

**China PV Committee**  
**Meeting Summary and Minutes**  
 China Spring Standards Meetings 2014  
 March 20th, 2014, Thursday, 09:00 -16:00  
 Pudong Ballroom 5+6, Pudong Kerry Hotel, Shanghai  
 No.1388 Hua Mu Road Pudong, Shanghai, China

**Next Committee Meeting**  
 Friday, June 13th, 2014

**Table 1 Meeting Attendees**

**Co-Chairs:** Jun Liu (CESI), Guangchun Zhang (CanadianSolar)

**SEMI Staff:** Dennis McGuirk – SEMI HQ, James Amano – SEMI HQ, Allen Lu – SEMI China, Kris Shen – SEMI China, Annie An – SEMI China, Toby Liu – SEMI China

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
48th Research Institute	Jia	Jinying	LCT	Li	Zhixin
48th Research Institute	Xiao	Youwen	LDK	Wang	Yuepeng
48th Research Institute	Liu	Liangyu	LDK	Liu	Linyan
48th Research Institute	Long	Hui	Lightway	Wu	Zhenyu
Astronergy	Niu	Xinwei	NanJing University	Xia	Shouyun
Bothleader	Zhou	Shudong	None	Shang	Dinghui
CESI	Liu	Jun	PVCOMPASS	Wu	Jun
CESI	Feng	Yabin	Rutech	Fan	Baobin
CNSMQ	He	dongjiang	Rutech	Xu	Hongmei
CNSMQ	Yang	Suxin	SEMILAB	Huang	Li
CPVT	He	Li	Sevenstar	Li	Buzhong
CPVT	Jiang	Wei	Sevenstar	Zheng	Jianyu
CPVT	Wu	Yuan	SIBCO	Schless	Ton
CSI	Zhou	Chengbai	SIBCO	Liu	Erming
Darbond	Liu	Zhongxun	SIMIT	Zhou	Jian
Darbond	Wang	Xuegang	SINOPACO	Ban	Keke
Dupont	Du	Peng	SINOSICO	Chu	Dongxu
FIL	Yang	Aiyun	SINOSICO	Yan	Dazhou
FDL-Lab	Huang	Qiang	Sveck	Shen	Wenjuan
GCL	lv	Jinbiao	Sveck	Cao	Yongjiu
GCL	Liu	Xiaoxia	Sveck	Li	Xuemei
GCL	Lu	Wenfeng	Sunport	Sheng	Wenting
GCL	You	Da	Suntech	Zhu	Jingbing
GSOLA	Ran	Xu	Suntech	Liang	Zhe
GDsolar	Wu	Xiexiang	Suntech	Chen	Rulong
GDsolar	Cai	Haizhou	TBEA	Wang	Yanhui
GDsolar	Tang	Baisheng	TBEA	Liu	Jia
GDsolar	Zhou	Xiaobao	TBEA	Li	Jianshuai
Hanergy	Yu	Huacong	TBEA	Zan	Wu
Hanergy	Lv	Baotang	TBEA	Yin	Bo
Hanergy	Tong	Xiang	TESA	Wang	Meng
Hanergy	Zhang	Ying	TESA	Li	Ming
Hareon Solar	Cheng	Xiangwen	Tianwei New Energy	Lin	Hongfeng
Hareon Solar	Zhang	Yujun	Trina	Xiao	xinmin
Heraeus	Zhang	Weiming	Trina	Zhou	Wei
Hongcheng Converter	Yang	Renjie	Trina	Xiao	Taoyun
HonBest	Rao	Hui	TUV	Zhou	Gary
HonBest	Huang	Junran	TUV	Monokroussos	Christos

Huahong	Liu	Ming	VITRONIC	Qian	Xihan
HuaXia	Ji	Yifeng	Wacker	Qin	Wenfang
JA Solar	Wang	Xiaoyong	Yingli	Song	Dengyuan
JA Solar	Huang	Xinming	Yingli	Zhang	Xi
Jinko Solar	Yao	Yanyan	Yingli	Liang	Yujie
Jinko Solar	Fox	Stephen	Yingli	Ma	Chao
Jinko Solar	Li	Ning	Yingli	Li	Yingye
Jolywood	Xia	Wenjin	Yingli	Wang	Zhanyou
Jolywood	Xie	Jianjun	WSBX	Quan	Meizi
JYT	Zhao	Tongrong			

**Table 2 Leadership Changes**

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
PV Silicon Raw Materials Task Force	Dazhou Yan (SINOSICO) quit	
PV Silicon Wafer Task Force	Dengyuan Song (Yingli) quit	
Crystalline Silicon Solar Cell Task Force		Ruling Chen (Suntech) Xianwu Cai (48 <sup>th</sup> Institute)
PV Module Task Force	Qiang Huang (FDI-LAB) quit Binglin Lu (CPRTC) quit Cheng Zhu (Suntech) quit	Liang Luo (Hunan Red Solar) Ton Schless (Sibco)
PV Thin Film Task Force	Zhenyu Wu (Hanergy) quit	Jian Ding (Hanergy)

**Table 3 Ballot Results**

**Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

**Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5426	Specification for Aluminum Paste, Used in Back Surface Field of Crystalline Silicon Solar Cells	<b>Passed</b> with minor editorial change
5427	Specification for front Surface Silver Paste, Used in P-Type crystalline Silicon Solar Cells	<b>Passed</b> as balloted
5429	Test Method for In-line Monitoring of Flat Temperature Zone in Horizontal Diffusion Furnaces	<b>Passed</b> with minor editorial change
5476A	Test Method for Determination of Total Carbon Content in Silicon Powder by Infrared Absorption After Combustion in an Induction Furnace	<b>Passed</b> with minor editorial change
5477A	Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry	<b>Failed</b> and return to TF for re-work
5563	Specification for Framing Tape for PV Modules	<b>Failed</b> and return to TF for re-work
5564A	Test Method for the Measurement of Chlorine in Silicon by Ion Chromatography	<b>Failed</b> and return to TF for re-work

**Table 4 Authorized Ballots**

<i>#</i>	<i>When</i>	<i>SC/TF/WG</i>	<i>Details</i>
5382A	Cycle 3-2014	PV Silicon Wafer Task Force	New Standard: Specification for Quasi-monocrystalline Silicon Wafers Used in Photovoltaic Solar Cells

**Table 4 Authorized Ballots**

#	When	SC/TF/WG	Details
5659	Cycle 3-2014	Crystalline Silicon Solar Cell Task Force	New Standard: Test Method Based on RGB for C-Si Solar Cell Color
5477B	Cycle 3-2014	PV Silicon Raw Materials Task Force	New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry

**Table 5 Authorized Activities**

#	Type	SC/TF/WG	Details
	TFOF	Polysilicon Packaging Materials Task Force	The task force is disbanded, the previous Doc. 5428 is transferred to PV Silicon Raw Materials Task Force
	TFOF	Metal Paste for Crystalline Silicon Solar Cells Task Force	The task force is disbanded, the previous Doc. 5426 and Doc. 5427 are transferred to Crystalline Silicon Solar Cell Task Force
	TFOF	PV Module Task Force	Updated the TF name from Crystalline Silicon PV Module Task Force, and expanded the TF charter and scope
	TFOF	Crystalline Silicon PV Back Contact Technology Task Force	The task force is disbanded, the previous Doc. 5644 is transferred to PV Module Task Force
	TFOF	PV Thin Film Task Force	Updated the TF name from Silicon Thin Film PV Module Task Force
5659	SNARF	Crystalline Silicon Solar Cell Task Force	Updated the document title from Test Method for C-Si Solar Cell Color to Test Method Based on RGB for C-Si Solar Cell Color
5699	SNARF	PV Silicon Raw Materials Task Force	New Standard: Test Method for Interstitial Atomic Oxygen Content of Crystalline Silicon by Multiple Transmission-reflection Infrared Absorption
5670	SNARF	PV Silicon Raw Materials Task Force	New Standard: Test Method for Substituted Carbon Content of Crystalline Silicon by Multiple Transmission-reflection Infrared Absorption

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

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

**Table 6 New Action Items**

Item #	Assigned to	Details
None		

**Table 7 Previous Meeting Action Items**

Item #	Assigned to	Details	Status
ChinaPV-101 3-01	All China PV Task Force Leader and Kris	Decrease and merge China task force to 6 TFs	Done 7 TFs now

## 1 Welcome, Reminders, and Introductions

Committee co-chair Jun Liu chair the meeting and welcome all attendees, all the attendees introduced themselves. Kris Shen called the meeting to order at 9:10 AM. The meeting reminders on antitrust issues, intellectual property issues and effective meeting guidelines were reviewed.

Agenda was reviewed.

## 2 Review of Previous Meeting Minutes

Minutes were reviewed. No change was made.

**Motion:** To accept the minutes of the previous meeting as submitted

**By / 2<sup>nd</sup>:** Zhixin Li(Solarinco)/ Yuepeng Wan (LDK)

**Discussion:** None

**Vote:** 31-0. Motion passed

[Attachment-1, China PV TC Minutes 20131023.pdf](#)

## 3 Staff Report

Kris Shen (SEMI) gave the staff report. Highlights

- Overview the SEMI Global 2014 Calendar of Events
- Remind the upcoming SEMI standards ballots submission deadline, and remind to vote for Cycle 3
- Recently Published 3 PV Standards
  - SEMI PV50-0114 Specification for Impurities in Polyethylene Packaging Materials for Polysilicon Feedstock
  - SEMI PV51-0214 Test Method for In-Line Characterization of Photovoltaic Silicon Wafers by Using Photoluminescence
  - SEMI PV52-0214 Test Method for In-Line Characterization of photovoltaic Silicon Wafers Regarding Grain Size

[Attachment-2, SEMI Staff Report 20140320.pdf](#)

## 4 Liaison Reports

### 4.1 North America PV Materials Committee

James Amano (SEMI HQ) reported. Highlights:

- Next meeting - North America Spring Standards Meetings, SEMI HQ, San Jose, CA, April 2, 2013

[Attachment-3, NA Liaison Report PV Materials 20131112.ppt](#)

### 4.2 Europe PV Automation Committee

James Amano (SEMI HQ) reported. Highlights:

- Next meeting – Date to be decided

[Attachment-4, EU PV Automation Liaison Report 20140317.ppt](#)

### 4.3 Europe PV Materials Committee

James Amano (SEMI HQ) reported. Highlights:

- Next meeting – Date to be decided
- Ballot Results Summary from October meeting
  - Doc 5565, Line Item Revision to PV42, Test Method for In-Line Measurement of Waviness on PV Silicon Wafers by a Light Sectioning Technique Using Multiple Line Segments – PASSED
  - Doc 5433, New Standard, Test Method for In-line Characterization of PV Silicon Wafers regarding Grain Size – PASSED
  - Doc 5432, New Standard, Test Method for In-line Characterization of PV Silicon Wafers by Using Photoluminescence – PASSED

[Attachment-5, EU PV Materials Liaison Report 20140317.ppt](#)

### 4.4 Japan PV Automation Committee

James Amano (SEMI HQ) reported. Highlights:

- PV 35 Horizontal Communication is Ready for Implementation!
- Next meeting – June 27, 2014, SEMI Japan, Tokyo, Japan
- Ballot Action in Cycle 6

- Doc. #5223A, New Subordinate Standard: “Media Interface Specifications for a Horizontal Communication between Equipment” to be Used to Implement SEMI PV35--Passed as balloted
- Doc. #5631, Line Item Revisions to SEMI PV35-1012, Specification For Horizontal Communication Between Equipment For Photovoltaic Fabrication System

[Attachment-6, JP\\_PVAuto\\_Liaison\\_R1.1.ppt](#)

#### 4.5 *Japan PV Materials Committee*

James Amano (SEMI HQ) reported. Highlights:

- Next meeting – July 4, 2014, SEMI Japan Office, Tokyo, Japan
- Working on
  - Doc. #5417, New Standard: Test Method for Measurement of Defects in PV Silicon Wafers in PV Modules by Electroluminescence Imaging
  - Doc. #5532, New Standard: Test Method for Measurement of Cracks in PV Silicon Wafers in PV Modules by Laser Scanning

[Attachment-7, JA\\_PV&PVM\\_to\\_China\\_PV&PVM\\_R0.2.pptx](#)

#### 4.6 *Taiwan PV Committee*

James Amano (SEMI HQ) reported. Highlights:

- Next meeting – July 25, 2013, SEMI Office, Hsinchu

[Attachment-8, Taiwan PV Committee.ppt](#)

### 5 **Ballot Review**

5.1 Cycle 8-2013: Doc. 5426, New Standard: Specification for Aluminum Paste, Used in Back Surface Field of Crystalline Silicon Solar Cells

5.1.1 Document **passed** technical review and will be submitted to A&R SC for procedural review.. See attachment below for detail adjudication.

[Attachment-9, 5426 Procedure Review.pdf](#)

5.2 Cycle 8-2013: Doc. 5427, New Standard: Specification for front Surface Silver Paste, Used in P-Type crystalline Silicon Solar Cells

5.2.1 Document **passed** technical review and will be submitted to A&R SC for procedural review. See attachment below for detail of ballot adjudication.

[Attachment-10, 5427 Procedure Review.pdf](#)

5.3 Cycle 8-2013: Doc. 5429, New Standard: Test Method for In-line Monitoring of Flat Temperature Zone in Horizontal Diffusion Furnaces

5.3.1 Document **passed** technical review and will be submitted to A&R SC for procedural review. See attachment below for detail of ballot adjudication.

[Attachment-11, 5429 Procedure Review.pdf](#)

5.4 Cycle 8-2013: Doc. 5476A, New Standard: Test Method for Determination of Total Carbon Content in Silicon Powder by Infrared Absorption After Combustion in an Induction Furnace

5.4.1 Document **passed** technical review and will be submitted to A&R SC for procedural review. See attachment below for detail of ballot adjudication.

[Attachment-12, 5476A Procedure Review.pdf](#)

5.5 Cycle 8-2013: Doc. 5477A, New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry

5.5.1 Document **failed** technical review due to persuasive reject and was sent back to TF for rework. See attachment below for detail adjudication.

[Attachment-13, 5477A Failed.pdf](#)

5.6 Cycle 8-2013: Doc. 5563, New Standard: Specification for Framing Tape for PV Modules

5.6.1 Document **failed** technical review due to persuasive reject and was sent back to TF for rework. See attachment below for detail adjudication.

[Attachment-14, 5563 Failed.pdf](#)

5.7 Cycle 8-2013: Doc. 5564A, New Standard: Test Method for the Measurement of Chlorine in Silicon by Ion Chromatography

5.7.1 Document **failed** technical review due to persuasive reject and was sent back to TF for rework. See attachment below for detail adjudication.

[Attachment-15, 5564A Failed.pdf](#)

## 6 Task Force Reports

### 6.1 PV Raw Materials Task Force

- **Motion:** Apply the Polysilicon Packaging Materials Task Force disband, the previous Doc. 5428 transfer to PV Silicon Raw Materials Task Force
- **By/2 nd:** Xiaoxia Liu(GCL) / Zhixin Li(LCT)
- **Discussion:** None
- **Vote:** 30-0, Motion Passed
- Working on
  - Doc. 5476, New Standard: Test Method for Determination of Total Carbon Content in Silicon Powder by Infrared Absorption after Combustion in an Induction Furnace.
  - Doc. 5477, New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry.
  - Doc. 5564Aa, New Standard: Test Method for the Measurement of Chlorine in Silicon by Ion Chromatography.

[Attachment-16, PV Raw Materials TF Report.ppt](#)

### 6.2 PV Silicon Wafer Task Force

- Working on Doc. 5382A, New Standard : Specification for Quasi-monocrystalline Silicon Wafers used in Photovoltaic Solar Cells

[Attachment-17, PV Silicon Wafer TF Report.ppt](#)

### 6.3 Crystalline Silicon Cell Task Force

- **Motion:** Apply the Metal Paste for Crystalline Silicon Solar Cells Task Force disband, the previous Doc. 5426 and Doc 5427 transfer to Crystalline Silicon Solar Cell Task Force
- **By/2 nd:** Dengyuan Song(Yingli) / Zhixin Li(LCT)
- **Discussion:** None
- **Vote:** 27-0, Motion Passed
- 2 ballots review from Cycle 8-2013
  - Doc. 5426, Specification For Aluminum Paste, Used In Back Surface Field Of Crystalline Silicon Solar Cells
  - Doc. 5427, Specification For Silver Paste, Used To Contact With N+ Diffusion Layer Of Crystalline Silicon Solar Cells

[Attachment-18, Crystalline Silicon Solar Cell TF Report.pptx](#)

#### 6.4 PV Module Task Force

- **Motion:** Apply update the TF name from Crystalline Silicon PV Module Task Force to PV Module Task Force, and expanded the TF charter and scope. Disband the Crystalline Silicon PV Back Contact Technology Task Force and Anti-reflective Coated Glass Task Force, the previous doc 5644 transfer to PV Module Task Force.
- **By/2 nd:** Weizhou(Trina) / Dengyuan Song(Yingli)
- **Discussion:** None
- **Vote:** 28-0, Motion Passed
- Working on 4 documents
  - Doc. 5660, Specification for Ultra-thin Glasses Used for Photovoltaic Modules
  - Doc. 5661, Test Method for Electrical Parameters of Bifacial Solar Module
  - Doc. 5563, Specification for Framing Tape for PV Modules
  - Doc. 5644, Terminology for Back Contact PV Cell and Module

Attachment-19, PV Module TF Report.ppt

#### 6.5 PV Thin Film Task Force

- Working on Doc. 5478, Test method for thin-film silicon PV modules light soaking

Attachment-20, PV Thin Film TF Report.ppt

#### 6.6 PV Diffusion Furnace Test Methods Task Force

- **Motion:** Apply update the TF name from PV Diffusion Furnace Test Methods Task Force to PV Manufacturing Equipment Task Force
- **By/2 nd:** Liangyu Liu(48<sup>th</sup> Institute) / Zhixin Li (LCT)
- **Discussion:** None
- **Vote:** 10-13, Motion Failed
- Working on Doc. 5429, New Standards: Test Method for In-line Monitoring of Flat Temperature Zone in Horizontal Diffusion Furnaces

Attachment-21, PV Diffusion Furnace Test Methods TF Report.ppt

#### 6.7 PV Power Station Equipment Integrated Performance Task Force

- **Motion:** Apply update the TF name from PV Power Station Equipment Integrated Performance Task Force to PV Power System Task Force
- **By/2 nd:** Xiexiang Wu(GDSolar) / Jingbing Zhu (Suntech)
- **Discussion:** None
- **Vote:** 9-10, Motion Failed
- Working on Doc. 5648, New standard: Test Method for the Integrated Efficiency of Installed PV Components

Attachment-22, PV Power Station Equipment Integrated Performance TF Report.ppt

### 7 Old Business

None

### 8 New Business

#### 8.1 Request for Ballots in cycle 3-2014

- Doc. 5659, New Standards: Test Method for C-Si Solar Cell Color

**Motion:** To approve Doc. 5659 for Balloting in cycle 3-2014

**By/2 nd:** Xi Zhang (Yingli)/ Zhixin Li(LCT)

**Discussion:** Q: It is not suitable for the name of this standard. If it has a new standard in the future, we can not

name the standard. This standard is mainly based on RGB, so he suggest revision of name of this standard.

A: Accept. Amend the name to *Test Method Based on RGB for C-Si Solar Cell Color*

**Vote:** 21-1, Motion Passed

- Doc. 5477B, New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry

**Motion:** To approve Doc. 5477B for Balloting in cycle 3-2014

**By/2 nd:** Dazhou Yan(SINOSICO) / Zhixin Li(LCT)

**Discussion:** None

**Vote:** 21-0, Motion Passed

## 8.2 New SNARFs & TFOFs

- SNARF- New Standard:: Test Method for Interstitial Atomic Oxygen Content of Crystalline Silicon by Multiple Transmission-reflection Infrared Absorption

**Motion:** To approve the SNARF

**By/2<sup>nd</sup>:** Shoujun Xiao (NJU)/ Guangchun Zhang (CanadianSolar)

**Discussion:** Q1: Multiple Transmission-Reflection Infrared Spectroscopy (MTR-IR) is a very sensitive method to measure the impurity contents of interstitial oxygen and substituted carbon in crystalline silicon, especially for thin silicon slices (0.1~0.3 mm). My question is: have you done the statistic measurements on different batches of double-side-polished silicon samples? I wonder how the homogeneity and reproducibility of polishing affect the measurement?

A1: We ordered silicon samples from companies who offer double-side-polished silicon slices. For the same batch of samples sliced from a silicon crystalline cylinder, the measurement error is within 1%. As a standard test method, we need more data to verify this claim. Welcome all companies here to verify the test methods together.

Q2: Do the following parameters: passivation silicon oxide layer, polishing, infrared instruments, reference sample, affect the accuracy of the measurements?

A2: All the above parameters not only exist in our MTR-IR measurements, but also do in the currently adapted standard method. We can easily follow the protocols already used the current standard method to prepare the samples for our MTR-IR method. MTR-IR has one order of magnitude higher sensitivity than the current method, so does the measurement accuracy.

Q3: For the solar cell panel and module fabrication companies, now they melt the thin slices into single crystalline silicon materials and then measure the impurity contents with different methods such as Infrared spectrometer, Carbon and Oxygen analyzer, mass spectrometer, etc. From your introduction, MTR-IR deletes the interference fringes and is specially excellent for thin silicon slices. It will be applied not only in solar cell crystalline silicon materials, but also in semiconductor industry, semiconductor optics, and many other fields.

A3: Thanks. To improve the quality and performance of silicon industry is the purpose of this standard test method.

Q4: MTR-IR is based on a China Invention Patent ([ZL 2006 1 0097859.4](#)), generally, a standard method should be the well-known and well-accepted method, can you comment on the relationship between the standard test method and the invention patent.

A4: According to the SEMI Standards Purpose – “SEMI Standards are designed to define current practices for and to drive industry improvement in both quality and performance.” MTR-IR was invented for about 8 years, it has been well-recognized in academia. Now it is the right time to step into industry. The technology obeys the the SEMI Standards Purpose, and the patent holder assigned a letter of assurance (LOA). Applicants follow the SEMI “regulations” to prepare all documents for the said standard test methods.

**Vote:** 17-3, Motion Passed

- SNARF-New Standard: Test Method for Substituted Carbon Content of Crystalline Silicon by Multiple Transmission-reflection Infrared Absorption

**Motion:** To approve the SNARF



By/2<sup>nd</sup>: Shoujun Xiao (NJU)/ Zhixin Li (LCT)

Discussion: None

Vote: 17-3, Motion Passed

## 9 Action Item Review

### 9.1 Open Action Items

None

### 9.2 New Action Items

See Table 6.

## 10 Next Meeting and Adjournment

The next meeting of the China PV Standards committee will be on June 13th, 2014, Friday, in Baoding, Hebei, China.

Respectfully submitted by:

Kris Shen

SEMI China

Minutes approved by:

Jun Liu (CESI) , Co-chair	2014/4/14
Guangchun Zhang (CanadianSolar), Co-chair	2014/4/14

**Table 8 Index of Available Attachments #1**

#	Title	#	Title
1	China PV TC Minutes 20131023.pdf	12	5476A Procedural Review.pdf
2	SEMI Staff Report 20140320.ppt	13	5477A Failed.pdf
3	NA Liaison Report PV Materials 20131112.ppt	14	5563 Failed.pdf
4	EU PV Automation Liaison Report 20140317.ppt	15	5564A Failed.pdf
5	EU PV Materials Liaison Report 20140317.ppt	16	PV Raw Materials TF Report.ppt
6	JP_PVAuto_Liaison_R1.1.ppt	17	PV Silicon Wafer TF Report.ppt
7	JA_PV&PVM_to China PV&PVM_R0.2.pptx	18	Crystalline Silicon Solar Cell TF Report.pptx
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9	5426 Procedural Review.pdf	20	PV Thin Film TF Report.ppt
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#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](http://www.semi.org). For additional information or to obtain individual attachments, please contact [SEMI Staff Name] at the contact information above.