

Accredited Standards Committee*
X3, Information Processing Systems

Doc. No.: X3T9.2/93-125r0

Date: July 28, 1993

Project:

Ref. Doc.:

Reply to: John Lohmeyer

To: Membership of X3T9.2

From: Lawrence J. Lamers, Secretary X3T9.2
John B. Lohmeyer, Chair X3T9.2

Subject: Minutes of X3T9.2 Plenary Meeting #106
Bedford, New Hampshire -- July 22-23, 1993

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- 8.14 SCSI-3 Block Commands (SBC) [Mellinger]
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- 8.16 SCSI-3 Graphics Commands (SGC) [Stephens]
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- 8.18 Directly-Addressable Device Interface (DADI)
- 8.19 SCSI Common Access Method -2 (CAM-2) (93-082) [Dallas]
- 8.20 RAID Study Group (93-129) [Penokie]
- 9. Old Business
 - 9.1 ATA-2 Project Proposal [Finch]
 - 9.2 Recommended X3T9.2 Procedure on electronic notification (93-019) [Lamers]
 - 9.3 Near Queue Full Threshold (93-102) [Williams]
 - 9.4 When to issue SDTR after WDTR (93-037r2) [Penokie]
 - 9.5 Scanner Window Descriptor Bytes Proposal (93-036) [Motoyama]
 - 9.6 Clearing ACA in SCSI-3 Interlocked Protocol (93-065) [Frazier]
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 - 10.1.2 Should d.c. resistance in SPI 5.2 be increased from 10 to 75 milliohms?
 - 10.1.3 Milligan Comments.
 - 10.1.4 SCAM inclusion
 - 10.2 Forwarding Motion on SCSI-3 Serial Storage Protocol (SSP) (93-61) [Scheible]
 - 10.3 SCSI Configuration AutoMatically (93-109r2) [Gardner]
 - 10.4 Review of new documents
 - 10.5 Unitized Connector Pin Assignments revisited (92-139r1) [Williams]
 - 10.6 Queuing Model Review (92-146) [Penokie]
- 11. Review of Action Items
- 12. Meeting Schedule
 - 12.1 Authorization of Working Group Meetings
- 13. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer, the Chair, called the meeting to order at 1:30 p.m., Thursday July 22, 1993. He thanked Ralph Weber and Charles Monia of Digital for arranging and hosting the meeting. He especially appreciated the abundant power receptacles for the "power users".

John said that the X3 Secretariat prefers receiving membership changes on the "X3 Subgroup Membership Forms" which were available on the document table. He said that people should use the X3 forms to insure the X3 Secretariat has the latest membership information. The forms should be mailed to the X3 Secretariat with a copy to John Lohmeyer.

As is customary, the people attending introduced themselves. A copy of the attendance list was circulated for attendance and corrections. Copies of the draft agenda and the recent document register were made available to those attending. Information on X3T9.2 and Mailing Subscription Forms were made available.

2. Approval of Agenda

The draft agenda was approved with the following additions:

10.6 Queuing Model Review (92-146) [Penokie]

3. Attendance and Membership

The membership requirements were reviewed. X3 rules permit one vote per organization. An individual from a new organization must attend two out of three consecutive plenary meetings. He/she may apply for voting membership the second meeting via a letter to the Chair of X3T9.2. The individual may vote at the second plenary meeting. Working group meetings do not count toward attendance requirements.

Organizations must also pay the X3 Service Fee and the International Participation fees to maintain membership. These fees total \$600 per year. Since the last meeting, 42 individuals were terminated for non-payment. None of these terminations affected the number of voting organizations.

With the re-instatement of Advanced Micro Devices, the X3T9.2 voting membership is now at 57 organizations up from 56 at the last meeting. Enclosure (1) is the list of the people present at the meeting and enclosure (2) is the current X3T9.2 membership list.

3.1 Roll Call of Members in Jeopardy

The Chair said he had sent only two jeopardy letters to two people from Amdahl for lack of meeting attendance (see 93-048r1). The letters said that their organization had failed to attend two of the last three plenary meetings and that their membership would be terminated unless they attended this meeting. The letters also informed these people of the committee's ability to retain their membership under special circumstances in spite of their failure to attend.

Representatives were present from Amdahl, so no organizations were terminated.

4. Approval of Minutes - April Meeting St. Petersburg Beach, FL (93-072r0)

The minutes were approved with the following correction. Satwinder Mangat actually introduced the Ricoh presentation, not Tetsuro Motoyama as the minutes stated. The minutes will be corrected; the corrected version will be available on the SCSI BBS but will not be redistributed.

5. Document Distribution

John Lohmeyer said that the committee mailing had been sent to CBEMA the week of June 14th. The X3 Secretariat is now dealing with our large mailings by shipping them in boxes. Members who have any problems with their mailing subscription should deal directly with Katrina Gray at (202) 626-5741.

Larry Lamers requested that all documents for the next mailing must be sent so as to be received by noon on Thursday, August 5, 1993 documents received after this date will go into a subsequent mailing.

Larry Lamers reminded the committee of the requirements for document submission to be included in the committee mailing. Since X3T9.2 meets its CBEMA document archiving requirements by including CBEMA on the mailing list, documents included in the mailing must be suitable for microfilming. This means that high-quality, single-sided originals with adequate margins and proper identification must be submitted. Document X3T9.2/92-84 R1 contains the list of requirements for submissions.

As usual, minutes are also available on the SCSI BBS (719-574-0424) and will be distributed to the SCSI Reflector E-mail list. To be added to the SCSI Reflector, send an electronic message to:

scsiadm@WichitaKS.NCR.COM.

The current document register is enclosure (3).

6. Liaison Reports and Call for Patents

6.1 ISO [Milligan]

Gene Milligan, the X3T9 International Representative, gave an oral report and provided an electronic report from the June 1993 X3T9 meeting:

ISO Report
June 1993

The principal ISO activity was covered in the The Hague meeting. This activity is best covered by the WG 4 report to SC 25, by the WG 4 Resolutions, and the WG 4 meeting document list as follows:

The convenor of WG4, Professor Popovic of the University of Bremen, assisted by the WG 4 Secretary Dr. Kovacs, led the completion of all agenda items. Experts from Denmark, Germany, Japan, and the United States contributed to the resolution of technical issues.

The CD letter ballot comment resolution has been incorporated in Project 25.13.01.06 - Fibre Distributed Data Interface (FDDI) Part 4: Single-Mode Fibre Physical Layer Medium Dependent (see JTC 1/SC 25 N 46, N67, JTC 1 N 997, JTC 1 N 1179) and the report on the disposition of comments will be complete within 2 months.

The disposition of comments on DIS Project 25.13.01.07 - Fibre Distributed Data Interface (FDDI) Part 5: Hybrid Ring Control (HRC) along with the final text for IS 9315-5 is just now being forwarded to the SC 25 Secretariat.

The draft for Project 25.13.01.11 - Fibre Distributed Data Interface (FDDI) Media Access Control - 2 (MAC-2)

(NP JTC 1 N 1328, NP Summary of Voting in JTC 1 N 1552) has been submitted for a CD ballot which is expected to be circulated within the next month.

WG 4 discussed the review pDISPs 10 608-6 and 10 608-14 (See SC 25/WG 4 N 614) noting that the US National Body has recommended disapproval but has proposed resolutions which would allow an approval. WG 4 does not have any specific liaison comment concerning these documents.

WG 4 discussed the disposition of comments on Project 25.13.10.116 - Intelligent peripheral Interface (IPI) - Part 5: Device-specific tape commands (ISO/IEC DIS 9318-5).

A contribution for Project 25.13.12.01 - High Performance Parallel Interface - Part 1: Mechanical, Electrical and Signaling Protocol Specification (HIPPI-PH) has been submitted by the technical experts 4/22/93 and its status needs to be determined. (ISO/IEC CD 11 518-1, JTC 1/SC 25 N45, N 66)

The WG also discussed potential risks to the participants

due to the lack of a specific patent disclaimer in standards for which a patent holder has not responded to the call for patents.

Numerous other agenda items were completed as reflected in the twenty three resolutions offered on behalf of WG 4 for consideration by SC 25. Further reference to the work is contained in the WG 4 minutes and its registry of 26 den Haag documents.

One of the issues concerning support of the WG 4 programme of work I think deserves special mention even before we consider the specific resolutions. Interface standards development by this group and its antecedents through a very broad spectrum of international participants are focused down to fairly few participants at SC 25. However these standards account for well over 35 million unit equipment shipments per year and tens of billions of industry revenue stated in the currencies with lower numerators. It would be a shame if this productive international activity were to be impeded by it being accomplished with too few direct participants to garner the minimum authorization requirement from JTC 1 even on projects which are essentially unopposed.

WG 4 nominates Professor Popovic as their Convenor for another term.

Resolution WG4-1

SC 25 requests that its member bodies urge their experts to actively participate in the programme of work of WG 4 and indicate this participation on NP letter ballots.

(This resolution was later withdrawn for tactical reasons.)

Resolution WG4-2

SC 25 requests its Secretariat to issue a reminder to the SC 25 members when an NP letter ballot with relevance to SC 25 is initiated by JTC 1.

Resolution WG4-3

SC 25 requests that liaison be established with IEC TC 46 and IEC TC 86 to enable them to:

1) Consider standards and standards projects that are within the responsibility of ISO/IEC/JTC 1/SC 25/WG 4

and

2) Where appropriate, establish projects that will standardize components such as connectors & cables, and related test procedures that may be referred to SC 25/WG 4 standards.

Resolution WG4-4

SC 25 recommends that JTC1 Secretariat ignore responses to, and subsequently remove, Q.4 ("Are you able to commit resources to this item without detracting from the existing work of the JTC?") from VOTING FORM 4 ("VOTE ON A PROPOSED NEW WORK ITEM"), since responses to this question are not relevant for the acceptance of a new project into the programme of work according to the current procedures of JTC1.

Resolution WG4-5

SC25 requests its Secretariat to take the necessary steps to issue a CD LB using SC 25 den Haag N ?? (WG 4/DH19) FDDI CT-PICS Revision 3.3 upon approval of the New Work Item.

Resolution WG4-6

SC 25 requests its Secretariat to take the necessary steps to withdraw Project 25.13.10.05 - Interface for Streaming Cartridge and Cassette Tape Drives (ISO 9317) since member bodies have indicated no interest in completing the standard.

Resolution WG4-7

SC 25 requests its Secretariat to take the necessary steps to withdraw Project 25.13.10.06 - Intelligent peripheral Interface (IPI) - Part 1: Physical level (ISO/IEC DIS 9318-1), which will be superseded by a future IPI Enhanced Physical level ISO/IEC 9318- 6 (project 25.13.10.14).

Resolution WG4-8

SC 25 requests that its Secretariat determine the status of the DIS 10 222 ESDI camera- ready copy, and to inform the US National Body of its findings.

Resolution WG4-9

SC 25 requests its Secretariat to take the necessary steps to issue a CD LB for ATA upon the successful completion of the NP LB, using SC 25 den Haag N ?? (WG 4/DH20) ATA Revision 4A.

Resolution WG4-10

SC 25 requests its Secretariat to take the necessary steps to issue a CD LB for SCSI CAM upon successful completion of the NP LB and the receipt of a document contribution from the US National Body.

Resolution WG4-11

SC 25 requests its Secretariat to take the necessary steps, upon registration of the approved project 25.13.12.02 - Proposal for a New Work Item: High Performance Parallel Interface (HIPPI) Framing Protocol (FP) to issue a CD Letter ballot using the SC 25 den Haag N ?? (WG 4/DH9) HIPPI-FP [11518-2] Revision 4.3.

Resolution WG4-12

SC 25 requests its Secretariat to take the necessary steps, upon registration of the approved project 25.13.12.03 - Proposal for a New Work Item: High Performance Parallel Interface (HIPPI) Encapsulation of ISO 8802-2 Logical Link Control Protocol Data Units (LE), to issue a CD Letter ballot using SC 25 den Haag N ?? (WG 4/DH6) HIPPI-LE [11518-3] Revision 3.4.

Resolution WG4-13

SC 25 requests its Secretariat to take the necessary steps, upon registration of the approved project 25.13.12.06 - Proposal for a New Work Item: High Performance Parallel Interface (HIPPI) Physical Switch Control (SC), to issue a CD Letter ballot using

SC 25 den Haag N ?? (WG 4/DH8) HIPPI-SC [11518-6] Revision 2.6.

Resolution WG4-14

SC 25 requests its Secretariat to take the necessary steps, upon registration of the approved project 25.13.13.01 - Proposal for a new Work Item: Fibre Channel (FC) Physical and Signaling Interface (PH), to issue a CD Letter ballot using SC 25 den Haag N ?? (WG 4/DH5) FC-PH Revision 4.0.

Resolution WG4-15

SC 25 recommends to JTC1 to recommend the following action with respect to the periodical review of standards:

ISO 9314-1: (project 25.13.01.03) Confirm.
ISO 9314-2: (project 25.13.01.04) Confirm.
ISO 9315: (project 25.13.10.01) Confirm.
ISO 9316 (project 25.13.11.01): Revise by replacing with SCSI-2 (project 25.13.10.13)

ISO 6548: Withdraw.

Resolution WG4-16

SC 25 resolves to re-appoint Professor Popovic as its Convenor for WG 4.

Resolution WG4-17

SC 25 resolves to accept the disposition of DIS letter ballot comments per SC 25 den Haag N ?? (WG 4/DH25) 9314-5 Editor's Report and to instruct its Secretariat to issue the final report for publication of ISO/IEC 9314-5.

Resolution WG4-18

SC 25 resolves to accept the disposition of DIS letter ballot comments per SC 25 den Haag N ?? (WG 4/DH24) Editorial Statement Regarding DIS 9318-5 Comment Resolution and to instruct its Secretariat to issue the final report for publication of ISO/IEC 9318-5.

Resolution WG4-19

SC 25 requests its secretariat to take the necessary steps to issue an NP letter ballot for the following projects: FDDI CT-PICS; FDDI PMD ATS; FDDI PHY ATS; FDDI MAC ATS; and FDDI SMT ATS per den Haag 25.

Resolution WG4-20

SC 25 requests its secretariat to take the necessary steps to issue CD letter ballots on FDDI CT-PICS and FDDI-ATSS upon approval of the projects and upon receipt of the CD- documents provided by the US National Body.

Resolution WG4-21

SC 25 resolves to instruct its Secretariat to request modification of the programme of work for SCSI as follows:

Project Number =====	Status =====	Standard # =====	Editor =====	Title =====
25:13:10:13 WG4		9316-1	Lamers	SCSI-2 Small Computer System Interface - Revision of 9316
25:13:11:01		9316	Burr	SCSI Small Computer System Interface - Published
25.13.11.02		9316-2	TBD	SCSI-2 CAM Small Computer System Interface, Common Access Method
25.13.11.02		TBD-2	TBD	SCSI-3 CAM Small Computer System Interface, Common Access Method
25:13.11.03		NEW #-7	TBD	SCSI-3 SCC Small Computer System Interface, SCSI Core Commands
25:13.11.04		NEW #-8	TBD	SCSI-3 SIP Small Computer System Interface, Interlocked Protocol
25:13.11.05		NEW #-9	TBD	SCSI-3 SPI Small Computer System Interface, Parallel Interface
25:13.11.06		NEW #-12	TBD	SCSI-3 GPP Small Computer System Interface, Generic Packetized Protocol
25:13.11.07		NEW #-11	TBD	SCSI-3 SBP Small Computer System Interface, Serial Bus Protocol
25:13.13.02		NEW #-10	TBD	SCSI-3 FCP Small Computer System Interface, Fibre Channel Protocol
25:13.13.TBD		NEW #-3	TBD	SCSI-3 SBC Small Computer System Interface, SCSI Block Commands
25:13.11.TBD		NEW #-4	TBD	SCSI-3 SSC Small Computer System Interface, SCSI Stream Commands
25:13.11.TBD		NEW #-5	TBD	SCSI-3 SGC Small Computer System Interface, Graphic

			Commands
25:13.11.TBD	NEW #-6	TBD	SCSI-3 SMC Small Computer System Interface, Medium Changer Commands
25:13.11.TBD	NEW #-1	TBD	SCSI-3 SAM Small Computer System Interface, Architectural Model

"NEW" under standards number for these subdivisions of SCSI-3 should be selected as the same new number.

Resolution WG4-22

SC 25 resolves to instruct its Secretariat to request modification of the programme of work for IPI, HIPPI and FC as follows:

Project Number	Status	Standard #	Editor	Title
=====	=====	=====	=====	=====
25.13.10.6		9318-8	Miller	EIPI-2D, Enhanced Device Specific command set for magnetic disk
25.13.10.08		9318-3	Trustedt	RIPI-3D, Revised Device Generic Command Set for Magnetic and Optical Disk
25.13.10.09		9318-4	Cummings	RIPI-3T, Revised Device Generic Command Set for Magnetic Tape Drives
25.13.12.TBD		TBD	Cummings	HIPPI-FC, HIPPI Fibre Channel Protocol
25.13.13.TBD		TBD	Tolmie	FC-FP, Fibre Channel Mapping of HIPPI Framing Protocol
25.13.13.TBD		TBD	Sloan	FC-LE, Fibre Channel Mapping of Link Encapsulation (ISO 8802.2)
25.13.13.TBD		TBD	Smith	FC-IG, Fibre Channel Implementation Guide
25.13.13.TBD		TBD	Taborek	FC-SB, Fibre Channel Mapping of Single-Byte Command Code Sets
25.13.13.05		TBD	Cornelius	FC-FG, Fibre Channel Generic Fabric Requirements
25.13.13.TBD		TBD	Malavalli	FC-XS, Fibre Channel Crosspoint Switch Requirements

25.13.13.06	TBD	Stephens	FC-AL, Fibre Channel Arbitrated Loop Fabric Requirements
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Resolution WG4-23

SC25 welcomes the liaison from SC 26 to its WG 4 and accepts the proposal of WG 4 to nominate Mr. Gene Milligan as their liaison to ISO/IEC JTC1 SC26.

The following documents were provided to WG 4.

Document List

SC 25/WG 4

DH1 Standardization Activities within SC 25/WG 4 (Germany)
 DH2 Comments on ANSI X3T9.5 FDDI TP-PMD (SC 25/WG 3)
 DH3 HIPPI Document Status (USA)
 DH4 FC Document Status (USA)
 DH5 FC-PH Revision 4.0 (USA)
 DH6 HIPPI-LE [11518-3] Revision 3.4 (USA)
 DH7 HIPPI-PH [11518-1] Revision 8.2 (USA)
 DH8 HIPPI-SC [11518-6] Revision 2.6 (USA)
 DH9 HIPPI-FP [11518-2] Revision 4.3 (USA)
 DH10 Revised IPI-3 Disk (USA)
 DH11 FC-AL Revision 1.5 (USA)
 DH12 FCP Revision 4.0 (USA)
 DH13 FC-FP Revision 1.3 (USA)
 DH14 FC-LE Revision 0.60 (USA)
 DH15 FC-SB Revision 1.3 (USA)
 DH16 FDDI Document Status (USA)
 DH17 Comment on FC-PH NWI Letter ballot (IEC TC46)
 DH18 Summary of X3T9.2 Interface Activities (USA)
 DH19 FDDI CT-PICS Revision 3.3 (USA)
 DH20 ATA Revision 4A (USA)
 DH21 Fax by Mr. Leistner to Mr. Barth regarding 9318-6 and 9314-8
 DH22 Fax by Mr. Leistner to Mr. Barth regarding approved documents
 DH23 US member body Request for discontinuance of 9318-1 (USA)
 DH24 Resolution of comments on 9318-5 (USA)
 DH25 Resolution of comments on 9314-5 (USA)
 DH26 Enhanced IPI Device Specific Disk Revision 2.0 (USA)

6.2 X3T9.7 (SSA) Liaison Report [Scheible]

John Scheible reported. See X3T9.2/93-127 for details. A project proposal for SSP - Mapping of SCSI-3 Commands to SSA is on the agenda (see 10.2) for consideration.

6.3 Fibre Channel [Allan]

Dal Allan reported. The Physical Interface document was approved with an errata document. A statement of requirements for the next physical interface is being worked on. Support for isochronous is included.

6.4 Small Form Factor Industry Group [Allan]

Dal Allan reported. There is an issue on the 2.5-inch drive dimensions. This issue has been sent to a SSWG for resolution. The four-pin power connector dimensions have reached conclusion. The unitized connector has an issue with regard to the signal assignments on the 12-pin feature connector (see 10.5 for details).

6.5 IEEE P1394 [Marazas]

Jerry Marazas reported. The P1394 project has made significant progress on the link and transaction layers. The bus management section is currently being worked on. Revision 6.3 will be available later this month. The P1394 document is intended to be forwarded to the IEEE sponsor organization in November 1993.

In order to comment on P1394, a person must sign up as a ballot review member. Membership in IEEE is required to participate in the ballot.

Larry Lamers moved and Robert Snively seconded that the chair take appropriate steps so that X3T9.2 become a participant in the balloting committee for P1394. The motion failed 7:14:13.

Jerry Marazas took an action item to get the information regarding commenting and balloting procedures and post it on the SCSI reflector.

6.6 IT8 [Lohmeyer]

John Lohmeyer had nothing new to report.

6.7 IEEE P1285 Status [Pak]

Scott Smyers reported for Dennis Pak. See X3T9.2/93-128 for details.

6.8 PCMCIA Report

John Lohmeyer stated that a PCMCIA meeting is scheduled for next week. There is work being done on a connector and cable for PCMCIA SCSI host adapters. Contact Larry Barnes (719-573-3253) at NCR for details.

Bob Bellino provided a document detailing a PCMCIA SCSI cable (see X3T9.2/93-121).

6.9 AIIM C21 (93-107)

John Lohmeyer reported that the Association for Information and Image Management (AIIM) had appointed Fernando L. Podio, the AIIM C21 Chair as a liaison to X3T9.2. C21 is responsible for Optical Disk Applications. Document X3T9.2/93-107 contains additional information and a copy of a dpANS on "Use of Media Error Monitoring and Reporting Techniques for Verification of the Information Stored in Optical Disk-Based Information Systems".

C21 has defined a MEDIA ERROR LOG page and a CURRENT THRESHOLD VALUES page which are to be retrieved with the SCSI INQUIRY command as vital product data. John asked interested parties to study the C21 draft standard and to recommend a response to the C21 committee.

6.10 Call for Patents

This is a regular agenda item to identify any potential patent issues with developing standards.

A document is available from ANSI, "Procedures for the Development and Coordination of American National Standards", at no charge. The last page contains the ANSI patent policy.

John Lohmeyer stated that while some people had suggested that a Conner Peripherals' patent on power management may be applicable to some of our draft standards, X3T9.2 had taken no position on the validity of the patent or on whether an implementation based on the X3T9.2 draft documents would involve infringement of the patent. The letter (92-239) from the Conner Peripherals patent attorney also did not appear to take a position on infringement.

7. Review of Old Action Items

- 1) John Lohmeyer will send a letter to PCMCIA regarding meeting dates. **Complete (93-74).**
- 2) John Lohmeyer will send a letter to the X3 Secretariat on approval of expenditures for editing. **Complete (93-78).**
- 3) John Lohmeyer will send a letter to George Anjargoli regarding tape partition reporting. **Complete (93-85).**
- 4) Gary Stephens will draft a technical information bulletin on reporting tape partitions. **Carry over.**
- 5) John Lohmeyer will post the P1285 Liaison report to the SCSI reflector. **Complete.**

8. Working Group and/or Project Status Reports

8.1 Project Status Summary [Lohmeyer]

John Lohmeyer presented the current X3T9.2 project status summary.

8.2 X3T9.2 General Working Group (X3T9.2/93-092r0) [Lamers]

See 93-092 for details on the General Working Group held in Santa Fe, NM and 93-115 for details on the General Working Group held in Bedford, NH.

8.3 SCSI-2 Status [Lamers]

Larry Lamers reported that he had received the comments from Mike Frary, the ISO editor. The comments are:

There are a few further corrections to be made to ensure conformance with ISO/IEC Directives Part 3 as follows:

Throughout the DIS, the number of the standard appears to be wrong at the top of every odd-numbered page.

Page 3, clause 3, move the sentence beginning "For the purposes" after the title to subclause 3.1.

Pages 3 to 5, clause 3, definitions should not begin with phrases such as "This term refers to" etc.

Page 8, clause 5, remove the full stop after the clause number.

Page 8, subclause 5.2.1, line 1, replace "meters" with "m".

Larry Lamers accepted an action item to provide the ISO version with the ISO editor's comments included to Gene Milligan for ISO letter ballot.

8.4 SCSI Common Access Method (CAM) [Dallas]

Bill Dallas was not present to provide a report. There had been a CAM working group meeting on Monday and the group was working on resolving the target mode issues in CAM-1.

8.5 AT Attachment Status (ATA)

Dal Allan reported. There is a fair amount of activity in ATA. A CD-ROM command set is floating around but has not been submitted.

John Lohmeyer stated that he had written a letter (93-111r0) to the principal member of Western Digital noting that Western Digital had been distributing a document incorrectly identified as a "draft proposed American National Standard". John asked that committee members be more careful to correctly identify proposals.

8.5.1 Payment Authorization for Editing Services (Invoice #93-4502)

The chair reported that he had received an invoice in the amount of \$650.00 from J. M. Cohen Technical Editing. This is for the work performed in preparing the AT Attachment document Rev 4.0 as authorized at the February 1993 meeting.

John Lohmeyer reported that the Editing Fund currently has \$3850. A total of \$7500 have been collected (\$50 times 150 subscriptions). After payment of this invoice, \$3200 will remain. No other editing work is currently authorized.

Larry Lamers moved and Dal Allan seconded that the X3 Secretariat be authorized to pay invoice #93:4502-X3T9.2 from J. M. Cohen submitted for AT Attachment document in the amount of \$650. The motion passed 33:0:0.

8.6 ATA Extensions [Finch]

Steve Finch reported on ATA Extensions. A document has been put together of all the various proposals as a straw horse (see 93-109). The working group voted to delete FORMAT TRACK LBA and use the remainder as a submission for project 948.

8.7 SCSI-3 Architecture Model (SAM) Status [Monia]

Charles Monia reported. An editors meeting was held on Sunday afternoon. A new revision will be available at the next working group meeting. See 93-124 for details.

8.8 SCSI-3 Parallel Interface (SPI) Status [Lamers]

Larry Lamers reported that a number of editing changes were made to address X3T9 letter ballot comments and to clean up clause 10. This resulted in revision 12b. This revision was in the mailing. See item 10.1.

8.9 SCSI-3 Interlocked Protocol (SIP) Status [Lamers]

Larry Lamers reported that revision 3 was in the mailing. It still needs work. A working session is planned for Monday afternoon and Tuesday in Colorado Springs in August 16-17, 1993.

8.10 SCSI-3 Generic Packetized Protocol (GPP) Status [Stephens]

Gary Stephens reported that revision 6 was distributed at the meeting. It includes the SAM-specific terminology. In his opinion GPP is ready for forwarding.

Larry Lamers moved and John Lohmeyer seconded that revision 6 be accepted as the working draft for project 991. The motion passed 33:0:1.

8.11 SCSI-3 Serial Bus Protocol (SBP) Status [Marazas]

Jerry Marazas reported. Revision 13 was distributed in the mailing for this meeting. Refinements continue to be worked on; it is expected to be ready for forwarding for public review in September.

Jeff Stai moved and Scott Smyers that SBP revision 13 be accepted as the working draft document for project 992D. The motion passed 29:0:0.

8.12 SCSI-3 Fiber Channel Protocol (FCP) Status [Snively]

Robert Snively provided the following report:

FCP revision 5 includes all comments made on revision 4. The most significant modifications include a partial clarification of the reset functions and the inclusion of the ACA capability. Modifications are indicated by change bars.

Giles Frazier and Gary Stephens have provided additional comments which will be included in revision 6. Clarifications and corrections have been suggested for:

- ACA;
- Relationship between exchanges and data sequences;
- logout/logout corrections;
- clarification of residual count;
- response payload to allow 256 bytes of sense information.

The working group has recommended that FCP revision 5 be accepted as the base document for project 993.

Robert Snively moved and Dal Allan that FCP revision 5 be accepted as the working draft document for project 993D. The motion passed 33:0:0.

8.13 SCSI-3 Primary Commands (SPC) Status [Weber]

Ralph Weber reported that no progress has been made since the last meeting due to extenuating circumstances.

8.14 SCSI-3 Block Commands (SBC) [Mellinger]

John Lohmeyer noted that Dennis Mellinger has volunteered to edit this document.

8.15 SCSI-3 Stream Commands (SSC) [Stephens]

Gary Stephens reported that he is near completion of the first draft of the SSC document. Expect it in September.

8.16 SCSI-3 Graphics Commands (SGC) [Stephens]

Gary Stephens volunteered to be the project editor.

8.17 SCSI-3 Medium Changer Commands (SMC) [Stephens]

Gary Stephens reported that he has prepared a draft of the Medium Changer Commands. This will be in the August mailing.

8.18 Directly-Addressable Device Interface (DADI)

A proposal for this project did not arrive in May as expected due to workload issues at the purporting company.

8.19 SCSI Common Access Method -2 (CAM-2) (93-082) [Dallas]

Bill Dallas was not present.

8.20 RAID Study Group (93-129) [Penokie]

George Penokie reported. See X3T9.2/93-129 for details.

George noted that the study group will seek a authorization for a project to develop a subsystem command set for applications where a device contains multiple devices (e.g., RAIDs).

Doug Hagerman presented a proposal for this project. He is proposing establishing a new device type. One of the key elements is to get extended addressing in parallel SCSI for logical units. This will require a new flavor of the IDENTIFY message.

Gene Milligan moved and Jim McGrath seconded that a new extended IDENTIFY message be added to SIP to allow extend LUN specification and expand the tag value. The motion passed 23:2:0.

9. Old Business

9.1 ATA-2 Project Proposal [Finch]

Dropped.

9.2 Recommended X3T9.2 Procedure on electronic notification (93-019) [Lamers]

Dropped. {Chair's note: This does not mean you should drop your email account; we still plan to use the SCSI Reflector. Larry dropped the proposal to use the reflector as the *only notification method* until we fix a few known bugs with email reliability.}

9.3 Near Queue Full Threshold (93-102) [Williams]

The working group recommended this not be accepted by X3T9.2. Adding this protocol would help on getting command flow restarted after a QUEUE FULL status. However, it does not solve all cases and a more complete solution is needed to really solve the issues.

Gary Stephens pointed out a issue in a multi-initiator mixed SCSI-2 and SCSI-3 system with a target that does not save mode pages on a per-initiator basis. The SCSI-2 initiator could receive NEAR QUEUE FULL statuses even though it never enabled them (and doesn't understand them).

Jeff Williams moved and Charles Monia seconded that 93-102 be incorporated in SCSI-3. The motion failed 2:19:0.

9.4 When to issue SDTR after WDTR (93-037r2) [Penokie]

George Penokie moved and Steve Finch seconded 93-037r3 as revised be incorporated in SCSI-3. The motion carried 15:0.

9.5 Scanner Window Descriptor Bytes Proposal (93-036) [Motoyama]

Mr. Motoyama presented a proposal for scanner window descriptors. It includes additional error codes to be included.

There were issues with the proposed ordering of bits and bytes. There is a more fundamental image positioning. Gary Stephens, newly-appointed SGC editor, offered to work with Mr. Motoyama on revising the proposal.

9.6 Clearing ACA in SCSI-3 Interlocked Protocol (93-065) [Frazier]

The working group recommended that a bit be added to the control byte (most likely bit 2) to control the clearing of ACA.

Gary Stephens complained that this would weaken extended contingent allegiance in SCSI-3 by making it optional. Others countered that the bit normalized the ACA control that already exists in FCP and SBP. Furthermore, it resolves the compatibility problem identified by Giles Frazier.

George Penokie moved and Charles Monia second that a bit be added to the control byte in the CDB to control the clearing of ACA. The motion passed 19:0.

10. New Business

10.1 SPI Forwarding Motion

John stated that SPI Rev 12a had passed the X3T9 letter ballot. However, changes to incorporate most of the comments accompanying the Yes votes from Milligan and Lohmeyer and changes to correct errors in clause 10 were incorporated in SPI Rev 12b. He had asked X3T9 to not forward the SPI document on to X3 until X3T9.2 had met to decide which one should go on.

{This portion of the minutes may be confusing to those who were not at the meeting. Agenda items 10.1.1 through 10.1.4 occurred next chronologically and had the effect of defining several revisions to SPI Rev 12b. You may wish to skip ahead and come back here after reading those sections.}

Gene Milligan moved and Jeff Stai seconded that X3T9.2 request that X3T9 substitute SPI Rev 12b as revised by the motions taken at this meeting for SPI Rev 12a.

George Penokie requested the two-week rule be invoked since the revised 12b document did not yet exist.

Dal Allan moved and George Penokie seconded that X3T9 be requested to substitute SCSI-3 Parallel Interface revision 12b for the revision 12a forwarded to X3T9 for first public review.

Jeff Stai called the question. Seconded by Jim McGrath. The motion passed 23:1.

The motion passed 35-2-0-0.

The Chair asked the No voters [Milligan and Snively] if they wanted to state their reasons for their No votes. Gene Milligan stated that he feels that 12b is defective. Bob Snively stated that he feels that 12a is as good as 12b for purposes of first public review.

Jim McGrath commented that he would like an affirmation that the unshielded low density 50-pin connector as specified in SCSI-2 is compliant with SPI.

10.1.1 Should requirement in SPI 5.0 for multi-wipe contact be dropped?

Bob Masterson moved and Dal Allan seconded that the wording be changed to delete the word multi-wipe so that the sentence would read, "The connector shall be designed with contact force and normal geometry sufficient to pass the following test."

The motion failed 8:19:0.

10.1.2 Should d.c. resistance in SPI 5.2 be increased from 10 to 75 milliohms?

The working group recommended no change. The plenary accepted this recommendation.

10.1.3 Milligan Comments.

Gene Milligan presented his comments on SPI Rev 12b. Gene Milligan moved that X3T9.2 require that the SPI document include:

- a) a statement in the compliance section and/or 4.1 overview that SPI may be implemented with either 50- or 68-pin connectors.
- b) change 5.1 and 5.2 and appropriate sections from "the ... SCSI-3 device connector shall be a 68-conductor..." to "the ... wide device connector shall be a 68..." or "the ... 68-pin device...".

The motion passed 23:7.

10.1.4 SCAM inclusion

Jeff Stai moved and Bob Snively seconded that SCAM services be included in SPI.

Gene Milligan moved and Dal Allan seconded to amend the motion to not incorporate SCAM until it is approved by X3T9.2, however a note of its existence be included. The motion carried 26:3.

The amended motion is to not incorporate SCAM into SPI until it is approved by X3T9.2, however a note of its existence be included.

George Penokie moved to divide the question. The motion passed 10:5.

The first motion is to not incorporate SCAM into SPI until it is approved by X3T9.2. The motion carried 23:7.

The second motion is to include a note in SPI that states an automatic ID assignment protocol is under development.

Jeff Stai moved and Jim McGrath seconded that the motion be amended to include the list of anticipated hardware requirements developed in the working group be included in the document or expository remarks.

Jeff Stai moved and Scott Smyers seconded that the motion be amended so that the note would read as follows: SCAM may require firmware control of signals and wire-OR'd functionality of all signals. The motion carried 23:8.

The amended motion carried: 18:5.

10.2 Forwarding Motion on SCSI-3 Serial Storage Protocol (SSP) (93-61) [Scheible]

George Penokie moved and Larry Lamers seconded that the Serial Storage Protocol project proposal as revised be forwarded to X3T9 with a recommendation that the work be done in X3T9.2.

The motion carried 32:0.

The effect of the recommendation for the work to be performed in X3T9.2 is that 93-061 should be revised to as follows: drop the suggested liaison with X3T9.2, remove the "or .7", and change coordinating liaison with X3T9.7 to close liaison. Additionally, it was agreed to drop coordinating liaison with X3T9.3 as this TG is not involved with the SSA work.

10.3 SCSI Configuration AutoMatically (93-109r2) [Gardner]

Due to the lateness of the meeting and the fact that SCAM had been extensively discussed at the working group meeting, John requested that people interested in SCAM review the 93-109r2 proposal, keep up on the related SCSI Reflector messages, and be prepared to discuss it at the next working group meeting.

10.4 Review of new documents

All new documents had been reviewed in the working group meetings. John said he plans to drop this agenda item now that we are meeting with the working groups.

10.5 Unitized Connector Pin Assignments revisited (92-139r1) [Williams]

Jeff Williams recounted the history of the pin assignment on the 12-pin feature connector with all its various flavors in X3T9.2 and SFF.

The Small Form Factor Committee had made a decision on the really right way to implement the feature connector. Gene Milligan also submitted a document with suggested wording additions for the signal definitions to the SFF committee. There was general agreement to have the SFF group document this connector.

10.6 Queuing Model Review (92-146) [Penokie]

The topic was deferred until the bit-significance issue is visited more fully. Revision 5 is the currently accepted document.

11. Review of Action Items

- 1) Jerry Marazas will distribute information regarding IEEE commenting and balloting procedures on the SCSI Reflector.
- 2) John Lohmeyer will send a letter to the X3 Secretariat on approval of expenditures for editing. **Complete.**
- 3) Larry Lamers will prepare ISO SCSI-2 and send it to the X3T9 IR.
- 4) Gary Stephens will draft a technical information bulletin on reporting tape partitions.
- 5) Larry Lamers will post the P1285 Liaison report to the SCSI reflector. **Complete.**
- 6) John Lohmeyer will request X3T9 to substitute SPI revision 12b for SPI revision 12a.

Gene Milligan noted that X3T9.5 puts the liaison reports at the end of the agenda and the working group reports first. He recommended that X3T9.2 adopt a similar order to avoid the compressed New Business as flight times approach.

12. Meeting Schedule

The next plenary meeting of X3T9.2 will be September 16-17, 1993 at the Westchester Marriott Hotel (Tel: 914-631-2200 Fax: 914-631-7819) in Tarrytown, New York, hosted by The IBM Corporation. The room rates are \$99.00, plus tax. The reservation deadline for these rates is August 27, 1993. The X3T9.2 plenary meeting will begin at 1:00 pm on Thursday and at 8:30 am on Friday.

The meeting schedule for the week of September 12-17 in Tarrytown is:

Day & Date	Meeting	Times
Sunday 9/12	General Editing Session	1:30p - 5:00p (*)
Monday 9/13	Small Form Factor Committee	9:00a - 1:00p
	ATA Working Group	2:00p - 8:00p (*)
	CAM Working Group	9:00a - 5:00p (*)
	IEEE P1394	9:00a - 8:00p
Tuesday 9/14	Serial Storage Protocol SG (SSA)	9:00a - 1:00p
	X3T9.7 (SSA)	2:00p - 5:00p
	P1394 Connector WG	9:00a - 1:00p
	SBP WG (doc review)	2:00p - 5:00p (*)
	FCP WG (doc review)	5:00p - 8:00p (*)
	Fibre Channel Working Group	9:00a - 8:00p
	FC-0 Working Group	9:00p - 5:00p
Wednesday 9/15	SCSI Working Group	9:00a - 5:00p (*)
	GPP WG (doc review)	5:00p - 8:00p (*)
	Fibre Channel Working Group	9:00p - 5:00p
	FC-LE Edit	5:00p - 8:00p
	SSA-UIG	8:00a - 5:00p
Thursday 9/16	RAID Study Group	9:00p - 12:00p (*)
	X3T9.2 Plenary Meeting	1:00p - 6:00p (*)
	Fibre Channel WG (Fabric)	9:00a - 5:00p
	IPI-3	9:00a - 8:00p
Friday 9/17	X3T9.2 Plenary Meeting	8:30a - 2:00p (*)
	IPI-3	8:30a - 2:00p

(*) - Indicates an X3T9.2-related meeting. All others are shown for reference only and may be changed by other groups without notice.

Several other X3T9.2 events are also planned:

Event	Day/Date	Time	Location/contact
ATA Working Group	Wed 7/28	9a - 5p	Milpitas / Finch
ATA Working Group	Wed 8/25	9a - 5p	Milpitas / Finch
ATA Working Group	Wed 9/29	9a - 5p	Milpitas? / Finch
RAID Study Group	Wed 8/18	8a - 11a	Colo Spgs / Penokie
SCAM Working Group	??	??	?? / Gardner Lohmeyer
SBP Working Group	Thu 8/19	9a - 6p	Colo Spgs / Marazas
SBP Working Group	late Aug	??	Boca Raton / Marazas

For more information about X3T9.2 activities, please contact the following people:

Activity	Contact	Telephone/Email
CAM Working Group	Bill Dallas	(603) 881-2508 dallas@wasted.enet.dec.com
Disk Drive Working Group/ATA	Steve Finch	(714) 573-6808 5723283@mcimail.com
GPP Working Group	Gary Stephens	(602) 799-2246 gstephen@tucvm2.vnet.ibm.com
RAID Study Group	George Penokie	(507) 253-5208 gop@rchvmp3.vnet.ibm.com
SAM Working Group	Charles Monia	(508) 841-6757 monia@starch.enet.dec.com
SBP Working Group	Jerry Marazas	(407) 982-4423 marazas@bcrvmpc2.vnet.ibm.com
SPI Contact	Larry Lamers	(408) 432-3889 71540.2756@compuserve.com
SIP Contact	Larry Lamers	(408) 432-3889 71540.2756@compuserve.com
SCAM Contact	Ed Gardner	(719) 528-2247 gardner@ssag.enet.dec.com
Other Activities	John Lohmeyer	(719) 573-3362 john.lohmeyer@ftcollinsco.ncr.com

The long-term X3T9.2 meeting week schedule is:

Date	Location	Host/Comments
Sep 13-17, 1993	Tarrytown, NY	IBM
Nov 8-12, 1993	Colo Spgs, CO	NCR
Jan 10-14, 1994	San Diego, CA	Vitro
Mar 14-18, 1994	Newport Beach, CA	Emulex {tentative}
May 16-20, 1994	Harrisburg, PA	AMP {tentative}
Jul 18-22, 1994	Manchester, NH	DEC {tentative}
Sep 12-16, 1994	Toronto, Canada	Canstar {tentative}
Nov 7-11, 1994	Irvine, CA	Western Digital {tentative}

12.1 Authorization of Working Group Meetings

John noted that the working group meetings are required to operate under the same voting procedures as does X3T9.2 (that is, one vote per organization) and the results of a working group are not binding on the parent committee. This later requirement is why we have traditionally only used non-binding straw polls in working group meetings. Any issue where the voting rules would make a difference is automatically deferred to the plenary group.

Steve Finch moved and Erich Oetting seconded that X3T9.2 authorize the X3T9.2-related meetings and events in the list under agenda item 12. The motion passed 14-2.

13. Adjournment

The meeting was adjourned at 12:10 p.m. on Tuesday July 23, 1993.

Meeting Attenders -- Enclosure (1)

Name	S	Organization	Electronic Mail Address
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Mr. Clifford E. Strang Jr.	P	BusLogic	
Mr. David Elam	O	Cables To Go	
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Mr. Edward Haske	P	CMD Technology	
Mr. Roger Wang	O	CMD Technology	
Mr. Joseph Wach	A	Conner Peripherals	
Mr. Louis Grantham	O	Dallas Semiconductor	
Mr. Michael Smith	O	Dallas Semiconductor	
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64 People Present

Status Key: P - Principal
 A - Alternate
 O - Observer
 L - Liaison
 S,V - Visitor

Minutes of X3T9.2 Plenary Meeting #106 in Bedford, NH

X3T9.2/93-125r0

Jul 28, 1993 - X3T9.2 Membership - Enclosure (2)

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Minutes of X3T9.2 Plenary Meeting #106 in Bedford, NH

X3T9.2/93-125r0

Jul 28, 1993 - X3T9.2 Document Register - Enclosure (3)

X3T9.2/93-001R0 Date: 3/12/93 Author: J. Lohmeyer [3/15/93]
 Desc: X3T9.2 Annual Report
 Res:

X3T9.2/93-002R0 Date: 1/6/93 Author: G. Penokie [3/15/93]
 Desc: Summary of SCSI Disk Array Items submitted to the RAID Study Group
 Res:

X3T9.2/93-003R0 Date: 2/13/93 Author: G. Penokie []
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-003R1 Date: 2/13/93 Author: G. Penokie []
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-003R3 Date: 3/21/93 Author: G. Penokie [3/15/93]
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-003R4 Date: 4/15/93 Author: G. Penokie []
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-003R5 Date: 4/15/93 Author: G. Penokie [6/15/93]
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-003R6 Date: 6/13/93 Author: G. Penokie []
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-003R7 Date: 7/6/93 Author: G. Penokie [8/15/93]
 Desc: SCSI Disk Array Model
 Res:

X3T9.2/93-004R0 Date: 1/11/93 Author: S. Finch [3/15/93]
 Desc: Minutes of ATA Extensions Working Group - Jan '93
 Res:

X3T9.2/93-005R0 Date: Author: G. Penokie [3/15/93]
 Desc: Minutes of RAID Study Group - Jan '93
 Res:

X3T9.2/93-006R0 Date: 1/12/93 Author: J. Lohmeyer [3/15/93]
 Desc: Minutes of X3T9.2 General Working Group - Jan '93
 Res:

X3T9.2/93-007R0 Date: 1/11/93 Author: J. McGrath [3/15/93]
 Desc: Support of Local Bus in ATA
 Res:

X3T9.2/93-008R0 Date: 10/21/92 Author: D. Kummer [3/15/93]
 Desc: Local Bus IDE Modes
 Res:

X3T9.2/93-009R0 Date: Author: S. Finch []
 Desc: ATA Extensions draft document
 Res:

X3T9.2/93-010R0 Date: 1/11/93 Author: R. Roberts [3/15/93]
 Desc: "What does the Customer Want???" presentation
 Res:

X3T9.2/93-011R0 Date: 1/4/93 Author: S. Todd [3/15/93]
 Desc: Dual Array Controller issues
 Res:

X3T9.2/93-012R0 Date: 1/5/93 Author: G. Houlder [3/15/93]
 Desc: Clarification of TTD, CIOP
 Res:

X3T9.2/93-013R0 Date: 1/4/93 Author: P. Entzel [3/15/93]
 Desc: Request for two SCSI-3 (SSC) Density Codes
 Res: Gary Stephens to assign codes

X3T9.2/93-014R0 Date: 1/12/93 Author: G. Marazas [3/15/93]
 Desc: Serial Bus Protocol Fundamentals
 Res:

X3T9.2/93-015R0 Date: Author: B. Dallas [3/15/93]
 Desc: Minutes of CAM-2 Study Group - Jan '93
 Res:

X3T9.2/93-016R0 Date: 1/21/93 Author: R. Weber [3/15/93]
 Desc: Why SCSI-3 needs ABORT (all initiator tasks)
 Res:

X3T9.2/93-017R0 Date: 1/21/93 Author: J. Lohmeyer [3/15/93]
 Desc: X3T9.2 Meeting Schedule
 Res:

X3T9.2/93-018R0 Date: 1/25/93 Author: S. Finch [3/15/93]
 Desc: ATA Extensions-Specifications of Electrical Characteristics
 Res:

X3T9.2/93-019R0 Date: 2/15/93 Author: L. Lamers [3/15/93]
 Desc: X3T9.2 Procedure on Electronic Notification
 Res:

X3T9.2/93-020R0 Date: 2/15/93 Author: J. Williams [3/15/93]
 Desc: New Optical Memory Density Codes
 Res:

X3T9.2/93-020R1 Date: 2/22/93 Author: J. Williams [3/15/93]
 Desc: New Optical Memory Density Codes
 Res: Accepted for SCSI-3 in 4/93.

X3T9.2/93-021R0 Date: 2/11/93 Author: R. Jesup [3/15/93]
 Desc: Response to Public Review Comment on CAM
 Res:

X3T9.2/93-022R0 Date: 1/28/93 Author: T. Hanan [3/15/93]
 Desc: Minutes of SFF SSWG on Local Bus ATA
 Res:

X3T9.2/93-023R0 Date: 2/8/93 Author: L. Barnes [3/15/93]
 Desc: Report on PCMCIA SCSI
 Res:

X3T9.2/93-024R0 Date: 2/8/93 Author: J. Scheible [3/15/93]
 Desc: SSA Liason Report
 Res:

X3T9.2/93-025R0 Date: 2/10/93 Author: V. Novak [3/15/93]
 Desc: Status of FCP Revision 003
 Res:

X3T9.2/93-026R0 Date: 2/15/93 Author: D. Pak [3/15/93]
 Desc: P1285 Liason Report
 Res:

X3T9.2/93-027R0 Date: 1/28/93 Author: G. Leonhardt [3/15/93]
 Desc: Explanation of No Vote on ATA
 Res:

X3T9.2/93-028R0 Date: 2/12/93 Author: J. Chen [3/15/93]
 Desc: Comment on ATA letter ballot
 Res:

X3T9.2/93-029R0 Date: 2/15/93 Author: Lamers/Penokie []
 Desc: Minutes of RAID Study Group - Feb '93
 Res:

X3T9.2/93-029R1 Date: 2/25/93 Author: Lamers/Penokie [3/15/93]
 Desc: Minutes of RAID Study Group - Feb '93
 Res:

X3T9.2/93-030R0 Date: 2/12/93 Author: B. Dallas [3/15/93]
 Desc: SCSI RAID Problems Presented to the Software Developer
 Res:

X3T9.2/93-031R1 Date: 2/16/93 Author: B. Spence [3/15/93]
 Desc: Corrections and Additions in SPI Timing
 Res:

X3T9.2/93-032R0 Date: 2/16/93 Author: G. Penokie []
 Desc: Number of Blocks Field Size Limitation
 Res:

X3T9.2/93-032R1 Date: 3/22/93 Author: G. Penokie [3/15/93]
 Desc: Number of Blocks Field Size Limitation
 Res: Accepted for SCSI-3 in 4/93.

X3T9.2/93-033R0 Date: 2/16/93 Author: Lamers/Lohmeyer [3/15/93]
 Desc: Minutes of X3T9.2 Plenary Meeting #104
 Res:

X3T9.2/93-034R0 Date: 2/17/93 Author: J. Lohmeyer [3/15/93]
 Desc: SDP Message Clarification
 Res:

X3T9.2/93-035R0 Date: 2/21/93 Author: S. Smyers [3/15/93]
 Desc: Minutes of SBP Working Group - Feb '93
 Res:

X3T9.2/93-036R0 Date: 2/17/93 Author: T. Motoyama [3/15/93]
 Desc: Scanner Window Descriptor Bytes Proposal
 Res:

X3T9.2/93-037R0 Date: 2/27/93 Author: G. Penokie []
 Desc: When to issue SDTR after WDTR
 Res:

X3T9.2/93-037R1 Date: 3/22/93 Author: G. Penokie [3/15/93]
 Desc: When to issue SDTR after WDTR
 Res:

X3T9.2/93-037R2 Date: 5/5/93 Author: G. Penokie [6/15/93]
 Desc: When to issue SDTR after WDTR
 Res:

X3T9.2/93-037R3 Date: 6/13/93 Author: G. Penokie [8/15/93]
 Desc: When to issue SDTR after WDTR
 Res:

X3T9.2/93-038R0 Date: 3/20/93 Author: R. Weber [3/15/93]
 Desc: Third-party Commands in SCSI-3 SPC
 Res:

X3T9.2/93-038R1 Date: 4/15/93 Author: R. Weber [6/15/93]
 Desc: Third-party Commands in SCSI-3 SPC
 Res:

X3T9.2/93-039R0 Date: 3/16/93 Author: Lamers/Lohmeyer [3/15/93]
 Desc: Minutes of X3T9.2 General Working Group - Mar '93
 Res:

X3T9.2/93-039R1 Date: 3/25/93 Author: Lamers/Lohmeyer [5/15/93]
 Desc: Minutes of X3T9.2 General Working Group - Mar '93
 Res:

X3T9.2/93-040R0 Date: 3/2/93 Author: E. Gardner [3/15/93]
 Desc: Minutes of SBP Working Group - Mar '93
 Res:

X3T9.2/93-041R0 Date: Author: G. Houlder [3/15/93]
 Desc: SCSI-3 Changes for Dual Port Feature
 Res:

X3T9.2/93-041R1 Date: Author: G. Houlder [3/15/93]
 Desc: SCSI-3 Changes for Dual Port Feature
 Res:

X3T9.2/93-041R2 Date: 4/20/93 Author: G. Houlder [6/15/93]
 Desc: SCSI-3 Changes for Dual Port Feature
 Res: Accepted for SCSI-3 in 4/93.

X3T9.2/93-042R0 Date: 3/17/93 Author: E. Gardner []
 Desc: SBP Command Block CDB Alignment
 Res:

X3T9.2/93-042R1 Date: 3/17/93 Author: E. Gardner [3/15/93]
 Desc: SBP Command Block CDB Alignment
 Res:

X3T9.2/93-043R0 Date: 3/17/93 Author: N. Hayes [3/15/93]
 Desc: SQRL SCSI Queued Reference List
 Res:

X3T9.2/93-044R0 Date: 3/18/93 Author: R. Roberts [3/15/93]
 Desc: Presentation on BASE-1
 Res:

X3T9.2/93-045R0 Date: 3/18/93 Author: S. Finch [3/15/93]
 Desc: Minutes of the Disk Drive Working Group - Mar '93
 Res:

X3T9.2/93-046R0 Date: 2/24/93 Author: T. Hanan [3/15/93]
 Desc: Minutes of SFF SSWG on Local Bus ATA
 Res:

X3T9.2/93-047R0 Date: 3/19/93 Author: J. Lohmeyer [3/15/93]
 Desc: Minutes of CAM Working Group - Mar '93
 Res:

X3T9.2/93-048R0 Date: 3/21/93 Author: J. Lohmeyer [3/15/93]
 Desc: Jeopardy Letter for 1993
 Res:

X3T9.2/93-049R0 Date: 3/22/93 Author: L. Lamers [3/15/93]
 Desc: Minutes of the RAID Study Group - Mar '93
 Res:

X3T9.2/93-050R0 Date: 3/22/93 Author: Finch/Allan [3/15/93]
 Desc: Project Proposal for ATA-2
 Res:

X3T9.2/93-051R0 Date: 1/6/93 Author: I. Larsen [3/15/93]
 Desc: Asynch transfer question & reply
 Res:

X3T9.2/93-052R0 Date: 1/14/93 Author: K. Gingerich [3/15/93]
 Desc: Suggested Changes to Fig 8 in SPI
 Res:

X3T9.2/93-053R0 Date: 1/31/93 Author: J. Cohen [3/15/93]
 Desc: Quotation on SCSI-2 edit
 Res:

X3T9.2/93-054R0 Date: 1/31/93 Author: J. Cohen [3/15/93]
 Desc: Quotation on ATA edit
 Res:

X3T9.2/93-055R0 Date: 1/31/93 Author: J. Cohen [3/15/93]
 Desc: Quotation on CAM edit
 Res:

X3T9.2/93-056R0 Date: 3/12/93 Author: C. Wozniak [3/15/93]
 Desc: Copyright fo Single Connector Attachment Document
 Res:

X3T9.2/93-057R0 Date: 11/9/92 Author: R. Snively [3/15/93]
 Desc: Single Connector Attachment for Small SCSI Disk Drives
 Res:

X3T9.2/93-058R0 Date: 1/28/93 Author: R. Whalen [3/15/93]
 Desc: SIMport Specification
 Res:

X3T9.2/93-059R0 Date: 4/21/93 Author: L. Lamers [6/15/93]
 Desc: ATA Rev 4 Errata
 Res:

X3T9.2/93-060R0 Date: 4/22/93 Author: E. Gardner [6/15/93]
 Desc: Minutes of SBP Working Group - Apr '93
 Res:

X3T9.2/93-061R0 Date: 4/22/93 Author: J. Scheible [6/15/93]
 Desc: Project Proposal for SCSI-3 Serial Storage Protocol (SSP)
 Res:

X3T9.2/93-062R0 Date: 3/29/93 Author: S. Washburn [8/15/93]
 Desc: New Code for QIC 555 Tape - mini cartridge
 Res:

X3T9.2/93-063R0 Date: 3/29/93 Author: R. Weber []
 Desc: Disposition of COPY Function Codes in 90-048r7
 Res:

X3T9.2/93-063R1 Date: 4/20/93 Author: R. Weber [6/15/93]
 Desc: Disposition of COPY Function Codes in 90-048r7
 Res: Accepted for SCSI-3 in 4/93

X3T9.2/93-064R0 Date: 3/30/93 Author: R. Weber [6/15/93]
 Desc: Disposition of ASC/ASCQ tag number in X3T9.2/92-141R5
 Res:

X3T9.2/93-065R0 Date: 4/19/93 Author: J. Frazier [6/15/93]
 Desc: Clearing an ACA in SIP
 Res:

X3T9.2/93-066R0 Date: 4/9/93 Author: R. Weber [6/15/93]
 Desc: ASC ASCQ Sense Codes for SCSI-3
 Res:

X3T9.2/93-067R0 Date: 3/22/93 Author: Lynn Barra [6/15/93]
 Desc: Follow-Up to X3LB 2189
 Res: CAM-2 LB results 21-0-1-9; 990D

X3T9.2/93-068R0 Date: 3/22/93 Author: Lynn Barra [6/15/93]
 Desc: Follow-up to X3LB 2190
 Res:

X3T9.2/93-069R0 Date: 3/22/93 Author: Lynn Barra [6/15/93]
 Desc: Follow-up to X3LB 2191
 Res:

X3T9.2/93-070R0 Date: 4/13/93 Author: G. Anjargoli [6/15/93]
 Desc: Revision to Description of Partion Size in SCSI-2
 Res:

X3T9.2/93-071R0 Date: 4/16/93 Author: G. Penokie []
 Desc: Isochronous Queue Tagsk
 Res:

X3T9.2/93-071R1 Date: 5/5/93 Author: G. Penokie [6/15/93]
 Desc: Isochronous Queue Tagsk
 Res:

X3T9.2/93-071R2 Date: 6/13/93 Author: G. Penokie [8/15/93]
 Desc: Isochronous Queue Tag
 Res:

X3T9.2/93-072R0 Date: 4/21/93 Author: Lamers/Lohmeyer [6/15/93]
 Desc: Minutes of X3T9.2 Plenary Meeting #105
 Res:

X3T9.2/93-072R1 Date: 7/23/93 Author: Lamers/Lohmeyer [6/15/93]
 Desc: Minutes of X3T9.2 Plenary Meeting #105
 Res: changed Motoyama to Satwinder Mangat

X3T9.2/93-073R0 Date: 4/13/93 Author: J. Scheible [6/15/93]
 Desc: SSA Liason Report
 Res:

X3T9.2/93-074R0 Date: 4/19/93 Author: J. Lohmeyer [6/15/93]
 Desc: Letter to PCMCIA RE Schedules
 Res:

X3T9.2/93-075R0 Date: 4/19/93 Author: Penokie/Lamers [6/15/93]
 Desc: Minutes of the X3T9.2 RAID Study Group - Apr '93
 Res:

X3T9.2/93-076R0 Date: 5/20/93 Author: Lamers/Penokie [6/15/93]
 Desc: Minutes of RAID Study Group - May '93
 Res:

X3T9.2/93-077R0 Date: 4/20/93 Author: G. Milligan [6/15/93]
 Desc: Conflict between CORRECT and DCR bits
 Res:

X3T9.2/93-078R0 Date: 4/20/93 Author: J. Lohmeyer [6/15/93]
 Desc: Letter to Authorize Edit Expenditures
 Res:

X3T9.2/93-079R0 Date: 4/19/93 Author: D. Pak [6/15/93]
 Desc: P1285 Liaison Report for April 1993
 Res:

X3T9.2/93-080R0 Date: 4/13/93 Author: R. Snively [6/15/93]
 Desc: SCSI-3 FCP Change Report
 Res:

X3T9.2/93-081R0 Date: 4/22/93 Author: J. Stai [6/15/93]
 Desc: Comments on SPI Rev 12
 Res:

X3T9.2/93-082R0 Date: 4/23/93 Author: B. Dallas [6/15/93]
 Desc: Minutes of CAM Working Group - Apr '93
 Res:

X3T9.2/93-083R0 Date: 4/26/93 Author: D. Allan [6/15/93]
 Desc: Information on Email
 Res:

X3T9.2/93-084R0 Date: 4/26/93 Author: S. Smyers [6/15/93]
 Desc: Minutes of SBP Working Group - Apr '93
 Res:

X3T9.2/93-085R0 Date: 4/28/93 Author: J. Lohmeyer [6/15/93]
 Desc: Letter to George Anjargoli on Tape Issues
 Res:

X3T9.2/93-086R0 Date: 4/30/93 Author: L. Lamers [6/15/93]
 Desc: Minutes of ATA Working Group - Apr '93
 Res:

X3T9.2/93-087R0 Date: 5/3/93 Author: G. Watson [6/15/93]
 Desc: RAID Issues from TRIMM's Perspective
 Res:

X3T9.2/93-088R0 Date: 5/10/93 Author: E. Gardner [6/15/93]
 Desc: Dealing with SBP Target Resets
 Res:

X3T9.2/93-089R0 Date: 5/14/93 Author: N. Harris [6/15/93]
 Desc: SCSI-3 Wide Bus Parity Handling Considerations
 Res:

X3T9.2/93-090R0 Date: 5/17/93 Author: B. Spence [6/15/93]
 Desc: Proposal for Recouping Seemingly Lost Ground
 Res:

X3T9.2/93-091R0 Date: 5/18/93 Author: D. Allan [6/15/93]
 Desc: 1994 Calendar
 Res:

X3T9.2/93-092R0 Date: 5/18/93 Author: Lamers/Lohmeyer [6/15/93]
 Desc: Minutes of X3T9.2 General Working Group - May '93
 Res:

X3T9.2/93-093R0 Date: 5/4/93 Author: R. Bellino [6/15/93]
 Desc: Cable for PCMCIA-SCSI Applications
 Res:

X3T9.2/93-094R0 Date: 5/12/93 Author: G. Frazier [6/15/93]
 Desc: Setup and hold timings in SPI
 Res:

X3T9.2/93-095R0 Date: 5/19/93 Author: J. McGrath [6/15/93]
 Desc: Son of SPASTIC
 Res:

X3T9.2/93-096R0 Date: 5/18/93 Author: M. Freeman [6/15/93]
 Desc: Liason Report on P1285
 Res:

X3T9.2/93-097R0 Date: 5/17/93 Author: R. Snively [6/15/93]
 Desc: Presentation on FCP rev 4 changes
 Res:

X3T9.2/93-098R0 Date: 5/17/93 Author: S. Smyers [6/15/93]
 Desc: Minutes of SBP Working Group - May 6-7, '93
 Res:

X3T9.2/93-099R0 Date: 5/20/93 Author: S. Smyers [6/15/93]
 Desc: Minutes of SBP Working Group - May 20, '93
 Res:

X3T9.2/93-100R0 Date: Author: L. Lamers [6/15/93]
 Desc: Minutes of Disk Drive Working Group - May '93
 Res:

X3T9.2/93-101R0 Date: 5/26/93 Author: J. Lohmeyer [6/15/93]
 Desc: X3T9 Letter Ballot comments on SPI
 Res:

X3T9.2/93-102R0 Date: 6/6/93 Author: J. Williams [6/15/93]
 Desc: Queue Full Handling
 Res:

X3T9.2/93-103R0 Date: 5/31/93 Author: G. Milligan [6/15/93]
 Desc: SCSI-3 Parallel Interface Letter Ballot Comments
 Res:

X3T9.2/93-104R0 Date: 5/24/93 Author: J. Cannon [6/15/93]
 Desc: Comment on SPI letter ballot
 Res:

X3T9.2/93-105R0 Date: 6/8/93 Author: J. Lohmeyer [6/15/93]
 Desc: Response to J. Cannon Letter
 Res:

X3T9.2/93-106R0 Date: 6/8/93 Author: J. Lohmeyer [6/15/93]
 Desc: Response to G. Milligan comments on SPI
 Res:

X3T9.2/93-107R0 Date: 5/27/93 Author: F. Podio [6/15/93]
 Desc: Letter & draft of AIIM error monitoring & reporting
 Res:

X3T9.2/93-108R0 Date: 7/9/93 Author: G. Penokie [8/15/93]
 Desc: SCSI Disk Array Questions and Answers
 Res:

X3T9.2/93-109R0 Date: 6/7/93 Author: E. Gardner []
 Desc: SCSI Configured Automagically (SCAM)
 Res:

X3T9.2/93-109R1 Date: 6/30/93 Author: E. Gardner []
 Desc: SCSI Configured Automagically (SCAM)
 Res:

X3T9.2/93-109R2 Date: 7/20/93 Author: E. Gardner [8/15/93]
 Desc: SCSI Configured Automagically (SCAM)
 Res:

X3T9.2/93-110R0 Date: 6/21/93 Author: H. Landis [8/15/93]
 Desc: Comments on ATA DMA definitions
 Res:

X3T9.2/93-111R0 Date: 7/16/93 Author: J. Lohmeyer [8/15/93]
 Desc: Letter to J. Stai
 Res:

X3T9.2/93-112R0 Date: 7/8/93 Author: R. Whiteman [8/15/93]
 Desc: Unitized Connector 12-pin Assignment
 Res:

X3T9.2/93-113R0 Date: 6/9/93 Author: G. Houlder [8/15/93]
 Desc: SPI rev 12 comments
 Res:

X3T9.2/93-114R0 Date: 6/28/93 Author: G. Houlder [8/15/93]
 Desc: SPI Clarification of REQ/ACK pulse width
 Res:

X3T9.2/93-115R0 Date: 7/19/93 Author: L. Lamers [8/15/93]
 Desc: Minutes of the Disk Drive Working Group - July, 1993
 Res:

X3T9.2/93-116R0 Date: 7/12/93 Author: J. McGrath [8/15/93]
 Desc: ATA Power Mode Timer
 Res:

X3T9.2/93-119R0 Date: Author: Lamers/Lohmeyer [8/15/93]
 Desc: Minutes of X3T9.2 Working Group - JUL '93
 Res:

X3T9.2/93-120R0 Date: 6/23/93 Author: G. Penokie [8/15/93]
 Desc: Minutes of RAID Study Group - JUN '93
 Res:

X3T9.2/93-121R0 Date: 7/19/93 Author: R. Bellino [8/15/93]
 Desc: PCMCIA Cable Family
 Res:

X3T9.2/93-122R0 Date: 7/15/93 Author: G. Frazier [8/15/93]
 Desc: Automatic SCSI ID Acquisition
 Res:

X3T9.2/93-124R0 Date: 7/21/93 Author: C. Monia [8/15/93]
 Desc: SAM status report
 Res:

X3T9.2/93-125R0 Date: 7/22/93 Author: Lamers/Lohmeyer [8/15/93]
 Desc: Minutes of X3T9.2 Meeting #106
 Res:

X3T9.2/93-126R0 Date: 7/16/93 Author: R. Snively [8/15/93]
 Desc: Proposed Architecture for Configuring External RAID devices
 Res:

X3T9.2/93-127R0 Date: 7/20/93 Author: J. Scheible [8/15/93]
 Desc: Liason Report - X3T9.7 for JUL '93
 Res:

X3T9.2/93-128R0 Date: 7/23/93 Author: D. Pak [8/15/93]
 Desc: Liason Report - P1285 for JUL '93
 Res:

X3T9.2/93-129R0 Date: 7/22/93 Author: G. Penokie [8/15/93]
 Desc: Minutes of the RAID Study Group - JUL '93
 Res:

X3T9.2/93-130R0 Date: 7/23/93 Author: D. Hagerman [8/15/93]
 Desc: Project Proposal for SCSI-3 Controller Commands
 Res:

X3T9.2/93-131R0 Date: 7/26/93 Author: J. Lohmeyer [8/15/93]
 Desc: Letter to CBEMA on payment for Editorial services
 Res: