Approved by General Counsel

FO2 and FO6 Meeting Report
Date: 06/23/02
Location: Kiawah, South Carolina

Approved: 7/12/02
T# 6597

FO-2 Chair: Felix Kapron
FO-6 Chair: Steve Swanson
Secretary and EDC: Bob Jensen

June 26, 2002
Kiawah Island Inn
Kiawah Island, SC

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ADMINISTRATIVE

1.1 Call, to order

FO-6 Chair, Steve Swanson, called the opening plenary meeting to order on June 4, 2002 at 8:00 AM. This opening plenary session is intended for high-level liaison reports, to update members of committee meeting expectations, and to inform them of administrative essentials.

FO-6 Chair, Steve Swanson, called the closing plenary meeting to order at 2:00 PM on June 26, 2002. This closing plenary session is intended to summarize Subcommittee meeting activities and resolve issues arising throughout the week of meetings.

1.2 Attendance (quorum, introductions and roster)

Attendance at the closing plenary constitutes the FO-2&6 membership and quorum. A total of 24 attendees, including 8 voting companies and 16 others companies were present at the closing plenary. A quorum for the combined Engineering Committees was established. The attendees introduced themselves and an attendance roster was distributed for participants to sign.

Chairs:

				Plenary	
				Opening	Closing
Felix Kapron	Corning, Inc.	kapronfp@corning.com	607-974-7156		
Steven Swanson	Corning, Inc.	swansonse@corning.com	607-974-4252	√	√

Voting members companies present:

-- Jack Dupre	Agilent Technologies	jack_dupre@Agilent.com	707-636-9001	√	√
-- Dave Roland	Alcatel	dave.roland@cable.alcatel.com	828-459-8775		√
-- Tom Hanson	Corning Inc.	hansonta@corning.com	607-974-4530	√	√
-- Arthur Hudson	Defense Supply Center	arthur_hudson@dscc.dla.mil	614-692-0657	√	√
-- Kenneth Bow	DOW Chemical	kebow@dow.com	989-638-3759	√	√
-- Andre Girard	EXFO	andre.girard@exfo.com	418-683-0211	√	√
-- Rex Craig	NIST	rcraig@boulder.nist.gov	303-497-3359	√	√
-- Gair Brown	NSWCDD	browngd@nswc.navy.mil	540-653-1579	√	√
-- Allen Cherin	OFS Fitel	cherin@lucent.com	770-798-2619	√	√
-- Osman Gebizlioglu	Telcordia Technologies	ogebizli@telcordia.com	973-829-4956	√	√

Voting members companies absent:

-- Barry Cambeilh	Delphi Comm.	barry.cambeilh@delphiauto.com	949-660-5764	√	
-- Ken Marchman	Stratos Lightwave	kmarchman@stratoslightwave.com	708-867-9600		
-- Dennis Horwitz	Tempo	dennis.horwitz@rifocs.com	805-389-9868		

Other participants

Eric Morgan	3M	emmorgan@mmm.com	512-984-3550	√	√
Doug Atwill	ADC	doug-atwill@adc.com	952-233-7056	√	
Andrei Vankov	AI, Inc.	avankov@aifocs.com	508-541-3400	√	
Ray Lovie	Alcatel USA	ray.lovie@alcatel.com	828-459-8389	√	
Robert Conte	Avaya	rac07726@yahoo.com	732-817-3661		√
Jack Rosko	Berk-Tek, NEXANS	jack.rosko@berktek.com	919-552-4451	√	√
Jerry Shrimpton	CIENA	shrimpton@worldnet.att.net	303-674-0981	√	
John Abbott	Corning, Inc.	abbottgs@corning.com	607-974-6182	√	
Teresa Bazzle	Corning, Inc.	Teresa.bazzle@corning.com	828-901-5534	√	
Susan Grant	Corning, Inc.	Susan.grant@corning.com	828-902-2457	√	
Rob Johnson	Corning Inc.	johnsonr@corning.com	607-974-7359	√	√
Ed Kelly	Corning, Inc.	edward.kelly6@gte.net	717-730-2026	√	√
James Matthews III	Corning, Inc.	matthewsje@corning.com	607-974-7608	√	√
Greg Smith	Corning Inc.	smithge@corning.com	607-974-7134		√
Pin Su	Chorum	psu@chorumtech.com	469-330-5123	√	√
David Leight	Defense Supply Center	David.leight@dsoc.dia.mil	614-692-0521	√	√
Ernie Gonzalez	Delphi Comm.	Ernie.Gonzalez@delphiauto.com	410-560-1250	√	
Daniel Ernst	Diamond	pt@diamondfo.com	44917854595	√	√
Alan Whitebook	Diamond	awhitebook@diausa.com	661-702-9740	√	√
Peter Pleunis	Drake Fiber Tech.	p.pleunis@drakefibre.com	31.602958620	√	√
Halina Kosiorska	FiberSource, Inc.	halina@fibersource.net	864-277-7200	√	
Bob Jensen	Fluke Networks	robert.jensen@flukenetworks.com	512-514-7760	√	√
Joalyn.Lauzon	INO	joalyn.lauzon@ino.ca	418-657-7006	√	
Joe Allen	JDS Uniphase	joseph.allen@jdsu.com	732-380-2207	√	√
Michael Itano	Leviton Mfg	mitano@levitonvoicedata.com	425-415-7239	√	
Angel Molina	Lucent	amolina2@lucent.com	732-332-7052	√	√
Vuong Bang	MIPOX	vbong@mipox.com	510-785-0740	√	√
Tim Drapela	NIST	drapela@boulder.nist.gov	303-497-5858	√	√
Greg Obarski	NIST	obarski@boulder.nist.gov	303-497-5747	√	√
Iwano Shin'ichi	NTT America, Inc.	s.iwano@ntt-at.com	650-794-2722	√	√
Chris Blair	Noyes Fiber Systems	chris.blair@alcoa.com	603-528-7780	√	
Robert Throm	NSWCDD	thromra@nswc.navy.mil	540-653-4203	√	

Thomas Ball	OFS Fitel	teballzz@aol.com	717-939-8537	√	√
William Flegal	OFS Fitel			√	
William Gardner	OFS Fitel	wbgardner@ofsoptics.com	770-978-3218	√	√
Michael Kinard	OFS Fitel	mkinard@ofsoptics.com	770-798-2109	√	√
Paul Kolesar	OFS Fitel	pkolesar@lucent.com	732-949-1255	√	√
James Refi	OFS Fitel	jrefi@ofsoptics.com	770-798-2737		√
John Ritger	OFS Fitel	ritger@ofsoptics.com	770-798-2784	√	√
John Struhar	OFS Fitel	jstruhar@lucent.com	770-798-3281	√	
Frank Dundek	Panduit Corp.	fjdu@panduit.com	708-532-1800	√	
Jim Morikuni	RSoft Design Group	jim_morikuni@rsoftdesign.com	847-803-1710	√	
Brent Whitlock	RSoft Design Group	brent_whitlock@rsoftdesign.com	408-586-9360	√	
Lorenz Cartellieri	Tempo	lorene.cartellieri@rifocs.com	805-665-8909	√	√
Erich Rosenasd	Tempo	erich.rosenasd@rifocs.com	805-445-8733	√	
David Fisher	Tyco Electronics	david.fisher@tycoelectronics.com	717-986-5501	√	
Matt Brown	US Conec	mattbrown@vsconec.com	828-267-6327	√	
Stephanie Lane	Veeco Metrology	slane@veeco.com	970-494-3026	√	
Greg Maksinchuk	Veeco Metrology	gregm@veeco.com	520-741-1044	√	
John Spooner	Volex, Inc.	john_spooner@volexna.com	828-464-4546	√	
Robert Otto	Xanoptix	robert.otto@xanoptix.com	603-546-0613	√	

F0-2/6 Company attendance history: This does not constitute the quorum list, as companies need to be members of TIA and meet quorum requirements of the TIA Engineering Manual.

Company	3 meetings	Jun-02	Jan-02	Jun-01	Jan-01
Agilent Technologies	2	1	1		
Alcatel	2	1	0	1	1
Corning, Inc.	3	1	1	1	1
Defense Supply Center	2	1	0	1	1
Dow Chemical	2	1	1	0	1
EXFO	2	1	0	1	1
NIST	2	1	1	0	1
NSWCDD	3	1	1	1	0
Telcordia Technologies	3	1	1	1	0
Tempo	3	1	1	1	1

Note: Member companies absent from three consecutive 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 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.

1.3 Agenda review and approval (FO-2&6/02-06-013; FO-2&6/02-06-014)

The agenda was reviewed and approved.

1.4 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 2001 edition of the TIA Engineering Manual.

1.5 Chair's report; general items; elections (FO-2&6/02-06-025, FO-2&6/02-06-035)

At the opening plenary, Steve Swanson welcomed everyone to the meeting with a presentation containing items to be discussed. Steve presented Recognition Awards to Ed Kelly, Bill Wood, Felix Kapron, Mike Hackert, and Eric Loytty for their dedicated service to the FO Committees. Steve noted the importance of recognizing key contributors in a timely fashion and asked that he be notified 6 weeks in advance of the meeting with candidates for recognition so that proper preparations can be made.

Steve explained that the purpose for the opening plenary is to optimize time in our schedule by reducing redundancy, to keep members informed of administrative items, and to offer all members the opportunity to hear high-level liaison reports relating to other pertinent organizations. Steve stressed that members should be using conference calls, the reflector, and the FTP site for facilitating meetings and distribution of documents. The intent is to be doing all standards business electronically by January 2003. The reflector has been setup so that e-mail to all of the FO Committees can be sent using the address of foall@tiacomm.org in addition to methods already set for e-mailing individual committees. A reminder was given that elections will be held for all odd number Subcommittees at the January meeting.

1.6 TIA's report

TIA advised that their old e-mail addresses would not work at the end of the year. Their new addresses should be used in which the person's first initial and full last name should be used (e.g., Stephanie Montgomery; smontgomery@tia.eia.org, Billie Zidek-Conner; bzidekconner@tia.eia.org).

Susan Hoyler held a tutorial session at noon Tuesday to explain the activities of the IPR Statement Working Group that was initiated by the Technical Committee. A lot of work has gone into the development of a new statement, which is still being worked on and should be available later this year.

1.7 Distribution and numbering of documents

Document #	Contributor	Company	Title
FO-2&6/02-06-012	Steve Swanson	Corning, Inc.	January 2002 Meeting Report (Kauai)
FO-2&6/02-06-013	Steve Swanson	Corning, Inc.	June 2002 Opening Plenary Agenda (Kiawah)
FO-2&6/02-06-014	Steve Swanson	Corning, Inc.	June 2002 Closing Plenary Agenda (Kiawah)
FO-2&6/02-06-015	Steve Swanson	Corning, Inc.	ISO SC25/WG3 Liaison
FO-2&6/02-06-016	David Leight	DSCC-VAT	DoD Liaison
FO-2&6/02-06-017	Tom Ball	OFS	86B Liaison
FO-2&6/02-06-018	Osman Gebizlioglu	Telcordia	Telcordia Liaison
FO-2&6/02-06-019	Gair Brown	NSWC	FO-2.2 Items for week
FO-2&6/02-06-020	Rob Johnson	Corning	Laser Safety Liaison
FO-2&6/02-01-021	Tom Hanson	Corning	86A Liaison Report (PowerPoint)
FO-2&6/02-01-021a	Tom Hanson	Corning	86A Liaison Report (Word)
FO-2&6/02-06-022	Paul Kolesar	OFS	IEEE Liaison Report

FO-2&6/02-06-023	Allen Cherin	OFS	FO-2.1 Items for week
FO-2&6/02-06-024	Felix Kapron	Corning	86C Liaison Report
FO-2&6/02-06-025	Steve Swanson	Corning	Opening Plenary FO2/6 Report
FO-2&6/02-06-026	Mike Kinard	OFS	ICEA Liaison
FO-2&6/02-06-027	Bill Gardner	OFS	ITU Q.15/15 Liaison
FO-2&6/02-06-028	Stephanie Montgo	TIA	TIA Liaison
FO-2&6/02-06-029	Jerry Shrimpton	CIENA	ITU Q.16/15 Liaison
FO-2&6/02-06-030	Jim Matthews	Corning	ITU Q.17/15 Liaison
FO-2&6/02-01-031	Jim Matthews	Corning	FO-2.7 Items for week
FO-2&6/02-06-032	Jim Matthews	Corning	86C WG3 Update
FO-2&6/02-06-033	Ed Kelly	Corning	TC86 Liaison
FO-2&6/02-06-034	Stephanie Montgo	TIA	Electronic Tools
FO-2&6/02-06-035	Steve Swanson	Corning	Closing Plenary FO2/6 Report

1.8 Meeting report review and approval (FO-2&6/02-06-012)

The January 2002 meeting report was reviewed at the closing plenary. Kenneth Bow noted that he was at the January plenary meeting whereas it was not shown on the meeting report. The Engineering Committee unanimously approved the amended January 2002 meeting report.

OLD BUSINESS

1.9 Action item review

There were no action items to be reviewed at the opening plenary. Action items were reviewed at the closing plenary, which included:

Item #	Action:	Resp:	Status:
2002-01-001	Investigate FO-2.7 Web page access problem	TIA	Closed
2002-01-002	Review and update SC and WG scopes	SC Chairs	On-going
2002-01-003	Benchmark other SDOs like OIF and IEEE	TIA	On-going
2002-01-004	Develop proposal to establish formal liaisons with IEEE and other application groups	Allen Cherin	Open
2002-01-005	Develop a recommendation for FO-2/6 on reliability	Pin Su	Open
2002-01-006	Modify June schedule to increase FO-6.6 time from 2 to 4 hours on Wednesday	FO-6 Chair	Closed
2002-01-007	Move FO-2.2 to 8-12 on Tuesday	FO-6 Chair	Closed
2002-01-008	Move 2.3 to 4-6 on Tuesday	FO-6 Chair	Closed
2002-01-009	Prepare a TIA ballot for TIA-440	David Leight	Closed

1.10Liaison reports

1. TIA, Stephanie Montgomery (FO-2&6/02-06-028)

At the last meeting of the Technical Committee, an Ad Hoc Group was formed, led by the Standards Secretariat, to review and draft a new Style Manual. They completed a first draft of the manual and then discovered that it was not in compliance with the new ISO/IEC Directive 2. The Draft Style Manual was modified and is currently in final review by the Vice President, Standards and Special Projects. In addition,

the IPR Ad Hoc is in the process of developing a new contribution template, which will be incorporated into the Style Manual. After completing Vice President review and adding the new contribution template the Style Manual will be distributed to the Technical Committee for a 30-day ballot (planned for late July).

The IPR Ad-hoc Group was formed at the request of the Technical Committee. They have been meeting weekly since April 9th with their next meeting scheduled for late July. The major goals of the Ad-hoc Group are to tighten the IPR language, and change the language for the copyright of software source code so that it complies with ITU-T policy. They are also addressing the concerns of the government regarding their contributions because their contributions are all in the public domain and the government does not have IPR. Lastly they are looking at providing Chairs the authority to reject contributions if the contribution does not have the approved IPR language on the cover page.

The ANSI Subcommittee on accreditation reviewed the TIA Engineering Manual, issued June 1, 2001. Resulting from the review was that TIA is required to make immediate changes to some of the procedures that had been issued. The document released June 1, 2001 will be called the 2nd edition while the new release of the Engineering Manual will be called the 3rd edition (expected to be released by the end of June 2002).

The Engineering Manual Ad Hoc (EMAH), Chaired by Steve Swanson, will be recruiting participants for bi-weekly meetings which will start in September to address certain concerns in the TIA Engineering Manual. The EMAH will also work to ensure compliance with new ANSI procedures, which were released in January 2002.

The TIA Board of Directors determined that a merger with Committee T1 was not feasible at this time. Despite Press Releases late last year, TIA further investigated the impact of separating the SDO from the rest of TIA and concluded that the SDO spinning-off is not a positive move at this time. Resulting from these actions is that TIA will proceed with the same business model as past years.

The IEC Sector Board 4 (Telecommunications Infrastructure) currently has three members (Corning, OFS, and TIA). The purpose of the Board is to provide relevant marketing input to the work programs of the Technical Committee (i.e., TC86). This Board will also be developing a future trends paper that will be periodically updated. This initiative was raised as information to the Engineering Committees for awareness should others choose to join.

This year TIA will be audited by ANSI to ensure compliance with the policies outlined in the TIA Engineering Manual as approved by ANSI. This requires exhaustive checks by the TIA Standards Secretariat team to ensure that TIA has all the documents required by the Engineering Manual. In addition it was noted that TIA has applied to ANSI for accreditation using the "canvass" method of balloting. This will provide an additional method in which standards can be balloted.

2. T1X1, Ken Biholar

There was no T1X1 report.

3. DoD, Dave Leight (FO-2&6/02-06-016)

Twelve balloted TIA documents were reviewed since the January 2002 TIA meeting. There have been no major issues of contention.

MIL-C-28876 and all of its specification sheets are in final draft stage. There were 600-plus comments to the initial drafts. Comment dispositions have been sent to the respondents. Final drafts are being prepared.

The comment period expired for MIL-T-29504/4 and /5. Comment dispositions are being prepared. Numerous ferrule hole sizes are being added. New qualified sources are anticipated after completion of the document.

MIL-F-49291/1 (fiber) and MIL-C-85045/8 (cable) specifications are in final draft stage. These documents support Army TFOCA II cable.

TIA-440-B, Optical Fiber Terms and Definitions has been balloted. New terms have been added including definitions from military and federal standards. The voting period expires June 27th.

4. ICEA, Mike Kinard (FO-2&6/02-06-016)

In 2000, ICEA was reorganized into two Divisions: Energy Cables Division and Communication Cables Division. The Energy Division comprises three Sections: Power, Control and Instrumentation, and Portable. The Communications Division comprises two Sections: Copper and Optical Fiber. The Optical Fiber Section of the ICEA Communications Division is the unit corresponding to FO-6.

ICEA has three published optical fiber cable standards:
- ICEA S-83-596-2001, premises cable (revision)
- ICEA S-87-640-1999, OSP cable (revision)
- ICEA S-104-696-2001, indoor/outdoor cable (new)

S-640 is ANSI approved. S-596 and S-696 are awaiting ANSI approval, which has been delayed by excessive abstentions on the ANSI C8 ballot.

Currently-active ICEA projects include:
- 716, low temperature cable performance
- 717, drop cable (in its second draft)
- 718, sewer cable (requested by ASTM F36 to support their work on sewer-based access and distribution systems)
- 719, 1625 nm performance

Additionally, the subject of interconnect cable was investigated, however, there was insufficient support for the project.

The, Telephone Wire and Cable Systems Technical Advisory Committee (TWCS-TAC), has undergone a change in status. Its user membership had shrunk to the point that it was no longer viable as a stand-alone Standards formulating body. Therefore, it was collapsed into a Working Group of the ICEA Communications Division. Active TWCS-TAC projects of interest to FO-2/6 are:
- polyethylene (PE) weathering
- simulated rodent testing

Both projects are efforts to establish test protocols and baseline requirements.
- The PE weathering protocol was established a couple of years ago, and the testing has reached its initial milestone – a report is expected soon. Long-term testing is now underway.
- The gopher test project is developing a test protocol with live gophers to establish criteria for "calibrating" an electro-mechanical simulated "gopher" system for cable testing.

The ICEA Communications Division still awaits action by TIA on the long-proposed Memorandum of Understanding (or other currently-appropriate vehicle) to jointly issue optical fiber cable standards.

5. IEC 86A, Tom Hanson (FO-2&6/02-01-010)

Multimode Specs: The proposal for a Technical Specification with the requirements for 10 Gb/s transmission over A1 fibers was sidetracked and instead, a revision to 60793-2-10 was issued and commented upon. Resulting from an IEC 86A meeting were that substantial changes were agreed to the revision. Subsequently, a second CD ballot has been issued which includes environmental testing requirements. TAG members must offer comments on this document before August 2nd. The DMD test procedure passed the PAS ballot and will be published in parallel with ballot stage processing.

Single-mode specs: The proposal for a Technical Specification for environmental requirements was sidetracked and replaced by a revision. Comments made to this revision were agreed to at the meeting. In

addition, there was a proposal from the Netherlands to modify the low water specification to a constant single value for the entire band from 1260 nm to 1625 nm. As a result of discussion, the definition of the band was modified so as to terminate at 1310 nm, with a note indicating an expected 1260 nm performance level. Language was also agreed for the allowance of 1 atm hydrogen testing as an alternative to 0.01 atm testing.

Plastic fiber: A Task Group was formed to define the improved performance requirements for category A4 fiber.

Specialty fibers: A proposal from the US was reviewed to create a new Sectional Specification (plus family specifications) with requirements for photonic interconnection fibers. The group wanted more time to study the proposal, but indicated that if the project were adopted, the fiber type designation should be "C" rather than "B." A list of attributes that might be needed for the specification of EDFA fibers was also reviewed. A correspondence group was formed for further study of this work.

Inter-fiber compatibility guideline: A proposal from Italy was reviewed in which the group continues to support the concept and value of such a document. However, the group suggested that the scope and structure of the document be revised. A correspondence group was formed for further study of this work.

PMD measurement: It was noted that the very low PMD specification introduces issues due to the inherent sampling induced variability associated with the limited bandwidth of the measurement. The group agreed that the editorial addition of a guidance note on this issue should be added to the document before it goes to the CDV stage.

Nonlinear attribute measurement: The nonlinear coefficient measurement procedure recently closed (positive). The Raman gain efficiency measurement procedure will proceed to final ballot stage soon.

Nuclear radiation: The test and guidance document ballot comments were resolved resulting in a revised ballot to be issued in the next months.

OTDR guidance: Ballot comments were resolved and a new ballot will be issued.

Joint Working Group (JWG)
Fire performance: The JWG with SC46C is about to publish its results. This consists of a conclusion that three basic tests are satisfactory. TC20 has asked to participate.

PMD specs: There are proposals in the ITU to tighten the statistical specs to 0.2 ps/km$^{1/2}$ or to 0.10 ps/km$^{1/2}$, depending on fiber type and application need. The cable group should be aware of this.

Plastic fiber cable: TC100 has approved systems that include requirements on plastic optical fiber cable. A liaison was produced to inform TC100 that 60793-2-40 should be a basic reference. A Task Group was formed to study the possible need to define a cable family specification.

6. IEC 86B, Tom Ball (FO-2&6/02-06-017)

WG4: Circulated 9 documents for vote and comment in the past 5 months.
Key measurement documents under development include:

- 1685/NP, New Work Item Proposal for the Measurement of Group Delay and Chromatic Dispersion of Passive Components
- 1689/PAS, New publicly available standard (PAS) on Characterizing the Amplitude of the Spectral Transfer Function of DWDM Devices
- Visual Inspection of Polished Fibre Endfaces. This will support the work of WG6 on Optical Interface Standards. This was published as a PAS while developing a NP proposal

WG5: Circulated 1 document for vote and comment in the past 5 months.

Key Reliability documents under development include:

- 62005-1 Part 2-1, Example of quantitative assessment of reliability based on accelerated ageing test - Design of an acceptance test for fibre pistoning failure on connectors during temperature and humidity cycling; demarcation analysis (CD Level).
- 62005-8: Fundamentals of Reliability Theory (new)- In preparation and will cover the basics of reliability theory. It will give the background essential to the more advanced procedures for processing the experimental data called for in other parts.

WG6: Circulated 6 documents for vote and comment in the past 5 months
Key document types under development include:

- The release of the Optical Interface Standards; Level 1 General and Guidance, Level 2 fibre to fibre and Level 3 ferrule or fibre support mechanisms were approved to go out as New Work Item Proposals.
- In conjunction with WG7, the General and Guidance Document for Performance Standards that covers connectors, passive products and closures was released as a CD 1622. This document covers General Operating Service Environments, Common Performance Criteria, Sequencing and a Numbering scheme for individual Performance standards. A US proposal to have an outside plant category that mirrored the requirements of Telcordia GR-326 support was accepted providing the US could work out a set of acceptable environmental severities.
- MU Interface Std.- The Japan National Committee has now harmonized the MU ferrule dimensions with the LC Interface Standard.
- A new working draft for Interface Standards for Closures is being prepared. It is proposed to have four Parts; (1) Closure to Pit, (2) Cable Entry to Closure Base, (3) Organizer to Closure and (4) Fibre to Organizer.

WG7: Circulated 6 documents for vote and comment during the last 5 months

- Their focus has been on the previously reported progress in Performance Standards. As WG7 develops performance standards it has been necessary to insert new definitions within individual performance standards. At some point they are going to have to pause and incorporate these changes into a "definitions document".

7. IEC 86C, Jim Matthews for Felix Kapron (FO-2&6/02-06-024)

Jim Matthews provided an overview of the activities in IEC SC86C for Felix Kapron. The statuses of the projects being worked on in SC86C are included in the above referenced contribution. Noted in the contribution was that several projects need leaders assigned and drafts constructed. In addition, Felix achieved agreement that French translations must be completed before going to CDV circulation. The FNC agreed that they have been up to 6 months behind. Resulting from this agreement is that if the French translation is not complete in time, the documents will be issued in English only.

8. IEC TC86, Ed Kelly (FO-2&6/02-06-033)

IEC TC 86 will establish positions relative to the TC Fiber Optic meetings to be held on November 1, 2002 in Beijing, China. There have been no TC86 meetings since the last meeting of FO-6.

Working Group 4 and Working Group 8 experts have met since the last FO-2/6 meeting. Working Group 8 on Dynamic Modules had their first official meeting in London, England and discussed a new project "Single mode fiber optic dynamic channel equalizer for use in controlled environments (Category C)". They also produced an NP for Reliability. Working Group 4 met and discussed comments received on 86/180 CDV (IEC 62129 Ed 1 0 Calibration of Optical Spectrum Analyzer) and moved the document to FDIS status. They also moved 86/175/FDIS [IEC 61746 ED 1: Calibration of Optical time domain reflectometers, (OTDRs).

The SMB met twice since the last meeting of FO-6 once in February and again in June. As previously noted in the FO-2/6 meeting report, TC 86 had Questions of Principle regarding Internal PAS's. The first

had to do with combining the forms used in balloting on PNWI, which was approved by the SMB. The second had to do with empowering officers to select projects from approved PNWI for Internal PAS processing, which was disapproved. TC86 still has an outstanding item on Liaison D status for TIA.

9. IEEE 1222 and 1638, John Smith

There was no IEEE 1222 or 1638 report.

10. IEEE 802.3, Paul Kolesar (FO-2&6/02-06-022)

Two Task Forces are working on standards relevant to TIA FO because they contain optical technology. These are 802.3ae on 10-Gigabit Ethernet, and 802.3ah on Ethernet in the First Mile (EFM). The next plenary is –July 8-11 in Vancouver. See www.ieee802.org/3 for details.

IEEE approved the 10-Gigabit Ethernet standard on June 13, with publication expected in July. The closure of this standard represents a major success for TIA FO, as we delivered a suite of documents defining new laser-optimized 50 μm fiber that includes a new test procedure for Differential Mode Delay, FOTP-220, and a new detailed fiber spec, 492AAAC. These documents represent the culmination of many months of work by FO-2.2.1 and solidified the acceptance of this new media within the 10-Gigabit Ethernet standard.

The EFM Objectives are firming up. Changes in recent months are highlighted in red in the presentation. Major changes include: extended temperature specs only on LX (1310 nm), allowance for 100 Mb/s operation on both dual and single SMF, an additional objective for a 20-km P2MP (EPON), and optional use of multiple copper pairs.

The EFM Task Force continues adopting proposals for the baseline document to be circulated within the Task Force as Draft 1.0. The group moved quickly on P2MP operation, already adopting seven proposals. The adopted optical PHY and PMD proposals include eight different transceivers. All single-fiber PMDs employ two wavelengths, one upstream and another downstream. OAM functionality proved controversial, as the Task Force adopted only the in-frame method and rejected the preamble method. And, while the copper-based solutions progressed on PHY definitions, the Task Force continues to deadlock on copper PMDs.

11. ISO/IEC JTC1 SC25/WG3, Steve Swanson (FO-2&6/02-06-015)

Steve Swanson provided a liaison report from ISO/IEC JTC1/SC25/WG3 highlighting a summary from the February 2002 Kyoto, Japan meeting where the WG approved the second edition of 11801 on Building Cabling for publication.

Swanson reviewed the fiber specifications and noted that a liaison was sent to IEC SC86A for the purposes of cross-referencing international fiber designations.

The next meeting will be hosted by the US September 23-27 in McLean, VA.

12. ITU Q.15/15, Bill Gardner (FO-2&6/02-06-027)

The Recommendation on SM Test Methods was subdivided into three smaller Recommendations:

- G.650.1; Definitions and test methods for linear, deterministic attributes (consented)
- G.650.2; Definitions and test methods for statistical and non-linear attributes (consented)
- G.650.3; Test methods for installed single-mode links

The U.S. Proposal for new PMD_Q values of 0.10 and 0.2 ps/$(km)^{1/2}$ was not accepted; a Correspondence Group is being chaired by Tom Hanson (Corning).

NTT/CLPAJ proposed a new Rec. G.scl for a non-zero dispersion-shifted fiber that would operate in the S, C, and L bands; D. Tanaka of Fujikura chairs a Correspondence Group preparing a draft for the next meeting.

Rec. G.654 (Cut-off shifted SM fiber and cable) was consented.

13. ITU Q.16/15, Jerry Shrimpton (FO-2&6/02-06-029)

The activities of ITU Q.16/15 were reviewed. The following documents are given updates in the presentation noted above.

- Draft new Rec. G.694.1 (ex G.wdm.1)
- Draft new Rec. G.694.2 (ex G.wdm.2):
- Draft revised Rec. G.664, Optical Safety Procedures:
- Draft revised Rec. G.959.1:
- Draft new Sup.dsn
- Draft new Rec. G.capp
- Intra-Domain Interface
- Future revision of G.691
- Optical performance monitoring
- Proposed draft descriptions of longitudinal and transverse compatibility distributed and views exchanged.
- Proposed draft scope statement for IaDI Recommendation distributed and views exchanged.

14. ITU Q.17/15, Jim Matthews (FO-2&6/02-06-030)

Text was agreed to be added to Recommendation G.671 (Optical Components) to include Asymmetric Branching Components: Definitions &Values; and Reflectance as preferred for by ITU-T. Noted was that IEC SC86B prefers the term return loss, IEC SC86C prefers reflectance used for optical amplifier documents, and TIA uses a mix of the terms.

New work will begin on Appendix II for Recommendation G.663 to enable 40 Gb/s applications, and include PMD requirements (to align with IEC document).

A revision to both Recommendation G.661 and G.662 may occur. As they are similar to IEC 61291-1, work will likely be coordinated with IEC SC86C/WG3.

There is a possible supplement that may be introduced on Raman Amplification and a new Recommendation on PMD compensators.

15. Laser Safety Standards, Rob Johnson (FO-2&6/01-06-020)

IEC SC86C WG3 is proposing a ‘user guide’ on the safe use of high optical power. The aim is to reduce complexity of interpreting IEC 60825-1 and -2. Otherwise progress is slow:

- IEC 60825-2 ‘Safety of Optical Fiber Communication Systems’ revision is likely to advance to CD stage by October 2002.
- IEC 60825-12 ‘Safety of Free Space Optical Communication Systems’ will advance to CDV stage by October 2002.
- IEC TC31 WG8 draft on ‘Safe use of fiber optics in hazardous environments’ had circulated in May 2002 for comment.
- There have been no ANSI Z.136 meetings for over 12 months.

1.11Liaison letters received

There were no liaison letters received by FO-2 or FO-6.

1.12Reports on pending projects, Subcommittees

16. FO-2.1, Single-Mode Systems, Allen Cherin

The Subcommittee discussions centered on common issues related to the work in IEC SC86C WG1. Many of the documents originated in the TIA as OFSTP's. The documents are currently being developed in the IEC Working Group with the intention of adopting the published IEC documents as TIA documents. The following documents were discussed:

- Time Resolved Chirp Measurement – IEC 61280-2-7
- Optical Eye Pattern, Waveform and Extinction Ratio Measurement – IEC 61280-2-2
- Guideline for the Calculation of PMD in FO Systems – IEC 61282-3
- Data Analysis of BER versus Received Power – IEC 61280-2-Y, OFSTP-5 (It is likely that this document will become an annex to a power penalty document)
- Measurement of Average Q-Factor – IEC 61280-2-10
- Jitter and Wander Measurement – IEC 61280-2-3
- Jitter Transfer Function Measurement – IEC 61280-2-5
- Receiver Sensitivity and Overload – IEC 61280-2-1
- Central Wavelength and Spectral Width Measurement – IEC 61280-1-3
- Transmitter Output Power Measurement for Single-mode Fiber Optic Cable – IEC 61280-1-1

Liaison Reports from the following groups related to work in FO-2.1:

- FO-2.7 – SC on Optically Amplified Devices, Subsystems, and Systems
- IEC SC 86C WG1 on Fiber Optic Subsystems
- ITU-T Question 16/15 on Terrestrial Systems
- IEC SC 86C WG3 on Optical Amplifiers
- IEC SC 86C WG4 on Active Components and Devices

In FO-2.1.2, Gair Brown gave an update on the status of the 'Single-mode System Design Guideline'. A draft of the design guide is expected at the January meeting.

Topics related to polarization mode dispersion (PMD) measurements of installed links were discussed in FO-6.6.5 due to the limited time allotted to FO-2.1 at this meeting. A four-hour time slot is requested for the January meeting of FO-2.1.

17. FO-2.2, Digital Multimode Systems, Gair Brown

FO-2/6 Proposed Restructuring

S. Swanson (Corning) briefed the Subcommittee on the possible restructuring of the TIA FO-2 and FO-6 Engineering Committee. The sentiment of the FO-2.2 Subcommittee was that the current FO-2.2 Subcommittee and the FO-2.2.1 Working Group are functioning well. No structural changes within FO-2.2 would seem to be necessary. There was additional discussion regarding the concentration of all multimode work projects under the auspices of FO-2.2. There was no objection to the incorporation of additional multimode projects (currently under other FO-2/6 Subcommittees) into the FO-2.2 Subcommittee. Some of the efforts currently underway in FO-6.6.10 may be candidates for incorporation into FO-2.2 under the restructuring. In addition, Mr. Swanson asked that the FO-2.2 Subcommittee accept the responsibility to review applicable IEC documents and coordinate technical responses back to the appropriate US Technical Advisory Groups (TAGs) for IEC 86A and IEC 86C.

Report of Working Group FO-2.2.1

FO-2.2.1 continues to make progress on improved multimode bandwidth measurement methodologies for high bit rate laser based systems.

An interim meeting was held on 5/14/02 at IBM's Watsontown Research Center as well as several teleconferences since our last FO meeting. The WG also met on Monday, June 24, 2002.

Corning presented an updated version of their approach to calculation and specification of effective modal bandwidth from DMD information (EMBc). The presentation covered the advantages - improved alpha and beta risk from improved correlation between measurements and predicted values. The presentation also included validation of the methodology using both the TIA model data set and actual empirical results. Integral in the calculation is the adjustment to the bandwidth metric to account for non-Gaussian behavior such as pulse splitting. With the appropriate metric, Corning showed that the EMB results from the original modeling used to develop the 10 Gb standard correlated to ISI and system performance.

Lastly, the presentation covered what documents need to be changed in order to incorporate this recommendation. The changes would set up this calculation method as a second option for specifying 850 nm Laser Optimized 50 um fiber. It also would set up the documentation to allow the committee to do additional development as scalability is confirmed.

FO-2.2.1 agree that the scope of work:

- Should apply to all 50µm fibers (500-2000+)
- Should apply to 2-4 Gbps VCSELs and 10
- Work may proceed in 2 phases

FO-2.2.1 recommended the following ballot authorizations

- New EB FOTP (recommend to FO-2.2 and approved)
- Revision to FOTP-220 (recommend to FO-6.6)
- Revision to 492AAAC (recommend to FO-6.6)
- TG 2.2.1 to determine when we are ready for ballot

Jim Morakuni of Rsoft presented on new software for multimode fiber simulation that has been developed at Rsoft. The software allows the user to develop a fiber library of profiles and the ability to simulate modeling for the performance of that fiber and an architecture for all modeling work including proprietary solutions.

FO-2.2.1 also recommends that FO-6.6 consider disbanding FO-6.6.10 and shift all multimode test methodology to FO-2.2.1. The rationale here is that the critical mass of multimode experts resides in FO-2.2.1.

Finally, the WG would like welcome Peter Pleunis of Draka Fibre Technologies as the new Chair. The WG also expressed it sincere appreciation to Mike Hackert for all his support in his role as the former Chair.

High Performance Parallel Interface – 6400 Mbit/sec Optical Specification

G. Brown (Navy) reported that the FO-2.2 comments on the draft HPPI specification were updated after the January FO-2.2 meeting and circulated over the FO-2.2 reflector for review. After review, the comments were submitted via email to the document author, Don Tolmie. Mr. Brown reported that Mr. Tolmie had responded via email that the NCITS T11.1 Task Group (the group that developed the standard) had disbanded and that technical changes to the document would be difficult. However, Mr. Tolmie indicated that the document was in process for circulation for public review by the NCITS. Mr. Brown indicated that he had not found the review announcement and asked the Subcommittee if he should submit the FO-2.2 comments once the ballot announcement was located. Discussion ensued resulting in the Subcommittee agreeing that G. Brown should submit the FO-2.2 comments to NCITS as part of the review process and also provide the comments under TIA letterhead to the NCITS committee.

TIA-785 "100 Mb/s Physical Layer Medium Dependent Sublayer and 10 Mb/s and 100 Mb/s Auto-Negotiation on 850 nm Fiber Optics" (SP-4360)

C. Montstream (Ortronics) reported that the Addendum 1 to TIA-785 had been circulated as a TIA ballot. The results of the ballot were 2 votes of abstention, 13 votes for approval, and 2 votes for approval with

comments. The comments were all editorial in nature. Due to the fact that the original standard is ANSI approved, the TIA ballot is not sufficient for publication of the addendum (that is, a TIA addendum cannot be published to an ANSI standard). Permission to proceed to an ANSI ballot was requested and approved. In addition, publication of the document was approved in the event that no technical comments are received from the ANSI ballot.

TIA-626 Reaffirmation or Revision
G. Brown reported that TIA-626 is required to undergo reaffirmation or revision by the end of 2002. Although the document is in need of revision to address higher bit rates and new source technology (e.g. VCSELs), the document revision is not a project that can be completed in a timely fashion. The currently published version is still technically valid within its stated scope. It is expected that it will take a minimum of two years to revise TIA-626. The Subcommittee voted to reaffirm TIA-626 and initiate efforts to update the document as required.

FO-2.2 Document Status

Document Number	Author	Publication Date	Status
TIA-785	C. Montstream Ortronics	5/24/01	Due for 5-year review in 2006
TIA-626	G. Brown NSWC	12/1/95	Subcommittee to decide to reaffirm or revise at June 2002 meeting.
TIA-526-14	None	6/24/1998	Due for 5 year review in 2003

Correlation of CPR and Optical Loss Measurements
G. Brown provided a presentation summarizing work by the Navy to investigate the correlation of optical source CPR and connector/cable assembly loss measurements using that optical source. Key points of the presentation were that within design classes of sources, CPR measurements do have good correlation with optical loss measurements. However, there are at least two or three design classes of optical in the marketplace, with distinctly different correlations between CPR and optical loss. The Navy has investigated combining the characterization of optical source CPR with a characterization of the optical source high order mode power (HOMP) to more completely characterize an optical source for testing purposes. The HOMP characterization utilizes the application of a standard TIA mandrel to the optical fiber and characterizes the HOMP as the power removed by the standard mandrel. Connector and cable assembly loss measurements correlate extremely well with HOMP measurements. The use of both the CPR and HOMP parameters to characterize the optical source provides for very robust correlation of optical connector/cable assembly losses between optical sources. Mr. Brown also discussed efforts to minimize the uncertainty in the CPR measurement itself. Originally the procedure was developed to be an approximately +/- 0.5 dB type of measurement. It was recommended that the Subcommittee consider modifications to the CPR test apparatus (specifically, optical fiber specifications) to promote increased measurement precision in the CPR measurement.

100/1000 Mbps Short Wavelength Ethernet Standard
J. Coffey (ADC) reported on the efforts of the 100/1000 Mbps Short Wave Task Group. Current efforts are directed at gathering experimental data on the interoperability between VCSEL based and LED based 100 Mbps implementations. The initial testing used approximately 2 km fiber lengths and approximately 13 dB of optical loss. No interoperability issues have been identified. Additional testing will be conducted by the next meeting. Initial observations are that the VCSEL based transceivers exhibit lower levels of electromagnetic emissions as well as lower power consumption and lower heat generation. Questions were raised regarding power levels during the auto-negotiation process. Right now the prototype units dynamically adjust optical power levels as the units progress through the auto-negotiation algorithm. The Task Group has done preliminary investigations into market potential/market acceptance of a 100/1000 Mbps type of product. There is commercial interest, but this issue will be studied further before the January FO-2.2 meeting. The Task Force will provide additional information and recommendations regarding the development of a standard at the January FO-2.2 meeting.

FOLS Request for Support

Fusion Splicing of Multimode Fiber. FOLS has requested information from FO-2.2 regarding the effects of fusion splicing on multimode fiber launch conditions. There is concern that in high data rate multimode systems with critical launch condition requirements that fusion splices may unacceptably alter the fiber launch conditions. Discussion ensued. G. Brown noted that in early launch conditions studies by the Navy, that the changes in mode power distribution through a fusion splice were minimal (as compared with connectors). The subcommittee members noted no other data on launch condition alterations by fusion splices. Concern was expressed as to the effects of low quality fusion splices. G. Brown was asked to respond to the FOLS that there was very little data available pertinent to the question, but that the effects of high quality fusion splices was expected to be minimal. Further, the response is to indicate that if the FOLS can provide optical source samples, that the FO-2.2 Subcommittee is willing to characterize the effects of fusion splice samples on the mode power distribution present in the samples.

TR-42 Request for Support

TSB on Field Measurement of Fiber Cable Loss. TR-42 has requested assistance from FO-2.2 and FO-6.1 in the development of a TSB addressing the field measurement of fiber optic cables per TIA 526-14 and TIA 526-7. TR 42 feels that clarifications in the applicability of the various test procedures is necessary. G. Brown noted that such a TSB should address the impact of source launch conditions on the measurement results. G. Brown was asked to respond to TR-42 that FO-2.2 will support the development of the proposed TSB, and note that the inclusion of information on the usage of appropriate source launch conditions is a critical area that the TSB should address. In addition, G. Brown is to provide a copy of document number FO-22-02-08 to the TR-42 Subcommittee for information and further discussion.

Nomination of a new FO-2.2.1Working Group Chair

Nominations for the position of Chair of the FO-2.2.1 Working Group were discussed. Peter Pleunis (Draka Fibre) was unanimously affirmed as the new Chair of FO-2.2.1.

> *Chairs note: I wish to note our great loss in Mike Hackert's departure as Chair of FO-2.2.1. Mike's successful management of the difficult technical tasks within the Working Group, his personal diligence in supporting the technical tasks within the Working Group, and his attention to detail were a critical factors in the successes of the FO-2.2.1 Working Group. His presence will be greatly missed within TIA.*

18. FO-2.3, Opto-Electronic Sources & Detectors, Robert Gallenberger

FOTP on Measurement of Frequency Response of Digital Receivers

G. Brown (Navy) distributed a draft of a new FOTP on the Measurement of Frequency Response of Digital Receivers. The procedure is based on a rough measurement procedure included in the IEEE 802.3 standard. The document was revised to incorporate comments received at the January TIA meeting. Mr. Brown asked Subcommittee members to review the draft procedure and provide comments back to the author. The draft document will be sent out for TIA ballot.

TIA Restructuring

The possible restructuring of the TIA FO-2 and FO-6 committees was discussed. There were no objections within the Subcommittee to possibly combining the Subcommittee with the FO-2.6 Subcommittee. G. Brown noted that he had communicated with the current Chair, B. Gallenberger (SSC), and that Mr. Gallenberger would no longer be able to perform the duties of FO-2.3Chair and that he would not be a candidate for Chair at the January 2003 meeting. J. Allen (JDSU) expressed interest in possibly assuming the duties of FO-2.3Chair.

19. FO-2.6, Reliability of Fiber Optic Systems and Active Optical Components, Pin Su

Pin Su, Chorum Technologies and Chair of FO-2.6, discussed the possibility of combining this Subcommittee's efforts with that of FO-2.3. A need is apparent to recognize a role for coordination of reliability. Additionally, a re-numbering of the FO-2.6 Subcommittee will eliminate confusion between the FO-2.6 Subcommittee and the FO-2/6 Engineering Committee.

Rob Johnson provided a review of the IEC project on reliability of dynamic modules. Rob asked for time at the January meeting to provide an overview of a document that is under development in the IEC. A New Work Proposal is anticipated within the IEC this week. FO-2.6 decided to follow this work closely.

John Osenbach, Agere, gave an overview presentation on MEMS Technology and Reliability. Noted were several Telcordia documents addressing some of these needs and potential issues including:

- Armature stability, flatness of mirror surface over time
- Packaging issues: Many wirebonds/interconnections - higher density than IC's for interconnections
- Most MEMS devices hermetically sealed, sensitive to moisture and corrosion
- Ingress and egress fiber and lens arrays (1000+ ports)
- High voltage electronics - humidity and leakage currents

The Subcommittee agreed to develop a Project on MEMS Reliability. A scope for the project will be addressed at the January meeting.

20. FO 2.7, Optically Amplified Devices, Subsystems and Systems, Jim Matthews

Jim Matthews reported that there was an April interim meeting of F)-2.7 in Atlanta, GA in conjunction with a T1X1 meeting, therefore the agenda for this meeting was "light". Items discussed during this meeting included:

- Optical Amplifier Metrology - Obarski (NIST): RIN Standards
- IEC Activity including Laser Safety
- Future meeting schedule - Conflict with ITU-T schedule and State Department Committee B Requirements
- Possible Contributions for ITU-T Experts Meeting
- Question 16/15
- Question 17/15
- Updated position document on Intra-domain interfaces (IaDI)
- IEC / ITU Issues of Reflectance/Return Loss (FO-6.3 and FO-2.1 implicated)
- IEC Reliability of Optical Amplifiers (Publication due early July which will be a strong candidate for back adoption)

21. FO-6.1 Fiber Optic Test, Measurement & Inspection Instrumentation, Rex Craig for Dennis Horwitz

Several project have been published in May 2002 including SP-3-0032, IEC 61746: Calibration of Optical Time-Domain Reflectometers (OTDRs), to be published as TIA/EIA-455-226; SP-3-0033, IEC 61744: Calibration of Fiber Optic Chromatic Dispersion Test Sets, to be published as TIA/EIA-455-224; and, SP-3-0034, IEC 61745: End Face Image Analysis Procedure for the Calibration of Optical Fibre Geometry Test Sets, to be published as TIA/EIA-455-225.

The projects in process include PN-3-0066 (TSB-143), Fiber Optic Power Meters: Measurement and Application Issues; PN-3-0065 (TSB-142), Optical Return Loss Meters: Measurement and Application Issues; PN-3-0064 (TSB-141), PDL Meters: Measurement and Application Issues; TIA/EIA-455, Standard Test Procedure for Fiber Optic Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices, and Other Fiber Optic Components; and, rescission ballots for the TIA-573XXXX series for Field Portable

Tools. A note was also mde that the revision text for TIA-455 regarding calibration text has not been completed.

For new business there are two projects being processed. These include: (FOTP-XXX) IEC 61315: Calibration of Fibre- Optic Power Meters (Ed.1) for back adoption; and, TSB-XXX: Polarization Modal Dispersion Meters: Measurement & Application Issues.

With the departure of Mike Hackert, FO6.1.10 will be folded into FO6.1 beginning with the Jan-2003 meeting with a 4-hour time slot. For full summary of FO6.1.10 and IEC TC86 WG4 activities, refer to the minutes of the FO6.1.10 meeting on 6/25/2002. The following FO6.1.10 items are being highlighted here as the most noteworthy activities and issues:

- IEC 61315: Fibre-Optic Power Meter Calibration Ed.2
- IEC 62129: Calibration of Optical Spectrum Analyzers Ed.1
- Tba (IEC-XXX): Reference Receiver Calibration Ed.1
- Tba (IEC-XXX): Wave Meter Calibration Ed.1
- Tba (IEC-XXX): Return Loss Meter Calibration Ed.1

A liaison was provided by Bob Jensen from TR-42 requesting FO-6.1 interest in participating in writing a TSB on testing that will help installers understand proper testing methods for OLTS and OTDRs.

22. FO-6.3, Fiber Optic Interconnecting Devices & Passive Products, Tom Ball

One documents advanced for SP ballot:

- FOCIS 2 (BFOC) Connector (SP Default)

Several documents advance for TIA publication including:

- FOCIS 5B (MTP/MPO) Connector
- FOCIS 13 (SFOC) Connector-- Conditional on comment resolution
- FOTP 198 PDL by Muller Stokes Method—Conditional on comment resolution
- FOTP 229 High Power Characterization – Conditional on comment resolution

There were no new projects approved for ballot:

Projects that are being cancelled include:

- FOTP 205 (3-4725) Amplitude Response Measurement of Narrow Band Passive FO Components

Standards approved for rescission include:

- 475CC00 Blank Detail for FSMA, Cat III
- 475CB00 Blank Detail for FSMA, Cat II
- 475CA00 Blank Detail for FSMA, Cat I
- 475C000 Sectional for FSMA
- 475E000 Sectional for BFOC/2.5
- 475EA00 Blank Detail for BFOC/2.5, Cat I
- 475EB00 Blank Detail for BFOC/2.5,Cat II
- 475EC00 Blank Detail for BFOC/2.5,CatIII

Standards approved for ANSI reaffirmation include:

- FOTP 189 Ozone Exposure
- FOTP 190 Low Air Pressure (High Altitude)

Standards approved for TIA reaffirmation include:

- FOTP 23A Air Leakage Testing
- FOTP 26A Crush Resistance Testing

- FOTP 36A Twist Test

Working Group Changes:
- 6.3.3 Ferrule/Fiber Geometrical Measurement (Dissolved)
- 6.3.6 Splices & Enclosures (Dissolved)
- 6.3.1 Adhesives Reliability rolled back into 6.3.8 Passive Component Reliability
- 6.3.4 Intermateability Standards, new chair-Greg Sandels, OFS

23. FO-6.6, Optical Fiber, Greg Smith

FO-6.6.1, Round robins and Glass Geometry, approved balloting the adoption of IEC 60793-1-20 as replacement of FOTP-176. Within FO-6.6.5, Single-mode Measurements, the Working Group agreed to merge with FO-6.6.9. FO-6.6.5 also approved publication of revision 1 to FOTP-122. In addition to other Working Group consolidations, FO-6.6.7 and FO-6.6.8 have decided to merge their efforts. FO-6.6.8 had also decided to approve a new Project (as an ITM) regarding fiber break analysis. Also affecting FO-6.6.8 are activities in NEMI regarding packaging of splice and connectors. FO-2/6 has agreed to write a liaison requesting clarification of their objectives and scope while informing them of TIA's activity. FO-6.6.7 agreed to form a position on the MM/SM CENELEC proposal, to discuss specialty fiber proposals, and existing specifications, 60793-2-10, A1 multimode and 60793-2-50, single-mode specifications. Within FO-6.6.10, a number of test procedures were reviewed and agreement reached to move the work of FO-6.10 to FO-2.2.1, thereby disbanding FO-6.6.10 in consolidation efforts. Additionally, agreement was reached to forward ownership of the FO-6.6 multimode documents to FO-2.2. Pending agreement with FO-2.2.1, FO-6.6.10 approved the revision of FOTP-220 DMD to incorporate calculated effective modal BW (EMBc) (PN0008), and a revision of the Detail specification 492-AAAC (PN0035) to add EMBc. Overall, FO-6.6 approved action on 41 documents.

24. FO-6.7, Subcommittee On Fiber Optic Cables, Michael Kinard

FO-6.7 Chair Eric Loytty, Corning Cable Systems, retired in early 2002. Since FO-6.7 was due for elections in January 2003, FO-6 Chair Steve Swanson appointed Vice-Chair Mike Kinard, OFS, to the Chair and Andrew Straw, CCS, as Vice-Chair. Subsequently, Straw suffered a layoff from CCS, and no CCS replacement had been identified. Scott Chastain, Sumitomo, agreed to step in as Secretary for this one meeting.

The Subcommittee recognizes the need to harmonize TIA standards with IEC standards. A significant problem is that TIA cable standards are much more focused and contain a lot more detail than the international standards. Making our FOTPs "fit into" IEC test methods is possible to be accomplish in the near-term. Harmonization the other way will require a paradigm shift in either TIA (less-specific documents) or in IEC (standards narrower than the barn door), or both.

Documents to be listed for reaffirmation at the next Subcommittee meeting include:
- FOTP-12, fluid immersion
- FOTP-38, fiber strain in TL&B
- FOTP-41, compressive loading
- FOTP-91, twist-bend
- TIA/EIA-590A, physical location and protection of below ground cable

FOTP-12 needs reformat and updates to references, but no technical changes. TIA-590 was written by FO-2.5, now disbanded thereby making FO-6.7 the most logical group to accept ownership of the maintenance activities.

Documents to be listed for rescission at the next subcommittee meeting include:
- TIA-4720000-A, cable generic spec
- TIA-472C000-A, indoor sectional
- TIA-472CA00, all-dielectric indoor blank detail
- TIA-472D000, OSP sectional

- TIA-472-series still left

There are huge discrepancies amongst the Subcommittee records, the Secretariat database, and the FO-6.7 Document Manager's database (Art Hudson's document database at DSCC) on which of the 472-Series have been rescinded (years past) and which are being held for the ICEA/TIA joint action. FO-6.7 decided to do a blanket rescission on all of them – redundant or not – to clear the books.

There are several existing "final closing" cycles on FOTPs for which the Subcommittee has no knowledge of status. Some of it is due to layoffs of the authors. Some is due to unexplained loss of documents between the authors and the Secretariat. Some of it is due to confusion and disagreement amongst the several records and databases.

FOTP-82, EIA/TIA-455-82, ***Fluid Penetration Test for Fluid-Blocked Optical Fiber Cable***, has been reaffirmed by Subcommittee vote.

Bill Gardner gave a detailed status report on PMD, L-band work in ITU. He reported that L-band does seem to be stable and that there is a lull in the PMD work. However, 40 Gb/s work will require drastic lowering of PMD link values.

With regards to TIA-598C, issues in color coding remain very active. The need for Revision C of 598 has been recognized for a long time. The use of aqua for high-speed laser-optimized MM fiber cables is the current practice by those in that business. Expansion of the basic colors from 12 to 18 is desired by at least two of the member companies--for both fiber colors and tube colors. A Task Group, led by Soo-Gun Oh of OFS, will work on the details of the additional six names and order. Colorimeter instruments have seen a significant improvement in recent years, and may now be used for color matching and color measurement in lieu of the visual standards (Munsell) method. Colorimeters usually use L*a*b values rather than Munsell H*C*V criteria. The Task Group will investigate existing test procedures for their use to determine if a new FOTP is needed.

A TIA/ICEA MOU had been initiated in 1996 in which the objective has been to allow TIA numbering of ICEA cable standards to provide a seamless link from the TIA system to the US National Standards. TIA was requested to look into the status of the MOU.

ICEA S-596 & S-696 is stuck in ANSI C8 committee. ANSI C8's scope included "...insulated...electrical wires and cables…" , and was intended for copper-based media – mostly power cables. C8 is expanding their scope to include telecom and will need telecom members to support the work.

25. FO-6.9, Polarization Maintaining Fiber, Connectors And Components, Rex Craig

One Project Proposal had been published since the January meeting: Keying Accuracy of PM Connectors (IEC 61300-3-24), published as ANSI/TIA/EIA-455-227. The projects in process include: PN-3-0019; TSB130, Generic Guidelines for Connectorized PMF/PZF Cable Assemblies, and PN-3783; FOTP-199 In-fiber Polarization Crosstalk Measurement for Highly Birefringent Optical Fibers.

A presentation was given by Paul Hernday on various methods for measuring Beat Length. Most of the industry now uses the PMD method when the measurement is required. Consensus of the Subcommittee was that there was no need for a specific Beat Length FOTP.

FO-6.9 has evolved over the years from "FO Sensors" to "PM Fiber, Connectors and Components" as sensor participation has dwindled. It is expected that current projects will be completed by January 2003. If no new projects arise, then FO-6.9 will propose disbanding.

NEW BUSINESS

1.13Other

26. Re-structuring of FO-2/6, Steve Swanson

Steve introduced the concept of consolidating FO-2 and FO-6 into one Engineering Committee with nine (9) Subcommittees, thereby reducing complexity. In earlier years it was easier having components and systems separated. Today, however, the components and systems have become even more interactive. The Subcommittee Chairs solicited their Subcommittees to determine if any detriments were apparent to consolidation. There were no negative comments received to the restructuring of the Engineering Committee. However, a few items were discussed and agreed to:

- The Engineering Committee would become FO-4.
- The Subcommittee numbering would be consistent with the past numbering inasmuch possible (e.g., FO-2.1 to become FO-4.1).
- Consent agendas would be included at the Subcommittee level for re-affirmation of TIA maintenance documents (one motion needed for a grouping of documents). ANSI documents will be required to be balloted. Discussions will be held in Subcommittee rather than in the Engineering Committee.

Steve Swanson made a motion to consolidate FO-2&6 into FO-4 as noted above. Seconded by Mike Kinard.

Plenary action: The motion was unanimously approved.

A second request was made to transfer all multimode related documents to FO-2.2. Tom Hanson made a motion to transfer responsibility for multimode documents to FO-2.2 under the new structure.

Plenary action: The motion was unanimously approved.

The timing for all transfer of responsibilities for FO-2&6 to FO-4 were agreed to happen as quickly as possible and no later than by the January meeting. TIA was asked to initiate all changes within the TIA structure and WEB site. All Subcommittees and Working Groups were reminded to review and approve their Scope Statements at the January meeting. The FO-4 Engineering Committee will include:

FO-4, Fiber Optics, Steve Swanson, Chair; Bob Jensen, Secretary

FO-4.1, Single-Mode Systems, Allen Cherin, Chair

- FO-4.1.1, Single-Mode Transmission Design, Gair Brown (Corresponding)

FO-4.2, Digital Multimode Systems, Gair Brown, Chair

- FO-4.2.1, Modal Dependence of Multimode Fiber Bandwidth, Peter Pleunis

FO-4.3, Interconnecting Devices, Tom Ball, Chair; Andre Girard, Secretary

- FO-4.3.1, Fiber Optic Connector Intermateability Standards, Greg Sandels
- FO-4.3.2, Connector Documentation, Doug Atwill
- FO-4.3.3, Passive Component Reliability, Bruce LeFevre

FO-4.4, Reliability and Characteristics of Active Optical Components, Pin Su, Chair; Jim Matthews, Secretary

FO-4.5, Optically Amplified Devices, Sub-systems and Systems, Jim Matthews, Chair

FO-4.6, Optical Fibers, Greg Smith, Chair; Tom Hanson, Secretary

- FO-4.6.1, Single-mode Fibers, Jim Refi
- FO-4.6.2, Fiber Coatings and Fiber Reliability, Eric Urutti; Harish Chandan

FO-4.7, Optical Cables, Mike Kinard, Chair

- FO-4.7.1, Color Coding of Fiber Optic Cable, J. Peters
- FO-4.7.2, Hydrogen Effects on Cable, Jack Rosko

- FO-4.7.3, Fiber Optic Ribbon Test Procedures, Jon Fitz
- FO-4.7.4, Cable Impact Test, John Smith

FO-4.8, Passive Fiber Optic Devices, Rob Johnson, Chair

FO-4.9, Fiber Optic Metrology, Dennis Horwitz, Chair; Rex Craig,Secretary

- FO-4.9.1, Round Robin Testing and Calibration, Tim Drapela

27. Document database, Steve Swanson

Steve discussed with the Subcommittee Chairs that the document database needs to be updated. It was recognized that there are a couple of databases and that they do not match. The group agreed that a column should be added to include the editor. Additionally, the Subcommittee Chairs agreed to take on the responsibility to update the document list at the Subcommittee level rather than in the Engineering Committee.

28. Meeting locations, Steve Swanson

Steve noted that TIA will be moving to recommending meeting locations. Several members noted that resorts are not favorable as meeting locations. Items most would like to see include two line phones within rooms, broadband access, and low cost room rates. FO-2/6 members also asked for a survey to be sent out by TIA asking for their opinion of the meeting facilities. The January 2004 meeting location was requested to be in the Southwest US (e.g., Tucson, AZ; Austin, TX; San Antonio, TX; Scottsdale, AZ). A request was made to look into moving the dates of the meetings to February and August.

1.14Action items derived from this meeting

Item #	Action:	Resp:	Status:
2002-01-002	Review and update SC and WG scopes	SC Chairs	On-going
2002-01-003	Benchmark other SDOs like OIF and IEEE	TIA	On-going
2002-01-004	Develop proposal to establish formal liaisons with IEEE and other application groups	A. Cherin	Open
2002-01-005	Develop a recommendation for FO-2/6 on reliability	P. Su	Open
2002-06-001	Investigate discontinuing V-card attachments from TIA	TIA	
2002-06-002	Provide meeting location standards from TIA for January 2004	TIA	
2002-06-003	Investigate and provide update on moving forward with MOU with ICEA	TIA	
2002-06-004	Survey attendees as to satisfaction of meeting facility arrangements	TIA	
2002-06-005	Restructure of FO-2/6 into FO-4	S. Swanson	
2002-06-006	Send information to all FO Committees of what wireless adapter cards are best suited for LAN	TIA	
2002-06-007	Liaison letter to NEMI regarding packaging for splice and connectors	S. Swanson H. Chandan T. Ball	
2002-06-008	Provide TIA with January 2004 meeting location to be in the Southwest USA	S. Swanson	

Item #	Action:	Resp:	Status:
2002-06-009	Place document database on the WEB for all projects so that it can be updated and maintained.	TIA	
2002-06-010	Transfer responsibilities for FO-2&6 to FO-4 by no later than by the January meeting. Initiate all changes within the TIA structure and WEB site.	TIA	
2002-06-011	Subcommittee Chairs to include elections within their agendas for odd number Subcommittees	SC Chairs	
2002-06-012	Review feasibility of moving meeting times to February and August	S. Swanson	

NEXT MEETING, INTERIM MEETINGS, FUTURE MEETINGS

1.15Next meeting

January 13-16, 2003

Hyatt Regency Tampa
Two Tampa City Center
Tampa, FL 33602813/225-1234
813/273-0234-Fax
http://tamparegency.hyatt.com/property/index.jhtml
Rate: $140.00
Cut-off date: December 11, 2002

1.16Future meetings

29. 2003 Meetings

June 23- ,2003, Portland, OR

ADJOURNMENT

The opening plenary meeting adjourned at 10:15 AM on June 24, 2002. The closing plenary meeting adjourned at 5:30 PM on June 27, 2002.

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

Steve Swanson, FO-6 Chair

Felix Kapron, FO-2 Chair