3D Packaging & Integration North America TC Chapter

Meeting Summary and Minutes

SEMICON West 2018 Standards Meetings

Thursday, July 12, 10:30 – 12:00

Marriott Marquis Hotel, San Francisco, California

TC Chapter Announcements

Next TC Chapter Meeting

NA Standards Fall 2018 Meetings

Thursday, November 8, 14:00 – 16:00

SEMI Headquarters, Milpitas, California

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Richard Allen (NIST), Chris Moore (Covalent Metrology), Sesh Ramaswami (Applied Materials)
SEMI Staff: Laura Nguyen

Company	*Last*	*First*	*Company*	*Last*	*First*
Acteon NEXT Corporation	Komatsu	Shoji	Hitachi Power Solutions Co., Ltd.	Ohno	Shigeru
AGC	*Satou*	*Youichirou*	*NIST*	*Allen*	*Richard*
AGC	Takahashi	Mark	Nordson SONOSCAN	Martell	Steve
BW & Associates	Wu	Bevan	Okamoto Machine Tool	Takahiko	Mitsui
Corning	Schmidt	Ilona	Rockwell Automation	Weyer	Dan
Covalent Metrology	Moore	Chris	Self	Wagner	Peter
Entegris	Zheng	Jun-Fei	TEL NEXX, Inc.	Chu	Cristina
Flagship International Ltd.	Tuan	Andy	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
6389	Reapproval of SEMI 3D3-0613, Guide for Multiwafer Transport and Storage Containers for 300 mm, Thin Silicon Wafers on Tape Frames	**Passed**, as balloted
6390	Reapproval of SEMI 3D5-0314, Guide for Metrology Techniques to be Used in Measurement of Geometrical Parameters of Through-Silicon Vias (TSVs) in 3DS-IC Structures	**Passed**, as balloted

#1 **Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.
#2 **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 5 Activities Approved by the GCS between meetings of the TC Chapter

None

Table 6 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

#	Type	SC/TF/WG	Details
6075	SNARF	Bonded Wafer Stacks TF	New Standard, Guide for Describing Glass-Based Material for Use in 3DS-IC Process – ***Revision to SNARF title and scope. TC Member Review took place between 06/20/2018 and 07/03/2018.***
6412	SNARF	Inspection and Metrology TF	Line Item Revision to SEMI 3D1-0912(Reapproved 0417), Terminology for Through Silicon via Geometrical Metrology

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

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

Table 7 Authorized Ballots

#	When	TF	Details
6075	Cycle 7-2018	Bonded Wafer Stacks TF	New Standard, Guide for Describing Glass-Based Material for Use in 3DS-IC Process
6175	Cycle 7-2018	Inspection and Metrology TF	New Standard, Guide on Measurements of Openings and Vias in Glass
6332	Cycle 7-2018	FO-PLP Panel TF	New Standard, Specification for Panel Substrate Characteristics for Fan-Out Panel Level Packaging (FO-PLP) Applications
6412	Cycle 7-2018	Inspection and Metrology TF	Line Item Revision to SEMI 3D1-0912(Reapproved 0417), Terminology for Through Silicon via Geometrical Metrology

Table 8 SNARF(s) Granted a One-Year Extension

None

Table 9 SNARF(s) Abolished

None

Table 10 Standard(s) to receive Inactive Status

None

Table 11 New Action Items

None

Table 12 Previous Meeting Action Items

Item #	Assigned to	Details
2018April#01	Laura Nguyen, Rich Allen	Laura to send draft LI SNARF for SEMI 3D1 to Rich Allen, copy Steve Martell and Chris Moore. Include RA for 3D1 ballot results from Cycle 4-2017 in email. Completed. Closed.

1 Welcome, Reminders, and Introductions

Richard Allen (NIST) called the meeting to order at 10:30. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Elements_June2016

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion:	To accept the previous meeting minutes as written.
By / 2nd:	Steve Martell (Nordson SONOSCAN) / Ilona Schmidt (Corning)
Discussion:	None.
Vote:	8-0 in favor. Motion passed.

Attachment: [2018Spring] 3DP&I NA Minutes FINAL

3 Liaison Reports

3.1 *3D Packaging & Integration Japan TC Chapter*

Laura Nguyen (SEMI) reported for the Japan TC Chapter. Of note:

Meeting Information

- Last meeting
  - Monday, May 21, 2018 at Japan Spring 2018 Meetings; SEMI Japan office, Tokyo
- Next meeting
  - Monday, October 15, 2018 at Japan Fall 2018 Meetings; SEMI Japan office, Tokyo

Leadership

- Committee Co-Chairs
  - Kazunori Kato – AiT
    - 1st GCS voting member; 1st 3D Packaging & Integration representative to the JRSC
  - Masahiro Tsuriya – iNEMI
    - 2nd GCS voting member; 3rd 3D Packaging & Integration representative to the JRSC
  - Haruo Shimamoto – AIST
    - 2nd 3D Packaging & Integration representative to the JRSC

Leadership Changes

*This leadership change was made at the TC Chapter meeting on September 13, 2017, but the record was missed on the CER of that meeting.

TF/SC/CFG/TC Name	*Previous Leader*	*New Leader*
Thin Chip Handling TF	Haruo Shimamoto (AIST) Hideki Suzuki (Shin-Etsu Polymer)	Haruo Shimamoto (AIST) remains as the leader Hideki Suzuki stepped down from the leader.

Current Organization Chart of Japan TC Chapter *{See attachment for Org Chart}*

Ballot Results

Doc #	*Document Title*	*TC Chapter Action*
6352	Line Item Revision to SEMI G64-96 (Reapproved 0811) "Specification for Full-Plated Integrated Circuit Leadframes (Au, Ag, Cu, Ni, Pd/Ni, Pd)"	
Line Item 1	Change section title to meet the requirement which is specified section 3.2 of Procedure Manual	**Passed,** as balloted
6353	Reapproval of SEMI G94-0113: Specification for Coin-Stack Type Tape Frame Shipping Container for 300 mm Wafer	**Passed**, as balloted

Activities Approved via GCS between Meetings

#	Type	SC/TF/WG	Details
6352	Ballot submission	3D Packaging & Integration 5 Year Review TF	Line Item Revision to SEMI G64-96 (Reapproved 0811) "Specification for Full-Plated Integrated Circuit Leadframes (Au, Ag, Cu, Ni, Pd/Ni, Pd)" ***– Authorized for ballot in voting Cycle 3-2018 by the GCS on 3/9/2018***
6353	Ballot submission	3D Packaging & Integration 5 Year Review TF	Reapproval of SEMI G94-0113: Specification for Coin-Stack Type Tape Frame Shipping Container for 300 mm Wafer ***– Authorized for ballot in voting Cycle 3-2018 by the GCS on 3/9/2018***

Authorized Ballots

Doc #	When	TF	Document Title/Details
6224	Cycle 6-2018	3D Packaging & Integration 5Year Review TF	Revision to SEMI G11-88 (Reapproved 0811): "Recommended Practice for RAM Follower Gel Time and Spiral Flow of Thermal Setting Molding Compounds" with non-conforming title change to "Practice for RAM Follower Gel Time and Spiral Flow of Thermal Setting Molding Compounds"
6233	Cycle 6-2018	3D Packaging & Integration 5Year Review TF	Line Item Revision to SEMI G29-1296E (Reapproved 0811): Test Method for Trace Contaminants in Molding Compounds
6230	Cycle 6-2018	3D Packaging & Integration 5Year Review TF	Revision to SEMI G43-87 (Reapproved 0811): Test Method for Junction-to-Case Thermal Resistance Measurements of Molded Plastic Packages
6094	Cycle 6-2018	3D Packaging & Integration 5Year Review TF	Revision to SEMI G45-93: "Recommended Practice for Flash Characteristics of Thermosetting Molding Compounds", with title change to "Practice for Flash Characteristics of Thermosetting Molding Compounds"
6232	Cycle 6-2018	3D Packaging & Integration 5Year Review TF	Revision to SEMI G55-93 (Reapproved 0811): Test Method for Measurement of Silver Plating Brightness
6167	Cycle 6-2018	3D Packaging & Integration 5Year Review TF	Line Item Revision to SEMI G73-0997 (Reapproved 0811) "Test Method for Pull Strength for Wire Bonding"

Abolished SNARFs *{See attachment for details; Slides 14-16}*

Standards Sent to Inactive Status

Standard Designation	Title
SEMI G4	Specification for Integrated Circuit Leadframe Materials Used in the Production of Stamped Leadframes
SEMI G10	Standard Method for Mechanical Measurement of Plastic Package Leadframes
SEMI G13	Standard Test Method for Expansion Characteristics of Molding Compounds
SEMI G15	Standard Test Method for Differential Scanning Calorimetry of Molding Compounds
SEMI G20	Specification for Lead Finishes for Plastic Packages (Active Devices Only)
SEMI G24	Test Method for Measuring the Lead-to-Lead and Loading Capacitance of Package Leads
SEMI G25	Test Method for Measuring the Resistance of Package Leads
SEMI G28	Specification for Leadframes for Plastic Molded S.O. Packages
SEMI G31	Test Method for Determining the Abrasive Characteristics of Molding Compounds
SEMI G49	Specification for Plastic Molding Preforms
SEMI G51	Specification for Plastic Molded (Metric) Quad Flat Pack Leadframes
SEMI G70	Standard for Equipment and Leadframe Fixtures for Measurement of Plastic Package Leadframes
SEMI G93	Measurement Method for Solder Sphere Size for Ball Grid Array Package

Task Force Highlights

- Thin Chip Handling Task Force
  - A new SNARF distributed for TC members two weeks review and to be forwarded for GCS approval
    - New Standard: Test method for Adhesive Strength for Adhesive Tray Used for Thin Chip Handling
    - SNARF #5836 missed one-year extension, so the same one as new is proposed.
- 3D Packaging & Integration 5 Year Review Task Force
  - A new SNARF is now distributed for TC members two weeks review and to be forwarded for GCS approval
  - Revision to SEMI G83-0912 "Specification for Bar Code Marking of Product Packages" and Withdrawal of SEMI G83.1-0912 "Specification for Bar Code Marking of Product Packages"
    - SEMI G83 is primary standard, and SEMI G83.1 subordinate standard which adds two-dimensional barcode symbol to G83 primary document. Therefore, most contents are duplicate among these two standards. So, Revision to G83-0912 and the withdrawal of G83.1-0912 are proposed based on the Regulations and this new SNARF draft is created.
    - Intercommittee Ballot: Traceability

Five-Year Review

Designation	Standard Title	Action By	Assigned to
SEMI G63-95 (Reapproved 0811)	Test Method for Measurement of Die Shear Strength	Past due	3D Packaging & Integration 5 Year Review TF
SEMI G83-0912 and SEMI G83.1-0912	Specification for Bar Code Marking of Product Packages (Subdocument: Specification for Bar Code Marking of Product Packages)	Past due	3D Packaging & Integration 5 Year Review TF
SEMI G95-0314	*Mechanical Interface Specification for 450 mm Load Port for Tape Frame Cassettes in the Backend Process	Spring 2019	JA 450mm Assembly and Test Die Preparation TF
SEMI G96-1014	Test Method for Measurement of Chip (Die) Strength by Mean of Cantilever Bending	Fall 2019	3D Packaging & Integration 5 Year Review TF

Staff Contact: Chie Yanagisawa; cyanagiswa@semi.org

Attachment: 20180701_3DP&I-Japan_Liaison_v1.0

3.2 *3D Packaging & Integration Taiwan TC Chapter*

Laura Nguyen (SEMI) reported for the *3D Packaging & Integration* Taiwan TC Chapter. Of note:

Meeting Information

- Previous meeting:
  - Thursday, May 10, 2018 at the Taiwan Summer 2018 Meetings; SEMI Taiwan office, Hsinchu
- Next meeting:
  - Tuesday, September 25, 2018 at the Taiwan Fall 2018 Meetings; SEMI Taiwan office, Hsinchu

Leadership

- Committee Co-Chairs: Wendy Chen (King Yuan Electronics), Roger Hwang (ASE), Chien-Chung Lin (ITRI)

Organization Chart *{See attachment for Org Chart}*

Ballot Results

Doc #	*Document Title*	*TC Chapter Action*
5800A	New Standard: Guide for Wafer Edge Trimming for 3DS-IC Process	Passed, with editorial change

Authorized Activities

Doc	*Type*	*SC/TF/CFG*	*Document Title/Details*
TBD	SNARF	3DS IC Middle End Process Task Force	Reapproval of SEMI 3D7-0913, Guide for Alignment Mark for 3DS-IC Process
TBD	SNARF	3DS IC Middle End Process Task Force	Line Item Revision to SEMI 3D6-0913, Guide for CMP and Micro-bump Processes for Frontside Through Silicon Via (TSV) Integration

Authorized Ballots

Doc #	*When*	*TF*	*Document Title/Details*
TBD	Cycle 6-18	3DS IC Middle End Process Task Force	Reapproval of SEMI 3D7-0913, Guide for Alignment Mark for 3DS-IC Process
TBD	Cycle 6-18	3DS IC Middle End Process Task Force	Line Item Revision to SEMI 3D6-0913, Guide for CMP and Micro-bump Processes for Frontside Through Silicon Via (TSV) Integration

Task Force Highlights

- Middle End Process TF
    - Five-year review: SEMI 3D7-0913, New Standard: Guide for Alignment Mark for 3DS-IC Process; SEMI 3D6-0913, Line Item Revision of SEMI 3D6-0913 Guide for CMP and Micro-bump Processes for Frontside Through Silicon Via (TSV) Integration.
- Testing TF
    - Discuss New SNARF “thin chip micro-crack inspection guide”(Ongoing).
    - The TF is recruiting new members.

Five-Year Review

Designation	**Standard Title**	**Action By**	**Assigned to**
SEMI 3D7-0913	New Standard: Guide for Alignment Mark for 3DS-IC Process	May 10, 2018	Middle End Process TF
SEMI 3D6-0913	Line Item Revision of SEMI 3D6-0913 Guide for CMP and Micro-bump Processes for Frontside Through Silicon Via (TSV) Integration	May 10, 2018	Middle End Process TF

Staff Contact: Dean Chang, dchang@semi.org; Tiffany Huang, thuang@semi.org

Attachment: 3D P&I TW Liaison Report_20180510

3.3 *SEMI Staff Report*

Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:

SEMI Global 2018 Calendar of Events

- SEMICON West (July 10-12; San Francisco, California)
- SEMICON Taiwan (September 5-7; Taipei, Taiwan)
- SEMICON Europa (November 13-16; Munich, Germany)

- SEMICON Japan (December 12-14; Tokyo, Japan)

Upcoming North America Standards Meetings

- NA Standards Fall 2018 Meetings (November 5-8, 2018, SEMI HQ in Milpitas, California)
- NA Standards Spring 2019 Meetings (April 1-4, 2019, SEMI HQ in Milpitas, California)
- SEMICON West 2019 (July 8-11, 2019, San Francisco, California)

Letter Ballot Critical Dates for 2018

- Cycle 6-2018: ballot submission due: July 20/Voting Period: August 1 – August 31
- Cycle 7-2018: ballot submission due: August 22/Voting Period: September 5 – October 5
- Cycle 8-2018: ballot submission due: October 12/Voting Period: October 26 – November 26
- Cycle 9-2018: ballot submission due: November 14/Voting Period: November 28 – December 28

Critical Dates: http://www.semi.org/en/Standards/Ballots

Standards Publications Report

Cycle	*New*	*Revised*	*Reapproved*	*Withdrawn*
April 2018	0	9	2	0
May 2018	0	3	5	0
June 2018	2	14	11	0

Total in portfolio – 987 (includes 236 Inactive Standards) *{See attachment for details}*

New Standards

Cycle	*Designation*	*Title*	*Committee*	*Region*
June 2018	SEMI C96	Test Method for Determining Density of Chemical Mechanical Polish (CMP) Slurries	Liquid Chemicals	NA
June 2018	SEMI D77	Test Method for Measurements of Dimension of Films for FPD – Contour Matching Method	Flat Panel Display	JA

New Forms, Regulations & Procedure Manual

- New version of Regulations (June 8, 2018)
- New version of Procedure Manual (June 8, 2018)
- New TFOF & SNARF forms
- New Ballot Review Templates
- www.semi.org/standards
    - Bottom left, under **Resources**

Regulations & Procedure Manual Changes

- Improvements on Rules for Handling of Patented Technology (Regulations § § 16.1-16.3)
    - Patented Technology that might be material to the Standard is disclosed at the end stage of document development
        - Disclosed after the ballot is issued
        - Assessment for potential materiality and technical justifiability for inclusion shall be postponed to the next scheduled meeting.
- A TF sometimes decides to use patented technology after it has started the document development project.
    - To require subsequent update of SNARF regarding use of Patented Technology and subsequent LOI process to ensure that TC Chapter agrees to the course of action recommended by the TF.

- Improvements on Rules for Handling of Copyright and Trademark (*Regulations* § 16.4)
    - Improvement on handling copyright process
    - New process for handling trademarks
- Additional Official Virtual TC Chapter Meeting Related Rules (*Regulations* ¶ 7.4.2 and § 9.5)
    - Loss of necessary infrastructure at the meeting location described in the Background Statement of the Letter Ballot
        - The necessary infrastructure (e.g., electrical power, internet connection, required software applications)
    - Procedure for Transition of Virtual Meeting (PM 4.3.6)
        - GTC Decision for Whether or Not to Adopt the Official Virtual TC Chapter Meeting
- Clarification on the Use of Editorial Changes a Standard or Safety Guideline (Regs § 8.9.5)
    - Two types, made independently from a Letter Ballot.
    - Both requires TC approval and subsequent A&R approval.
    - Type 1:
        - minor changes (i.e., corrections of obvious misspelling, formatting changes to comply with the Style Manual; corrections of capitalization, the use of italics, incorrect spacing);
    - Type 2:
        - those that introduce no change in technical content (e.g., changes to nontechnical information; insubstantial changes to existing Supplementary Materials; changes that reduce ambiguity; changes to eliminate an obvious technical content inconsistency; or adding/deleting/changing Notes or footnotes).
- Clarification on SNARF Revision vs. New SNARF (PM 2.2.6)
    - The SNARF should be revised if the Draft Document deviates technically from the scope described in the SNARF or changes in the 'Intellectual Property Considerations' section
    - New SNARF is required
        - expected result of activity changes from Line Item revision(s) to a major revision, or
        - scope change beyond modification of existing scope items (i.e., deleting existing or adding new scope items),
        - change of ballot type (e.g., reapproval to revision or vice versa), or
        - introduction of new Line Item(s)

Nonconforming Titles (See PM Appendix 4) *{None}*

Five-Year Review

- SEMI 3D8-0514, Guide for Describing Silicon Wafers for Use as 300 mm Carrier Wafers in a 3DS-IC Temporary Bond-Debond (TBDB) Process

SNARF 3 Year Status, TC Chapter may grant a one-year extension

- 5976: New Standard, Terminology for 3DS-IC Technology
    - SNARF expires Fall 2018

SNARF(s) Approved by GCS in between TC Chapter Meetings

- Revision to SNARF 6075: New Standard, Guide for Describing Glass-Based Material for Use in 3DS-IC Process

In-progress/Needs Action

- SEMI 3D1, Terminology for Through Silicon via Geometrical Metrology
    - Reapproval Ballot / Cycle 4, 2017
    - Publication pending; Task Force agreed to address Accept with Comment in future Line Item Ballot

Attachment: [2018West] Staff Report 3DP&I

4 Ballot Review

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

4.1 Document # 6389, Reapproval of SEMI 3D3-0613, Guide for Multiwafer Transport and Storage Containers for 300 mm, Thin Silicon Wafers on Tape Frames

- The ballot passed TC Chapter review as balloted. See attachment for ballot adjudication.

Attachment: 6389ProceduralReview

4.2 Document # 6390, Reapproval of SEMI 3D5-0314, Guide for Metrology Techniques to be Used in Measurement of Geometrical Parameters of Through-Silicon Vias (TSVs) in 3DS-IC Structures

- The ballot passed TC Chapter review as balloted. See attachment for ballot adjudication.

Attachment: 6390ProceduralReview

5 Subcommittee and Task Force Reports

5.1 *Fan-Out Panel Level Packaging (FO-PLP) Panel Task Force*

Cristina Chu (Tokyo Electron, NEXX) reported for this Task Force. This report contained information on the PowerPoint presentation below.

- Document 6332, Specification For Panel Substrate Characteristics for Fan-out Panel Level Packaging (FO-PLP) Applications
    - Reviewed in yesterday's TF meeting
        - Purpose and Scope were rewritten to include addressing standard dimensions for both panels and panels with carriers (in both cases, the external most dimension is the dimension being standardized)
        - Substrate dimensions narrowed to two sizes: 510 x 515 mm and 610 x 615 mm (the understanding is that 600 x 600 mm panels could be handled by a 610 x 615 mm panel holder)
        - Agreed to emphasize that except for external x y dimensions, all physical properties are optional by moving Table 1 to APPENDIX 1: OPTIONAL PHYSICAL PROPERTIES OF PANEL MATERIALS
        - Removed appendix with "Sampling Plan" with plan to revisit in future revision
        - Added draft definitions
- The TF would like to ask the committee to send 6332 to ballot in Cycle 7.

Motion:	To send 6332 to ballot in Cycle 7-2018 after all agreed upon corrections to the document had been made at the Web & teleconference meeting scheduled for August 7/8, 2018.
By / 2nd:	Cristina Chu (TEL NEXX) / Steve Martell (Nordson SONOSCAN)
Discussion:	None.
Vote:	11-0 in favor. Motion passed.

Attachment: FO-PLP Panel TF Meeting Minutes_2018.07.11

5.2 *3DP&I Inspection & Metrology and Bonded Wafer Stacks Task Force*

Task Force Leaders reported for both the 3DP&I Inspection & Metrology and 3DP&I Bonded Wafer Stacks Task Forces.

Of note, during the task force meeting, the task force reviewed the ballot results for:

- 6389: Reapproval of SEMI 3D3-0613, Guide for Multiwafer Transport and Storage Containers for 300 mm, Thin Silicon Wafers on Tape Frames
- 6390: Reapproval of SEMI 3D5-0314, Guide for Metrology Techniques to be Used in Measurement of Geometrical Parameters of Through-Silicon Vias (TSVs) in 3DS-IC Structures.

The task force also reviewed new and opened SNARFs below:

- 5976: New Standard, Terminology for 3DS-IC Technology
    - Connect with Chris Moore about what he would like to do with this SNARF – since the NA Silicon Wafer is planning to turn their Terminology document into an AUX; this might be something this TC Chapter would like to do as well.
- 6075: New Standard, Guide for Describing Glass-Based Material for Use in 3DS-IC Process
    - The TF had resent out this SNARF for additional two-week TC Member Review to revise the title and scope once more to clarify "quartz" and "glass"
    - The TF would like to ask the TC Chapter to approve revision to SNARF 6075 and to authorize for ballot in Cycle 7-2018.

Motion: To approve SNARF 6075 as revised.
By / 2nd: Ilona Schmidt (Corning) / Mark Takahashi (AGC)
Discussion: None.
Vote: 10-0 in favor. Motion passed

Attachment: 6075 Revision SNARF

Motion: To authorize 6075 for ballot in voting Cycle 7-2018 after it has been formatted and modified per TC Chapter meeting.
By / 2nd: Ilona Schmidt (Corning) / Mark Takahashi (AGC)
Discussion: None.
Vote: 8-0 in favor. Motion passed.

- 6076: New Standard, Specification for Identification and Marking on Wafers and Wafer Stacks for 3DS-IC Applications
    - Currently, there is no push on the NA side. The NA TC Chapter will like to request to the Japan Chapter if anyone in their region would like to take over this activity; if not, the NA TC Chapter will consider abandoning this SNARF at the Fall meetings.
- 6175: New Standard, Guide on Measurements of Openings and Vias in Glass
    - The Document has been circled through the TF and the TF would like to ask the TC Chapter to authorize to ballot in Cycle 7-2018.

Motion: To authorize 6175 for ballot in voting Cycle 7-2018 after it has been formatted and modified per TC Chapter meeting.
By / 2nd: Ilona Schmidt (Corning) / Bevan Wu (BW & Associates)
Discussion: None.
Vote: 9-0 in favor. Motion passed.

- New SNARF for Line Item (LI) Revision to SEMI 3D1

- SEMI 3D1 was a Reapproval Ballot in Cycle 4-2017. Comments were received that would be later addressed in a Line Item Ballot. An Action Item was taken to reach out to voter(s) who made the comments and begin drafting a SNARF for revision.
- The TF would like to ask the TC Chapter to approve new LI SNARF and authorize to ballot in Cycle 7-2018.

Motion:	To approve new SNARF for Line Item Revision to SEMI 3D1.
By / 2nd:	Steve Martell (Nordson SONOSCAN) / Bevan Wu (BW & Associates)
Discussion:	None.
Vote:	10-0 in favor. Motion passed.

Attachment: SNARF_LI_3D1 v2

Motion:	After HQ assigns document number for SEMI 3D1 SNARF, motion to authorize to ballot in voting Cycle 7-2018.
By / 2nd:	Steve Martell (Nordson SONOSCAN) / Bevan Wu (BW & Associates)
Discussion:	None.
Vote:	10-0 in favor. Motion passed.

6 Old Business

6.1 *Previous Action Items*

Previous action items are noted in Table 12 in 'red' and for recent updates in 'blue'. There is no further old business.

7 New Business

7.1 *Fan-Out Panel Level Packaging (FO-PLP) Panel FOUP Task Force Report*

Shoji Komatsu (Acteon NEXT) addressed the committee on this topic. Of note:

1-1. Discussion of technical items(Ref.450FOUP)

- Reference Planes (HP, FP, BP) Specification — No Change
- Carrier Envelope — One type for 600x600(TBD)
- Features for Automated Handling — Pending

  The central top flange is difficult. Side flange? Carry on the bottom flange?
- Requirements for Kinematic Coupling Pins — No Change
- Requirements for Kinematic Coupling Groove — No Change
- Requirements for Bottom Surface Features — Ref) Next page
- Requirement for RFID Tag Placement Volume — No Change
- Requirements for Carrier Hold-Down Features — No Change
- Requirements for Carrier Door — Extended only in width direction
- Requirements for Conveyor Rails — No need?
- Requirements for Port Exclusion Areas — No change
- Requirements for Wafer Support Features — Customization needed for panel
- Requirements for End Effector Exclusion Volumes — Customization needed for panel

- Need discussion➔ Stored Numbers / slot pitch

1-2. Features of the bottom face *{See attachment for Image}*

1-3. Features of the front face *{See attachment for Image}*

1-4. Storage pitches and Exclusive volumes *{See attachment for Image}*

1-5.25mm pitch example *{See attachment for Image}*

2-1. Discussion of technical items(Ref.450LP)

- **7.Requirements for Interface Between Load Port and Carrier Delivery System**
- **8.Requirements for Interface Between Load Port and Carrier Door**
- **9.Requirements for Interface Between Load Port and SME**
- **10.Requirements for Load Port Status Indicators and Indicator Placement Area**

【Items required at least as specifications】

- Load port pitch
- Height to place Panel FOUP
- Shape of load port mounting surface (BOLTS/M)

Timeline proposal *{See attachment for Table}*

Next Meeting

- SEMI Japan MTG Room 2, July 20(Friday), 10:00-12:00
- Agenda
    - Report of SEMICON WEST
    - Discussion of technical items

Contact: Shoji Komatsu/ Acteon NEXT, shoji_komatsu@acteon.co.jp

Attachment: Panel FOUP TF report 20180712E

8 Next Meeting and Adjournment

The next meeting is scheduled for Thursday, November 8, in conjunction with the NA Standards Fall 2018 Meetings located at SEMI Headquarters in Milpitas, California. See http://www.semi.org/standards-events for the current list of events.

New Schedule:

Wednesday, November 7

13:00-15:00 FO-PLP Panel (TF)

Thursday, November 8

12:30-14:00 3DP&I Bonded Wafer Stacks and Inspection and Metrology (TFs)

14:00-16:00 3DP&I (C)

Adjournment: 12:02.

Respectfully submitted by:

Laura Nguyen

Coordinator, International Standards

SEMI Headquarters

Phone: 1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Richard Allen (NIST), Co-chair	August 16, 2018
Sesh Ramaswami (Applied Materials), Co-chair	<Date approved>
Chris Moore (Covalent Metrology), Co-chair	<Date approved>

Table 13 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Elements_June2016	6390ProceduralReview
[2018Spring] 3DP&I NA Minutes FINAL	6075 Revision SNARF
20180701_3DP&I-Japan_Liaison_v1.0	SNARF_LI_3D1 v2
3D P&I TW Liaison Report_20180510	FO-PLP Panel TF Meeting Minutes_2018.07.11
[2018West] Staff Report 3DP&I	Panel FOUP TF report 20180712E
6389ProceduralReview	

#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 Laura Nguyen at the contact information above.