

North America Physical Interfaces & Carriers Committee Meeting Summary and Minutes

N.A. Standards Spring 2013 Meetings
Wednesday, 03 April 2013, 9:00 AM – 12:00 PM PST
SEMI Headquarters in San Jose, CA

Next Committee Meeting

The next meeting of the North America Physical Interfaces & Carriers Committee is scheduled for Wednesday, July 10, 2013 at 9:00 AM -- 12:00 Noon (PST) at the San Francisco Marriott Marquis Hotel in conjunction with SEMICON West 2013.

Times and dates are subject to change without notice.

For additional meeting details, registration, travel information, and the latest schedule, please visit

<http://www.semi.org/node/45276>

Table 1 Meeting Attendees

Co-Chairs: Matt Fuller (Entegris) / Mutaz Haddadin (Intel)

SEMI Staff: Michael Tran

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
450 Consortium	Lin	Pinyen	KLA-Tencor	Crockett	Alan
Acteon Corporation	Komatsu	Shoji	Miraial	Nagashima	Tsuyoshi
Applied Materials	Fitzpatrick	Russell	Sinfonia Technology Co., Ltd.	Otani	Mikio
Brooks Automation	Carlson	Bob	U.A. Associates	Hartsough	Larry
BW & Associates	Wu	Bevan	<i>Shimizu Consultant</i>	<i>Shimizu</i>	<i>Yasuhiro</i>
Daifuku Co., Ltd.	Yamagata	Kenji	Tokyo Electron	Mashiro	Supika
Dainichi Shoji K.K.	Oyama	Koji	Persimmon Technologies, Inc.	Hofmeister	Chris
Entegris	Fuller	Matt			
Genmark Automation	Sotirov	Zlatko	SEMI Japan	Kanno	Hirofumi
Intel Corporation	Quinn	Tom	SEMI N.A.	Tran	Michael

**Italics indicates virtual participants*

Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
International Reticle SMIF Pods and Loadports Interoperability TF	Tom Kielbaso (Entegris)	
North America 450 mm Shipping Box TF	Eric Olson (Entegris)	

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.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5464	Revision to SEMI E154-0612, Mechanical Interface Specification for 450 mm Load Port	Passed as balloted. Superclean.
5523	Removal of SEMI E7-91 (Withdrawn 0312), Specification for Electrical Interfaces for the U.S. Only	Passed as balloted. Superclean.

Table 4 Authorized Activities

#	Type	SC/TF/WG	Details
5584	SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19-0912, Standard Mechanical Interface (SMIF)
5585	SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19.3-0309, Standard Mechanical Interface (SMIF), Specification for 150 mm (6 inch) Port
5465	Revised SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E111-1106, Mechanical Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticle
5466	Revised SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E112-1106, Mechanical Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles
---	Editorial Changes to SEMI E159	International 450 mm Shipping Box TF	Editorial changes made to SEMI E159-0912, Mechanical Specification for Multi Application Carrier (MAC) Used to Transport and Ship 450 mm Wafers
---	Revision to AUX 023	450 mm IPIC TF	Revision to SEMI AUX023-1211, Overview Guide to SEMI Standard for 450 mm Wafers <i>(Note: The safety and IP checks were not performed for the Auxiliary document. They will have to be checked at the next NA PIC TC Chapter meeting at SEMICON West 2013 in order to forward the Auxiliary document to the A&R SC for procedural review.)</i>
---	Transfer ownership of SEMI E156	450 mm IPIC TF	The 450 mm IPIC TF transfer the ownership of SEMI E156-0710, Mechanical Specification for 450 mm AMHS Stocker to Transport Interface to the Japan AMHS TF

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
5584	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19-0912, Standard Mechanical Interface (SMIF)
5585	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19.3-0309, Standard Mechanical Interface (SMIF), Specification for 150 mm (6 inch) Port

Table 5 Authorized Ballots

#	When	SC/TF/WG	Details
5465	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E111-1106, Mechanical Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticle
5466	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E112-1106, Mechanical Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles
5069	Cycle 3 or 4-2013	International 450 mm Shipping Box	New Standard: Specification for 450 mm Wafer Shipping System

Table 6 New Action Items

Item #	Assigned to	Details
2013Apr#01	Yasuhiro Shimizu	Correct figures 17 and 18 in SEMI M80 because both figures show incorrect reference plane.
2013Apr#02	Larry Hartsough and Shoji Komatsu	Work together on merging and aligning the previously approved PIC charters from Japan and North America.
2013Apr#03	Michael Tran	Send Russell Fitzpatrick the notchless wafer presentation from Pinyen Lin.

Table 7 Previous Meeting Actions Items

Item #	Assigned to	Details	Status
2012Oct#01	Michael Tran	To find out if the SEMI E84 TF is revising SEMI E48 or E84	Frank Petzoid: It is SEMI E48; CLOSED
2012Oct#02	Shoji Komatsu	To complete the revision of SEMI E154 and ballot it for Cycle 1 or 2-2013	CLOSED
2012Oct#03	Mutaz Haddadin	To speak to Frank Robertson (Intel) to discuss the IPPI TF load port height issue	CLOSED
2012Oct#04	Michael Tran	To investigate what the columns and the abbreviations in the 450 mm IP review slides represent	CLOSED
2012Oct#05	Michael Tran	To forward the PIC revised charter to Shoji Komatsu (Acteon Corporation)	CLOSED
2012Oct#06	Michael Tran	To contact the canceled Task Forces about their scheduling for the N.A. Standards Spring 2013 Meetings	CLOSED
2012Jul#01	Kenji Yamagata	Revise the AMHS TF scope and include specific items for the phrase "other specifications."	CLOSED

1 Welcome, Reminders, and Introductions

1.1 Matt Fuller (Entegris) called the meeting to order at 9:00 AM PST. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: 01, SEMI Standards Required Meeting Elements

2 Review of Previous Meeting Minutes

2.1 The committee reviewed the minutes of the previous meeting.

Motion: To approve the previous meeting minutes (Fall 2012).

By / 2nd: Bob Carlson (Brooks Automation) / Larry Hartsough (U.A. Associates)

Discussion: None.

Vote: 10-0 in favor. Motion passed.

Attachment: 02, N.A. PIC Meeting Minutes (Fall 2012)

3 Liaison Reports

3.1 Europe Equipment Automation Committee

3.1.1 There was no report received.

3.2 Japan Physical Interfaces & Carriers Committee

3.2.1 Kenji Yamagata (Daifuku) reported for the Japan Physical Interfaces & Carriers Committee. The key items were as follows:

- Leadership Changes
 - Shoji Komatsu (Acteon) stepped down as co-chair
 - Kenji Yamagata (DAIFUKU) will be newly appointed as co-chair after JRSC approval in April
- Meeting Information for the committee
 - The last meeting was on March 7, 2013 at SEMI Japan in Tokyo, Japan
 - The next meeting is scheduled for June 6, 2013 at SEMI Japan in Tokyo, Japan
- Ballots Adjudication Results for Cycle 7-2012
 - Doc. #5489, *Reapproval of SEMI E85-1108, Specification for Physical AMHS Stocker to Interbay Transport System Interoperability*
 - Passed as balloted
 - Doc. #5488, *New Standard, Specification for 450 mm Cluster Module Interface: Mechanical Interface and Transport Standard*
 - The document was re-balloted as #5488A and passed as balloted at the Japan PIC meeting in March
- Japan Physical Interfaces & Carriers Task Force reports
 - 450mm IPIC Task Force
 - Current activity topics
 - EFEM Robot “Pocket” Volume Definition
 - Load Port Standard Proposed Updates
 - E156 Stocker I/F update

- Int'l Reticle SMIF Pod and LP Interoperability TF
 - RSP150 cover (pod shell) sensing
 - RSP150 door (pod door) sensing
 - Generalize SEMI E19 pod detection option from „limit switch“ to „sensor“
- 450 mm AMHS TF
 - The TF charter was revised per action item 2012Jul#01, see Table 7
 - Signal tower standardization is not only a matter of AMHS, then asking for ESGJ cooperation has been determined and further plan has been discussed
 - SNARF to revise E156 is in preparation
 - Planned to obtain approval for SNARF at NA Spring Meeting.
 - Key revision items are as follows:
 - Add FOSB and MAC to objects to be transported (currently FOUP only).
 - Modify expressions that may cause misunderstanding.
- SEMI Japan contact: Hirofumi Kanno (hkanno@semi.org)

Attachment: 03, Japan Physical Interfaces & Carriers Report (Spring 2013)

3.3 SEMI N.A. Staff Report

3.3.1 Michael Tran (SEMI N.A.) gave the SEMI Staff Report. The key items were as follows:

- Some Upcoming SEMI Major Events
 - SEMICON West 2013
 - July 9-11, 2013 in San Francisco, CA, USA
 - SEMICON Taiwan 2013
 - September 4-6, 2013 in Taipei
 - SEMICON Europa 2013
 - October 8-10, 2013 in Dresden, Germany
- Upcoming North America Standards Meetings
 - NA Compound Semiconductor Materials Committee in conjunction with CS MANTECH 2013
 - May 15, 2013 in New Orleans, Louisiana
 - NA Standards Meetings at SEMICON West 2013
 - July 8-11, 2013 in San Francisco, California
- Cycle 4 and 5-2013 Critical Dates for SEMI Standards Ballots
 - Cycle 4, 2013
 - Ballot Submission Date: May 20, 2013
 - Voting Period Starts: June 1, 2013
 - Voting Period Ends: July 1, 2013
 - Cycle 5, 2013
 - Ballot Submission Date: July 18, 2013

- Voting Period Starts: July 29, 2013
- Voting Period Ends: August 28, 2013
- SEMI Standards Publications
 - Standards published from January 2013 to March 2013:
 - New Standards: 9
 - Revised Standards: 14
 - Reapproved Standards: 2
 - Withdrawn Standards: 2
 - There are a total of 871 SEMI Standards in portfolio and that includes 93 Inactive standards
- Major Items Included in the Revision to the SEMI *Regulations*
 - This revision to the *Regulations* added a new category called Complementary Files
 - Complimentary files are considered an official part of a standard or safety guideline
 - Complimentary files are NOT in PDF file format
 - Otherwise, they would be conjoined to the standard or safety guideline which are published in the PDF file format
 - They could be in any non-PDF format that is required for use with a standard or safety guideline
 - The TC Chapters decide which non-PDF files are complimentary
 - If they are not complimentary, then they are considered non-official and are categorized as *Various Materials*
 - If they are complimentary, then the files must be balloted if they are revised or added to a standard or safety guideline
 - Other Major Items
 - Global Technical Committee Structure
 - All regional and local TC become chapters and are independent regardless of whether an RSC exist in their region
 - Formation and Disbandment of Global Technical Committee
 - Formation and Disbandment of TC Chapter under existing Global Technical Committee
 - Elimination of Regional Standards
 - Intellectual Property (IP) section (§15 in the *Regulations*)
 - There is now an exit mechanism for Letter of Assurances in “limbo”
 - More clarification for Letter of Intents and the discovery of IP after a standard is published
- Major Items Included in the Revision to the SEMI *Procedure Guide*
 - The *Procedure Guide* was revised to align with changes in the *Regulations*
 - Added the 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
- Global Activity Report
 - North America has the most TFs, SNARFs, and ballots followed by Japan and Europe
 - Please see the attached Staff Report for detailed information and other regions
- Request to Members
 - Looking for details on how standards are actually used:
 - Development/Engineering
 - Procurement
 - Manufacturing
 - Interview should take less than 30 minutes – contact James Amano (jamano@semi.org) or any Standards staff
- SEMI N.A. contact: Michael Tran, mtran@semi.org

Discussion: Supika Mashiro commented there is a proposal for the TC chapter to choose not to use virtual meetings. For the PIC TC, using virtual meetings will be difficult anyway.

Bob Carlson had a concern with complimentary files. What if there are additional files required for use with the complimentary files? Do those files have to be included as well?

Attachment: 04, SEMI Standards Staff Report (Spring 2013)

4 Ballot Review

NOTE 1: Committee adjudication on the ballots are detailed in the Audits & Reviews (A&R) Subcommittee Forms for procedural review. These A&R forms are available as attachments to these minutes. The attachment number for each ballot document is provided under each ballot review section below.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5464	Revision to SEMI E154-0612, Mechanical Interface Specification for 450 mm Load Port	Passed as balloted. Superclean.
5523	Removal of SEMI E7-91 (Withdrawn 0312), Specification for Electrical Interfaces for the U.S. Only	Passed as balloted. Superclean.

Motion: The Document #5464 passed committee review as balloted and will be forwarded to the A&R for procedural review.

By / 2nd: Larry Hartsough (U.A. Associates) / Shoji Komatsu (Acteon Corporation)

Discussion: None.

Vote: 12-0 in favor. Motion passed.

Attachment: 05, Procedural Review A&R Form for Document #5464

Motion: The Document #5523 passed committee review as balloted and will be forwarded to the A&R for procedural review.

By / 2nd: Larry Hartsough (U.A. Associates) / Alan Crockett (KLA-Tencor)

Discussion: The Safety Check for Document #5523 was not performed by the committee because the document is being removed.

Vote: 10-0 in favor. Motion passed.

Attachment: 06, Procedural Review A&R Form for Document #5523

5 Subcommittee & Task Force Reports

5.1 450 mm International Physical Interfaces & Carriers (IPIC) Task Force

5.1.1 Shoji Komatsu (Acteon Corporation) reported for the International 450 mm Physical Interfaces & Carriers Task Force. Pinyen Lin from the Global 450 mm Consortium (G450C) presented the 450 mm Notchless Wafers to the TF and the TF provided feedback:

- When will G450C be able to supply notch-less wafers with proposed marks to equipment suppliers?
- Backside mark will be deleted or obscured by back grind and 3D wafers.
- Concern that notch/notch-less wafers will lead to variation within the industry.
- Concern that for a period of time, both notch/notch-less may be used same factory. This may lead to damaging the equipment. For instance, if a notched wafer is used in a tool that is setup for a notch-less wafer.
- Concern that 4 marks is not enough for alignment. Some grippers may obscure two of the marks.
- Will the mark be visible with eyes?
- Processes equipment that use the notch aligner, will the equipment have problem with notch-free wafer?
- A typical vacuum process equipment transports the wafer after performing the alignment in the beginning. Then, the effect is small because it does not need the alignment notch in the vacuum chamber. For metrology, lithography and inspection tools the wafer are aligned in two steps. If the direction of the pre-alignment accuracy improves with notch-less design, time may be reduced for secondary alignment.
- The reference to T7 is misleading. The presentation should simply explain that the use of a dot matrix design is appropriate.
- Wafers are currently placed in the shipping box with matched notch direction. Is it also the same request for the notchless wafer?
 - Lin: Wafer alignment in the shipper is preferable convention.
- This will lead to an increase in cost.

5.1.2 The TF reviewed the updated proposed revisions to the main body and related information to the committee's load port standards:

- The robot pocket space under the raised metal floor (RMF) is for EFEM robot ONLY.
- The ybackpocket = EFEMsupp has to be minimize.
- This volume is to be made available for equipment (SME) that requires a higher wafer transfer plane.
- The volume is to be used for wafer handling robot clearance only, and not for physical support of the robot or EFEM.
- Include a figure and explanation in Related Information to clarify that this space is not applicable across the board and only should be used for tools that require higher transfer plane, i.e. cluster tools and that the OEM needs to coordinate with end user / device maker for implementation.

5.1.3 The TF received feedback from Frank Robertson of G450C, who observed that the robot pocket space has to be placed relative to the RMF tile edges, and wondered if folks had considered the support requirements that might result from breaking those edges in some cases. The actual volume of the pocket space would be defined by the device makers and equipment suppliers. For Brooks Automation, the RMF is outside of scope in this TF as this is more of an end user proposal.

5.1.4 The TF proposed to transfer the ownership of SEMI E156 (450 mm AMHS Stocker) to the JA 450 mm AMHS TF.

Motion: Transfer the ownership of SEMI E156 to the JA 450 mm AMHS TF
By / 2nd: Shoji Komatsu (Acteon Corporation) / Larry Hartsough (U.A. Associates)
Discussion: None.
Vote: 12-0 in favor. Motion passed.

Attachment: 07, International 450mm Physical Interfaces & Carriers Task Force Report (Spring 2013)

5.2 International and N.A. 450 mm Shipping Box Task Force

5.2.1 Tom Quinn (Intel) reported for the International and N.A. 450 mm Shipping Box Task Force. The TF submitted the letter ballot of Document 5069, *New Standard: 450 mm Wafer Shipping System* for Cycle 4-2013 and it was approved by the committee. It is pending additional approval from the GCS of the Global PIC and Silicon Wafer committees.

5.2.2 The TF reviewed SEMI E159 (Multi Application Carrier) and SEMI M80 (Front-Opening Shipping Box) in SEMIviews and found several figures have incorrect reference plane notations. The TF proposed editorial changes to revise the figures to the committee outside of the balloting process. It was approved by the committee pending additional review by the A&R SC.

5.2.3 Eric Olson (Entegris) reported to the TF before the committee meeting that he had stepped down as TF co-leader of the NA 450 mm Shipping Box Task Force.

Attachment: 08, International and N.A. 450mm Shipping Box Task Force Report (Spring 2013)

Attachment: 09, Editorial changes to SEMI E159 A&R SC form

Action Item: 2013Apr#01, Yasuhiro Shimizu to correct figures 17 and 18 in SEMI M80 because both figures show incorrect reference plane.

5.3 International Process Module Physical Interface (IPPI) Task Force

5.3.1 Supika Mashiro (Tokyo Electron Ltd.) reported for the International Process Module Physical Interface Task Force. The TF reviewed ballot results of document #5488A, *New Standard, Specification for 450 mm Cluster Module Interface: Mechanical Interface and Transport Standard* and it passed as balloted at the Japan PIC meeting in March 2013.

5.3.2 The TF reviewed the proposal of “450mm Load Port EFEM Robot Pocket Volume Definition” from the IPIC TF. Some key items:

- Proposed Item 1 is to include a reference to SEMI E154 (*Mechanical Interface Specification for 450 mm Load Port*) regarding the Pocket Volume under the EFEM for robot stroke and explanation about relationship between higher (>1350 mm) wafer transport plane and the use of the pocket volume under the EFEM.
- Proposed Item 2 is to add information (either a new Related Information section or addition to the existing one) that explains two wafer transport planes (nominal and alternative).
 - e.g., How a transport module of a cluster tool designed to alternative wafer transport plane height may be connected with a process module designed to nominal wafer transport plane?

- Item 1 & 2 could be addressed by either separate ballots (i.e. one Line Item (LI) Ballot for revising both E154 and doc. 5488A, and another for revising doc. 5488A to address Item 2) or
- one ballot including 2 LIs (i.e. One Ballot including 2 LIs, LI-1 for revising both SEMI E154 and doc. 5488A and LI-2 for revision of doc. 5488A to address Item 2).
- The TF prefers the latter and plans to submit a Line Item Revision SNARF after review with other regions.

Attachment: 10, International Process Module Physical Interface (IPPI) Task Force Report (Spring 2013)

5.4 *International Reticle SMIF Pods and Load Ports Interoperability Task Force*

5.4.1 Koji Oyama (Dainichi Shoji K.K.) reported for the TF. The TF is currently working on the RSP150 cover for (pod shell) sensing and the RSP150 door (pod door) sensing to update SEMI E111 (RSP150) and E112 (MRSP150). The TF have been working on creating new Related Information sections with the list of known sensor positions and recommendations for sensor implementation. Key items of note:

- Task Force decided that this Related Information should be best attached to SEMI E19 (Standard Mechanical Interface)
- SEMI E19.3 (200 mm SMIF), E111 and E112 should get a short Related Information which makes the readers of the standards aware of the detailed Related Information in SEMI E19
- Task Force drafted short Related Information for E19.3, E111 and E112

5.4.2 Moving forward, the TF plans to finalize the paragraph about pod weight considerations for mechanical switches and complete the Related Information sections for the documents. The TF submitted SNARFs and letter ballot authorizations for the Related Information of the documents in Cycle 4-13 to the committee which was all approved by the committee (see §7.4 and 7.5 of these minutes).

5.4.3 Matt Fuller reported Tom Kielbaso (Entegris) has stepped down as TF co-leader and a search for his replacement is starting now.

Attachment: 11, International Reticle SMIF Pods and Load Ports Interoperability TF Report (March 2013)

5.5 *Global PIC Maintenance Task Force*

5.5.1 Larry Hartsough (U.A. Associates) reported the TF did not meet and did not have a report as there was no new business.

5.6 *EUV Reticle Handling Task Force*

5.6.1 Michael Tran (SEMI NA) reported for the TF. Long He (Intel) have been drafting a line item ballot for SEMI E152, *Mechanical Specification of EUV Pod for 150 mm EUVL Reticles* and it will be balloted for Cycle 3 or 4 after additional review with Michael.

Attachment: 12, E152 Ballot Status and Plan

5.7 *N.A. 450 mm Automated Test Die Prep Task Force*

5.7.1 There was no report given.

6 Old Business

6.1 Revision of the Physical Interfaces and Carriers Committee Charter

6.1.1 Shoji Komatsu reported that in 2006, the Japan PIC TC chapter had previously approved a revised PIC charter in the minutes, but actual changes were not made to the PIC charter. Larry Hartsough and Shoji Komatsu will have to work together on aligning and merge the PIC charters from Japan in 2006 and North America which was previously approved in Fall 2012.

Action Item: 2013Apr#02, Larry Hartsough and Shoji Komatsu to work together on aligning the previously approved PIC charters from Japan and North America.

Attachment: 13, JA PIC TC Chapter minutes from 2006

Attachment: 14, Revised PIC charter from the NA PIC TC Chapter

6.1 5 year review of SEMI E72

6.1.1 Alan Crockett (KLA-Tencor) commented that SEMI E72, *Specification and Guide for 300 mm Equipment Footprint, Height, and Weight* was in a strange situation. He said the end users admit it was outdated, but they don't want to change it. The document needs to be fixed, but maybe they don't want it to be fixed. He added the drawings in SEMI E72 are valuable and they belong in SEMI E6, *Guide for Semiconductor Equipment Installation Documentation*. Transferring the document to the Gases/Facilities committee won't do anything. The end users and the Gases/Facilities committee have to do something about these types of standards, otherwise they will be deleted.

6.1.2 Larry Hartsough said it is a bad situation, but the PIC committee doesn't have the knowledge or personnel to review the document. He suggested waiting for additional input from Mutaz Haddadin at SEMICON West 2013.

6.2 The Committee Updated the Status of Documents Due for Five Year Reviews

#	Details	Status
SEMI E48-1101 (Reapproved 1107)	Specification for SMIF Indexer Volume Requirement	Europe reviewing it.
SEMI E72-0600 (Reapproved 0305)	Specification and Guide for 300 mm Equipment Footprint, Height, and Weight	Wait for input from Mutaz Haddadin
SEMI E73-0301 (Reapproved 0307)	Specification for Vacuum Pump Interfaces - Dry Pumps	Publication Process Started
SEMI E74-0301 (Reapproved 0307)	Specification for Vacuum Pump Interfaces - Turbomolecular Pumps	Publication Process Started
SEMI E83-1106	Specification for 300 mm PGV Mechanical Docking Flange	Publication Process Started
SEMI E85-1108	Specification for Physical AMHS Stocker to Interbay Transport System Interoperability	Japan will review it. Open
SEMI E111-1106	Mechanical Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticle	Alfred Honold submitted revised SNARF (see §7.3 and 7.4 of these minutes).
SEMI E112-1106	Mechanical Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles	Alfred Honold submitted revised SNARF (see §7.3 and 7.4 of these minutes).

7 New Business

7.1 450 mm Notchless Wafers

7.1.1 Pinyen Lin (Global 450 mm Consortium) presented to the committee a presentation on 450 mm Notchless Wafers. Some key items of note:

- Key message:
 - G450C member companies has agreed to explore notch - free wafer activities.
 - Schedule for standardization is tight, and we need to work together collaboratively.
 - Process advantages with notch - free wafers
 - Backside laser fiducial marks as potential replacement marks for notch.
- Goal:
 - Standardize a backside fiducial mark that meet all process requirements in 2013.
 - Work with leading suppliers on the fiducial design.
 - Plan to submit SNARF in July.

7.1.2 Pinyen is looking for feedback from the committee. The committee suggested the SNARF to be submitted in July might be more for the Silicon Wafer committee. Bob Carlson is really interested as he does wafer alignment and wants to see how far Pinyen Lin's technology will go. He added if there is something new happening in the Silicon Wafer committee, it could affect PIC. Matt said the 450 mm IPIC TF had already provided some feedback (see §5.1 of these minutes) and Supika said the activities between the committees are closely related.

Action Item: 2013Apr#03, Michael Tran to send Russell Fitzpatrick the 450 mm Notchless Wafer Presentation

Attachment: 15, 450 mm Notchless Wafer Presentation

7.2 Concept for Fiducial Mark for Substrate Centering and Angular Orientation plus ID Mark

7.2.1 Bob Carlson (Brooks Automation) presented the Concept for Fiducial Mark for Substrate Centering and Angular Orientation plus ID Mark. The concept is would be good for the 450 mm notchless wafers presented by Pinyen Lin. Some items of note:

- A discussion regarding an alignment target on a wafer.
- Concept proposal for a target at the center of the wafer for 450 mm notchless wafers.
- The mark may appear on top side or bottom side, or both.

7.2.2 Bob said the concept has IP from Brooks, but Brooks will be generous with it to move the concept on to 450 mm notchless wafers.

Attachment: 16, Concept for Fiducial Mark for Substrate Centering and Angular Orientation plus ID Mark

7.3 New SNARFs

7.3.1 The following SNARFs were submitted for the committee's approval:

#	Type	SC/TF/WG	Details
5584	SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19-0912, Standard Mechanical Interface (SMIF)

#	Type	SC/TF/WG	Details
5585	SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19.3-0309, Standard Mechanical Interface (SMIF), Specification for 150 mm (6 inch) Port
5465	Revised SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E111-1106, Mechanical Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticle
5466	Revised SNARF	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E112-1106, Mechanical Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles

Motion: To approve all of the above SNARFs

By / 2nd: Koji Oyama (Dainichi Shoji K.K.) / Shoji Komatsu (Acteon Corporation)

Discussion: Matt Fuller and Larry Hartsough said addition or changes to the Related Information could be done out of the balloting process. The International Reticle SMIF Pods and Loadports Interoperability TF prefer to have everyone in the industry see the Related Information of the documents when they are balloted.

Vote: 13-0 in favor. Motion passed.

7.4 New Ballot Submission

7.4.1 The following documents were submitted for letter ballot to the committee for approval:

#	When	SC/TF/WG	Details
5584	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19-0912, Standard Mechanical Interface (SMIF)
5585	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E19.3-0309, Standard Mechanical Interface (SMIF), Specification for 150 mm (6 inch) Port
5465	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E111-1106, Mechanical Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticle

#	When	SC/TF/WG	Details
5466	Cycle 4-2013	International Reticle SMIF Pods and Loadports Interoperability TF	Revision to SEMI E112-1106, Mechanical Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles
5069	Cycle 3 or 4-2013	International 450 mm Shipping Box	New Standard: Specification for 450 mm Wafer Shipping System

Motion: To approve letter ballot of all documents above for Cycle 3 or 4-2013.
By / 2nd: Koji Oyama (Dainichi Shoji K.K.) / Shoji Komatsu (Acteon Corporation)
Discussion: None
Vote: 13-0 in favor. Motion passed.

7.5 Revision to SEMI AUX023-1211

(Note: The safety and IP checks were not performed for the Auxiliary document. They will have to be checked by the committee at the next NA PIC TC Chapter meeting at SEMICON West 2013 in order to forward the Auxiliary document to the A&R SC for procedural review.)

Motion: To approve the Revision to SEMI AUX023-1211, *Overview Guide to SEMI Standard for 450 mm Wafers* and forward to the A&R SC for procedural review.
By / 2nd: Shoji Komatsu (Acteon Corporation) / Alan Crockett (KLA-Tencor)
Discussion: None
Vote: 9-0 in favor. Motion passed.

8 Action Item Review

8.1 Open Action Items

8.1.1 Michael Tran (SEMI N.A.) reviewed the open action items. These can be found in the Open Action Items table at the beginning of these minutes.

8.2 New Action Items

8.2.1 Michael Tran (SEMI N.A.) reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

9 Next Meeting and Adjournment

9.1 The next N.A. Physical Interfaces & Carriers standards meetings will be held at the San Francisco Marriott Marquis Hotel in conjunction with SEMICON West 2013.

Tentative Schedule

Monday, July 8*

- Int'l Reticle SMIF Pods and Loadports Interoperability TF (10:00 AM – 12:00 PM Noon)
- Int'l 450 mm Shipping Box TF (1:00 PM – 4:00 PM)

Tuesday, July 9*

- EUV Reticle Handling TF (10:00 AM – 12:00 PM Noon)
- Int'l Process Module Physical Interface TF (1:00 PM – 3:00 PM)
- Int'l PIC TF (3:00 PM – 5:00 PM)

Wednesday, July 10*

- Physical Interfaces & Carriers Committee (9:00 AM – 12:00 PM Noon)

*All times are in PST. Times and dates are subject to change without notice.

For additional meeting details, registration, travel information, and the latest schedule, please visit

<http://www.semi.org/node/45276>

9.2 Having no further business, a motion was made to adjourn the N.A. Physical Interfaces & Carriers committee meeting on April 3, 2013 at 11:50 AM in conjunction with the N.A. Standards Spring 2013 Meetings at SEMI Headquarters in San Jose, California.

Respectfully submitted by:

Michael Tran
 Senior Standards Engineer
 SEMI North America
 Phone: 1-408-943-7019
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Minutes approved by:

Matt Fuller (Entegris), Co-chair	June 3, 2013
Mutaz Haddadin (Intel), Co-chair	

Table 8 Index of Available Attachments #1

#	Title	#	Title
01	SEMI Standards Required Meeting Elements	09	Editorial changes to SEMI E159 A&R SC form
02	N.A. PIC Meeting Minutes (Fall 2012)	10	International Process Module Physical Interface (IPPI) Task Force Report (Spring 2013)
03	Japan Physical Interfaces & Carriers Report (Spring 2013)	11	International Reticle SMIF Pods and Load Ports Interoperability TF Report (March 2013)
04	SEMI Standards Staff Report (Spring 2013)	12	E152 Ballot Status and Plan
05	Procedural Review A&R Form for Document #5464	13	JA PIC TC Chapter minutes from 2006
06	Procedural Review A&R Form for Document #5523	14	Revised PIC charter from the NA PIC TC Chapter
07	International 450mm Physical Interfaces & Carriers Task Force Report (Spring 2013)	15	450 mm Notchless Wafer Presentation
08	International and N.A. 450mm Shipping Box Task Force Report (Spring 2013)	16	Concept for Fiducial Mark for Substrate Centering and Angular Orientation Plus ID Mark

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