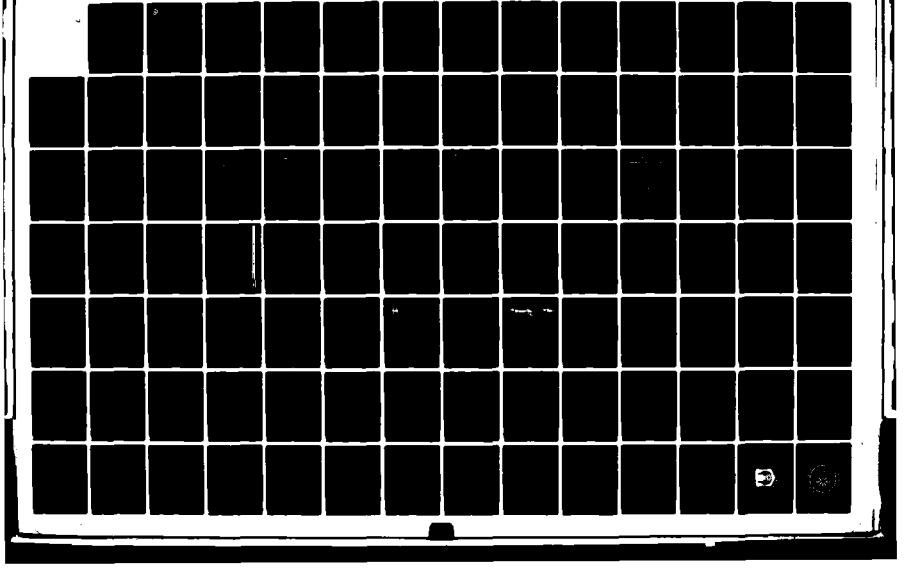
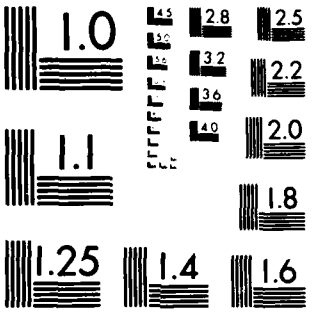
AD-A142 152 MINUTES OF THE FIBER OPTICS STANDARDIZATION PLANNING MEETING HELD AT DAYTON OHIO ON 1-3 AUGUST 1983(U) DEFENSE ELECTRONICS SUPPLY CENTER DAYTON OH 12 DEC 83 1/2

UNCLASSIFIED F/G 20/6 NL





DEFENSE LOGISTICS AGENCY
DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OH 45444

IN REPLY REFER TO DESC-ESS (Mr. Hudson/(AV) 986-6093/sgo)

12 DEC 1983

SUBJECT: Minutes of the Fiber Optics Standardization Planning Meeting Held 1 - 3 August 1983

TO: Military Distribution

1. The minutes of the subject meeting are enclosed.

2. Agreements, as reported, will be included in the initial draft of the Standardization Program Analysis for Fiber Optics (FSG-60) 1985 thru 1989.

FOR THE COMMANDER:

29 Encl

ARTHUR C. HUDSON
Chairman

cc:
Attendees

Minutes of the Fiber Optics Standardization Planning Meeting, 1-3 August 1983

INDEX OF ENCLOSURES

NUMBER	SUBJECT
1	Welcome by Brig. Gen. Anthony F. Albright, USA
2 (w/5 Att)	Presentation, DoD Policies Affecting Fiber Optics
Att 1 (w/2 Att)	EOP/Management and Budget Office Memorandum, OMB Circular No. A-119, Federal Participation in the Development and Use of Voluntary Standards
Att 2	DMSSO Letter, 26 Aug 82, Nongovernment Standards
Att 3	Under Secretary of Defense Memorandum, 7 Mar 80, Metric Specifications and Standards
Att 4	Standardization and R & D Military Structure Chart
Att 5	Listing of Standardization Documents of Interest
3	Report on EIA Fiber Optic Systems and Components Council
4	Report on NATO Allied Publications for Fiber Optics Components
5	IEC Report, 1 Aug 83, FSG60 Program Analysis
6	DESC-EMD Report on Status of Fiber Optics
7	Report on EIA Fiber Optic Parts Committee EIA P6
8	IECSC, International Electro-Technical Commission Subcommittee 46E on Fiber Optics
9	IEEE Activity Report 1 Aug 83, Fiber Optic Standardization Program Analysis (FSG60)
10	Report on EIA Fiber Optic Parts Committee EIA P6
11	MIL-STD-188-111 Update
12	EIA TR-44, Optical Communications Systems Committee Report
13	CCITT Study Group XV, Digital Line Systems Working Party, Fibre Optic Systems Status Report
14	CCITT Study Group XV, Fibre Optic Working Party Status Report

Minutes of the Fiber Optics Standardization Planning Meeting, 1-3 August 1983
Index of Enclosures, continued.

NUMBER	SUBJECT
15	AFLC Fiber Optic Management Initiative Plan
16	Fiber Optic Technology Center Briefing
17	List of DoD Spokesmen in Fiber Optics
18	Status Report for EIA Working Group P-6.4, Fiber Optics Materials, Components, Assemblies and Accessories
19	Overview of an Investigation of the Near-Infrared Radiation on the Retina of the Rhesus Monkey
20	Report on Cleaved-Coupled-Cavity (C^3), Semiconductor Lasers
21	EIA P-6.6 Working Group Report on Optical Fibers and Materials
22	Report on Factory Splicing of Optical Waveguide Fibers
23	Presentation on Qualification Testing of Heavy Duty Six Fiber Cable
24	EIA P6.7 Fiber Optic Cable Committee Report
25	Alert, LC-A-82-01, Cable, Electrical, Polyurethane Jacket
26	IEC SC 46E Working Group 5 Status Report on Terminal Devices
27	EIA P6.3 Report on Fiber Optic Working Group on Interconnections
28	Report on EIA P-6.1 Committee on Fiber Optics
29	Attendance Roster, DoD Fiber Optics Meeting, 1-3 August 1983

Hutterfield

FSG 60, FIBER OPTIC STANDARDIZATION
PLANNING MEETING MINUTES
1 - 3 AUGUST 1983
DAYTON, OHIO

A-1

1. The meeting was opened at 1300 by Mr. Arthur C. Hudson, Chairman.

2. Brigadier General Anthony F. Albright, United States Air Force, Commander of the Defense Electronics Supply Center (DESC) welcomed the attendees. See Enclosure 1 for text.

3. No opening statements were presented.

4. Mr. Hudson gave administrative announcements and presented the objectives of the meeting as follows:

a. Review existing standardization problems and update program schedule.

b. Identify new standardization problems and develop a program of action for each.

c. Inform attendees about standardization activites happening in Fiber Optics (FOs).

d. Provide some technical papers on FOs.

e. Provide a forum for open discussion on FOs.

5. Mr. Hudson gave a presentation on DoD policies affecting FOs (see Enclosure 2). The primary points covered were:

a. The standardization program, "Why Standardize?"

b. Use of industry documents.

c. Exceptions to industry documents.

d. Qualification restrictions; two or more source requirements will be enforced.

e. Metrics - mandatory for DoD.

f. Standardization early in the technology.

6. Mr. Hank Dorris of American Bell gave a presentation on the EIA Fiber Optic Systems and Components Council and the proposed Fiber Optic Standards Steering Committee (see Enclosure 3).

7. Mr. Richard Thomas gave a report on NATO Allied Publications (AStanPs) for FO components (see Enclosure 4).

8. Mr. William O'Hirok gave a report on the activities of the International Electro-Technical Commission Subcommittee (IECSC) 46E on FOs (see Enclosure 5).

9. Mr. Richard Schade of DESC gave a report of the present and future planned military activity (see Enclosure 6).

10. A report of the overall activities of the EIA Fiber Optic Parts Committee (EIA P6) was given by Mr. Joseph Neigh, EIA P6 chairman (see Enclosure 7).

11. A report of the activities of the Society of Automotive Engineers (SAE) AE9C on FO Systems and MIL-STD-1773," Fiber Optic Databus", was given by Mr. Rod Katz of the the Naval Avionics Center (NAC), Indianapolis, Indiana (see Enclosure 8).

12. Mr. William Schumaker of AMP, Inc. gave a report on the FO activities in the Institute of Electrical and Electronic Engineers (IEEE) committees (see Enclosure 9).

13. A report on the functions of the Fiber Optic Tri-Service Steering Committee for R & D was given by Mr. Katz. There is a need to develop a data base to establish new decisions. More R & D money is needed according to Mr. Katz (see Enclosure 10).

14. Mr. Anthony Russo of the National Security Agency gave a report on the purpose and status of MIL-STD-188-111, "Tactical Long Haul Fiber Optic Systems" (see Enclosure 11).

15. Mr. Dorris gave presentations on EIA TR44 activities (see Enclosure 12) and CCITT study group 15 activities (see Enclosures 13 and 14).

16. A presentation on the AFLC Fiber Optic Management Initiative Plan (see Enclosure 15) was given by Mr. Burt Thompson.

17. Mr. Dennis Burman of McClellan AFB, California gave a briefing on the FO Technology Center being established there (see Enclosure 16).

18. Following the above presentations an open discussion session was held. Mr. Dorris asked the following questions:

a. How will DoD replace stress damaged sections of FO cable?

b. Will salt spray damage stressed cable? He warned that it probably would.

He stated that there was a need for life testing of FO components and systems. Mr. Louis Coryell of the Army stated that most failures are localized and, in most cases, can be spliced . Gopher/rodent damage and tanks turning on the cable are problems experienced to date. The Army does not have data on salt spray damage or results of life testing. Mr. John Kacur of Vitro Labs stated that FO cable specifications should specify waterproof testing to eliminate salt spray damage. If it does not he would like to be made aware of specific cases.

19. Mr. Hudson presented a list of DoD spokesmen who have been assigned to FO industry associations (see Enclosure 17) and gave a run-down of their responsibilities. He requested feedback concerning corrections and additions to the list of systems using FOs which appears in the program analysis. He requested data be provided to improve the program analysis on various types of usage of FOs.

20. Mr. Marvin McNeil gave a report on the EIA P6.4 committee activities on FO testing. Mr. McNeil is the chairman of that committee (see Enclosure 18).

21. Discussion was opened on test methods (problem ES-82-60GP-E-01). Mr. Hudson requested the status of DOD-STD-1678. Mr. Stan Mickel, NAC, said that meeting minutes of the DoD working group set up to review EIA documents could give the status. He stated that EIA test methods were not adequate and that DoD changes have been extensive. The working group does not know what EIA will do with the DoD comments. Mr. John Cook, Naval Air Engineering Center, has a project to update DOD-STD-1678 but has not had time to do so. He recently has been provided additional manpower. Mr. Cook is awaiting data from the Jan 84 EIA P6 meeting. If EIA satisfactorily revises EIA test methods they will be used; otherwise, DoD will write their own. A draft of DOD-STD-1678 is expected to be circulated in Apr 84. Mr. Neigh stated that the author of each test procedure must answer each comment. Many military comments on EIA test procedures said "not acceptable" but did not state why. Too many comments are received on documents already published.

Mr. Steve Searcy, DESC, admitted that many comments had not been forwarded in a timely manner. He stated that the new working group method will improve the quality and timeliness of DoD comments.

Mr. Neigh complained that there had not been enough participation at industry working group meetings. EIA will provide responses to DoD comments received prior to publication. Comments received after publication will be kept for the next revision. Revisions are on a five-year cycle but special projects will be established, if justified.

Mr. Schumaker, AMP Inc., suggested that DoD provide the name of the commentor with each comment so that document authors will be able to discuss problems with individuals who initiated the comment. This was endorsed by Mr. Neigh and Mr. Doug Briggs. DoD's position is not to provide the name because what is being provided is the DoD position, not individual comments. Mr. Schade has sent 27 pages of comments so far. The next meeting of the working group is scheduled for the first week of November.

Mr. Neigh complained that EIA did not understand some comments. Who should they address their questions to? Mr. Schade requested they go to the service representatives.

Mr. Hudson reiterated that the DoD comments are not individual comments but the results of individual comments; therefore, feedback must be to the DoD working committee chaired by Mr. Schade. EIA feedback on DoD comments should go to Mr. Schade, and should be in writing, as it will go back to the working group for discussion.

22. Discussion was opened on program analysis number ES-83-60GP-E-05 (short length tests on FO cables and fibers. Mr. Dorris stated that the National Bureau of Standards (NBS) has agreed to define a short distance fiber.

Mr. Schumaker asked if DoD really needs any such tests.

Mr. Ceber Simpson, NAC, replied that tests for attenuation band width and refractive index profile are required on 100 meter lengths. Some NBS work shows a need for these and other tests.

Mr. Hudson stated the problem would be retained and updated and that DoD and industry people need to work together.

23. FO test equipment (ES-83-60GP-E-06) was discussed next. Mr. Hudson stated that the DoD position at this point is that test equipment for FOs should be classified in FSC 6625, not FSC 6070. Documentation is needed for test equipment regardless of the classification.

Mr. Neigh stated that EIA differentiates between lab and field equipment and handles them in two separate committees. "Does DoD do the same?"

Mr. Hudson replied that there are separate classes for test equipment and lab equipment but he did not think it applied here. He asked if any catalogers would comment. There were no comments. Mr. Hudson asked what other test equipment other than attenuation testers and optical time domain reflectometers (OTDRs) are needed. Bandwidth testers were mentioned.

Mr. Nat Kronstadt, NKA, stated that special equipment should be listed as part of each FOTP. EIA can list only generic types.

Mr. Chuck Kleekamp, Mitre Corp., suggested fusion splicers be covered also. In Mitre documents the equipment was defined in terms of manufacturer model numbers. He endorsed the requirement for documenting test equipment and usable generic requirements.

24. Engineering handbooks were discussed next (problem ES-83-60GP-E-02). The presentation on the engineering design manual was cancelled. Mr. Ken Becker, Scott AFB, (618-256-4589) contracted for this document as a technical order. Mr. Robert Lebduska of NOSC was the author. Mr. Rod Katz stated data was available and that CCITT will publish two volumes on systems and components in FY84.

25. Installation practices (ES-82-60GP-E-03) was next on the agenda. There was no discussion or update on this problem. Mr. Hudson requested the services to get the data into Mr. John Cook at the Naval Air Engineering Center, Lakehurst, NJ 08733.

26. Safety (ES-82-60GP-E-03) was next on the agenda. Mr. Dorris gave a paper entitled "An Investigation of the Near-Infrared Radiation on the Retina of the Rhesus Monkey" (see Enclosure 19). The second draft of ANSI Z136.2, "American National Standard for the Safe Use of Optical Fiber Communications Systems Utilizing Laser Diode and LED Sources", dated April 26, 1983, was mentioned.

It is 55 pages long which is too long to include as an enclosure. Draft copies may be obtained from Mr. Ron C. Peterson, Bell Labs, RM1F101C, 600 Mountain Ave., Murray Hill, NJ 07974, telephone 201-582-6442, who is the ANSI Z136.2 committee secretary.

27. The area of FO terminology/symbology (ES-82-60GP-E-04) was addressed next. MIL-STD-1864 (symbology) was issued in Jun 83. EIA P6.2 is still working on an industry document; no progress was reported. IEEE STD-812, "Fiber Optic Glossary", was scheduled to be issued in Oct 82. It is an outgrowth of NBS Handbook 140 (NTIA79-4). As of Oct 83 the 812 had not been issued. EIA P6.2 is working on a document that has IEEE-STD-812 in it as well as additional terms. DoD should adopt whichever one gets ANSI approval first; the alternatives being a military standard, or adoption of the NBS Handbook 140. Mr. Schumaker stated that a symbology document for systems will be developed by EIA TR44 and P6.2.

28. Metrication of FO (ES-83-60GP-E-01) was the next issue. Mr. Hudson noted that a DoD metric plan is in effect and is covered by appendix II to the program analysis. Mr. O'Hirok stated that the way to get "metric" is to get metric requirements in contracts or to give preference (preferably monetary) to hard metric components. The problem appears to be the lack of international business for components for U. S. manufacturers. This issue will be addressed at the International Standards Engineering Society Conference in September, and the DoD Standardization Conference in October.

29. The problem of radiation hardened components (ES-83-60GP-E-07 and ES-83-6010-P-01) was addressed. Mr. Kacur asked for the status of EIA P6.6 and the NOSC program. Mr. Hudson requested him to contact Mr. Roger Greenwell of NOSC. Mr. Kacur requested that there be a coorelation of the various activities. Mr. Hudson referred him to the steering committee listed in the program analysis. Mr. Hudson noted that much of the information on this subject is classified. AT&T has a contract with The Defense Communications Agency (DCA) on radiation effects on systems. There is a radiation requirement in DOD-C-85045, Fiber Optic Cables. Mr. Kleekamp suggested that Mr. Schade of DESC invite Mr. George Segal, NRL, to the upcoming DOD-C-85045 meeting. Problem ES-83-6010-P-01 will be incorporated into ES-83-60GP-E-07.

30. New devices were discussed (ES-XX-60GP-E-04). No new devices were presented. There is R & D going on in multiplexing/demultiplexing schemes and associated hardware. Mr. Dorris presented a paper entitled "Cleaved-Coupled-Cavity (C3) Semiconductor Lasers" (see Enclosure 20).

31. Discussion of FSC 6010 was turned over to Mr. Briggs who gave the EIA P6.6 report (see Enclosure 21). He stated that the revised draft of EIA RS 492 on fibers is due out Sep 83.

32. Single-mode fibers (ES-84-6010-P-02) were discussed next. EIA P6.6.5 has been established to cover single-mode fibers. No drafts have reached the proposal stage.

33. Fiber specifications and standards (ES-82-6010-P-02 and ES-84-6010-P-01) were discussed. Work on RS 492 has fallen far behind schedule. Unfortunately, only ten of the 40 test methods referenced in the document have been published. Drafts on step and quasi-step index fibers have been circulated. It was noted that EIA RS 458 and RS 459 on materials and dimensions of fibers were rejected by DoD. IEC 693 on fiber sizes has been adopted. RS 458 and RS 459 need to be combined into one document. RS 458 is being updated to include other fiber sizes. Mr. Kacur asked how the military determined that EIA RS 458 and 459 were unacceptable. Why could DoD not use the two documents? RS 458 could not be adopted because the tolerances on the fibers ±6 micrometers was too large. DoD required ±2 micrometers . RS 459 was rejected because DoD already had a classification system under DOD-C-85045 which was completely different. In addition, both EIA RS 458 and 459 were very small and cost $6.00 each. Combining them would be cost effective. AMP, Inc., does not expect to buy DOD-C-85045/1 fibers. Can DoD accept the EIA standard? According to Mr. Hudson, the government will coordinate on the next revision; adoption may or may not occur. Mr. Briggs stated that his group had removed tolerances from the EIA standard. He asked how his group could get feedback from the military. His committee has been able to get input from manufacturers of "All Plastic" fibers. Mr. Hudson stated that DoD personnel must directly participate more in the P6.6 committee. DoD will comment on drafts through the working group as well. Mr. Dorris asked why DoD had to have ±2 micrometers tolerance. He suggested DoD review tolerance requirements to see if they can be loosened. Mr. Hudson stated the tight control was to improve the concentricity between core and cladding and was needed to improve termination to connectors. The DoD will relook at the requirements in September when DOD-C-85045/1 will be recoordinated. Mr. Kleekamp said that DOD-C-85045/1 tolerance was ±4 micrometers which the manufacturers felt they could meet. Is ±4 micrometers OK? He asked if there was a need for plastic clad silica fibers or are they becoming obsolete. Mr. Hudson stated that there are some applications. Mr. Kleekamp stated that 100/140 micrometer and 50/125 micrometer fibers will suffice for most applications at the present technical level. Mr. Hudson agreed. No one knew of an application using 200 micrometer core fibers. Mr. Hudson pointed out that there are other fiber characteristics that need to be standardized besides the fiber sizes.

Mr. Katz stated that system requirements must be reviewed to make decisions. Mr. Briggs has two papers bearing on the problem concerning selection of fiber sizes. Single copies can be obtained from him (see Enclosure 29 for his address and phone number). Mr. Kleekamp recommended standardization on only the two sizes. Mr. Robert Rosell, the Air Force representative, agreed. The Army is working with the 50/125 fiber sizes; the Navy is using both sizes. IEC 693 was DoD adopted in Jan 83 and contains both and the 200 micrometer core for plastic clad fibers. It was asked if the government was thinking of going to single-mode fibers or if it is more cost effective in present applications. Mr. Hudson said none was known to the DoD people present. Mr Coryell, the Army representative, stated that the Army is in the planning stages for new projects using data and video in systems weapons which will probably start next year. Use will be made of 35-50 megabits to over 100 megabits, or even higher resolution. That makes single-mode fibers look promising.

34. Mr. Douglas Briggs followed the fiber discussion with a paper on Factory Splicing of Optical Waveguide Fibers (see Enclosure 22).

35. Discussion next turned to fiber optic cables, FSC 6015. Mr. Ron Ohlhaber gave a presentation entitled "Qualification Testing of Heavy Duty Six Fiber Cable" (see Enclosure 23).

36. Mr. Ramesh Sheth gave the EIA P6.7 report (see Enclosure 24).

37. Problem ES-82-6015-P-02 on DOD-C-85045 was next on the agenda. Unless NAVAIR takes action on DOD-C-85045 the PA may be changed. There is much activity in cables and since there is much upgrading to be done the rest of DoD cannot wait. NAVSEA, through NAVELEX, is planning to issue a ship's version of DOD-C-85045. Nuclear and thermal radiation requirements must be addressed. There are about eight requirements covered by the existing and proposed draft sheets which are not in the basic. EIA RS 472 on fiber optic cable has not yet been issued. DOD-C-85045 must be maintained until details of adoption can be worked out. Many of the referenced FOTP's have not been issued. The problems of referencing military documents and the qualification program are still being worked on. Mr. Kacur asked what was the chance of DoD accepting the EIA generic. Mr. Hudson responded that every attempt will be made to adopt it. We may adopt the generic and sectionals and write military detail specifications only. A problem with use of polyurethane as a cable jacket has been identified. Mr. Rosell stated that the AF had found that it outgasses cyanide vapor particularly when exposed to flame. New DOD-C-85045 specification sheets are being delayed because of this. A copy of the GIDEP Alert is given in Enclosure 25. Contact points within DoD are:

AFLC/IGYG -	Phone 513-257-7131
AFMRL/SGBD Maj. Talley Lt. Wiegal	Phone 513-255-3807
4950 ABW/AMFP Burch Voorhees	Phone 513-255-5813
Brooks AFB, TX Mr. Hillsberry	Phone 512-536-3626

Ms. Patricia Isaacs of B. F. Goodrich, spoke briefly on the problem. She stated that the circumstances under which cyanide is generated are unusual and questioned if it really was a problem. She will continue discussions with the above individuals. Mr. Dorris asked if this was covered by the National Electric Code. There will be a SPI urethane convention the first week in November. If this continues to impact DOD-C-85045 it will be put in as a problem in the program analysis.

Mr. Tom McMahon, Siecor Corp., stated that the DOD-C-85045 specification sheets appear to be design specifications. Does DoD intend to continue with design specifications? According to Mr. Hudson they will continue because sufficient detail is required to insure interchangeability. Mr. McMahon said there was more detail than required. Mr. Hudson said that would be corrected. Mr. Rosell says they will cover designs needed by the Air Force. Mr. Kacur asked where the DOD-C-85045 working committee is to get inputs. It was suggested that

DESC-EMD get comments with copies to Messrs. Klekamp and Cook, NAVAIR. EIA RS 472 (cables) has been reformatted and is due for release by the end of 1983.

38. Submarine cable (ES-82-6015-P-03) was the next agenda item. Mr. Dale Stump, the Navy representative, said that the final draft of a new basic specification is in preparation and due to go to printing about the first week in September. It will not be a "use-in-lieu-of" DOD-C-85045 document. This document supports SUBACS and AEGIS programs of the Navy. Mr. Hudson regretted that NAVELEX, who took over from NAVSEA as preparing activity, did not hold with the agreement established between NAVSEA and the assignee activity to make the document a "use-in-lieu-of" document.

39. Avionics cables are covered under problem ES-82-6015-P-04. The Air Force has not started a specification sheet for this. The Navy has been working on a specification sheet using 140/100 fiber for several years. If the documents are military specifications they will conform to MIL-STD-961. If they are EIA documents they will be in the IECQ-System format. This was Mr. Hudson's response to a question put forth by Mr. Kacur. His reply was that it seems wasteful to develop the document in one format and later change it to the other format. Now that the IECQ format is being better defined by EIA, DoD can start to address the format issue.

40. Space cables were next on the agenda (problem ES-83-6015-P-01). Mr. Dean Storm of Aerospace Corporation, who is the DoD expert in this area, was not present. There was no discussion.

41. Problem ES-83-6015-P-02 was next covering Air Force communication cables. According to Mr. Rosell the program plan was accurate and the projects are on schedule.

42. Problem ES-83-6015-P-01 on fusion splicing techniques was addressed. Mr. Dorris stated that much information is available. Mr. Hudson asked if a list of documents could be provided.

Mr. Dorris suggested a bibliography search through TDIC and contact with the Defense Nuclear Agency. The general consensus was that no one wanted a standard enough to write it. EIA P6.1 spokesman, Mr. Douglas Parker, G & H Technology, said that field splicing and factory splicing were very different. Mr. Searcy said DESC is considering splicing and may do something on it in the future. (DESC has a project on mechanical splice hardware.) The TDIC will be searched.

43. Cable assemblies problem (ES-82-6020-P-01) was next on the agenda. EIA P6.3.9 has been established to cover cable assemblies. Mr. Ron Smith is the chairman. No military cable assembly requirements or requests to document them has been received. Mr. Hudson noted that study project 6010-001, which was sent to EIA, covered cable assemblies as well as fibers. Copies of the report need to be sent to EIA again.

44. Active devices were brought up next. Mr. Dorris gave a report on the activities of IEC SC46E working group 5 (see Enclosure 26). There has been no DoD participation in this area but according to Mr. Dorris it is needed. Mr. Hudson asked if any of the military present was interested in being the DoD spokesman to EIA P6.5. This committee inputs to SC46E WG5. There were no volunteers. Mr. Hudson mentioned the lack of activity by P6.5 itself. It seems to follow IEC SC46E WG5's lead.

45. Sources and detectors (ES-82-6030-P-01) were discussed next. Discussion covered ANSI Z136.2. See paragraph 26 (above) on safety for the contact point for obtaining copies of drafts of this document. Projects are underway on coordinated source and detector specifications primarily to support the SUBACS program.

46. Problem ES-82-6030-P-02 on transmitter and receiver modules was discussed. DoD submitted reports to EIA on these; EIA P6.5 said they never received them. A second set needs to be provided to P6.5 by DESC. MIL-STD-188-111 will be published soon. It will have requirements which should be incorporated into the module specifications.

47. Repeaters (ES-83-6030-P-01) were discussed. According to Mr. Coryell, the Army does not have a contract as stated in the program analysis. As attenuation loss has improved, need for repeaters has gone down. The Army does have an R&D contract for the Long Haul System. EIA has generated a generic specification for repeaters which has been circulated internally to the committee for comment. There is no DoD representation on the committee. Mr. Kacur asked what specification structure is needed. Mr. Hudson replied that it will depend on whatever the final documents are, EIA or DoD. Mr. Rosell stated that they want a basic and specification sheets. Mr. Coryell stated that only one basic with specification sheets is needed. The problem will be continued in the program analysis but will be low priority.

48. Discussion was opened to new standardization problems that need to be addressed. Mr. Coryell stated that active wavelength division multiplex couplers are being developed. Single wavelength devices are being worked on now. Work will extend to multiple wavelength devices soon. This will be addressed as a new problem in the program analysis.

Mr. Coryell stated that the Army is not getting adequate support in various commands. His agency is requesting extra manpower. He agreed that DoD participation has been inadequate.

Mr. Dorris stated that EIA TE44 is not getting inputs from DoD and the components industry. TR44 has tried to work with each P6 group trying to reflect system needs in each.

Mr. Hudson stated that he would address the manpower problem in the program analysis.

49. The area of interconnecting devices was next on the schedule. Mr. Leonard Krantz, Bendix Corp., gave a presentation on the work of EIA P6.3 (see Enclosure 27). Mr. O'Hirok expressed concern and frustration about the military/industry relationship that exists. There needs to be more participation by the military in the industry committees if consensus documents are to be obtained. Mr. Dale Stump, the Navy representative, agreed with Mr. O'Hirok that the frustration exists. EIA has been requested to help prepare documentation. Mr. Stump felt that the EIA has set up a competing standardization organization which conflicts with the military system. EIA must provide usable documents. A meeting is needed to hash out the problems at the working level. Mr. Hudson stated that DoD had directed EIA to do the documents, not just help DoD do them. He stated that there were individuals within DoD who were against using industry documents but that the DoD policy was for DoD to provide industry the military requirements. In turn the industry associations (including EIA) have agreed to incorporate those requirements into their documents. Mr. Hudson stated he was also aware of the DoD/industry manpower problem. Most people in FOs have been given their duties as additional work load. This problem will be addressed and highlighted in the program analysis. Mr. Hudson will call a DoD meeting in the near future to discuss these problems. Mr. Dorris stated that recent developments dictated by the marketplace have established the IECQ-system as acceptable which in turn is driving the format of the documents. Both industry and the military must conform to this new development. Mr. O'Hirok mentioned that EIA would be willing to go to the highest levels, if needed, to get participation. Many military people took this as a threat and Mr. O'Hirok qualified his remarks by stating that the basis of the remark was that DoD people were saying they wanted to but could not participate in EIA activities due to shortages of funds and manpower. He was offering a means to get those. Mr. Stump requested that EIA establish a single location with reasonable room rates so that military people could afford to stay at the hotel where the meetings were. Meetings are presently scattered all over the United States and usually in high cost areas. This presents difficulties in building a stable coordination structure. Mr. Hudson proposed that a military/spokesman/ industry association meeting be held. Mr. Dorris has set up TC44.5 with a proposed liason for the military requirements for systems. The planning session for the new committee should perhaps be held in Dayton. Mr. Hudson stated that much of the work in systems has been handled by NAVELEX which is responsible to see that liason exists. NAVELEX will be asked if they will establish a location for the meetings.

50. General Specification for Connectors (problem ES-82-6060-P-01) was discussed next. EIA RS 475A has been approved by EIA for dating. It is presently being circulated for comment within DoD. The military services have requested specifications on SMA type fiber optic connectors. EIA is working on documents in this area (EIA RS 475-01 - sectional - and RS 475-01-01, blank detail specifications) which will be ready for SP circulation within 30 days. Comments will be incorporated into the document in Jan 84, with publication anticipated by Mar 84. Mr. Kacur asked what DESC plans to do to handle the problem. Mr. Hudson's reply was that projects would be issued to the Air Force only if justified by identifying the program(s) needing the documentation and proof that the documentation needed to be available before Mar 84.

51. The discussion turned to the NATO connector specification (problem ES-82-6060-P-03). Mr. Dorris asked how industry could participate in NATO. Mr. Hudson reviewed procedures set up at DESC. Mr. Dorris said he didn't understand how inputs worked. Mr. John Wilkinson, Amphenol, explained how he had recently participated in a NATO meeting. The DoD procedures are presently being written up by DMSSO. DESC'S procedures will handle the documents about the same as they do military specifications and standards.

52. The standard interface for interconnection devices (ES-83-6060-P-02) was next on the agenda. Mr. Kacur asked if MIL-STD-1863 has been adopted by NATO. He noted that MIL-STD-1863A was being worked on. Mr. Hudson replied that MIL-STD-1863 is being put into an Allied Standardization Publication. NATO AC301, SG1, STG7 has given feedback which is being placed in MIL-STD-1863A. Mr. Rosell, the Air Force spokesman, stated that a military version of the ARINC 600 connector for the new DoD module system may be proposed for inclusion into MIL-STD-1863. Mr. Hudson noted that no existing rectanglar connector designs in existing electrical connector specification has been acceptable for inclusion into MIL-STD-1863. One criteria that needs to be kept in mind, according to Mr. Hudson, is the DoD policy that new designs shall be hard metric. Mr. Coryell, the Army spokesman stated that three kinds of connectors have been tested. All take over 400 lbs. of pull at the strain relief. Mr. Schumaker expressed concern for the optional keying for single fiber connectors in the standard. If you put the fiber in the center of the connector you do not need a key. He recommended the source requiring keying be checked. Mr. Jack Kerr, NAVELEX, stated that the key is to prevent rotation of the connector and for repeatability of optical loses in mating. The repeatability is very important. Messrs. Coryell and O'Hirok echoed Mr. Kerr's comment. Mr. O'Hirok stated that not all SMA type connectors are alike; in some, the fibers touch. Some designs are not even intermateable. Mr. Parker stated that optical loss tolerances need to be stated as both a maximum and as a value with tolerance. This may affect the keying problem. Mr. Rosell stated that the Air Force will have a requirement on identifying
FO connectors. Mr. Schumaker requested that on electrical connectors using FOs the marking be on the backshell hardware only. Mr. Krantz stated that keying should be changed on any connector to prevent any possibility of mating with a power connector. Filter pin connectors are now specially marked. Something should be stamped on the connector to identify it; color coding is
not enough. Mr. Hudson pointed out that DoD wants to eliminate epoxy in field terminations. The Avionics Laboratory has requirements for field termination. The Army has not had a requirement for retention strength testing of individual contacts. Avionics stated that they may have an excess design requirement. In the future they may be using smaller connectors and may have individual strength requirements later. The Avionics Systems need a 45° angled connector.
Ms. Isaacs, B. F. Goodrich, questioned exclusion of Polyvinyl Chloride (PVC). Mr. Hudson noted that tests at Kelly Air Force Base several years ago showed burning PVC generated 50% by weight of chlorine. Ms. Isaccs said a specification for outgassing is needed. Blacklisting a material, as has been done to PVC, is not good. The entire outgassing question should be reexamined. Specifications should deal with what happens to the material, not what the material is. The PVC restriction will continue, according to the DoD spokesmen. Items (6) and (10) of this problem will be dropped from the program analysis.

53. The discussion turned to splice hardware (problem ES-82-6060-P-05). The Army is working on mechanical splices to be used in the field for Long Haul Systems. Documentation will follow field testing. The requirements are under 1 db loss for a field splice and under a 5 db loss for depot level repair.

54. The Army and Air Force stated they had no interest in bulkhead and hull penetrators (ES-82-6060-P-06). Mr. Kronstadt, NKA, said that these items are used on ships as well as submarines, and have less rigid requirements. Mr. Kacur asked if feedthroughs are included in this category. Mr. Hudson stated that penetrators allow the fibers to pass through. Stuffing tubes are something else again and are not included. Since projects for military specifications for penetrators are underway, this problem will be dropped from the program analysis.

55. Problem ES-82-6060-P-08 on couplers was briefly discussed. The schedule for completion of a coupler specification to support SUBACS has been speeded up, according to Mr. Kacur. Mr. Schumaker stated that the IEC has a generic on "branching devices" which are star couplers, IEC 46E (secretariat) 60. The Avionics people stated they need couplers.

56. The marking of termini (ES-83-6060-P-01) was brought up for discussion. The Air Force recommended dropping this problem. The Navy requested keeping the problem but dropping the project. The service expects the problem to surface but no projects are needed until data is available. The Navy's request will be honored. There were no new interconnection device problems to address.

57. Discussion next turned to materials and accessories. Ms. Isaacs asked if there will be a flame retardant requirement. It was suggested that the National Electrical Code was probably the controlling factor at this time. Because of MIL-STD-454, requirements III and IV, outgassing should be considered. According to Mr. Simpson of NAC, the Army will require flame retardant jackets on all cables used in the field.

58. Mr. Parker, G & H Technology, gave a report on EIA P6.1 activities (see Enclosure 28).

59. Tools and tool kits (ES-83-6070-E-03) were the next area of discussion. Mr. Hudson stated that tools are being catalogued into FSC 6070. There is a controversy on this. The original setup was that only tools peculiar to FOs would be in FSC 6070. The problem has been given to Defense Logistics Agency Headquarters to resolve. There was no objection to a program analysis problem for inspection tools. The problem will not be added. There was no input on tool kits.

60. Accessories were discussed next. Documentation is needed for cable hangers, bend limiters and reels. New reels are needed for fibers but not for cables. Mr. Hudson asked if DoD used bare, unjacketed fibers in equipment. Mr. Coryell stated that some are used particularly in the modem cases, but the Army does not expect any significant requirements for bare fiber; therefore, there is no need for DoD to document a reel for fibers. The Air Force concurred.

61. The following are closing statements:

a. Mr. Arne Aucland, EIA. "I will brief EIA management on events of the meeting." He stated the review accomplished its goal. The mechanics of reviewing and distribution are still a problem. There were two precedents; parochial rigidity and acrimony. A new way of doing standards that may drive technology is needed; otherwise, procurement may drive standards which may drive the technology. The policy on meeting locations for EIA meetings will not be changed.

b. Mr. Hank Dorris, American Bell. A joint meeting is needed between the FO systems and component panels. Coordinated activity must be expanded. All areas have not been covered, i.e., IEC 46. He did not feel that the acrimony level was offensive. He suggested holding the meeting to general interest items, minimize technical items, and identifying issues.

c. Mr. Nat Kronstadt, NKA. He requested that connectors be placed first on the agenda next year.

d. Mr. William O'Hirok, ITT Cannon. He appreciated the invitation to participate in the program analysis process. He felt that exchanges were constructive. He suggested starting meetings on Tuesday rather than Monday.

e. Mr. Ramesh Sheth, Belden. He would have liked to hear more military presentations on programs in process. More system presentations from the military are needed.

f. Mr. Hudson thanked all those who attended and who contributed to the success of the meeting. He adjourned the meeting at 1700 hours (5:00 P.M.).

62. The Attendance Roster is Enclosure 29.

WELCOME

Standardization Meeting On Fiber Optics
1300 Hours - 1 August 1983
Holiday Inn - Dayton Mall
Brig. Gen. Anthony F. Albright, USA

GOOD AFTERNOON, LADIES AND GENTLEMEN.

A NUMBER OF YEARS AGO, SIR WINSTON CHURCHILL, WHOSE FONDNESS FOR DRINK WAS WELL KNOWN, WAS SCHEDULED TO MAKE A SPEECH BEFORE A SMALL GATHERING . . . PROBABLY SIMILAR IN SIZE TO THE GROUP WE HAVE HERE TODAY.

IN INTRODUCING CHURCHILL, THE CHAIRMAN SAID: "IF ALL THE SPIRITS CONSUMED BY SIR WINSTON WERE POURED INTO THIS ROOM, IT WOULD REACH UP TO HERE ON THE WALL." WITH THAT, THE CHAIRMAN DREW A LINE WITH HIS FINGER AT ABOUT EYE LEVEL. CHURCHILL THEN GOT UP TO SPEAK. HE GLANCED AT THE IMAGINARY LINE ON THE WALL, LOOKED UPWARD TO THE CEILING AND IN HIS GRAVELY MANNER SAID, "AH, SO MUCH TO BE DONE AND SO LITTLE TIME IN WHICH TO DO IT."

I KNOW YOU HAVE MUCH TO DO HERE THIS WEEK AND SO LITTLE TIME IN WHICH TO DO IT. I'M NOT REFERRING TO PATRONIZING SOME OF THE FINE WATERING HOLES JUST DOWN THE HALL FROM US HERE, BUT THE RATHER AMBITIOUS SCHEDULE THAT HAS BEEN ESTABLISHED FOR THIS MEETING. IT IS VERY CONSUMING, SO I'LL BE BRIEF IN MY REMARKS.

I'M PLEASED TO BE WITH YOU TODAY AND PARTICIPATE IN WHAT CONTINUES TO BE AN OUTSTANDING EXCHANGE OF IDEAS, INFORMATION AND GENERAL PERSPECTIVES. THESE STANDARDIZATION PLANNING MEETINGS HAVE PROVEN TO BE HIGHLY PRODUCTIVE IN THE PAST AND WE CAN LOOK FORWARD TO SIMILAR BENEFITS EMERGING FROM THIS SESSION ... BENEFITS WHICH NOT ONLY SERVE THE SPECIAL INTERESTS OF OUR AGENCIES AND CORPORATIONS, BUT THOSE OF GOVERNMENT AND INDUSTRY AS WELL.

ENCL 2

LET ME PARTICULARLY COMMEND YOU FOR YOUR INTEREST IN THIS CONFERENCE WHICH IS DEMONSTRATED BY THE EXCELLENT ATTENDANCE WE HAVE. WE ARE BLESSED WITH AN EXCELLENT TURNOUT . . . ONE OF THE LARGEST WE'VE HAD FOR A STANDARDIZATION MEETING. SUCH PRESENCE REFLECTS THE SIGNIFICANCE YOU AND YOUR ORGANIZATION ATTACH TO THE SUBJECT OF FIBER OPTICS.

WE AT DESC PLAN TO WATCH THE PROCEEDINGS VERY CLOSELY SINCE FIBER OPTICS REPRESENTS ONE OF THE MORE IMPORTANT GROUPS OF ITEMS THAT WE MANAGE TODAY. MYSELF, I WAS PERSONALLY INVOLVED WITH FIBER OPTICS DURING AN EARLIER ASSIGNMENT AT FORT MONMOUTH, NEW JERSEY, AND HAVE HAD THE OPPORTUNITY TO WATCH IT EMERGE INTO ONE OF THE NEWEST AND MORE PROMISING COMMODITIES IN THE INDUSTRY TODAY. IT HAS GREAT POTENTIAL COMMERCIALLY AND MILITARILY AND I DON'T FEEL WE'RE BEING OVERLY OPTIMISTIC IN OUR ASSESSMENT.

SINCE OUR FIRST MEETING TWO YEARS GO, 19 MILITARY SYSTEMS USING FIBER OPTIC TECHNOLOGY HAVE GONE INTO PRODUCTION AND BROADENED USE INTO OTHER SYSTEMS IS EMMINENT. OBVIOUSLY, FIBER OPTICS OFFERS THE ECONOMY AND RELIABILITY THAT POTENTIALLY COULD REVOLUTIONIZE COMMUNICATIONS ON A MILITARY AND COMMERCIAL SCALE.

EFFORTS TO STANDARDIZE FIBER OPTICS OVER THE PAST YEAR HAVE ALSO GAINED MOMENTUM. THERE HAVE BEEN A NUMBER OF ACCOMPLISHMENTS WHICH WE ARE PLEASED TO REPORT. AMONG THESE ARE THE PUBLICATION OF MIL-STANDARD - 1863 COVERING THE PREFERRED CONNECTOR INTERFACES, THE COORDINATION OF AN ADOPTION NOTICE FOR SEVERAL OF THE ELECTRONICS INDUSTRY ASSOCIATION TEST METHOD STANDARDS DESCRIBED UNDER E.I.A. RS-455. . . AND, FINALLY, THE DEVELOPMENT OF MILITARY SPECIFICATIONS AND STANDARDS TO SUPPORT SHORT LEADTIME PROCUREMENTS FOR FIBER OPTIC COMPONENTS.

DESPITE THIS, MUCH WORK REMAINS TO BE DONE IN A NUMBER OF AREAS. AS WE HAVE PREVIOUSLY NOTED TO E.I.A., THE SOLID STATE ASPECTS OF FIBER OPTICS NEED GREATER ATTENTION. FURTHER EFFORT IS ALSO REQUIRED IN OTHER IMPORTANT AREAS.

RECALLING MY STATEMENT TO YOU LAST YEAR, WE MOST OF ALL NEED TO HAVE A SOUND SET OF SPECIFICATIONS AND STANDARDS AVAILABLE FOR THESE WILL HELP ASSURE THAT SYSTEMS INCORPORATING FIBER OPTICS WILL HAVE THE BEST PARTS AT THE BEST PRICE. BY DOING A PROFESSIONAL JOB UP FRONT, WE CAN ALSO ELIMINATE SOME OF THE DOWNSTREAM PROBLEMS SUCH AS DIMINISHING MANUFACTURING SOURCES WHICH CONFRONT US TODAY IN OTHER COMMODITY AREAS.

I AM HOPEFUL THE CONFERENCE WILL BE SUCCESSFUL ACROSS THE BOARD AND THAT YOU WILL LEAVE HERE WITH A SENSE OF ACCOMPLISHMENT AND AN IMPROVED SENSE OF DIRECTION. AS WE SEEK TO FIND THE RIGHT COMBINATION TO THIS IMPORTANT FIELD OF ENDEAVOR, I AM PLEASED THAT WE HAVE THE OPPORTUNITY TO MEET AND WORK TOGETHER FOR A COMMON PURPOSE. THOUGH WE HAVE OUR INDIVIDUAL POINTS OF VIEW, THERE IS A THREAD OF COMMONALITY THAT RUNS THROUGH EVERY COMPANY AND AGENCY REPRESENTED IN THIS ROOM. WE'RE ALL AMERICAN . . . AMERICAN INDUSTRY. . . AMERICAN GOVERNMENT. TOGETHER, WE MAKE A POWERFUL TEAM AND LET'S PRAY WE NEVER LOSE SIGHT OF THAT.

THANK YOU AND HAVE AN OUTSTANDING CONFERENCE.

DOD POLICIES

Presented By
Arthur C. Hudson
1 Aug 1983

DOD FIBER OPTIC STANDARDIZATION MEETING

The following is taken from SD-8 (an overview of the Defense Standardization and specification program (DSSP)

WHY STANDARDIZE?

Every individual, industry, and Government agency sponsors or uses, to some degree, the standardization process. The basic purpose is essentially the same—to acheive the greatest practical uniformity of items, materials, and practices in order to minimize the costs and risks associated with developing managing, using, and maintaining similar things satisfying similar functions. In some cases the use of standardization principles is apparent, as in the selection of a particular size of photographic film (e.g. 35 mm, 110, etc.) to fit a variety of cameras. At other times, standardization is taken for granted (as in standardization of electrical plug and outlet interface characteristics).

Because the benefits of good standardization may get lost by overspecifying requirements or through our enthusiasm to be innovative, the primary purposes for applying standardization principles bear mentioning.

Standardization reduces the unnecessary and inefficient proliferation of generally similar types, kinds, sizes, and styles of items. Where an existing product or service can adequately do the job, it should be used rather than creating a new one. A decision to standardize on an existing product saves money, manpower, and time. When a single product (standard item) can perform the job of several other products,
replacement of the other products should be considered. Where a new product may potentially have multiple applications, the broad use of this product should be explored.

Encl 2

Standardization of parts, components and subassemblies reduces the risks associated with developing and producing new products and services. Standardized products have a track record of usefulness, quality, reliability, maintainability and performance. The suitability of a standard product or service to meet requirements can be based on actual experience rather than theory or promises.

If properly accomplished, standardization provides a stepping stone for evolutionary improvements. It promotes technological growth by providing a solid foundation for innovation. Modifications to existing standardized products may make them acceptable for future applications, and, when a superior product or technology is developed, this may be used as the basis for a new standard.

Standardization conserves resources by minimizing and simplifying training, technical data, engineering and support requirements. Use of standard items should significantly reduce expenditure of research, development, test and evaluation, and logistics support resources. New items which enter a supply system may need to be tested. Often, these new items bring with them the need for special support equipment life of the new end product. Standardization reduces the total logistics burden.

WHAT IS STANDARDIZATION?

The standardization process consists of the following three basic elements: (1) developing and agreeing on standard characteristics for products, practices and data so that they can be used cost-effectively in multiple applications;
(2) communicating those agreements (i.e., the standard) to the people who need to use it and; (3) selectively applying the standard, products, practices and data in a cost-effective manner. A failure in any of these elements will result in ineffective standardization.

Standardization is usually an agreement about:

Form (i.e., the physical configuration (shape) of an item to assure interchangeability and compatibility with intended applications);

Fit (i.e., the dimensional description of input/output characteristics to ensure interoperability with related interfacing items); and to ensure interoperability with related interfacing items); and

Function (i.e., the performance characteristics to ensure that the item is capable of doing its intended job).

Standardization is a conscientious approach to designing and using products for a variety of applications.

Standardization is not always achieved by locking into a single, detailed design.

Standardization must be able to grow with technological advances and not be arbitrarily locked into a single manufacturer, design or technology.

The DoD Standardization

The standardization program for DoD was setup by title 10, United States Code, chapter 145, Cataloging and Standardization. Section 2452, Duties of Secretary of Defense, paragraph 5 states in part that the Secretary of Defense shall "establish, publish, review and revise, within the Department of Defense, military specifications, standards, and lists of qualified products . . . ."

Sections 2451-2456 requires the Secretary of Defense, to the highest degree practicable, standardize items by developing and using single specifications and efficiently use services and facilities for inspecting, testing, and accepting such items

The activity to carry this out is the Assignee Activity whose duties are:

a. Developing and coordinating Standardization Program Analyses/plans for assigned FSC's/areas in accordance with guidance provided by higher authority.

b. Ensuring that the maximum practicable degree of standardization will be attained and maintained in assigned FSC's/areas.

c. Ensuring the elimination of overlapping and duplicative standardization documents.

d. Assigning numbers for projects in assigned FSC's/areas as scheduled, insuring that projects are initiated and completed in a timely manner.

e. Ensuring that the documentation conforms with applicable format and quality standards, such as MIL-STD-961A and MIL-STD-962.

f. Making decisions on unresolved comments in all standardization matters in assigned FSC's/areas as prescribed and delegated by higher authority. Assignee activites/lead service activities shall avoid protracted discussions and conferences and shall render decisions on controversial issues within 30 days of the failure to resolve differences.

g. Referrring to their DepSO appeals from decisions made by them as assignee activities/lead service activities supported by data, records of negotiations and other information as may be pertinent.

Industry Standards

It is DoD's intent to work with industry associations to develop DoD acceptable industry specifications and standards to the maximum extent possible. This supports Office of Management and Budget circular No. A-119 "Federal participation in the development and use of voluntary standards. " 1/ (enclosure 1)

Additional guidance has been provided where DoD takes exception to the industry document. (See enclosure 2)

Metrics

For new designs hard metrics is to be used to provide effective NATO standardization. (See enclosure 3)

Qualification

Qualification requirements have always required that two sources exist on qualified parts. This requirement will be strictly enforced in Fiber Optics.

Early Standardization

Standardization early in the technology is a DoD goal. The earlier standardization of designs, parameters, and performance are accomplished the less proliferated those characteristics will become.

DoD Structure

The DoD standardization and R & D structure in Fiber Optics is shown in figure 1. (See enclosure 4) The communication lines between the two are being kept open to insure that R & D data is pumped into the standardization documents whereever needed.

Standardization Documents

A list of standardization documents is provided on enclosure 5.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. [redacted]

OCT 26 1982

MEMORANDUM TO HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: David A. Stockman

SUBJECT: OMB Circular No. A-119, "Federal Participation in the Development and Use of Voluntary Standards"

Attached, for your implementation, is a revision to OMB Circular No. A-119 which provides guidance to agencies in working with, and using the products of, private sector standards organizations. The effect of this revision is to eliminate the costly, unnecessary, and burdensome aspects of the Circular, while continuing to encourage agency participation in the development of private sector standards.

Also attached for your information and use is a letter, dated June 22, 1982, from the Department of Justice, which provides guidance in the implementation of the Circular -- particularly as it relates to working with private sector groups to develop needed standards.

Attachments (2)

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. [redacted]

OCT 26 1982

CIRCULAR NO. A-119
REVISED

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Federal Participation in the Development and Use of Voluntary Standards

1. Purpose. This Circular establishes policy to be followed by executive agencies in working with voluntary standards bodies. It also establishes policy to be followed by executive branch agencies in adopting and using voluntary standards.

2. Rescissions. This Circular supersedes OMB Circular No. A-119, dated January 17, 1980, which is rescinded.

3. Background. Many Governmental functions involve products or services that must meet reliable standards. Many such standards, appropriate or adaptable for the Government's purposes, are available from private voluntary standards bodies. Government participation in the standards-related activities of these voluntary bodies provides incentives and opportunities to establish standards that serve national needs, and the adoption of voluntary standards, whenever practicable and appropriate, eliminates the cost to the Government of developing its own standards. Adoption of such standards also furthers the policy of reliance upon the private sector to supply Government needs for goods and services, as enunciated in OMB Circular No. A-76.

4. Applicability. This Circular applies to all executive agency participation in voluntary standards activities, domestic and international, but not to activities carried out pursuant to treaties and international standardization agreements.

5. Definitions. As used in this Circular:

a. Executive agency (hereinafter referred to as "agency") means any executive department, independent commission, board,

bureau, office, agency, Government-owned or - controlled corporation or other establishment of the Federal Government, including regulatory commission or board. It does not include the legislative or judicial branches of the Federal Government.

b. Standard means a prescribed set of rules, conditions, or requirements concerned with the definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, design, or operations; measurement of quality and quantity in describing materials, products, systems, services, or practices; or descriptions of fit and measurement of size.

c. Voluntary standards are established generally by private sector bodies and are available for use by any person or organization, private or governmental. The term includes what are commonly referred to as "industry standards" as well as "consensus standards", but does not include professional standards of personal conduct, institutional codes of ethics, private standards of individual firms, or standards mandated by law, such as those contained in the United States Pharmacopeia and the National Formulary, as referenced in 21 U.S.C. 351.

d. Government standards include individual agency standards and specifications as well as Federal and Military standards and specifications.

e. Voluntary standards bodies are private sector domestic or multinational organizations -- such as nonprofit organizations, industry associations, professional and technical societies, institutes, or groups, and recognized test laboratories -- that plan, develop, establish, or coordinate voluntary standards.

f. Standards-developing groups are committees, boards, or any other principal subdivisions of voluntary standards bodies, established by such bodies for the purpose of developing, revising, or reviewing standards, and which are bound by the procedures of those bodies.

g. Adoption means the use of the latest edition of a voluntary standard in whole, in part, or by reference for procurement purposes and the inclusion of the latest edition of a voluntary standard in whole, in part, or by reference in regulation(s).

h. Secretary means the Secretary of Commerce or that Secretary's designee.

6. Policy. It is the policy of the Federal Government in its procurement and regulatory activities to:

a. Rely on voluntary standards, both domestic and international, whenever feasible and consistent with law and regulation pursuant to law;

b. Participate in voluntary standards bodies when such participation is in the public interest and is compatible with agencies' missions, authorities, priorities, and budget resources; and

c. Coordinate agency participation in voluntary standards bodies so that (1) the most effective use is made of agency resources and representatives; and (2) the views expressed by such representatives are in the public interest and, as a minimum, do not conflict with the interests and established views of the agencies.

7. Policy Guidelines. In implementing the policy established by this Circular, agencies should recognize the positive contribution of standards development and related activities. When properly conducted, standards development can increase productivity and efficiency in industry, expand opportunities for international trade, conserve resources, and improve health and safety. It also must be recognized, however, that these activities, if improperly conducted, can suppress free and fair competition, impede innovation and technical progress, exclude safer and less expensive products, or otherwise adversely affect trade, commerce, health, or safety. Full account shall be taken of the impact on the economy, applicable Federal laws, policies, and national objectives, including, for example, laws and regulations relating to antitrust, national security, small business, product safety, environment, technological development, and conflicts of interest. It should also be noted, however, that the provisions of this Circular are intended for internal management purposes only and are not intended to (1) create delay in the administrative process, (2) provide new grounds for judicial review, or (3) create legal rights enforceable against agencies or their officers. The following policy guidelines are provided to assist and govern implementation of the policy enunciated in paragraph 6.

a. Reliance on Voluntary Standards.

(1) Voluntary standards that will serve agencies' purposes and are consistent with applicable laws and regulations

should be adopted and used by Federal agencies in the interests of greater economy and efficiency, unless they are specifically prohibited by law from doing so.

(2) Voluntary standards should be given preference over non-mandatory Government standards unless use of such voluntary standards would adversely affect performance or cost, reduce competition, or have other significant disadvantages. Agencies responsible for developing Government standards should review their existing standards at least every five years and cancel those for which an adequate and appropriate voluntary standard can be substituted.

(3) In adopting and using voluntary standards, preference should be given to those based on performance criteria when such criteria may reasonably be used in lieu of design, material, or construction criteria.

(4) Voluntary standards adopted by Federal agencies should be referenced, along with their dates of issuance and sources of availability, in appropriate publications, regulatory orders, and related in-house documents. Such adoption should take into account the requirements of copyright and other similar restrictions.

(5) Agencies should not be inhibited, if within their statutory authorities, from developing and using Government standards in the event that voluntary standards bodies cannot or do not develop a needed, acceptable standard in a timely fashion. Nor should the policy contained in this Circular be construed to commit any agency to the use of a voluntary standard which, after due consideration, is, in its opinion, inadequate, does not meet statutory criteria, or is otherwise inappropriate.

b. Participation in Voluntary Standards Bodies.

(1) Participation by knowledgeable agency employees in the standards activities of voluntary standards bodies and standards-developing groups should be actively encouraged and promoted by agency officials when consistent with the provisions of paragraph 6b.

(2) Agency employees who, at Government expense, participate in standards activities of voluntary standards bodies and standards-developing groups should do so as specifically authorized agency representatives.

(3) Agency participation in voluntary standards bodies and standards-developing groups does not, of itself, connote agency agreement with, or endorsement of, decisions reached by such bodies and groups or of standards approved and published by voluntary standards bodies.

(4) Participation by agency representatives should be aimed at contributing to the development of voluntary standards that will eliminate the necessity for development or maintenance of separate Government standards.

(5) Agency representatives serving as members of standards-developing groups should participate actively and on a basis of equality with private sector representatives. In doing so, agency representatives should not seek to dominate such groups. Active participation is intended to include full involvement in discussions and technical debates, registering of opinions and, if selected, serving as chairpersons or in other official capacities. Agency representatives may vote, in accordance with the procedures of the voluntary standards body, at each stage of standards development, unless specifically prohibited from doing so by law or their agencies.

(6) The number of individual agency participants in a given voluntary standards activity should be kept to the minimum required for effective presentation of the various program, technical, or other concerns of Federal agencies.

(7) The providing of Agency support to a voluntary standards activity should be limited to that which is clearly in furtherance of an agency's mission and responsibility. Normally, the total amount of Federal support should be no greater than that of all private sector participants in that activity except when it is in the direct and predominant interest of the Government to develop a standard or revision thereto and its development appears unlikely in the absence of such support. The form of agency support, subject to legal and budgetary authority, may include:

(a) Direct financial support; e.g , grants, sustaining memberships, and contracts;

(b) Administrative support, e.g., travel costs, hosting of meetings, and secretarial functions;

(c) Technical support, e.g., cooperative testing for standards evaluation and participation of agency personnel in the activities of standards-developing groups; and

(d) Joint planning with voluntary standards bodies to facilitate a coordinated effort in identifying and developing needed standards.

(8) Participation by agency representatives in the policymaking process of voluntary standards bodies, in accordance with the procedures of those bodies, is encouraged -- particularly in matters such as establishing priorities, developing procedures for preparing, reviewing, and approving standards, and creating standards-developing groups. In order to maintain the private, nongovernmental nature of such bodies, however, agency representatives should refrain from decisionmaking involvement in the internal day-to-day management of such bodies (e.g., selection of salaried officers and employees, establishment of staff salaries and administrative policies).

(9) This Circular does not provide guidance concerning the internal operating procedures that may be applicable to voluntary standards bodies because of their relationships to agencies under this Circular. Agencies should, however, carefully consider what laws or rules may apply in a particular instance because of these relationships. For example, these relationships may involve the Federal Advisory Committee Act, as amended (5 U.S.C. App. I), or a provision of an authorizing statute for a particular agency. Agencies are best able to determine what laws and policies should govern particular relationships and to assess the extent to which competition may be enhanced and cost-effectiveness increased. Questions relating to anti-trust implications of such relationships should be addressed to the Attorney General.

8. Responsibilities.

a. The Secretary will:

(1) Coordinate and foster executive branch implementation of the policy in paragraph 6 of this Circular, and may provide administrative guidance to assist agencies in implementing paragraph 8.b. (5) of this Circular;

(2) Establish an interagency consultative mechanism to advise the Secretary and agency heads in implementing the policy

contained herein. That mechanism shall provide for participation by all affected agencies and ensure that their views are considered; and

(3) Report to the Office of Management and Budget concerning implementation of this Circular.

b. The heads of agencies concerned with standards will:

(1) Implement the policy in paragraph 6 of this Circular in accordance with the policy guidelines in paragraph 7 within 120 days of issuance;

(2) Establish procedures to ensure that agency representatives participating in voluntary standards bodies and standards-developing groups will, to the extent possible, ascertain the views of the agency on matters of paramount interest and will, as a minimum, express views that are not inconsistent or in conflict with established agency views;

(3) Endeavor, when two or more agencies participate in a given voluntary standards body or standards-developing group, to coordinate their views on matters of paramount importance so as to present, whenever feasible, a single, unified position.

(4) Cooperate with the Secretary in carrying out his responsibilities under this Circular; and

(5) Consult with the Secretary, as necessary, in the development and issuance of, internal agency procedures and guidance implementing this Circular, and submit, in response to the request of the Secretary, summary reports on the status of agency interaction with voluntary standards bodies.

9. Reporting Requirements. Three years from the date of issuance of this Circular, and each third year thereafter, the Secretary will submit to the Office of Management and Budget a brief, summary report on the status of agency interaction with voluntary standards bodies. As a minimum, the report will include the following information:

a. The nature and extent of agency participation in the development and utilization of voluntary standards; and

b. An evaluation of the effectiveness of the policy promulgated in this Circular and recommendations for change.

10. Policy Review. The policy contained in this Circular shall be reviewed for effectiveness by the Office of Management and Budget three years from the date of issuance.

11. Inquiries. For information concerning this Circular, contact the Office of Management and Budget, Office of Federal Procurement Policy, telephone 202/395-7207.

David A. Stockman
Director

U.S. Department of Justice

Antitrust Division

Office of the Assistant Attorney General — Washington, D.C. 20530

JUN 22 1982

Mr. Donald E. Sowle
Administrator for Federal
Procurement Policy
Office of Management and Budget
Washington, D.C. 20503

Dear Mr. Sowle:

I am writing to express the views of the Department of Justice on competition policy issues raised by the Revised OMB Circular No. A-119, "Federal Participation in the Development and Use of Voluntary Standards" published for comment in the Federal Register on April 20, 1982 (47 Fed. Reg. 16, 919).

In our comments on previous drafts of the Circular, dated December 26, 1976 and June 13, 1978, we have supported a policy of federal adoption of privately developed standards when appropriate. Through participation in, and support for, private standards making activities, agencies may benefit greatly from private expertise and will avoid the wasteful duplication of cost and effort involved in developing their own in-house standards. The Department of Justice is not opposed to the policy announced in Revised OMB Circular A-119, which would eliminate the rigid "due process" precondition to federal participation in private standards activities. Such a precondition is overly restrictive, since as a practical matter federal agencies will often be required to adopt the standards developed regardless of federal participation in their development. Thus, in our view, the better solution is to participate in standards setting bodies and work within them to assure that appropriate procedures are adopted.

The Department believes that federal participants should encourage the adoption of procedures to foster access to standard setting activities and transparency in such activities. Such procedures facilitate the development of standards acceptable to the entire affected industry as well as to consumers. In particular, notice and opportunity for comment help assure that standards will be based on adequate information as to their utility and consequences. Moreover, it is especially important that performance criteria be given a prominent, perhaps predominant, place in any standards activity. Federal agency representatives, therefore, should advocate, as strongly as possible, procedures designed to assure that a broad range of information is solicited, and that performance criteria are central elements of the resulting standards.

In addition to the practical advantages of open standards proceedings, such safeguards would mitigate the substantial anticompetitive potential inherent in private standards groups. The importance of assuring adequate consideration of competition in the work of private standards bodies was noted recently by the Supreme Court in American Society of Mechanical Engineers, Inc. v. Hydrolevel Corp. The case involved a product standard which had been adopted in 46 states and all but one of the Canadian provinces. The Court observed that organizations creating such standards could be "rife with opportunities for anticompetitive activity." Federal agencies ought to strongly encourage these private groups to ensure consideration of all relevant viewpoints and interests including those of consumers, and potential or existing industry participants.

This country's international obligations and policy, as expressed in the Standards Code negotiated during the Tokyo Round of the Multilateral Trade Negotiations, see the Agreement on Technical Barriers to Trade, codified at 19 U.S.C.A. 2531 et seq. (1980), provide another important reason for federal agency participants to encourage the adoption of open procedures for private standards groups. This Code, approved by Congress as well as by our leading trading partners, seeks to prevent the creation of product standards which discriminate against import competition. It requires central governmental bodies to provide notice and opportunity to comment in their own standards making activities, and encourages governments to take reasonable measures to ensure that non-governmetal bodies provide similar protection. Where the federal government is in fact involved in the private group, the obligations of the Standards Code would appear even stronger. Open procedures, specifically adequate notice and opportunity to comment, would further the objectives of the Standards Code, and would substantially reduce the possibility that discriminatory, anticompetitive standards will be developed.

The Circular would encourage use of voluntary standards for regulatory and other purposes. Although we applaud this expansion of the scope of the Circular, we believe that broadened federal use of privately developed standards should be accompanied with broad federal awareness of the practical and competitive advantages of industry-wide access to private standards bodies. Such access is an asset to federal participation in private standards activities, but it is also of great importance when federal agencies, without participation in the process, merely adopt standards for procurement or regulatory use.

As we indicated in our previous comments, private activity is not, by virtue of governmental participation or approval, shielded from the antitrust laws. Federal agency participation in a standards body, however, may imply federal approval of the process and of the resulting standard, and perhaps lead private participants to become lax in their own antitrust scrutiny. To dispel any false impressions, federal agency representatives should inform private participants that federal participation does not remove antitrust concerns, as well as advocate that appropriate procedures be employed in the standards proceedings.

Sincerely yours,

Ronald G. Carr
Acting Assistant Attorney General
Antitrust Division

OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

RESEARCH AND
ENGINEERING

DMSSO

26 AUG 1982

MEMORANDUM FOR THE DEPSOs

SUBJECT: Nongovernment Standards EXCEPTIONS

This memorandum sets forth guidance on DoD adoption of nongovernment documents where changes must be incorporated to make the document usable by DoD. This supersedes all previous issuances on this matter and will be used until appropriate changes can be made to the Defense Standardization Manual, 4120.3-M and Military Standards 961 and 962.

Adoption of nongovernment standards is being relied on as the optimum method for making better use of the commercial marketplace. In accordance with this thrust, nongovernment standards should be adopted and used exactly as written whenever possible. In all development, participation and adoption work, maximum effort should be made toward this end. Use of nongovernment standards without the imposition of any separately identified DoD unique additions, deletions or modifications offers the least cost alternative to the preparation and use of military specifications and standards.

When, however, certain changes to a nongovernment standard are essential to make the document usable to DoD, the military coordinating activity should work with the standard producer to try to insert a "When Specified" or "For DoD Use" paragraph. If this can be accomplished, the standard can still be adopted without additional notes on an acceptance notice. Because our changes frequently make documents more readily usable for acquisition, there is often widespread support for such changes. Many standards bodies have been most cooperative in working with DoD on these kinds of issues.

If, after best efforts in this regard, there are still irreconcilable differences and in the opinion of the military coordinating activity certain changes must be noted in the adoption of the nongovernment standard in order to make it usable, several options are available:

1. When a large number of nongovernment documents can be categorized in a single commodity area (as in Military Bulletin 147 for flight vehicle construction), the changes can be noted in a DoD prepared and maintained design document. Such a bulletin lists nongovernment standards, many of which are adopted, with certain limitations noted for particular applications. The DoD prepared document can be called out on contracts along with the nongovernment standard to ensure that the limitations are properly invoked. This is not a substitute for, but is rather an adjunct to adoption of the standard.

Attachment 2 to Encl 2

2. When informational notes must be included in the standard's adoption, such as the fact that the standard forms part of an international agreement, this may be done with a "NOTE" on the acceptance notice. This is acceptable when there is no need for the "NOTE" to be available to our contractors but is only for DoD use.

3. Nongovernment standards may be the primary reference in a CID, federal or military specification or standard (including sheet form standards), as appropriate. When this is necessary, the nongovernment standard should still be adopted. The DoDISS listing should indicate the document in which the nongovernment standard is the primary reference. In order to accomplish this, it is necessary that the acceptance notice includes a "NOTE" to cite the particular CID, federal or military specification or standard. This method of imposing a unique DoD change should be a last resort only after efforts to accomplish the requirement in some other way have failed. This method will not be used where part numbers are required unless the change is such that it changes the item of supply. If this is the case, the part numbering scheme will be based on and described in the government document.

The DoDISS indicates which nongovernment standards have been adopted with DoD exceptions. Military coordinating activities for standards which are so listed are requested to apply the principles of this memorandum to those standards and to insure compliance or, as a minimum, that projects are underway by 1 January 1983.

Questions on this policy should be directed to Mr. Greg Saunders, 756-2340 or autovon 289-2340.

[redacted]
Colonel, USAF
Director, Defense Federal Specifications
& Standards Office

THE UNDER SECRETARY OF DEFENSE

WASHINGTON, D C. 20301

RESEARCH AND
ENGINEERING

7 MAR 1980

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE ARMY (RESEARCH, DEVELOPMENT AND ACQUISITION)
THE ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS)
THE ASSISTANT SECRETARY OF THE AIR FORCE (RESEARCH, DEVELOPMENT AND LOGISTICS)
THE DIRECTORS OF DEFENSE AGENCIES

SUBJECT: Metric Specifications and Standards

Achieving effective NATO standardization requires that we utilize the metric system in design of new weapon systems and equipments to the maximum practical extent because all other NATO countries are metric users. This is a principal basis for metric policies layed out in DoD Directive 4120.18, "Use of the Metric System of Measurement." It has not been practical for many recent programs to employ metric measurements due in large part to unavailability of metric specifications and standards.

The availability of such specifications and standards is a key factor in any decision to use the metric system in new design. Progress in developing metric specifications and standards has been extremely slow, and national standardization bodies have not moved as fast as we had hoped.

To provide a firm date on which future plans can be based, I am establishing a target date of 1 January 1990 for availability of a complete spectrum of metric specifications and standards which can be used in place of the 40,000 documents listed in the DoD Index of Specifications and Standards. Initial emphasis will be placed on documents for common hardware items, materials, engineering practices and other common areas.

I would appreciate it if you would:

- Begin scheduling preparation of metric specifications and standards on an accelerated basis at the earliest practical date, emphasizing common areas where the private sector cannot or will not prepare the documents.

- Participate with national standardization activities of the private sector in preparation of metric documents and assume a fair share of the workload.

- Adjust five-year standardization plans (DoD Standardization Manual 4120.3M) accordingly.

2. When informational notes must be included in the standard's adoption, such as the fact that the standard forms part of an international agreement, this may be done with a "NOTE" on the acceptance notice. This is acceptable when there is no need for the "NOTE" to be available to our contractors but is only for DoD use.

3. Nongovernment standards may be the primary reference in a CID, federal or military specification or standard (including sheet form standards), as appropriate. When this is necessary, the nongovernment standard should still be adopted. The DoDISS listing should indicate the document in which the non-government standard is the primary reference. In order to accomplish this, it is necessary that the acceptance notice includes a "NOTE" to see the particular CID, federal or military specification or standard. This method of imposing a unique DoD change should be a last resort only after efforts to accommodate the requirement in some other way have failed. This method will not be used where part numbers are required unless the change is such that it changes the item of supply. If this is the case, the part numbering scheme will be based on and described in the government document.

The DoDISS indicates which nongovernment standards have been adopted with DoD exceptions. Military coordinating activities for standards which are so listed are requested to apply the principles of this memorandum to those standards and to insure compliance or, as a minimum, that projects are underway by 1 January 1983.

Questions on this policy should be directed to Mr. Greg Saunders, 756-2340 or autovon 289-2340.

WALKER A. LARIMER
Colonel, USAF
Director, Defense Materiel Specifications
& Standards Office

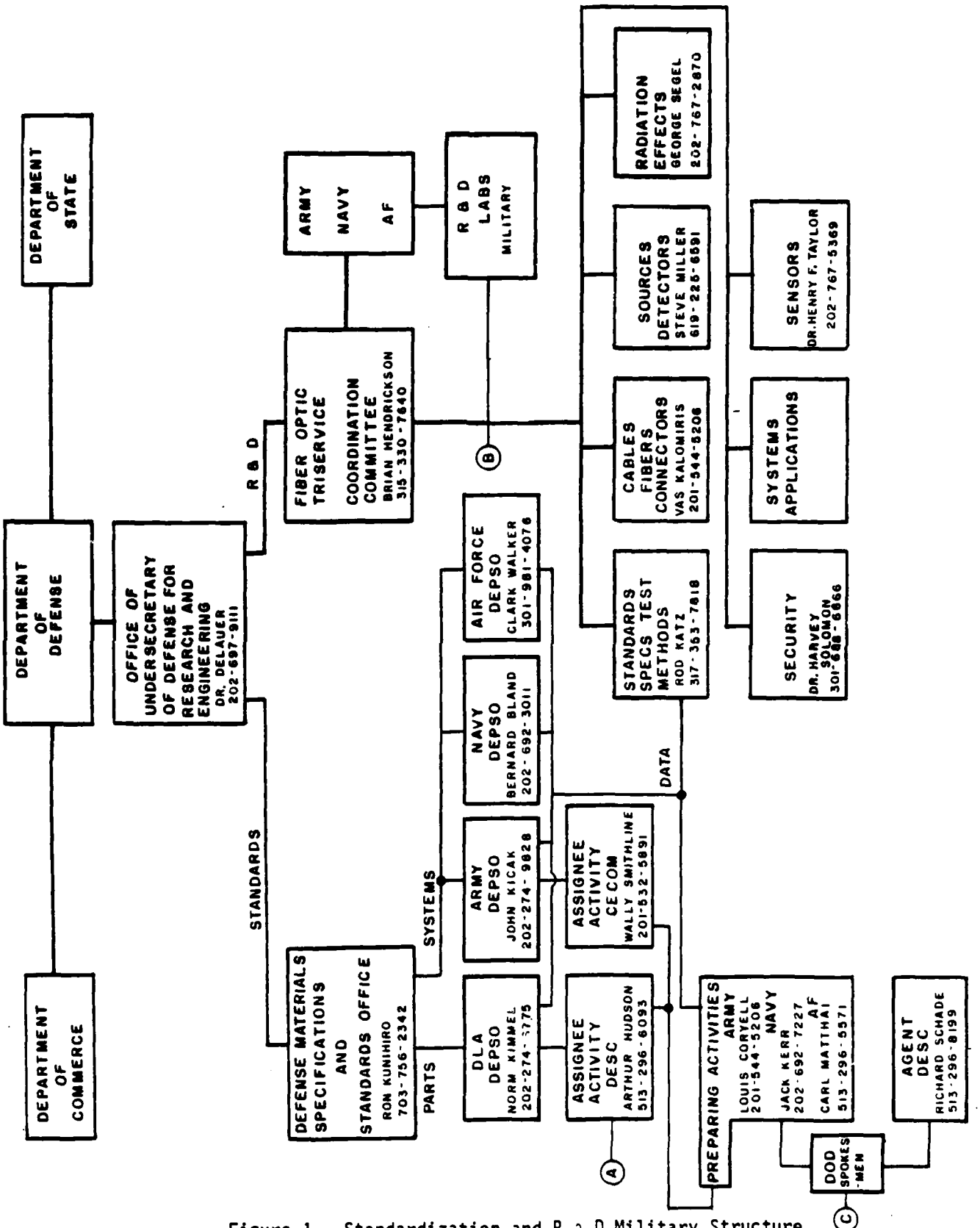


Figure 1. Standardization and R a D Military Structure

Attachment 4 to E.C. 2

STANDARDIZATION DOCUMENTS OF INTEREST

Document Title	DoD Organizations Obtain From	All other Organizations (non DoD and nongovernment/Private Concerns) Obtain From
"Defense Standardization Manual," DoD 4120.3-M	Naval Publications & Forms Center (NPFC), 5801 Tabor Avenue, Philadelphia, PA 19120	Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, D.C. 20402
"DoD Index of Specifications and Standards," Parts I, II, & III Printed Edition	NPFC	GPO
Microfiche Edition	NPFC	Naval Publications & Printing Service Office, 700 Robbins Avenue, Philadelphia, PA 19111
"Department of Defense Single Stock Point for Specifications and Standards: A Guide for Private Industry"	NPFC	NPFC
"Standardization Directory," SD-1	NPFC	GPO
"Status of Standardization Projects," SD-4	NPFC	Not Available
"Provisions Governing Qualification," SD-6	NPFC	GPO
"The Defense Standardization and Specification Program Summary," SD-8	NPFC	NPFC
"Selling to the Military"	GPO	GPO
"Guide to Specifications and Standards of the Federal Government"	GPO	GPO

Attachment 5 to encl 2

EIA FIBER OPTIC SYSTEMS AND COMPONENTS COUNCIL

REPORT

H. N. DORRIS
CHAIRMAN
AMERICAN BELL

1 of 5

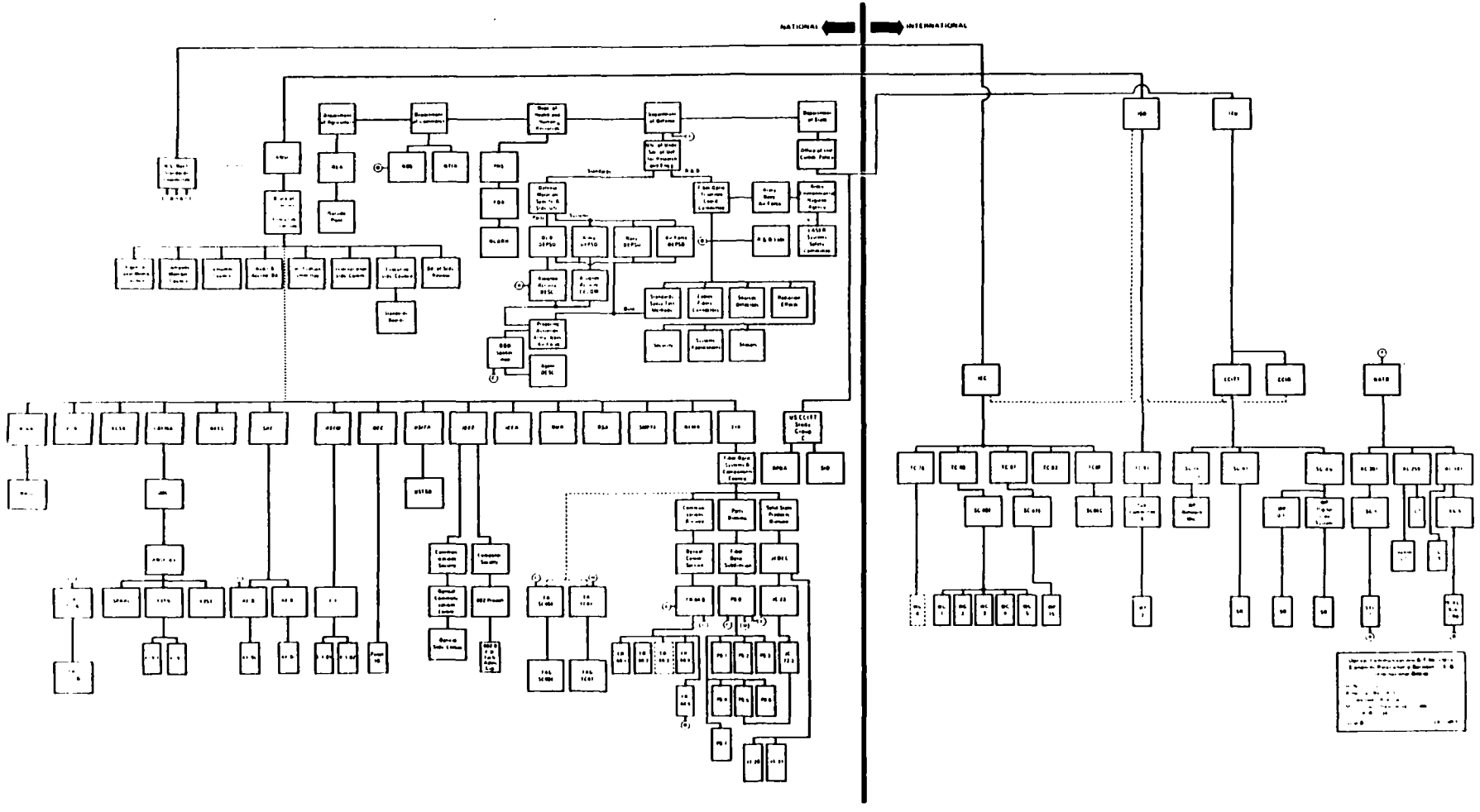
ENCL 3

EIA FIBER OPTIC SYSTEMS AND COMPONENTS COUNCIL

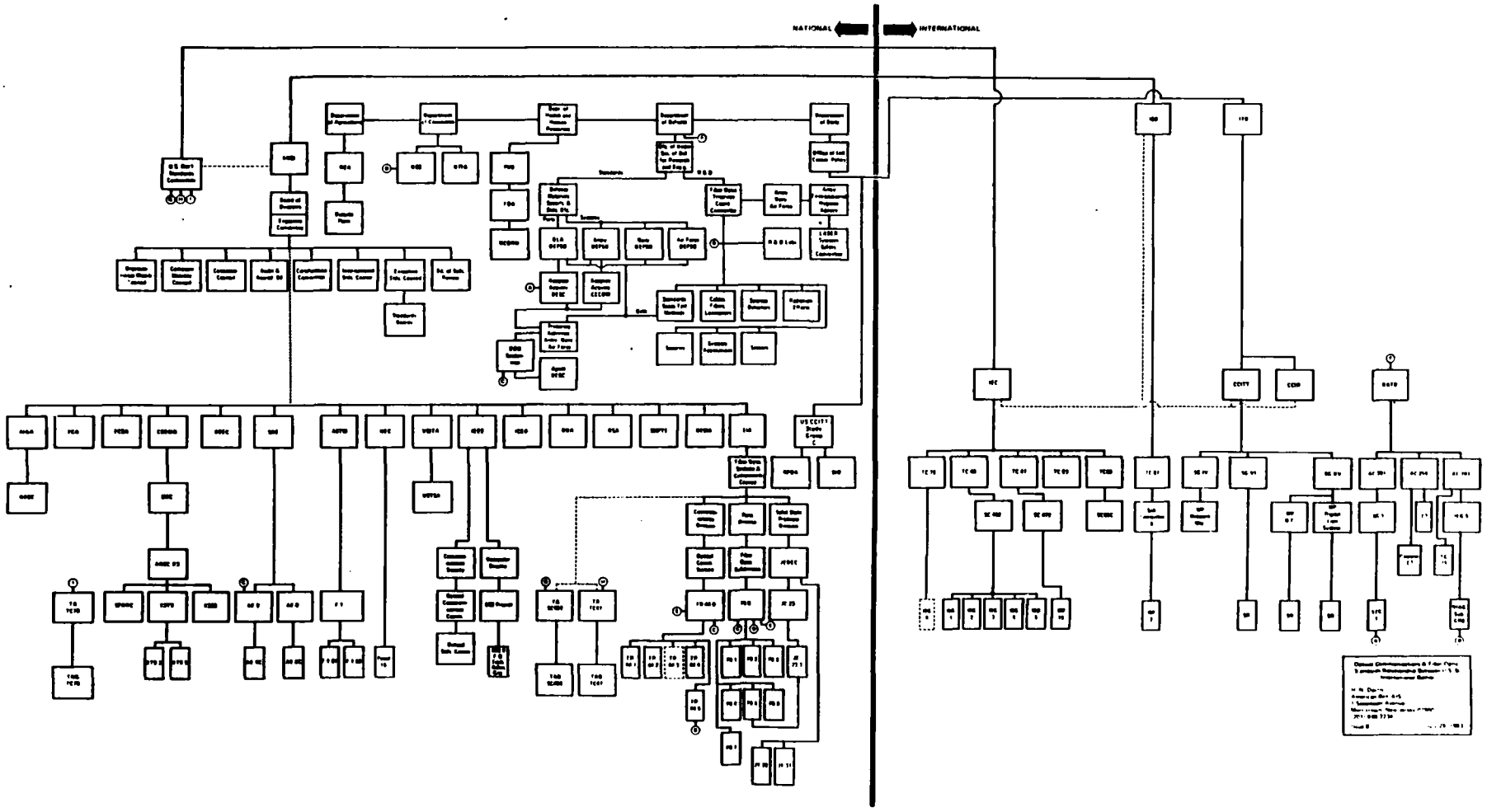
- o CURRENT US OPTICAL SYSTEMS AND COMPONENTS STANDARDS DEVELOPMENT

- o PROPOSED
  NEW ANSI "FIBER OPTIC SYSTEMS AND COMPONENTS PANEL"
  - PLANS
  - DIRECTION
  - COORDINATION

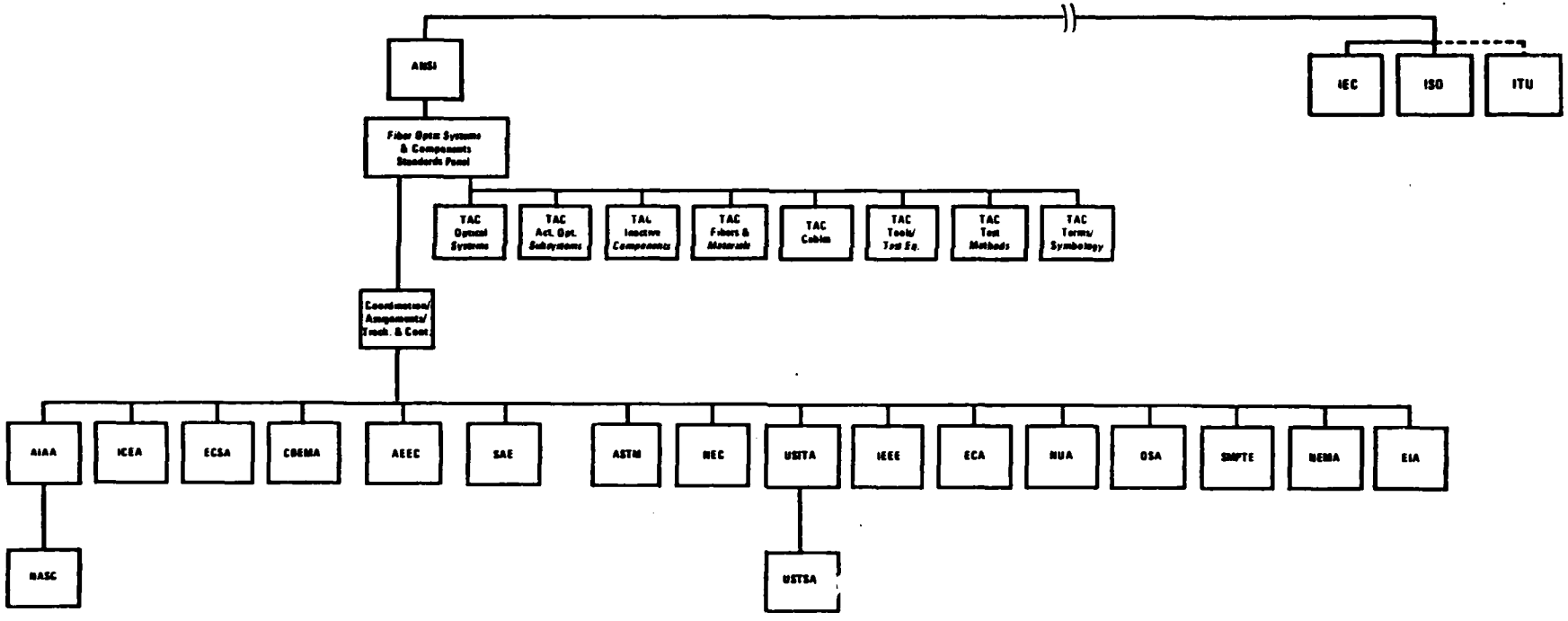
Optical Communications & Fiber Optic Standards Relationship Between U.S. & International Bodies



Optical Communications & Fiber Optic Standards Relationship Between U.S. & International Bodies



Proposed USA Optical Communications System
& Fiber Optic Compounds Standards Development



H. N. Dorris
American Bell/AIS
1 Speedwell Avenue
Morristown, New Jersey 07960
(201) 898-2234
Issue 1 July 26, 1988

AS THE U.S. REPRESENTATIVE TO NATO STUDY GROUP 7 UNDER SUB-GROUP I OF AC301, I HAVE ATTENDED SEVERAL MEETINGS THIS PAST YEAR. STUDY GROUP 7 HAS RESPONSIBILITY FOR NATO DOCUMENTATION OF FIBER OPTICS. THIS IS ONE OF SEVERAL PRODUCT AREAS THAT THIS GROUP HAS RESPONSIBILITY.

IT HAS BEEN DETERMINED THAT ALL PARTS RECOMMENDATION DOCUMENTS AND ALL TECHNICAL RECOMMENDATION DOCUMENTS WILL BE INCLUDED IN ASTANP-3 INSTEAD OF THE PREVIOUSLY PROPOSED DASH 3 AND DASH 4 ASTANPs.

THIS PAST MARCH THERE WAS A WORKING GROUP MEETING HELD ON THE MECHANICAL AND OPTICAL INTERFACES FOR A SINGLE FIBER CONNECTOR. PRESENT AT THIS MEETING WERE THE NATO STG/7 DELEGATES FROM USA, FRANCE, AND UK, TOGETHER WITH TECHNICAL EXPERTS FROM THE TRADE FEDERATIONS AND NATIONAL STANDARDS AUTHORITIES FROM THESE COUNTRIES. AS THE U.S. DELEGATE, I WAS ACCOMPANIED BY JOE NEIGH AND OWEN MULKEY, WHO ARE THE RESPECTIVE CHAIRMAN OF THE EIA P-6 AND P-6.3 COMMITTEES ON FIBER OPTICS.

THE DRAFT OF THE NATO CONNECTOR SECTIONAL DOCUMENT WILL NOT ONLY CONTAIN THE OPTICAL AND MECHANICAL INTERFACE DIMENSIONS, BUT ALSO PREFERRED RATINGS AND CHARACTERISTICS, INSPECTION, QUALIFICATION, AND TESTING. A PROJECT HAS BEEN ISSUED TO CIRCULATE THIS DRAFT TO THE MILITARY AND INDUSTRY FOR COMMENTS.

THE SUCCESS OF THIS WORKING GROUP MEETING CAN BE CONTRIBUTED LARGELY TO THE AVAILABLITY OF MIL-STD-1863 (INTERFACE DESIGNS AND DIMENSIONS FOR FIBER OPTIC INTERCONNECTION DEVICES) WHICH WAS DATED IN DECEMBER 1982. THE FACT THAT THIS MILITARY STANDARD WAS AVAILABLE PROVIDED A GOOD BASELINE FOR THE UK DRAFT. IF IT HAD NOT BEEN AVAILABLE, THE PORTION OF THE DRAFT DEALING WITH INTERFACES MIGHT HAVE BEEN QUITE DIFFERENT.

AS A SPINOFF FROM THIS MEETING, A PROJECT HAS BEEN INITIATED TO UPDATE MIL-STD-1863.

A PROJECT HAS ALSO BEEN ISSUED TO CIRCULATE A UK DOCUMENT ON AN EXPANDED BEAM CONNECTOR.

THE NATO GENERIC SPECIFICATION ON FIBER OPTIC CONNECTORS IS BEING REFORMATTED BY THE U.S. INTO ASTANP FORMAT.

THE NATO GENERIC SPECIFICATION ON FIBER OPTIC CABLES, WHICH IS BEING PREPARED BY THE NETHERLANDS, IS STILL BEING COMMENTED ON BY THE NATO COUNTRIES.

A GENERIC SPECIFICATION ON FIBER OPTIC TERMINAL DEVICES WILL BE CIRCULATED BY FRANCE SHORTLY. ALSO, THE UK WILL BE CIRCULATING A DRAFT ON FIBER OPTIC SAFETY ASPECTS SOON. THIS DRAFT WILL BE BASED ON THE IEC DOCUMENT.

THE NEXT STUDY GROUP 7 MEETING WILL BE HELD AT NATO HEADQUARTERS IN BRUSSELS DURING THE WEEK OF 24 OCT 83.

IEC Report
1 August 1983
FSG 60 Program Analysis
Dayton, Ohio

In previous FSG 60 Standardization Program Analysis meetings for Fiber Optics we presented the organization of the International Electrotechnial Commission or IEC as it is better known, its beginnings, worldwide membership and participation of National committees.

In particular, we reported on the activities of SC46E Fiber Optics of TC 46 Cables, Wires, and Waveguides for Telecommunication Equipment and the international meetings held in Florence, Ottawa, and Dubrovnic.

Today we'll discuss the USNC role in SC46E, how its structured and the manner in which a U.S. Position is established. This includes the initiation of documents and the preparation for an international meeting such as the one scheduled for 17 - 21 October in Tokyo this Fall where over 30 documents have been agended for discussion.

The Technical Advisory Group or TAG of the USNC for IEC/SC46E consists of a Technical Advisor and 9 Deputy Technical Advisors. I'm pleased to serve as Technical Advisor, particularly when so well supported by the following Deputies:

1. Doug Parker (G&H): Tools/Instruments
2. Mike DiMauro (Rochester): Terminology/Symbology
3. Owen Mulkey (Boeing): Interconnecting Devices
4. Marv McNeil (Siecor): Test Methods
5. Jim Herman (Times Fibers): Transducers
6. Roy Love (Corning): Fibers/Materials
7. Ramesh Sheth (Belden): Cables
8. Hank Dorris (Amer. Bell): Systems
9. Bob Gallawa (NBS): Systems

Each of these DTA's with the exception of Hank Dorris and Bob Gallawa are chairmen of their respective EIA P-6 Working Groups. Hank Dorris is Chairman of EIA TR-44 Committee for Optical Communications Systems and Bob Gallawa is Deputy at Large.

Each Deputy has his own TAG consisting of the membership of his Working Group plus other outside (outside of EIA) experts including military personnel who comment on the various documents being reviewed or initiate and prepare documents on behalf of the USNC. It is important to note that the USNC position is intended to truly reflect the U.S. position and not just EIA's.

The Deputy TA is responsible for developing the U.S. position in final form and subject to my approval submitting it to the Secretary of the USNC for dissemination worldwide.

These positions are normally determined by ballot as a result of circulation of the documents to the members of the applicable TAG. The DTA's can formulate proposed USNC positions as a result of these ballots or call a meeting of his TAG to resolve key issues in the event of conflict or strong recommendations.

To facilitate these reviews and particularly to further the initiation of U.S. documents, the DTA's have opted to meet with their TAG's during a period reserved for this purpose at the semi-annual P-6 Working Groups meetings. This is done as a convenience for the attendees and should not be construed as being solely an EIA position. Each DTA has been strongly encouraged and requested to utilize experts from all sectors of the fiber optics industry and as such to totally represent the U.S. position.

In developing the U.S. position for the October meeting in Tokyo, the Deputy TA's met in Washington, DC on July 11th and addressed each agendum. I have appointed each of the Deputies as a delegate/observer to the Tokyo meeting. Since the delegation is limited by IEC regulation to four delegates, we are continuing the practice we established several years ago of rotating delegates and observers at the meetings depending upon the agenda item. By this vehicle, we are able to maximize our technical competency during discussions at the meeting. I have also appointed Dr. Roy Love to again serve as Chief U.S. Delegate.

Most of the Deputies will be speaking to you later on in this program as chairmen of their Working Groups. Details of their specific activities will be covered at that time.

A meeting of the Deputy Technical Advisors will take place following this meeting for an overall review of USNC TAG operations and to ensure a firm and concise position for the U.S. Delegates to Tokyo. We intend to field the strongest possible rational delegation bar none to the October meetings for Fiber Optics in Tokyo.

W.D. O'HIROK
Technical Advisor, USNC

STATUS OF FIBER OPTICS

DESC - EMD

MR. RICHARD SCHADE

SYSTEM USAGE

OF

FIBER OPTICS

SYSTEM USAGE

I. OPERATION/PRODUCTION - 23 SYSTEMS

II. DEVELOPMENT - 36 SYSTEMS

III. OTHERS - 65 SYSTEMS

CURRENT MILITARY

FIBER OPTIC

DOCUMENTATION

CURRENT MILITARY FIBER OPTIC DOCUMENTATION

1.	MIL-STD-1863	2 DEC 82	INTERFACE DESIGNS AND DIMENSIONS FOR FIBER OPTIC INTERCONNECTION DEVICES
2.	DOD-C-85045	16 FEB 79	CABLES, FIBER OPTICS, GENERAL SPECIFICATION FOR (METRIC)
3.	DOD-C-85045/1	10 NOV 81	SINGLE FIBER
4.	DOD-C-85045/2	10 NOV 81	CABLE, HEAVY DUTY
5.	DOD-STD-1678	30 NOV 77	FIBER OPTICS TEST METHODS AND INSTRUMENTATION

MILITARY FIBER OPTIC

DOCUMENTATION

IN

PROCESS

MILITARY DOCUMENTS IN PROCESS

CABLE, CONNECTORS

SPLICES, COUPLERS

SOURCES (LED), DETECTORS

BULKHEAD AND HULL PENETRATORS, CABLE ASSEMBLIES

MILITARY DOCUMENTS PROPOSED

CONNECTORS, TOOLS

COUPLERS, SPLICE (LASER)

RECEIVERS, TRANSMITTERS

TERMINATING DEVICES, KITS

TEST EQUIPMENT, DATA LINKS

REPEATERS, ASSEMBLIES

DOD POSITION MEETINGS

ON

EIA DOCUMENTATION

DOD POSITION PROVIDED ON

EIA DOCUMENTS

EIA has rededicated itself to standards for the Fiber Optics technologies - this rededication has taken various forms since the last FSG 60 Standardization Program Analysis meeting in 1982. Some of the steps taken and to be taken are:

1. Establish an EIA Fiber Optic Council to bring together management coordination of various EIA groups working on or having interest in Fiber Optics.

2. Call thru ANSI a November meeting to discuss FO standardization programs.

3. Issue a "Guide for the Preparation of Specifications Using the IECQ - System Format".

4. Hold a training meeting and workshop on the Specification Preparation Guide (Sept. 1983).

5. Consideration of establishment of an EIA FO Division.

   a) Sales reporting
   b) Dues structuring
   c) Complete budgeting

6. Alter the FOTP issuance under RS-455 to better handle revisions and to clarify.

7. Issue Component Bulletin No. 9.

8. Establishment of a decision sequence for Working Groups preparing specifications.

9. Establish a Qualification Approval sequence for specification writing.

More Recommended Standards, Specifications and FOTPs are coming out each month.

The IECQ Program is progressing and the first U.S. company has qualified (not FO). Countries involved (see attachment).

This is the way the IECQ is set-up in the U.S.

Interest still remains high as you can see by this partial list of companies active in the EIA effort.

And our interest continues as can be seen by the government participants.

There are several points we hope to have clarifed during these sessions today and later this week ...

1. EIA invited DoD to utilize the IEC format and the EIA Generic documents as the basis for DoD's writing sectional and detail specifications. This does not appear to be happening as evidenced by the documents coming from DESC.

2. We are also concerned in that we keep hearing of needs for specifications on an almost urgent basis, and have heard this for the last two years; yet, if we understand the Table I in IIA on page 3 of the Analysis, it would appear we are talking of only 2 or 3 items procured three times a year or less.

3. For four years or more, EIA has been asking for DoD specification requirements. From the number of documents coming from DESC, it appears the requirement needs did exist but for some reason couldn't be made available to the WGs working in these same technological areas.

Never-the-less, the WGs are progressing and I'm sure that as these days progress, we will all benefit from this exchange. I hope all of you have an enjoyable, profitable, and meaningful FSG 60 Fiber Optics Standardization Planning Meeting.

JRN/kk

8/8/83

EIA RS-455-15

AMERICAN NATIONAL STANDARD

ANSI/EIA RS-455-15-1983
APPROVED MAY 23, 1983

EIA STANDARD

FOTP-15

ALTITUDE IMMERSION

RS-455-15

MAY 1983

Engineering Department

ELECTRONIC INDUSTRIES ASSOCIATION

APRIL 1983

COMPONENT BULLETIN No. 9

REFERENCE GUIDE

FOR

FIBER OPTIC TEST PROCEDURES

ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT

2001 EYE STREET, N.W.

WASHINGTON, D.C. 20006

DECISION SEQUENCE

1. Generic Specification

   (a) Determine the scope.
   (b) Decide what performance parameters along with associated tests are needed to characterize the product.
   (c) Decide what documents should be referenced that include required tests.
   (d) Determine particular test methods needed, options necessary, etc.

2. Sectional Specification

   (a) Define the sub-families under the GS.
   (b) Determine how many sectionals will be needed to cover the sub-families.
   (c) Develop a Qualification Approval test schedule.
   (d) Develop any tests not available in EIA standards.

3. (Blank) Detail Specification

   (a) Decide grouping of products to be included in BDS.
   (b) Develop a component Quality Conformance Inspection test schedule.

QUALIFICATION APPROVAL

TESTS NEEDED TO PROVE PRODUCT PERFORMANCE

SELECT APPROPRIATE CONDITIONS & OPTIONS

QUALIFICATION APPROVAL TEST SCHEDULE TABLE

METHOD OF CLASSIFYING DEFECTS

CRITICAL DEFECT

MAJOR DEFECT

MINOR DEFECT

SAMPLING PLAN

ESTABLISH AQL

AMERICAN NATIONAL STANDARD

ANSI/EIA RS-458 - 1981
APPROVED APRIL 27, 1981

EIA RS-458

EIA STANDARD

STANDARD OPTICAL

WAVEGUIDE FIBER TYPES

RS-458

MAY 1981

Engineering Department

ELECTRONIC INDUSTRIES ASSOCIATION

IECQ-SYSTEM

The International Electrotechnical Commission Quality Assessment System

Certifying countries:

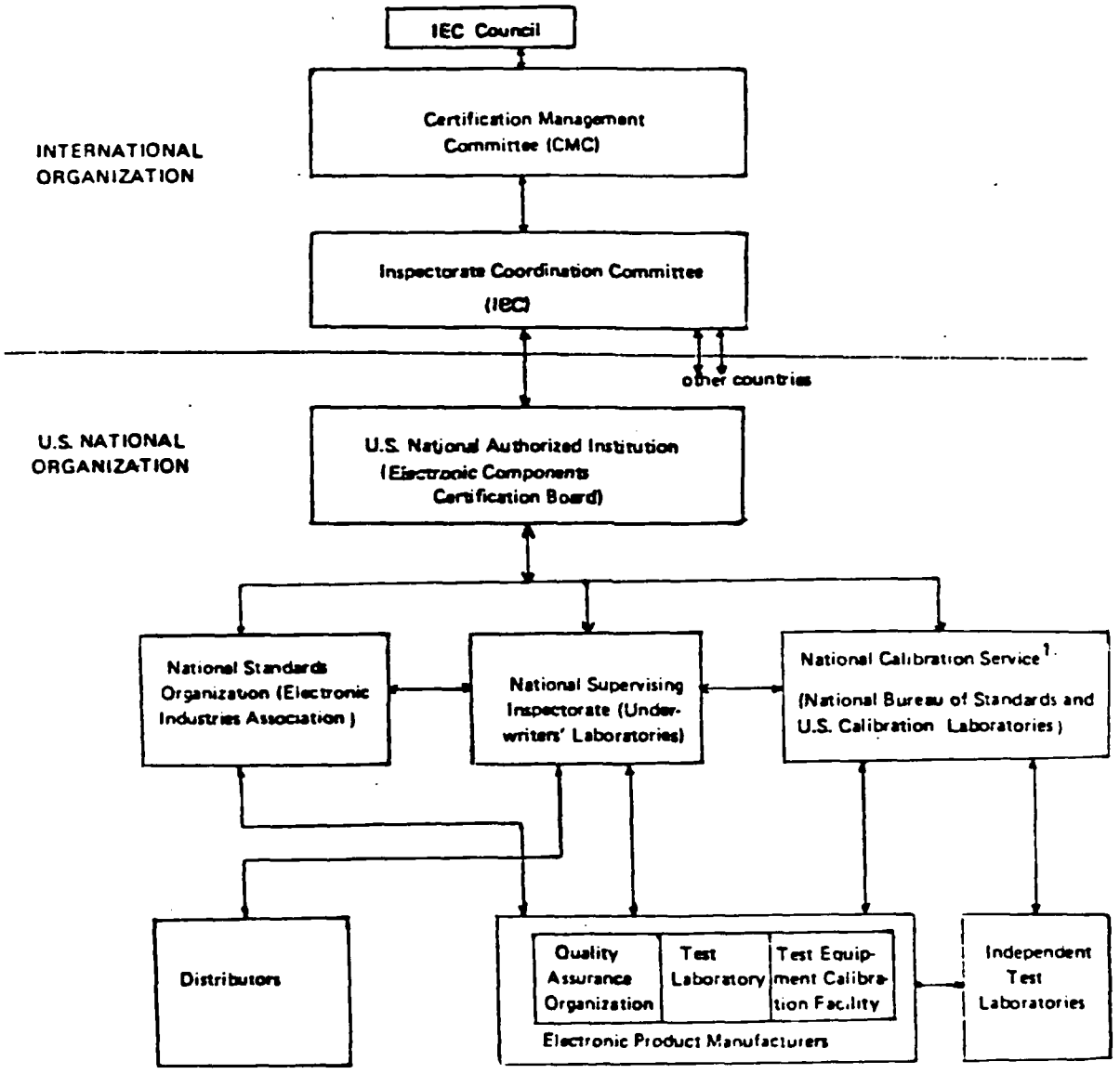
AUSTRALIA	ISRAEL
BELGIUM	JAPAN
DENMARK	SWITZERLAND
FRANCE	UNITED KINGDOM
GERMANY	UNITED STATES
IRELAND	

Participating countries:

Canada	Norway	Sweden
Hungary	Netherlands	ROK
Italy	Poland	India

OPERATIONAL MID-NOVEMBER 1981 INTERNATIONALLY AND IN THE U.S. IN JULY 1983. FOLLOWING OVER 10 YRS. OF PLANNING.

THE U.S. NATIONAL IECQ-SYSTEM ORGANIZATION



Note 1: *The National Calibration Service is the U.S. National Bureau of Standards operating in conjunction with a U.S. network of calibration laboratories.*

Enclosure 8 Not Available

IEEE ACTIVITY REPORT
FOR
1 AUGUST 1983
FIBER OPTIC STANDARDIZATION PROGRAM ANALYSIS (FSG60)

IEEE Computer Society Project 802 - Local and Metropolitan Area Network Standards

The project involves data communication systems. The systems involve such as a single office building, a warehouse or a campus (LAN) and larger areas such as several blocks of buildings to entire cities (MAN). These LAN's and MAN's will operate with transmission data rates of 1 to 20 Mb/s. The standards will define a set of interfaces and protocols.

Three LAN access method and physical layer specifications are under study. They are CSMA/CD, Token-Passing Bus and Token-Passing Ring. Access to the media in CSMA/CD is permitted to any data source and has a collision detection technique to prevent scrambled messages. In the other two methods, the media is accessed only when you have the "Token" and this is passed via a bus or a ring topology.

There is a fiber optic Technical Advisory Group (802.8) that is charted to help the three LAN working groups and the MAN working group. TAG 802.8 has just had a request to help lay out a Fiber Optic media for the Token-Passing Ring group and to review a technical contribution by the CSMA/CD group. Only work assignments have been made so far.

IEEE Communications Society - Optical Waveguide Communications Committee

This committee scope includes the sponsorship of papers, discussions and promulgates standards in the area of communication lightwave technology. This committee has a "Standards Sub-Committee". Its first task was to up date the Glossary and to work on "Symbols". Prior to any other standards effort being started a need must be established and a check of other standards groups such as EIA and SAE will be made to prevent overlap. At the present time the committees' main thrust is in the educational papers and discussions areas.

7/26/83
W. L. Schumacher

Enclosure 10 Not Available

MIL-STD-188-111 UPDATE

Preparing activity - U.S. Naval Electronic Systems Command.

Speaker - Anthony L. Russo - NSA

1. CURRENT STATUS

The second unification meeting was held on 17-19 May at DCEC, Reston, Virginia. The purpose of this meeting was to take action on the 314 comments received as the result of the coordination review by industry and government. Resolution of all comments was achieved at this meeting and the document currently is in final preparation for printing. Formal release of the Standard is expected in November of this year.

2. OVERVIEW OF MIL-STD-188-111

The purpose of MIL-STD-188-111 is to provide mandatory system standards and optional design objectives that are considered necessary to ensure interoperability and commonality among long haul and tactical fiber optics transmission subsystems.

The final structure of the document is the result of some nine drafts and two coordination reviews by industry and government. Many of the recommendations provided by industry were incorporated into the document.

A. Areas of standardization by MIL-STD-188-111 - DIGITAL LINK

(1) Electrical Interface - MIL-STD-188-114 with option provisions.

(2) BER performance 1 in 10^{-8} D.O. 1 in 10^{-9}

(3) Power margin - 6Db

(4) Dynamic Range - 20 Db

(5) Jitter - Max. 3.5% of unit interval

(6) Distortion - Max. 25%

(7) Clock control and timing

Areas of Standardization - Analog Link

(8) Net loss variation $\pm$ .5 Db

(9) Intermodulation distortion - -40 Db

(10) Power margin - 6 Db

(11) Dynamic range - 20 Db

B. Areas not standardized by MIL-STD-188-111 at this time:

(1) Wavelength

(2) Optical connectors

(3) Optical cable/fiber

(4) Light source

(5) Optical detector

(6) Optical line code techniques

3. Component Selection

The user of MIL-STD-188-111 is directed to appendix E which explains the relationship between the standard and the Fiber Optic Component Standardization Program (FSG-60) at DESC.

4. Future of MIL-STD-188-111

It is envisioned at this time that the document will under go a revision perhaps every two years, these revisions will accomodate new mandatory perameters, as the technology matures and also additional application.

A military handbook is planned for the purpose of backing the standard and to give guidance in the fiber optic system design area. Publication of the Handbook is planned for late CY 84.

ELECTRONIC INDUSTRIES ASSOCIATION

TR-44

OPTICAL COMMUNICATIONS SYSTEMS COMMITTEE

REPORT

H. N. (HANK) DORRIS
CHAIRMAN
AMERICAN BELL

TR-44 OPTICAL COMMUNICATIONS SYSTEMS COMMITTEE
H. N. DORRIS, AMERICAN BELL

TR-44.1 OPTICAL FIBER TELECOMMUNICATIONS SYSTEMS SUBCOMMITTEE
O.M.M. MITCHELL, AMERICAN TELEPHONE AND TELEGRAPH

TR-44.2 FIBER OPTIC LOCAL AREA NETWORK SUBCOMMITTEE
H. N. DORRIS, AMERICAN BELL

TR-44.3 NON-GUIDED OPTICAL COMMUNICATIONS SUBCOMMITTEE*
H. N. DORRIS, AMERICAN BELL (TEMPORARY CHAIRMAN)

TR-44.4 OPTICAL SYSTEMS TERMS, DEFINITIONS, SYMBOLOGY, SAFETY, AND DOCUMENTATION CONTROL SUBCOMMITTEE
W. L. SCHUMACHER, AMP, INC.

TR-44.5 INDUSTRIAL LIAISON FOR MILITARY OPTICAL FIBER SYSTEMS COMMITTEE**
R. F. HAZEL, ITT

* INACTIVE
** TO REPLACE AD HOC COMMITTEE

TR-44.1 OPTICAL FIBER TELECOMMUNICATIONS SYSTEMS SUBCOMMITTEE

HISTORY

- APRIL, 1981: P-6.1 FIBER OPTICS SYSTEMS WORKING GROUP FORMED

- JUNE, 1981: FIRST MEETING OF P-6.1, SEATTLE, WA.
  - SCOPE
  - FORMED TASK GROUP P-6.1.1 FIBER OPTIC SYSTEM ARCHITECTURE
    - DEFINE FIBER OPTIC SYSTEMS AND CLASSIFICATIONS
    - FORMULATE AND RECOMMEND GUIDELINES
  - DISCUSSED REQUEST TO REVIEW PROPOSED MIL STD 188-111
  - DISCUSSED TRANSMISSION OBJECTIVES AND SYSTEM GUIDELINES

- SEPTEMBER, 1981: P-6.1.1 TASK GROUP MEETING
  - FIRST DRAFT OF "INTERCITY DIGITAL LIGHTWAVE SYSTEMS WORKING PAPER (REQUIREMENTS)"
    - TRANSMISSION CRITERIA
    - OPERATIONAL CRITERIA
    - MAINTENANCE
    - PHYSICAL AND ENVIRONMENTAL

- JANUARY, 1982: P-6.1 SECOND MEETING, PALM BEACH, FLA.
  - REVIEW OF WORKING PAPER
    - REVISIONS
  - REVIEW OF COMMENTS TO MIL STD 188-111
  - DRAFTED LETTER TO NEC
  - DISSOLVED P-6.1: TRANSFER TO TR-44

TR-44.1 OPTICAL FIBER TELECOMMUNICATIONS SYSTEMS SUBCOMMITTEE

HISTORY (CONTINUED)

- MAY 1982: TASK GROUP TR-44.1.1 AUDIO TELECONFERENCE
  - REVIEWED CHANGES TO WORKING PAPER

MEETING 1: JUNE, 1982: DENVER, CO.
- SCOPE MODIFIED
- ORIGINAL NAME "INTERCITY, METRO AND FEEDER (LOOP) FIBER OPTIC SYSTEMS" OF TR-44.1 CHANGED
- ADDITIONS TO WORKING PAPER
- GENERIC SPECIFICATION FOR ANALOG FIBER SYSTEMS
- JOINT TASK GROUP MEETING P-6.6.4/TR-44.1.1
  - FIBER BANDWIDTH AND SYSTEM CONSIDERATIONS
  - FIBER CONCATENATION
    - BANDWIDTH SPECIFICATION

- SEPTEMBER, 1983: TR-44.1.1/P-6.6.4 JOINT TASK GROUP MEETING, BASKING RIDGE, NJ (HUDSON/DORRIS)
  - FIBER CONCATENATION
    - SYSTEM CONSIDERATION
    - FIBER BW MEASUREMENTS AND CONSIDERATIONS

- OCTOBER, 1982: TR-44.1.1/P-6.6.4 JOINT TASK GROUP MEETING, BOULDER, CO (HUDSON/DORRIS)
  - SYSTEM BW CHARACTERISTICS
  - FIBER BW MEASUREMENTS

TR-44.1 OPTICAL FIBER TELECOMMUNICATIONS SYSTEMS SUBCOMMITTEE

HISTORY (CONTINUED)

MEETING 2: JANUARY, 1983; SAN DIEGO, CA

- TR-44.1.1 DIGITAL WORKING PAPER (PN 1683) MITCHELL
  - NEXT REVISION MARCH 15, 1983
  - COMMENTS BY APRIL 15, 1983
  - MAILING BEFORE JUNE 1983, MEETING FOR LETTER BALLOT

- TR-44.1.2/P-6.6.4 INFORMATION TRANSMISSION CAPACITY JOINT TASK GROUP
  - END-TO-END BW
  - DRAFT DOCUMENT - "FIELD MEASUREMENT, END-TO-END BW" (PN 1684)
  - DRAFT CIRCULATION MARCH 30, 1983
  - COMMENTS BY APRIL 30, 1983
  - LETTER BALLOT BY MAY 21, 1983
  - CCITT STUDY GROUP XV CONTRIBUTION, APRIL 25, 1983

- TR-44.1/P-6.6.4
  - POWER PENALTY/BW TRADE-OFF
  - DEFINITION OF FIBER BW (MORE THAN A SINGLE NUMBER)
  - CONCATENATION (γ)
    - ROUND ROBIN MEASUREMENTS ON BW

TR-44.1 OPTICAL FIBER TELECOMMUNICATIONS SYSTEMS SUBCOMMITTEE

HISTORY (CONTINUED)

- o TR-44.1.3 HIGH LEVEL DIGITAL INTERCONNECTION TASK GROUP (KARLOVAC)
  - o COORDINATION IEEE/CCITT/USITA/AT&T

- o TR-44.1.4 WAVELENGTH DIVISION MULTIPLEXING (WDM) TASK GROUP (CANTWELL/DORRIS)
  - o PLANNING PRESENTATION FOR JUNE. 1983 MEETING

- o FIBER OPTIC SYSTEM SAFETY CONSIDERATION (DORRIS)
  - o TR-44.1 RESPONSE TO ANSI Z136.2
  - o SHIFT TO TR-44.4

- o FIBER OPTIC ANALOG SYSTEM WORK
  - o SHIFT TO BACK BURNER

MEETING 3: JUNE. 1983; BOSTON. MA.

- o PN 1683 "GENERIC SPECIFICATION FOR DIGITAL OPTICAL FIBER TELECOMMUNICATION SYSTEMS"
  - o FINAL DRAFT DISCUSSIONS
  - o CIRCULATED ON LETTER BALLOT TO TR-44 AND P-6 BY AUGUST. 1983

TR-44.1 OPTICAL FIBER TELECOMMUNICATIONS SYSTEMS SUBCOMMITTEE

(CONTINUED)

- PN 1684 "FIELD MEASUREMENTS IN THE FREQUENCY DOMAIN OF MULTIMODE OPTICAL FIBER INFORMATION TRANSMISSION CAPACITY"
  - REVISED DRAFT TO BE SENT ON LETTER BALLOT TO TR-44 AN P-6
    - LAUNCHING CONDITIONS TO BE DETERMINED

- TR-44.1.1 WORKING PAPER ON SINGLE MODE SYSTEMS TO BE INITIATED

- TR-44.1.2 INITIATE STUDY OF LAUNCHING CONDITIONS FOR BANDWIDTH MEASUREMENTS
  - RESULTS JUNE, 1984
  - PLAN ONE DAY SEMINAR ON SYSTEMS BANDWIDTH ISSUES FOR JANUARY, 1984 MEETING

- TR-44.1.4 PRESENTATION ON WDN

TR-44.2 FIBER OPTICAL LOCAL AREA NETWORK SUBCOMMITTEE

MEETING 1: APRIL, 1982; PHOENIX, AZ

- SCOPE/OBJECTIVES
- TECHNICAL CONSIDERATIONS
  - FIBER OPTIC LAN ARCHITECTURES
  - SYSTEM PARAMETERS
  - CHARACTERISTICS OF TERMINAL SUBSYSTEMS
  - INTRA/INTER TRANSMISSION CRITERIA
  - LINE CODING
  - SUBJECTIVE TESTING

MEETING 2: JULY, 1982, DENVER CO

- REVIEW OF IEEE 802 MEDIA SUBCOMMITTEE ACTION PLANS
- REVIEW OF IEEE 802 FIBER OPTIC SPECIFICATION
- XEROX's FIBERNET II
- TASK GROUP (TR-44.2.1) - LAN DEFINITIONS (RAWSON: XEROX)
- FIBER OPTIMIZATION FOR LAN'S
- STRUCTURE FOR FIBER OPTIC LAN STANDARDS
- TASK GROUP (TR-44.2.2) - LAN APPLICATONS (VITALO, WECO)
  - RS-232-C
  - DTE/DTC

TR-44.2 FIBER OPTICAL LOCAL AREA NETWORK SUBCOMMITTEE

MEETING 3: JANUARY, 1983; SAN DIEGO, CA

- o REVIEWED ANSI DRAFT STANDARD Z136.2 (1984)
  "SAFETY WITH OPTICAL FIBER SYSTEMS UTILIZING LASER DIODE AND LED SOURCES"
- o FIBER OPTIC ARCHITECTURES/COMPONENT CONSIDERATIONS
- o TASK GROUP TR-44.2.1
  - o LAN DEFINITIONS
  - o FIBER OPTIC LAN BIBLIOGRAPHY
- o TASK GROUP TR-44.2.2
  - o DTE/DCE
  - o RS-232-C
  - o LINK MARGIN
  - o INTERFACE CONSIDERATIONS FOR FIBER OPTIC INTERCHANGE CIRCUITS AND PARAMETERS
  - o TO DEVELOP
    - o FUNCTIONAL SPECIFICATION FOR RS-232-C FIBER OPTIC INTERFACE (ASYN/SYN)
- o JOINT TASK GROUP (TR-44.2 AND P-6.6.3) - SHORT DISTANCE FIBERS
  - o CATEGORIES OF STANDARD FIBERS
  - o FIBER OPTIMIZATION
  - o PROPOSED NEW FIBER SIZES DISCUSSION
- o TASK GROUP, TR-44.2.2, MAY, 1983
  - o RS-232-C OPTICAL LINK DISCUSSIONS
    - o ASYN
    - O SYN

TR-44.2 FIBER OPTICAL LOCAL AREA NETWORK SUBCOMMITTEE

MEETING 4: JUNE, 1983; BOSTON, MA

- o FO LOCAL NETWORK FIBER OPTIMIZATION DISCUSSIONS
- o PROPOSED NEW FIBER SIZES
  - o GLASS/GLASS
  - o PLASTIC
- o RS-232-C (ASYN/SYN) FO LINK PROPOSALS REVIEWED
- o CATEGORIES OF DATA LINKS FOR STD'S WORK (DUPLEX, SIMPLEX, ETC.)
- o STUDIES AND NEW AREAS OF WORK
  - o LINE CODES
  - o RANGE OF BIT RATES/DISTANCE
  - o TESTS (LOOP BACK)
  - o PERFORMANCE PARAMETERS
  - o ISDN INTERFACE
  - o IEEE 488 (MULTIPLEXER STD)

TR-44.4 OPTICAL SYSTEMS TERMS, DEFINITIONS, SYMBOLOGY, SAFETY, AND DOCUMENTATION CONTROL SUBCOMMITTEE

MEETING 1: JUNE, 1983; BOSTON, MA

- o PROPOSED SCOPE AND MEMBERSHIP
- o SYSTEM TERMS AND DEFINITIONS
  - o PROPOSAL
- o DOCUMENTATION CONTROL

TR-44 AD HOC - MILITARY FIBER OPTIC STANDARDS REVIEW COMMITTEE

- JULY, 1981
  ANNOUNCE FORMATION OF AD HOC COMMITTEE AND ATTACHED PROPOSED MIL-STD 188-111 FOR ELECTRONIC INDUSTRIAL REVIEW AND COMMENTS
- SEPTEMBER, 1981
  FIRST MEETING OF AD HOC COMMITTEE
  - PRELIMINARY REVIEW
  - ACTION PLAN
    - NOVEMBER, 1981 COORDINATE AND REVIEW INDUSTRY COMMENTS AND CONSOLIDATE POSITION
    - DECEMBER, 1981 EIA FORMAL RESPONSE TO NAVELEX ON THE PROPOSED MIL-STD
- DECEMBER, 1981
  COMPLETED EIA FORMAL RESPONSE
- 1982-1983
  - REVIEWS AND TECHNICAL DISCUSSIONS WITH DOD
  - DECEMBER, 1982 RECEIVED REVISED PROPOSED MIL-STD 188-111
  - MARCH, 1983 EIA FORMAL RESPONSE DUE
  - MAY, 1983 REVIEW WITH THE DEPARTMENT OF DEFENSE
  - JUNE, 1983 PROPOSED TR-44.5 "INDUSTRIAL LIAISON FOR MILITARY OPTICAL FIBER SYSTEMS SUBCOMMITTEE TO THE DOD STEERING COMMITTEE
    - PLANS
    - SCOPE
- TR-44.5 SCOPE AND MEMBERSHIP MEETING PLANNING

TR-44 OPTICAL COMMUNICATIONS SYSTEMS COMMITTEE

FUTURE DIRECTION

- EIA INDUSTRIAL MEMBER OPTICAL SYSTEM STANDARDS PRIORITIES
  - SINGLE MODE SYSTEMS
  - LOOP SYSTEMS
  - NON-GUIDED
  - SENSORS → P6.5
- USA OPTICAL SYSTEM STANDARDS PRIORITIES

TR-44 OPTICAL COMMUNICATIONS SYSTEMS COMMITTEE SUPPORT

	MEMBERS	CTA	% ACTIVE PARTICIPATION
TR-44	14	8	70 (A)
TR-44.1	25	26	40 (N)
TR-44.2	13	25	54 (N)
TR.44.3	INACTIVE	-	-
TR-44.4	NEW	-	-
AD HOC	5	8	80 (N)
TR-44.5	TO BE FORMED		-

A - ACCEPTABLE
N - NOT ACCEPTABLE

CCITT STUDY GROUP XV

DIGITAL LINE SYSTEMS (DLS) WORKING PARTY*

FIBRE OPTIC SYSTEMS STATUS REPORT

H. N. DORRIS
AMERICAN BELL

* USA MEMBERS OF FIBRE OPTIC SYSTEMS RELATED TOPICS:

H. N. DORRIS - ABI
J. SINGLETON - BELL LABS
T. WALZMAN - AT&T

ENCL 23

SUMMARY REPORT - GENEVA, APRIL, 1983

Q17/XV - CHARACTERISTICS DLS ON OPTICAL FIBRE CABLES

CONSIDERED 12 RELATED CONTRIBUTIONS:

- PARAMETERS AND VALUES WERE PROPOSED FOR INCLUSION IN RECOMMENDATION FOR 34 Mb/s OFDLS OPERATING IN THE WAVELENGTH RANGE 800 - 900 NM.

ITEMS TO BE DISCUSSED - GENEVA, SEPTEMBER, 1983

- OFDLS/850NM/MULTIMODE
  - 8,0 MB/S
  - 34, MB/S
- OFDLS/1300NM/MULTIMODE
- OFDLS/1300NM/MONO-MODE
  - 90. MB/S
  - 140. MB/S
- TESTING OF REGENERATOR FOR OFDLS
- NEW ISSUES FOR NEXT STUDY PERIOD
- IEC RELATIONSHIPS

CCITT STUDY GROUP XV

FIBRE OPTIC WORKING PARTY*

STATUS REPORT

H. N. DORRIS
AMERICAN BELL

* USA MEMBERS OF FIBRE OPTIC WP:

H. N. DORRIS - ABI
W. GARDNER - BELL LABS
G. FOOT - GENERAL CABLE
(P. REITZ - GUEST REPRESENTING EIA, FROM CORNING GLASS)

ENCL 14

SUMMARY REPORT - GENEVA, APRIL, 1983

Q13/XV - CHARACTERISTICS OF OPTICAL FIBRE CABLES

CONSIDERED 11 CONTRIBUTIONS:

- o CONSIDERATION OF RECOMMENDED G.651 TOLERANCES
- o MEASUREMENT METHODS FOR NON-CIRCULAR CORE AND CLADDING
- o K VALUES FOR SUITABLE AGREEMENT BETWEEN MEASUREMENTS OF CORE DIA
- o OPTICAL PROPERTIES OF FIBRES IN THE FIELD SHOWS NA IN G.651 ADEQUATE
- o ATTENUATION
  MEAN LOSS/SPLICE IS USEFUL FOR PREDICTING THE MOST PROBABLE VALUE OF ECS ATTENUATION. HOWEVER, THE BUDGET USED IN DESIGNING AN ACTUAL SYSTEM SHOULD ACCOUNT FOR STATISTICAL VARIATIONS OF CABLE AND SPLICE LOSSES.

CONSIDERED 8 CONTRIBUTIONS:

- o BASEBAND RESPONSE
  IN THE FREQ RANGE OF INTEREST AMPLITUDE DISTRIBUTION BELOW SOME TOLERABLE LEVEL - PHASE RESPONSE NOT REQUIRED.

Q13/XV - CHARACTERISTICS OF OPTICAL FIBRE CABLES (CONTINUED)

- BANDWIDTH CONCATENATION FACTOR (γ)
  γ CAN LIE ANYWHERE IN THE RANGE 0.5 TO 1.0

- PROPOSAL FOR A NEW ANNEX TO G.651.
  SHOULD DRAW ATTENTION TO THE FACT THAT THE DISTRIBUTION OF OPTICAL FIBRE TRANSMISSION CHARACTERISTICS ARE TO BE TAKEN INTO ACCOUNT WHEN DETERMINING PRACTICAL SPECIFICATIONS.

- MULTIMODE OPTICAL FIBRES FOR LOCAL NETWORKS
  - 65/125
  - 100/140

- DRAFT RECOMMENDATION G.65x MONOMODE FIBRES
- TERMINOLOGY
  ADDITIONAL TERMS FOR BOTH MULTI AND MONO MODE FIBRES

Q14/XV - METHODS OF MEASURING THE CHARACTERISTICS OF OPTICAL FIBRE CABLES

CONSIDERED 8 RELATED CONTRIBUTIONS:

- GEOMETRICAL AND OPTICAL PARAMETER MEASUREMENTS:
  - TWO ATM's WERE AGREED FOR THE MEASUREMENT OF GEOMETRICAL CHARACTERISTICS AND OF THE REFRACTIVE INDEX PROFILE.
  - FAR FIELD TECHNIQUE FOR THE MEASUREMENT ON THE NA OF GRADED INDEX OPTICAL FIBRES

- ATTENUATION

  NOT TO MODIFY PREVIOUS WORK. ACCEPT FOR MINOR CLARIFICATIONS

- BASEBAND (BB) RESPONSE - LAUNCHING CONDITIONS

  REPRODUCIBILITY OF BB RESPONSE MEASUREMENT IS MORE HEAVILY DEPENDENT ON THE EXACT MODE ENERGY DISTRIBUTION THAN IS THE CASE OF ATTENUATION
  - THIS IS A CONSEQUENCE OF THE FACT THAT, WITHIN LIMITS, DIFFERENTIAL MODE ATTENUATION IS SMALL, WHEREAS DIFFERENTIAL MODE DELAY IS AT THE HEART OF ANY BB RESPONSE MEASUREMENT.
  - ADOPT "EQUILIBRIUM" CONDITIONS SIMILAR TO THOSE FOR ATTENUATION

Q14/XV - METHODS OF MEASURING THE CHARACTERISTICS OF OPTICAL FIBRE CABLES

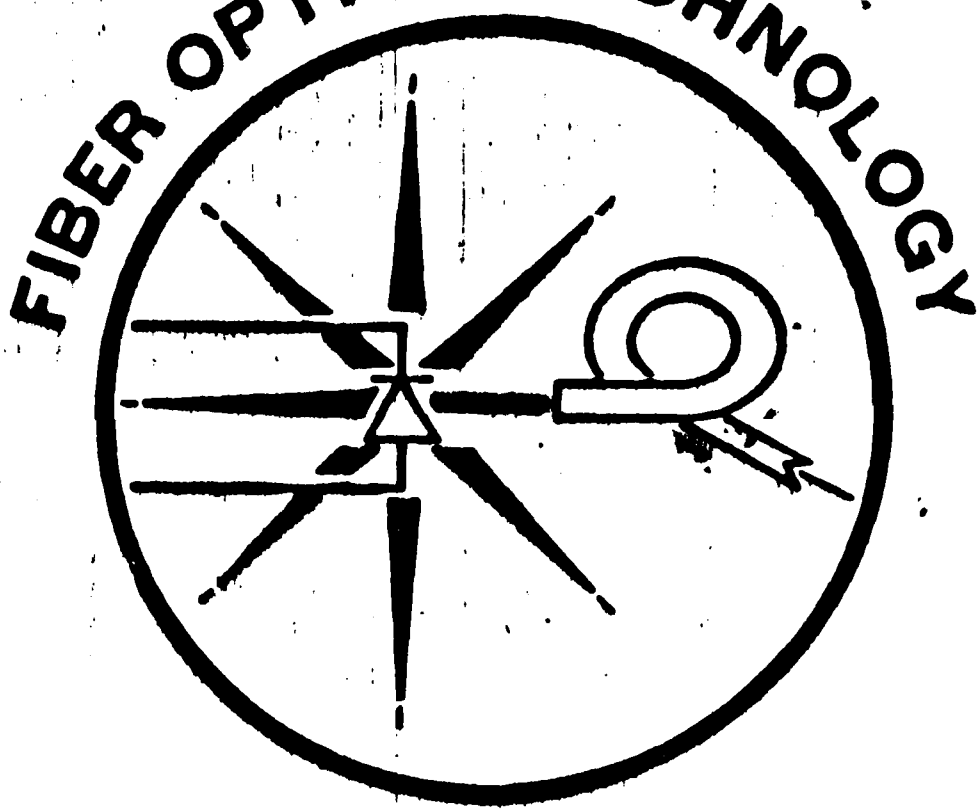
(CONTINUED)

- TEST METHODS FOR MONO MODE FIBRES RTM AND ATM FOR
  - MODE FIELD DIAMETER
  - EFFECTIVE CUT-OFF WAVELENGTH
  - INDEX PROFILE AND GEOMETRICAL PARAMETERS
  - ATTENUATION
  - TOTAL DISPERSION

- FUTURE WORK
  - COMPLETE G.651 AND G.65X
  - NEW QUESTIONS FOR NEXT STUDY PERIOD

Enclosure 15 Not Available

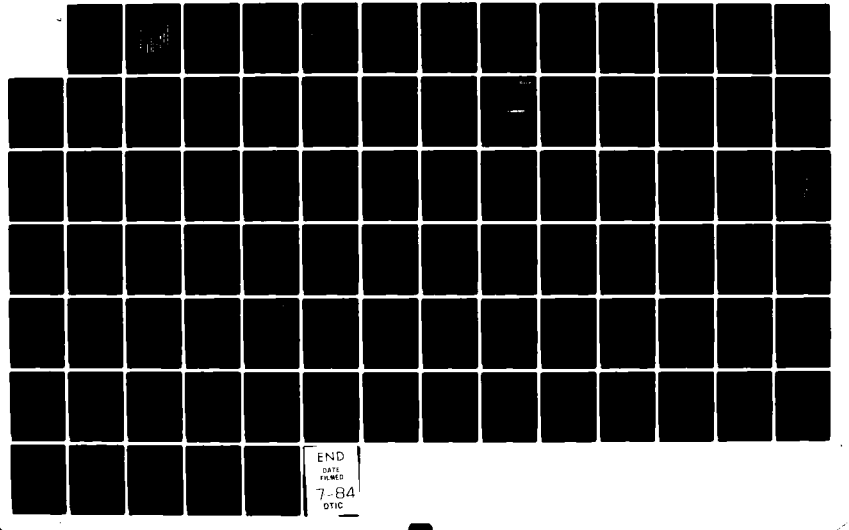
ENCL 3


FIBER OPTICS TECHNOLOGY
CENTER

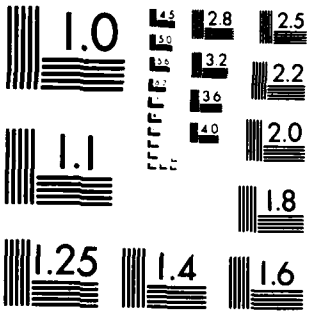
AD-A142 152 MINUTES OF THE FIBER OPTICS STANDARDIZATION PLANNING MEETING HELD AT DAYTON OHIO ON 1-3 AUGUST 1983(U) DEFENSE ELECTRONICS SUPPLY CENTER DAYTON OH 12 DEC 83

2/2

UNCLASSIFIED F/G 20/6 NL



END
DATE FILMED
7-84
DTIC



SACRAMENTO ALC CAPABILITIES

- ENGINEERING

  ORGANIC (IN HOUSE)
  CONTRACTOR

- PROCUREMENT
- LIGHT MANUFACTURING
- DEPOT LEVEL MAINTENANCE
- PROTOTYPING FACILITIES/LABORATORY

FIBER OPTIC INTEGRATION SUPPORT FACILITY

- DEDICATED SUPPORT ENGINEERS
- COMMAND WIDE SUPPORT OF FIBER OPTIC APPLICATIONS
- SYSTEM SIMULATION AND INTEGRATION
- TEST AND EVALUATION OF COMPONENTS AND SYSTEMS
- LATEST SUPPORT EQUIPMENT

FIBER OPTIC INTEGRATION SUPPORT FACILITY SUPPORT EQUIPMENT

- FIBER GEOMETRY INSPECTION SYSTEM
- OPTICAL COMPONENT CHARACTERISTIC SYSTEM
- FIBER ATTENUATION MEASUREMENT SYSTEM
- OPTICAL TEST PLATFORM
- FIBER OPTIC FIELD SUPPORT EQUIPMENT
- ADVANCED ELECTRONIC SUPPORT EQUIPMENT

CURRENT SUPPORT PROJECTS

- A-10 FIBER OPTIC FEASIBILITY STUDY
- A-10 EXTENDABLE INTEGRTATION SUPPORT FACILITY
- A-10 CAMERA SYNCHRONIZATION
- F-111 FLIGHT TEST INSTRUMENTATION
- COMMAND INFORMATION NETWORK

EXTENDABLE ISF

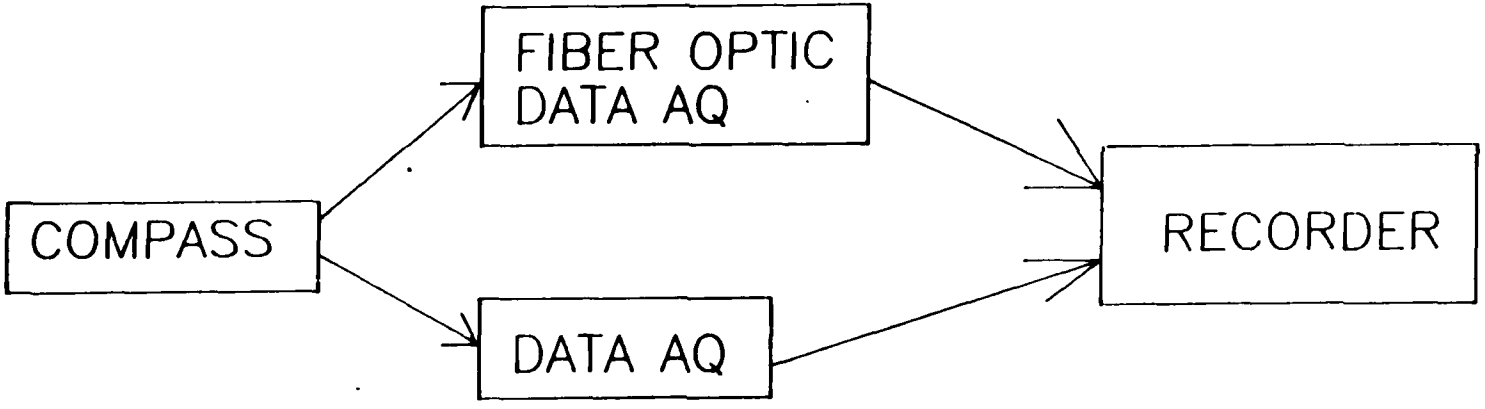
- EXPANDABLE AND UPGRADABLE
- DUALLY REDUNDANT
- NOISE RESISTANT DUE TO FIBER OPTICS
- ENHANCED SIGNAL SECURITY

A-10 CAMERA SYNCHRONIZATION

PROBLEM: ELECTRONIC COUPLING BETWEEN WEAPONS DELIVERY AND CAMERA SYNCHRONIZATION SIGNALS

SOLUTION: EMI RESISTANT FIBER OPTICS

F -111 FLIGHT TEST INSTRUMENTATION



RESOLUTION : FIBER OPTIC 2^{14}

COPPER 2^{9}

COMMAND INFORMATION NETWORK

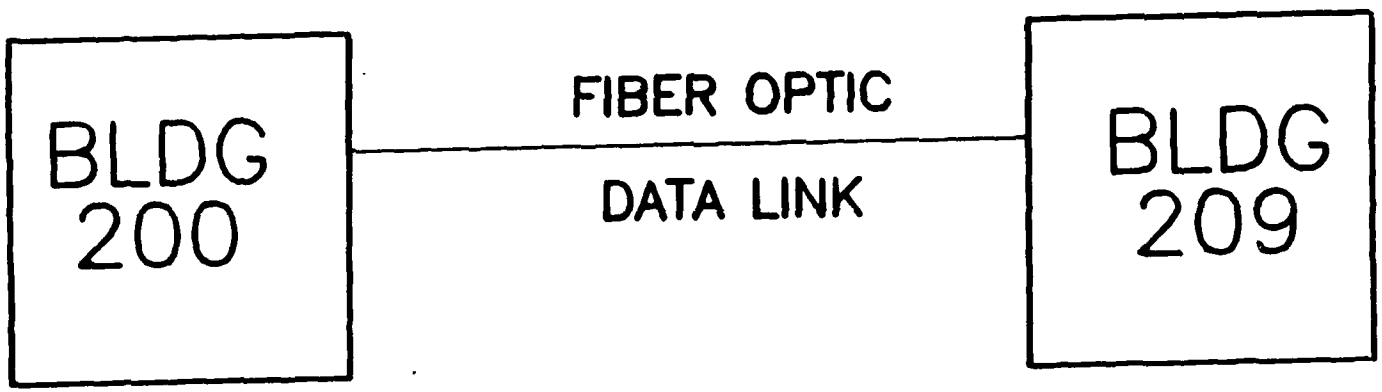


TABLE XII. DoD SPOKESMAN IN FIBER OPTICS.

Committee		Spokesman	Activity	Phone
P-6	Committee on Fiber Optics	Art Hudson	DESC	513-296-6093
P-6.1	Tools and Test Equipment	Robert Rosell	AFALD	513-296-5571
P-6.2	Fiber Optic Terminology	Stan Mickel	NAC	317-353-3045
P-6.3	Fiber Optic Interconnecting Devices	Leonard Bloom	NAVSEA	202-692-2156
P-6.4	Fiber Optic Test Methods and Instrumentation	Dennis Burman	AFLC	916-643-5147
P-6.5	Optical Transducers	Open		
P-6.6	Optical Fibers and Materials	Louis Coryell	CECOM	201-544-5206
P-6.7	Fiber Optic Cables	Vas Kalomiris	CECOM	201-544-5206
TR-44	Fiber Optic Systems Group	Robert Lebduska	NOSC	619-225-7295

Society of Automotive Engineers (SAE)

Committee	Spokesman	Activity	Phone
AE8D1 Fiber Optic Task Group	Ron Peterson	NAC	317-353-3274
AE9C Fiber Optics	Rod Katz	NAC	317-353-7818

International Electrotechnical Commission (IEC)

SC46E - Fiber Optics	Art Hudson	DESC	513-296-6093

Institute of Electrical and Electronic Engineers

FO Communication Committee	Art Hudson	DESC	513-296-6093
Fiber Optic Computer Society	Open		

STATUS REPORT

FOR

EIA WORKING GROUP P-6.4

TEST METHODS AND INSTRUMENTATION

TO

FEDERAL STOCK GROUP FSG 60

STANDARDIZATION PLANNING MEETING

FIBER OPTICS MATERIALS, COMPONENTS, ASSEMBLIES & ACCESSORIES

AUGUST 1 - 4, 1983

MIAMISBURG, OHIO 45342

BY H. M. MCNEIL, CHAIRMAN, EIA P-6.4

DESC-E STANDARDIZATION PLANNING MEETING ON FIBER OPTICS - AUGUST 1-4, 1983

TEST METHODS - EIA P-6.4 PRESENTATION

By: H. Marvin McNeil
SIECOR CORPORATION
Hickory, N.C.

* * * * * *

This is my third appearance at this meeting. As usual, I'll try to provide you with an update of EIA activities relative to Test Procedure documentation. As has been my past practice, I will attempt to bring you an overview of the current status of this documentation effort, while attempting, also, to provide an indication of the progress made since the last report was given.

As most of you know, EIA Standard RS-455 is the Basic specification in EIA's hierarchy of Fiber-Optic related documents, and thus will eventually include all of the Fiber Optic Test Procedures (or FOTPs) contemplated by EIA's Committee P-6 and its various working groups. The first issue of RS-455 appeared in February of 1979 and included four procedures. In the succeeding months and years, additional addendums were published to add procedures, and this process is continuing.

As you can see from the summary status list of Exhibit #1, we presently have some 36 published procedures in place. Exhibit #1 also compares the statistics for August 1983 with the earlier reports given here in August of 1982 and in August of 1981. The percentage figures shown relate the various status categories to the total number of FOTPs that were envisioned at that time. As you can see, the numbers seem to grow each year and we have some difficulty in maintaining a 20% published rate for FOTPs. Our rate of procedure development is encouraging, however, so if we can just slow down the number of new procedure ideas, we can eventually get on top of the situation.

FIBER OPTIC TEST PROCEDURES

(FOTPs)

SUMMARY STATUS

DATE	NUMBER OF TEST METHOD FOTP NUMBERS ASSIGNED	NUMBER OF FOTPs PUBLISHED (EIA RS-455)	FOTPs NEARING PUBLICATION ①	FOTPs IN VARIOUS STAGES OF DEVELOPMENT	WORK NOT YET STARTED
8/81	80	14 (17.5%)	9 (11.25%)	34 (42.5%)	23 (28.75%)
8/82	104	24 (23.1%)	15 (14.4%)	34 (32.7%)	31 (29.8%)
CHANGE ('81 to '82)	+24	+10	+6	-	+8
8/83	165 ②	36 (21.8%)	23 (13.9%)	44 (26.7%)	62 (37.6%)
CHANGE ('82 to '83)	+66	+12	+8	+10	+31

NOTES: ① INCLUDES ONLY DOCUMENTS AT OR BEYOND SP BALLOT STAGE

② EXCLUDING FIVE CANCELLED FOTP NUMBERS

EXHIBIT #1

If we now examine Exhibit #2, we can get a feel for the areas of interest that are covered by these assigned FOTP numbers. In prior years, Exhibit #2 showed only a breakdown for Fiber, for Connector and for Cable, but an additional category has been added this year. Most of the newly assigned FOTP numbers will cover documents in the area of transducers and related equipment and these additions have severely distorted our progress picture. I have made no attempt here to compare these Exhibit #2 figures with the reports made in prior years, but if you are interested, the old numbers are reported in the minutes of the 1981 and 1982 meetings.

FIBER OPTIC TEST PROCEDURES (FOTPs)

APPROXIMATE BREAK DOWN BY SUBJECT MATTER AND STATUS

PROCEDURE STATUS	FIBER (MATERIAL)	CONNECTORS	FO CABLE	OTHER*	TOTAL**
NUMBER ASSIGNED	56	27	46	51	180
PUBLISHED IN RS-455	11	18	10	0	39
NEARING PUBLICATION (AT OR BEYOND SP BALLOT)	11	4	12	0	27
IN PROCESS	16	4	16	17	53
NOT STARTED	18	1	8	34	61

* TRANSDUCERS, SYSTEMS, ETC.

** SINCE SOME PROCEDURES APPLY TO MORE THAN ONE SUBJECT, TOTALS WILL NOT AGREE WITH SUMMARY STATUS TABULATION

EXHIBIT #2

One important point is not shown here, but deserves mention . . . in addition to the work being done to develop new procedures, we also presently have an additional sixteen of our published documents that are currently undergoing review because they have reached the 18-month life limit. Normally, a five-year publication review cycle applies to such documents, but because things are changing so fast and because EIA wants to make sure that all problems are addressed in a timely manner, this shortened review period will be in force for the near future, at least.

Since we last reported to this group, one important change has been made in the EIA publication process and deserves your attention. Through late

1982, Addendums to RS-455 were published with several FOTPs included in each addendum. Beginning in January 1983, each published addendum included only one FOTP, and the addendum number is the same as the FOTP number (e.g., Addendum RS-455-20 covers FOTP-20). Exhibit #3 shows a typical cover sheet in the new format. This may cause some confusion until the first five published addendums are retired through the revision process, but our eighteen-month review cycle should take care of this problem in relatively short order.

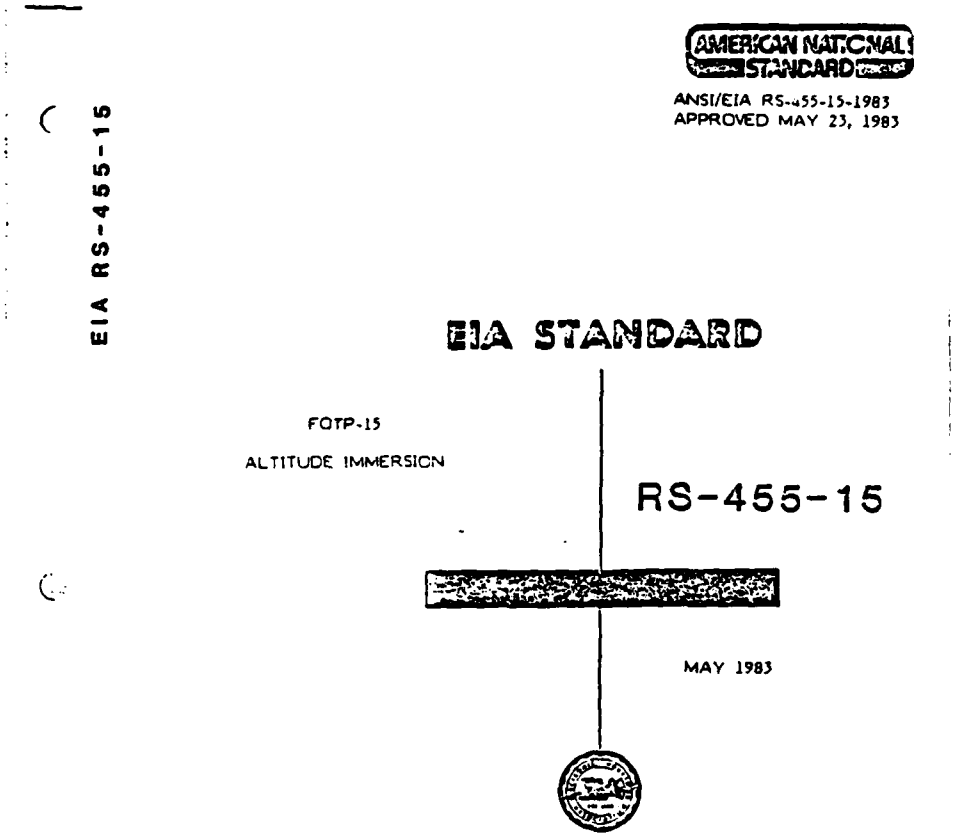


EXHIBIT #3

Another item of interest that deserves mention here is our new "Reference Guide to Fiber Optic Test Procedures", published in April 1983 as "Components Bulletin No. 9". Essentially, this document (cover illustrated in Exhibit #4) expands on the old numerical index of FOTPs by providing additional reference lists. Part II of this document classifies the FOTPs by applicability and sub-classifies them by test type (Exhibit #5), while Part III is an alphabet list of FOTPs arranged by title key words (Exhibit #6). This new guide has been very favorably received and should be a significant help to all users of EIA Fiber Optic Test Procedures.

APRIL 1983

COMPONENT BULLETIN No. 9

REFERENCE GUIDE

FOR

FIBER OPTIC TEST PROCEDURES

ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT

2001 EYE STREET, N.W.

WASHINGTON, D.C. 20006

EXHIBIT #4

LIST OF FIBER OPTIC TEST PROCEDURES

PART II: NUMERIC CONTENTS LIST CLASSIFIED BY APPLICABILITY AND SUB-CLASSIFIED BY TEST TYPE *

Test Procedure Number	Title
	A. OPTICAL FIBER TEST PROCEDURES
	1. Optical Tests
FOTP-8	Radiant Power Measurements
FOTP-20	Measurement of Change in Optical Transmittance
FOTP-29	Refractive Index Profile Transverse Interference Method
FOTP-30	Frequency Domain Measurement of Multimode Optical Fiber Information Transmission Capacity
FOTP-32	Fiber Optic Circuit Discontinuities
FOTP-43	Output Near-Field Radiation Pattern Measurement of Optical Waveguide Fibers
FOTP-44	Refractive Index Profile, Refracted Ray Method
FOTP-46	Spectral Attenuation Measurement for Long-Length, Graded-Index Optical Fibers
FOTP-47	Output Far Field Radiation Pattern Measurements
FOTP-50	Light Launch Conditions for Long-Length Graded-Index Optical Fiber Spectral Attenuation Measurements
FOTP-51	Pulse Distortion Measurement of Multimode Glass Optical Fiber Information Transmission Capacity
FOTP-53	Insertion Loss Measurement for Long-Length, Graded Index Optical Fibers

*This document is current as of its publication date. It will be updated and revised as necessary and will be provided as a separate and revised handout with a RS-455 series documents.

Issue, 11/81

EXHIBIT #5

LIST OF FIBER OPTIC TEST PROCEDURES

PART III: ALPHABETIC INDEX BY TITLE KEY WORDS *

Test Procedure Number	Title
Air	
FOTP-23	Air Leakage
Abrasion	
FOTP-66	Abrasion
FOTP-90	Fiber Optic Cable Jacket Abrasion Test
Absolute Optical Power	
FOTP-95	Absolute Optical Power Test for Optical Fibers and Cables
Accelerated	
FOTP-70	Accelerated Aging
FOTP-101	Accelerated Oxygen Aging
Acceleration	
FOTP-18	Acceleration
Acceptance Pattern	
FOTP-10	Acceptance Pattern Measurement for Fiber Optic Devices
Adhesion	
FOTP-84	Jacket Self-Adhesion (Blocking) Test for Fiber Optic Cable
FOTP-106	Fiber Adhesion
Aging	
FOTP-17	Maintenance Aging
FOTP-70	Accelerated Aging
FOTP-101	Accelerated Oxygen Aging

Issue /31/83

*This document is current as of its publication date. It will be updated and revised as necessary and will be provided as a separate and revised handout with a RS-455 series documents.

EXHIBIT #6

To summarize:

Working in concert with the other P-6 working groups, EIA Working Group P-6.4 has accomplished quite a bit since our August '82 report, and work is continuing at a fast pace. We still have a number of problems to resolve (manpower needs continue to be one of our greatest handicaps), but we <u>are</u> making progress. In general, I continue to feel that we are accomplishing the work that needs to be done and we are doing this in a reasonably well-controlled manner. In our efforts, we still want and need the support and cooperation of both industry and military interests; to this end, your continuing interest and guidance is appreciated.

If anyone has any specific questions, I'll try to answer them for you; otherwise this overview concludes my presentation.

Thank you.

FIBER OPTIC TEST PROCEDURES

(FOTPs)

SUMMARY STATUS

DATE	NUMBER OF TEST METHOD FOTP NUMBERS ASSIGNED	NUMBER OF FOTPs PUBLISHED (EIA RS-455)	FOTPs NEARING PUBLICATION (1)	FOTPs IN VARIOUS STAGES OF DEVELOPMENT	WORK NOT YET STARTED
8/81	80	14 (17.5%)	9 (11.25%)	34 (42.5%)	23 (28.75%)
8/82	104	24 (23.1%)	15 (14.4%)	34 (32.7%)	31 (29.8%)
CHANGE ('81 to '82)	+24	+10	+6	-	+8
8/83	165 (2)	36 (21.8%)	23 (13.9%)	44 (26.7%)	62 (37.6%)
CHANGE ('82 to '83)	+66	+12	+8	+10	+31

NOTES: (1) INCLUDES ONLY DOCUMENTS AT OR BEYOND SP BALLOT STAGE

(2) EXCLUDING FIVE CANCELLED FOTP NUMBERS

HMM
7/21/83

EXHIBIT #1

FIBER OPTIC TEST PROCEDURES (FOTPs)

APPROXIMATE BREAK DOWN BY SUBJECT MATTER AND STATUS

PROCEDURE STATUS	FIBER (MATERIAL)	CONNECTORS	FO CABLE	OTHER*	TOTAL**
NUMBER ASSIGNED	56	27	46	51	180
PUBLISHED IN RS-455	11	18	10	0	39
NEARING PUBLICATION (AT OR BEYOND SP BALLOT)	11	4	12	0	27
IN PROCESS	16	4	16	17	53
NOT STARTED	18	1	8	34	61

* TRANSDUCERS, SYSTEMS, ETC.

** SINCE SOME PROCEDURES APPLY TO MORE THAN ONE SUBJECT, TOTALS WILL NOT AGREE WITH SUMMARY STATUS TABULATION

HMM
7/21/83

EXHIBIT #2

EIA RS-455-15

AMERICAN NATIONAL STANDARD

ANSI/EIA RS-455-15-1983
APPROVED MAY 23, 1983

EIA STANDARD

FOTP-15

ALTITUDE IMMERSION

RS-455-15

MAY 1983

Engineering Department

ELECTRONIC INDUSTRIES ASSOCIATION

EXHIBIT #3

12

APRIL 1983

COMPONENT BULLETIN No. 9

REFERENCE GUIDE

FOR

FIBER OPTIC TEST PROCEDURES

ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT

2001 EYE STREET, N.W.

WASHINGTON, D.C. 20006

EXHIBIT #4

13

LIST OF FIBER OPTIC TEST PROCEDURES

PART III: ALPHABETIC INDEX BY TITLE KEY WORDS *

Test Procedure Number	Title
Air	
FOTP-23	Air Leakage
Abrasion	
FOTP-66	Abrasion
FOTP-90	Fiber Optic Cable Jacket Abrasion Test
Absolute Optical Power	
FOTP-95	Absolute Optical Power Test for Optical Fibers and Cables
Accelerated	
FOTP-70	Accelerated Aging
FOTP-101	Accelerated Oxygen Aging
Acceleration	
FOTP-18	Acceleration
Acceptance Pattern	
FOTP-10	Acceptance Pattern Measurement for Fiber Optic Devices
Adhesion	
FOTP-84	Jacket Self-Adhesion (Blocking) Test for Fiber Optic Cable
FOTP-106	Fiber Adhesion
Aging	
FOTP-17	Maintenance Aging
FOTP-70	Accelerated Aging
FOTP-101	Accelerated Oxygen Aging

*This document is current as of its publication date. It will be updated and revised as necessary and will be provided as a separate and revised handout with a RS-455 series documents.

EXHIBIT #5

14

LIST OF FIBER OPTIC TEST PROCEDURES

PART II: NUMERIC CONTENTS LIST CLASSIFIED BY APPLICABILITY AND SUB-CLASSIFIED BY TEST TYPE *

Test Procedure Number	Title
	A. OPTICAL FIBER TEST PROCEDURES
	1. Optical Tests
FOTP-8	Radiant Power Measurements
FOTP-20	Measurement of Change in Optical Transmittance
FOTP-29	Refractive Index Profile Transverse Interference Method
FOTP-30	Frequency Domain Measurement of Multimode Optical Fiber Information Transmission Capacity
FOTP-32	Fiber Optic Circuit Discontinuities
FOTP-43	Output Near-Field Radiation Pattern Measurement of Optical Waveguide Fibers
FOTP-44	Refractive Index Profile, Refracted Ray Method
FOTP-46	Spectral Attenuation Measurement for Long-Length, Graded-Index Optical Fibers
FOTP-47	Output Far Field Radiation Pattern Measurements
FOTP-50	Light Launch Conditions for Long-Length Graded-Index Optical Fiber Spectral Attenuation Measurements
FOTP-51	Pulse Distortion Measurement of MultiMode Glass Optical Fiber Information Transmission Capacity
FOTP-53	Insertion Loss Measurement for Long-Length, Graded Index Optical Fibers

*This document is current as of its publication date. It will be updated and revised as necessary and will be provided as a separate and revised handout with a RS-455 series documents.

Issue, 31/83

EXHIBIT #6

15

OVERVIEW OF AN AT&T SPONSORED CONTRACT
WITH THE VIRGINA COMMONWEALTH UNIVERSITY

"AN INVESTIGATION OF THE NEAR-INFRARED
RADIATION ON THE RETINA OF THE
RHESUS MONKEY"*

H. N. DORRIS
AMERICAN BELL

*INVESTIGATORS: DR. W. T. HAM, JR. AND DR. H. A. MUELLER
VIRGINIA COMMONWEALTH UNIVERSITY.
RESULTS TO BE DOCUMENTED IN
1984 MEDICAL PUBLICATION.

EXCL 29

PURPOSE

DEFINE THRESHOLD LEVELS FOR RETINAL INJURY FROM NEAR-INFRARED RADIATION (RHESUS MONKEY AS THE EXPERIMENTAL ANIMAL)

EXPERIMENT

- DEFINED CW THRESHOLDS FOR λ'S 820, 860 AND 910 (USING A 2500W XENON LAMP WITH NARROW BANDPASS FILTERS)

- EXPOSURE TIMES RANGED FROM 10 TO 10,000 s
  - SPOT SIZE DIA ON THE RETINA - 500 μM
  - RETINAL IRRADIANCES WERE FROM 11 TO 18 W/cM ^{2}

- RESULTS:
  - RADIANT EXPOSURES TO PRODUCT A MINIMAL LESION IN 1,000s. AVERAGED $\cong$ 11,500 J/cM ^{2}
  - LITTLE VARIATION WITH
  - BELIEVED
    THAT THESE MINIMAL LESIONS WERE THERMAL LESIONS

EXPERIMENT

- RHESUS MONKEY TRAINED TO UNDER GO DAILY EXPOSURE TO
  - 102 EXPOSURES
  - >3 MO/1000s/DAY/5 DAYS/WK
  - GaAs LASER (λ = 830 nm), MOD @ 22 MHz
  - PLANO - CONVEX LENS PRODUCED A 20mm BEAM/AVERAGE POWER 333 μW

- RESULTS
  - NO FUNDUSCOPICALLY VISIBLE DAMAGE TO THE EXPOSED EYE AS COMPARED WITH THE CONTROL (UNEXPOSED EYE)

EXPERIMENT

- BEFORE SACRIFICING THIS ANIMAL FOR HISTOLOGICAL ANALYSIS
  - 10 EXPOSURES TO DILATED CONTROL EYE @ 4 AND 2 DAYS BEFORE SACRIFICE AS WELL AS 1 HOUR BEFORE SACRIFICE
  - BTL GaAs LASER (λ = 830 nm), MOD @ 22 MHz
  - PLANO - CONVEX LENS PRODUCED A 5mm BEAM/8.1 mW

- RESULTS

  HISTORICAL EXAMINATION DISCLOSED NO DIFFERENCES NOTED BETWEEN THE FOVEAS IN THE CONTROL AND EXPOSED EYE.

EXPERIMENT

- o BTL GaAs LASER (λ = 830nm), MOD @ 22 MHz (20mW CW AND 12 mW AVERAGE POWER WHEN MOD @ 22MHz)
- o 8.45 mW FOR A PARALLEL CW 5mm BEAM ENTERING THE FULLY DILATED PUPIL OF THE ANESTHETIZED ANIMAL

- o RESULTS

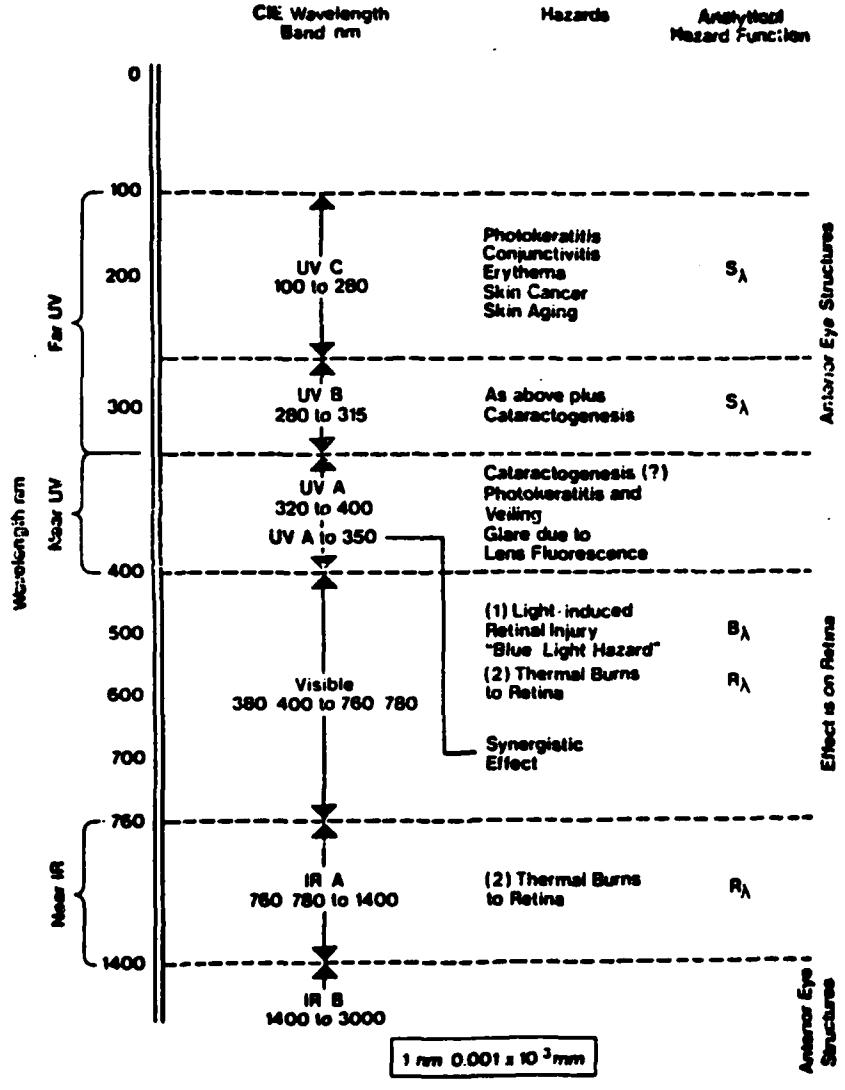
EXPOSURE TIMES			LESION (FUNDUSCOPICALLY VISIBLE)
400 s (8.45 mW	-	CW)	MINIMAL
1.000 s (7.2 mW	-	CW)	MINIMAL
3.000 s (6.1 mW	-	CW)	MINIMAL
900 s (8.4 mW 22MHz	-	MOD)	MINIMAL
3.000 s (7.5 mW 22MHz	-	MOD)	MINIMAL

- o RESULTS

  THERE SEEMS TO BE A SIGNIFICANT DIFFERENCE IN RETINAL SENSITIVITY BETWEEN THE CW AND THE MODULATED LASER BEAMS AT SHORT EXPOSURE TIMES BUT WHEN EXPOSURE TIMES WERE EXTENDED TO 3.000 s, THE DIFFERENCE DISAPPEARED

- COMMENTS
  - EXPERIMENTS OUTLINED WERE UNDER "WORST" VIEWING CONDITIONS
  - POWER LEVELS USED IN FIBER OPTIC COMMUNICATION SYSTEMS RARELY EXCEED A FEW HUNDRED μW. WHEREAS IT REQUIRES mW ENTERING THE EYE FOR LONG PERIODS OF TIME (AT LEAST SEVERAL MINUTES) TO INJURE THE MONKEY'S RETINA
  - EXTRAPOLATION TO HUMANS IS ALWAYS DIFFICULT FOR COMPLETE CORRELATION
- TENTATIVE CONCLUSIONS
  - NO WAY OF KNOWING WHETHER THESE LESIONS ARE CAUSED BY THERMAL OR PHOTOCHEMICAL EFFECTS
  - EXPERIMENTAL RESULTS TO DATE DO NOT SUGGEST THAT OPERATING PERSONNEL OF FIBER OPTIC TELECOMMUNICATION SYSTEMS ARE SUBJECT TO AN OCULAR RISK (I.E., WITH PRESENT POWER LEVELS)
  - AT&T SAFETY PROCEDURES FOR FIBER OPTIC SYSTEMS BEING DEFINED (BASED ON THESE RESULTS WHICH WILL BE REFLECTED IN Z136.2)

Optical Radiation Hazards



CLEAVED - COUPLED - CAVITY (C^3) SEMICONDUCTOR LASERS*

H. N. DORRIS
AMERICAN BELL

* RECENT PATENTS BY BELL LABS

EVEL 20

CLEAVED - COUPLED - CAVITY (C^3) SEMICONDUCTOR LASERS

- BACKGROUND
- GENERAL CHARACTERISTICS
- BASIC WORKING PRINCIPLES
- C^3 LASER POTENTIALS
- PRACTICAL SYSTEM DEMONSTRATION

BACKGROUND

- ALL FODLS DEVELOPED SO FAR UTILIZE AM
- RECENTLY OPTICAL FM AND DEMOD OF COHERENT LASERS WAVES
  - EXPECT IMPROVE SYSTEM PERFORMANCE TOWARDS LONGER REPEATER SPACINGS AND HIGHER INFO CAPACITY
  - DIFFICULTY DUE TO LACK OF SUITABLE FREQ TUNABLE LASERS THAT CAN BE "CONVENIENTLY" USED AS TX'S IN SUCH A SYSTEM
- APPROACHES HAVE BEEN TO USE ELECTRO-OPTIC FREQ MODULATORS
  - EITHER INTEGRATED OR DISCRETE DEVICES IN EXTERNAL CAVITY SEMICONDUCTOR LASERS
  - BY:
    - DIRECT MODULATION OF THE INJECTION CURRENT OF LASER DIODES
    - MODULATION OF THE EFFECTIVE MIRROR REFLECTIVITY
    - ELECTRO-OPTIC EFFECTS
- DRAWBACKS TO ABOVE APPROACHES
  - ONLY BROAD-AREA DIODES WERE DEMONSTRATED
  - COMPLEXITY INVOLVED IN FABRICATING SUCH COMPLICATED INTEGRATED STRUCTURE
  - RELATIVELY SMALL FREQ SHIFT CAN BE ACHIEVED WITHOUT SERIOUS UNINTENDED INTENSITY MODULATION.

GENERAL CHARACTERISTICS

- CONSTRUCTION
  - TWO STD FABRY-PEROT (F-P) CAVITY WAVELENGTH GaInAsP CRESCENT LASER DIODES (1.3 AND 1.5 μM) DEVICES FABRICATED*) 136 μM AND 121 μM LENGTH. REPECTIVELY
    - DIODES SELF ALIGNED AND VERY CLOSELY COUPLED TO FORM A TWO-CAVITY RESONATOR
    - ELECTRICAL ISOLATION BETWEEN THE TWO F-P DIODES $\geq$50KΩ
  - TOTAL LENGTH CAN BE AS SHORT AS 100 μM WITH TYPICAL LENGTH 200-400 μM.

* TO BE PUBLISHED BY W. T. TSANG AND N. A. OLSSON, BELL LABS

BASIC WORKING PRINCIPLE OF THE C^3 LASER

- PROPAGATION MODE IN EACH ACTIVE STRIP CAN HAVE A DIFFERENT EFFECTIVE REFRACTIVE INDED (N_{EFF}) EVEN THOUGH THEY HAVE THE SAME GEOMETRIC SHAPE, SIZE, AND MATERIAL COMPOSITION
  - N_{EFF} IS A FUNCTION OF CARRIER DENSITY IN THE ACTIVE STRIP
  - N_{EFF} VARIED BY VARYING THE INJECTION CURRENT BELOW THRESHOLD WHEN THE JUNCTION VOLTAGE IS NOT SATURATED
  - THE F-P MODE SPACINGS FOR THE ACTIVE STRIPES 1 AND 2 WILL BE DIFFERENT AND GIVEN BY

$$\Delta\lambda_1 \sim \lambda_0^2/2\, N_{EFF} L_1 \text{ AND}$$
$$\Delta\lambda_2 \sim \lambda_0^2/2\, N_{EFF} L_2 .$$

- SINCE THE TWO CAVITIES ARE COUPLED, THOSE F-P MODES FROM EACH CAVITY THAT COINCIDE SPECTRALLY WILL INTERFERE CONSTRUCTIVELY AND BECOME THE ENFORCED F-P MODES OF THE COUPLED-CAVITY RESONATOR WHILE THE OTHERS INTERFERE DESTRUCTIVELY AND BECOME SUPPRESSED.
- THE SPECTRAL SPACING Λ OF THESE ENFORCED F-P MODES WILL BE SIGNIFICANTLY LARGER THAN EITHER OF THE ORIGINAL INDIVIDUAL F-P MODE SPACING - DEPENDING ON THE DIFFERENCE OF $N_{EFF}L_1$ AND $N_{EFF}L_2$

  GIVEN BY

$$\Lambda = \Delta\lambda_1 \Delta\lambda_2 / |\Delta\lambda_1 - \Delta\lambda_2| =$$
$$\lambda_0^2 / 2|N_{EFF} L_1 - N_{EFF} L_2|.$$

ASSUMING $\Delta\lambda_1 \approx \Delta\lambda_2$.

BASIC WORKING PRINCIPLE OF THE C^3 LASER (CONTINUED)

- THUS, FOR THE ENFORCED MODE NEAR THE GAIN MAXIMUM, THE NORMAL GAIN ROLL-OFF (WHICH IS FAST FOR GaInAsP AT 1.3 μM) IS SUFFICIENT TO SUPPRESS THE ADJACENT ENFORCED MODES.

- KNOWN AS "CAVITY - MODE ENHANCED FREQ MODULATION" (CME-FM).

- SOME OF THE POTENTIALS OF THE C^3 LASER
  - ULTRA - PURE SINGLE-LONGITUDINAL MODE OPERATION. EVEN UNDER VERY HIGH BIT - RATE MODULATION ($\geq$ 2G B/S)
  - STEP TUNABLE OVER WIDE FREQ RANGE
    - 150 TO 300 Å. 10-25 Å/MA
  - CONTINUOUS DIRECT FM WITH NEGLIGIBLE SPURIOUS AM
  - MULTI-LEVEL. MULTI-CHANNEL FREQUENCY SHIFT KEYING (FSK)
  - SPECTRUAL BI-STABLE FSK
  - OPTICAL LOGIC OPERATIONS
  - GATEABLE MODE-LOCK WITH ELECTRONICALLY CONTROLLABLE ABSORBER
  - 1 G B/S A/D CONVERTER
  - LASER DETECTOR FEEDBACK CONTROL

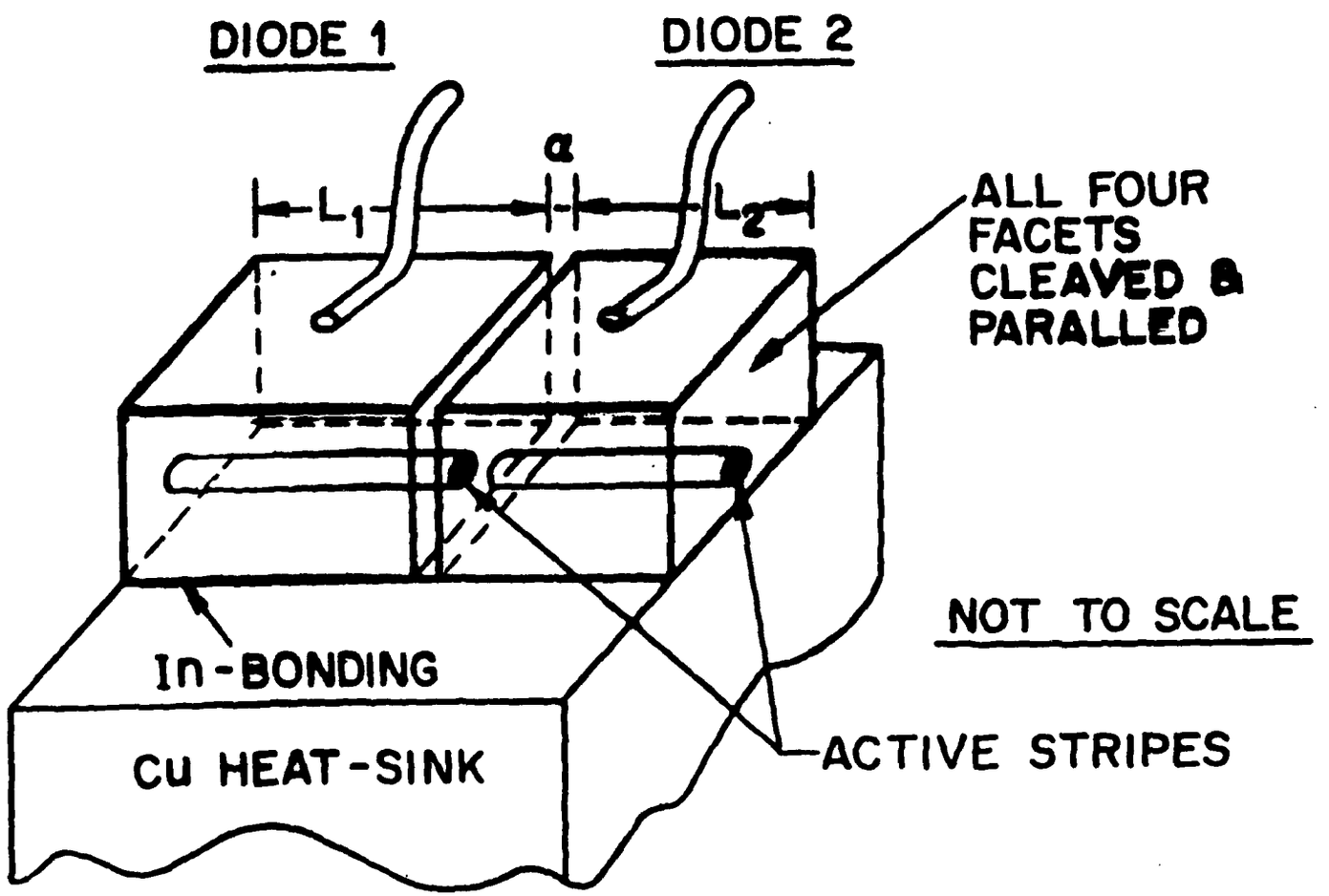
o
o
o
o
o

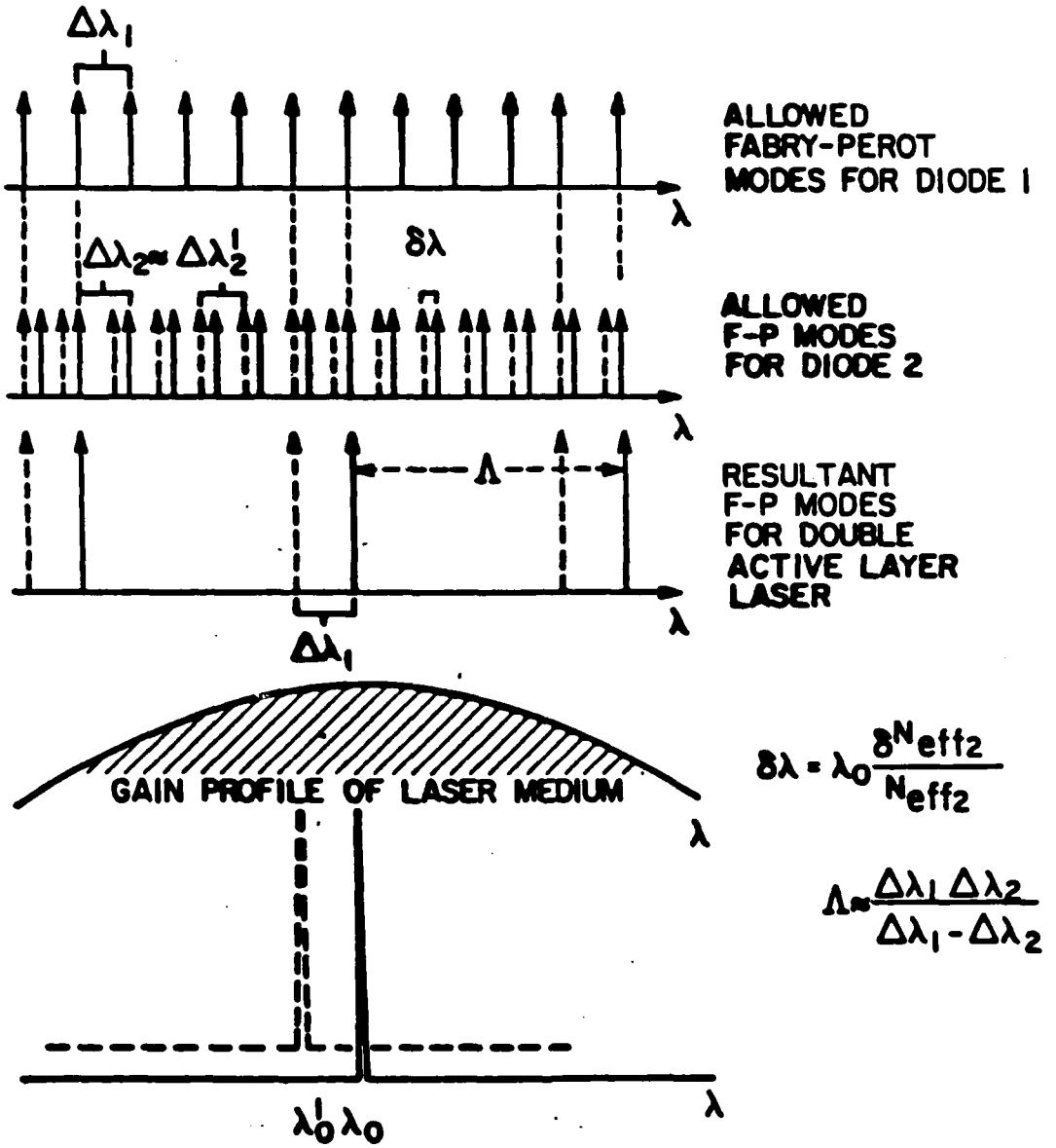
- PRACTICAL SYSTEM DEMONSTRATION

- DEMO USING
  - C^3 LASER AT 1.55 μM. MODULATED AT 420 M B/S
  - WECo SINGLE MODE FIBER. MINIMUM DISPERSION AT 1.315 μM AND AT 1.546 μM - 17.5 PS/KM-NM CHROMATIC DISPERSION ($\alpha_{1.55}$ = 32.1 DB OR 0.27 DB/KM INCLUDING SINGLE MODE CONNECTORS AND FLAME-FUSION SPLICES)
  - REGENERATOR
    - EQUALIZED RECEIVER. SAW-FILTER TIMING CIRCUIT WITH PRE-AND POST-AMPLIFIERS
    - MEASURED FOR A 10^{-9} BER AT 1.55 μM IS -34.2 DBM.

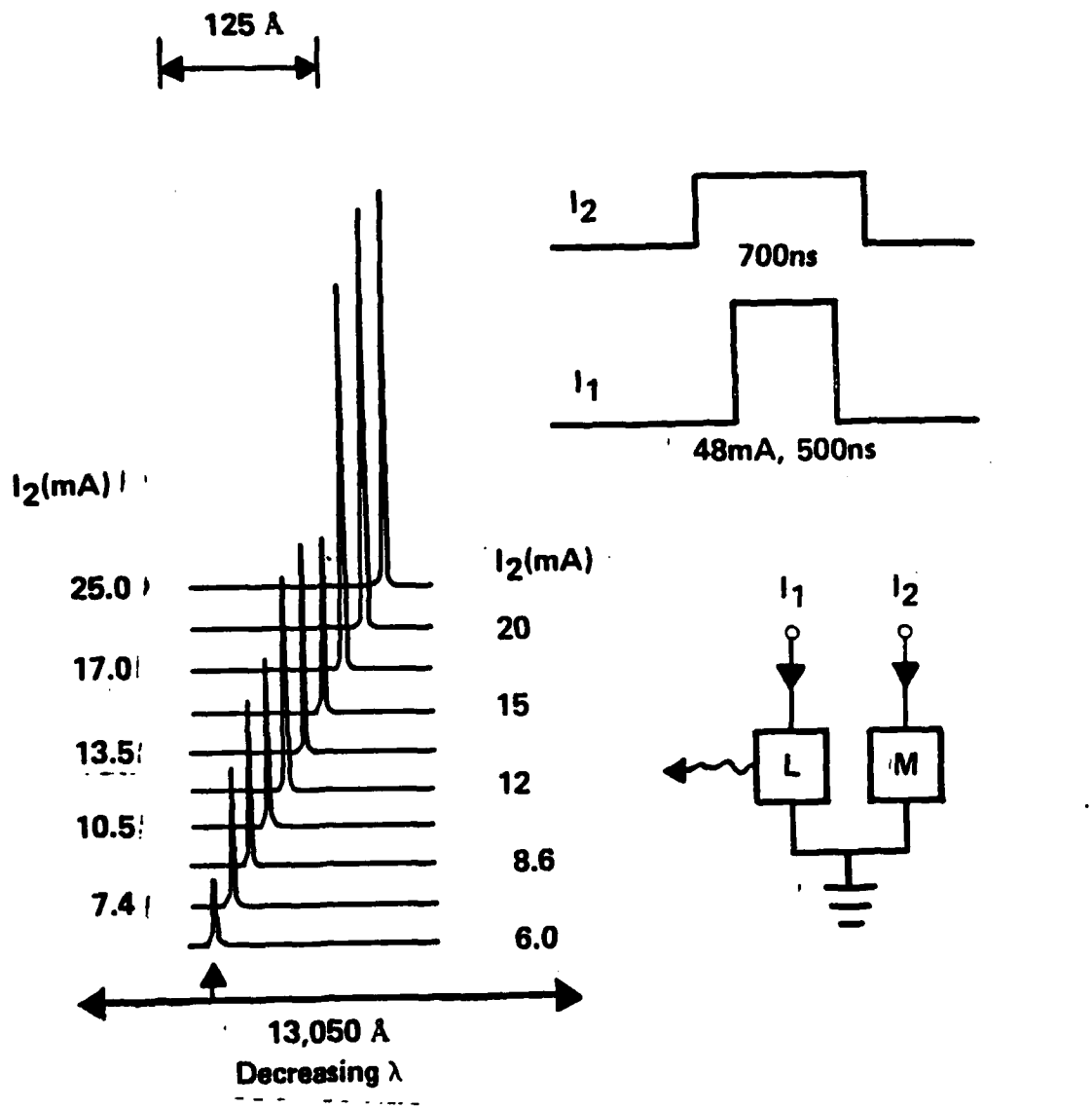
RESULT

- C^3 LASER TRANSMITTED THROUGH 199 KM UNREPEATERED SECTION OF CABLE THAT HAD A TOTAL OF 2.080 PS/KM-NM OF CHROMATIC DISPERSION.


DIODE 1
DIODE 2
α
L_1
L_2
ALL FOUR FACETS CLEAVED & PARALLED
NOT TO SCALE
In-BONDING
Cu HEAT-SINK
ACTIVE STRIPES



RESULTANT LASER SPECTRUM


125 Å
I_2
700ns
I_1
48mA, 500ns
I_2(mA)
25.0
17.0
13.5
10.5
7.4
I_2(mA)
20
15
12
8.6
6.0
I_1
I_2
L
M
13,050 Å
Decreasing λ

E.I.A. WORKING GROUP P-6.6

OPTICAL FIBERS & MATERIALS

- ESTAB: 4/78, MYRTLE BEACH
- CHMN.: DR. R. E. LOVE, CORNING GLASS WORKS
- SCOPE: ESTABLISH STANDARDS
  - TEST METHODS
  - STANDARD FIBERS
  - SPECIFICATIONS: GENERIC, SECTIONAL, & BLANK DETAIL
- MEMBERSHIP

MEMBERS:	15 (+1)
CTA:	20 (-3)
CTB:	12 (+8)
	47 (+6)

R.F. Bugg
Secretary, EIA P-6.6
8/83

ENCL 21

PAST YEAR HIGHLIGHTS

- NEW TASK GROUP: P-6.6.6, STEP & QUASI-STEP INDEX FIBERS, R. L. GALLAWA, CHAIRMAN
- GENERIC READY FOR SP BALLOT 9/1
- GRADED INDEX MULTIMODE FIBERS:
  - SECTIONAL
  - BLANK DETAIL

  } READY FOR BALLOT 9/15
- OTHER SECTIONALS & BDS: AWAIT MINIMUM LIST OF FOTP'S IN PRINT OR ATTACHED
- TEST PROCEDURES:
  - IN PRINT (OR SOON TO BE) 18 (+11)
  - IN LETTER BALLOT (MULTIMODE) 7
  - IN DRAFT (MULTIMODE) 9
  - ASSIGNED 5
  - SINGLE MODE DRAFTS 4

HIGHLIGHTS (CONT.)

- STANDARD FIBER SIZES (RS-458 Revised)
  - ALL-GLASS:

50/125/.19-.25	REAPPROVE
100/140/.25-.30	
62.5/125/.27-.31	NEW
85/125/.26-.29	
200/250/.14-.16	

  - PLASTIC-CLAD SILICA:

C.D. 200	REAPPROVE
C.D. 400	NEW

STATUS OF FOTP's

	FOTP	General Title	Assigned	In Draft	In Ballot	In Print
OPTICAL	-46	Spectral Attenuation, GRIN				X
	-53	Insertion Loss			X	
	-50	Attenuation Launch				X
	-57	End Preparation		X		
	-51	Info. Trans. Cap., Pulse Dist.				X
	-30	Info. Trans. Cap., Freq.Resp.				X
	-54	Info. Trans. Cap., Launch				X
	-29	Refr. Index Profile				X
	-43	Core Diam., Nearfield				X
	-44	Core Diam., Refracted Ray				X
	-47	Numerical Aperture/Farfield				X
	-58	Core Diameter, General			X	
DIMENSIONAL	-45	Glass Geometry			X	
	-27	Clad Diameter, Uncoated				X
	-48	Clad Diameter, On-line				X
	-55	Coating Geometry				X
	-59	Backscatter/OTDR		X		
	-60	Length, Time-of-flight				X
MECHANICAL	-28	Tensile Strength				X
	-31	Tensile Proof				X
	-62	Bending Loss		X		
	-63	Torsion			X	
	-64	Vibration			X	
	-65	Flexing			X	
	-66	Abrasion			X	
	-67	Blocking		X		
	-68	Microbend Sensitivity		X		

STATUS OF FOTP's (CONTINUED)

	FOTP	General Title	Assigned	In Draft	In Ballot	In Print
ENVIRONMENTAL	-69	Max./Min. Use Temperature	X			
	-70	Accelerated Aging	X			
	-71	Temperature Shock		X		
	-72	Temperature Cycling		X		
	-73	Temperature-Humidity Cycling		X		
	-74	Humidity		X		
	-75	Fluid Immersion	X			
	-52	Temperature Dep. of Attn.				X
	-56	Fungus Resistance				X
	-76	Atmos. Contam. Resist.	X			
	-49	Nuclear Radiation Res.				X
	-77	Flammability	X			

FACTORY SPLICING

OF

OPTICAL WAVEGUIDE FIBERS

Douglas R. Briggs
Corning Glass Works
July 25, 1983

FACTORY SPLICING

- DRIVING FORCES:
  - RECLAIMING: LOWER COSTS → PRICES
  - LONGER LENGTHS REQUIRED

- ANALYSIS:
  - NO LONGER TECHNICAL ISSUE
  - MAINLY ECONOMIC ISSUE
  - LONGER CONTINUOUS LENGTHS BEING CONSIDERED

COMPARISON vs. FIELD SPLICING

- CONTROLLED ENVIRONMENT
- SKILLED OPERATORS
- JUSTIFICATION FOR BETTER ($) EQUIPMENT
- MORE TESTING POSSIBLE
- STRICTER REQUIREMENTS, ESP. STRENGTH NEEDED FOR CABLING

PROCESS . STEPS

- SELECTION OF MATE-ABLE FIBERS
- END PREPARATION
- END INSPECTION
- CLEANING
- FUSION
- INSPECTION
- STRENGTHENING/CLEANING/DRYING
- COATING
- INSPECTION
- PROOF TESTING
- OTDR
- REWINDING
- REMEASUREMENT OF OPTICAL PROPERTIES

PRODUCT SPECIFICATIONS

- STRENGTH, AFTER SPLICE & RECOAT:

  PASS PROOF TESTER AGAIN

- ATTENUATION STEP:
  - MAXIMUM $\leq$ 0.2 dB
  - TARGET $\leq$ 0.1 dB

- CLAD O.D. AFTER SPLICING: SAME TOLERANCE AS ORIGINAL

- COATED O.D. AFTER RECOATING:
  - TOLERANCE $\leq$ 2 X REGULAR COATING
  - TARGET $\leq$ REGULAR COATING

- QUALIFICATION TESTING

QUALIFICATION TESTING

- Abrasion Resistance
- Temperature Dependence
- Microbend Resistance
- Temperature-Humidity Cycling
- Static Fatigue

PROCESS SPECIFICATIONS

- EQUIPMENT COST
- MANUFACTURING COST
  - DIRECT LABOR
  - YIELD
  - TRAINING/REPEATABILITY
- RETESTING COST

EXPERIMENT #1

CONDITION	MEAN STRENGTH (KPSI)	RANGE (KPSI)
UNSTRIPPED CONTROLS	585	201 - 625
STRIPPED CONTROLS	98	56 - 132
STRIPPED AND SPLICED	37	21 - 59
STRIPPED AND SPLICED AND ETCHED	114	90 - 129

EXPERIMENT #2

CONDITION	MEAN STRENGTH (KPSI)	RANGE (KPSI)
UNSTRIPPED CONTROLS	418	106 - 686
STRIPPED CONTROLS	362	141 - 529
STRIPPED AND SPLICED	127	42 - 183
STRIPPED AND SPLICED AND ETCHED	188	80 - 298

PROCESS COMMENTS

- MINIMUM EXPOSED LENGTH ($\sim$3/16")
- MAXIMUM CLEANLINESS
- END ANGLE $\leq 2^{o}$
- ELECTRIC ARC
- OPTIMUM FUSION TIME & TEMPERATURE:
  - STRENGTH
  - ATTENUATION STEPS
- STRIPPING
- ETCHING/STRENGTHENING: O.K. IF REQ'D
- RECOATER EQUIPMENT DESIGN
- BREAK AREA: ONLY $\sim$4% AT FUSION POINT

CONCERNS & ISSUES

- SPECIFICATIONS BY USERS
- METHOD & SPECIFICATION FOR IDENTIFYING SPLICED AREA
- COST
- TIMING

BELDEN

PRESENTED AT DESC MEETING, AUGUST 1-4, 1983, Dayton, Ohio

Qualification Testing of Heavy Duty Six Fiber Cable
R. Ohlhaber, Belden Corp.

Figure 1. Cable cross section diagram (229706).

The cable contains six color coded 100/140 fibers stranded around a central fiberglass epoxy rod. A double polyurethane jacket with a Kevlar braid between encloses the core elements.

This cable's application is radar remoting using 500m lengths. During the manufacturing run, over 40 such lengths were produced. Cable was made in continuous 2 km lengths. The final cable was connectorized by Hughes with 6 terminal connectors.

Figure 2. This is a histogram showing induced fiber loss due to cable fabrication. Average added loss for a fiber was about 1 dB/km.

Figure 3. Worst case data for temperature cycling. Note that this cable did not have a region of flat response. Other cables of similar construction but with 50/125 micron fibers had no change in attenuation from -20°C to + 60°C.

Figure 4. Tensile and Twist Bend test results.

A load of 225 lbs. on 0.5m cable length for 1 min. resulted in an attenuation change of -0.04 to +0.04 dB. This was Method 3010, Procedure 11, DOD-STD-1678.

For twist bending, a 17 lb. load was applied to the cable which was placed on a 3 inch diameter sheave. After 1,000 cycles the fiber transmission variation was in the 0.0 to 0.06 dB range. This test is described by DOD-STD-1678, Method 2060, Procedure II or EIA FOTP #91.

Figure 5. Other Tests: Impact, knot, compressive loading, ozone resistance, cold temperature deployment, and vehicle rollover all produced acceptable results.

Figure 6. Compressive loading effect on transmission.

Compressive loading results show a large variation when the cable transmission is monitored during application of the load. The results are due to the length over which the load is applied. This is because the fiber lay length of approximately 3 inches permits some fibers to experience almost no force when a short 1 inch long load plate is employed.

EXCL 33

Figure 7. Cable transmission on reels.

It has been shown that the cable has some sensitivity to compressive forces. Consequently, the transmission will depend on the tension and crossovers present on a reel. For this cable, the variations due to winding on a reel were generally less than 1 dB/km.

Additional Information

This cable design is suggested as a potential slash sheet for DOD-C-85045. It has been in production for over one year and represents an obtainable product.

Other similar field cables with different fibers and other fiber counts have also been produced. Today the inherent cable induced loss has been further reduced, and improved temperature stability appears possible.

Based on our experience, realistic cable specifications can only be achieved after a number of actual cable production runs have been completed.

dl/SPC6

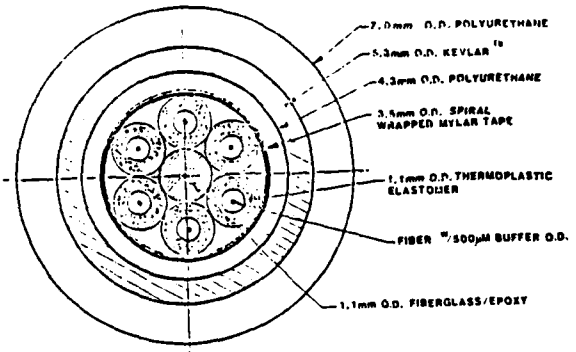


Figure 1

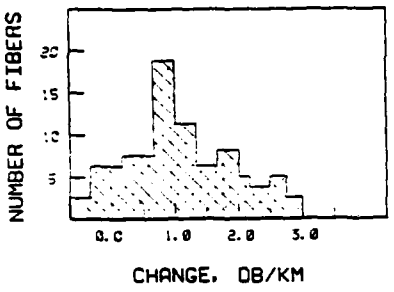
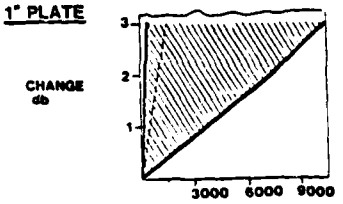


Figure 2

IMPACT
KNOT
COMPRESSIVE
OZONE RESISTANCE
COLD TEMP. DEPLOYMENT
VEHICLE ROLL-OVER

Figure 5



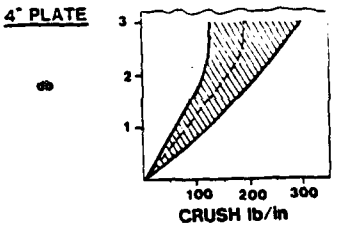


Figure 6

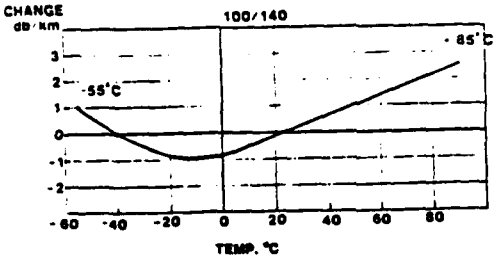


Figure 3

TENSILE TEST
225 LB.
0.5 M
1 MIN
-0.04 TO +0.04 DB

1 TEST BEND
EIA FOTP 91
17 LB.
3 IN SHEAVE DIA.
1000 CYCLES
0 TO +0.06 DB

Figure 4

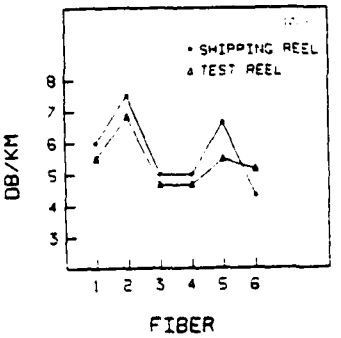


Figure 7

EIA P6.7 F.O. Cable Committee
Ramesh Sheth - Chairman
8/2/83

Status Report:

1. RS-472 Generic spec. for F.O. cables: In June 1983 meeting, we reviewed and approved formatted RS-472 (IECQ System format).

   P6.7.1 Editorial Group will review this document & then it will be issued as RS-472 in next 60 to 90 days.

2. PN-1452 (FOCP #7001) sectional standard for F.O. communication cables for aerial outside plant use: The committee agreed to have EIA reformat this document in IECQ format and then after P6.7.1 Editorial Group's review issue it as a sectional standard - in next 120 days.

3. PN-1453 (FOCP #7002) sectional standard for F.O. Communication cable for underground and burial outside plant use: Same status as PN-1452.

4. PN-1454 (FOCP #7003) sectional standard for F.O. communication cables for indoor use: Same status as PN-1452.

5. PN-1619 (FOCP #7004) sectional standard for F.O. communication cables for outside telephone plant use: Same status as PN-1452.

6. Test Methods:

   There are a total of 46 test procedures assigned and in various stages of completion as follows:

Published	10
Near completion	12
In process	16
Not started	8*

   * These are unique procedures for specialty applications such as nuclear plant use.

7. Task Groups:

   A. Military Task Group, P6.7.3 (Vas Kalomiris) - Due to schedule conflicts, this task group was unable to meet and provide document to the committee. The task group consists of members:
      Vas Kalomiris - Task Group Chairman
      Charles Kleekamp
      Bill Schumacher
      Ish Aggarwal
      Bill Jackman

   This task group is charged with rewrite of DOD-C-85045 cable spec as one of the detailed specs under the EIA spec system. The group is also to consider other military needs and propose documents for P6.7 group. It is believed that a new sectional is required for fiber to meet DOD-C-85045 requirements.

E.U.C. 24

B. Splicing Task Group, P6.7.2 (Bill Schumacher) - In a joint meeting with P6.3, it was learned that Splicing Task Group (6.3.6) has developed generic splice specification for field splices. P6.7 committee decided that at this point a specification for in process splicing is not necessary as this is adequately covered in Appendix D of new RS-472.

C. Cable Assembly Task Group, P6.7.4 - In a joint meeting with P6.3, it was learned that cable assemblies are covered in P6.3 scope. Therefore, P6.7.4 will be merged with P6.3.9 (Ron Smith, Chairman) to develop specifications and test methods. Charles Kleekamp is to coordinate cable group's activities with P6.3.9.

P6.7 committee urges government and military group participation in committee activities and document development.

8. NEC:

F.O. will be covered in 1984 National Electrical Code.

JCDB

GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM — OMB NO. 22-R0328

SAFE ALERT

Please Type All Information – See Instructions On Reverse

1. NOMENCLATURE (Part/Component/Hazard/Safety Problem)

Cable, Electrical, Polyurethane Jacket

2. ALERT/SAFE-ALERT NO.
LC-82-01

3. DATE (Year, Month, Day)
82-5-20

4. MANUFACTURER AND ADDRESS

All Manufacturers

5. NSN
See Block 11

6. PROCUREMENT SPECIFICATION
MIL-C-5898C

7. REFERENCE

8. MANUFACTURER'S PART NUMBER

9. LOT DATE CODE OR SERIAL NO

10. SPECIAL REQUIREMENTS OR ENVIRONMENT (Requirements placed on, or extreme environment to which item was exposed)

11. PROBLEM SITUATION AND CAUSE (State facts of problem and cause-failure mode and mechanism-project and function)

NSN 6145-00-500-3084 Type WF5/U, NSN 6145-00-635-5332 Type WF14/U, NSN 6145-00-539-8058 Type WD34/U, NSN 6145-00-500-0814 Type WM53/U, NSN 6145-00-635-1536 Type WM85/U, other NSN's may be involved. Personnel have encountered headaches from fumes while assembling cables identified as those procured to MIL-C-5898C. Tests at USAF Laborabory of Environmental Health at Brooks AFB TX revealed the following conditions when subjected to analysis for thermal decomposition. Wire jacketing identified to be polyurethane melts at 121 degrees centigrade, but does not emit any decomposition products. Material will thermally decompose at 350-700 degrees C to Diisocyanate substances in vapor and particulate phases. Combustion will cause hydrogen cyanide to be produced.

12. ACTIONS TAKEN (State all actions taken to correct the problem situation and to prevent its recurrence)

Use of polyurethane for jacketing material in MIL-C-5898C to be reviewed after completion of testing and study of cable assembly practices. Suggest extreme care be used when assembling cable under conditions that may cause ignition of the polyurethane.

13. DATE MFR NOTIFIED (Year, Month, Day)

14. MANUFACTURER RESPONSE
☐ CORRESPONDENCE ATTACHED
☐ DID NOT REPLY

15. CONTACT POINTS FOR INFORMATION (Name, Activity, Phone)
AFALD/PTSP
Tom Rathfelder
Gentile AFS OH 45444
AV 850-5571
513-296-5571

16. ALERT COORDINATOR (Name, Activity)
Arthur H. Wiesman/GIDEP Mgr.

17. SIGNATURE OF ALERT COORDINATOR

DD FORM AUG 1988 — ALL PREVIOUS EDITIONS ARE OBSOLETE

ENCL 25

IEC SC 46E - WORKING GROUP 5*

"TERMINAL DEVICES"

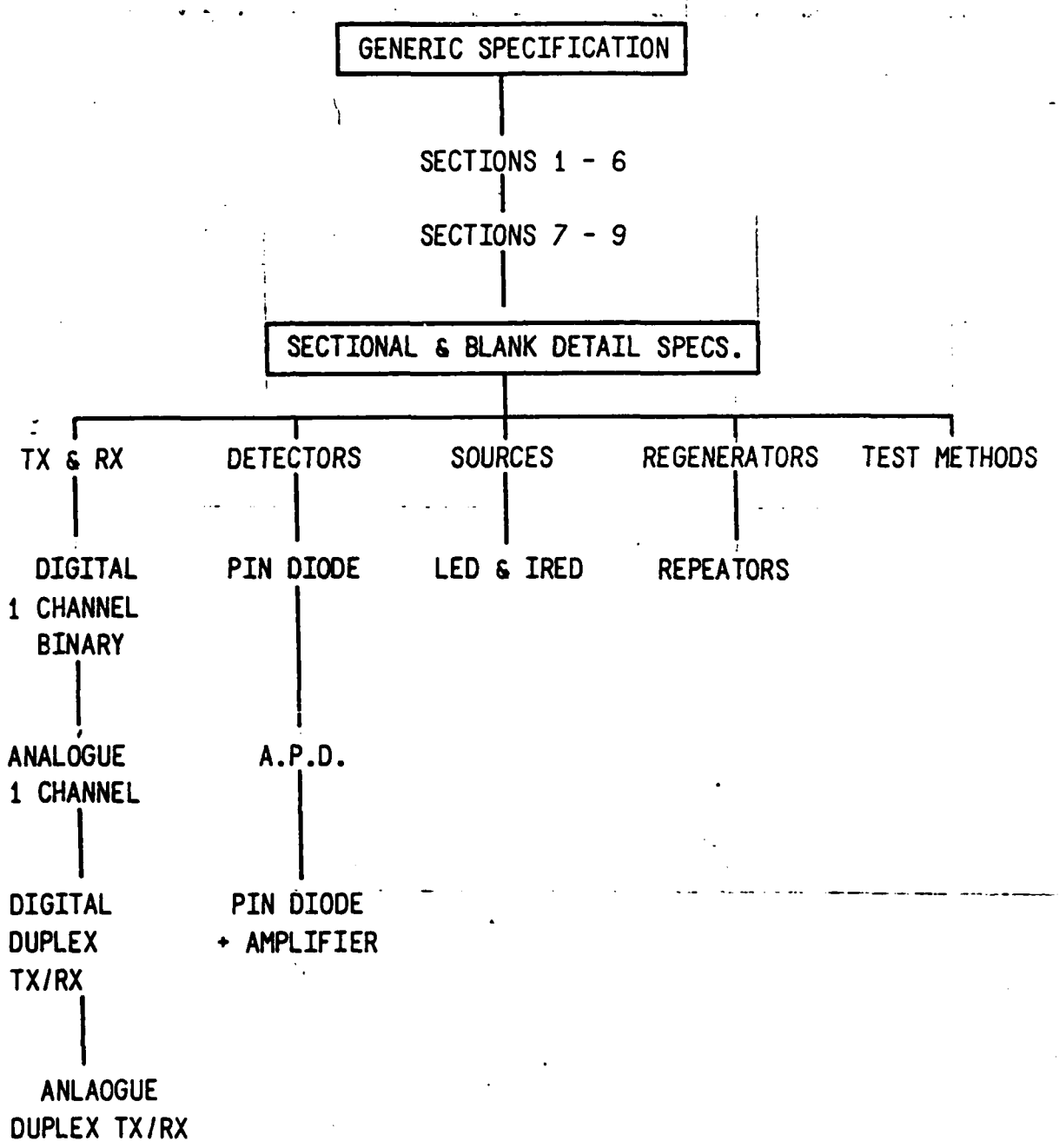
STATUS REPORT

H. N. DORRIS
AMERICAN BELL

* US MEMBERS
  H. N. DORRIS, AMERICAN BELL
  D. HANSON, H/P

ENCL 26

OVERVIEW OF IEC SC46E/WORKING GROUP 5 ACTIVITIES



- o SC46E-WG5 DOCUMENTS COMPLETED, I.E., HAVE BEEN CIRCULATED AS 46E (SECRETARIAT) DOCUMENTS TO THE NATIONAL COMMITTEES FOR COMMENT.

DOCUMENT	46E/WG5 (SECRETARY) #	46E (SECRETARIAT) #
o GENERAL SPECIFICATION		
SECTIONS 1 - 6	9	54 (7/82)
SECTIONS 7 - 9	13A	54A (4/83)
o SECTIONAL AND BDS FOR FO TX, SINGLE CHANNEL BINARY DIGITAL OUTPUT	10B	56 (4/83)
o SECTIONAL AND BDS FOR FO RX, SINGLE CHANNEL BINARY DIGITAL OUTPUT	11B	57B (4/83)
o MEASUREMENT METHODS		
0001 - 0004		
2000 - 2006	12B	58B (4/83)

- SC46E-WG5 DOCUMENTS UNDER DEVELOPMENT, I.E., HAVE BEEN WRITTEN AND ARE IN THE PROCESS OF REVIEWS, CORRECTIONS, AND PREPARATION FOR SC46E (SECRETARIAT) DOCUMENTS.

DOCUMENT	46E/WG5 (SECRETARY) #	46E (SECRETARIAT) #
o SECTIONAL AND BDS FOR FO TX, SINGLE CHANNEL ANALOGUE INPUT	21	NOT ASSIGNED
o SECTIONAL AND BDS FOR FO RX, SINGLE CHANNEL ANALOGUE OUTPUT	22	NOT ASSIGNED
o SECTIONAL AND BDS FOR FO DETECTORS	24	NOT ASSIGNED
o SECTIONAL AND BDS FOR FO DETECTORS WITH INTEGRAL PREAMPLIFIERS	25	NOT ASSIGNED
o SECTIONAL AND BDS FOR FO REPEATERS, SINGLE CHANNEL DIGITAL	28	NOT ASSIGNED

(CONTINUED)

DOCUMENT	46E/WG5 (SECRETARY) #	46E (SECRETARIAT) #
o SECTIONAL AND BDS FOR FO TX/RX DUPLEX (SINGLE FIBRE), BINARY DIGITAL	29	NOT ASSIGNED
o ADDITIONAL TEST METHODS	1004	NOT ASSIGNED
	1005	NOT ASSIGNED
	1503	NOT ASSIGNED

SC46E-WG5 FUTURE WORK

DOCUMENT	REMARKS	SCHEDULE
o SC46E (SECRETARIAT) 54, 54A, 56, 57 & 58	TO BE DISCUSSED AT SC46E PLENARY MTG, TOKYO	OCT, 1983
o SECTIONAL AND BDS FOR FO REPEATERS, DIGITAL	TO BE EXPANDED TO ENCOMPASS REGEN-ERATOR TYPES	MAY, 1984
o SECTIONAL AND BDS FOR FO TX AND RX WITH TERTIARY INPUTS AND OUTPUTS	NEW	MAY, 1984
o SECTIONAL AND BDS FOR FO DIGITAL TX AND RX WITH MULTI-SPEED INPUTS AND OUTPUTS	NEW	MAY, 1984
o SECTIONAL AND BDS FOR FO ACTIVE STAR COUPLERS	NEW (LAN SUPPORT)	MAY, 1984
o TEST METHODS	ADDITIONAL METHODS	MAY, 1984

BLANK DETAIL SPECIFICATION FRONT PAGE

[1]	PAGE OF	IEC XX 0102 [2]
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH: [3]		[4]
DETAIL SPECIFICATION FOR: FIBRE OPTIC DETECTOR, USING A DISCRETE AVALANCHE PHOTODIODE (APD), BINARY DIGITAL OUTPUT [5] DESCRIPTION AND CONSTRUCTION: OPTICAL WAVELENGTH RANGE, F.O. CONNECTOR OR PIGTAIL DETAILS (AS APPLICABLE), AND PACKAGE DETAILS, FOR EXAMPLE, HERMETIC OR PLASTIC ENCAPSULATION, ETC. [6]		
OUTLINE DRAWINGS SHOWING [7] (NOT FOR INSPECTION PURPOSES) SEE IEC XX 0000 CLAUSE 4.2	APPLICATION(S) [8]	
DATA [9] LIMITING CONDITIONS OF USE (RATINGS) (SEE 4.3 OF IEC XX 0000) ABSOLUTE LIMITING VALUES IN ACCORDANCE WITH IEC 134. ... (continued on next page)		
SEE THE RELEVANT QUALIFIED PRODUCTS LIST FOR AVAILABILITY OF COMPONENTS QUALIFIED UNDER THIS DETAIL SPECIFICATION.		

* DENOTES THAT A VALUE OR UNIT SHALL BE INSERTED IN THE DETAIL SPECIFICATION UNLESS PRECLUDED BY THE DESIGN OF THE DETECTOR.

THE FOLLOWING CONDITIONS OF USE (RATINGS) SHALL BE GIVEN AS ABSOLUTE LIMITING VALUES AND SHALL NOT BE USED FOR INSPECTION PURPOSES.

A.	SUPPLY VOLTAGE(S)	(MAX)	V
B.	OPTICAL INPUT POWER (INTO FIBRE/CONNECTOR)	(MAX)	MW
C.	OPERATING TEMPERATURE RANGE (CASE OR AMBIENT INCLUDING ANY DERATING INFORMATION).	(MIN TO MAX)	°C
D.	STORAGE TEMPERATURE RANGE, T_{STG}	(MIN TO MAX)	°C
E.	PIN SOLDERING TEMPERATURE (WHERE APPLICABLE) AND DURATION	(MAX)	°C
F.	OTHER LIMITING CONDITIONS PECULIAR TO THE PARTICULAR DEVICE, FOR EXAMPLE, VIBRATION, SHOCK, MECHANICAL LIMITATIONS OF F.O. PIGTAIL AND/OR CONNECTOR, ETC.		

NOTE. ANY INTERDEPENDENCE OF LIMITING CONDITIONS SHALL BE STATED.

RECOMMENDED CONDITIONS OF USE AND ASSOCIATED CHARACTERISTICS

(SEE 4.4 OF IEC XX 0000)

THESE APPLY OVER THE RECOMMENDED OPERATING TEMPERATURE RANGE AND TO GIVE A BIT ERROR RATE (BER) OF LESS THAN (10^{-9}), UNLESS OTHERWISE SPECIFIED. WHERE A PARTICULAR CHARACTERISTIC OF THE DETECTOR VARIES SIGNIFICANTLY OVER THE RECOMMENDED OPERATING TEMPERATURE RANGE, THE VALUE OF THAT CHARACTERISTIC AT 25°C AND AT THE EXTREMES OF THE OPERATING TEMPERATURE RANGE SHOULD BE GIVEN. THIS INFORMATION MAY BE PROVIDED IN GRAPHICAL FORM.

TYPICAL DATA SHALL APPLY AT 25°C AND NOMINAL SUPPLY VOLTAGE(S).

		SYMBOL	MIN	TYP	MAX	UNIT
A.	OPERATING TEMPERATURE (CASE OR AMBIENT)		*		*	°C
B.	SUPPLY VOLTAGE(S), POSITIVE AND/OR NEGATIVE	V_{S1}, V_{S2}, ETC.	*		*	V
C.	SUPPLY CURRENT(S) AT RECOMMENDED MAXIMUM VOLTAGE(S) AND RECOMMENDED LOAD	I_{S1}, I_{S2}, ETC.			*	MA
D.	DATA OUTPUT VOLTAGE:					
	(I) HIGH STATE)FOR DEFINED)LOAD RESISTANCE)OR CURRENT,) Φ_{IN}= 0 AND) Φ= P_{MAX}	V_{OH}	*		*	V
	(II) LOW STATE)(SEE NOTE 1)	V_{OL}	*		*	V

		SYMBOL	MIN	TYP	MAX	UNIT
E.	DATE OUTPUT CURRENT:					
	(I) HIGH STATE	I_{OH}			*	MA
	(II) LOW STATE (SEE NOTE 1)	I_{OL}			*	MA
F.	OUTPUT PROPAGATION DELAY FOR DATA OUTPUT CHANGE FROM:					
	(I) LOW TO HIGH OUTPUT	T_{PLH}	*		*	NS
	(II) HIGH TO LOW OUTPUT (SEE NOTE 1)	T_{PLH}	*		*	NS
G.	OPTICAL INPUT PERIOD:					
	(I) HIGH STATE	T_H	*		*	NS
	(II) LOW STATE (SEE NOTE 1)	T_L	*		*	NS
H.	OUTPUT RISE TIME 10% - 90% (SEE NOTE 1)	T_R			*	NS
J.	OUTPUT FALL TIME 90% - 10% (SEE NOTE 1)	T_F			*	NS
K.	OPTICAL SENSITIVITY, UNDER DEFINED CONDITIONS OF MEASUREMENT, OPTICAL INPUT LINE CODING, MODULATION, DATA RATE AND BER. (SEE NOTE 1). MINIMUM AVERAGE OPTICAL INPUT POWER REQUIRED:					
	(I) INTO FIBRE PIGTAIL CORE, OR (II) AT CONNECTOR INPUT PORT (AS APPROPRIATE)	Φ_{IN}	*			W
L.	OPTICAL DYNAMIC RANGE RELATIVE TO K.		*			dB
M.	OPERATING WAVELENGTH RANGE OVER WHICH K AND L ARE APPLICABLE.	λ	*		*	NM
N.	OPTICAL INPUT LINE CODING DETAILS WHERE APPLICABLE. (IF NECESSARY WAVEFORM DIAGRAMS TO BE INCLUDED).					

NOTE 1: FOR WORST CASE CONDITIONS (TO BE STATED).

(ADDITIONAL CHARACTERISTICS OR ENVIRONMENTAL LIMITS MAY BE INCLUDED, AS APPROPRIATE).

ADDITIONAL INFORMATION (SEE 4.5 OF IEC XX 0000)

ANY OTHER ESSENTIAL DATA, FUNCTION DIAGRAMS, WAVEFORMS, ETC., SHALL BE GIVEN. INCLUSION OF FURTHER INFORMATION, FOR EXAMPLE, FULL CIRCUIT DIAGRAM OR DETAILED CIRCUIT DESCRIPTION, IS OPTIONAL.

MEASUREMENT METHODS FOR FIBER OPTIC (F.O.) TERMINAL SUBSYSTEMS[1]

IEC#[2]	EIA FOTP[3]	TITLE	ISSUE[4]
0001	109	REFERENCE POINT TEMPERATURE.	DRAFT A, FEB., 1983
0002	110	VERIFICATION OF TYPE OF F.O. TRANSMITTER.	DRAFT A, FEB., 1983
0003	111	VERIFICATION OF TYPE OF F.O. RECEIVER.	DRAFT A, FEB., 1983
0004	112	POWER SUPPLY CURRENT(S).	DRAFT A, FEB., 1983
1004	120	OPTICAL OUTPUT POWER	DRAFT A, OCT., 1982
1005	121	OUTPUT PROPAGATION DELAY	DRAFT A, OCT., 1982
1501	123	OUTPUT VOLTAGE AND SWITCHING TESTS	DRAFT A, MAR., 1983
1502	124	DARK CURRENT	DRAFT A, MAR., 1983
1503	125	DETECTOR NUMERICAL APERTURE	DRAFT A, MAR., 1983
1700	122	EFFECTIVE OPTICAL RESPONSIVITY AND RMS OUTPUT NOISE VOLTAGE	DRAFT A, OCT., 1982
2000	113	DIGITAL F.O. TERMINAL DEVICES GENERAL MEASUREMENT REQUIREMENTS.	DRAFT A, FEB., 1983
2001	114	DATA INPUT CURRENT(S).	DRAFT A, FEB., 1983
2002	115	CONTROL INPUT CURRENT(S) OR VOLTAGE(S).	DRAFT A, FEB., 1983
2003	116	DATA OUTPUT VOLTAGE(S) OR CURRENT(S).	DRAFT A, FEB., 1983
2004	117	OPTICAL OUTPUT POWER.	DRAFT A, FEB., 1983
2005	118	OUTPUT PROPAGATION DELAY.	DRAFT A, FEB., 1983
2006	119	OPTICAL SENSITIVITY AND DYNAMIC RANGE.	DRAFT A, FEB., 1983
2007	126	MODULATION FACTOR AND/OR INDEX	DRAFT A, MAR., 1983

FOR NOTES 1, 2, 3, AND 4 SEE THE FOLLOWING PAGE.

NOTES:

1. MODIFICATION AND OR ADDITIONS TO THE PAST MEASUREMENT METHODS ARE NOTED BY A VERTICAL BAR IN THE RIGHT HAND MARGIN.

2. IEC SC46E WORKING GROUP 5 HAS ASSIGNED TEST NUMBER SEQUENCES FOR THE FOLLOWING CATEGORIES (AGREED AT LUXEMBOURG MEETING, MAY, 1982):

General Tests	0001 AND SEQ.
Discretes	
SOURCES:	
LED/IRED	1000 AND SEQ.
LASER	1100 AND SEQ.
DETECTORS:	
PIN DIODE	1500 AND SEQ.
APD	1600 AND SEQ.
PIN DIODE PLUS AMPLIFIER	1700 AND SEQ.
DIGITAL	2000 AND SEQ.
ANALOGUE	3000 AND SEQ.

3. FOTP - F.O. TEST PROCEDURE

4. ABI TEXT EDITING DOCUMENT FILE: CONTACT MS. DARIA SCHETZINA, 201-898-2849
DISKETTE NO. 04758:
DOCUMENT ID NO. 7672B

SC46E-WG5 DIRECTION

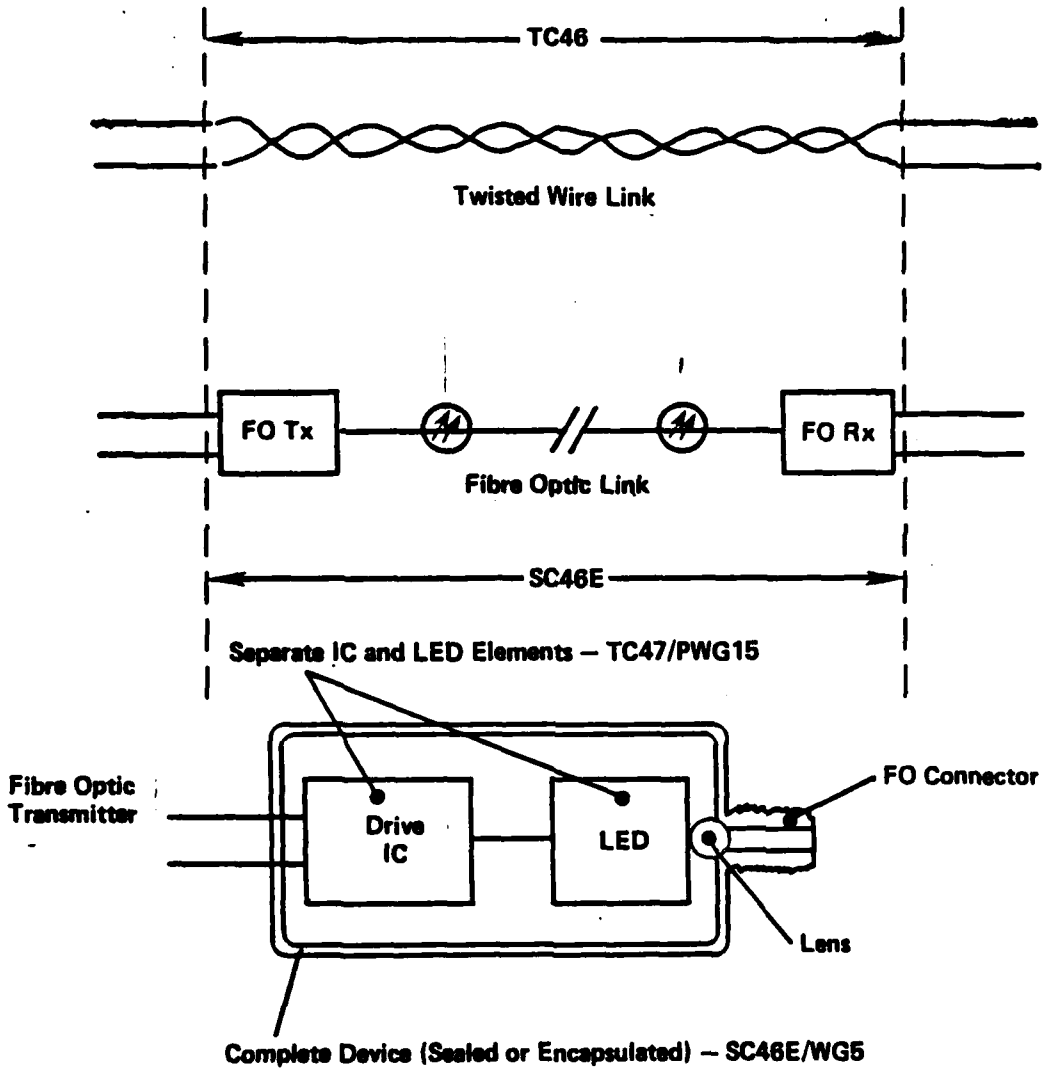
- RESTRICT ITSELF TO A "BLACK BOX" CONCEPT WHEN DRAFTING SPECIFICATIONS FOR FIBRE OPTIC TERMINAL SUBSYSTEMS.

- AVOID MAKING REFERENCE TO SEMICONDUCTOR DEVICES SUCH AS "LASER DIODE. LED. OR PIN PHOTODIODE". ETC.

- AVOID USE OF TERMS AND SYMBOLS (SUCH AS) CURRENTLY USED ONLY FOR SEMICONDUCTORS AND/OR IC DEVICES.

- SPECIFY ONLY ESSENTIAL INPUTS AND OUTPUT PARAMETERS AND THEIR MEASUREMENT METHODS.

Division of Responsibility Between
TC46/SC46E-WG5 and TC47-WG15



TC45-WG15* STATUS

DOCUMENTS		STATUS
o LASER DIODE ,	ESSENTIAL RATING AND CHAR	IN PREPARATION
o LED ,	ESSENTIAL RATING AND CHAR	IN PREPARATION
o PIN PHOTODIODE ,	ESSENTIAL RATING AND CHAR	IN PREPARATION
o APD. ,	ESSENTIAL RATING AND CHAR	IN PREPARATION
o MEASURE METHOD -	LASER DIODE THRESHOLD CURRENT	IN PREPARATION
o MEASURE METHOD -	OPTICAL POWER VS DRIVE CURRENT	IN PREPARATION
o MEASURE METHOD -	PEAK EMISSION λ AND SPECTRAL RADIATION BW	IN PREPARATION
o MEASURE METHOD -	LASER EMISSION SOURCE SIZE	IN PREPARATION
o MEASURE METHOD -	HALF INTENSITY ANGLE	IN PREPARATION
o MEASURE METHOD -	PIN PHOTODIODE NOISE	IN PREPARATION

* NO USA MEMBERS
  PROPOSED: B. OWEN, BELL LABS
  D. CHANNIN, RCA

REPORT EIA P6.3 FIBER OPTIC WORKING GROUP ON INTERCONNECTIONS

In our last meeting at Boston, P6.3 accomplished a number of milestones. They are as follows:

1. Approved for publication RS475A.

2. Reviewed and approved for S.P. ballot the Sectional and Blank Detail specification for Single Contact Subminiature Fiber Optic Connector RS475-01 and RS475-01-01 respectively. Comments from letter ballot have to be incorporated prior to S.P. ballot.

3. Reviewed for ad hoc committee action, P6.3.11, RS475-02 which is a Sectional specification for a multicontact fiber optic connector.

4. Reviewed and approved for S.P. ballot, a Generic specification for splices.

5. Reviewed and approved for S.P., a Sectional specification for a Fiber Splice and another for a Cable Splice.

6. Completed the initial review of a Generic Specification for Passive Couplers.

7. Established two more ad hoc working groups to assist in the preparation of test methods for Connectorized Cable and Coupling Devices.

8. Reviewed all comments received on the letter ballot of FOTP-34 to resolve all editorial and technical problems with this FOTP. FOTP-34 is Insertion Loss of Interconnecting Devices.

9. Passed out for working group review and comment the NATO and IEC documents.

10. Assigned individuals to review the following FOTP's:

a.	FOTP 1 - T. Stambaugh	g.	FOTP 9 - D. Parker
b.	FOTP 2 - R. Dehl	h.	FOTP 11 - Galarowicz
c.	FOTP 3 - R. Williams	i.	FOTP 12 - Galarowicz
d.	FOTP 4 - L. Krantz	j.	FOTP 17 - Poppitz
e.	FOTP 5 - Amphenol	k.	FOTP 18 - Mulkey
f.	FOTP 6 - Amphenol	l.	FOTP 26 - Sherrard

11. Met with P6.7 to discuss connector manufacturers' concerns about cable diameter variations and the need for standardization. Expressed concern about cable testing without tying down the strain relief of the cable and monitoring fiber movement during temperature and mechanical testing.

12. Discussed the lack of DOD representation at our meetings, in particular, the need to have the DOD representative present to provide input and know the philosophy of the compromises reached during document preparation.

L. Krantz

L. Krantz

ENCL 27

REPORT EIA P6.3 FIBER OPTIC WORKING GROUP ON INTERCONNECTIONS

In our last meeting at Boston, P6.3 accomplished a number of milestones. They are as follows:

1. Approved for publication RS475A.

2. Reviewed and approved for S.P. ballot the Sectional and Blank Detail specification for Single Contact Subminiature Fiber Optic Connector RS475-01 and RS475-01-01 respectively. Comments from letter ballot have to be incorporated prior to S.P. ballot.

3. Reviewed for ad hoc committee action, P6.3.11, RS475-02 which is a Sectional specification for a multicontact fiber optic connector.

4. Reviewed and approved for S.P. ballot, a Generic specification for splices.

5. Reviewed and approved for S.P., a Sectional specification for a Fiber Splice and another for a Cable Splice.

6. Completed the initial review of a Generic Specification for Passive Couplers.

7. Established two more ad hoc working groups to assist in the preparation of test methods for Connectorized Cable and Coupling Devices.

8. Reviewed all comments received on the letter ballot of FOTP-34 to resolve all editorial and technical problems with this FOTP. FOTP-34 is Insertion Loss of Interconnecting Devices.

9. Passed out for working group review and comment the NATO and IEC documents.

10. Assigned individuals to review the following FOTP's:

a.	FOTP 1 - T. Stambaugh	g.	FOTP 9 - D. Parker
b.	FOTP 2 - R. Dehl	h.	FOTP 11 - Galarowicz
c.	FOTP 3 - R. Williams	i.	FOTP 12 - Galarowicz
d.	FOTP 4 - L. Krantz	j.	FOTP 17 - Poppitz
e.	FOTP 5 - Amphenol	k.	FOTP 18 - Mulkey
f.	FOTP 6 - Amphenol	l.	FOTP 26 - Sherrard

11. Met with P6.7 to discuss connector manufacturers' concerns about cable diameter variations and the need for standardization. Expressed concern about cable testing without tying down the strain relief of the cable and monitoring fiber movement during temperature and mechanical testing.

12. Discussed the lack of DOD representation at our meetings, in particular, the need to have the DOD representative present to provide input and know the philosophy of the compromises reached during document preparation.

L. Krantz

EIA P-6.1 Report

P-6.1 Fiber Optic Working Group on Field Tooling and Test Instrumentation was established, organized and met three times (October '82, January and June, 1983) during the past year since the last FSG60 review. Formation and acceptance of the scope of this newest P-6 working group was completed January, 1983. In discussing the areas to be addressed in field tooling and test instrumentation, an extensive list of tools, support equipment, electronic test instruments, cleaners, epoxies, splicers- anything used in field installations and repairs of fiber optic components- was compiled.

Initial task groups formed in January are:

P-6.1.1 Cleaving tools, chm. Rusty Williams, Thomas & Betts. Reporting at the June meeting, the group has established the direction they'll take in producing a generic specification plus an outline of the sectionals and details anticipated to fall under the generic document.

P-6.1.2 Visual Inspection Tools, chm. Willard Hunter, Bausch & Lomb. Two drafts of military specs, one on inspection devices and one on inspection device kits were prepared prior to June. Following some additional market research on just what is needed, the task group will produce 2 corresponding generic documents in EIA format for review in January at Albuquerque.

P-6.1.3 Crimp tools, chm. C. Howard Stevens, ITT Cannon Electric. This task group met after the January meeting and produced a draft generic document which was reviewed in June. This resulted in a series of revisions to be incorporated and possibly circulated prior to the January meetings in Albuquerque.

P-6.1.4 Frequency Analysis Instruments, chm. Art Riedlinger, Western Electric. This task group has done much reviewing and seeking of guidance to produce a generic document. The IEC format guidelines now issued by EIA are of much help, but this area of electronic equipment is rather unique and difficult to define using the product-oriented guidelines. Discussion was held on the jurisdiction of P-6.1 vs. TR-44 efforts in instrumentation standardization. It was felt that P-6.1 is concerned with the quality level or required range, sensitivity, etc. of a measuring instrument while TR-44 would be concerned with usage and procedures from a system standpoint. Art will

ENCL 28

work with Marshall Hudson's (Valtec) group of TR-44.

These initial task groups are just scratching the surface of the field tooling and test instrumentation area. It appears that the major military interest is in the area of tool kits at this time, although other items of interest were noted in the report of Dick Schade (DESC) and Art Hudson (DESC) at the January and June working group meetings. Because currently available fiber optic connectors and splices are complete systems of their own, it is anticipated that several sectional and many detail documents will be produced in the area of fiber optic kits.

Additionally, P-6.1 will work with Felix Kapron (ITT EOPD) on the revision of a generic document on OTDR's which will be broken into FOTP's based on applications.

P-6.1 needs input from military and industry with active participation on the working group to accomplish the extensive tasks at hand. P-6.1 welcomes Bob Roselle as DoD representative.

Scope of P-6.1 WORKING GROUP ON FIBER OPTIC TOOLING AND TEST INSTRUMENTATION

The P-6.1 working group is established to provide standardization of fiber optic field tooling and field test instrumentation. The criteria for acceptable safety levels, performance testing and maintenance procedures of such tooling shall be specified. This includes but is not limited to:

TOOLS AND EQUIPMENT- cleaving, crimping, splicing, etc.

CHEMICAL AGENTS- cleaners, bonding agents, etc.

FIELD INSPECTION AND TESTING EQUIPMENT- fiber optic signal source, fiber optic power meter, measuring devices, visual inspection devices, etc.

NOTE: "Field" indicates installation, maintenance and repair.

- Douglas A. Parker, G&H Technology
P-6.1 Chairman

NAME:	COMPANY NAME:	MAILING ADDRESS:	PHONE
Stan Mickel	Naval Avionics Center	6000 E. 21st St. Indianapolis, IN 46218	317-353-3045
Peg Neidert	DESC-EQP	1507 Wilmington Pike Dayton, OH 45444	293-8874
Chris O'Brien	DESC-EMD	Same As Above	513-296-6189
Patrick Rodeheaver	LOC/CFVE	WPAFB, OH 45433	(AV)787-7020
Robert Rosell	Air Force	AFALD/PTSP, Gentile Air Force Station Dayton, OH 45444	(AV)986-5534 513-296-5534
Ken Rumford	DESC-STJ	1507 Wilmington Pike Dayton, OH 45444	513-296-5885
Anthony L. Russo	NSA	T-25 Ft. George G. Meade, MD 20755	301-688-7052
Ceber Simpson	Naval Avionics Center	Code 813 6000 E. 21st St. Indianapolis, IN 46218	317-353-7845 (AV)724-7845
John Slivinski	USAF	ASD/ENASF WPAFB, OH 45433	513-255-3586
Sabrina Strahler	DESC-ESS	1507 Wilmington Pike Dayton, OH 45444	513-296-5544
Dale Stump	NAVALEX	ELEX 813422 Washington, DC 20363	202-692-7227
J.R. Talbott	USAF	ASD/AXT WPAFB, OH 45433	513-255-5941
Richard Thomas	DESC-ESS	Dayton, OH 45444	513-296-5541
Burt Thompson	SM-ALC, USAF	SM-ALC/MMIMA McClellan AFB, CA 95652	916-643-4660
Dalton N. Wirtanen	DESC-E	1507 Wilmington Pike Dayton, OH 45444	513-296-6531
Roy Wood	DESC-ESS	Same As Above	(AV)986-6094
Tristan Zoia	NAVELEX	Naval Electronics Systems Command ELEX 813424 Washington, DC 20363	202-692-7227
Pete Zimbran	DESC-EM	1507 Wilmington Pike Dayton, OH 45444	513-296-5213

ATTENDANCE ROSTER
DOD FIBER OPTICS MEETING
1 -3 AUG 83

MILITARY

NAME:	COMPANY NAME:	MAILING ADDRESS:	PHONE
Brenda Bertwell	DESC	DESC-STJ, Dayton, OH	513-296-5199
Margaret J. Booher	AFALD/PTEA	WPAFB, Dayton, OH 45433	513-255-3650
Thomas J. Brooks	NSA	T-25, FT. George G. Meade, MD 20755	301-688-7052
G. Anthony Brown	Naval Facilities Engineering Command	200 Stovall St. Alexandria, VA 22332	202-325-0260
Dennis Burman	Sacramento Air Logistics Center USAF	SM-ALC/MMEHD McCellan AFB, CA 95652	916-643-5147
Louis A. Coryell	CECOM	Ft. Monmouth, NJ 0770?	201-544-5206
William Crawford	AFLC CASO/LODSGB	Federal CTR Battlecreek, MI 49016	616-962-6511 X-9381 (AV)962-6511
Jim Day	DESC	1507 Wilmington Pike Dayton, OH 45444	513-296-5014
Robert Depp	DESC-EQ	Same As Above	513-296-6271
Kurt Gausel	DESC-STJ	Same As Above	513-296-5886
Bobbi George	DESC-EMD	Same As Above	513-296-5493
Craig Gilbert	USAF	ESD/XRU Hanscom AFB, MA 01731	617-271-7228
Tom Hatcher Maj.	USAF/SI	SITI, Pentagon, Washington, DC 20330	703-695-1014
Arthur Hudson	DESC-ESS	1507 Wilmington Pike Dayton, OH 45444	513-296-6093
Rod Katz	Naval Avionics Center	Code 811, NAC, 6000 E. 21st St. Indianapolis, IN 46218	317-353-7818
John D. Knapp	Naval Facilities Engineering Command	Code 04T, 200 Stovall St. Alexandria, VA 22332	202-325-0260
Richard Lewandouski	USAF	ASD/ENASF, WPAFB, OH 45433	513-255-3586

ECL 27

ATTENDANCE ROSTER
DOD FIBER OPTICS MEETING
1 -3 AUG 83

INDUSTRY

NAME:	COMPANY NAME:	MAILING ADDRESS:	PHONE
Arne O. Aukland	EIA	2001 Eye St., N.W. Washington, DC 20006	202-457-4969
C.C. Austin	Advance Technology Systems	3412 Lenox Dr. Dayton, OH 45429	513-293-9102
Bob Becker	NKA Dayton	5775 Pondview Dr. Kettering, OH 45440	513-437-8555
A. Max Bellard	Daniels Mfg. Corp.	64 Andrew Lane Orange, CT 06477	203-799-2343
Steve Blake	Ferranti UK	TY COCH WAY, CWMBRAN GWENT NP44 7XX UK	06333 71111 X3137
Douglas R. Briggs	Corning Glass Works	Canada Road Facility Corning, NY 14830	607-974-3146
Ron Crouch	Deutsch ECD	Suite 207 4215 N. Main St. Dayton, OH 45405	513-276-3936
Richard A. Dean	IBM	Bodle Hill Rd. Owego, NY 13827	607-751-5686
Hank N. Dorris	American Bell	1 Speedwell Ave. Morristown, NJ 07960	201-898-2234
Raymond Haworth	Electric Boat	Eastern Point Rd. Groton Ct. 06340	203-446-2825
Arthur J. Harvey	EOTEC	200 Frontage Rd. W. Haven, CT 06516	203-934-7961
Richard F. Hough	G & H Technology	1649 17th St. Santa Monica, CA 90404	213-450-5604
Pat Isaacs	B.F. Goodrich	6100 Oaktree Blvd. Cleveland, OH 44131	216-447-7642
Terry Jarnigan	Hughes Aircraft	17150 VON Karman Irvine, CA 92714	714-660-5769
John E. Kacur	Vitro Labs	14000 Georgia Avenue Silver Spring, MD 20910	301-251-4104
Charles W. Kleekamp	The MITRE Corp.	P.O. Box 208 Bedford, MA 01730	617-271-3357

NAME:	COMPANY NAME:	MAILING ADDRESS:	PHONE
Leonard A. Krantz	Bendix Corp.	Delaware Ave. Sidney, NY 13838	607-563-5665
Nat Kronstadt	ELCO	8905 Fairview Rd. Silver Spring, MD 20910	301-585-6141
Michael R. Lacharite	L.L. Rowe Co.	66 Holton St. Woburn, MA 02186	617-729-7860
Lewis LaFornara	Bendix Corp.	Delaware Ave. Sidney, NY 13838	602-563-5095
William J. Matusz	Amphenol - An Allied Co.	33 E. Franklin St. Danbury, CT 06810	203-743-9272
Tom McMahon	Siecor/Optical	610 Siecor Park Hickory, NC 28601	704-329-3886
H. Marvin McNeil	Siecor Corp	Box 489 Hickory, NC 28601	704-328-2171
Art Meixner	Bell Laboratories	1 Whippany Rd. Whippany, NJ 07981	201-386-4508
R.G. Miller	Eaton, Acc Div	Dept. C156 201 N. 27 St. Milwaukee, WI 53216	414-449-6000
J.R. Neigh	AMP, Inc.	8224 Crown Ct. Rd. Alexandria, VA 22308	202-484-9596
William D. O'Hirok	ITT Cannon	10550 Talbert Ave. Fountain Valley, CA 92708	714-964-8385
R. Ohlhaber	Belden	2000 S. Batavia Geneva, IL 60134	312-232-8900
Robert Pancoast	Eaton/Cutler Hammer	3077 S. Kettering Dayton, OH 45439	513-294-1077
Douglas A. Parker	G & H Technology	1649 17th St. Santa Monica, CA 90404	213-450-0561
Richard Plunkett,II	Western Elec Co.	Dept. 9011 P.O. Box 20046 Greensboro, NC 27420	919-697-3180
Ken Prescott	GTE SSD	1 Research Dr. Westborough, MA 01701	617-366-6000
David Quiñones	Science Applications,Inc.	2450 Washington Ave. Suite 240 San Leandro, CA 94577	415-351-7807

NAME:	COMPANY NAME:	MAILING ADDRESS:	PHONE
John B. Ricci	Bendix Corp.	Delaware Ave. Sidney, NY 13838	607-563-5330
Bob Rollings	Elco Corp.	Industrial Park Huntingdon, PA 16652	814-643-4045
Edwin M. Sakaguchi	Amphenol - An Allied Co.	2122 York Rd. Oak Brook, IL 60521	312-986-2315
W.L. Schumacher	AMP, Inc.	MS 24-21 P.O. Box 3608 Harrisburg, PA	717-780-6034
D.W. Shafferkoetter	McDonnell-Douglas	2358 Farflung Dr. Florissant, MO 63031	314-233-4335
Ramesh Sheth	Belden	2000 S. Batavia Ave. Geneva, IL 60134	312-232-8900
John C. Smith	ITT-EOPD	P.O. Box 7065 Roanoke, VA 24019	703-563-0371
Greg Take	Anaconda Wire & Cable Co.	P.O. Box 4405 Overland Park, KS 66204	913-541-7500
Jim Tremlett	AMP, Inc.	927 Weston Ct. Vandalia, OH 45377	513-224-1875
Craig Tyler	Times Fiber Comm.	358 Hall Ave. Wallingford, CT 06067	203-265-8800
T. Peter Varga	Amphenol	33 E. Franklin St. Danbury, CT 06810	203-743-9272
O. Buzz Vetter	TRW/CCO	8821 Science Center Dr. Minneapolis, MN 55428	612-537-2545
John Walsh	Deutsch ECD	Suite 207 4215 N. Main St. Dayton, OH 45405	513-276-3936
John E. Wilkinson	Amphenol - An Allied Co.	3131 S. Dixie Dr. Suite 222 Dayton, OH 45429	513-294-0461
Joseph Williams	ITT EOPD	Box 7065 Roanoke, VA 24019	703-563-0371