only slight injuries (S1) and serious injuries (S2) are considered."	**(Select 1)** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** Was unclear due to the extra wording Make an editorial change 1 to remove ~~(e.g., if it were to fail).~~	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #1) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 7-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
AMAT-N2	Table R1-2	Negative Table R1-2 is not consistent with Table 7 of ISO 13849-1. The intersecting cell between "Low" MTTFd, Category "3" and "Medium" DCavg should be "c" (not "d"). Proposed Solution: Correct the inconsistency.	**(Select 1)** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** Correct should be c Editorial change 2	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #2) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 5-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Final disposition of this reject:
_x_Valid (includes at least one significant negative)
__Not Valid (all negatives withdrawn, found not related, or found not significant)

Negatives from < KLA-Tencor: Lauren Crane >

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
KT-1	5.1	Negative "…the design strategy to eliminate hazards of main body of this document should be followed." Does not make sense. Proposed Solution: Clarify this phrase. Editorial	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Editorial change 3, clarified second sentence: From: When a risk is identified that a designer would like to mitigate (e.g., typically an S10 risk-ranking of Medium or higher) the design strategy to eliminate hazards of main body of this document should be followed. To: When a risk is identified that a designer would like to mitigate the SEMI S2 design strategy to eliminate hazards or control risks should be followed.	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #3) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 7-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
KT-2	5.2	Negative "Ready" is an odd termination term. "Ready" for what? Proposed Solution: Change to "Finished" or "End" or "Stop" or something similar. Editorial	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Changed from "ready" to '"no further risk reduction required" Editorial change 4	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #4) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
KT-3	Global	Negative There are too many grammatical errors. For me, 5 is too many. Here are 9 I found quickly. There may be more. 1. flow chart note.. "are two possible ways how to determine…" 2. "6.1 "…not all of the standard listed may be…" 3. 4.2 "…interlock system depending on the risk…" [missing comma] 4. 4.2 "..for the safety interlock …" [should be "a"] 5. 7.2 "… not just for electrical safety interlock system, as well as …" 6. 7.4.4 "…uses a PASS/FAIL checklist is used…" 7. 7.4.4 "…to help designer to determine…" 8. 9.1 "This reliability levels are…" 9. 9.1 "Details on the requirements for can be found…" Proposed Solution: Take another editorial pass through this entire document to improve the language. Editorial	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason: Accept** 1. Editorial change 5 2. Editorial change 6 3. Editorial change 7 4. Editorial change 7 5. Editorial change 8 6. Editorial change 9 7. Editorial change 9 8. Editorial change 10 9. Editorial change 10	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #5,6,7,8,9,10) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
KT-4	7.1.3 Note	Negative I do not agree that "and/or" should be read as "and" in one place and "or" in another. This is inconsistent, and contrary to the generally accepted meaning of "and/or" Proposed Solution: Delete this note Technical	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** **Discussed this with one of the Task force member of the 13849-1. He agreed that it should be an and/or as being the intent. By having the and/or in the original of the standard I can have an F1 because it is a onetime issue, but based on a long time I can also chose F2.** **Discuss in EHS committee to leave the note in or out.** **If no consensus in committee remove the not and stick to original standard**	Discussion: Motion: Flip the content of the note and the main text. (see EC#22) By/2nd: Chris / Mark Vote: 6-2 __**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of on the lack of clarity and interpretation were addressed as editorial changes (see EC #22). *By/2nd*: Bert Planting / Chris Evanston *Disc*: *Vote*: 5-1. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

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

#	Ref.	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
KT-5	7.4.3	Negative "detected" is applicable to all the parenthetical terms, but appears in only one. Proposed Solution: Put 'detected' in each parenthetical term. Technical	**(Select 1)** __Not related __X__Not persuasive (**assumes related**) __Related & persuasive **Reason:** R1-1.1.1 Make editorial change 11 for clarification: R1-1.1.2 from R1-1.1.3 The DC_{avg} has four levels: Not Available (< 60%), Low (≥60% – <90%), Medium (≥90% - <99%), and High (≥99% detected). R1-1.1.4 To R1-1.1.5 The DC_{avg} has four levels of detection: None (< 60%), Low (≥60% – <90%), Medium (≥90% - <99%), and High (≥99% ~~detected~~).	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #11) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 5-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Final disposition of this reject:
__x__Valid (includes at least one significant negative)
__Not Valid (all negatives withdrawn, found not related, or found not significant)

Negatives from < Lam Research: Brian Claes >

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

#	Ref.	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMRC-1	R1-1.1	The subject of this RI is "Selection of Interlock Reliability", but there are no requirements in SEMI S2 Section 11 ("Safety Interlock Systems") dealing with the need to select interlock reliability (except indirectly by reference in Clause 11.6.1 addressing FECS). Consequently, this Related Information document is *not related* to the overall Section 11 ("Safety Interlock Systems") of SEMI S2 so the Purpose statement needs to be revised to clarify which clause or requirement in S2, if any, it is related to. **Recommendation:** Revise the RI title and purpose paragraph to state that its purpose is to provide discussion/comparison of standards related to FECS safety systems described in S2 Clause 11.6.1 (and 12.2.2 Exception 2 if EMOs are desired to be in the scope of the revised RI). Additionally, all clauses in the RI addressing interlocks in the context of SEMI S2 need to be revised to restrict scope to FECS applications.	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** . The intention of this RI is just pointing engineers to existence of the standards. The standards are essential to prove the reliability needed in several other standards or CE marking Need to decide if this reference Make an editorial change to link it to section 11.6.1 Motion: negative is related, not persuasive 3-6 Make change in the scope of RI to refer to SEMI S2 FECS Editorial change 12 Replace safety interlock with a safety function Editorial change 13	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _X_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #12 and #13) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 5-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement _x_Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

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

#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
LMRC-2	R1-1.1 R1-1.1 NOTE R1-4.1 Table R1-1 R1-7.1 R1-7.3 R1-7.4 R1-7.5	Safety Related Parts of Control Systems (SRP/CS) and Safety Interlocks are **not** synonymous yet there are a number of places in the RI where the lines between the two are so blurred that it's apparent we're treating them as if they were the same. In some cases the confusion is direct and intentional (R1-7.1, R1-7.5 are examples) or misleading (R1-1.4). Safety Interlocks in the SEMI S2 context form a subset of Safety Related Parts of Control Systems. Some of the key standards addressed in the RI (e.g., ISO 13849-1, etc.) specifically address the broader universe of SRP/CS and should be applied in that appropriate context. **Recommendation:** 1. All portions of the RI that discuss application of requirements from standards addressing SRP/SC rather than safety interlocks specifically should be revised so that the actual term addressed the referenced standard appears instead of "interlocks". Examples include "SRP/CS" (spelled out, of course) in R1-7.1, R1-7.2, R1-7.3, R1-7.4.2etc. The exception to this is where the differences between the two categories are being addressed. 2. Eliminate or revise various texts with language suggesting or stating equivalence between the two categories (R1-7.1, R1-4.1, etc.) so as to eliminate an appearance of equivalence.	**(Select 1)** __Not related __X__ Not persuasive (**assumes related**) __Related & persuasive **Reason:** Submitter agreed that this issue is addressed with the changes purposed by LMRC1	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__ Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #12 and #13) *By/2nd*: Bert Planting / Alan Crockett *Disc*: *Vote*: 7-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __x__ Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMRC-3	R1-4.2	'Interlocks are not limited to protecting people. See SEMI S2 Clause 11.2, etc. Clause 11.2 specifically states that interlocks are used where appropriate to protect personnel, facilities and the community. **Recommendation:** 'Revise to align with the normative part of SEMI S2.	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** **OK, is already covered in section R1-4.4** Depending on the standard, the criteria for the safety function may consider only harm to people, or it may also include damage to equipment or installations **Remove first sentence in 4.2** ~~Safety functions are used to reduce risk of harm to people.~~ Covered in editorial change 7	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #7) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 7-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement _x_Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMRC-4	R1-5.1	The normative requirement in S2 requires mitigation for the top 2 severity classifications (Cl. 6.5). Additionally, "Low" risks not meeting the criteria for "Conforms to the Performance Criteria" also require mitigation (Clauses 8.3.4.3 and 8.3.4.4). **Recommendation:** 'Revise to align with the applicable requirement in SEMI S2 (Cl. 6.5, 8.3.43 to 8.3.4.5)	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Removed "(e.g. typically an S10 risk-ranking of Medium or higher)" because it not cover all situations See editorial change 3	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #3) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 7-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement _x_Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMRC -5	R1-4.2 Figure R1-1 R1-5.1	"Interlocks and "other type of risk mitigation" are rarely mutually exclusively implemented as driven by the second decision block. Most interlock systems backup other safeguards and controls. **Recommendation:** 1. Revise logic flow to address cases where multiple risk reductions measures are used to protect against a given risk and provide guidance on how the effectiveness of other types of risk mitigation impact the selection of safety interlocks and their reliability. 2. Revise last sentence of R1-5.1 from "If the mitigation scheme is done by…" to "If the mitigation scheme includes…" 3. Revise R1-4.2 to change "Safety interlock systems are used reduce the risk of harm to…." To "Safety interlock systems are used as one of a variety of means to reduce the risk of harm to…"	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** 1. Update chart editorial change 14 2. Changed 5.1 the SEMI S2 design strategy to eliminate hazards or control Editorial change 3 3. Added in the note of fig R1-1 Editorial change 5	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC # 3, 5, and 14) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 5-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement _x_Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMRC-6	R1-7.1	There is no discussion or analysis in this section as to whether application of ISO 13849-1 to an interlock system would result in one or more non-compliant findings even if the interlock otherwise fully complied with the normative requirements in S2 Section 11. Failure to align the recommendations in the RI with the normative requirements in S2 raises the likelihood of unacceptable conflicts in S2's articulation of interlock requirements. **Recommendations:** Limit discussion to an overview of applying ISO 13849-1 as one means of meeting the requirements for FECS in Clauses 11.6.1 (and Clause 12.2.2 if EMOs are desired to be in the scope of the revised RI).	**(Select 1)** __Not related __X__Not persuasive (**assumes related**) __Related & persuasive **Reason:** Solved by LMRC1	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Concerns of the negatives addressed as editorial changes (see EC #12 and #13) *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 5-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __x__Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

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

#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMRC-7	SEMI S2 Clauses 11.6.1, 12.2.2 Exception 2	The normative text of S2 is not in scope of Doc 5000B, but if the RI is to be legitimately considered related we should be able to identify the relevant requirement in S2 that would point to the RI. **Recommendations:** Add a new NOTE under existing NOTE 39 (Clause 11.6.1) and NOTE 44 (Clause 12.2.2 Exception 2) to the effect of: "Related Information XX provides additional information on electronic safety systems."	**(Select 1)** __Not related __X__ Not persuasive (**assumes related**) __Related & persuasive **Reason:** No action, future work on SEMI s2	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__ Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** The negatives submitted by the voter pertain to the main body of S2. The ballot proposal is for a Related Information. The proposed change by the submitter would require a change to the existing SNARF. *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __x__ Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 8-0. **Motion passed**	

Final disposition of this reject:
__Valid (includes at least one significant negative)
__x__ Not Valid (all negatives withdrawn, found not related, or found not significant)

Negatives from < Lam Research AG: Sean Larsen >

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-1	Note After R1-1.1	Unless the goal is to state the S2 compliant interlocks the industry has been using are inadequate and the industry should be moving to everything being SIL certified components and circuits, the idea of this note seems to be rather important. **Suggestion / Justification** Reformat the note into a regular paragraph such as below: "R1-4.1.1 Both the terminology and the circuits referenced are not consistent between SEMI S2 section 11 and the documents referenced in this RI. The SEMI S2 safety interlock may be all or only a part of the circuits that are referenced by these other standards and discussed in this RI, depending on the circuit design that is chosen."	**(Select 1)** __Not related __X__Not persuasive (**assumes related**) __Related & persuasive **Reason:** Note was made with all committee member to address all different kind of interlock systems half a year ago. It is given as a way to come to a good design but not a requirement. Several changes were made that will improve the document No further action	__x__**Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative <u>including Justification</u>*	*TF Finding <u>and Reason</u>*	*Motion <u>and Reason</u> in Committee:*	*Final*
LMAG-4	R1-4.3 & most of document	Be consistent. Either use the acronym (SIS), or don't (my preference). Jumping back and forth just causes confusion. I believe this could be addressed as an editorial change.	**<u>(Select 1)</u>** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Problem removed by remove SIS by replace by safety function (editorial change 13)	**_x_ Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: <u>(select 1)</u>** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **<u>Reason:</u>** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: <u>(select 1)</u>** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-5	R1-5.1	It is unclear if the term "this document" refers to the document under discussion (S10) or the document that this ballot is trying to be placed in (S2). **Suggestion / Justification** Clarify so that people that are not that familiar with the two documents will understand.	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Clarified see Editorial change 3	**_x_ Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-6	R1-5-1	The phrase "provide guidance that may be used as criteria" is problematic to begin with, and it even worse in an RI. Also see LMAG4 **Suggestion / Justification** Suggest changing to something like "the referenced standards provide guidance that can be used as justification that the safety interlock system design adequately reduces the risk.	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Modified second sentence added "adequately reduces the risk"., Editorial change 3	_x_ **Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative <u>including Justification</u>*	*TF Finding <u>and Reason</u>*	*Motion <u>and Reason</u> in Committee:*	*Final*
LMAG-7	R1-5.2	The phrase "a new risk assessment should be carried out to verify the risk has been sufficiently mitigated" looks an awful lot like evaluation criteria that is inappropriate for an RI. **Suggestion / Justification** If this statement is referring to the S10 process, it should clearly indicate this, preferably with a reference to the appropriate section(s) of S10.	**<u>(Select 1)</u>** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** This would be a normal step in design verification. It is normal to update a risk assessment with precautions you have evaluated Editorial change 15: remove should to is typically	**_x_ Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: <u>(select 1)</u>** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **<u>Reason:</u>** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: <u>(select 1)</u>** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative <u>including Justification</u>*	*TF Finding <u>and Reason</u>*	*Motion <u>and Reason</u> in Committee:*	*Final*
LMAG-8	NOTE in Figure R1-1	The phrase "Reliability to be based on the risk" is incomplete and not very informative. **Suggestion / Justification** Suggest replacing the first statement with something like the following "The referenced SIS standards include reliability criteria based upon the risk being mitigated."	**<u>(Select 1)</u>** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** **Section already change in Editoral change 5, changed from reliability to design requirements**	_x_**Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: <u>(select 1)</u>** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **<u>Reason:</u>** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: <u>(select 1)</u>** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-9	Table R1-1	It is unclear what is intended to be communicated with this table, and with some of the redundancy in columns, it gives impressions that I don't believe are accurate (such as 62061 is better for systems and 13849 is better for components). **Suggestion / Justification** As a first guess, I would suggest the following changes: a) Indicate the subparts of the standards ISO 13849 & IEC 61508 as shown ISO 13849: Safety of machinery - Safety-related parts of control systems Part 1: General principles for design Part 2: Validation b) Delete the remarks column c) Flip columns two and three d) Take another look and edit as appropriate to support the intended purpose.	**(Select 1)** __Not related __X__ Not persuasive (**assumes related**) __Related & persuasive **Reason:** a. No action, can find more info in section 3 b. Agree, but remove one remark on 61508 to typical use c. No action d. Done, includes edt ti safety function Editorial change 16	__x__ **Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative <u>including Justification</u>*	*TF Finding <u>and Reason</u>*	*Motion <u>and Reason</u> in Committee:*	*Final*
LMAG-10	Table R1-1	The term PLC is undefined and depending on interpretation could be referring to two different things in the adjacent cells. **Suggestion / Justification** Use terminology that will be interpreted consistently.	**<u>(Select 1)</u>** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Added see Editorial change 16	**_x_Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: <u>(select 1)</u>** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **<u>Reason:</u>** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: <u>(select 1)</u>** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-11	R1-7.3, R1-7.4.1 & R1-7.4.4	I don't believe these paragraphs will be readily understandable without a little guidance on what the different architectures are. **Suggestion / Justification** Either add some basic information to explain the different categories and monitoring discussion such as a simplified version of Figure 9 and 11 from 13849-1.	**(Select 1)** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** Correct, it is an introduction, an if people want to know more they should get training or read the standard itself. No action	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** It is an overview and is not intended to explain the details. If people want to learn more then they should attend training for this standard. *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-1. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-12	R1-7.6	Last sentence, an "iteration" of what is necessary? **Suggestion / Justification** Modify to clarify, possible with ". . . , then a design modification or other changes in the risk control measures is considered necessary."	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Iteration is meant reconsider what the original base line was and it still applicable maybe add or editorial change 17 the review the original starting points are still applicable Proposed change: If this is not the case, then a design modification and re-evaluation of the achieved performance level is necessary	__x__ **Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG -13	Table R1-2, second note	If there is a purpose for the first two sentences in this note it is unclear. **Suggestion / Justification** Either delete the first two sentences and modify the last sentence so that it is clear the comparison is between 954-1 and 13849-1 (which seems worthwhile to indicate due to familiarity) or clarify the intent of the first two sentences.	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** the baseline architectures of EN 954 are still used in the 13849 (table 7) Find where to place this (section 3 or beginning or end of section 7. Now located at the end of section 7 No action?	**_x_ Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
LMAG-14	Table R1-7 Note	Which levels are referred to with "For these levels"? **Suggestion / Justification** If you are referring to the items marked as #1, then delete the word "Note:" and preface "#1"	**(Select 1)** __Not related __Not persuasive (**assumes related**) __Related & persuasive **Reason:** Editorial change 18 #1 to #1: so it becomes clear that it defines #1	_x_ **Withdrawn by Subm. (Date: April 4, 2013)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Final disposition of this reject:
_x_ Valid (includes at least one significant negative)
__Not Valid (all negatives withdrawn, found not related, or found not significant)

Negatives from < QSES: Tomokatsu Sano >

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

#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
QSES-1	---	It seems that the description in R1-7.1.2 shows an overview of PLr required for SRP/CS that is combined with other protective measures, but the overview would be difficult to understand through reading it alone, unless readers have the knowledge for the requirements defined ISO 13849-1. Meanwhile, ISO 13849-1 provides the readers with a better guidance with use of not only texts but also figure (Figure 2 in ISO 13849-1).	**(Select 1)** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** Agree, this is why this RI is make to point people to the standards and trainings No further action in this RI	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** The RI is intended as an overview. *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 4-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement _x_Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 5-0. **Motion passed**	

Final disposition of this reject:
__Valid (includes at least one significant negative)
_x_Not Valid (all negatives withdrawn, found not related, or found not significant)

Negatives from < Sokudo: Eiji Nakatani >

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
SKDO-1	RI-5.2	Please revise current figure so that describe the relation between ISO 12100 and ISO13849-1, such as Figure 1 of Section 4.1 (Overview of risk assessment/risk reduction) in ISO 13849-1 **Reason／Justification** It is difficult to understand relation between ISO 12100 and ISO13849-1 on current figure(R1-1) for document reader	**(Select 1)** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** This RI is only related to the interlock standards and not to provide a complete picture how all international A, B and C type standards should be used No action	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _x_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** This RI is only related to the interlock standards and not to provide a complete picture how all international A, B and C type standards should be used *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement _x_Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed**	

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

#	Ref.	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
SKDO-2	RI-6	Please add more detail information related between ISO 13849-1 risk tree and SEMI S10 risk matrix. **Reason／Justification** Relation between risk tree of ISO 13849-1 and the risk matrix of SEMI S10 is not clear.	**(Select 1)** __Not related __X__Not persuasive (**assumes related**) __Related & persuasive **Reason:** Flow chart is very clear. They are not direct related, SEMI S10 is used for risk estimation and as a check if a precaution is sufficient. No action	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** The flow chart is very clear. They are not direct related, SEMI S10 is used for risk estimation and as a check if a precaution is sufficient. *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __x__Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 6-0. **Motion passed**	

Final disposition of this reject:
__Valid (includes at least one significant negative)
__x__Not Valid (all negatives withdrawn, found not related, or found not significant)

Comments

Company: Submitter	*ID*	#	*Company: Submitter*	*ID*	#
Lam Research AG: Sean Larsen	LMAG	2			
Projects: George Rutherford	PROJ	1			

#	Ref.	Comment	TF Response	Committee Action:
LMAG-2	R1-3.2 & R1-3.3	COMMENT For consistency, indicate the 7 documents that fall under IEC 61508 in a similar manner to the two documents that fall under ISO 13849.	Ok might be consistent, editorial change 19 add series. Body does not have a section on 61508	**(Select one)** ___No further action ___Refer to TF for further review ___New Business _x_Editorial Change: #__19__in ECs below ___Other: **(Select one)** ___Committee agrees (no motion nec.) _x_Motion to act as indicated above: *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 7-0. Motion **passed**
LMAG-3	R1-3.4	COMMENT Add "[commonly known as the ATEX directive]" at the end of the entry.	Editorial change 20	**(Select one)** ___No further action ___Refer to TF for further review ___New Business _x_Editorial Change: #_20__in ECs below ___Other: **(Select one)** ___Committee agrees (no motion nec.) _x_Motion to act as indicated above: *By/2nd*: Bert Planting / Mark Fessler *Disc*: *Vote*: 7-0. Motion **passed**
PROJ-1	---	*[SEMI Staff Note: This comment continues to next page]* *Please see my comments re the new Part 2 of ISO 13849 (2012) on my vote for (01-13)* ---- Hello all – I have serious concerns with some of the contents of the ISO 13849-2:2012. These concerns were raised at ISO Committee Level - but the whole thing seems to have been pushed through even though at the FDIS stage there were still many many pages of technical concerns – especially on the Annex E example!! Australia for one gave a NEGATIVE vote on this part 2 due to these dubious assumptions in Annex E and elsewhere in the document and has NOT adopted the new Part 2 but will modify the part 2 to remove the 'funnies' and then adopt a modified version.		**(Select one)** _x_No further action ___Refer to TF for further review ___New Business ___Editorial Change: #___in ECs below ___Other: **(Select one)** _x_Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**

#	Ref.	Comment	TF Response	Committee Action:
		Please do not get me wrong – I am a big supporter of ISO 13849 BUT certain parts of this new part 2 needs to be selectively applied if safety is to be ensured. In particular…. 1) After stating that Software development, environment issues (including increased immunity issues etc) have not been considered ….Annex E then launches into an example in which it implies that you can use General Purpose PLCs rather than Safety PLCs (certified to 61508 (now also 61131-6)) for performance of safety functions……..(stepping back in time by 20+ years???) 2) Annex D now states that General Purpose Relays are effectively equivalent to force guided relays (EN50205) even though the EN 50205 ensures not only ability to monitor the contacts BUT also a minimum of 10 million mechanical operation….whereas the standard for the General Purpose relays can have this mechanical life decided by the manufacturer and much much less than 10 million (in fact as low as 5,000) and still claim compliance with the general purpose relay standard! 3) Well established requirements for use of adequate creepage/clearance on PCBs to meet "reinforced" dimensions under IEC 60664 was removed from the DIS - without comment/explanation by the chair…and required clearances reduced plus a totally unjustified statement that a resist coating is as good as a coating meeting IEC 60664-3!!! These are the main issues I guess – but others too……so user beware – I am hopeful that a rewrite will eventually happen I am actively working on that rewrite and will pursue this matter as far as necessary to prevent this publication tarnishing what otherwise is an excellent standard. Regards - George Rutherford (Projects etc Pty Ltd - Safety Related Control Systems)		

Editorial Changes

SEMI Staff Note: Some of the proposed editorial changes that were approved by the committee would be considered technical in nature. However, since Document 5000C is a Related Information these changes are considered editorial. Per Regulations § 4.2.8, Related Information is a category of Supplementary Material that is not required for using the Standard or Safety Guideline. Related Information is not an official part of the Standard or Safety Guideline.

1

Proposed Change:
Revise R1-7.1.1 of Document 5000C as follows:

FROM: Section R1-7.1.1

R1-7.1.1 Before the risk estimation can be done, it is important to clearly understand the hazard scenario which would exist if the planned safety interlock system safety function was not available (e.g., if it were to fail).

TO: Section R1-7.1.1

R1-7.1.1 Before the risk estimation can be done, it is important to clearly understand the hazard scenario which would exist if the planned safety interlock system safety function was not available ~~(e.g., if it were to fail)~~.

Justification: (if necessary)
Change proposed for clarification; reduce ambiguity.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	8-0 Motion passed

2

Proposed Change:
Revise Table R1-2 of Document 5000C as shown below.
[*Category (basic architecture)* = 3, *Average Diagnostic coverge* (DC_{avg}) = Medium, *Mean Time To dangerous Failure* ($MTTF_d$) *in each channel* = Low, change "d" to "c"]

FROM: Table R1-2

Table R1-2 Simplified Relation between PL and Category Levels

Simplified view of the PL that can be achieved for a given Category, DC_{avg} and $MTTF_d$

Category (basic architecture)		B	1	2	2	3	3	4
Average Diagnostic coverage (DC_{avg})		None	None	Low	Medium	Low	Medium	High
Mean Time To dangerous Failure ($MTTF_d$) in each channel	Low	a	Not covered	a	b	b	d	Not covered
	Medium	b	Not covered	b	c	c	d	Not covered
	High	Not covered	c	c	d	d	d	e

TO: Table R1-2

Table R1-2 Simplified relation between PL and Category levels

Simplified view of the PL that can be achieved for a given Category, DC_{avg} and $MTTF_d$								
Category (basic architecture)		B	1	2	2	3	3	4
Average Diagnostic coverage (DC_{avg})		None	None	Low	Medium	Low	Medium	High
Mean Time To dangerous Failure ($MTTF_d$) in each channel	Low	a	Not covered	a	b	b	c	Not covered
	Medium	b	Not covered	b	c	c	d	Not covered
	High	Not covered	c	c	d	d	d	e

Justification: (if necessary)
Change proposed to address inconsistency.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	The typo from another standard's table was made. The ballot is not proposing to change in the original RI criteria.
Vote	7-0 Motion passed

3

Proposed Change:
Revise section R1-5.1 of Document 5000C as follows:

FROM: Section R1-5.1

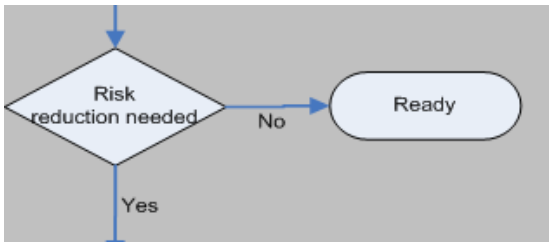
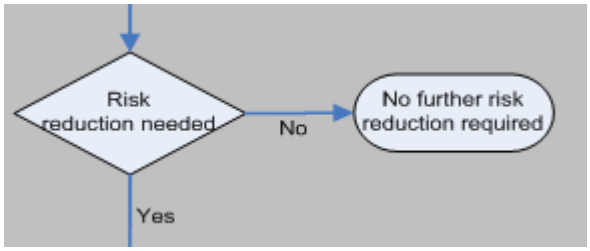
R1-5.1 SEMI S10 is used for risk identification, ranking and evaluation. When a risk is identified that a designer would like to mitigate (e.g., typically an S10 risk-ranking of Medium or higher) the design strategy to eliminate hazards of main body of this document should be followed. If the mitigation is done by using a safety interlock system, the referenced standards provide guidance that can be used as criteria for the safety interlock system design.

TO: Section R1-5.1

R1-5.1 SEMI S10 is used for risk identification, ranking and evaluation. When a risk is identified that a designer would like to mitigate ~~(e.g., typically an S10 risk-ranking of Medium or higher),~~ the SEMI S2 design strategy to eliminate hazards or control risks ~~of main body of this document~~ should be followed. If the mitigation is done by using a safety interlock system, the referenced standards provide guidance that can be used as ~~criteria~~ justification ~~for~~ that the safety interlock system design adequately reduces the risk.

Justification: (if necessary)
Change proposed for clarification.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Sean Larsen (Lam Research AG)
Discussion	None
Vote	9-0 Motion passed

4	**Proposed Change:** Revise Figure R1-1 of Document 5000C as shown below: [Change "Ready" to "No further risk reduction required"]
	FROM: Figure R1-1 
	TO: Figure R1-1 
	Justification: **(if necessary)** Change proposed for clarification.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	6-0 Motion passed

5	**Proposed Change:** Revise Figure R1-1 Note of Document 5000C as follows:
	FROM: Figure R1-1 Note NOTE: * Reliability to be based on the risk. The standards ISO 13849-1 and IEC 62061 are two possible ways how to determine the reliability level.
	TO: Figure R1-1 Note NOTE: * Design requirements ~~Reliability~~ for safety functions are ~~to be~~ based on the risk after other risk mitigation has been implemented. The standards ISO 13849-1 and IEC 62061 are two ~~possible~~ documents that might be useful ways how to determine the design and reliability level.
	Justification: **(if necessary)** Change proposed to correct grammatical error and improve readability.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	8-0 Motion passed

6	**Proposed Change:** Revise section R1-6.1 of Document 5000C as shown below: [Add "s" to "standard"]
	FROM: Section R1-6.1 R1-6.1 The standards listed in Table R1-1 have their own scope of application. Due to the many types of safety interlock systems, not all of the standard listed may be applicable to a specific system.
	TO: Section R1-6.1 R1-6.1 The standards listed in Table R1-1 have their own scope of application. Due to the many types of safety interlock systems, not all of the standards listed may be applicable to a specific system.
	Justification: (if necessary) Change proposed to correct grammatical error.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	6-0 Motion passed

7	**Proposed Change:** Revise R1-4.2 as shown below
	FROM: Section R1-4.2 R1-4.2 Safety interlock systems are used to reduce risk of harm to people. Some standards require different levels of reliability for the safety interlock system depending on the risk it is mitigating. The risk level is evaluated from several factors like:
	TO: Section R1-4.2 R1-4.2 ~~Safety interlock systems are used to reduce risk of harm to people.~~ Some standards require different levels of reliability for ~~the~~ a safety interlock system depending on the risk it is mitigating. The risk level is evaluated from several factors like:
	Justification: (if necessary) Change proposed to correct grammatical error.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	First sentence deleted to remove conflict with section R1-4.4.
Vote	7-0 Motion passed

8	**Proposed Change:** Revise R1-7.2 of Document 5000C as follows: **FROM: Section** R1-7.2 R1-7.2 In ISO 13849-1 safety interlock system reliability is expressed in terms of required performance levels (PLr) a, b, c, d and e, with increasing reliability. Once the appropriate required performance level is determined, it is used to specify the minimum reliability requirements for the safety interlock system. This analysis is relevant not just for electrical safety interlock systems, as well as pneumatic, hydraulic and mechanical safety interlock systems. **TO: Section** R1-7.2 R1-7.2 In ISO 13849-1 safety interlock system reliability is expressed in terms of required performance levels (PLr) a, b, c, d and e, with increasing reliability. Once the appropriate required performance level is determined, it is used to specify the minimum reliability requirements for the safety interlock system. This analysis is relevant not just for an electrical safety interlock system~~s~~, as well as pneumatic, hydraulic and mechanical safety interlock systems. **Justification: (if necessary)** Change proposed to correct grammatical error.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	5-0 Motion passed

9	**Proposed Change:** Revise section R1-7.4.4 of Document 5000C as follows: **FROM: Section** R1-7.4.4 R1-7.4.4 *CCF* — Common Cause Failure. CCF is an indicator of whether different items in the safety interlock system can fail from a common event (where these failures are not consequences of each other). ISO 13849-1 uses a PASS/FAIL checklist is used to help designer to determine if they have included considerations to prevent common failures. Having technical measures for avoiding CCF is relevant for the multi-channel safety interlock system CAT 2, 3 and 4 architectures, but it is not relevant for single channels architectures CAT B and CAT 1. **TO: Section** R1-7.4.4 R1-7.4.4 *CCF* — Common Cause Failure. CCF is an indicator of whether different items in the safety interlock system can fail from a common event (where these failures are not consequences of each other). ISO 13849-1 uses a PASS/FAIL checklist ~~is used~~ to help the designer to determine if they have included considerations to prevent common failures. Having technical measures for avoiding CCF is relevant for the multi-channel safety interlock system CAT 2, 3 and 4 architectures, but it is not relevant for single channels architectures CAT B and CAT 1. **Justification: (if necessary)** Change proposed to correct grammatical error.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	5-0 Motion passed

10	**Proposed Change:** Revise R1-9.1 of Document 5000C as follows: **FROM: Section** R1-9.1 R1-9.1 The European legislation for Equipment Intended for Use in Potentially Explosive Atmospheres (ATEX) defines reliability levels for equipment which is intended to be used in areas with a potential explosion risk. This reliability levels are based on an assessment of substances that comprise the potentially explosive atmosphere and time the atmosphere is expected to be present. Details on the requirements for can be found in the ATEX directive. **TO: Section** R1-9.1 R1-9.1 The European legislation for Equipment Intended for Use in Potentially Explosive Atmospheres (ATEX) defines reliability levels for equipment which is intended to be used in areas with a potential explosion risk. This reliability levels are based on an assessment of substances that comprise the potentially explosive atmosphere and time the atmosphere is expected to be present. Details on the requirements ~~for~~ can be found in the ATEX directive. **Justification: (if necessary)** Change proposed to correct grammatical error.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	6-0 Motion passed

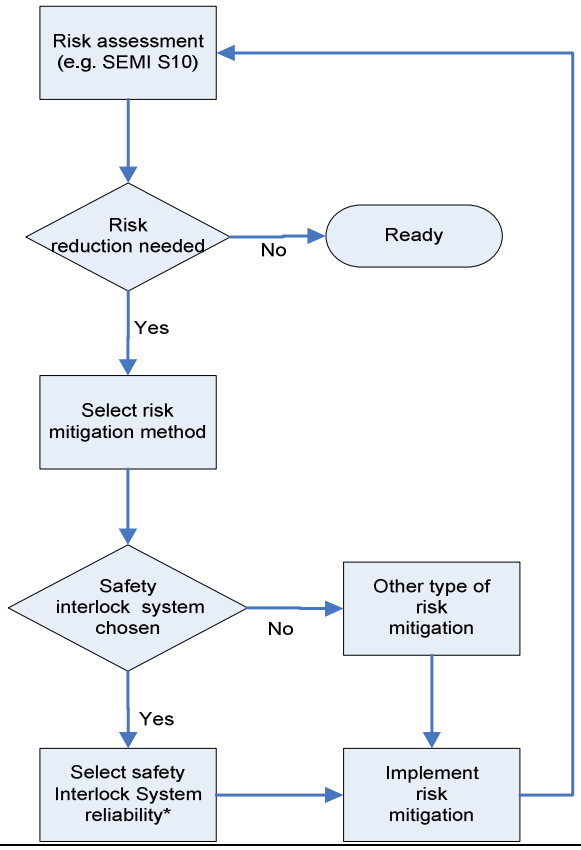
11	**Proposed Change:** Revise section R1-7.4.3 of Document 5000C as follows: **FROM: Section** R1-7.4.3 R1-7.4.3 DC_{avg} — Average Diagnostic Coverage (%). The DC_{avg} is the ratio of the rate of dangerous failures that can be detected in the safety interlock system, compared to rate of all dangerous failures (both detectable and undetectable) in the safety interlock system. It is determined by how frequently and accurately the system undergoes failure-diagnosis, and what actions are taken if a failure is detected. The DC_{avg} has four levels: Not Available (< 60%), Low (≥60% – <90%), Medium (≥90% - <99%), and High (≥99% detected). **TO: Section** R1-7.4.3 R1-7.4.3 DC_{avg} — Average Diagnostic Coverage (%). The DC_{avg} is the ratio of the rate of dangerous failures that can be detected in the safety interlock system, compared to rate of all dangerous failures (both detectable and undetectable) in the safety interlock system. It is determined by how frequently and accurately the system undergoes failure-diagnosis, and what actions are taken if a failure is detected. The DC_{avg} has four levels of detection: ~~Not Available~~ None (< 60%), Low (≥60% – <90%), Medium (≥90% - <99%), and High (≥99% ~~detected~~). **Justification: (if necessary)** Change proposed for clarification.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

12	**Proposed Change:** Insert new R1-1.1 and new R1-1.3 and revise new R1-1.2 as shown below:
	FROM: **R1-1 Purpose** R1-1.1 In the Safety Interlock Systems section of this standard, guidelines are given for the design and assessment of safety interlock systems. Because new, evolving technologies are used in the semiconductor and related industries, safety interlock systems can be complex. This Related Information (RI) provides guidance on additional standards that might be useful for safety interlock system design and assessment. This RI explains how several different standards discuss the design of safety interlocks or safety related parts of control systems. This RI also provides a comparison among the definitions of reliability levels within several standards. NOTE: The term 'safety interlock' as used in S2 Section 11 could be the entire safety related control system or safety related parts of control system as defined in the standards referenced in the following text, or it could be just a portion of these circuits, depending on the design approach chosen.
	TO: Section XXX **R1-1 Purpose** R1-1.1 This Related Information provides information on the use of standards of safety functions as it is mentioned in SEMI S2 section 11.6 related to the use of FECS. R1-1.2 In the Safety Interlock Systems section of ~~this standard,~~ SEMI S2 guidelines are given for the design and assessment of safety interlock systems. Because new, evolving technologies are used in the semiconductor and related industries, safety interlock systems can be complex. This Related Information (RI) provides guidance on additional standards that might be useful for a safety interlock system design and assessment. This RI explains how several different standards discuss the design of a safety interlocks or safety related parts of control systems. This RI also provides a comparison among the definitions of reliability levels within several standards. R1-1.3 A safety function as used in this Related Information is a function of the machine whose failure can result in immediate increase of the risk(s) (ISO 13849-1, IEC 62061, ISO 12100) NOTE: The term 'safety interlock' as used in S2 Section 11 could be the entire safety related control system or safety related parts of control system as defined in the standards referenced in the following text, or it could be just a portion of these circuits, depending on the design approach chosen.
	Justification: (if necessary) Change proposed for clarification.

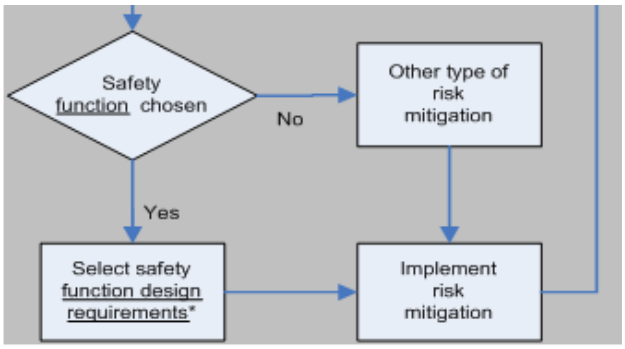
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

13	**Proposed Change:** Replace all instances of "interlock system" or "interlock" with "safety function
	FROM:
	TO: Changes done in following sections:R1-1.2; R1-2.1; R1-4.1; R1-4.2; R1-4.2.1; R1-4.3; R1-4.4; R1-5; R1.5.1; Figure R1-1; R1-6; R1-6.1; Table R1-1; R1-7; R1-7.1; R1-7.1.1; R1-7.2; R1.7.3; R1-7.4.2; R1-7.4.3; R1-7.4.4; R1-7.6; Note 3; Note 4; R1-8.2.6; R1-8.3; R1-9.2; R1-9.3
	Justification: (if necessary) Change proposed for clarification; reduce ambiguity.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

14	**Proposed Change:** Revise Figure R1-1 as shown below: [Change "Safety interlock system chosen" to "Safety function chose" Change "Select safety interlock System reliability" to "Select safety function design requirements"]
	FROM: Figure R1-1



TO: Figure R1-1



Justification: **(if necessary)**
Change proposed for clarification; reduce ambiguity.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	8-0 Motion passed

15

Proposed Change:
Revise section R1-5.2 of Document 5000C as follows:

FROM: Section R1-5.2

R1-5.2 After the mitigation plan has been designed, a new risk assessment should be carried out to verify the risk has been sufficiently mitigated.

TO: Section R1-5.2

R1-5.2 After the mitigation plan has been designed, a new risk assessment ~~should be~~is typically carried out to verify the risk has been sufficiently mitigated.

Justification: **(if necessary)**
Change proposed for clarification.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

16

Proposed Change:
Revise Table R1-1 of Document 5000C as shown below:

FROM: Section Table R1-1

Table R1-1 Application of Safety System Related Standards

Standard	*Typical use*	*Components/designs covered*	*Remarks*
ISO 13849-1: Safety of machinery - Safety-related parts of control systems	Calculation of the reliability of individual components and complete interlock control systems	It applies to any type of technology and energy used (electrical, hydraulic, pneumatic, mechanical, and software.)	ISO 13849-2 provides information how to calculate reliability of all types of components
IEC 62061: *Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems*	Calculation of the reliability of complete interlock control systems	Electromechanical, control system	Used for complete systems qualification
IEC 61508 series Functional Safety of Electrical/Electronic/ Programmable Electronic Safety-related Systems	Verification of a control system that uses software	PLC controlled system	Used for requirements of a software control system. Most of the times a safety PLC is approved based in this applications
European ATEX directive: 94/9/EC	Defines reliability levels for components that need to be used in explosive atmospheres	Components that need to be used in explosive atmospheres	Components used in explosive atmospheres need to be CE marked

TO: Section Table R1-1

Table R1-1 Application of Safety System Related Standards

Standard	*Typical use*	*Components/designs covered*	~~*Remarks*~~
ISO 13849-1: Safety of machinery - Safety-related parts of control systems	Calculation of the reliability of individual components and complete interlock control systems	It applies to any type of technology and energy used (electrical, hydraulic, pneumatic, mechanical, and software.)	~~ISO 13849-2 provides information how to calculate reliability of all types of components~~
IEC 62061: *Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems*	Calculation of the reliability of complete interlock control systems	Electromechanical, control system	~~Used for complete systems qualification~~
IEC 61508 series Functional Safety of Electrical/Electronic/ Programmable Electronic Safety-related Systems	Verification of a control system that uses software Used for requirements of a software control system. Most of the times a safety PLC is approved based in this applications	Programmable Logic Controller (PLC) controlled system	~~Used for requirements of a software control system. Most of the times a safety PLC is approved based in this applications~~
European ATEX directive: 94/9/EC	Defines reliability levels for components that need to be used in explosive atmospheres	Components that need to be used in explosive atmospheres	~~Components used in explosive atmospheres need to be CE marked~~

Justification: (if necessary)
Change proposed for clarification.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	4-0 Motion passed

17

Proposed Change:
Revise section R1-7.6 of Document 5000C as follows:

FROM: Section R1-7.6

R1-7.6 The standard provides both a tabular (refer to Table R1-2) and graphical way to estimate the achieved PL of a safety interlock system. A successful design occurs when the achieved PL is greater than or equal to required performance level (PLr.). If this is not the case, then a design modification or iteration is necessary.

TO: Section R1-7.6

R1-7.6 The standard provides both a tabular (refer to Table R1-2) and graphical way to estimate the achieved PL of a safety interlock system. A successful design occurs when the achieved PL is greater than or equal to required performance level (PLr.). If this is not the case, then a design modification ~~or iteration~~and re-evaluation of the achieved performance level is necessary.

Justification: (if necessary)
Change proposed for clarification.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	6-0 Motion passed

18

Proposed Change:
Change remark below Table R1-7 from a note to a table note.

FROM:

Table R1-7 SIL Requirement

Severity	*Class of Probability of Occurrence of Harm (Cl)*				
	3 - 4	*5 – 7*	*8 - 10*	*11 – 13*	*14 -15*
4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
3		#1	SIL 1	SIL 2	SIL 3
2			#1	SIL 1	SIL 2
1				#1	SIL 1

#1 NOTE: For these levels, other measures may be appropriate (e.g., Performance Level (PL) 'a' as per ISO 13849-1)

TO:

Table R1-7 SIL Requirement

Severity	*Class of Probability of Occurrence of Harm (Cl)*				
	3 - 4	*5 – 7*	*8 - 10*	*11 – 13*	*14 -15*
4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
3		#1	SIL 1	SIL 2	SIL 3
2			#1	SIL 1	SIL 2
1				#1	SIL 1

#2 #1~~NOTE:~~ For these levels, other measures may be appropriate (e.g., Performance Level (PL) 'a' as per ISO 13849-1)

Justification: (if necessary)
Change proposed to correct error introduced during formatting.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

19	**Proposed Change:** Revise IEC 61508 entry in section R1-1.3.2 of Document 5000C as shown below:
	FROM: R1-3.2 *IEC Standards*[1] IEC 61496 — Safety of machinery - Electro-sensitive protective equipment IEC 61508 — Functional safety of electrical/electronic/programmable electronic safety-related systems IEC 62061 — Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems
	TO: R1-3.2 *IEC Standards*[1] IEC 61496 — Safety of machinery - Electro-sensitive protective equipment IEC 61508 (series) — Functional safety of electrical/electronic/programmable electronic safety-related systems IEC 62061 — Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems
	Justification: (if necessary) Change proposed for clarification.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

20	**Proposed Change:** Revise section R1-3.4 of Document 5000C as shown below:
	FROM: Section R1-3.4 R1-3.4 *Other Standards and Documents* Directive 94/9/EC of The European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres
	TO: Section R1-3.4 R1-3.4 *Other Standards and Documents* Directive 94/9/EC of The European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (commonly known as the ATEX directive)
	Justification: (if necessary) Change proposed for clarification.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	7-0 Motion passed

21	**Proposed Change:** Change the title of the proposed new RI as follows: **FROM: Document Title** **SELECTION OF INTERLOCK RELIABILITY** **TO: Document Title** **ADDITIONAL GUIDANCE FOR SAFETY FUNCTIONS** **Justification: (if necessary)** Change proposed for clarification; reduce ambiguity.
Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	6-0 Motion passed

22	**Proposed Change:** Revise section R1-7.1.3 and R1-7.1.3 Note as shown below: **FROM: Section** R1-7.1.3 and R1-7.1.3 Note R1-7.1.3 There are 3 parameters related to the equipment hazards during operation, maintenance and service that contribute to the risk estimation and determination of PLr in ISO 13849-1. • Severity of the injury (S) S1: Slight (normally reversible injury) S2: Serious (normally irreversible injury or death) • Frequency or exposure to the hazard (F) F1: Seldom-to-less-often and/or exposure time is short F2: Frequent-to-continuous and/or exposure time is long • Possibility of avoiding hazard or limiting harm (P) P1: Possible under specific conditions P2: Scarcely possible NOTE: Although ISO 13849-1 uses "and/or" in its explanations of the frequency metrics, the EHS committee recommends that these should be understood as: F1- Seldom-to-less-often and exposure time is short; F2- frequent-to-continuous or exposure time is long.

TO: Section R1-7.1.3 and R1-7.1.3 Note

R1-7.1.3 There are 3 parameters related to the equipment hazards during operation, maintenance and service that contribute to the risk estimation and determination of PLr in ISO 13849-1.

- Severity of the injury (S)

  S1: Slight (normally reversible injury)

  S2: Serious (normally irreversible injury or death)

- Frequency or exposure to the hazard (F)

  F1: Seldom-to-less-often and~~/or~~ exposure time is short

  F2: Frequent-to-continuous ~~and/~~or exposure time is long

- Possibility of avoiding hazard or limiting harm (P)

  P1: Possible under specific conditions

  P2: Scarcely possible

NOTE: ~~Although ISO 13849-1 uses "and/or" in its explanations of the frequency metrics, the EHS committee recommends that these should be understood as: F1 - Seldom to less-often and exposure time is short; F2 - frequent to continuous or exposure time is long.~~The original description for F1 and F2 in ISO 13849-1 uses and/or terminology for both F1 and F2 which could lead to conflict when choosing the frequency term. The F1 and F2 text provided is based upon feedback from ISO TC199 members and discussion forums.

Justification: (if necessary)
Change proposed for clarification; reduce ambiguity.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	6-0 Motion passed

23

Proposed Change:
Delete first sentence of the 2nd note below Table R1-2 then move into Note 1 in section R1-3.3 of Document 5000C as shown below:

FROM:

R1-3.3 *ISO Standards*[2]

ISO 13849-1 — Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

ISO 13849-2 — Safety of machinery - Safety-related parts of control systems - Part 2: Validation

NOTE 1: The ISO 13849 is the successor of EN 954-: Safety of Machinery - Safety-related parts of control systems - Part 1: General principles for design

ISO TR 23849 — Guidance on the application of ISO 13849-1 and IEC 62061 in the design of safety related control systems

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Table R1-1 Simplified Relation between PL and Category Levels

Simplified view of the PL that can be achieved for a given Category, DC_{avg} and $MTTF_d$								
Category (basic architecture)		B	1	2	2	3	3	4
Average Diagnostic coverage (DC_{avg})		None	None	Low	Medium	Low	Medium	High
Mean Time To dangerous Failure ($MTTF_d$) in each channel	Low	a	Not covered	a	b	b	d	Not covered
	Medium	b	Not covered	b	c	c	d	Not covered
	High	Not covered	c	c	d	d	d	e

#3 NOTE: More detailed information about comparison between performance levels and the design parameters of the SIS can be found in ISO 13849-1.

NOTE: EN 954-1 has been replaced by ISO 13849-1. The hardware requirements of EN 954-1 were based on hardware architecture and fault tolerance. Safety interlock system reliability was determined in a decision diagram using severity of possible harm, frequency of exposure, and the possibility of avoiding the harm. The definition of severity of possible harm, frequency of exposure, and possibility of avoiding the harm are identical to those in ISO 13849-1 (see § R1-7)

TO:

R1-3.3 *ISO Standards*[2]

ISO 13849-1 — Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

ISO 13849-2 — Safety of machinery - Safety-related parts of control systems - Part 2: Validation

NOTE 1: The ISO 13849 is the successor of EN 954-: Safety of Machinery - Safety-related parts of control systems - Part 1: General principles for design. The hardware requirements of EN 954-1 were based on hardware architecture and fault tolerance. Safety interlock system reliability was determined in a decision diagram using severity of possible harm, frequency of exposure, and the possibility of avoiding the harm. The definition of severity of possible harm, frequency of exposure, and possibility of avoiding the harm are identical to those in ISO 13849-1 (see § R1-7).

ISO TR 23849 — Guidance on the application of ISO 13849-1 and IEC 62061 in the design of safety related control systems

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Table R1-2 Simplified Relation between PL and Category Levels

Simplified view of the PL that can be achieved for a given Category, DC_{avg} and $MTTF_d$								
Category (basic architecture)		B	1	2	2	3	3	4
Average Diagnostic coverage (DC_{avg})		None	None	Low	Medium	Low	Medium	High
Mean Time To dangerous Failure ($MTTF_d$) in each channel	Low	a	Not covered	a	b	b	d	Not covered
	Medium	b	Not covered	b	c	c	d	Not covered
	High	Not covered	c	c	d	d	d	e

#4 NOTE: More detailed information about comparison between performance levels and the design parameters of the SIS can be found in ISO 13849-1.

~~NOTE: EN 954-1 has been replaced by ISO 13849-1. The hardware requirements of EN 954-1 were based on hardware architecture and fault tolerance. Safety interlock system reliability was determined in a decision diagram using severity of possible harm, frequency of exposure, and the possibility of avoiding the harm. The definition of severity of possible harm, frequency of exposure, and possibility of avoiding the harm are identical to those in ISO 13849-1 (see § R1-7)~~

Justification: (if necessary)
Change proposed to improve readability.

Motion	To approve the above editorial changes
Motion by/2nd by	Bert Planting (ASML) / Mark Fessler (TEL)
Discussion	None
Vote	8-0 Motion passed

Forwarding Motions

Safety Check

Move to find that this document:
___Is NOT a safety document: when all safety-related information is removed, the document is still technically sound and complete.
_x_IS a safety document: when all safety-related information is removed, the document is not technically sound and complete.
_x_The Safety Checklist (Regulations 13.3) for this document is complete and has accompanied the document through the balloting process.

By/2nd: Bert Planting / Mark Fessler
Disc:
Vote: 6-0. **Motion passed**

Intellectual Property Check

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

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

___Patented or copyrighted material is known to exist in the Standard or Guideline but release for such material has been obtained or presented to the committee. (no motion needed)

___Patented or copyrighted material is known to exist in the Standard or Guideline but release for some of the material(s) has NOT been obtained or presented to the committee. The committee moves to:

___Ask the ISC for special permission to publish the standard without release

___Quit the activity

___Wait for the release of the patented or copyrighted material.

By/2nd:
Disc:
Vote: #-#-#. **Motion passed failed**

Final Action

Move to:

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

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

By/2nd: Bert Planting / Mark Fessler
Disc:
Vote: 5-0. **Motion passed**

Attachment: 12, 5000C LI1 Compiled Responses

4.6 Document 5357A, Line Item Revisions to SEMI S2-0712a, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Delayed Revisions Related to Optical Radiation

4.6.1 *Line Item #1: Delayed Revisions Related to Optical Radiation*

Tallies at Close of Voting

Voting Return Data		Acceptance Rate Data	
Voting Interest Returns	52	*Voting Interest Accept Votes (VIAccept)*	31
Total Voting Interests	83	*Interest Reject Votes (IReject)*	1
Voting Interest Return %	**62.65%**	*Approval % [VIAccept / (VIAccept + IReject)]*	**96.88%**
Other Returns (Intercommittee, etc.)	27	*# of Interest Rejects that Need to be not found Valid for Final Approval % >= 90%*	**0**
Total Votes	79		
Total Votes with Comments	1		
Total Reject Votes	2		

Rejects/Negatives

Company: Submitter	*ID*	*Negs*	*Disp*	*Company: Submitter*	*ID*	*Negs*	*Disp*
DNS:							
Naokatsu Nishiguchi	DNSA	1					
Ryosuke Imamiya	DNSB	2					

Negatives from < DNS: Naokatsu Nishiguchi (DNSA-#), Ryosuke Imamiya (DNSB-#) >

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

#	Ref.	Negative including Justification	TF Finding and Reason	Motion and Reason in Committee:	Final
DNSA-1	A3-4: Optical Radiation	Please describe the value of the threshold value for optical radiation (180-3000nm). 180-3000nm の閾値の値を記述して下さい。 Reason/justification In this ballot, we cannot understand what kind of threshold value is used in each wavelength. As an example, although 2006/25-/EC is mentioned, we cannot understand relation of TABLE A3-3. 今回のバロットではそれぞれの波長においてどのような閾値を使用するのかが理解できない。 例として、2006/25/EC が挙げられているが TABLE A3-3 との関連が理解できない。	**(Select 1)** __Not related __X__ Not persuasive (**assumes related**) __Related & persuasive **Reason:** Karl – RNP The ballot does reference the relevant values in ACGIH in paragraph A3-4.3. 2nd Visty 8-0	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__ Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** The ballot does reference the relevant values in ACGIH in paragraph A3-4.3. *By/2nd*: Sean Larsen / Ed Karl *Disc*: *Vote*: 6-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

W = Withdrawn, NR = Not Related, NP = Not Persuasive, RP = Related and Persuasive, NS = Not Significant, S = Significant					
#	*Ref.*	*Negative <u>including Justification</u>*	*TF Finding <u>and Reason</u>*	*Motion <u>and Reason</u> in Committee:*	*Final*
DNSB-1	A3-4.4.1	It is difficult to understand the difference between two methods. What is the method of "directly measure" in the description of former method? Please define the wards radiance and irradiance. Please explain about the method "directly measure" and why the measurement of radiance is necessary.	**<u>(Select 1)</u>** __Not related _X_Not persuasive (**assumes related**) __Related & persuasive **Reason:** Holbrook – RNP – two measurement methods are described and definitions are provided in section A3-4.4.2 and the referenced standards. 2nd Visty 8-0	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: <u>(select 1)</u>** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ _X_Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **<u>Reason:</u>** Two measurement methods are described and definitions are provided in section A3-4.4.2 and the referenced standards. *By/2nd*: Sean Larsen / John Visty *Disc*: *Vote*: 5-0. **Motion passed** **Significance finding/method: <u>(select 1)</u>** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

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

#	Ref.	*Negative including Justification*	*TF Finding and Reason*	*Motion and Reason in Committee:*	*Final*
DNSB-2	A3-4.4.3 and R7-1.X.1 d)	Current Table A3-3 has "20% of the applicable exposure limits". The time considerations may need to keep the 20% multiplier for safety. Please consider to keep the 20% multiplier.	**(Select 1)** __Not related __X__Not persuasive (**assumes related**) __Related & persuasive **Reason:** Holbrook – RNP – defined energy source and much more controlled set of conditions that are less impacted by external factors, so considered to be adequately safe. 2nd Karl – additionally, exposure values have been stable for a period of time, unlike the discussion with chemistry exposures. 8-0	__**Withdrawn by Subm. (Date: _____)** **Move to find this negative: (select 1)** __Not related (**requires reason, follow**) __Committee new business __Assigned to: _____ __x__Not persuasive (**requires reason**) __Related & persuasive (**ballot fails**) **Reason:** Defined energy source and much more controlled set of conditions that are less impacted by external factors, so considered to be adequately safe. Additionally, exposure values have been stable for a period of time, unlike the discussion with chemistry exposures. *By/2nd*: Sean Larsen / John Visty *Disc*: *Vote*: 4-0. **Motion passed** **Significance finding/method: (select 1)** __Not significant by agreement __Not significant by motion __Significant by % of NP vote (>10%) __Significant by agreement __Significant by motion *By/2nd*: *Disc*: *Vote*: #-#-#. **Motion passed failed**	

Final disposition of this reject:
__x__Valid (includes at least one significant negative)
__Not Valid (all negatives withdrawn, found not related, or found not significant)

Comments

Company: Submitter	*ID*	#	*Company: Submitter*	*ID*	#
KLA-Tencor: Lauren Crane	KT	10			

#	*Ref.*	*Comment*	*TF Response*	*Committee Action:*
KT-1	4.2	Comment Some additional information will help readers understand what could be considered a "significant emission" Proposed Solution: Add a note to the effect of "NOTE: Determining what constitutes a "significant emission" is a subjective decision. A reasonable rule of thumb is that an emission for a given frequency band in table A3-3 that could be above 10% of the threshold for that band is significant." Editorial	No action, Conceptually understand, but instrumentation limitations prevent being able to evaluate to this level of detail.	**(Select one)** _x_No further action ___Refer to TF for further review ___New Business ___Editorial Change: #___in ECs below ___Other: **(Select one)** _x_Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed** **failed**
KT-2	4.2	Comment Improve the understanding that the significant emissions decision is taken for each wavelength band in table A3-3 rather than each weighting step. Proposed Solution: Change to "Therefore, the optical source should be evaluated to all of the limits wavelength bands in Table A3-3 that the optical energy source has significant emissions." Editorial	No action, Conceptually understand, but instrumentation limitations prevent being able to evaluate to this level of detail. The wavelength bands for the weighting values are 5 to 10nm bands for the differing weighting values in the referenced standards, which cannot generally be measured in the field.	**(Select one)** _x_No further action ___Refer to TF for further review ___New Business ___Editorial Change: #___in ECs below ___Other: **(Select one)** _x_Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed** **failed**

#	Ref.	Comment	TF Response	Committee Action:
KT-3	4.4.3.2	Comment The idea indicated by the paragraph might be more obvious with the addition of a word. Proposed Solution: Add "..assuming the same person is …" Editorial	Agreed, See editorial change 1.	**(Select one)** ___No further action ___Refer to TF for further review ___New Business _x_Editorial Change: #__1__in ECs below ___Other: **(Select one)** _x_Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**
KT-4	4.2	Comment Grammar Proposed Solution: Change to "Therefore, the optical source should be evaluated to all of the limits ~~that~~ for which the optical energy source has significant emissions." Editorial	Agreed, see editorial change 2	**(Select one)** ___No further action ___Refer to TF for further review ___New Business _x_Editorial Change: #_2__in ECs below ___Other: **(Select one)** _x_Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**
KT-5	4.2	Comment Relocating this paragraph might improve comprehension, particularly regarding the use of the definite article "the accessible limits"… Proposed Solution: Position this paragraph after 4.3	Agree to move A3-4.3 above the table on the page, but do not move above A3-4.2 See editorial change 3	**(Select one)** ___No further action ___Refer to TF for further review ___New Business _x_Editorial Change: #_3__in ECs below ___Other: **(Select one)** _x_Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**

#	Ref.	Comment	TF Response	Committee Action:
KT-6	4.3	Comment I think the table implies the emissions limit analysis is limited to the safety concerns and frequency bands in table A3-3, but it would improve clarity to explicitly say so. A change in ACGIH approach could cause confusion. Proposed Solution: As an editorial change "The equipment emission limits for this document are is the exposure limit values for the frequency ranges given in Table A3-3 from the most recent…" Editorial	Agreed, see editorial change 4	**(Select one)** ___No further action ___Refer to TF for further review ___New Business _x_Editorial Change: #_4__in ECs below ___Other: **(Select one)** _x__Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**
KT-7	Table A3-3	Comment I assume the "weighted towards" phrases in the table are general descriptions of the how the frequency range is weighted but are not actually measurement instructions. They are not technically necessary and have a small potential to introduce confusion. Proposed Solution: Delete all these phrases such as this "Effective (weighted by relative Spectral Effectiveness [S(λ)] weighting function) irradiance ~~weighted towards 255 to 295nm~~" Editorial	No action	**(Select one)** _x__No further action ___Refer to TF for further review ___New Business ___Editorial Change: #___in ECs below ___Other: **(Select one)** _x__Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**
KT-8	Global	Comment Access to the ACGIH optical radiation limit values is expensive. Access to the European workplace directive 2006/25/EC values is free. Proposed Solution: Change the emission limit basis to the European directive. Technical	No Action	**(Select one)** _x__No further action ___Refer to TF for further review ___New Business ___Editorial Change: #___in ECs below ___Other: **(Select one)** _x__Committee agrees (no motion nec.) ___Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**

#	Ref.	Comment	TF Response	Committee Action:
KT-9	Table A3-3	Comment The wavelength ranges given are quite precise, and nonetheless describe the exact limits over which assessment is expected to occur. Therefore “Approximate” does not properly describe the column. Proposed Solution: Delete this word. Editorial	Leave as is to pass this ballot. Clean-up as determined to be appropriate in future ballots.	**(Select one)** _x_ No further action ___ Refer to TF for further review ___ New Business ___ Editorial Change: #___ in ECs below ___ Other: **(Select one)** _x_ Committee agrees (no motion nec.) ___ Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**
KT-10	note to SEMI Staff	Comment It makes no sense to have the statement at the top of page 4 following an “end of ballot” flag at the bottom of page 3. How can something be part of a ballot when the ballot has been declared to have ended. Proposed Solution: If used in future ballots, change this notice to the effect of “The rest of this document is material that is required for inclusion in a ballot by the SEMI Procedure Guide, but it does not contain any proposed document changes” AND Change the Page 3 notice to the effect of “End of Change Proposals” Technical	No action	**(Select one)** _x_ No further action ___ Refer to TF for further review ___ New Business ___ Editorial Change: #___ in ECs below ___ Other: **(Select one)** _x_ Committee agrees (no motion nec.) ___ Motion to act as indicated above: *By/2nd*: *Disc*: *Vote*: #-#-#. Motion **passed failed**

Editorial Changes

1	**Proposed Change:** Revise ¶ A3-4.4.3.2 of Document 5357A as follows:
	FROM: A3-4.4.3.2 If the exposure period occurs during only a portion of the scheduled maintenance task being evaluated, and the maintenance task foreseeably could be repeated during the work day, the total foreseeable exposure time can be calculated adding the actual exposure times over the course of the shift, assuming the person is performing the task repeatedly during the work shift.
	TO: A3-4.4.3.2 If the exposure period occurs during only a portion of the scheduled maintenance task being evaluated, and the maintenance task foreseeably could be repeated during the work day, the total foreseeable exposure time can be calculated adding the actual exposure times over the course of the shift, assuming the same person is performing the task repeatedly during the work shift.
	Justification: (if necessary) Editorial change proposed for clarification.

Motion	To approve the above editorial changes
Motion by/2nd by	Sean Larsen (Lam Research AG) / John Visty (Salus)
Discussion	None
Vote	6-0 Motion passed

2	**Proposed Change:** Revise ¶ A3-4.2 of Document 5357A as follows:
	FROM: A3-4.2 All of the accessible limits are summation limit functions, meaning that they add up the relative contributions of the various wavelengths of the optical energy source. Therefore, the optical source should be evaluated to all of the limits that the optical energy source has significant emissions.
	TO: A3-4.2 All of the accessible limits are summation limit functions, meaning that they add up the relative contributions of the various wavelengths of the optical energy source. Therefore, the optical source should be evaluated to all of the limits ~~that~~ for which the optical energy source has significant emissions.
	Justification: (if necessary) Editorial change proposed to correct grammar.

Motion	To approve the above editorial changes
Motion by/2nd by	Sean Larsen (Lam Research AG) / Edward Karl (Applied Materials)
Discussion	None
Vote	5-0 Motion passed

3

Proposed Change:
Move A3-4.3 and note 161 between A3-4.2 and Table A3-3 of Document 5357A as follows:

FROM: A3-4.3 and note 161 is after Table A3-3.

A3-4 Optical Radiation

A3-4.1 There are multiple safety concerns related to the effects of optical radiation on the skin and multiple tissues in the eyes. This document is not addressing skin concerns as there is very little exposed skin in a semiconductor fabrication cleanroom environment, and the eyes are more sensitive than the skin. The concerns and associated wavelengths are listed in Table A3-3.

A3-4.2 All of the accessible limits are summation limit functions, meaning that they add up the relative contributions of the various wavelengths of the optical energy source. Therefore, the optical source should be evaluated to all of the limits that the optical energy source has significant emissions.

Table A3-3 Optical Radiation Concerns

Approximate Wavelengths	*Safety / Tissue Concern*	*Measurement*
180 to 400 nm (Broadband UV)	Corneal and lenticular hazard	Effective (weighted by relative Spectral Effectiveness [S(λ)] weighting function) irradiance weighted towards 255 to 295nm
315 to 400 nm (UV-A)	Lenticular and retinal hazard	Irradiance
300 to 700 nm ("Blue light", UV-A and visible)	Photochemical retinal hazard	Effective (weighted by blue light hazard [B(λ)] weighting function) irradiance & radiance weighted towards 415 to 475nm
380 to 1400 nm (visible and IR-A)	Thermal retinal hazard[#1]	Effective (weighted by retinal thermal hazard [R(λ)] weighting function) radiance weighted towards 415 to 850nm
775 to 3000 nm (IR-A and IR-B)	Thermal corneal and lenticular hazard	Irradiance

#1 The thermal retinal hazard has different limit criteria depending on whether there is a significant visible light component to cause constriction of the pupil.

A3-4.3 The equipment emission limit for this document is the exposure limit value from the most recent version of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®) book with the measurement distance from source and time considerations given below.

NOTE 161: The European Union (EU) Worker Protection directive for artificial optical radiation (e.g., 2006/25/EC) provides similar worker exposure criteria for the EU countries. There are some differences in the retinal thermal hazard weighting values [R(λ)], further focusing the criteria towards 380 to 495nm energy.

A3-4.4 *Measurement Techniques and Limit Value Guidance*

A3-4.4.1 *Meters and Measuring* — There are two viable methods for measuring…

TO: A3-4.3 and note 161 between A3-4.2 and Table A3-3.

A3-4 Optical Radiation

A3-4.1 There are multiple safety concerns related to the effects of optical radiation on the skin and multiple tissues in the eyes. This document is not addressing skin concerns as there is very little exposed skin in a semiconductor fabrication cleanroom environment, and the eyes are more sensitive than the skin. The concerns and associated wavelengths are listed in Table A3-3.

A3-4.2 All of the accessible limits are summation limit functions, meaning that they add up the relative contributions of the various wavelengths of the optical energy source. Therefore, the optical source should be evaluated to all of the limits that the optical energy source has significant emissions.

A3-4.3 The equipment emission limit for this document is the exposure limit value from the most recent version of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®) book with the measurement distance from source and time considerations given below.

NOTE 161: The European Union (EU) Worker Protection directive for artificial optical radiation (e.g., 2006/25/EC) provides similar worker exposure criteria for the EU countries. There are some differences in the retinal thermal hazard weighting values [R(λ)], further focusing the criteria towards 380 to 495nm energy.

Table A3-3 Optical Radiation Concerns

Approximate Wavelengths	*Safety / Tissue Concern*	*Measurement*
180 to 400 nm (Broadband UV)	Corneal and lenticular hazard	Effective (weighted by relative Spectral Effectiveness [S(λ)] weighting function) irradiance weighted towards 255 to 295nm
315 to 400 nm (UV-A)	Lenticular and retinal hazard	Irradiance
300 to 700 nm ("Blue light", UV-A and visible)	Photochemical retinal hazard	Effective (weighted by blue light hazard [B(λ)] weighting function) irradiance & radiance weighted towards 415 to 475nm
380 to 1400 nm (visible and IR-A)	Thermal retinal hazard[#1]	Effective (weighted by retinal thermal hazard [R(λ)] weighting function) radiance weighted towards 415 to 850nm
775 to 3000 nm (IR-A and IR-B)	Thermal corneal and lenticular hazard	Irradiance

#1 The thermal retinal hazard has different limit criteria depending on whether there is a significant visible light component to cause constriction of the pupil.

~~A3-4.3 The equipment emission limit for this document is the exposure limit value from the most recent version of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®) book with the measurement distance from source and time considerations given below.~~

~~NOTE 161: The European Union (EU) Worker Protection directive for artificial optical radiation (e.g., 2006/25/EC) provides similar worker exposure criteria for the EU countries. There are some differences in the retinal thermal hazard weighting values [R(λ)], further focusing the criteria towards 380 to 495nm energy.~~

A3-4.4 *Measurement Techniques and Limit Value Guidance*

A3-4.4.1 *Meters and Measuring* — There are two viable methods for measuring…

Justification: (if necessary)
Editorial change proposed to improve readability.

Motion	To approve the above editorial changes
Motion by/2nd by	Sean Larsen (Lam Research AG) / John Visty (Salus)
Discussion	None
Vote	7-0 Motion passed

4	**Proposed Change:** Revise ¶ A3-4.3 of Document 5357A as follows:
	FROM: A3-4.3 The equipment emission limit for this document is the exposure limit value from the most recent version of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®) book with the measurement distance from source and time considerations given below.
	TO: A3-4.3 The equipment emission limit for this document ~~is~~are the exposure limit value from the most recent version of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs®) and Biological Exposure Indices (BEIs®) book with the measurement distance from source and time considerations given below.
	Justification: (if necessary) Editorial change proposed to correct grammar.
Motion	To approve the above editorial changes
Motion by/2nd by	Sean Larsen (Lam Research AG) / John Visty (Salus)
Discussion	None
Vote	7-0 Motion passed

Forwarding Motions

Safety Check

Move to find that this document:

__Is NOT a safety document: when all safety-related information is removed, the document is still technically sound and complete.

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

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

By/2nd: Sean Larsen / Ed Karl
Disc:
Vote: 7-0. **Motion passed**

Intellectual Property Check

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

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

___ Patented or copyrighted material is known to exist in the Standard or Guideline but release for such material has been obtained or presented to the committee. (no motion needed)

___ Patented or copyrighted material is known to exist in the Standard or Guideline but release for some of the material(s) has NOT been obtained or presented to the committee. The committee moves to:

___ Ask the ISC for special permission to publish the standard without release

___ Quit the activity

___ Wait for the release of the patented or copyrighted material.

By/2nd:
Disc:
Vote: #-#-#. **Motion passed failed**

Final Action

Move to:

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

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

By/2nd: Sean Larsen / John Visty
Disc:
Vote: 9-0. **Motion passed**

Attachment: 13, 5357A LI1 Compiled Responses

5 Subcommittee & Task Force Reports

5.1 *Manufacturing Equipment Safety Subcommittee (MESSC)*

Cliff Greenberg reported. Report highlights:

- Old Business Reminder
    - Arc flash (~NFPA 70e) has no reference in SEMI documents, is an inherent electrical hazard.
    - Suggested to ask S22 TF to consider adding:
        - Low power available at low voltage has low arc-flash hazard, suppliers could delineate the low hazard thresholds and consider these during system build
        - A SC member's suggestion for equipment design: segregate low voltage (<50v) from power circuits to make service work easier on the low voltage circuits
        - S2 suggests: drive task 3 & 4 to lower, safer level
    - Discussion about how to influence NFPA on 79 discussions
    - Expanding possible application of S2, etc. to other non-semiconductor equipment
        - Consensus: We do not want to support an additional "S2" for a specific industry
            - An RI could explain how to use S2 with limited application for a different industry
- New Business
    - Control of Hazardous Energy (CoHE), Lockout/Tagout (LOTO) in S2 is not as explicit as USA OSHA
        - Does it need to be?
    - EMO locations
        - Related Information 3 in S2 vs S8
    - Conform to the performance goal
        - Some 3rd Parties do not do the "full boat" of reference to other standards, still use an "arm wave" conforms to the intent approach
    - 450 mm
        - Discussed some of the items in the 450 summary from March 14 EHS Division

Attachment: 14, MESSC Report

5.2 *Fail-Safe / Fault-Tolerant Interest Group*

Lauren Crane reported. Current activities:

- Good discussion on concepts. Draft being developed on bypass (related to interlock requirement)
- Telecons to be arranged between NA Spring meetings and SEMICON West.

5.3 *Fire Protection Task Force*

Sean Larsen presented to the committee a SNARF proposal:

- Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed revisions related to fire code criteria
    - Rationale: The proposed change to SEMI S2 is to better align the criteria with the fire code criteria included in NFPA and IFC.
    - Scope: This activity is to generate a line item modification of SEMI S2, section 14. A similar line item change to SEMI S26 may also be appropriate but needs to be confirmed or completed by the S26 TF.

Motion:	EHS Committee approves SNARF for S2, section 14, revisions related to fire code criteria.
By / 2nd:	Sean Larsen (Lam Research AG) / Alan Crockett (KLA-Tencor)
Discussion:	None
Vote:	6-0. Motion passed.

5.4 *S2 Chemical Exposure Task Force*

Sean Larsen reported that the TF intends to propose a new activity (i.e., separate from SNARF #4683) to define what representative conditions are required when conducting IH (industrial hygiene) air sampling to determine conformance to OEL (occupational exposure limits) / LFL (lower flammability limits) levels. Unfortunately, Sean was unable to obtain a copy of the proposed SNARF in time to present to the committee for approval.

5.5 *S2 Ladders & Steps Task Force*

Ron Macklin stated that committee members see Document 4449 (S2 revision, related to work at elevated locations and design criteria for platforms, steps, and ladders) as an important Document. Therefore, the TF will target for Cycle 4, 2013 ballot submission.

5.6 *Japan S2 Seismic Protection Task Force*

Sean Larsen reported that the TF plans to submit ballot # 5556 (S2 revisions related to section 19) for the Cycle 4 voting period. He then asked the committee whether a liaison TF should be formed (in NA EHS) to help host meetings from the North America side. Supika Mashiro pointed out that the people leading this work are not accustomed to writing Standards Documents (including native language). She, therefore, asked the NA EHS co-chairs (together with SEMI staff) to facilitate communication between the NA EHS committee and the Japan TF leaders. Lauren Crane stated that he would check within his company to determine whether he can dedicate some time to help lead this effort.

Action Item: 2013Apr #02, Paul Trio and Chris Evanston to send an email to NA EHS TC members informing them about the Seismic Protection TF activity in Japan and request for participation.

5.7 *S8 Ergonomics Task Force*

Ron Macklin reported. Current activities:

- Rework failed line items from 2012 cycle 2 & 4 ballots and submit for 2013 cycle 4
    - Add definition for hand-object coupling point
    - Section 7: add criteria for whole body clearance and expand scope to equipment operation
    - Section 7: move equipment maintainability and serviceability to a new section 11

- Section 7: Add criteria for hand/arm clearance
- Section 9: Add limitations to hand control location

- Criteria currently under consideration
  - Rework Section 6 handle design guidelines
  - Critical controls definition changes (EMO)
- New criteria requested by participants 4/2/13
  - Hand crank criteria
  - Overhead seated reach
  - Standing workstation foot clearance
    - Note: this was in the original version of S8-95
    - SEMI-S2 RI3 EMO reach alignment w/ S8 (discussed in the MESSC meeting)
- Future Plans / Timeline
  - Continue teleconference efforts on Thursdays @ 13:00 Pacific Time up until SEMICON West starting April 18th.
  - Rework previously failed line items and re-ballot during Cycle 4 (May 20, 2013).
  - Prepare additional material for future ballot consideration (Cycle 6, 2013).
  - Changes to section 6 of appendix 1, and new requests noted during Spring Mtgs.

Attachment: 15, S8 Ergonomics Task Force Report

5.8 *S23 Revision Task Force*

George Hoshi reported. Current activities:

- Voting results summary for Ballot 5513, Line Item Revision to SEMI S23-0311, *Guide for Conservation of Energy, Utilities and Materials Used by Semiconductor Manufacturing Equipment*, issued for Cycle 2, 2013 voting period.
  - Line Item 1 – The expansion of Related Information (RI) 2 / Temperature Control Unit
    - Return rate: 62.7% | Accepts: 28 | Rejects: 3 | Comments: 3
  - Line Item 2 – The addition of text explaining the meaning and limits of the exhaust conversion factor.
    - Return rate: 62.7% | Accepts: 32 | Rejects: 0 | Comments: 1
  - Line Item 3 – Small editorial change in the sleep mode definitions, and the addition of a criterion related to load port availability during sleep mode
    - Return rate: 62.7% | Accepts: 32 | Rejects: 0 | Comments: 3
- Future Plans / Timeline
  - (Japan) TF to meet before the Japan EHS Committee meeting on April 18, 2013 to discuss line item 1. TF will review voting results and determine action plan.

Attachment: 16, S23 Revision Task Force Report

5.9 *EMC Task Force (under the NA Metrics Committee)*

SEMI Staff Note: The details below were obtained from the EMC Task Force report given during the NA Metrics Spring 2013 committee meeting. The report was obtained by staff after the NA EHS Committee meeting on April 4 and was included in these minutes for reference.

- Discussed possibility of SNARF to add an alternative test method for large equipment proposed by ASML. There was no representation from ASML at the meeting. Decision was to hold a meeting at a "Europe-friendly" time to give ASML an opportunity to present their cause to the team.
- SNARF for EMC at the Factory Level was presented, reviewed and recommended to Metrics Committee for approval.
- At July meeting or thereafter we will conduct a survey on actual use of E33 among equipment manufacturers.
- Possibility of webinar/tutorial for E33 will be explored.

Attachment: 17, EMC Task Force Report

6 Old Business

6.1 *Open Action Item Review*

Paul Trio reviewed the old action items, where are found in the table below

Item #	*Assigned to*	*Details*	*Status*
2012Nov #01	Paul Trio	Post EHS voting template, TF leader kit, and F2F meetings bridge info on the EHS committee page (http://www.semi.org/en/node/41746) on the SEMI Standards website.	Done. Closed.
2012Nov #02	Paul Trio	Include MESSC discussion topics in the NA EHS liaison report.	Done. Closed.
2012Nov #03	Alan Crockett	Report on the progress of the Energy Saving Equipment Communication (ESEC) TF at the next NA EHS committee meeting (in Spring 2013).	Paul reported that two ballots were submitted for the Cycle 2, 2013 voting period (i.e., 5411A, 5453). Both ballots failed and will be reballoted in time for adjudication at SEMICON West 2013.
2012Nov #04	Paul Trio	Ask regional SEMI staff to assist in the translation or help identify members who would be able to assist in the translation and proofing of the HEI/LOTO survey and survey responses.	Open. Paul reported that the online survey has been deployed, but translation to local languages has not yet taken place.

7 New Business

7.1 *Ballot Authorization*

#	When	SC/TF/WG	Details
5590	Cycle 3, 2013	NA EHS Committee, 5-Year Review	Reapproval of SEMI S14-0309, Safety Guidelines for Fire Risk Assessment and Mitigation for Semiconductor Manufacturing Equipment
4316J	Cycle 3, 2013 (or C4-13)	S22 TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*, and SEMI S22, *Safety Guideline for the Electrical Design of Semiconductor Manufacturing Equipment* Revisions related to clarifying the FECS criteria of S2 and S22
TBA	Cycle 3, 2013 (or C4-13)	S2 Non-ionizing Radiation TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment* Delayed revisions related to non-ionizing radiation
4683C	Cycle 4, 2013	S2 Chemical Exposure TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment* Delayed Revisions Related to Chemical Exposure
4449E	Cycle 4, 2013	S2 Ladders & Steps TF	Line Item Revisions to SEMI S2, *Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment*. Revisions related to stairs, ladders, platforms, and fall protection
5009B	Cycle 4, 2013	Ergonomics TF	Delayed Line Items Revisions to SEMI S8, *Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment*
5591	Cycle 4, 2013	International Fire Protection TF	Line Item Revisions to SEMI S2, Environmental, Health, and Safety Guideline for Semiconductor Manufacturing Equipment. Delayed revisions related to fire code criteria

TBA – to be announced

Motion: NA EHS TC approves distribution of ballots as shown above
By / 2nd: Alan Crockett (KLA-Tencor) / Ron Macklin (Macklin & Associates)
Discussion: None
Vote: 7-0. Motion passed.

7.2 *Leadership and Task Force Changes*

Group	Previous Leader	New Leader
NA EHS Committee	Eric Sklar (Safety Guru)	
FPD Safety System Liaison Task Force	This TF has been disbanded.	
	Carl Wong (AKT)	
S2 3.3 Limitations Task Force	This TF has been disbanded.	
	Lauren Crane (KLA-Tencor)	
	Cliff Greenberg (Nikon)	
S6 Revision Task Force	Eric Sklar (Safety Guru)	
S13 Support Task Force	This TF has been disbanded.	
	Eric Sklar (Safety Guru)	
S22 Revision Task Force	Ed Guild (---)	
S25 Revision Support Task Force	This TF has been disbanded.	
	Eric Sklar (Safety Guru)	

Motion:	NA EHS TC approves approves leadership and task force changes as shown above.
By / 2nd:	Sean Larsen (Lam Research AG) / Bert Planting (ASML)
Discussion:	None
Vote:	11-0. Motion passed.

Action Item: 2013Apr #03, Paul Trio to ask Mark Harralson (Intel) whether he wishes to continue serving as MESSC Co-chair (assuming that he is not yet eligible for the "3-strikes rule").

7.3 *5-Year Review*

Paul Trio reported that SEMI S14 (*Safety Guidelines for Fire Risk Assessment and Mitigation for Semiconductor Manufacturing Equipment*) will soon be due for 5-year review.

Motion:	NA EHS TC authorizes reapproval ballot for SEMI S14 for the Cycle 3, 2013 voting period.
By / 2nd:	Chris Evanston (Salus) / Ron Macklin (Macklin & Associates)
Discussion:	None
Vote:	4-2. Motion passed.

7.4 *NA EHS Proposed Meeting Schedule at SEMICON West 2013*

North America Standards Meetings at SEMICON West 2013
July 8-11, 2013
San Francisco Marriott Marquis Hotel
55 Fourth Street
San Francisco, California 94103

Monday, July 8
- S22 (Electrical Safety) TF (9:00 AM to 10:30 AM)
- S8 Ergonomics 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)
- S2 Ladders & Steps TF (3:30 PM to 5:00 PM)
- Seismic Protection Japan TF (5:00 PM to 6:00 PM)

Tuesday, July 9
- [ICRC (8:30 AM to 11:00 AM)]
- S10 Revision Europe TF (11:00 AM to 11:30 AM)
- S1 5-Year Review Discussion (11:30 AM to 12:00 Noon)
- Fail-Safe Fault-Tolerant TF (1:00 PM to 2:00 PM)

Wednesday, July 10
- S2 Machinery Directive Mapping TF (8:00 AM to 9:00 AM)
- MESSC (9:00 AM to 11:00 AM)
- Fire Protection TF (11:00 AM to 12:00 Noon)
- EHS Leadership Meeting (1:00 PM to 2:00 PM)
- S6 Revision TF (2:00 PM to 3:00 PM)
- S23 Revision Japan TF (5:30 PM to 6:30 PM)

Thursday, July 11
- EHS Committee (9:00 AM to 6:00 PM)

For more information about the NA Standards SEMICON West 2013 meetings, 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 Spring 2013 meeting schedule is May 27, 2013.

7.5 *New Action Items*

Item #	*Assigned to*	*Details*
2013Apr #01	Paul Trio	Add Alan Crockett to the Facilities Committee distribution list.
2013Apr #02	Paul Trio, Chris Evanston	Send an email to NA EHS TC members informing them about the Seismic Protection TF activity in Japan and request for participation.
2013Apr #03	Paul Trio	Ask Mark Harralson (Intel) whether he wishes to continue serving as MESSC Co-chair (assuming that he is not yet eligible for the "3-strikes rule").

8 Next Meeting and Adjournment

The next meeting of the North America Environmental, Health, and Safety committee is scheduled for July 11 in conjunction with SEMICON West 2013. Adjournment was at 5:50 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: NA EHS TC Chapter on July 11 in conjunction with SEMICON West 2013.

Chris Evanston (Salus Engineering), Co-chair	
Sean Larsen (Lam Research AG), Co-chair	

Table 6 Index of Available Attachments [#1]

#	*Title*	#	*Title*
01	SEMI Standards Required Meeting Elements	10	4683B LI 1 Compiled Responses
02	NA EHS Fall 2012 Meeting (November 1) Minutes	11	Edited 4683B Ballot
03	Europe EHS Committee Report	12	5000C LI 1 Compiled Responses
04	Japan EHS Committee Report	13	5357A LI 1 Compiled Responses
05	Leadership Report	14	MESSC Report
06	SEMI Staff Report	15	S8 Ergonomics TF Report
07	4613I LI 1 Compiled Responses	16	S23 Revision TF Report
08	5521 Compiled Responses	17	EMC TF Report (NA Metrics)
09	5522 Compiled Responses		

#5 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 Paul Trio at the contact information above.