3D Packaging & Integration North America TC Chapter

Meeting Summary and Minutes

SEMI Standards NA Summer (June) Meetings 2025

Thursday, June 5, 13:00 – 14:30 Pacific

SEMI Global Headquarters, Milpitas, California, and via OVTCCM

TC Chapter Announcements

Next TC Chapter Meeting

SEMI Standards NA Fall Meetings 2025

Tuesday, October 14, 2025, 13:00 – 14:30 Pacific

Official Virtual TC Chapter Meeting (OVTCCM)

Table 1 Meeting Attendees

Co-Chairs: Bill Kerr (Evergreen Enhancement), Chris Moore (Consultant)
SEMI Staff: Laura Nguyen

Company	*Last*	*First*	*Company*	*Last*	*First*
Acteon	*Komatsu*	*Shoji*	*NIST*	*Allen*	*Richard*
ASE	*Shen*	*Mulder*	*Nordson T&I*	*Martell*	*Steve*
Fritz Tech Consultant	*Fritz*	*Denny*	*WD Advanced*	*Ciraldo*	*John*
IST Group	Lee	Jeffrey	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

Document #	*Document Title*	*Committee Action*
7337	Reapproval of SEMI 3D9-0914 (Reapproved 0420), Guide for Describing Materials Properties for a 300 mm 3DS-IC Wafer Stack	**Passed**, as balloted.
7338	Reapproval of SEMI 3D10-0814 (Reapproved 0420), Guide to Describing Materials Properties for Intermediate Wafers for Use in a 300 mm 3DS-IC Wafer Stack	**Passed**, as balloted.
7339	Reapproval of SEMI 3D11-1214 (Reapproved 0420), Terminology for Through Glass Via and Blind Via in Glass Geometrical Metrology	**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 Ratification Ballot Results

None

#1 **Passed** Ratification ballots will be submitted to SEMI publication for final processing.

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

Table 6 Activities Approved by the GCS between meetings of the TC Chapter

None

Table 7 Authorized Activities

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

#	*Type*	*SC/TF/WG*	*Details*
7368	SNARF & Ballot Authorization	3DP&I Inspection & Metrology	Reapproval of SEMI 3D12-1020, Guide for Measuring Flatness and Shape of Low Stiffness Wafers
7369	SNARF	PLP Panel	Line-Item Revision to SEMI 3D20-0921, Specification for Panel Characteristics for Panel Level Packaging (PLP) Applications

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

Table 8 Authorized Ballots

Listing of documents authorized by the Originating TC Chapter for Letter Ballot.

#	*When*	*TF*	*Details*
7368	SNARF & Ballot Authorization	3DP&I Inspection & Metrology	Reapproval of SEMI 3D12-1020, Guide for Measuring Flatness and Shape of Low Stiffness Wafers

Table 9 SNARF(s) Granted a One-Year Extension

None

Table 10 SNARF(s) Canceled

None

Table 11 Standard(s) to receive Inactive Status

None

Table 12 New Action Items

Item #	*Assigned to*	*Details*
#01June2025	Shoji/Steve/Rich	Coordinate with Japan PIC and NA PLP Panel TF meeting.

Table 13 Previous Meeting Action Items

None

1 Welcome, Reminders, and Introductions

Richard Allen (NIST) stepped in as acting co-chair and called the meeting to order at 13:15 Pacific. 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

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion:	Approve the minutes as written.
By / 2nd:	By: Shoji Komatsu / Acteon NEXT LLC Second: Steve Martell / Nordson SONOSCAN
Discussion:	None.
Vote:	4-0 in favor. Motion passed.

Attachment: [2025Winter] 3DP&I NA TC Chapter Meeting Minutes

3 Liaison Reports

3.1 *3D Packaging & Integration Japan TC Chapter*

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

Meeting Information

- Last meeting: Monday, May 19, 2025, OVTCCM/ SEMI Japan, Tokyo, Japan (Hybrid)
- Next meeting: Monday, October 6, 2025, OVTCCM/ SEMI Japan, Tokyo, Japan (Hybrid)

Leadership

- Co-chairs
  - Kazunori Kato/ AiT
    - GCS voting member
  - Masahiro Tsuriya/ iNEMI
    - GCS voting member
  - Haruo Shimamoto/ AIST

Org Chart *{Refer to the attachment}*

Ballot Results

- None

Authorized Activities & Ballots for Cycle 6, 2025

- 7359: Reapproval of SEMI G11-0519, Practice for RAM Follower Gel Time and Spiral Flow of Thermal Setting Molding Compounds
- 7360: Reapproval of SEMI G73-0519, Test Method for Pull Strength for Wire Bonding
- 7361: Reapproval of SEMI G77-0699 (Reapproved 0215), Specification for Frame Cassette for 300 mm Wafers

Task Force Highlights

3DS IC Bonded Layer Inspection Metrology TF

- Co-leaders: Haruo Shimamoto/ AIST, Shigeru Ohno/ Hitachi Power Solutions
- SNARF was approved by the TC Chapter on October 28, 2024.
- Developing Doc.#7299, New Standard: Guide for 3DS IC Bonded Layer Inspection Metrology
  - For detecting defects on the interfaces between layers of 3D stacked IC.

  - Specify the reference sample for separating the existence of voids and/or structures between wafers and/or dies more than two layers.
  - Guideline for each layer identification marks and size.
  - TF plans to prepare the final draft of Doc.#7299 by the next TC Chapter meeting in October.

Wafer Bond Strength Measurement by Double-cantilever Beam Task Force

- Co-leaders: Fumihiro Inoue/ Yokohama National University, Marie Sano/ Yokohama National University
- Looking for another TF co-leader from another company/ organization.
- Newly formed in January 2024
  - The wafer bonding process is maturing and being utilized for a wide variety of semiconductor processes. Bonding is typically assessed through "adherence energy (also known as bond strength)," with the energy evaluated using the double cantilever beam (DCB) test. While this test is widely used in the semiconductor field, there is currently no standardized method for measurement. As a result, measured values exhibit significant variation even within a wafer. Furthermore, these values are not comparable.
  - The objective of the TF is to minimize this variation and establish an industrial standard for bond strength measurement as well as the values for process qualification.
  - TF intends to standardize Measurement Sample, Measurement Environment, Measurement System (+ equation) and Measurement Method.
  - TF meetings have been held with 20+ participants from various countries.
  - Drafting SNARF has been delayed because TF co-leaders are busy.

Five Years Review TF

- Completed all documents that required 5-year review in 2024.
  - SEMI 3D19-0619 – Reapproved.
  - SEMI G96-1014 (Reapproved 1019) – Line Item Revision Ballot has passed TC Chapter review.
- Reviewed all the documents that requires 5-year review in 2025 and will decide whether they will be reapproved or revised to be compliant with Style Manual (refer to the next slide).

Documents under Five-Year Review in 2025

	Document #	Document Title
1	SEMI G92-0315 (Reapproved 1220)	Specification for Tape Frame Cassette for 450 mm Wafer
2	SEMI G82-1115 (Reapproved 1220)	Specification for 300 mm Load Port for Frame Cassettes in Backend Process
3	SEMI G95-1120	Specification for Mechanical Features of 450 mm Load Port for Tape Frame Cassettes in the Backend Process
4	SEMI G52-1120	Test Method for Measurement of Ionic Contamination on Semiconductor Leadframes
5	SEMI G87-1108 (Reapproved 1020)	Specification for Plastic Tape Frame for 300 mm Wafer
6	SEMI G77-0699 (Reapproved 1020)	Specification for Frame Cassette for 300 mm Wafers
7	SEMI G74-0699 (Reapproved 1020)	Specification for Tape Frame for 300 mm Wafers
8	SEMI G11-0519	Practice for RAM Follower Gel Time and Spiral Flow of Thermal Setting Molding Compounds
9	SEMI G73-0519	Test Method for Pull Strength for Wire Bonding

3D Packaging & Integration Steering Group WG

- The package technical workshop will be held at Mitsutoyo on April 14, 2025. This event will be sponsored by iNEMI and JIEP with support from 3D Packaging & Integration Steering Group.

Staff Contact: Akiko Yoshida at ayoshida@semi.org

Attachment: JA 3DP&I_Liaison Report_June 2025_R0_distr

3.2 *3D Packaging & Integration Taiwan TC Chapter (no update since Summer 2022)*

3.3 *SEMI Staff Report*

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

SEMI Global 2025 Calendar of Events

- SEMICON India (Sept 1-3; New Delhi, India)
- SEMICON Taiwan (Sept 10-12; Taipei, Taiwan)
- SEMCON West (Oct 7-9; Phoenix, Arizona)
- SEMICON Europa (Nov 18-21; Munich, Germany)
- SEMICON Japan (December 17-19; Tokyo, Japan)

SEMICON West 2025-2030

- **2025—October 7-9 | Phoenix Convention Center | Phoenix, AZ**
- 2026—October 13-15 | Moscone Center | San Francisco, CA
- **2027—October 12-14 | Phoenix Convention Center | Phoenix, AZ**
- 2028—October 10-12 | Moscone Center | San Francisco, CA
- **2029—October 9-11 | Phoenix Convention Center | Phoenix, AZ**
- 2030—October 29-31 | Moscone Center | San Francisco, CA

Upcoming NA Meetings 2025 & 2026

- SEMICON West: Oct 6-9, 2025, at Phoenix Convention Center, Phoenix, Arizona/USA
- NA Standards Winter Meetings: Feb 23-26, 2026, (tentative) at SEMI HQ, Milpitas, California/USA

2025 Critical Dates for SEMI Standards Ballots

- Cycle 5-2025: Ballot Submission Due: May 8/Voting Period: May 28 – June 27
- Cycle 6-2025: Ballot Submission Due: June 19/Voting Period: July 9 – Aug 8
- Cycle 7-2025: Ballot Submission Due: July 24/Voting Period: Aug 13 – Sep 12
- Cycle 8-2025: Ballot Submission Due: Sept 3/Voting Period: Sept 24 – Oct 24
- (Current) Cycle 9-2025: Ballot Submission Due: ~~Oct 1~~/Voting Period: ~~Oct 21 – Nov 20~~
- (Revised) Cycle 9-2025: Ballot Submission Due: Oct 14/Voting Period: Oct 29 – Nov 28

2026 Critical Dates for SEMI Standards Ballots (tentative)

- Cycle 1-2026: Ballot Submission Due: Dec 16/Voting Period: Jan 7 – Feb 6
- Cycle 2-2026: Ballot Submission Due: Jan 23/Voting Period: Feb 11 – Mar 13
- Cycle 3-2026: Ballot Submission Due: Mar 5/Voting Period: Mar 18 – Apr 17
- Cycle 4-2026: Ballot Submission Due: Mar 30/Voting Period: Apr 14 – May 14
- Cycle 5-2026: Ballot Submission Due: May 8/Voting Period: May 27 – June 26

https://www.semi.org/en/collaborate/standards/ballots

Standards Publications Report

Cycle	*New*	*Revised*	*Reapproved*	*Withdrawn*
February 2025	1	9	0	0
March 2025	2	11	6	0
April 2025	1	2	2	0

Total in portfolio – 1,101 (includes 356 Inactive Standards)

New Standards

Cycle	*Designation*	*Title*	*Committee*	*Region*
February 2025	SEMI F122	Guide for Facilities Data Package for Manufacturing Equipment Installation and Building Information Modeling	Facilities	NA
March 2025	SEMI D88	Specification for Electrostatic Properties of FPD Photomasks and Blanks Package	FPD - Materials & Components	JA
March 2025	SEMI MS15	Guide to MEMS Manufacturing Readiness Levels	MEMS/NEMS	NA
April 2025	SEMI E193	Specification for 300 mm Film Frame FOUP (FFF)	Physical Interfaces & Carriers	NA

Style Manual / Formatting Reminders

- Style Manual: Revision 10 (draft proposal) being reviewed with the Regs SC., Mid-End June estimated publishing timeframe.
- Formatting Reminders: Referenced Standards and Documents section: Refer to Procedure Manual A3-5 for content requirements, Terminology section: Refer to Procedure Manual A3-6 through A3-9 for content requirements.
- Formatting Questions? Contact your local staff coordinator or standardspublishing@semi.org for assistance.

Regulations & Procedure Manual

- Regulations (Feb 20, 2024): https://www.semi.org/sites/semi.org/files/2024-02/Standards%20Regulations%20February%2020%202024.pdf
- Procedure Manual (Sept 27, 2024): https://www.semi.org/sites/semi.org/files/2024-09/Procedure%20Manual%20September%2027%2C%202024.pdf

Connect@SEMI Communities for all SEMI Standards Task Forces

- All program members may log in at: https://connect.semi.org (username and password is same as program membership log-in)
- Training materials are available at: https://www.semi.org/standards
    - Under Standards Developer Resources → Collaboration Tools (scroll to the bottom)

Five-Year Review

- SEMI 3D12-1020, Guide for Measuring Flatness and Shape of Low Stiffness Wafers

Staff Contact: Laura Nguyen, Lnguyen@semi.org

Attachment: Staff Report June 2025 v4_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 file name for each balloted document is provided under each ballot review section below.

4.1 Document # 7337, Reapproval of SEMI 3D9-0914 (Reapproved 0420), Guide for Describing Materials Properties for a 300 mm 3DS-IC Wafer Stack

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

Attachment: 7337_ProceduralReview

4.2 Document # 7338, Reapproval of SEMI 3D10-0814 (Reapproved 0420), Guide to Describing Materials Properties for Intermediate Wafers for Use in a 300 mm 3DS-IC Wafer Stack

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

Attachment: 7338_ProceduralReview

4.3 Document # 7339, Reapproval of SEMI 3D11-1214 (Reapproved 0420), Terminology for Through Glass Via and Blind Via in Glass Geometrical Metrology

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

Attachment: 7339_ProceduralReview

5 Subcommittee and Task Force Reports

5.1 *Panel Level Packaging (PLP) Panel Task Force*

PLP Panel TF did not meet at this meeting set. The TF leaders continue to liaise with the PIC PLP activities to ensure both documents don't overlap and complement each other.

Discussed a new SNARF for 3D20 to include smaller panel sizes. Of note:

- Tool manufacturers should be involved in the discussion (RA)

The TF brought the Line-Item SNARF to the TC Chapter for approval:

Motion:	Approve the SNARF as written in meeting for: Line-Item Revision to SEMI 3D20-0921, Specification for Panel Characteristics for Panel Level Packaging (PLP) Applications
By / 2nd:	By: Steve Martell / Nordson SONOSCAN Second: Shoji Komatsu / Acteon NEXT LLC
Discussion:	SK: Line-Item revision does not affect scope section? SM: No, it does not.
Vote:	4-0 in favor. Motion passed.

Attachment: SNARF_3D20(LI)_draft

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

Task Force Leader Steve Martell (Nordson SONOSCAN) reported for both the 3DP&I Inspection & Metrology and 3DP&I Bonded Wafer Stacks Task Forces. Of note:

- TF reviewed three ballots. Refer to § 4 for results.
- The TF reviewed Standards coming up for Five-Year Review and decided to send SEMI 3D12 for Reapproval Ballot.
  - SEMI 3D12-1020, Guide for Measuring Flatness and Shape of Low Stiffness Wafers
- 7331: New Standard, *Guide for Peel Testing of RDLs and Other Traces Used within HDI, WLP, and PLPs Structures*
  - Currently under development
  - Plan to ballot in time for review at Winter meetings

6 Old Business

6.1 *Upcoming Standards for Five-Year Review*

Motion:	Approve and Authorize 3D12 for Reapproval Ballot
By / 2nd:	By: Steve Martell / Nordson SONOSCAN Second: Shoji Komatsu / Acteon NEXT LLC
Discussion:	None.
Vote:	5-0 in favor. Motion passed.

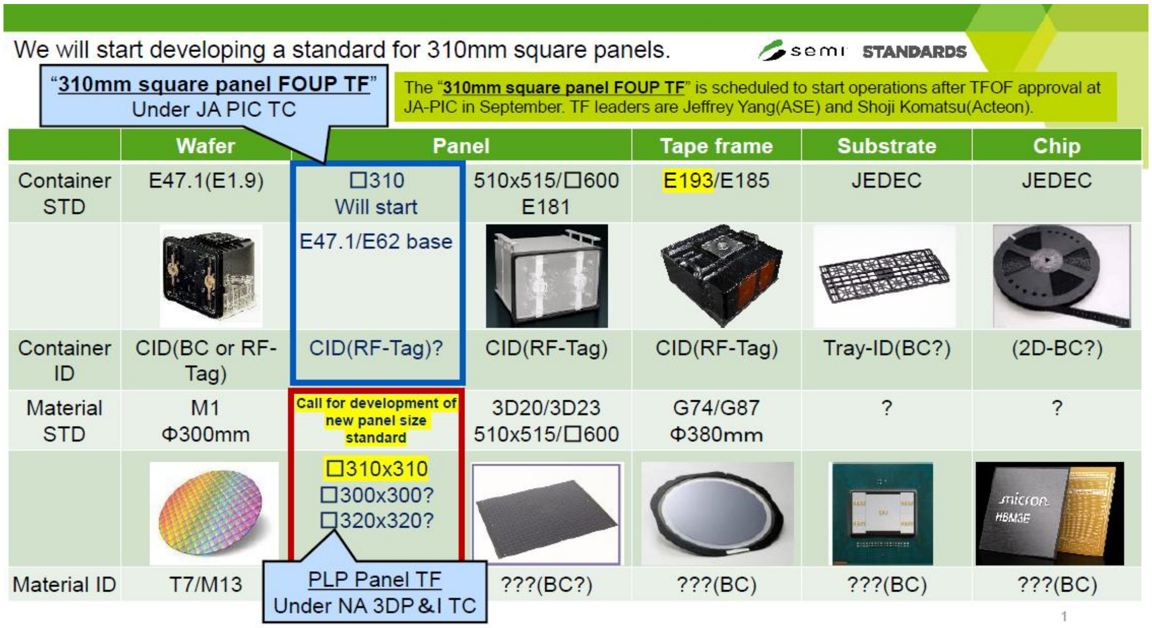
7 New Business

7.1 Square mm panel presentation

Shoji Komatsu (Acteon) brought this topic up to the Committee. Of note:

- Customer suppliers are thinking about square panel standardization
- Japan PIC has proposal for new TFOF to accommodate a FOUP standard for the square panels
- Request to this TC/ NA PLP Panel TF to modify 3D standards to include this
- Discussion: Why 310x310, not 300x300?
  - 310 carrier utilization will increase 125% compare with wafer platform
  - Is there edge inclusions like in wafers?
    - 10 mm is included in the exclusion area

Action Item: To continue coordination with Japan PIC and NA 3DP&I



We will start developing a standard for 310mm square panels.

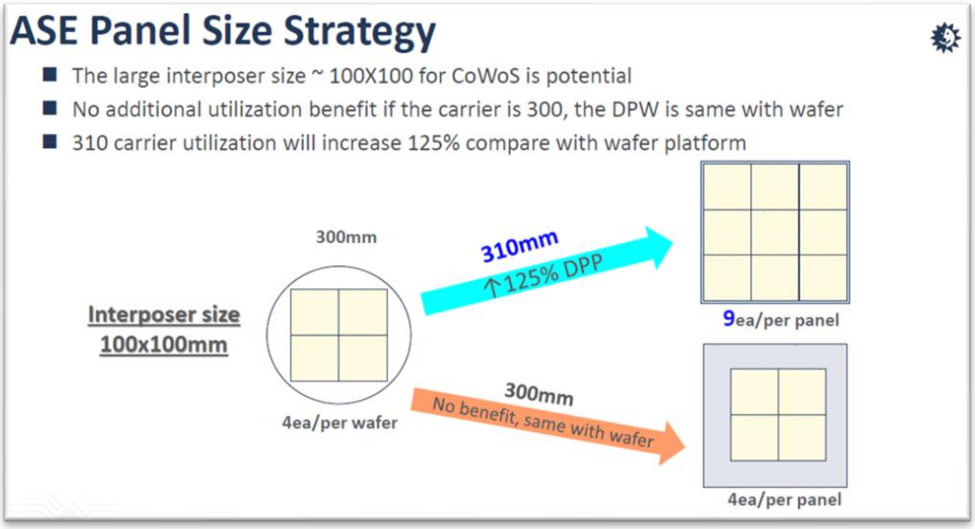
"**310mm square panel FOUP TF**"
Under JA PIC TC

The "**310mm square panel FOUP TF**" is scheduled to start operations after TFOF approval at JA-PIC in September. TF leaders are Jeffrey Yang(ASE) and Shoji Komatsu(Acteon).

	Wafer	Panel		Tape frame	Substrate	Chip
Container STD	E47.1(E1.9)	□310 Will start	510x515/□600 E181	E193/E185	JEDEC	JEDEC
		E47.1/E62 base				
Container ID	CID(BC or RF-Tag)	CID(RF-Tag)?	CID(RF-Tag)	CID(RF-Tag)	Tray-ID(BC?)	(2D-BC?)
Material STD	M1 Φ300mm	Call for development of new panel size standard	3D20/3D23 510x515/□600	G74/G87 Φ380mm	?	?
		□310x310 □300x300? □320x320?				
Material ID	T7/M13		???(BC?)	???(BC)	???(BC)	???(BC)

PLP Panel TF
Under NA 3DP &I TC

Attachment: SEMI_Developing SQ310mm standards for advanced packaging



ASE Panel Size Strategy

- The large interposer size ~ 100X100 for CoWoS is potential
- No additional utilization benefit if the carrier is 300, the DPW is same with wafer
- 310 carrier utilization will increase 125% compare with wafer platform

Attachment: 20250606_NA_SEMI_ASE

8 Action Item Review

8.1 New Action Items are noted in Table 11. Previous action items are noted in Table 12 in 'red' and for recent updates in 'blue'. There is no further business.

9 Next Meeting and Adjournment

9.1 The next meeting is tentatively scheduled for the week of October 6-9, in conjunction with SEMICON West 2025 in Phoenix, Arizona. Please check the SEMICON West website for updates: https://www.semiconwest.org/special-features/standards.

Alternatively, the next meeting can be scheduled for the week after SEMICON West. Schedule details TBD. Please check www.semi.org/standards for updates.

Adjournment: 14:19.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org

Minutes tentatively approved by:

Bill Kerr (Evergreen Enhancement), Co-chair	<Date approved>
Chris Moore (Consultant), Co-chair	<Date approved>

Minutes approved by: **3DP&I NA OVTCCM on October 14, 2025.**

Table 14 Index of Available Attachments[#1]

Title	*Title*
SEMI Standards Required Elements	7338_ProceduralReview
[2025Winter] 3DP&I NA TC Chapter Meeting Minutes	7339_ProceduralReview
JA 3DP&I_Liaison Report_June 2025_R0_distr	SNARF_3D20(LI)_draft
Staff Report June 2025 v4_3DP&I	SEMI_Developing SQ310mm standards for advanced packaging
7337_ProceduralReview	20250606_NA_SEMI_ASE

#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.