



BUILDING GLOBAL COMMUNICATIONS

## Approved by General Counsel

FO-4 Meeting Report

Date: 06/21-23/05

Location: Boulder, CO

Approved: 12/20/05

**T# 9003**

2500 Wilson Boulevard  
Suite 300  
Arlington, VA 22201-3834  
USA

+1.703.907.7700  
FAX +1.703.907.7727

[www.tiaonline.org](http://www.tiaonline.org)

**Telecommunications Industries Association  
Standards and Technology Department**

**Engineering Committee FO-4, Committee on Fiber Optics**

**Meeting Report**

FO-4 Chair: Steve Swanson  
Secretary and EDC: Bob Jensen

June 21-23, 2005  
NIST  
Boulder, CO

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**1 ADMINISTRATIVE**

**1.2 Call, to order**

FO-4 Chair, Steve Swanson, called the Opening Plenary meeting to order on June 21, 2005 at 8:00 AM. The Chair noted that the Opening Plenary is intended to update members of committee meeting expectations, and to inform them of administrative essentials. He also noted that quorum is not called at the Opening Plenary and that attendance at the closing plenary constitutes the FO-4 membership and quorum.

FO-4 Chair, Steve Swanson, called the Closing Plenary meeting to order at 8:00 AM June 23, 2005. The Closing Plenary session is intended to summarize Subcommittee meeting activities and resolve any issues arising throughout the week of meetings. The Chair again reminded those attending that attendance at the Closing Plenary constitutes the FO-4 membership and quorum. He also noted that continuity of membership is important in order to establish quorum and to take part in the FO-4 leadership

decisions.

### 1.3 Attendance (quorum, introductions and roster)

Attendance at the Closing Plenary constitutes the FO-4 membership and quorum. A total of 28 attendees were present at the Closing Plenary including 13 of 25 members, thereby establishing quorum for the Engineering Committee meeting. The attendees introduced themselves and an attendance roster was distributed for participants to sign.

				Plenary	
				Opening	Closing
<b>Chair:</b>					
Steven Swanson	Corning, Incorporated	<a href="mailto:swansonse@corning.com">swansonse@corning.com</a>	607-974-4252	√	√

#### Voting members companies present:

Tom Hanson	Corning Incorporated.	<a href="mailto:hansonta@corning.com">hansonta@corning.com</a>	607-974-4530	√	√
Alan Whitebook	Diamond USA, Inc.	<a href="mailto:awhitebook@mindspring.com">awhitebook@mindspring.com</a>	661-702-9740	√	√
Dave Leight	DSCC-VAT	<a href="mailto:david.leight@dla.mil">david.leight@dla.mil</a>	614-692-0657	√	√
Andre Girard	EXFO	<a href="mailto:andre.girard@exfo.com">andre.girard@exfo.com</a>	418-683-0211	√	√
Lorenz Cartellieri	Experior Photonics, Inc.	<a href="mailto:lcartellieri@experiorphotonics.com">lcartellieri@experiorphotonics.com</a>	805-499-3000	√	√
Halina Kosiorska Bodine	FiberSource Inc.	<a href="mailto:Halina@fibersource.net">Halina@fibersource.net</a>	864-277-7200		√
Bob Jensen	Fluke Networks	<a href="mailto:robert.jensen@flukenetworks.com">robert.jensen@flukenetworks.com</a>	512-514-7760	√	√
Dan Morris	KITCO Fiber Optics	<a href="mailto:dmorris@kitcofo.com">dmorris@kitcofo.com</a>	757-518-8100	√	√
Mike Kinard	OFS	<a href="mailto:mkinard@ofsoptics.com">mkinard@ofsoptics.com</a>	770-838-5307	√	√
Scott Chastain	Sumitomo Electric	<a href="mailto:schastain@sumitomoelectric.com">schastain@sumitomoelectric.com</a>	919-541-8175	√	√
Paul Kolesar	SYSTIMAX Solutions	<a href="mailto:pkolesar@systemax.com">pkolesar@systemax.com</a>	972-792-3155	√	√
Osman Gebizlioglu	Telcordia Technologies	<a href="mailto:ogebizli@telcordia.com">ogebizli@telcordia.com</a>	732-699-3378	√	√
Eric Rosenast	Tempo Research	<a href="mailto:erosenast@tempo.textron.com">erosenast@tempo.textron.com</a>	760-598-8900		√

#### Voting members companies absent:

Dave Roland	Alcatel USA	<a href="mailto:dave.roland@cable.alcatel.com">dave.roland@cable.alcatel.com</a>	828-459-8775		
Pin Su	DiCon Fiberoptics Inc.	<a href="mailto:psu_std@yahoo.com">psu_std@yahoo.com</a>	510-620-5315		
Michael Itano	Leviton Voice & Data	<a href="mailto:mitano@levitonvoicedata.com">mitano@levitonvoicedata.com</a>	425-415-7239		
M. Kinan	Nexans dba Berk-Tek,		919-552-2061	√	
Iwano Shin'ichi	NTT Advanced Tech.	<a href="mailto:s.iwano@neo.ntt-at.co.jp">s.iwano@neo.ntt-at.co.jp</a>	650-617-0320		
Adam Murano	Ortronics	<a href="mailto:amurano@ortronics.com">amurano@ortronics.com</a>	860-450-2804		
Robert Fitzpatrick	Panduit Corp.	<a href="mailto:rfti@panduit.com">rfti@panduit.com</a>	708-460-1800		
Dave Kritler	Photon Kinetics Inc.	<a href="mailto:dave.kritelr@pkinetics.com">dave.kritelr@pkinetics.com</a>	503-526-4655		
Dave Fisher	Tyco Electronics	<a href="mailto:David.fisher@tycoelectronics.com">David.fisher@tycoelectronics.com</a>	717-986-5501		
Matt Brown	US Conec	<a href="mailto:mattbrown@usconec.com">mattbrown@usconec.com</a>	828-267-6327		
Gair Brown	US Navy	<a href="mailto:browngd@nswc.navy.mil">browngd@nswc.navy.mil</a>	540-653-1579		

Voting members companies absent:

Norm Lampert	Yazaki NA Inc.	<a href="mailto:lampert@optoc.com">lampert@optoc.com</a>	717-930-1332		
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Other participants

Robin Pollock	3M	<a href="mailto:rlpollock@mmm.com">rlpollock@mmm.com</a>	512-984-3373	√	√
Andrei Vankov	Advanced Interconnect, Inc.	<a href="mailto:vankov@ai-global.com">vankov@ai-global.com</a>	508-541-3400	√	
Bill Troemel	Aerotech WTL	<a href="mailto:billt@aeroechusa.com">billt@aeroechusa.com</a>	818-991-7562	√	√
Kenneth Dunn	Corning, Inc.	<a href="mailto:ken.dunn@corning.com">ken.dunn@corning.com</a>	828-901-6936	√	√
Frank Achten	Draka Comteq Optical Fibre	<a href="mailto:f.achten@drakafibre.com">f.achten@drakafibre.com</a>	31.402958653	√	√
James Ryan	Draka Comteq Optical Fibre	<a href="mailto:Jim.ryan@drakacomteq.com">Jim.ryan@drakacomteq.com</a>	828-459-8357	√	√
Jim Hayes	Fiber Optic Association	<a href="mailto:jeh@jimhayes.com">jeh@jimhayes.com</a>	760-451-3655	√	√
Barry Siroka	Fiber Optic Center	<a href="mailto:bsiroka@juno.com">bsiroka@juno.com</a>	617-916-1550	√	
Mauricio Silva	General Cable	<a href="mailto:msilva@generalcable.com">msilva@generalcable.com</a>	360-774-1332	√	
Erich Rosenast	Greenlee, a Textron Co.	<a href="mailto:erosenast@tempo.textron.com">erosenast@tempo.textron.com</a>	760-598-8900	√	
Helmut Knehr	National Technical Systems	<a href="mailto:helmut.knehr@ntscorp.com">helmut.knehr@ntscorp.com</a>	714-879-6110	√	√
David Ives	National Physical Laboratory	<a href="mailto:David.ives@npl.co.uk">David.ives@npl.co.uk</a>	442089437158		√
David Ives	NPL	<a href="mailto:David.ives@npl.co.uk">David.ives@npl.co.uk</a>		√	
Helmut Knehr	NTS	<a href="mailto:helmut.knehr@ntscorp.com">helmut.knehr@ntscorp.com</a>	714-879-6110		
Greg Sandels	OFS	<a href="mailto:gsandels@ofsoptics.com">gsandels@ofsoptics.com</a>	770-798-4978	√	√
Alan McCurdy	OFS	<a href="mailto:mccurdy@ofsoptics.com">mccurdy@ofsoptics.com</a>	770-798-2475	√	√
John George	OFS	<a href="mailto:johngorge@ofsoptics.com">johngorge@ofsoptics.com</a>	770-798-2432	√	
Stephanie Montgomery	TIA	<a href="mailto:smontgomery@tiaonline.org">smontgomery@tiaonline.org</a>	703-907-7735	√	√
Tom Ball	Tom Ball Consulting	<a href="mailto:teballzz@aol.com">teballzz@aol.com</a>	717-939-8537		
Mike Hughes	US Conec	<a href="mailto:mikehughes@usconec.com">mikehughes@usconec.com</a>	828-267-6334	√	√
Tim Drapela	US Dept Commerce (NIST)	<a href="mailto:drapela@boulder.nist.gov">drapela@boulder.nist.gov</a>	303-497-5858	√	√
Harold Glick	US Navy	<a href="mailto:harold.a.glick2navy.mil">harold.a.glick2navy.mil</a>	951-273-4755	√	
Lance Doddridge	US Navy	<a href="mailto:lance.doddridge@navy.mil">lance.doddridge@navy.mil</a>	951-273-5741	√	
Norman Lampert [listed as absent above]	Yazaki NA Inc.	<a href="mailto:lampert@optoc.com">lampert@optoc.com</a>	717-930-1332	√	√

FO-4 company attendance history at Closing Plenary

Company	Last 3 meetings	June 2005	January 2005	June 2004
3M	1	1		
Alcatel	1			1

Company	Last 3 meetings	June 2005	January 2005	June 2004
Corning, Inc.	3	1	1	1
Diamond USA	3	1	1	1
DiCon Fiberoptics Inc.	2		1	1
Draka Fibre Tech.	2	1		1
DSCC-VAT	3	1	1	1
EXFO	3	1	1	1
Experior Photonics	3	1	1	1
FiberSource	1	1		1
Fluke Networks	2	1	1	
KITCO Fiber Optics	2	1	1	1
Leviton	1			1
Nexans	2		1	1
NIST	3	1	1	
NTT	2		1	1
OFS	3	1	1	1
Ortronics	1			1
Panduit	2		1	1
Photon Kinetics	1			1
Sumitomo	3	1	1	1
SYSTIMAX Solutions	2	1		1
Telcordia Technologies	3	1	1	1
Tempo	1	1		
Tyco Electronics	2		1	1
US CONEC	2		1	1
US Navy	1			1
Yazaki NA, Inc	1		1	

Note: Member companies absent from three consecutive closing plenary meetings will be removed from the voting member list and placed on the non-voting member list. The attendance roster is the sole basis for deriving meeting attendance, so it is important that you sign-in at the closing plenary meeting. The Chair will notify a company of their failure to meet minimum participation requirements and request their attendance at future meetings; enforcement of the membership continuation rules is necessary in order to maintain our ability to raise quorum at meetings.

#### 1.4 Agenda review and approval

The Opening Plenary agenda was reviewed and approved.

The Closing Plenary agenda was reviewed, amended and approved.

#### 1.5 Intellectual Property Rights statement

The chair brought to the attention of the membership the TIA policy regarding patents, the use of which may be essential to standards being considered. The full statement is contained in the fourth edition of the TIA Engineering Manual.

### 1.6 Chair's report; general items; recognition

At the Opening Plenary, Steve Swanson thanked Tim Drapela, NIST, for hosting FO-4 at their facility in Boulder, CO.

Steve noted that the Opening Plenary session is intended to update members of committee meeting expectations, and to inform them of administrative essentials. The liaison reports received will be posted to the ftp site. Steve reviewed the structure and leadership of the committee, having five Subcommittees. He reminded the FO-4 leadership to use the agenda template which includes the necessary "Notice of Participation" and to cover the IPR statement at their meetings while reminding participants of the need for the boilerplate cover sheet on all contributions. He also reviewed the electronic tools that are available and encouraged all members to utilize those tools to facilitate the progress of work between meetings. Steve also noted that the Closing Plenary session is the assembly of the FO-4 formulating group and is intended to summarize Subcommittee meeting activities and resolve issues arising throughout the week of meetings. Attendance at the Closing Plenary constitutes the FO-4 membership and quorum.

Steve Swanson reported on the key outcomes of the Subcommittee Chairs meeting held early in the week for standards planning and administration purposes. He reminded all attendees at the Opening and Closing Plenary that elections will be held in January for the Chair and Vice-chair positions of FO-4 Engineering Committee and the even number FO-4 Subcommittees. Steve encouraged members to consider running for these positions and taking an active role in the FO-4 leadership.

Greg Sandels, OFS, was appointed FO-4.3 Vice-chair pending elections as Tom Ball has stepped down from this position. Presently a Chair is being sought for the FO-4.3.1 Working Group.

FO-4.4 is being disbanded and the work being rolled into FO-4.1. Those involved with FO-4.4 were encouraged to attend the FO-4.1 meetings.

The FTTP Correspondence Group reported that there were no contributions received after solicitations being made since the January meeting. A decision was made to delegate activity to each of the Subcommittees while also forming a Working group under FO-4 to gather the information. Bob Jensen, Fluke Networks, was named as chair of that Working Group. (FO-4.0.1).

NIST is beginning an initiative to create a strong private-public partnership that identifies America's measurement needs and strengthens the U.S. infrastructure for innovation. Additional information is covered under New Business within this report.

### 1.7 TIA staff report

Stephanie noted that many of the items in her staff report were previously covered in the Chair's report. Other items not mentioned include:

TIA is working on developing an MOU with the International Electronics Manufacturing Initiative (iNEMI). Due to anomalies in their IPR policies, Open Mobile Alliance (OMA) and Internet Engineering Task Force (IETF) references are not allowed in TIA documents until further notice.

Henry Cuschieri is TIA's new Director of Standards and Technology.

TIA will be issuing a quarterly newsletter/digest

The 4<sup>th</sup> edition of the Engineering manual was approved at the end of April

TIA is in the process of a re-design of their WEB site.

### 1.8 Numbering of contributions

Steve noted that all contributions to FO-4 were available on the FTP site. Additionally, a USB drive was made available at the meeting with all contributions for the attendees.

Document #	Contributor	Company	Title
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Document #	Contributor	Company	Title
FO-4/05-01-036	Bob Jensen	Fluke Networks	January 2005 Meeting Report
FO-4/05-01-037	Steve Swanson	Corning	June 2005 Opening Agenda
FO-4/05-01-037b	Steve Swanson	Corning	June 2005 Opening Agenda (revised)
FO-4/05-01-038a	Steve Swanson	Corning	June 2005 Closing Agenda
FO-4/05-06-039	Bob Jensen	Fluke Networks	Cover Sheet Template WORD
FO-4/05-06-040	Bob Jensen	Fluke Networks	Cover Sheet Template EXCEL
FO-4/05-06-041	Bob Jensen	Fluke Networks	Cover Sheet Template PowerPoint
FO-4/05-06-042	Bob Jensen	Fluke Networks	Agenda Template
FO-4/05-06-043	Steve Swanson	Corning	Opening Plenary
FO-4/05-06-044	Paul Kolesar	Systimax	FO-4.1 Summary Report (Word)
FO-4/05-06-044a	Paul Kolesar	Systimax	FO-4.1 Summary Report (PPT)
FO-4/05-06-045	Tom Hanson	Corning	FO-4.2 Summary Report
FO-4/05-06-046	Andre Girard	Exfo	FO-4.3 Summary Report
FO-4/05-06-047	Andre Girard	Exfo	FO-4.3.1 Summary Report
FO-4/05-06-048	Andre Girard	Exfo	FO-4.3.2 Summary Report
FO-4/05-06-049	Robin Pollock	3M	Connector Proposal to 4.3
FO-4/05-06-050	Tim Drapela	NIST	USMS
FO-4/05-06-051	Osman Gebizlioglu	Telcordia	GR Update
FO-4/05-06-052	Stephanie Montgomery	TIA	Engineering manual changes in 4 <sup>th</sup> edition
FO-4/05-06-053	Steve Swanson	Corning	Closing Plenary
FO-4/05-06-053a	Steve Swanson	Corning	Closing Plenary (rev)
FO-4/05-06-054	Lorenz Cartellieri	Experior	FO-4.5 Summary Report
FO-4/05-06-055	Bob Jensen	Fluke Networks	FO-4 June 2005 Meeting Report
FO-4/05-06-056	Steve Swanson	Corning	January 2006 Meeting Schedule
FO-4/05-06-057	Steve Swanson	Corning	January 2006 Opening Agenda
FO-4/05-06-058	Steve Swanson	Corning	January 2006 Closing Agenda

### 1.9 Meeting report review and approval

The January 2005 meeting report was reviewed at the closing plenary and unanimously approved.

## 2 OLD BUSINESS

### 2.2 Action item review from last meeting

Action item review	Action:	Resp:	Status:
2004-06-001	FO-4.1 also asked if a process can be developed retiring OFSTP numbers, possibly by using a dual number that includes the old OFSTP number and the new FOTP number for some period of time.	TIA Staff	On-going
2002-06-009	Place document database on the WEB for all projects so that it can be updated and maintained.	TIA Staff	On-going
2003-06-012	Develop national adaptation procedure	TIA Staff	On-going

Action item review	Action:	Resp:	Status:
2004-06-001	FO-4.1 also asked if a process can be developed retiring OFSTP numbers, possibly by using a dual number that includes the old OFSTP number and the new FOTP number for some period of time.	TIA Staff	On-going
2005-01-001	Investigate implementation of forward pointers in FO-4 standards.	TIA	On-going
2005-01-001	Investigate options for taking non-electronic versions of standards to become electronic versions.	TIA	On-going
2005-01-001	Develop a list of incompatible references that should not be used in TIA standards.	TIA	WI-FI IETF OMA On-going

### 3 PLENARY REPORTS

#### 3.2 Opening Plenary reports

Steve noted that any reports received will be posted to the ftp site for review.

#### 3.3 Closing Plenary reports

##### 3.3.3 FO-4.1, Optical Fiber Systems, Paul Kolesar

Paul Kolesar chaired FO-4.1 meeting and gave report.

There were 9 attendees at the meeting and a provisional quorum established with 7 of 11 voting members in attendance. The provisional status must be confirmed by review of attendance rosters from previous meetings, as no report was generated from the previous meeting in January 2005, and the meeting report from June of 2004 was not found on file at TIA. The official membership list (provided by TIA) was circulated to the attendees for updating of names, addresses, and verification of membership status.

The meeting agenda was accepted with the addition of text regarding the TIA Notice of Participation and IPR policy.

The committee determined the following specific dispositions on the documents requiring action within this list

1. SP-3-0142 comment resolution on the adoption of international standard as TIA-TR-1027 – “IEC 61282-6 – Fibre Optic Communications System Design Guides – Part 6; Skew Design in Parallel Optical Interconnection Systems”. The negative ballot returned by SYSTIMAX was determined to be for valid reasons that included lack of information relevant to optical fiber, cable, or passive components (content oriented towards transceiver and systems companies); no information regarding the impact of DMD on skew of MMF; potential understatement of maximum skew of 1 ps/m for singlemode fiber. The committee declined to accept the document.  
ACTION: Jim Matthews: Cancel project thru TIA.
2. TIA 455-204 Measurement of Multimode Fiber Bandwidth.  
ACTION: Jim Matthews: Initiate revision ballot of FOTP-204 as adoption of IEC-60793-1-41 to publish as 455-204-A.



3. TIA 526-4A Optical Eye Pattern Measurement Procedure.  
ACTION: Jim Matthews: Initiate revision ballot of 526-4A as adoption of IEC-61280-2-2 (Eye pattern and extinction ratio) to publish as 526-4-B.
4. TIA 526-16 Jitter Transfer Function Measurement. The IEC equivalent is in pre-NP state, so is not available for adoption.  
ACTION: Jim Matthews: Initiate reaffirmation ballot for TIA standard.
5. TIA 526-19 Optical Signal to Noise Measurement Procedures for DWDM Systems.  
ACTION: Jim Matthews: Initiate ballot to adopt IEC 61280-2-9 (Signal to noise measurement) to publish as 526-19-A.
6. Draft TIA 526-5 Data Analysis of Bit Error Ratio Versus Received Power for Digital Fiber Optic Systems.  
ACTION: Tom Hanson: Determine status of IEC equivalent document so that committee can make a determination at the next meeting.
7. Draft TIA 526-8 Accelerated Measurement of Low BERs in Digital Fiber Optic Systems, and Draft TIA 526-9 Accelerated Measurement Procedure for Determining BER and Q-Factor in Optical Transmission Systems Using the Variable Threshold Method.  
These documents deal in the same measurement topic. Tom Hanson reported that the IEC has developed a single document that encompasses this topic. Given the desire to convert the 525 OFSTP series to the 455 FOTP series, and given that these documents as drafts and never published, the recommendation is to publish as an FOTP.  
ACTION: Jim Matthews: Initiate ballot to adopt IEC 61280-2-8 (Low BER using Q Factor) to replace both of these and publish as 455-xxx.

A motion was made by T. Hanson and seconded by A. Whitbook to approve all disposition items and action items. Discussion ensued over revising the 526 numbering series to become part of the 455 series. Comments included that we do not have a "pointer" system in place as yet. For example, do other documents refer to this document. The motion was unanimously approved.

#### **FO-4.1.2 WG, Modal Dependence of Multimode Bandwidth, Paul Kolesar**

Paul Kolesar reported on the FO-4.1.2 working group activities. See written report for details, FO4.1-05.06-02. Tom Hanson noted that in relation to the topic of MM launch condition, that IEC 61280-4-1 will be up for revision in 2006, and that this provides a good vehicle to advance the RPD metric specification now in discussion in IEC 86B/WG4. WG4 is chartered with producing a measurement procedure for determining the launch condition (likely using a near-field scan). The 61280-4 document would provide the vehicle for setting the limits of the launch distribution using that measurement.

No contribution was received on a new TSB for FTTP drop/distribution systems requirements. Contributions are invited for the next meeting. Tom Hanson and Andre Girard brought attention to the problem of resolving the state of the branches of a PON using an OTDR or other instrument. This seems to be a perplexing problem with no simple answer.

Regarding the topic of black links, Tom Hanson reported that in May 2005 ITU consented a document allowing transverse compatibility for DWDM systems operating from 2.5 to 10Gb/s at 100GHz channel spacing in the C band. Their next topic in this area will address the use of optical amplifiers in such systems.

An action item was assigned to Jim Matthews for the next meeting to add an agenda item regarding the disposition on adoption of IEC fiber specifications for multimode and singlemode fiber. Many of these are due for processing in 2007.

### **3.3.4 FO-4.2, Optical Fibers and Cables, Tom Hanson**

The meeting was conducted by the Chairman, Thomas Hanson on 22-Jun-05 with 14 individuals participating. Six of nine quorum members were represented, so a quorum was declared.

Some members concluded that the "important notice of participation" in the cover sheet of the agenda is onerous and would require a review by their companies' legal counsel which might result in the need to read a disclaimer or some other such action at future meetings.

#### **Working Group 4.2.3, single-mode measurements and international harmonization (A. Girard)**

The meeting was conducted by T. Hanson in the absence of A. Girard, who had to attend to some open issues within FO-4.3.

The recent activities of IEC and ITU were reviewed.

Open items include:

- SBS definition: waiting on some consensus within the ITU
- PMD measurements: wait until the IEC revision of 60793-1-48 is complete, then adopt.
- Revision of TIA 492 Specifications in 2007: Consider options vis-a-vis IEC specifications and wait until there is some indication of direction from FO-4.2

The group concluded that in the absence of pressing items needing technical discussions within TIA, and considering that there are no current volunteers to serve as Chairman, it would be better to put the WG in hiatus status until there are specific items of work to complete. One such item could be to deal with the upcoming need for document maintenance of the several documents in the "492" fiber specification series, which are up for revision in 2007. A strategy for this is needed and input from the SC is required.

#### **Working Group 4.2.5, Cables and fiber units for installation in micro-ducts by blowing (K. Chauvin)**

Ken Chauvin is changing jobs and withdrawing from standardization. Ken Dunn is nominated and approved as the new Chair and has volunteered to continue with the IEC blown cable project. Similar personnel changes are expected for the blown fiber project.

Two teleconferences on the blown cable IEC Family Spec have been conducted and more are expected before the Cape Town meetings. There have not been any teleconferences on fiber units. The plan has been to get resolution on some of the issues in the cable discussion and then to harmonize in the fiber unit document.

Some main technical issues are with respect to "blow-ability" tests, for which definitions will be required prior to NP balloting. The test for fiber unit and cable are likely to be different. The coefficient of friction test idea has been set aside as a main specification attribute, but will be documented as a Technical Report.

#### **Working Group 4.2.6, Harmonization of IEC and TIA cable test methods (M. Kinard)**

The WG is organized to try to formulate some inputs to the revision of the IEC cable test document, 60794-1-2. A list of comparative test methods within the TIA and the IEC was prepared and partially

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reviewed. Issues were identified with respect to at least seven test methods. A correspondence activity will be conducted with the objective of producing a contribution to the upcoming Cape Town IEC meetings.

### **General results**

**FOTP:** The SC reaffirmed that the current version of the drop cable Standard, now published as TIA 472F000, and ICEA "717" should be the applicable reference for FOTP purposes. An invitation for contributions for any extensions of this document is invited. The SC also proposed that this document should be introduced to the IEC process.

**PMD measurements:** This is essentially done in IEC and ITU. Following the completion of the current revision, we plan to adopt 60793-1-48 and replace the current three FOTPs with one consolidated document.

**Fire:** The ballot being worked in NFPA-90 failed and is returned to committee on the basis of issues regarding plenum cable and limited combustible cables. These issues will return and group members should remain alert. In the IEC, TR-62222 has been published.

**ICEA progress:** ICEA S-110-717-2003 Standard for optical fiber drop cable, S-83-596-2001 Standard for optical fiber premises distribution cable, S-104-696-2001 Standard for indoor/outdoor optical cable are published as 472F000, 472C000, and 472E000, respectively. ICEA S-640 is essentially completed and can be balloted in the TIA as 472D000-B after some editorial changes. FO-4.2 authorizes this ballot. 718 is on-going work for sewer cable systems. The first level ballot has been completed and comment resolution is proceeding.

**FOTP-3:** Several teleconferences have taken place. The document is authorized for balloting pending minor editorial changes.

**IEC Specification adoptions:** Many of the "492" documents will need maintenance in 2007 (and are currently out of date). We need to agree on a plan on how this will be managed in the context of the availability of IEC Specifications and global trade. One option is to move single-mode fiber under the IEC format and keep multimode under the TIA system until the multimode technical discussions have stabilized.

**Measurement and definition of the SBS threshold:** On hold pending resolution in the ITU.

**Revision of TIA492AAAC (multimode 10 Gig fiber spec) for chromatic dispersion:** This has been put on hold considering some new proposals. The IEC revision of 60793-2-10 is ongoing and does incorporate the chromatic dispersion changes.

#### **Document maintenance**

Several document maintenance items that were approved at previous meeting have not been completed due to personnel changes at TIA. These will be completed with the assistance of TIA before the next meeting.

Several reaffirmations (20+) were completed in the last six months.

Three additional documents were agreed for group reaffirmation (with the other outstanding items).

Three open projects were again agreed to be closed on the official books. Among these is ITM-9 Method for evaluating optical fiber ribbon strip performance (1997). It was observed that although this document has been referenced in documents such as GR-20, it has never been approved. The SC agreed to try to find the relevant historical documents and revitalize the project as a separate action.

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FOTP-12, Fluid immersion test for fiber-optic components (1989), covering components, connectors, and cables, is used in cable testing by DoD and others. Some of the fluids listed are no longer available and some newer fluids should be listed. It is also called out in sewer cable specifications and in DoD splicing requirements. FO-4.2 requests that the document should be transferred to FO-4.2 for revision.

#### Items requested of FO-4

- Allocate 2 hours each for 4.2.5 and 4.2.6 at the next meeting.
- Allocate four hours for FO-4.2.
- Transfer FOTP-12 to FO-4.2 for revision.

### **3.3.5 FO-4.3, Interconnecting Devices and Passive Components, Andre Girard**

#### Documents

- 1 – Advanced for SP Ballot
  - FOTP-171, make bidirectional testing optional
  - FOCIS-16, include duplex option
- 2 – Advanced for TIA Publication Process
  - TIA-1048, IEC 62005-7: Reliability of Fibre Optic Interconnecting Devices and Passive Components - Part 7: Life Stress Modeling
3. Advanced for TIA/ANSI Publication Process
  - None
- 4 – FO-4.8 documents transferred to FO-4.3.1
  - No progress. Still open item; but just a matter of confirming status of documents. Item will be closed with help of FO-4.3 Chair before next meeting.

#### New Projects Approved for PN Balloting

- New Work Item proposal – FOTP for high resolution loss testing of low-loss fiber splices
- TSB-120 not withdrawn; Revise to remove “shall” and “must” and go to PN ballot afterwards
- TSB-130: guidelines for connectorizing PM fiber (review & reaffirm by 2006); Revise to remove “shall” and “must” and go to PN ballot afterwards

#### Projects Cancelled

- None

#### Standards Approved for Rescission Ballot

- None

#### ANSI Standards Reaffirmed

- None

#### TIA Standards Reaffirmed

- None

#### Other Businesses

- Chair of FO-4.3.2 Interconnecting Devices is stepping down. FO-4.3 will find a replacement before the next meeting.
- FO-4.3 WGs have started to look into FTTH PON products and possible new related document development.

### **3.3.6 FO-4.5, Fiber Optic Metrology, Lorenz Cartellieri**

Six (6) voting members were present (of 10 total) for the meeting and quorum declared. The June 2005 agenda and the January 2005 meeting report was approved.

Finished and Canceled Projects

PROJECTS	TITLE	STATUS
---	TSB-XXX, Connector Endface Inspection Instrumentation: Measurement and Application Issues	Development and scope of FOTP-238 under FO4.3.2 preclude need to develop this TSB. Discontinue this NEW BUSINESS item under FO4.5. Editor: Harvey Stone/AFL Noyes

Document review

Document Maintenance / Review Document Status

5430000	FO-4.5	Generic Specification Field Portable Electronic Instruments for Optical Fiber System Measurements
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A request will be made for a withdrawal ballot

455-179	FO-4.5	Inspection of Cleaved Fiber End Faces by Interferometry
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A request will be made to re-ballot and confirm as an FOTP

In-Process Projects

PN-3-0064A	TSB-141; PDL Meters: Measurement and Application Issues	Changes to remove normative “musts” into “shalls” have been approved and the document will be published this month (June)
PN-3-0066	TSB-143; Fiber Optic Power Meters: Measurement and Application Issues	Submitted for publication on June 2 Already authorized to submit for publication
PN-3-0065	TSB-142; Optical Return Loss Meters: Measurement and Application Issues	Closing ballot today (6/22) – 2 abstain, 9 approve (no comments), 5 ballots not returned Action: FO-4.5 authorized to submit this document for publications
PN-3438C	ANSI/TIA/EIA-455; Standard test procedure for fiber optic fibers, cables, transducers, sensors, connecting and terminating devices, and other fiber optic components	Published FO6.1.10. Editor: Dennis Horwitz/MICRONOR

New Business

PROJECT	SCOPE	ACTIONS
	Establish liaison between TIA FO-4.5 and IEC TC86 WG4 Fiber Optic Test Equipment Calibration (Chair: Marc Breton/EXFO)	Action: Lorenz Cartellieri to contact Jim Mathews
	MM OTDR calibration project Discussion on Multimode link measurements (attenuation) and review of measurement methods from 526-14 and how they affect measurement results / measurement	Action: Jim Hayes to add cover letter and submit as contribution to Bob Jensen. Action: monitor development of Relative Power Distribution measurement and US input into the IEC. Once method is accepted FO-4.5 plans to attempt a definition of proper launch condition for

PROJECT	SCOPE	ACTIONS
	uncertainty. Experimental measurements data was presented by Jim Hayes (FOA).	MM OTDRs. Action: Solicit contributions from MM OTDR manufacturers for the next meeting to present what they believe are issues driving MM OTDR calibration uncertainties
	Calibration of equipment used to inspect fiber optic endface / possibly already addressed in FOTP-238	Action: Find the original contribution from AFL / Noyes on a calibration ferrule and bring to the Jan 06 meeting. Lorenz Cartellieri
	Discussion on the proper test method for reference quality jumpers.	No specific action taken
		Invite contributions for the next meeting regarding recent development of PON rollout (as relevant to FO 4.5) Action: Lorenz Cartellieri

Summary Report from TIA FO4.5.1 WG on Round Robin Testing & Calibration (Chair: Tim Drapela/NIST)

PROJECT	SCOPE	ORG	WG	ACTIONS
TIA	Raman Gain RR	2004	FO4.2.3	RR completed in 2004
TIA	Return Loss RR	2003?	FO4.5.1	Artifacts are currently being circulated. 15 US participants and 12 international participants. NIST Coordinator: Tim Drapela-NIST Champion Lorenz Cartellieri/EXPERIOR Photonics
				Presentation of USMS road map / Tim Drapela NIST
TIA/NCSL	List of Industry Calibration Needs			On-going. Coordinator: Tim Drapela, NIST
TIA	Guidelines for Round Robins	2004	FO4.5.1	Draft developed was started during the FO 4.5.1 meeting in Mesa AZ Jan 05. No further development. Jim Hayes offered to make contributions. Author: Tim Drapela, NIST

## 4 NEW BUSINESS

### 4.1 NIST Initiative on the U.S. Measurement System (USMS)

Tim Drapela presented on NIST's initiative regarding the U.S. measurement system.

Using a broad definition of "measurement system", the community of stakeholder is expanded; notably, this includes private and public sector decision makers who need to understand the deep value of the measurement infrastructure. Most processes have some measurement costs. In some technologies, these costs can be very significant. In addition, metrology failures can be extremely costly – for example, poor metrology at later steps in a semiconductor fab that leads to wafer failure can cause the loss of millions of dollars of value.

The USMS developed as an ad-hoc system without central coordination. This is in contrast with EU and other countries, where measurement and documentary standards are developed with greater

coordination and may have the force of law. As a result, the US measurement system is facing many pressures. How do we meet these challenges? Can a more coordinated, more strategic approach add value?

The present system serves the country well, but there is room for improvement. In particular, the growing importance of standards to international competitiveness dictates that the United States – both private and public sectors – move quickly to strengthen the interface between the U.S. standards system and the international system. This need was pointed out clearly two years ago by industry in response to questions posed by the Department of Commerce as part of its Standards Initiative. NIST intends to obtain a higher-level view for system-wide planning purposes. This will provide all parties with the information needed to identify issues and coordinate responses.

We recognize the global challenges posed to U.S. competitiveness, in both the documentary and measurement standards arenas. Now more than ever, in an environment of increasingly scarce resources and many competing demands, we need to create and implement mechanisms that will enable both the public and private sectors to make informed choices about how best to invest resources to achieve the greatest impact. The initiative is based on gathering information to develop a strategic plan for the system. This roadmap will describe the needs and required actions to meet gaps and challenges. For the first time, we will attempt to describe the consequences of not acting. Clearly broad participation from stakeholders with a long-range view is required.

Information gathering has two major components:

- 1) ongoing public workshops held to discuss and identify issues, and
- 2) the integration of existing industry roadmaps that have measurement and standards content (e.g., TIA, IEEE, OIDA, etc. roadmap reports)

The major output will be regular reports describing the state of the US metrology system. Ideally, benefits from this work will include early identification of issues that allows a coordinated response for addressing the issues. Articulating the consequences of not acting will allow decision-makers to understand the impacts and effects.

The current timetable includes completing the first report at the end of 2006, and providing subsequent reports every 4 years. For this first attempt, there are several activities to gather information and comment on findings

#### **4.2 Telcordia update**

Osman presented an update on Telcordia. Telcordia serves wireline, mobile, cable, government, and equipment supplier markets around the globe with a portfolio that includes:

- Operations support systems
- Network services software
- Consulting, engineering, and testing services
- Research services

Telcordia Technologies in January 1984 was known as Bellcore. In November 1996, the name Telcordia Technologies emerged as it became a wholly-owned subsidiary of SAIC (Science Applications International Corporation). In March 2005, Telcordia Technologies was acquired by Warburg Pincus and Providence Equity Partners and is operated as a privately-owned independent corporation.

After the history of Telcordia, Osman reviewed the new documents developed, documents that were reissued, and the documents planned for reissue.

### **4.3 Recognition**

Steve recognized several members of FO-4 for their outstanding contributions to TIA and FO-4. These members include:

Peter Pleunis  
Tom Ball  
Bruce LeFevre  
Pin Su  
Matt Brown

### **4.4 Schedule review**

A schedule for the next meeting was discussed and will be developed further between this meeting and the January 2006 meeting.

### **4.5 Future meetings**

FO-4: January 24-26, 2006  
Embassy Suites Hotel Las Vegas  
4315 Swensen Street  
Las Vegas, Nevada 89119  
Phone: 702-795-2800; Fax: 702-795-1520

## **5 ADJOURNMENT**

The Chair thanked all the participants for their contributions during the week and the TIA Staff for their support.

The closing plenary meeting adjourned at 11 AM on June 23, 2005.

This meeting was conducted in accordance with the TIA Legal Guide and the TIA Engineering Manual.

Steve Swanson, FO-4 Chair

Bob Jensen, FO-4 Secretary