



Information and Control Global Technical Committee

North America (NA) Chapter

Meeting Summary and Minutes

Spring 2019 Meeting

April 3, 2019 8:00AM – 12:30PM

SEMI HQ, Milpitas, CA

TC Chapter Announcements

Next TC Chapter Meeting

July 10, 2019 at 8:00AM – 12:30PM

San Francisco, CA

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Brian Rubow (Cimetrix), Jack Ghiselli (Ghiselli Consulting), James Moyne (AMAT/University of Michigan)

SEMI Staff: Inna Skvortsova

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Cimetrix	Rubow	Brian	AMAT/UMICH	Moyne	James
Ghiselli Consulting	Ghiselli	Jack	SCREEN	Takayuki	Nishimura
PEER Group	Fuchigami	Albert	Omron	Infelise	Nick
Intel	Bond	Rayn	KOKUSAI ELECTRIC CORPORATION	Mitsuhiro	Matsuda
<i>Intel</i>	<i>Maloney</i>	<i>Chris</i>	TEL	Mashiro	Supika
<i>Arlington Laboratory</i>	<i>Judd</i>	<i>Daniel</i>	SEMI	Skvortsova	Inna
<i>Veeco</i>	<i>Lawrence</i>	<i>Elena</i>			

Table 2 Leadership Changes

<i>WG/TF/SC/TC Name</i>	<i>Previous Leader</i>	<i>New Leader</i>
Fab & Equipment Computer and Device Security (CDS) Task Force	Brian Rubow (Cimetrix)	Richard Howard (Cimetrix)

Table 3 Committee Structure Changes

<i>Previous WG/TF/SC Name</i>	<i>New WG/TF/SC Name or Status Change</i>
None	



Table 4 Ballot Results

Document #	Document Title	Committee Action
R6335A	Line-Item Revision to SEMI E134, <i>Specification for Data Collection Management</i>	Approved for publication
R6114C	Line-item Revision to SEMI E5-0813, <i>SEMI Equipment Communications Standard 2 Message Content (SECS-II)</i>	Approved for publication
6348A	Revision to E30-0418, <i>Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)</i>	Failed
6349C	Revision to E37.1-1018, <i>High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS OR HSMS-SSS)</i>	Passed
6475	Reapproval to SEMI E94-0314, <i>Specification for Control Job Management</i>	Passed with editorial change
6476	Reapproval to SEMI E94.1-0312, <i>Specification for SECS-II Protocol for Control Job Management (CJM)</i>	Passed
6333A Line item-1	Line-item Revision to SEMI E54.23-0513, <i>Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network</i>	Passed with editorial change
6333A Line item-2	Line-item Revision to SEMI E54.23-0513, <i>Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network</i>	Passed
6333A Line item-3	Line-item Revision to SEMI E54.23-0513, <i>Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network</i>	Passed

#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

#	Type	SC/TF/WG	Details
None			

Table 6 Authorized Activities

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

#	Type	SC/TF/WG	Details
TBD	SNARF	DDA TF	Revision to SEMI E132-1015, <i>Specification for Equipment Client Authentication and Authorization</i> New SNARF to be distributed for 2-week member review followed by GCS approval
TBD	SNARF	DDA TF	Revision to SEMI E125-0414, <i>Specification for Equipment Self Description (EqSD)</i> New SNARF to be distributed for 2-week member review followed by GCS approval
TBD	SNARF	DDA TF	Revision to SEMI E134-0319, <i>Specification for Data Collection Management</i> New SNARF approved by TC
TBD	SNARF	GEM300 TF	Revision to SEMI E30-0418, <i>Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)</i> New SNARF to be distributed for 2-week member review before approval at SEMICON West I&C TC meeting.
TBD	SNARF	GEM300 TF	Line-item Revision to SEMI E5-MMY, <i>SEMI Equipment Communications Standard 2 Message Content (SECS-II)</i> New SNARF approved by TC
TBD	SNARF	GEM 300 TF	Reapproval to SEMI E148-1109 (Reapproved 0614), <i>Specification for Time Synchronization and Definition of the TS-Clock Object</i>



#	Type	SC/TF/WG	Details
			New SNARF approved by TC

#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
TBD	Cycle 5-2019	GEM 300TF	Reapproval to SEMI E148-1109 (Reapproved 0614), <i>Specification for Time Synchronization and Definition of the TS-Clock Object</i>
6348B	Cycle 5-2019	GEM300 TF	Revision to E30-0418, <i>Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)</i>
6236	Cycle 5-2019	GEM300 TF	Line-item Revision to SEMI E172-1015, <i>Specification for SECS Equipment Data Dictionary (SEDD)</i> , to address editorial changes in complementary file
6470	Cycle 5-2019	GEM300 TF	Line Item Revision to SEMI E5-MMY, <i>Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)</i>
6344	Cycle 5-2019	DDA TF	New Standard: <i>Specification for Protocol Buffers Semiconductor Common Components</i>
6346	Cycle 5-2019	DDA TF	Revision to Add a New Subordinate Standard: <i>Specification for Protocol Buffers for Equipment Client Authentication and Authorization (ECA)</i> to SEMI E132-1015, <i>Specification for Equipment Client Authentication and Authorization</i>
6347	Cycle 5-2019	DDA TF	Revision to Add a New Subordinate Standard: <i>Specification for Protocol Buffers of Data Collection Management</i> to SEMI E134-0414, <i>Specification for Data Collection Management</i>
#TBD	Cycle 5-2019	DDA TF	Revision to SEMI E125-0414, <i>Specification for Equipment Self Description (EqSD)</i>
6345	Cycle 5-2019	DDA TF	Revision to Add a New Subordinate Standard: <i>Specification for Protocol Buffers for Equipment Self Description (EqSD)</i> to SEMI E125-0414, <i>Specification for Equipment Self Description (EqSD)</i> Informational Ballot

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

#	TF	Title	Expiration Date
None			

Table 9 SNARF(s) Abolished

#	TF	Title
6008	DDA TF	New Auxiliary Information: Equipment Data Acquisition (EDA) Freeze Version Overview Superseded by SNARF 6300
6009	DDA TF	Line Item Revision to SEMI E132: Specification for Client Authentication & Authorization and E132.1 Specification for Soap Binding for Equipment Client Authentication and Authorization (ECA) Superseded by SNARF 6337
6437	GEM300 TF	Line Item Revision to SEMI E134-0319, <i>Specification for Data Collection Management</i> Scope change, new SNARF approved at TC.

Table 10 Standard(s) to receive Inactive Status

Standard Designation	Title
None	



Table 11 New Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2019Apr#01	Brian Rubow	Research use of Harel Notation for potential copyright.
2019 April#02	Ryan Bond	Produce the list of SEMATEC documents relevant to Fab&Eq CDS TF
2019 April#03	Inna Skvortsova	Follow up within SEMI on contacts from SUNNY to obtain permission to share & distribute SEMATEC documents within CDS TF
2019 April#04	Inna, Brian, Albert, James M	To brainstorm on possible presentations focused for Smart Manufacturing Standards for SEMICON and APC conferences Need deadlines for abstract submissions..
2019 April#04	Inna S.; James M.	To define list of standard to highlight at Smart Manufacturing Pavilion at SEMION West and other regions.

Table 12 Previous Meeting Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2018 Nov#01	Supika M.	To provide IRDS FI 2018 Presentation when finalized version is available for distribution to NA I&C TC members

1 Welcome, Reminders, and Introductions

Brian Rubow (Cimetrix) called the meeting to order at 08:05AM. 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 Elements.ppt

2 Review of Previous Meeting Minutes

2.1 The TC Chapter reviewed and approved the minutes of the previous NA Spring 2018 Standards meeting.

Motion: To approve minutes as written
By / 2nd: Jack Ghiselli (Ghiselli Consulting) / James Moyne (AMAT/UMICH)

Discussion: None
Vote: 6/0. Motion passed.

Attachment 02: NA Information & Control TC Meeting Minutes (April 2018).pdf

3 SEMI Standards Staff Report

3.1 Inna Skvortsova (SEMI) gave the SEMI Staff Report. Of note:

SEMI Global 2019 Calendar of Events

- o SEMICON Southeast Asia (May 7-9, Kuala Lumpur, Malaysia)
- o SEMICON West (July 9-11, San Francisco, California)
- o SEMICON Europa (November 12-15, 2018, Munich, Germany)
- o SEMICON Japan (December 11-13, 2018, Tokyo, Japan)

Upcoming North America Meetings

- o SEMICON West 2019 Meetings (July 8-11, 2019, San Francisco, California)



- **Standards Meetings will NOT be at the Marriott but will be at MOSCONE South Hall this year.**
- Meeting room details will be available on the web
- NA Standards Fall 2019 Meetings (November 4-7, 2019, SEMI HQ, Milpitas, California)
- NA Standards Spring 2020 Meetings (March 30 – April 2, 2020, SEMI HQ, Milpitas, California)
-

Letter Ballot Critical Dates for NA Standards meetings

- Cycle 3-19: due March 12 / Voting Period: March 26-April 25
- Cycle 4-19: due April 16 / Voting Period: April 30 - May 30
- Cycle 5-19: due May 10 / Voting Period: May 24 – June 24
- Cycle 6-19: due July 19 / Voting Period: July 31 – August 30
- Cycle 7-19: due August 22 / Voting Period: September 4 - October 4
- Cycle 8-19: due October 11 / Voting Period: Oct 25 – Nov 25
- Cycle 9-19: due Nov 14/ Voting Period: Nov 26 – Dec 26

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

• SEMI Standards Publications

Cycle	New	Revised	Reapproved	Withdrawn
November 2018	1	0	2	0
December 2018	0	7	6	0
January 2019	2	0	0	0
February 2019	1	3	4	0

Total SEMI Standards in portfolio: 1000. Includes 268 Inactive Standards

Cycle	Designation	Title	Committee	Region
November 2018	SEMI C97	Specification for Determination of Particle Levels of Gases Delivered as Pipeline Gas or by Pressurized Gas Cylinder	Gases	NA
January 2019	SEMI M88	Practice for Sample Preparation Methods for Measuring Minority Carrier Diffusion Length in Silicon Wafers by Surface Photovoltage Methods	Silicon Wafer	JA



January 2019	SEMI T23	Specification for Single Device Traceability for the Supply Chain	Traceability	NA
February 2019	SEMI PV89	Test Method for Current-Voltage Measurement in Indoor Lighting for Dye-Sensitized Solar Cell and Organic Photovoltaic	Photovoltaic	TW

- Connected@SEMI Community
 - Web link - <https://connect.semi.org>
 - Login using Standards account (username and password)
 - Program Member
 - Join any task forces
 - Post discussion thread
 - TF Leader/Community Admin
 - Add member
 - Upload meeting minutes
 - Communicate TF members
 - Contact your staff if a TF Site is desired
 - Details: www.semi.org/standards → Committee Info → Collaboration Community

- New Forms, Regulations & Procedure Manual
 - *Regulations* (Feb 28, 2019)
 - Latest version clarifies procedures applicable for Copyrighted Items and trademarks
 - Procedure Manual (Feb 28, 2019)
 - SNARF (Feb 2019)
 - www.semi.org/standards
 - Bottom left, under **Resources!**

- Style Manual Update (New version 6 issued March 25, 2019)
 - Additions and revisions to harmonize with updated *Regulations* and *Procedure Manual*
 - Updates
 - *Company or Organization Trademarks* (Table 1, #1-24)
 - *Active vs. Passive Voice* (Table 4, #4-4)
 - *Word Usage* (Table 4, #4-5)
 - *New Safety Guideline Conformance Notice* (Table 8, #8-1)

- www.semi.org/standards/standardspublications : **Under Document Authoring Tools**



- *SNARF 3 year status TC Chapter may grant a one-year extension:*
 - **None**
- *SNARFs to abolish at I&C TC meeting:*
 - **SNARF 6009 – replaced by new SNARF 6337**
 - **SNARF 6008 – superseded by SNARF 6300**
 - **SNARF 6437 – superseded by a new SNARF**

Motion: To abolish SNARF 6009 for Line Item Revision to Specifications E132, *Specification For Equipment Client Authentication And Authorization* and E132.1 *Specification For Soap Binding For Equipment Client Authentication And Authorization (Eca)*

By / 2nd: Jack Ghiselli (Ghiselli Consulting) / James Moyne (AMAT/UMICH)

Discussion: None.

Vote: 6-0. Motion passed.

Motion: To abolish SNARF 6008 for New Auxiliary Information: *Equipment Data Acquisition (EDA) Freeze Version Overview*

By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Matsuda Mitsuhiro (KOKUSAI ELECTRIC CORPORATION)

Discussion:

Vote: 6-0. Motion passed.

Motion: To abolish SNARF 6437 for Line Item Revision to SEMI E134-0414, *Specification for Data Collection Management*

By / 2nd: Albert Fuchigami (PEER Group) / Jack Ghiselli (Ghiselli Consulting)

Discussion: None.

Vote: 7-0. Motion passed.

- *Nonconforming Titles*
 - **SEMI E37.1-0702** (Reapproved 0413) — High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS) <ballot issued>

NOTE: Refer to Procedure Manual (PM) Appendix Table A4-1 and A4-2

- *Documents due for 5 Year Review*

Name	Due for Review	Title
*SEMI E37.1-0702 (Reapproved 0413)	4/1/2018	High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS)
SEMI E54.23-0513	5/1/2018	Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network
SEMI E94-0314	3/28/2019	Specification for Control Job Management



SEMI E94.1-0312		
SEMI E125-0414	4/25/2019	Specification for Equipment Self Description (EqSD)
SEMI E134-0414	4/25/2019	Specification for Data Collection Management
SEMI E164-0414	4/25/2019	Specification for EDA Common Metadata
SEMI E148-1109 (Reapproved 0614)	6/27/2019	Specification for Time Synchronization and Definition of the TS-Clock Object
SEMI E54.18-0914	9/30/2019	Specification for Sensor/Actuator Network Specific Device Model for Vacuum Pump Device
SEMI E54.22-0914	9/30/2019	Specification for Sensor/Actuator Network Specific Device Model for Vacuum Pressure Gauges

Attachment 03: SEMI Standards Staff Report I&C TC April 2019_v2.ppt

4 Liaison Reports

4.1 Information & Control Europe TC Chapter

No changes since November 2017 / no report presented by EU Chapter.

4.2 Information & Control Japan TC Chapter

Nishimura Takayuki (SCREEN) reported for the Information & Control Japan TC Chapter. Of note:

- Meeting Information
 - Last meeting:
 - Friday, December 14, 2018 at the SEMI Japan Winter 2018 Meetings in conjunction with SEMICON Japan 2018, Tokyo, Japan
 - Next meeting:
 - Wednesday, April 17, 2019 at the SEMI Japan Spring 2019 Meetings, SEMI Japan, Tokyo, Japan
- Current I&CC Japan TC Chapter Structure and Leadership changes:
 - New Backend Factory Integration Task Force:
 - New Leader - Hideaki Ogihara(Naigai TEC)
- Ballot Results



Doc #	Document Title	TC Chapter Action
6377	Line Item revision to SEMI E5-1217: Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)	-
Line Item 1	Make the following revisions to SECS message definitions in SEMI E5 to be compatible with the changes being done parallelly by #R6375 and former #6375 Major Revision to SEMI E170-1217 and E170.1-1217.	Failed, Returned to TF for rework
Line Item 2	Revise the SECS message defined in SEMI E5 to be compatible with the changes that will be done to #R6375, currently in ballot process, and former #6375 Major Revision to SEMI E170-1217 and E170.1-1217.	Failed, Returned to TF for rework

- Other Activities Outside the Letter Ballot Process

- Editorial change for “SEMI E54.12-0614, Specification For Sensor/Actuator Network Communications For CC-Link” was approved at I&C Japan TC Chapter meeting on October 24, 2018
- Ratification ballot #R6375 was submitted to Cycle 7-2018. Voting was completed with no disapproval. Passed A&R and waiting for publication.
-

- Authorized Activities

Doc #	Type	SC/TF/CFG	Document Title/Details
6481	SNARF	GEM300 TF	Line Item Revision to SEMI E174-0618: SPECIFICATION FOR WAFER JOB MANAGEMENT (WJM)
6482	SNARF	GEM300 TF	Line Item Revision to SEMI E170-mmyy(#R6375): SPECIFICATION FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM (SFORMS) and SEMI E170.1-mmyy(#R6375): SPECIFICATION FOR SECS-II PROTOCOL FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM
6483	SNARF	GEM300 TF	Line Item Revision to SEMI E170-mmyy(#R6375): SPECIFICATION FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM (SFORMS)
6484	SNARF	GEM300 TF	Line Item Revision to SEMI E170.1-mmyy(#R6375): SPECIFICATION FOR SECS-II PROTOCOL FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM

- Authorized Ballots

Doc #	When	TF	Document Title/Details
6377A	Cycle2-2019	GEM 300 TF	Line Item revision to SEMI E5-1217: Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)
6481	Cycle2-2019	GEM300 TF	Line Item Revision to SEMI E174-0618: SPECIFICATION FOR WAFER JOB MANAGEMENT (WJM)

Task Force Highlights

- GEM 300 TF



- Last TF meeting was held on February 26, 2019.
 - #6092: New standard “CUARAM: Centralized User Authentication & Role Authorization Management”
 - SNARF was approved at I&C Japan TC Chapter meeting on October 21, 2016
 - E170 application Study Working Group was formed as a subgroup under GEM 300TF
 - To study and to improve E170 by applying to factory operation.
 - Leadership: Koji Kitajima (Toshiba Memory) and Osamu Oishi (IBM Japan Service)
- #6375: Revision to: ‘SEMI E170-1217: Specification for Secured Foundation of Recipe Management System (SFORMS)’, and ‘SEMI E170.1-1217: Specification for SECS-II Protocol for Secured Foundation of Recipe Management System’
 - SNARF was approved at I&C Japan TC Chapter meeting on April 26, 2018
 - Ballot was submitted for Cycle 5-2018 and passed with a technical change at I&C Japan TC Chapter meeting on July 27, 2018.
 - Ratification ballot #R6375 was issued and submitted for to Cycle 7-2018. Voting was completed with no disapproval. Voting result will be forwarded to A&R.
- #6377: Line Item revision to SEMI E5-1217: SEMI EQUIPMENT COMMUNICATIONS STANDARD 2 MESSAGE CONTENT (SECS-II)
 - SNARF was approved at I&C Japan TC Chapter meeting on April 26, 2018
 - Ballot was submitted for Cycle 8-2018. The ballot failed, and it was returned to TF for rework. Doc. 6377A is submitted to Cycle 2-2019
- #6481: Line Item Revision to SEMI E174-0618: SPECIFICATION FOR WAFER JOB MANAGEMENT (WJM)
 - SNARF was approved at I&C Japan TC Chapter meeting on December 14, 2018
 - Doc. 6481 is submitted for Cycle 2-2019
- #6482: Line Item Revision to SEMI E170-mmyy(#R6375): SPECIFICATION FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM (SFORMS) and SEMI E170.1-mmyy(#R6375): SPECIFICATION FOR SECS-II PROTOCOL FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM
 - SNARF was approved at I&C Japan TC Chapter meeting on December 14, 2018
- #6483: Line Item Revision to SEMI E170-mmyy(#R6375): SPECIFICATION FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM (SFORMS)
 - SNARF was approved at I&C Japan TC Chapter meeting on December 14, 2018
- #6484: Line Item Revision to SEMI E170.1-mmyy(#R6375): SPECIFICATION FOR SECS-II PROTOCOL FOR SECURED FOUNDATION OF RECIPE MANAGEMENT SYSTEM
 - SNARF was approved at I&C Japan TC Chapter meeting on December 14, 2018
- *JA I&CC Maintenance TF*
 - Last TF meeting was held on October 21, 2016.
 - No current business exists.
- *Sensor Bus TF*
 - Last TF meeting was held on December 13, 2018.
 - #6330: SNARF for Line Item Revisions to E54.17 Specification of Sensor Actuator Network for A-Link
 - SNARF was approved at GCS on January 10, 2018.



- Ballot was submitted for Cycle 2-2018 and passed at I&C Japan TC Chapter meeting on April 26, 2018
- Line Item 1 and 2 passed A&R in May, 2018
- Published as E54.17-1018
- #6331: SNARF for Line Item Revisions to E54.19 Specification of Sensor Actuator Network for MECHATROLINK
 - SNARF was approved at GCS on January 10, 2018.
 - Ballot was submitted for Cycle 2-2018 and passed at I&C Japan TC Chapter meeting on April 26, 2018
 - Line Item 1 and 2 passed A&R in May, 2018
 - Published as E54.19-1018
- #6376: Line Item Revisions to SEMI E54.12-0614, Specification For Sensor/Actuator Network Communications For CC-Link
 - SNARF was approved at I&C Japan TC Chapter meeting on April 26, 2018
 - Ballot was submitted to Cycle 5-2018 and passed at I&C Japan TC Chapter meeting on July 27, 2018
 - Line Item 1 and 2 passed A&R in August, 2018*
- Editorial change for “SEMI E54.12-0614, Specification For Sensor/Actuator Network Communications For CC-Link” was approved at I&C Japan TC Chapter meeting on October 24, 2018. Passed A&R and waiting for publication
-
- #6374: Line Item Revisions to SEMI E54.21-1110 (Reapproved 0517) Specification For Sensor Actuator Network For Motionnet® Communication
 - SNARF was approved at I&C Japan TC Chapter meeting on April 26, 2018
 - Ballot was submitted to Cycle 5-2018 and passed at I&C Japan TC Chapter meeting on July 27, 2018
 - Line Item 1 and 2 passed A&R in August, 2018*

*Doc. 6374 and 6376 should be on hold until an editorial change to include a footnote references the organization that has ownership of the trademark is implemented.

- *DDA (Diagnostic Data Acquisition) Task Force*
 - Last TF meeting was held on December 14, 2018.
 - #6300: SNARF for New Standard: Guide for EDA Freeze Version
 - Ballot was submitted for Cycle 6-2018
 - Ballot was failed at I&C Japan TC Chapter meeting on October 24, 2018 and #6300B will be submitted in Cycle 2-2019
 - Doc. 6300B is submitted for Cycle 2-2019.
- *Fab and Equipment Information Security Task Force*
 - Formed at I&C Japan TC Chapter meeting on October 24, 2018



- Charter
 - To organize discussions in Japan to cooperate with the Fab and Equipment Information Security TF under Taiwan Chapter of Information & Control GTC
- *Backend Factory Integration Task Force*
 - Formed at I&C Japan TC Chapter meeting on December 14, 2018
 - Charter
 - To develop the equipment automation standard suite and related standards for such backend tools as Bump, Chip Probing, Assembly, Final Test and other wafer or dice processing tools, in order to make fully automated process operation.

The word backend is not metal wiring processes onto active and passive electronics elements fabricated on a semiconductor wafer but assembly and packaging processes of semiconductor dice, including final test and inspection processes.

- *Five-Year Review*

Designation	Standard Title	Action By	Assigned to
SEMI E169-0615	Guide for Equipment Information System Security	2020	-
SEMI E171-0916	Specification for Predictive Carrier Logistics (PCL)	2021	-
SEMI E99-0317	Specification for Carrier ID Reader/Writer	2022	-
SEMI E153-0310 (Reapproved 0517)	Specification for AMHS SEM (AMHS SEM)	2022	-
SEMI E174-0817	Specification for Wafer Job Management (WJM)	2022	-
SEMI E91-1217	Specification for Prober Specific Equipment Model (PSEM)	2022	-
SEMI E87-0818	Specification for Carrier Management (CMS)	2023	-
SEMI E54.17-1018	Specification of Sensor Actuator Network for A-LINK	2023	-
SEMI E54.19-1018	Specification of Sensor/Actuator Network For MECHATROLINK	2023	-

* Nonconforming title needs to be addressed in addition to Five-Year review

- For more information, please contact SEMI Japan staff:
 - Mizue Iwamura, SEMI Japan
 - miwamura@semi.org

Attachment 04: Japan I&C TC Report (April 2019).ppt

4.3 Information & Control Korea TC Chapter

Inna Skvortsova (SEMI) reported for the Information & Control Korea TC Chapter. Of note:

- Meeting Information
 - Last meeting
 - Friday, Oct 19, 2018 at Jeju, Korea
 - Next meeting

- Thursday, January 24, 2019 in conjunction with SEMICON Korea 2019
 - Seoul, Korea
- Announcements
 - None
- Leadership Change
 - None
- Ballots Results:

Doc #	Document Title	TC Chapter Action
4946E	Line Item Revision to E87 and E87.1, Adding Carrier Ready to Unload Prediction	Passed , with editorial change
6301A	Line Item Revision to E142-0211(Reapproved 1016) Specification for Substrate Mapping: Adding packaging raw materials traceability method	Failed

- No discussion on below topics
 - Activities Approved via GCS between Meetings
 - Authorized Activities
 - Authorized Ballots
 - Other Activities Outside the Letter Ballot Process
 - Abolished SNARF(s)
 - Standards to receive Inactive Status
 - Five-Year Review
- Task Force Highlights:
 - *GEM 300 Task Force*
 - #4946, Line Item Revision to E87 and E87.1, Adding Carrier Ready to Unload Prediction:
 - Refer ballot result section.
 - #5832, New Standard, Specification for Equipment Generic Counter Model
 - On hold as follow author's request.
 - *DDA TF*
 - #6452, Revision to SEMI E125: Specification for Equipment Self Description (EqSD) is drafting.
 - It started from line item revision but revised as major revision by author's request.
 - #6335A, Line-Item Revision to SEMI E134: Specification for Data Collection Management
 - Cycle 7 feedback were reviewed at the TC Chapter meeting. Reviewed comments will be forwarded to NA DDA TF for Fall meeting.
 - *ABFI TF*
 - #6301A, Line Item Revision to E142-0211(Reapproved 1016) Specification for Substrate Mapping: Adding packaging raw materials traceability method
 - Refer ballot result section.
 - TC Chapter recommended TF leader to contact E125 originator to understand his comment better. Further action will be taken once the discussion completed.
- Open SNARF(s)

#	TF	Title	Expiration Date
4946	GEM 300 TF	Line Item Revision to E87 and E87.1, Adding Carrier Ready to Unload Prediction	2020-06-16
5832	GEM 300 TF	New Standard, Specification for Equipment Generic Counter Model	2020-10-20
6301	ABFI TF	Line Item Revision to E142, Adding packaging raw materials traceability method	2020-10-20

For more information, please contact: *Natalie Shim at SEMI (eshim@semi.org)*

Attachment 05: Korea I&C TC Liaison Report (Dec 2018).pdf

4.4 Information & Control Taiwan TC Chapter

Inna Skvortsova (SEMI) reported on behalf of the Information & Control Taiwan TC Chapter. Of note:

- Leadership Change:
 - The previous TW I&C Chapter chair Robert Chien (TSMC) stepped down.
 - The new candidate Chair is Scott Yu (TSMC) and is waiting for approval by ISC.
 - Fab & Equipment Information Security TF
 - New TF co-leaders: Leon Chang (TSMC); Ares Cho (ITRI)
- Meeting Information:
 - Last Meeting
 - March 29, 2019 at the SEMI Standards Taiwan Spring 2019 Meetings
 - SEMI Taiwan Office, Zhubei City, Hsinchu County, Taiwan
 - Next meeting
 - September 27, 2019 at the SEMI Standards Taiwan Autumn 2019 Meetings
 - SEMI Taiwan Office, Zhubei City, Hsinchu County, Taiwan
- Ballot Results
 - NONE
- Authorized Activities / Other Activities
 - Equipment Information Integration TF:
 - NEW SNARF for “New Standards: Specification for Computing System Security of Fab Equipment”
- Task Force Updates:
 - *Equipment Information Integration TF*
 - No New Activity.
 - *GEM300 TF*
 - No New Activity.
 - *Backend Factory Integration TF*



- Last TF meeting was held on March 28, 2018
- Doc 6147: New Standard, Specification of Backend Die Traceability
 - On hold as follow author's request
- *Fab & Equipment Information Security TF*
 - There were 5 times TF meetings to discuss the draft of SNARF after last I&C TC meeting which was held on September 7, 2019.
 - TC Chapter authorized SNARF “New Standards: Specification for Computing System Security of Fab Equipment”

For more information, please contact: Dean Chang and Tiffany Huang at SEMI: dchang@semi.org ; thuang@semi.org
Attachment 06: Taiwan I&C Liaison Report (March 2019).pdf

5 IRDS Factory Integration (FI) Chapter

Supika Mashiro (TEL) presented the IRDS FI Chapter 2018 Updates;

For additional information, please contact Supika Mashiro at: supika.mashiro@tel.com

5.1 APC Conference & Smart Manufacturing Council Report

James Moyne (AMAT/UMICH) presented updates for the upcoming APC 2019 Conference and related SEMI Smart Manufacturing Council activities:

- Advanced Process Control 2019: www.apconference.com
 - Abstract submission deadline: July 26, 2019
 - Abstract acceptance notification sent on: August 30, 2019
 - PowerPoint presentations and posters due: October 4, 2019
 - Contact James Moyne, Moyne@umich.edu, with any questions
 - **The APC Conference** will be built around topics such as, but not limited to: Run-to-run, wafer-to-wafer, model-based, and real-time process control
- SEMI Smart Manufacturing Council
 - **SEMI Hosted Webinar – 13 June 2019 at 10am-Mppm PDT**
 - **Topic: Smart Manufacturing Journey Workshop**
 - **Introduction to Smart Manufacturing Journey**
 - 10:00 – 10:05am *Overview of Smart Manufacturing Activities at SEMI (Ayo/Tom)*
 - 10:05 – 10:10am *Summary of 2018 Workshop Output (Ranjan or Dan)*
 - **Presentations**
 - 10:10 – 10:35am *Topic: Data Flow Architecture – Format and Protocols (Presenter: ??)*
 - 10:40 – 11:05am *Topic: Data Sharing and IP Concerns (Presenter: ??)*
 - **Panel**
 - 11:10 – 11:30am *Critical Activities for Smart Manufacturing Readiness*
 - *Topics: Audit, Cost of Deployment, ??*



For additional information, please contact James Moyne, Moyne@umich.edu

Attachment 07: APC Smart Manufacturing Council Report.pdf

6 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.

Ballot #R6335A

The TC Chapter reviewed the Document #R6335A for Line-Item Revision to SEMI E134, Specification for Data Collection Management. Ratification ballot is superclean and is approved by ISC A&R for publication, no action is need from the I&C TC.

Ballot #R6114C

The TC Chapter reviewed the Document #R6114C for Line-Item Revision to SEMI E5, *SEMI Equipment Communication Standard 2 Message Content (SECS II)*. Ratification ballot is superclean and is approved by ISC A&R for publication, no action is need from the I&C TC.

Ballot #6348A

The TC Chapter reviewed the Document #6348A Revision to E30, *Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)*.

I&C TC accepted the GEM300 Task Force recommendation to find Reject #1-1 submitted by Masaya, Nagata (TEL) related and technically persuasive.

The ballot **failed** and will be reworked by the Task Force and resubmitted.

Motion: To find Reject #1-1 submitted by Masaya, Nagata (TEL) for SEMI Draft Document 6348A to be related and technically persuasive. The Task Force will rework and resubmit the document.

By / 2nd: Brian Rubow (Cimetrix) / James Moyne (AMAT/UMICH)

Discussion: None

Vote: 6-0. Motion passed.

Action Item: (Brian Rubow) Research use of Harel Notation for potential copyright.

James Moyne commented that Harel notation was first published in 1987 in academic paper and was not copyrighted.

Ballot #6349C

The TC Chapter reviewed the Document #6349C Revision to E37.1-1018, *High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS OR HSMS-SSS)*

The ballot **passed** TC review as balloted and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.



Motion: Documents # 6349C is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.
By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Nick Infelise (Omron)
Discussion: None.
Vote: 7-0. Motion passed.

Motion: Forward Document # 6349C to the ISC A&R for procedural review as balloted.
By / 2nd: Brian Rubow (Cimetrix) / James Moyne (AMAT/ UMICH)
Discussion: None.
Vote: 6-0. Motion passed.

Attachment 08: 6349C_Procedural Review

Ballot #6475

The TC Chapter reviewed the Document #6475 for Reapproval to SEMI E94-0314, *Specification for Control Job Management*.

The ballot **passed** TC review as balloted and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Documents # 6475 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.
By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Nick Infelise (Omron)
Discussion: None.
Vote: 7-0. Motion passed.

Motion: Forward Document # 6475 to the ISC A&R for procedural review with editorial change.
By / 2nd: Brian Rubow (Cimetrix) / Nick Infelise (Omron)
Discussion: None.
Vote: 6-0. Motion passed.

Attachment 09: 6475_Procedural Review

Ballot #6476

The TC Chapter reviewed the Document #6476 for Reapproval to Reapproval to SEMI E94.1-0312, *Specification for SECS-II Protocol for Control Job Management (CJM)*

The ballot **passed** TC review as balloted and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Documents # 6476 is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.
By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Nick Infelise (Omron)
Discussion: None.
Vote: 7-0. Motion passed.



Motion: Forward Document # 6476 to the ISC A&R for procedural review as balloted
By / 2nd: Brian Rubow (Cimetrix) / Nick Infelise (Omron)
Discussion: None.
Vote: 6-0. Motion passed.

Attachment 10: 6476_Procedural Review

Ballot #6333A

The TC Chapter reviewed the Document #6333A for Line-item Revision to SEMI E54.23-0513, *Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network*

Official statement from co-Chair of NA I&C TC and leader of SB Task Force, James Moyne (AMAT/UMICH): SEMI is allowed to do editorial changes to SEMI Standards, but SEMI Standards, specifically ISC A&R authorized not to do it, but required resubmission the ballot.*

The ballot **passed** TC review as balloted and will be submitted to the ISC A&R for procedural review. Details can be found in the attached Procedural Review file.

Motion: Documents # 6333A is not a Safety Document, when all safety-related information is removed, Document is still technically sound and complete.
By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Nick Infelise (Omron)
Discussion:
Vote: 7-0. Motion passed.

Motion: Forward Document # 6436 (all line items) to the ISC A&R for procedural review with authorized editorial change.
By / 2nd: James Moyne (AMAT/UMICH) / Brian Rubow (Cimetrix)
Discussion: None.
Vote: 6-0. Motion passed.

Attachment 11: 6333A_Procedural Review

7 Subcommittee and Task Force Reports

7.1 DDA Task Force

Albert Fuchigami (PEER Group) reported for the DDA Task Force. Of note:

- Leadership Change - None
- Ballots Adjudication - None
- New SNARFs
 - Revision to SEMI E132-1015: Specification for Equipment Client Authentication and Authorization
 - Revision to SEMI E125-0414: Specification for Equipment Self Description (EqSD)
 - Revision to SEMI E134-0319: Specification for Data Collection Management
- Ballot Plans for Cycle 5-2019
 - 6344, New Standard: Specification for Protocol Buffers Semiconductor Common Components



- 6346, Revision to Add a New Subordinate Standard: Specification for Protocol Buffers for Equipment Client Authentication and Authorization (ECA) to SEMI E132-1015
- 6347, Revision to Add a New Subordinate Standard: Specification for Protocol Buffers of Data Collection Management to SEMI E134-0414
- #TBD - Revision to SEMI E125-0414: Specification for Equipment Self Description (EqSD)
- Other
 - 6345 - Revision to Add a New Subordinate Standard: Specification for Protocol Buffers for Equipment Self Description (EqSD) to SEMI E125-0414
 - Informational Ballot to be issued in Cycle 5.
- Integrating HTTP/2 into EDA Standards
 - Vigorous discussions on handling EDA Clients (manage configuration) separate from EDA Consumers (get DCP values)
 - Possible that application software can be both EDA Client and EDA Consumer at the same time, or separate applications.
 - EDA Clients and EDA Consumers application software do not necessarily have to talk to each other through its own software channel.
 - EDA Server should open gRPC Connection to EDA Consumers. Figuring out how to handle various failure scenarios.
 - Sample code for Test App Server and Test App Client made available in March 2019
 - Lots of content - Continuing to look for feedback from TF / TC members on Informational Ballot content.

Attachment 12: DDA TF Report April 2019.PPT

7.2 GEM300 Task Force

- Leadership Change - None
- Ballots Adjudicated (Passed):
 - 6349C, Revision to E37.1-1018: High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS OR HSMS-SSS)
 - 6475, Reapproval to SEMI E94-0314: Specification for Control Job Management
 - 6476, Reapproval to SEMI E94.1-0312: Specification for SECS-II Protocol for Control Job Management (CJM)
- New SNARFs
 - Line-item Revision to SEMI E5-MMY: SEMI Equipment Communications Standard 2 Message Content (SECS-II)
 - Reapproval to SEMI E148-1109 (Reapproved 0614): Specification for Time Synchronization and Definition of the TS-Clock Object
 - Revision to SEMI E30-0418: Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)
- Ballot Plans for Cycle 5-2019
 - 6348B, Revision to E30-0418: Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)



- 6236, Line-item Revision to SEMI E172-1015: Specification for SECS Equipment Data Dictionary (SEDD),
- 6470, Line Item Revision to SEMI E5-MMY: Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)

Attachment 13: GEM300 TF Report April 2019.PPT

7.3 Sensor Bus Task Force

- TF Leadership & changes (if any):
 - None.
 - Current Task Force leader is planning to step down. Co-leader position is open.
- New SNARFs
 - None
- Ballot Adjudication:
 - 6333A, Line-item Revision to SEMI E54.23-0513, Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network
 - Passed I&C TC review with editorial changes to incorporate the trademark
- New Ballots and ballot plans
 - None

Attachment 14: SB TF Report April 2019.PPT

7.4 Fab and Equipment CDS Task Force

- TF Leadership changes :
 - Richard Howard (Cimetrix) – new co-Leader
 - Brian Rubow (Cimetrix) – stepped down
- New SNARFs
 - None
- Ballot Adjudication & Plans:
 - None
- Technical Summary
 - Discussion on current industry impacts and gaps
 - Reviewed currently available security documentation including SEMI E169
 - Task force leaders will develop a proposal on future actions.

Motion: Approve new co-leader, Richard Howard(Cimetrix) for the Fab and Equipment CDS Task Force.

By / 2nd: Brian Rubow (Cimertix)/Ryan Bond (Intel)

Discussion: None

Vote: 7/0. Motion passed.



Attachment 15: CDS TF Report April 2019.PPT

7.5 ESEC Task Force Report

No TF meeting / report at Standards Spring 2019 Meetings

7.6 PSC Task Force Report

No TF meeting / report at Standards Spring 2019 Meetings

7.7 GUI Task Force Report

No TF meeting / report at Standards Spring 2019 Meetings

8 Old Business

8.1 Standards due for Five-Year Review.

Inna Skvortsova addressed the TC Chapter on this topic. Of note:

Name	Due for Review	Title	Status
*SEMI E37.1-0702 (Reapproved 0413)	4/1/2018	High-Speed SECS Message Services Single Selected-Session Mode (HSMS-SS)	Balloted in Cycle 2-19
SEMI E54.23-0513	5/1/2018	Specification for Sensor/Actuator Network Communications for CC-Link IE Field Network	Balloted in Cycle 2-19
SEMI E167-1213	12/13/2018	Specification for Equipment Energy Saving Mode Communications (EESM)	Assigned to ESEC TF
SEMI E94-0314	3/28/2019	Specification for Control Job Management	Balloted in Cycle 2-19
SEMI E94.1-0312	3/28/2019	Specification for SECS-II Protocol for Control Job Management (CJM)	Balloted in Cycle 2-19
SEMI E125-0414	4/25/2019	Specification for Equipment Self Description (EqSD)	Ballot planned in Cycle 2-19 but postponed
SEMI E134-0414	4/25/2019	Specification for Data Collection Management	Ratification ballot passed A&R. Pending publication
SEMI E164-0414	4/25/2019	Specification for EDA Common Metadata	Assigned to DDA TF
SEMI E148-1109 (Reapproved 0614)	6/27/2019	Specification for Time Synchronization and Definition of the TS-Clock Object	SEMI Staff issue reapproval ballot
SEMI E54.18-0914	9/30/2019	Specification for Sensor/Actuator Network Specific Device Model for Vacuum Pump Device	Assigned to SB TF, recommendation by SW-19
SEMI E54.22-0914	9/30/2019	Specification for Sensor/Actuator Network Specific Device Model for Vacuum Pressure Gauges	Assigned to SB TF,



			recommendation by SW-19
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7.2 SNARFs Approaching 3-Year Review

The TC Chapter reviewed SNARFs approaching 3-year project period.

- No SNARFs received extended period.

9 New Business

9.1 New TFOFs Approval

- None

9.2 New SNARFs Approval

I&C Technical Committee reviewed and approved new SNARF for the following documents:

- SNARF for Line Item Revision to SEMI E5-MMY, *Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)*
- SNARFs for Revision to SEMI E134-0414, *Specification for Data Collection Management*
- SNARFs for Reapproval to SEMI E148-1109 (Reapproved 0614), *Specification for Time Synchronization and Definition of the TS-Clock Object*

Motion: Move to approve SNARF for Line Item revision to SEMI E5

By / 2nd: Brian Rubow (Cimterix)/Jack Ghiselli (Ghiselli Consulting)

Discussion: Suggestion from Matsuda Mitsuhiro to remove designation date code for the standard in the SNARF to ensure TF will use latest published version

Vote: 7/0. Motion passed.

Motion: To update the proposed SNARF title to remove the designation data code for Line Item revision to SEMI E5

By / 2nd: Brian Rubow (Cimterix)/Jack Ghiselli (Ghiselli Consulting)

Discussion: None

Vote: 7/0. Motion passed.

Motion: Move to approve SNARF Revision to SEMI E134-0414

By / 2nd: Brian Rubow (Cimterix)/Jack Ghiselli (Ghiselli Consulting)

Discussion: None

Vote: 7/0. Motion passed.

Motion: Move to approve SNARF for reapproval to SEMI E148

By / 2nd: Brian Rubow (Cimterix)/Jack Ghiselli (Ghiselli Consulting)

Discussion: None.

Vote: 7/0. Motion passed.

9.3 New Ballots Authorization:

- Ballot #6532 submitted by GEM 300TF for Reapproval to SEMI E148-1109 (Reapproved 0614), *Specification for Time Synchronization and Definition of the TS-Clock Object*
- Ballot #6348B submitted by GEM300 TF for Revision to E30-0418, *Specification for the Generic Model for Communications and Control of Manufacturing Equipment (GEM)*
- Ballot #6236 submitted by GEM300 TF for Line-item Revision to SEMI E172-1015, *Specification for SECS Equipment Data Dictionary (SEDD)*, to address editorial changes in complementary file
- Ballot #6470 submitted by GEM300 TF for Line Item Revision to SEMI E5-MMY, *Specification for SEMI Equipment Communications Standard 2 Message Content (SECS-II)*
- Ballot #6344 submitted by DDA TF for New Standard: *Specification for Protocol Buffers Semiconductor Common Components*
- Ballot #6346 submitted by DDA TF for Revision to Add a New Subordinate Standard: *Specification for Protocol Buffers for Equipment Client Authentication and Authorization (ECA)* to SEMI E132-1015, *Specification for Equipment Client Authentication and Authorization*
- Ballot #6347 submitted by DDA TF for Revision to Add a New Subordinate Standard: *Specification for Protocol Buffers of Data Collection Management* to SEMI E134-0414, *Specification for Data Collection Management*
- Ballot #TBD submitted by DDA TF for Revision to SEMI E125-0414, *Specification for Equipment Self Description (EqSD)*
- Ballot #6345 submitted by DDA TF for Revision to Add a New Subordinate Standard: *Specification for Protocol Buffers for Equipment Self Description (EqSD)* to SEMI E125-0414, *Specification for Equipment Self Description (EqSD)*
 - **Informational Ballot**

Motion: To approve letter ballots submission for Cycle 5-2019 for the following documents:
- #6532; 6348B, #6236, #6470, #6344, #6346, #6347, and revision ballot for SEMI E125 (Doc #'s TBD);

By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Albert Fuchigami (PEER Group)

Discussion: None.

Vote: 7-0. Motion passed.

Motion: To approve informational ballot submission for #6345

By / 2nd: Jack Ghiselli (Ghiselli Consulting) / Albert Fuchigami (PEER Group)

Discussion: None.

Vote: 4-0. Motion passed.

10 Action Items Review

10.1 Previous Meeting(s) Action Items

Inna Skvortsova (SEMI) reviewed open action items. These can be found in the Previous Meeting(s) Action Items table at the beginning of these minutes.



10.2 New Action Items

Inna Skvortsova (SEMI) reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

11 Next Meeting and Adjournment

The next meeting is scheduled for July 10, 2019 at San Francisco, CA. See <http://www.semi.org/en/events> for the current list of meeting schedules.

Having no further business, a motion was made to adjourn. Adjournment was at 12:17 PM.

Respectfully submitted by:

Inna Skvortsova

Sr. Standards Coordinator

SEMI North America

Phone: 408-9436996

Email: iskvortsova@semi.org

Minutes tentatively approved by:

Brian Rubow (Cimetrix) Co-chair	
Jack Ghiselli (Ghiselli Consulting) Co-chair	
James Moyne (AMAT/University of Michigan) Co-chair	

Table 13 Index of Available Attachments^{#1}

<i>Title</i>	<i>Title</i>
Attachment 01: SEMI Standards Required Elements.ppt	Attachment 10: 6476_Procedural Review
Attachment 02: NA I&C TC Meeting Minutes (Nov 2018)	Attachment 11: 6333A_Procedural Review
Attachment 03: NA I&C TC Staff Report (April 2019)	Attachment 12: DDA TF Report (April 2019).ppt
Attachment 04: Japan Liaison Report (April 2019).pdf	Attachment 13: GEM 300 TF Report (April 2019) ppt
Attachment 05: Korea Liaison Report (Dec 2018).pdf	Attachment 14: SB TF Report (April 2019).ppt
Attachment 06: Taiwan Liaison Report (March 2019).pdf	Attachment 15: Fab & Equip CDS TF Report (April 2019)
Attachment 07: APC SM Council Reports	
Attachment 08: 6349C_Procedural Review	
Attachment 09: 6475_Procedural Review	

#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 Inna Skvortsova at the contact information above.