



Facilities & Gases Joint North America TC Chapter Meeting Summary and Minutes

SEMICON West Standards Meetings 2021

Tuesday, December 7, 09:00 – 12:00 Noon Pacific

Moscone Center, San Francisco, California, and via Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

Next TC Chapter Meeting

NA Standards Spring Meetings 2022

Tuesday, March 29, 2022, 09:00 – 12:00 Noon Pacific

SEMI Global Headquarters, Milpitas, California, and via OVTCCM

Table 1 Meeting Attendees

Italics indicate virtual participants

Facilities Co-Chairs: Steve Lewis (Lam Research)

Gases Co-Chairs: Mohamed Saleem (Brooks Instrument)

SEMI Staff: Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Air Products and Chemicals, Inc.	Arslanian	Gregory	Mettler Toledo Thornton	Cannon	Jim
AP Tech	Kiikvee	Bill	MTA Labs	Blum	Mike
Applied Materials	Chen	Yanli	Mott Corporation	Beaune	Allen
BriskHeat	Colquhoun	David	Mott Corporation	Mohanram	Aravind
Brooks Instrument	Saleem	Mohamed	Parker Hannifin	Lis	Joseph
Camenzind Solutions	Camenzind	Mark	Rotronic Instrument Corp.	Futter	Nigel
Carpenter Technology	Abraham	Akash	Solid Systems Inc	Poe	Ed
Daido Steel	Yoshida	Yutaka	TEL	Hayashi	Haruna
Entegris	Lobert	Jurgen	TEL	Mashiro	Supika
Exyte Management GmbH	Potts	Michael	Valex	Kim	Josh
Festo SE & Co. KG	van de Berg	Max	Vogt Valves	Haas	Alexander
Ichor Systems	Findleton	Kevin	WIKA Instruments	Fritz	Thomas
Ichor Systems	Penley	Sean			
Lam Research	Lewis	Steve	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
<i>Facilities</i>		
None		
<i>Gases</i>		
6582A	New Standard: Test Method for the Electrochemical Critical Pitting Voltage Testing of Stainless Steel Used in Corrosive	Passed , with technical changes. Ratification Ballot to be issued.

#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.

None

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

<http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARE>

Table 7 Authorized Ballots

<i>#</i>	<i>When</i>	<i>TF</i>	<i>Details</i>
<i>Facilities</i>			
None			
<i>Gases</i>			
6394	Cycle 1 or 2-2022	Materials of Construction of Gas Delivery Systems TF	Line Item Revision to SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems
6510	Cycle 1 or 2-2022	Materials of Construction of Gas Delivery Systems TF	Line Item Revision to SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves
R6582A	Cycle 1 or 2-2022	Materials of Construction of Gas Delivery Systems TF	New Standard: Test Method for the Electrochemical Critical Pitting Voltage Testing of Stainless Steel Used in Corrosive

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

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2021Dec#01	Mike Potts, Laura Nguyen	Mike Potts to send Laura COT proposal and SEMI Staff to respond. Laura to follow-up with SEMI Pubs/Ops.

Table 12 Previous Meeting Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2019Nov#01	Laura Nguyen	Create invite-only TF in connect@SEMI for SEMI E49.6-E49.8 revision. Ongoing.
2021Feb#01	Bill Kiikvee	Reach out to Swagelok contact on Doc 6612. Ongoing.
2021Feb#02	Max van de Berg	Review SEMI E49.6/E49.8. Ongoing.
2021Feb#03	Bill, Mohamed, Max, Matthew Milburn	Review SEMI F19. Ongoing.
2021July#01	Laura Nguyen	Mohamed to reach out to Steve about creating a new Task Force for the Reapproval Ballots that failed (SEMI E6, E76). Ongoing
2021July#02	Laura Nguyen	Work with Mohamed to abolish Reapproval SNARFs and reissue new SNARFs. Ongoing.

1 Welcome, Reminders, and Introductions

Steve Lewis (Lam Research) called the meeting to order at 09:00. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

- Max van den Berg requested to review the Action Items. Of note the following update is referring to 2021Feb#02 A/I.
 - Discussed at the last SCIS meeting; attempted to get feedback from OEM/DMs to have specific input if the proposed changes would make a benefit. Unfortunately, no feedback.
 - Discussions at the SCIS meeting revealed data that is given there is quite outdated
 - Still ongoing; recommendation is to leave as or experts to weigh in

Motion: To accept the previous meeting minutes as written.

By / 2nd: By: Thomas Fritz / WIKA Instrument Corporation
Second: Max van den Berg / Festo SE & Co. KG

Discussion: None.

Vote: 11-0 in favor. Motion passed.

Attachment: [2021Summer] F&G Joint NA TC Chapter Meeting Minutes FINAL

3 Liaison Reports

3.1 Gases & Liquid Chemicals Europe TC Chapter

No update.

3.2 Gases & Facilities Japan TC Chapter

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

Meeting Information

- Last meeting: Wednesday, November 24, 2021, via Official Virtual TC Chapter Meeting (OVTCCM)
- Next Meeting: Friday, May 13, 2022, via Official Virtual TC Chapter Meeting (OVTCCM)

F&G Leadership

- Committee Co-chairs
 - Hiromichi Enami (Consultant), Isao Suzuki (Consultant), Masafumi Kitano (Fujikin)

F&G Current Organization Chart of Japan TC Chapter {See attachment for Org Chart}

Committee Highlights

- There was approval of proceeding to create SNARF for issuing reapproval ballot for SEMI F80-0309 (Reapproved 0914) during the TC chapter meeting on Wednesday, November 24, 2021. (*Aiming to submit ballot for Cycle 1 or 2, 2022)

F&G Five-Year Review

- SEMI F80-0309 (Reapproved 0914), Test Method for Determination of Gas Change/Purge Efficiency of Gas Delivery System

Staff Contact: Keigo Nakajima, knakajima@semi.org

Attachment: 2011124_JA_G+F_LiaisonR_v1.0

3.3 Facilities Korea TC Chapter

No update.

3.4 SEMI Staff Report

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

SEMI Global Calendar of Events

- SEMICON West (December 7-9; San Francisco, CA/USA)
- SEMICON Japan (December 15-17; Tokyo, Japan)
- SEMICON Taiwan (December 28-30; Taipei, Taiwan)

Critical Dates for SEMI Standards Ballots

- Cycle 9-2021: Ballot Submission Due: Nov 16/Voting Period: Nov 30 – Dec 30
- Cycle 1-2022: Ballot Submission Due: Jan 5/Voting Period: Jan 19 – Feb 18
- Cycle 2-2022: Ballot Submission Due: Feb 1/Voting Period: Feb 15 – Mar 17
- Cycle 3-2022: Ballot Submission Due: Mar 9/Voting Period: Mar 23 – Apr 22

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

Regulations and Procedure Manual Update

- *Regulations* (November 1, 2021)
 - Bias-free terminology - provide alternative, bias-free terms or option to rewrite and eliminate sensitive terms
 - Clarification of Inactive Status
 - Procedures for revising global Technical Committee charter and scope
 - https://www.semi.org/sites/semi.org/files/2021-11/Standards_Regulations_November_1_2021.pdf
- *Procedure Manual* (November 1, 2021)
 - Ballot procedures for Primary and Subordinate Standards
 - Ratification ballot improvement - clarification of the scope of Audit and Review process review to cover in authorizing, preparing, and conducting both Letter and Ratification ballots.
 - Clarifies that only Type 1 editorial changes are allowed in a reapproval ballot.
 - https://www.semi.org/sites/semi.org/files/2021-11/Procedure_Manual_November_1_2021.pdf

Style Manual update

- Style Manual (November 1, 2021)
 - New Appendix 5
 - Table A5-1 Restricted Biased Terms with Approved, Alternative, Bias-Free Terms

<i>Restricted Biased Terms</i>	<i>Approved, Alternative, Bias-free Terms</i>
blacklist	blocklist, denylist, droplist
master	primary, main, leader, active
slave	secondary, replica, follower, standby
webmaster	web product owner
whitelist	allowlist, accesslist, permitlist

- Table A5-2 Biased Terms to Avoid with Approved, Alternative, Bias-Free Terms
https://www.semi.org/sites/semi.org/files/2021-11/Style%20Manual%20Version%208_November%201%2C%202021_final.pdf

Standards Publications Report

<i>Cycle</i>	<i>New</i>	<i>Revised</i>	<i>Reapproved</i>	<i>Withdrawn</i>
August 2021	4	3	0	0
September 2021	0	5	6	0
October 2021	1	2	3	1
November 2021	3	7	7	1

Total in portfolio – 1,056 (includes 297 Inactive Standards)

New Standards

<i>Cycle</i>	<i>Designation</i>	<i>Title</i>	<i>Committee</i>	<i>Region</i>
August 2021	SEMI A4.1	Specification for the Automated Test Equipment Tester Event Messaging for Semiconductors (TEMS)	Automated Test Equipment	NA
August 2021	SEMI D82	Test Method for Viewing Angle of Flat Panel Displays	FPD – Metrology	KO
August 2021	SEMI F116	Guide for Drain Segregation for Semiconductor Manufacturing Tools to Support Site Water Reuse	Liquid Chemicals	NA
August 2021	SEMI M90	Test Method for Bulk Micro Defect Density and Denuded Zone Width in Annealed Silicon Wafers by Optical Microscopy After Preferential Etching	Silicon Wafer	JA
October 2021	SEMI C103	Guide for Reporting Performance Parameters of the Chemical Mechanical Planarization (CMP) Conditioning Disks Used in Semiconductor Manufacturing	Liquid Chemicals	NA
November 2021	SEMI E183	Specification for Rich Interactive Test Database (RITdb)	Automated Test Equipment	NA

November 2021	SEMI E186	Specification for Location and Dimensions for Power Connectors and EtherCAT ports in Mass Flow Controllers and Mass Flow Meters	Gases	NA
November 2021	SEMI D74	Guide for Measuring Dimensions of Plastic Films/Substrates	FPD - Materials & Components	JA

Inactive Standards (as of November 30, 2021) Cont.

<i>Committee</i>	<i>Number of Inactive Standards</i>
Assembly & Packaging	68
Automated Test Equipment	2
Compound Semiconductor Materials	4
Environmental Health & Safety	8
Facilities	14
FPD – Equipment	5
FPD – Factory Automation	14
FPD – Materials & Components	13
Gases	18
Information & Control	37
Liquid Chemicals	26
MEMS	4
Metrics	12
Micropatterning	30
Photovoltaic	3
Physical Interfaces & Carriers	25
Silicon Wafer	12
Traceability	8

Facilities: On-going

- SEMI E51, Guide for Typical Facilities Services and Termination Matrix
 - Abolished SNARF Fall 2017 - Reapproval ballot failed Committee review, new SNARF needs to be issued to reflect change in scope
 - Searching for volunteers to lead this activity
- SEMI F47, Specification for Semiconductor Processing Equipment Voltage Sag Immunity
 - Reapproval failed committee review; Spring 2018
 - Voltage Sag Immunity TF will take over this activity
- SEMI E76-0299 (Reapproved 0913), Guide for 300 mm Process Equipment Points of Connection to Facility Services
 - Failed TC Chapter Review; Summer 2021
 - Searching for volunteers to lead this activity
- SEMI E6-0914, Guide for Semiconductor Equipment Installation Documentation
 - Failed TC Chapter Review; Summer 2021
 - Searching for volunteers to lead this activity

Facilities Five-Year Review

Designation #	Standard Title	Action By	Assigned to
SEMI F51-0917	Guide for Elastometric Sealing Technology	Sept 2022	F51 Revision TF

Gases: On-going

- Materials of Construction of Gas Delivery Systems Task Force
 - 6394: Line Item Revision to SEMI F74-1103 (Reapproved 0710), Test Method for the Performance and Evaluation of Metal Seal Designs for Use in Gas Delivery Systems
 - 6510: Line Item to SEMI F32-0211, Test Method for Determining of Flow Coefficient for High Purity Shutoff Valves
 - 6612: New Subordinate Standard: Test Method for the Determination of Conductance of Fluid Handling Components at Subatmospheric and Vacuum Pressure, to SEMI F32-0211, Test Method for Determination of Flow Coefficient for High Purity Shutoff Valves

Five-Year Review

Designation #	Standard Title	Action By	Assigned to
SEMI C14-95 (Reapproved 0913)	Test Method for Particle Shedding Performance of 25 cm Gas Filter Cartridges	Past due	Filters & Purifiers TF
SEMI F36-0299 (Reapproved 0913)	Guide for Dimensions and Connections of Gas Distribution Components	Past due	Filters & Purifiers TF
SEMI F19-0815	Specification for the Surface Condition of the Wetted Surfaces of Stainless Steel Components	Past due	Materials TF
SEMI F21-1016	Classification of Airborne Molecular Contaminant Levels in Clean Environments	Fall 2021	Filters & Purifiers TF
SEMI F62-1016	Test Method for Determining Mass Flow Controller Performance Characteristics for Ambient and Gas Temperature Effects	Fall 2021	Mass Flow Controller TF

Designation #	Standard Title	Action By	Assigned to
SEMI C54-1116	Specification for Oxygen	Fall 2021	Gases Specification TF
SEMI C70-1116	Specification for Tungsten Hexafluoride	Fall 2021	Gases Specification TF
SEMI C58-1116	Specification for Hydrogen	Fall 2021	Gases Specification TF
SEMI C56-1116	Specification for Dichlorosilane	Fall 2021	Gases Specification TF
SEMI F113-1116	Test Method for Pressure Transducers Used in Gas Delivery Systems	Fall 2021	Pressure Measurements TF

Designation #	Standard Title	Action By	Assigned to
SEMI C60-0317	Specification for Nitrous Oxide	March 2022	Gases Specification TF
SEMI C59-0317	Specification for Nitrogen	March 2022	Gases Specification TF
SEMI C57-0317	Specification for Argon	March 2022	Gases Specification TF
SEMI C3-0317	Specification for Gases	March 2022	Gases Specification TF
SEMI E56-0317	Test Method for Determining Accuracy, Linearity, Repeatability, Short-Term Reproducibility, Hysteresis, and Deadband of Thermal Mass Flow Controllers	March 2022	Mass Flow Controller TF
SEMI E29-1110 (Reapproved 0417)	Terminology for the Calibration of Mass Flow Controllers and Mass Flow Meters	April 2022	Mass Flow Controller TF

Attachment: Staff Report Dec 2021 v3_F&G

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 Gases Ballot Review

4.1.1 Document # 6582A, New Standard: Test Method for the Electrochemical Critical Pitting Voltage Testing of Stainless Steel Used in Corrosive

- The ballot passed TC Chapter review with technical changes. Ratification Ballot to be issued. See attachment for ballot adjudication.

Attachment: 6582A_ProceduralReview

5 Subcommittee and Task Force Reports

5.1 Facilities

5.1.1 *Power Grid Harmonics Task Force – Did not meet*

5.1.2 *SEMI F51 Revision Task Force – Did not meet*

5.1.3 *Voltage Sag Immunity Task Force*

Mark Stephens (EPRI) provided a Task Force report from the October 7, 2021. Laura Nguyen (SEMI) presented on his behalf. Of note:

- Task Force Objectives
 - Determine the characteristics of the power quality events that are still causing semiconductor plant process downtime
 - Take a new look at the sensitivities in the process equipment
 - To determine any required adjustments to equipment design or standards to further reduce voltage sag induced losses by the semiconductor industry.
- The TF had a SEMI and EPRI joint Workshop on April 21, 2021 – great turnout!
 - Nearly 100 participants attended the workshop with speakers from Advanced Energy, ASML, Austin Energy, EPRI, HP, National Grid, Schneider Electric, and VELCO.
- To review the TF's Task 2 discussion and Task 3 Updates please refer to the PPT attachment.



- Next TF Meeting plan
 - January 2022
 - To be a part of this effort or learn more, contact: Mark Stephens, mstephens@epri.com and Laura Nguyen, lnguyen@semi.org

Attachment: SEMI VS Task Force Meeting No 12 100721

5.1.4 *Building Information Modeling (BIM) for Semiconductor Capital Equipment Task Force*

Michael Potts (Exyte) reported for this task force. Of note:

- Summary
 - Finish reviewing and resolving open 2021 ballot comments on Doc 6628
 - Dec 2021, before holidays: MP and ES to resolve what they can outside of TF
 - Pull in other TF members (CV, EP, SM, LN, SL) as needed
 - Hold additional worksession virtual meetings if needed.
 - Full Task Force review and closure in 12-Jan-2022 meeting.
 - One week final TF review 14-Jan-2022 to 21-Jan-2022
 - First re-ballot target Cycle 2 Ballot
 - Submission 1-Feb-2022 submission
 - Voting Open on 15-Feb-2022
 - Voting Closes on 17-Mar-2022
 - Spring meetings in March (date to be announced)

Attachment: SEMI BIM Task Force Meeting_20211206_SEMIconWest

5.2 *Gases*

5.2.1 *Materials of Construction of Gas Delivery Systems Task Force*

Bill Kiikvee (AP Tech) reported for this task force. Of note:

Meeting Summary:

- Adjudication of Document 6582A, New Standard: Test Method for the Electrochemical Critical Pitting Voltage Testing of Stainless Steel Used in Corrosive
 - Refer to §4 for ballot review.
- Old Business:
 - SEMI F32 for vacuum testing:
 - Doc 6612: New Subordinate Standard: Test Method for the Determination of Conductance of Fluid Handling Components at Subatmospheric and Vacuum Pressure, to SEMI F32-0211, Test Method for Determination of Flow Coefficient for High Purity Shutoff Valves
- SEMI F32 Line Item (6510) and SEMI F74 (6394) for review and hopefully be ready for next cycle.
 - Ask TC Chapter to authorize for ballot voting cycle 1, or 2-2022.SNARFs approaching three-year document development period

Attachment: TF_Materials of Construction_5Dec21_SEMICONWEST21_minutes

5.2.1 *Filters & Purifiers Task Force*

Mohamed Saleem (Brooks Instrument) reported for this task force. Of note:

- Meeting Summary: Past documents from Summer meetings to be addressed at a later time.
 - 6813: SEMI F28-1103 (Reapproved 0815), Test Method for Measuring Particle Generation from Process Panels
 - 6814: SEMI F43-0308 (Reapproved 0613), Test Method for Determination of Particle Contribution by Point-Of-Use Gas Purifiers and Gas Filters
 - 6815: SEMI F59-0302 (Reapproved 0613), Test Method for Determination of Filter or Gas System Flow Pressure Drop Curves
 - 6816: SEMI F67-1101, (Reapproved 0713), Test Method for Determining Inert Gas Purifier Capacity
 - 6817: SEMI F68-1101 (Reapproved 0713), Test Method for Determining Purifier Efficiency

Attachment: TF Chair Notes_12_05_2021_LNN

5.2.2 *Mass Flow Controller Task Force – Did not meet*

Mohamed Saleem (Brooks Instrument) reported for this task force. Of note:

- Recently published SEMI E186, Specification for Location and Dimensions for Power Connectors and Ethercat Ports in Mass Flow Controllers and Mass Flow Meters
 - Short article featured in the Standards Watch Newsletter, Vol. 16, Issue 4
 - <https://www.semi.org/en/standards-watch-2021Dec/newly-published-semi-e186>

5.2.3 *Gases Specification Task Force – Did not meet*

Mohamed Saleem (Brooks Instrument) reported for this task force. Of note:

- Two Reapproval Ballots out in Cycle 9-21
- Standards coming up for Five-Year Review will be reviewed at for the next meeting.

5.2.4 *Heater Jacket Task Force*

David Colquhoun (BriskHeat) reported for this task force. Of note:

- The Task Force reviewed:
 - General design guideline for heater. Old spec (SEMI F109) merged with new details of materials use and limits augmented into spec.
 - Proposal for specifications for heater particulation study and methods of testing for such.
 - Great discussion in the TF to limit contamination examination test method to heaters exposed to atmosphere rather than liquids.
 - SNARF to be sent out for two-week TC review
- Contact Laura Nguyen (SEMI) to be a part of this Task Force.



6 Old Business

6.1 Five-Year Review

Refer to Staff Report in §3.4 for full list of Five-Year. Contact Laura Nguyen (SEMI) if you like to review any in further detail.

6.2 Ballot Authorizations

Bill Kiikvee addressed the Committee on the below:

Motion: Motion: Authorize the Document 6394 (F74) and 6510 (F32) for Letter Ballot in Cycle 1, or 2- 2022.
By / 2nd: By: Thomas Fritz / WIKA Instrument Corporation
Second: Bill Kiikvee / AP Tech (Advanced Pressure Technology)
Discussion: None.
Vote: 12-0 in favor. Motion passed.

7 New Business

7.1 COTs Proposal

Michael Potts addressed the Committee on this topic. Of note:

- Question to the Committee on COT/terminology
 - Terms can have dictionary definition, textbook definition, COT definition, or a new definition that can be added to the COT down the line.
 - Seems that we are running into redefining a dictionary definition or textbook definition, is this correct?
 - Requests clarification from SEMI Staff on COT definitions

Action Item: 2021Dec#01, Mike Potts to send Laura COT proposal and SEMI Staff to respond.

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 March 28-31, in conjunction with NA Spring Meetings 2022. Schedule details TBD. Please check www.semiconwest.org for updates.

Adjournment: 11:26.

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:

Steve Lewis (Lam Research), Facilities Co-chair	<Date approved>
Mohamed Saleem (Brooks Instrument), Gases Co-chair	<Date approved>

Minutes approved by: **F&G NA OVTCCM on March 29, 2022.**

Table 13 Index of Available Attachments^{#1}

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meetings Elements	SEMI VS Task Force Meeting No 12 100721
[2021Summer] F&G Joint NA TC Chapter Meeting Minutes FINAL	SEMI BIM Task Force Meeting_20211206_SEMIconWest
2011124_JA_G+F_LiaisonR_v1.0	TF_Materials of Construction_5Dec21_SEMICONWEST21_minutes
Staff Report Dec 2021 v3_F&G	TF Chair Notes_12_05_2021_LNN
6582A_ProceduralReview	

#3 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.