

Accredited Standards Committee\*  
**X3, Information Technology**

**Doc. No.:** X3T10/96-168r1

**Date:** May 16, 1996

**Project:**

**Ref. Doc.:**

**Reply to:** John Lohmeyer

To: Membership of X3T10

From: Ralph Weber, Secretary X3T10  
John Lohmeyer, Chair X3T10

Subject: Minutes of X3T10 Plenary Meeting #15  
Ft. Lauderdale, FL -- May 9, 1996

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**Agenda**

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  - 8.4 SCSI-3 Parallel Interface (SPI) Status {Project 855-D} [Lamers]
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  - 8.9 SCSI-3 Architecture Model (SAM) Status {Project 994-D} [Monia]
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  - 8.11 SCSI-3 Block Commands (SBC) Status {Project 996-D} [Milligan]
  - 8.12 SCSI-3 Stream Commands (SSC) Status {Project 997-D} [Lappin]
  - 8.13 SCSI-3 Graphics Commands (SGC) Status {Project 998-D} [Tewell]
  - 8.14 SCSI-3 Medium Changer Commands (SMC) Status {Project 999-D} [Oetting]
  - 8.15 SCSI-3 Controller Commands (SCC) Status {Project 1047-D} [Penokie]
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  - 8.17 SCSI-3 Fast-20 Parallel Interface (Fast-20) {Project 1071-D} [Lamers]
  - 8.18 SCSI Parallel Interface - 2 (SPI-2) {Project 1142-D} [Ham]
  - 8.19 SCSI Enhanced Parallel Interface (EPI) Technical Report {Project 1143-D} [Ham]
  - 8.20 SCSI Fibre Channel Protocol - 2 (FCP-2) {Project 1144-D} [Snively]
  - 8.21 Boot Considerations Technical Report {Project 1154-DT} [Penman]
  - 8.22 SCSI-3 Serial Bus Protocol 2 (SBP-2) {Project 1155-D} [Johansson]
  - 8.23 SCSI Architecture Model - 2 (SAM-2) {Project 1157-D} [Monia]

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- 8.24 SPI Amendment (SPIAmnd) {Project 0855-D} [Johansson/Lamers]
- 8.25 SCC-2 Study Group [Penokie]
- 8.26 SCSI-3 Enclosure Commands (SES) [Snively]

9. Old Business

- 9.1 Results of SPC Letter Ballot (96-012)

10. New Business

- 10.1 Actions on Working Group Recommendations
  - 10.1.1 High Availability Project Proposal (96-151r1) [Hagerman]
  - 10.1.2 SPI Amendment (96-130) [Johansson]
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  - 10.1.4 Programmable Capacity Revisited (96-171r0) [Houlder]
  - 10.1.5 SBC Commands [Milligan]
  - 10.1.6 SCC-2 Project Proposal
- 10.2 Electronic Notification (95-146r1) [Lohmeyer]

11. ISO

- 11.1 ISO Report [Milligan]
- 11.2 Instructions to Delegation to SC 25/WG 4
- 11.3 SSA ISO/IEC NWIs
- 11.4 SSA ISO/IEC CD Contributions

12. Liaison Reports

- 12.1 X3T11 Liaison Report [Cummings]
- 12.2 X3T13 Liaison Report [Milligan]
  - 12.2.1 MMC-2 and/or Additional CD-ROM Command Set Project (X3T13/96-009) [Milligan]
- 12.3 SFF Industry Group [Allan]
- 12.4 IEEE 1394 [Johansson]
- 12.5 IEEE P1285 Status
- 12.6 PCMCIA Report []
- 12.7 SCSI Trade Association (STA) [Jones]

13. Review of Action Items

14. Meeting Schedule

- 14.1 Authorization of Working Group Meetings

15. Adjournment

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**Results of Meeting**

**1. Opening Remarks**

John Lohmeyer, the X3T10 Chair, called the meeting to order at 1:02 p.m., Thursday May 9, 1996. He thanked Norm Harris of Adaptec for hosting the meeting, at which point the hotel fire alarm sounded and the meeting was temporarily recessed.

When the meeting resumed, John said that X3 Subgroup Membership forms and the X3T10 Mailing Subscription form 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. These forms should be mailed directly to the X3 Secretariat.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated. Copies of the draft agenda and general information on X3T10 were made available to those attending.

## **2. Approval of Agenda**

The draft agenda was approved with the following additions:

- 8.26 SCSI-3 Enclosure Commands (SES) [Snively]
- 10.1.1 High Availability Project Proposal (96-151r1) [Hagerman]
- 10.1.2 SPI Amendment (96-130) [Johansson]
- 10.1.3 SPI-2 Clarification of When Parity is Valid (96-162r0) [Penokie]
- 10.1.4 Programmable Capacity Revisited (96-171r0) [Houlder]
- 10.1.5 SBC Commands [Milligan]
- 10.1.6 SCC-2 Project Proposal
- 10.2 Electronic Notification (95-146r1) [Lohmeyer]

## **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 X3T10. 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 (\$300) to maintain membership. The ANSI International Program Fee (also \$300) is billed at the same time.

The Chair said he had sent letters to 3 people from 2 organizations informing them that their membership was in jeopardy due to non-attendance (see 96-017r0) and that their membership would be terminated if they did not attend this meeting. All organizations were represented at this meeting except:

IIX Consulting

Organizations not present were 'terminated' (that is, the principal was changed to observer and the first alternate, if any, was dropped. Any additional alternates were changed to observer status).

Since the last meeting, Zane Daggett of Hitachi Cable was changed from an additional alternate for Hitachi to the principal member for Hitachi Cable. The X3 Secretariat has ruled that several of the Hitachi companies are separate organizations. Other Hitachi members may wish to consider joining X3T10 separately.

John announced the following new members at this meeting:

Roger Cummings (P) and Tom Treadway (A) from Distributed Processing Tech.  
Bill McFerrin (P) and David Pohm (A) from Philips KMG

The X3T10 membership during the meeting was at 49 organizations up from 48 organizations last time. Enclosure (1) is the list of the people present at the meeting and enclosure (2) is the current X3T10 membership list.

## **4. Approval of Minutes - March Meeting San Diego, CA (X3T10/96-139r1)**

The minutes were approved as written.

## **5. Document Distribution**

Members who have any problems with their mailing subscription should deal directly with Katrina Gray (kgray@itic.nw.dc.us) (202) 626-5741.

Larry Lamers requested that all documents for the next mailing be in his hands by 10:30 a.m. on Thursday May 16, 1996. Documents received after this time 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 X3T10 meets its document archiving requirements by including the X3 Secretariat on the mailing list, documents included in the mailing must be suitable for archiving. This means that native-format electronic originals with proper identification must be submitted. Document X3T10/95-147 contains the list of requirements for submissions. Document X3T10/95-361r0 contains instructions for expeditious delivery of documents to Larry.

The electronic copies can be emailed directly to Larry (at [ljlamers@corp.adaptec.com](mailto:ljlamers@corp.adaptec.com)), placed on the SCSI BBS (719-533-7950), or they can be ftp'd to <ftp.symbios.com> and placed in the /pub/standards/io/incoming directory. In the latter two cases, please also send an email to Larry (at [ljlamers@aol.com](mailto:ljlamers@aol.com)) informing him of the exact file name and location of the file.

As usual, minutes are also available on the SCSI BBS (719-533-7950) and will be distributed to the SCSI Reflector. John noted that the SCSI BBS has a new phone number

To be added to the SCSI Reflector, send an email to [majordomo@symbios.com](mailto:majordomo@symbios.com) with the line 'subscribe scsi' in the message body. The X3 Secretariat maintains a World Wide Web page at <http://www.x3.org>. Symbios Logic maintains a World Wide Web page on behalf of X3T10 at <http://www.symbios.com/x3t10>.

The current document register is enclosure (3).

## 6. 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. This document is also on the WWW at [http://www.x3.org/help/ansi\\_sdo.html](http://www.x3.org/help/ansi_sdo.html). Annex I contains the ANSI patent policy.

## 7. Review of Old Action Items

- 136) Bob Snively will supply the summary of substantive changes between FCP R10 and R12 to the IR by 3/18/96. *Complete*
- 137) George Penokie will write a document describing his concerns with table 9 and the text in clause 10.11.3, so that they can be addressed in SPI-2. *Complete*
- 138) Larry Lamers will prepare a SPI amendment document for review and consideration at the May meeting. *Carry over*
- 139) John Lohmeyer will generate a draft SCC-2 project proposal. *Complete*
- 140) John Lohmeyer will forward SIP revision 9a to X3 for processing toward first public review. *Complete*
- 141) John Lohmeyer will forward SSA-PH1 revision 9 to X3 for further processing toward first public review, including information about the unresolved negative letter ballot comment. *Complete*
- 142) John Lohmeyer will forward SSA-TL1 revision 10 to X3 for further processing toward first public review. *Complete*
- 143) John Lohmeyer will forward SSA-S2P revision 7 to X3 for further processing toward first public review. *Complete*
- 144) John Lohmeyer will help Doug Hagerman write a high availability project proposal in time for distribution in the next mailing. *Complete*
- 145) John Lohmeyer will forward the SES project proposal to X3 for further processing. *Complete*

## 8. Subgroup and/or Project Status Reports

### 8.1 Project Status Summary and X3/OMC Liaison [Lohmeyer]

John Lohmeyer said that the current X3T10 project status summary was included in the X3T10 Information Packages and will be included in the mailing as usual.

The X3 Operational Management Committee met in Scottsdale, AZ earlier this week. Due to the conflict with the X3T10 ad hoc meetings, Roger Cummings, X3T11 Chair, gave the X3T10 annual report to OMC. John expressed his appreciation to Roger. The annual report will be included in the next X3T10 mailing.

John Lohmeyer and Gene Milligan had participated in this meeting via telephone. OMC had accepted the SES project proposal and recommended that X3 approve it.

John announced that IEEE had sent him a "Coordination Verification" form and a copy of the draft IEEE 1284.1/D1.1V2, Standard for Information Technology for Transport Independent Printer/System Interface (TIP/SI). The form must be returned prior to June 11th. He requested anyone with comments to contact him before then.

### 8.2 X3T10.1 Task Group Report [Lamers]

Larry Lamers, acting X3T10.1 chair, provided the following written report, which was read to the committee.

#### **X3T10.1 Report Larry Lamers, Chair X3T10.1**

X3T10.1 met in South Burlington, VT on Wednesday, May 1, 1996 with 20 people present. Membership is now at 19 voting organizations of which 11 were in attendance.

All of the first-generation SSA documents (PH1, TL1, and S2P) were forwarded to X3 for first public review. The public reviews will end July 9, 1996. PH1 had an unresolvable negative from FSI objecting to standardizing the 20 MByte/Sec data rate.

Issues regarding hot swapping were addressed with a proposal to incorporate a confirmation for status transfers. A proposal for including facilities to improve XOR operations will be considered at the next meeting.

It is expected that SSA-PH2 and SSA-TL2 will have a technical stability vote at the next plenary. A forwarding motion is planned for October 1996.

The next plenary meeting of X3T10.1 will be June 26, 1996, in St. Petersburg Beach, FL at the Tradewinds Hotel (813) 562-1240, hosted by AMP. The meeting will begin at 3:00 p.m. on Wednesday.

The long term meeting schedule was revised to three plenary meetings for 1997 and 1998. The locations for the August, 1996 and October, 1996 meetings were changed due to host problems. The December 1996 meeting was canceled. The schedule is:

Week of August 26, 1996 in Ithaca, NY hosted by Pathlight.

Week of October 28, 1996 in Hawaii, hosted by IBM.

Week of February 24, 1997 in Austin, TX \*.

Week of June 23, 1997 in Monterey, CA \*.

Week of October 27, 1997 in Europe \*.

Week of February 23, 1998 in \*.

Week of June 22, 1998 in \*.

Week of October 26, 1998 \*.

**8.3 SCSI Common Access Method (CAM) {Project 792-D} [Dallas]**

John Lohmeyer reported that CAM was approved by BSR on February 5, 1996. It will be X3.232:1996. Bill reported that CAM is at the ANSI editors and Bill is answering occasional questions.

**8.4 SCSI-3 Parallel Interface (SPI) Status {Project 855-D} [Lamers]**

Larry reported that ANSI is holding a 60 day public review on SPI with the revised figures. The review closes on July 9.

Larry Lamers moved that X3T10 approve a payment of \$1,200 to Terrl Heinzman for editing on SPI. George Penokie seconded the motion. The motion passed unanimously.

**8.5 SCSI-3 Interlocked Protocol (SIP) Status {Project 856-D} [Penokie]**

George reported SIP is in public review. The public review closes on 25 June 1996.

**8.6 SCSI Common Access Method -3 (CAM-3) Status {Project 990-D} [Dallas]**

Bill reported that the working group reviewed the new software concepts. He promised delivery of a new draft the end of June. The minutes of the CAM-3 Working Group meeting are available in 96-177.

**8.7 SCSI-3 Serial Bus Protocol (SBP) Status {Project 992-D} [Roberts]**

Ron reported that SBP passed public review and is at X3 letter ballot. The X3 letter ballot closes in June 1996.

**8.8 SCSI-3 Fiber Channel Protocol (FCP) Status {Project 993-D} [Snively]**

Bob reported that FCP is in final ANSI editing. The committee discussed the ANSI editing process.

**8.9 SCSI-3 Architecture Model (SAM) Status {Project 994-D} [Monia]**

Larry reported that SAM is in final ANSI editing.

**8.10 SCSI-3 Primary Commands (SPC) Status {Project 995-D} [Weber]**

Ralph reported that SPC is undergoing a lengthy, and as yet incomplete, editorial review process. He promised a best effort attempt to provide a revised SPC for the next mailing. John noted that the Friday SBC editing session will also cover SPC.

**8.11 SCSI-3 Block Commands (SBC) Status {Project 996-D} [Milligan]**

Gene reported that the SCSI working group reviewed the known issues in SBC. He noted that several commands were made obsolete. Also, work is in progress to cleanup the power management requirements and make them more compatible with ATA power management.

Gene Milligan moved that the committee accept 996-D revision 4 as the current committee working document. Charles Monia seconded the motion. The motion passed unanimously.

**8.12 SCSI-3 Stream Commands (SSC) Status {Project 997-D} [Lappin]**

Ted reported on the SSC/SMC Working Group meeting, the minutes of which can be found in 96-174.

**8.13 SCSI-3 Graphics Commands (SGC) Status {Project 998-D} [Tewell]**

John reported no progress on SGC. He reminded the committee if no one has volunteered to edit SGC by the September plenary, he will introduce a motion to withdraw SGC from development.

**8.14 SCSI-3 Medium Changer Commands (SMC) Status {Project 999-D} [Oetting]**

In the absence of Erich, no report was available.

**8.15 SCSI-3 Controller Commands (SCC) Status {Project 1047-D} [Penokie]**

George reported on the ANSI editing problems with normative references in SCC. The committee discussed the possible responses to the ANSI position regarding normative references.

Larry Lamers moved that the SCC editor be instructed to remove all normative reference listings for documents not really referenced in SCC normative text and to create a bibliography of references for other X3T10 documents in the SCSI-3 Roadmap and that all other X3T10 technical editors be instructed to follow this precedent. Charles seconded the motion. The motion passed by a roll call vote of 29:1:0:19=49. The results of the roll call vote were as follows:

Organization	Name	Yes	No	Abs	NP
Adaptec, Inc.	Mr. Norm Harris	1			
Amdahl Corp.	Mr. Edward Fong	1			
AMP, Inc.	Mr. George Preputnick	1			
Amphenol Interconnect					1
Ancot Corp.					1
Apple Computer	Mr. Ron Roberts	1			
BusLogic					1
Ciprico Inc.					1
Circuit Assembly Corp.					1
Cirrus Logic Inc.					1
CMD Technology					1
Congruent Software, Inc.	Mr. Peter Johansson	1			
Dallas Semiconductor	Mr. Louis Grantham	1			
Digital Equipment Corp.	Mr. Charles Monia	1			
Distributed Processing Tech.	Mr. Roger Cummings	1			
Eastman Kodak Co.	Mr. Robert Reisch	1			
ENDL Associate	Mr. Ralph O. Weber	1			
Exabyte Corp.	Mr. Edward Lappin	1			
FSI Consulting Services	Mr. Gary R. Stephens		1		
Fujitsu Computer Products, Am					1
Hewlett Packard Co.	Mr. Stephen Holmstead	1			
Hitachi Micro Systems, Inc.					1
Hitachi Cable Manchester, Inc					1
Honda Connectors					1
IBM Corp.	Mr. George Penokie	1			
Iomega Corp.					1
KnowledgeTek, Inc.	Mr. Dennis Moore	1			
Linfinity Micro	Mr. Dean Wallace	1			
Maxtor Corp.	Mr. Pete McLean	1			
Methode Electronics, Inc.					1
Molex Inc.					1
Oak Technology, Inc.	Mr. Anthony E. Pione	1			
Ophidian Designs	Mr. Edward A. Gardner	1			
Panasonic Technologies, Inc	Mr. Stephen F. Heil	1			
Philips KMG	Mr. David A. Pohm	1			
QLogic Corp.	Mr. Skip Jones	1			
Quantum Corp.					1
Seagate Technology	Mr. Gene Milligan	1			
Silicon Systems, Inc.	Mr. Dave Guss	1			
Storage Technology Corp.					1

Sun Microsystems Computer Co	Mr. Robert N. Snively	1		
Symbios Logic Inc.	Mr. John Lohmeyer	1		
SyQuest Technology, Inc.			1	
Tandem Computers	Mr. Pete Tobias	1		
Toshiba America	Mr. Tokuyuki Totani	1		
UNISYS Corporation	Mr. Kenneth J. Hallam	1		
Unitrode Integrated Circuits	Mr. Paul D. Aloisi	1		
Western Digital Corporation			1	
Woven Electronics			1	
		29	1	0 19 = 49

Gary Stephens declined the offer of stating a reason for his No vote in the minutes.

### 8.16 Multimedia Command Set (MMC) Status {Project 1048-D} [Roberts]

#### MMC Status Report May 10, 1996

The working group has completed page by page review of Rev 6. The editor will make corrections and additions to document and provide a Rev 7 for the mailings. A vote was taken within the Working Group to recommend forwarding Rev 7 (Rev 6 with changes incorporated). The motion was defeated 4 yes - 7 no.

The schedule of meetings:

June 17, 18, & 19, in Irvine.

The working group has requested that the joint meeting with X3T13 be re-scheduled to some later date.

July 16, & 17, 1996 in Colorado Springs

### 8.17 SCSI-3 Fast-20 Parallel Interface (Fast-20) {Project 1071-D} [Lamers]

Larry reported that the ANSI editorial changes have been received and reviewed. Larry Lamers moved that X3T10 approve the ANSI editorial changes to Fast-20 as non-substantive. Ralph Weber seconded the motion. The motion was approved by a roll call vote of 29:0:0:20=49. The results of the roll call vote were as follows:

Organization	Name	Yes	No	Abs	NP
Adaptec, Inc.	Mr. Norm Harris	1			
Amdahl Corp.	Mr. Edward Fong	1			
Amdahl Corp.					1
Amphenol Interconnect					1
Ancot Corp.					1
Apple Computer	Mr. Ron Roberts	1			
BusLogic					1
Ciprico Inc.					1
Circuit Assembly Corp.					1
Cirrus Logic Inc.					1
CMD Technology					1
Congruent Software, Inc.	Mr. Peter Johansson	1			
Dallas Semiconductor	Mr. Louis Grantham	1			
Digital Equipment Corp.	Dr. William Ham	1			
Distributed Processing Tech.	Mr. Roger Cummings	1			
Eastman Kodak Co.	Mr. Robert Reisch	1			
ENDL Associate	Mr. Ralph O. Weber	1			
Exabyte Corp.	Mr. Edward Lappin	1			
FSI Consulting Services					1
Fujitsu Computer Products, Am					1
Hewlett Packard Co.	Mr. Stephen Holmstead	1			
Hitachi Micro Systems, Inc.					1
Hitachi Cable Manchester, Inc					1
Honda Connectors					1
IBM Corp.	Mr. George Penokie	1			



Iomega Corp.			1
KnowledgeTek, Inc.	Mr. Dennis Moore	1	
Linfinity Micro	Mr. Dean Wallace	1	
Maxtor Corp.	Mr. Pete McLean	1	
Methode Electronics, Inc.			1
Molex Inc.	Mr. Jay Neer	1	
Oak Technology, Inc.	Mr. Anthony E. Pione	1	
Ophidian Designs	Mr. Edward A. Gardner	1	
Panasonic Technologies, Inc	Mr. Stephen F. Heil	1	
Philips KMG	Mr. David A. Pohm	1	
QLogic Corp.	Mr. Skip Jones	1	
Quantum Corp.			1
Seagate Technology	Mr. Gene Milligan	1	
Silicon Systems, Inc.	Mr. Dave Guss	1	
Storage Technology Corp.			1
Sun Microsystems Computer Co	Mr. Robert N. Snively	1	
Symbios Logic Inc.	Mr. John Lohmeyer	1	
SyQuest Technology, Inc.			1
Tandem Computers	Mr. Pete Tobias	1	
Toshiba America	Mr. Tokuyuki Totani	1	
UNISYS Corporation	Mr. Kenneth J. Hallam	1	
Unitrode Integrated Circuits	Mr. Paul D. Aloisi	1	
Western Digital Corporation			1
Woven Electronics			1

29 0 0 20 = 49

### 8.18 SCSI Parallel Interface - 2 (SPI-2) {Project 1142-D} [Ham]

Bill reported on the working group meetings covering SPI-2, minutes of which can be found in 96-157 and 96-166.

Bill described configuration considerations and answered questions from the floor. The configurations cover several different combinations of total length and spacing between devices. Bill described work on a new definition for the drivers being undertaken by TI and Adaptec. He expressed the belief that the LVD contents are technically complete.

The committee held a lengthy discussion of the scope of SPI-2. The two opposing concepts were, a single SPI definition that supersedes all previous definitions vs. a delta document covering only LVD. Gary Stephens moved that the operating SPI-2 project scope be clarified to show that SPI-2 must supersede SPI and include SPI, Fast-20, Fast-40, Fast-80, and LVD. Steve Heil seconded the motion.

Gene Milligan moved to amend the motion to add a requirement that X3T10 produce an additional standard covering just LVD. The motion to amend failed for lack of second.

Gene Milligan moved to amend the motion such that SPI-2 does not automatically stop sales of SPI, i.e. SPI-2 would not supersede SPI. Ed Gardner seconded the motion. The motion to amend passed 21:4:2:22=49.

As amended, it was moved that the operating SPI-2 project scope be clarified to show that SPI-2 must include SPI, Fast-20, Fast-40, Fast-80, and LVD. The motion passed 25:4:1:19=49.

The committee discussed the relation of the proposed SPI-2 scope to SCSI-2. The opposing points of view were; that the SPI references to SCSI-2 are moved to the new document unchanged vs. pulling SCSI-2 text into the SPI-2 document.

Ed Gardner moved that the SPI-2 technical editor be directed to eliminate all references to SCSI-2 from SPI-2 by incorporating the referenced material into SPI-2 as deemed appropriate. Bill Ham seconded the motion. The motion passed 20:5:1:23=49. Bob Snively stated that his no vote is based on the belief that the requirement made unnecessary work for the SPI-2 technical editor.

John Lohmeyer moved that the inclusion of Fast-80 in SPI-2 scope be reconsidered and removed from the required contents of SPI-2. Ed Gardner seconded the motion to reconsider. The motion to reconsider passed 23:5:1:20=49.

As a result of all this moving, the operating scope of SPI-2 will be SPI, Fast-20, Fast-40, and LVD. Any references to SCSI-2 material in SPI will be eliminated by including the appropriate material directly in SPI-2. Thus SPI-2 will become a complete definition of the SCSI physical layer.

#### **8.19 SCSI Enhanced Parallel Interface (EPI) Technical Report {Project 1143-D} [Ham]**

Bill reported no progress on EPI this time. Questions were raised about whether arbitration fairness will be placed in EPI. The belief was expressed that arbitration fairness will be included in EPI.

#### **8.20 SCSI Fibre Channel Protocol - 2 (FCP-2) {Project 1144-D} [Snively]**

Bob reported no progress on FCP-2 and indicated that no progress will be made until summer.

#### **8.21 Boot Considerations Technical Report {Project 1154-DT} [Penman]**

Larry reported that the boot consideration information has been edited into the correct technical report format, based on previous GPP work. Larry Lamers moved that X3T10 approve a payment of \$300 to Terrl Heinzman for editing the boot considerations information into technical report format. Bill Dallas seconded the motion. The motion passed unanimously.

#### **8.22 SCSI-3 Serial Bus Protocol 2 (SBP-2) {Project 1155-D} [Johansson]**

Peter reported on the various IEEE 1394-related projects and their relationship to SBP-2.

#### **8.23 SCSI Architecture Model - 2 (SAM-2) {Project 1157-D} [Monia]**

Charles described work on a list of changes for SAM-2 conducted at the SCSI Working Group meeting (minutes available in 96-167). Charles stated his plans to have a first draft SAM-2 ready for the next meeting.

#### **8.24 SPI Amendment (SPIAmnd) {Project 0855-D} [Johansson/Lamers]**

Larry reported no progress on developing the SPI amendment.

#### **8.25 SCC-2 Study Group [Penokie]**

George reported on the activities of the SCC-2 Working Group meeting and meeting plans. Minutes of the SCC-2 Working Group meeting can be found in 96-165.

#### **8.26 SCSI-3 Enclosure Commands (SES) [Snively]**

Bob reported SES revision 4.0 has been prepared. OMC has approved the project proposal and the X3 letter ballot is in progress. Bob is working on revision 5.0 for the next mailing. Revision 5 will contain support for sub-enclosures based on a flat addressing scheme, will be reformatted into single columns, and will contain spelling and grammar corrections. Bob requested a letter ballot for first public review as soon as possible.

### **9. Old Business**

#### **9.1 Results of SPC Letter Ballot (96-012)**

Ralph reported that committee action cannot be taken at this time due to insufficient progress in resolving the letter ballot comments and numerous comments resulting from the editorial review meetings requested by one letter ballot comment.

## **10. New Business**

### **10.1 Actions on Working Group Recommendations**

#### **10.1.1 High Availability Project Proposal (96-151r1) [Hagerman]**

Larry presented a project proposal for a High Availability Technical Report (96-151r1). Charles Monia moved that the project proposal be forwarded for further processing by X3. Ken Hallam seconded the motion. The motion passed 26:0:0:23=49. John took an action item to forward the project proposal for a High Availability Technical Report (96-151r1) to X3 for further processing.

#### **10.1.2 SPI Amendment (96-130) [Johansson]**

It was agreed that no plenary action is necessary on the SPI amendment at this time.

#### **10.1.3 SPI-2 Clarification of When Parity is Valid (96-162r0) [Penokie]**

George described the addition of "at the receiver" to a sentence in SPI that clarifies conditions under which the statement applies. George Penokie moved that 96-162r0 be approved for inclusion in the SPI amendment. Gene Milligan seconded the motion. During the discussion, Gene asked for and received agreement that "at the receiver" be changed to the "at the receiving device". The motion passed 26:0.

#### **10.1.4 Programmable Capacity Revisited (96-171r0) [Houlder]**

Gene Milligan presented a proposal to change the handling of number of blocks equal to zero value in the mode page header. Gene Milligan moved that the proposal be adopted for inclusion in SPC as approved by the Working Group. Larry Lamers seconded the motion. The motion passed 25:0. Ralph and Larry noted that no electronic copy of the proposal has been received.

#### **10.1.5 SBC Commands [Milligan]**

Gene Milligan moved that the plenary accept the SCSI Working Group recommendation that the SEEK, REZERO UNIT, and all SEARCH DATA XXX commands be made obsolete in the SBC. George Penokie seconded the motion. The motion passed 26:0.

#### **10.1.6 SCC-2 Project Proposal**

George presented a project proposal for SCC-2 (96-152r0). Ron Roberts moved that the project proposal be forwarded for further processing by X3. George Penokie seconded the motion. The motion passed 26:0:0:23=49. John took an action item to forward the SCC-2 Project Proposal (96-152r0) to X3 for further processing.

### **10.2 Electronic Notification (95-146r1) [Lohmeyer]**

John presented the electronic notification and voting document distributed in the last mailing. Pete McLean noted that "at least" should be used in place of hard-coded notification periods. It was noted that the BBS phone number is incorrect in the current draft. Other minor grammar errors were noted. It was noted that meeting notifications should use at least the technical reflector. It was also noted that jeopardy notification should be discussed in the revised proposal.

John Lohmeyer moved that X3T10 adopt 95-146r2 (r1 as revised) as the electronic operating procedures for the committee. Pete McLean seconded the motion. The motion passed 25:0:0:24=49.

## 11. ISO

### 11.1 ISO Report [Milligan]

Gene Milligan, the X3T10 International Representative, gave a brief oral report and provided the following electronic report:

#### ISO Report 5/96

As noted in the last meeting the FCP NWI ballot N3702 results still have not been received. However IR96008 dated 96/04/01 was submitted with the following recommended vote: The U.S. member body votes YES on ISO/IEC JTC 1/SC 25 N TBD CD TBD FCP Revision 10 with a comment that the text for the DIS be based upon Revision 12 rather than 10. The principal differences between Revision 10 and 12 are:

- 1) Task Management Response changes.
- 2) Change to Write XFER\_RDY disabled in clause 6.2.6.13.
- 3) Changes to clause 7.4.4.,5.
- 4) Changes to clause 6.2.5.
- 5) Changes to clause 6.3.
- 6) Definition of Tag in clause 3.1.28.
- 7) Miscellaneous editorial changes

IR96003 dated 96/03/20 was submitted with the following recommended vote: The U.S. member body votes YES with comments on ISO/IEC JTC 1/SC 25 N 262 CD xxx-9 SPI Revision 15A. The comment notes defects in Annexes B and D along with editorial changes to the drafting standard and the RESELECT requirement. The U.S. technical experts will draft proposed change pages for these defects and submit them to the ISO/IEC JTC 1/SC 25/WG 4 Secretariat for discussion and resolution at the June meeting.

IR96005 dated 96/04/01 was submitted with the following recommended vote: The U.S. member body votes YES with comments on ISO/IEC JTC 1/SC 25 N 263 CD xxx-10 SBP Revision 19. The comments request that the text for the DIS be based upon Revision 22 rather than Revision 19. A copy of Revision 22 is attached for discussion and resolution at the June SC 25/WG 4 meeting. The principal changes from Revision 19 to Revision 22 are outlined below:

1. Forward and Introductions were re-written for clarification. Editorial changes only.
2. Clauses 1 through 9 - editorial changes and changes pertaining to the incorporation of the ISOCHRONOUS Transfer commands and protocol.
3. Clause 10 has been re-written to include the isochronous capability into the document. These changes are reflected in most of the sub-clauses of the document.
4. Annex A and B now contain informative data for isochronous transfers.
5. Annex C now contains configuration ROM information. ROM data has been modified to include isochronous configuration data.
6. All other annexes have deleted from previous revisions.

IR96006 dated 96/04/01 was submitted with the following recommended vote: The U.S. member body votes YES on ISO/IEC JTC 1/SC 25 N 266 CD NNNN-1 SAM Revision 18.

IR96007 dated 96/04/01 was submitted with the following recommended vote: The U.S. member body votes YES on ISO/IEC JTC 1/SC 25 N 267 CD NNNN-Z SCC Revision 6.

International standards IS11518-2 HIPPI-FP; IS11518-3 HIPPI-LE; and IS11518-6 HIPPI-SC have been published.

1N3864 dated 96/02/05 is the minutes of the IEC/TC100 Multimedia Systems & Equipment committee. An interesting item in the minutes of their November 1995 meeting are new work items for Digital Storage (hard disk arrays) and for Digital Interfaces.

1N3854 dated 96/01/16 was distributed with the Proposed cooperative agreement with ISO/TC184 which addresses Industrial Automation.

1N3813 95/12/07 Terms of Reference JTC1 Re-engineering addresses a very active topic within JTC 1.

An updated list of ISO documents is attached to this report with new documents for the dates covered marked by an \*:

DOC_NO	ORIG_DATE	DESCRIPTION
*1N3450	95/11/01	Doc register N3401-3450
*1N3500	95/11/01	Doc register N3451-3500
*1N3550	95/11/01	Doc register N3501-3550
*1N3600	95/11/01	Doc register N3551-3600
*1N3650	95/11/01	Doc register N3601-3650
*1N3750	95/11/01	Doc register N3701-3750
WG4N650	95/11/03	Liaison proposal on keyboards from SC18/WG9
WG4N651	95/11/07	List of NWI ballots
IR95016	95/11/27	Camera Ready Copy of 9316-1 SCSI-2
IR95017	95/11/27	Replacement of SPI with Rev 15a for CD LB
Barra	95/11/8	Req for rec votes on NWIs SCC; Fast-20; SAM; SBP; SPI; and FCP due 12/8 for JTC1 1/19/96
*1N3813	95/12/07	Terms of Reference JTC1 Re-engineering
*1N3834	95/12/12	NWI Keyboards for SC 18 Liaison with SC25/WG4
IR95018	95/12/18	Conversion of EIA Specifications to Anderson
*IS11518-2	96/00/00	HIPPI-FP
*IS11518-3	96/00/00	HIPPI-LE
*IS11518-6	96/00/00	HIPPI-SC
*JTC1N3862	96/01/15	NWI Proposal SCSI Specs for OMC Reader/Writer
*1N3854	96/01/16	Proposed cooperative agreement with ISO/TC184 Industrial Automation
*1N3864	96/02/05	Minutes of IEC/TC100 Multimedia Systems & Eq. SC26 Report
*1N3939	96/02/14	Letter to Vecchis with EIA docs for IEC docs
IR96001	96/02/15	Registration form & info for June SC 25 meet
*SC25N280	96/02/25	Recommended vote NWI N 3862 SCSI OMC
IR96002	96/02/27	US Contribution on Re-engineering
*1N3992	96/02/27	JTC 1 Meeting Calendar
*1N4011	96/03/04	Recommended Vote SPI Yes with Comments
*IR96003	96/03/20	Sending CD9314-13, 20, 21, 26, & 4 to Pattay
*IR96004	96/03/22	Recommended Vote SBP Yes with Comments
*IR96005	96/04/01	Recommended Vote SAM Yes
*IR96006	96/04/01	Recommended Vote SCC Yes
*IR96007	96/04/01	Recommended YES FCP Rev 10
*IR96008	96/04/01	Recommended YES FDDI SMT-2-CS
*IR96009	96/04/03	Recommended YES FDDI SMT-2-IS
*IR96010	96/04/03	Recommended YES FDDI SMT-2-PS
*IR96011	96/04/03	Vote on N268 CD9314-29 FDDI SMT-2-PS
*IR96009	96/04/04	Vote on N268 CD9314-27 FDDI SMT-2-CS
*IR96010	96/04/04	Vote on N268 CD9314-28 FDDI SMT-2-IS
*Pattay	96/04/12	Authorize printing of IS11518-2, -3, -6 HIPPI
*WG4N653	96/04/15	Draft WG3 Liaison Letter to IEC concerns CAT6
X3/902298	None	SC25 TAG's editorial change to area of work

IR96003 dated 96/03/20 was submitted with the following recommended vote: The U.S. member body votes YES with comments on ISO/IEC JTC 1/SC 25 N 262 CD xxx-9 SPI Revision 15A. The comment notes defects in Annexes B and D along with editorial changes to the drafting standard and the RESELECT requirement. The U.S. technical experts will draft proposed change pages for these defects and submit them to the ISO/IEC JTC 1/SC 25/WG 4 Secretariat for discussion and resolution at the June meeting.

George Penokie moved that X3T10 directs its chair and IR send a letter to the JTC-1 TAG expressing concerns about the scope and activities of IEC/TC100. Roger Cummings seconded the motion. During discussion of the motion, it was noted that the IEC/TC100 storage array activities represented one specific subject of concern. It was also noted that X3T10 members with X3 representatives should contact their X3 representatives regarding

this issue. The motion passed 24:0. Gene and John took an action item to send a letter to the JTC-1 TAG expressing concerns about the scope and activities of IEC/TC100.

### **11.2 Instructions to Delegation to SC 25/WG 4**

George raised a question about how SCC revision 6a will be handled at ISO. Larry said that SCC will run into the same problems at ISO that it has encountered at ANSI. Therefore, nothing needs to be done about 6a at this time.

### **11.3 SSA ISO/IEC NWIs**

Larry stated that no contributions are necessary for NWIs.

### **11.4 SSA ISO/IEC CD Contributions**

Larry stated that no CD contributions need to be processed at this time.

## **12. Liaison Reports**

### **12.1 X3T11 Liaison Report [Cummings]**

Roger Cummings, X3T11 Chair, made an oral report to the committee and provided the following electronic report:

#### **X3T11 LIAISON REPORT to X3T10 & X3T12**

X3T11 met on Thursday April 11, 1996 with 79 people in attendance. CNT lost membership for failure to attend meetings, Madison Cable lost membership because of their acquisition by AMP, and Computing Devices International lost membership because of failure to pay fees in a timely manner. Amphenol, DPT, Honeywell, Orca Systems and Silicon Systems were added as new member organizations. The membership of X3T11 is now 64 organizations.

The results of two X3T11 LBs which closed on 3/29/96 were announced:

- 1) Forwarding a working dpANS, for the HIPPI-ATM project, for further processing including an OMC review and a first Public Review passed with F51-O00-DNV10.
- 2) Forwarding a working dpANS, for the Revised HIPPI-SC project, for further processing including an OMC review and a first Public Review passed with F46-O00-DNV15.

It was reported that the FC Arbitrated Loop draft, Revision 4.5, has recently been approved for publication as X3.272-1996.

A request to reaffirm X3.183-1991 (HIPPI-PH) was forwarded for further processing by F44-O00-DNV20

Two Project Proposals, on HIPPI-6400-PH (the first project for the new generation of HIPPI standards) and HIPPI-MP, were approved for further processing, each by F46-O00-DNV18.

The Jitter Study group is still meeting monthly, and there has been an attendance of approximately 25 people at each of last two meetings. A tolerance mask and a set of test methods have been proposed, but issues with the eye mask still remain. Interim meetings in Dallas (5/10) and Boise (7/19) were authorized.

A dpANS for the SBCON project (Rev 2.2) was forwarded for a first Public Review, and the responses to the X3T11 Letter Ballot comments were approved, by F46-O00-DNV18

No X3T11 Letter Ballots were authorized.

Public Reviews ending on May 14, 1996 have been announced for the 10 Bit Interface (TR-18), FC-LE (X3.287), FC-GS (X3.288), FC-FG (X3.289), IPI-3TR (X3.290) and IPI-3DR (X3.291) projects.

The next meeting of X3T11 is being hosted by Los Alamos National Lab on WEDNESDAY 6/12/96 at La Fonda Hotel, 100 E. San Francisco, Santa Fe, NM 87501, The phone number for the hotel is(505)982-5511, the rate is \$105 (single or double), the group name is X3T11-Los Alamos and the cutoff date is 5/10/96.

## **12.2 X3T13 Liaison Report [Milligan]**

Gene Milligan, the acting chairman for X3T13, gave an oral report and provided the following electronic report:

### **X3T13 May Report**

X3T13 held a joint ad hoc meeting with the MMC ad hoc Wednesday April 24, 1996. The following documents were distributed:

- Proposal for X3T13 1153D ATA/ATAPI-4 [McLean]
- Strong Command Overlap and Command Queuing [McLean] (96D104r3)
- Two Giga-Byte Barrier [Stevens] (D96127R2)
- Vendor Specific & Optional Command Zero Budgeting [Evans] (D96125r2)
- SMART Proposal document (96131r0)
- ATA Protected Area Proposal [Colegrove] (D96137)

An alternative but not recommended method of handling commands to missing devices was eliminated in ATA/ATAPI-4.

ATA-2 - Project 0948D accommodation of the ANSI editor's comments has been completed and the document is being returned to X3 for further processing.

The joint ad hoc reviewed commands in SFF 8020 as compared to MMC. For those portions of SFF 8020 covered by ATA/ATAPI -4, MMC participants were requested to review ATA/ATAPI-4 for correctness. The ATA IDENTIFY DEVICE command and ATA READ command (four flavors) - SFF 8020 behavior will be defined.

SFF 8020 specifies 12 or 16 byte packets - padding algorithm need to be defined either in MMC or ATA/ATAPI-4 or perhaps in both.

An annex was recommended to be added to MMC to profile the recommended ATAPI command implementation. The ad hoc also recommended that a paragraph be added to MMC defining SFF 8020 usage of the command descriptor block.

The ad hoc discussed the tradeoffs of the dual methods of handling SMART, security, and power management. The recommended implementation for ATAPI devices is to use packet commands for SMART rather than the ATA version and that it be done only one way.

The group recommended to expand words 82 and 83 to define the command set supported with an annex added in ATA/ATAPI-4 to list the document wherein the various command sets reside.

Relative to SAM, no changes were recommended for MMC. Upon completing the review of MMC treatment of ATAPI the ad hoc concluded that no new commands were needed.

The ad hoc requested that the X3T13 acting chair contact Microsoft regarding Media Status Notification (MSN). Information concerning MSN can be found at <http://www.microsoft.com/hwdev/storage1.htm>.

Finally the joint ad hoc recommended a joint ad hoc meeting in June 96.

The X3T13 ad hoc continued the meeting through Thursday 25 April. The review of ATA/ATAPI-4 - Project 1153D proposed draft identified an issue in the documentation of non-overlapped PACKET command PIO data in to host. on the handling of the 01h case when the device generates DRQ and INTRQ. A change was recommended to the flow chart to show the correct protocol. An issue remains for both ATA and ATAPI devices on whether INTRQ and DRQ change at the same time? This issue will be put on the next agenda. Devices that delay generating interrupt after setting DRQ may cause data corruption on fast processors.

The ad hoc completed a review of Strong Command Overlap and Command Queuing (96D104r3). The queue depth needs to be added to the IDENTIFY DEVICE information. It was recommended that a mechanism to do split DMA transfers for Audio Video be added for packet commands but not for ATA commands. A recommendation was also made to encode the error register to allow reporting additional error conditions on the new queued command types. The consensus was to encode the upper four bits.

The group did not reach consensus on how to handle cache flush function complete failures which can occur primarily due to writes inhibited for an extended period of time with shock sensing combined with turbulence.

Curtis Stevens of Phoenix is soliciting proposals on how to handle the problem telling which host bus adapter passed on an interrupt.

It was suggested that silicon providers look at their present implementations and see if the 400 nS delay issue can now be removed since the timing is difficult to handle in the host software drivers.

Mark Evans led a review Vendor Specific & Optional Command Zero Budgeting [Evans] (D96125r2)

Dan Colegrove presented a proposal for ATA protected areas. This method is currently in use by at least one system manufacturer. Participants were requested to digest the proposal which will be considered for ATA/ATAPI-4 at the next meeting.

The ad hoc meetings were followed by the X3T13 plenary on Friday 26 April. The plenary unanimously approved the recommendations of the ad hoc.

The plenary voted 17:2:6 to withdraw the ATAPI Project 1120D. The NO votes were to save the project number in anticipation a new project would be needed.

The ATA-3 Letter Ballot passed by X3T10 46:0:0:5. The comment resolution, D96112r0, were accepted along with the editorial changes in D96129r0 by a vote of 20:0:5.

The reflector name has been turned on as 'X3T13@dt.wdc.com'.

The plenary approved resolution of letter ballot comments, if any, on the passing letter ballots for the following X3T13 procedures: Operations Policies and Procedures Tailored to X3T13; Documentation Procedures; X3T13 Project Document Format Guideline; Electronic Notification Procedure; Procedure for Funding Technical Editors.

The appointment of the X3T13 chair is on the July agenda for OMC.

X3T13 approved a new Project Proposal for Technical Report for Enhanced BIOS Disk Drive Technical Report by a vote of 20:0:0:7.

The next plenary meeting of X3T13 will be August 2, 1996 in the San Jose area hosted by Quantum.

The subsequent plenary meeting of X3T13 will be October 25, 1996 in Waikiki, Hawaii hosted by Quantum at the Sheraton Hotel.

Plenary meetings are also planned for:

January 24, 1997; April 25, 1997; July 31, 1997; October 24, 1997



Working Group Meetings are planned for:

X3T13 Working Group on May 22-24, 1996 at the Biltmore Hotel in San Jose, CA.

X3T13 Working Group on June 19-21, 1996 at Western Digital, in Irvine, CA

X3T13 Working Group on July 31-August 1, 1996 in Milpitas, CA.

X3T13 Working Group on August 21-23, 1996 in Milpitas, CA.

X3T13 Working Group on September 25-27, 1996 at Western Digital in Irvine, CA.

X3T13 Working Group on October 23-24, 1996 at the Sheraton Hotel in Waikiki, Hawaii.

X3T13 Working Group on November 13-15, 1996 at Western Digital in Irvine, CA.

X3T13 Working Group on January 22-23, 1997 hosted by Quantum.

X3T13 Working Group on February 19-21, 1997 hosted by Quantum.

X3T13 Working Group on March 19-21, 1997 hosted by Western Digital.

X3T13 Working Group on April 23-24, 1997 hosted by Quantum.

X3T13 Working Group on May 21-23, 1997 hosted by Quantum

### **12.2.1 MMC-2 and/or Additional CD-ROM Command Set Project (X3T13/96-009) [Milligan]**

John described a letter that he received from Gene regarding work on MMC commands. The letter reported agreement at X3T13 that MMC work should be done in one committee. X3T13 further voted 12:2:5 that the MMC work should be conducted under X3T10. The committee discussed the contents of a response letter from X3T10 to X3T13.

Gene Milligan moved that John write a letter accepting the concepts expressed in the X3T13/96-009 letter, particularly the concept of subsetting command sets for ATAPI uses, and noting that X3T10 is committed to working with X3T13, IEEE, and other industry organizations. Bob Snively seconded the motion. The motion passed 23:0. John took an action item to write a letter responding to X3T13/96-009 as described by the committee motion.

### **12.3 SFF Industry Group [Allan]**

No report.

### **12.4 IEEE 1394 [Johansson]**

Peter reported on the formation of three new groups 1394.1, 1394.2, and 1394.3.

### **12.5 IEEE P1285 Status**

John received the following P1285 report via email:

For the last several months the P1285 BRC has been meeting to resolve issues brought up by the balloting process. Most issues have been resolved, and a new version of the P1285 document is in process. When it is ready, it will be posted on the web.

Although P1285 has been meeting with the P1596 committee on a semi-regular basis to get feedback on the changes that are being made to the document, the P1285 working group, itself, has not met for some time.

### **12.6 PCMCIA Report []**

No report.

### **12.7 SCSI Trade Association (STA) [Jones]**

Skip reported on activities of STA. STA has been "doing" numerous trade shows, including ICC shows. STA also is making seminar presentations across the country. Skip described STA marketing activities at the Storage Track

'96 and Fall Comdex trade shows. Skip announced the STA web site, [www.scsita.com](http://www.scsita.com). Skip described new releases, articles, and other publications being written by STA.

Skip described the efforts to increase communications between STA and X3T10. He noted a 5 p.m. Wednesday meeting scheduled during the July meeting week.

**13. Review of Action Items**

- 138) Larry Lamers will prepare a SPI amendment document for review and consideration at the May meeting.
- 146) John Lohmeyer will forward the SCC-2 Project Proposal (96-152r0) to X3 for further processing.
- 147) John Lohmeyer will forward the project proposal for a High Availability Technical Report (96-151r1) to X3 for further processing
- 148) John Lohmeyer will add an agenda item to review the mandatory status of the SBC READ(6) and other commands to the July SCSI Working Group agenda.
- 149) Gene Milligan and John Lohmeyer will send a letter to the JTC-1 TAG expressing concerns about the scope and activities of IEC/TC100.
- 150) John Lohmeyer will write a letter responding to X3T13/96-009 letter as described by the committee motion.
- 151) John Lohmeyer will add an agenda item to review the MMC-2 project proposal to the Plenary agenda.

**14. Meeting Schedule**

The next plenary meeting of X3T10 will be July 18, 1996, in Colorado Springs, CO at the Red Lion Hotel (719-576-8900), hosted by Symbios Logic Inc. The meeting will begin at 1:00 p.m. on Thursday.

The meeting list for the next plenary week is:

July '96 Meeting Map  
(5/9/96 Version)

Monday 7/15	8	9	10	11	12	1	2	3	4	5	6	7	8	9	
		+-----+													
		SPI-2/EPI Working Group												(35)	
		+-----+													
		DMTF Mass Storage WG												(20)	
		+-----+													
								Serial Issues							(20)
		+-----+													
Tuesday 7/16		9	10	11	12	1	2	3	4	5	6	7	8		
		+-----+													
		SCSI-3 WG												(40)	
		+-----+													
		MMC WG												(20)	
		+-----+													
		SCC/RAB WG				RAB								(20)	
		+-----+													
		CAM-3 WG												(5)	
		+-----+													
		DMTF Mass Storage WG												(20)	
		+-----+													
Wednesday 7/17		9	10	11	12	1	2	3	4	5	6	7	8		
		+-----+													
		SCSI-3 WG												(40)	
		+-----+													
		MMC Working Group												(20)	
		+-----+													
		SFF SSWGs												(40)	
		+-----+													
		RAB												(20)	
		+-----+													

Thursday 7/18	9	10	11	12	1	2	3	4	5	6	7	8		
	+-----+													
		SFF												(40)
	+-----+													
							X3T10 Plenary Meeting							(70)
	+-----+													
		SSC/SMC WG												(10)
	+-----+													
		STA											(30)	
	+-----+													
Friday 7/19	8	9	10	11	12	1	2	3	4	5				
	+-----+													
		SPC Review											(15)	
	+-----+													

Meetings marked with == are X3T10-authorized meetings.  
 Meetings marked with -- are authorized by other groups and may change without notice.

Meeting Map Abbreviation Key:

CAM: Common Access Method  
 CAM-3: Next generation CAM for SCSI-3  
 EPI: SCSI Enhanced Parallel Interface (Technical Report)  
 DMTF: Desktop Management Task Force (not an X3 activity)  
 Fast-20: Synchronous Data Transfer at 20 Megatransfers/second  
 FC-AL: Fibre Channel - Arbitrated Loop (an X3T11 project)  
 FCLC: Fibre Channel Loop Community (not an X3 activity)  
 I/F: Interface  
 High Avail.: High Availability  
 LB: Letter Ballot  
 MMC: SCSI-3 Multimedia Commands (CD-ROM)  
 PH: Physical (Connectors, Cables, Transceivers, etc.)  
 Plenary: Full Committee Meeting  
 RAB: RAID Advisory Board (not an X3 activity)  
 RAID: Redundant Array of Independent Devices  
 SBC: SCSI-3 Block Commands  
 SBP: SCSI-3 Serial Bus Protocol  
 SCC: SCSI-3 Controller Commands (RAID)  
 SCSI: Small Computer System Interface  
 SPC: SCSI-3 Primary Commands  
 STA: SCSI Trade Association (not an X3 activity)  
 STATech: STA Technical Meeting (joint meeting with X3T10)  
 SFF: SFF Industry Group (not an X3 activity)  
 SG: Study Group  
 SMC: SCSI-3 Medium Changer Commands  
 SPI-2: Second Generation SCSI-3 Parallel Interface  
 SSA: Serial Storage Interface  
 SSC: SCSI-3 Stream Commands (includes Tape)  
 SSWG: Specific-Subject Working Groups  
 VHDCI: Very High Density Cabled Interconnect  
 WG: Working Group (same as Ad Hoc Group)  
 X3T10: Lower Level Interfaces Technical Committee  
 X3T10.1: SSA Task Group of X3T10

Several other X3T10 events are also planned:

Event	Day/Date	Location/contact
SPI-2 Working Group	Thur-Fri 6/6-7/96	Colo Spgs, CO / Lohmeyer
MMC Working Group	Mon-Wed 6/17-19/96	Irvine, CA / Western Digital
SPI-2 Working Group	Tue-Wed 8/13-14/96	Redwood City, CA / STA

For more information about X3T10 activities, please contact the following people:

Activity	Contact	Telephone/Email
BOOT TR	Duncan Penman	(408) 730-2565 penman@netcom.com
CAM-3	Bill Dallas	(603) 881-2508 dallas@wasted.enet.dec.com
EPI & SPI-2	Bill Ham	(508) 841-2629 ham@subsys.enet.dec.com
FCP & FCP-2	Robert Snively	(415) 336-5332 Bob.Snively@eng.sun.com
GPP	Gary Stephens	(602) 321-1725 6363897@mcimail.com
SAM	Charles Monia	(508) 841-6757 monia@starch.enet.dec.com
SBC	Gene Milligan	(405) 324-3070 gene_milligan@notes.seagate.com
SBP and MMC	Ron Roberts	(916) 677-5714 rkroberts@aol.com
SBP-2	Peter Johansson	(510) 531-5472 pjohansson@aol.com
SGC	Thomas Tewell	(415) 459-7978

SIP, SCC	George Penokie	thomas.tewell@seqadvtech.com (507) 253-5208 gop@rchvmp3.vnet.ibm.com
SMC	Erich Oetting	(303) 673-2178 Erich_Oetting@Stortek.com
SPC	Ralph Weber	(603) 881-1497 roweber@acm.org
SSA-PH1, -PH2, -TL1, -TL2	Larry Lamers	(408) 957-7817 ljlammers@aol.com
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SSC	Edward Lappin	(303) 447-7718 tedl@exabyte.com
Other Activities	John Lohmeyer	(719) 533-7560 john.lohmeyer@symbios.com

The long-term X3T10 meeting week schedule is:

Date	Location	Host/Comments
Jan 8-12, 1996	Dallas, TX	Quantum
Mar 11-15, 1996	Newport Beach, CA	QLogic
May 6-10, 1996	Ft. Lauderdale, FL	Adaptec
Jul 15-19, 1996	Colorado Springs, CO	Symbios Logic
Sep 9-13, 1996	Natick, MA (near Boston)	Digital
Nov 4- 8, 1996	Palm Springs, CA	Western Digital
Jan 6-10, 1997	Dallas, TX (?)	Quantum
Mar 10-14, 1997	San Diego, CA	QLogic
May 5-9, 1997	Natick, MA (near Boston)	Digital
Jul 14-18, 1997	Colorado Springs, CO	Symbios Logic
Sep 8-12, 1997	Nashua, NH	Unitrode
Nov 3-7, 1997	Palm Springs, CA	Western Digital (?)
Jan 5-9, 1998		
Mar 9-13, 1998		
May 4-8, 1998		
Jul 13-17, 1998		
Sep 14-18, 1998		
Nov 9-13, 1998		

#### 14.1 Authorization of Working Group Meetings

John noted that the working group meetings are required to operate under the same voting procedures as does X3T10 (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 should be deferred to the plenary group. Nonetheless, task groups and ad hoc groups should strive to achieve consensus prior to bringing issues to X3T10.

Ron Roberts moved that X3T10 authorize the X3T10-related meetings and events in the list above. Peter Johansson seconded the motion. The motion passed 21:0.

Larry Lamers moved that 1998 X3T10 plenary week dates list above be approved. John Lohmeyer seconded the motion. The motion passed 21:0.

John requested that volunteers to host 1998 meetings contact him.

#### 15. Adjournment

The meeting was adjourned at 7:12 p.m. on Thursday May 9, 1996.

## Meeting Attendees -- Enclosure (1)

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

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May 14, 1996 - X3T10 Document Register - Enclosure (3)

X3T10/96-001R0 Date: 11/20/95 Author: J. Lohmeyer [SY-96-01]  
Agenda for X3T10 Meeting #14 (Mar '96)

X3T10/96-002R0 Date: 11/20/95 Author: J. Lohmeyer [SY-96-01]  
X3T10 Project Summary - January '96

X3T10/96-003R0 Date: 11/20/95 Author: J. Lohmeyer [SY-96-01]  
Jeopardy letter for Mar '96 meeting

X3T10/96-004R1 Date: 1/4/96 Author: J. Lohmeyer [SY-96-01]  
Summary of Letter Ballot Results on ATA-3 (95-044) and SIP (95-045)

X3T10/96-005R0 Date: 11/20/95 Author: J. Lohmeyer [SY-96-01]  
Response to Public Review Comment #1 on SBP

X3T10/96-006R0 Date: 11/20/95 Author: J. Lohmeyer [SY-96-01]  
Response to Public Review Comment #2 on SBP

X3T10/96-007R0 Date: 11/29/95 Author: J. David Cabello [SY-96-01]  
ltr to John Lohmeyer re Compaq patent position on SMART proposed standard

X3T10/96-008R0 Date: 1/5/96 Author: L. Lamers [SY-96-01]  
Letter Ballot forwarding SSA-PH1 to 1PR

X3T10/96-009R0 Date: 1/5/96 Author: L. Lamers [SY-96-01]  
Letter Ballot forwarding SSA-TL1 to 1PR

X3T10/96-010R0 Date: 1/5/96 Author: L. Lamers [SY-96-01]  
Letter Ballot forwarding SSA-S2P to 1PR

X3T10/96-011R0 Date: 1/10/96 Author: J. Lohmeyer [SY-96-01]  
Jeopardy Letter - Letter Ballots

X3T10/96-012R0 Date: 1/17/96 Author: J. Lohmeyer [SY-96-01]  
Letter Ballot forwarding SPC to 1PR

X3T10/96-013R0 Date: 1/17/96 Author: J. Lohmeyer [SY-96-01]  
ltr to Richard Gibson, Chair ITCC, re IPF

X3T10/96-014R0 Date: 2/2/96 Author: Gene Milligan [SY-96-01]  
Letter Ballot on recommended response to NWI N 3862

X3T10/96-015R0 Date: 2/6/96 Author: J. Lohmeyer [SY-96-02]  
Agenda for X3T10 Meeting #15 (May '96)

X3T10/96-016R0 Date: 2/6/96 Author: J. Lohmeyer [SY-96-02]  
X3T10 Project Summary - March '96

X3T10/96-017R0 Date: 2/6/96 Author: J. Lohmeyer [SY-96-02]  
Jeopardy letter for May '96 meeting

X3T10/96-018R1 Date: 2/13/96 Author: J. Lohmeyer [SY-96-02]  
Letter Ballot Results on forwarding SSA-PH1 (96-008) & SSA-TL1 (96-009)

X3T10/96-019R0 Date: 2/16/96 Author: J. Lohmeyer [SY-96-02]  
Letter Ballot Results on forwarding SSA-S2P (96-010)

X3T10/96-020R1 Date: 3/12/96 Author: J. Lohmeyer [SY-96-02]  
Letter Ballot Results on forwarding SPC (96-012)

X3T10/96-021R0 Date: 2/29/96 Author: J. Lohmeyer [SY-96-02]  
Letter from R. Gibson, Chair ITCC, re IPF

X3T10/96-022R0 Date: 4/3/96 Author: J. Lohmeyer [SY-96-03]  
Agenda for X3T10 Meeting #15 (July '96)

X3T10/96-023R0 Date: 4/3/96 Author: J. Lohmeyer [SY-96-03]  
X3T10 Project Summary - May '96

X3T10/96-024R0 Date: 4/3/96 Author: J. Lohmeyer [SY-96-03]  
Jeopardy letter for July '96 meeting

X3T10/96-025R0 Date: 4/3/96 Author: J. Lohmeyer [SY-96-03]  
X3T10 Annual Report (April 1995 -- March 1996)

X3T10/96-101R0 Date: 12/14/95 Author: R. Roberts [SY-96-01]  
Minutes of MMC Working Group - 12/95

X3T10/96-102R0 Date: 12/16/95 Author: J. Lohmeyer [SY-96-01]  
Minutes of SPI-2 Working Group - 12/95

X3T10/96-103R0 Date: 12/16/95 Author: W. Bridgewater [SY-96-01]  
Proposed Change for Setup Time Budget

X3T10/96-104R0 Date: 12/16/95 Author: J. McGrath [SY-96-01]  
Request for full SCSI support with LVDS

X3T10/96-105R0 Date: 12/16/95 Author: J. McGrath [SY-96-01]  
Request for SPI (Fast-40/LVDS) Stabilization

X3T10/96-106R0 Date: 1/4/96 Author: J. Lohmeyer [SY-96-01]  
Minutes of SPI-2 Working Group - 1/96

X3T10/96-107R0 Date: 1/4/96 Author: J. Lohmeyer [SY-96-01]  
Minutes of EPI Working Group - 1/96

X3T10/96-108R0 Date: 1/4/96 Author: J. Lohmeyer [SY-96-01]  
Minutes of SCSI-3 Working Group - 1/96

X3T10/96-109R0 Date: 1/4/96 Author: R. Roberts [SY-96-01]  
Minutes of MMC Working Group - 1/96

X3T10/96-110R0 Date: 1/4/96 Author: Weber/Lohmeyer [SY-96-01]  
Minutes of X3T10 Plenary Meeting #13

X3T10/96-111R0 Date: 1/5/96 Author: J. Emard [SY-96-01]  
X3T10 Actions Regarding ANSI/ITCC IPF Payments and X3 TC Membership

X3T10/96-112R0 Date: 1/9/96 Author: J. McGrath [SY-96-01]  
SIP and Command Queuing

X3T10/96-113R0 Date: 1/9/96 Author: G. Penokie [SY-96-01]  
Minutes of SCC working group - 1/96

X3T10/96-114R1 Date: 1/10/96 Author: T. Lappin [SY-96-01]  
Granularity of Block Size for Tape

X3T10/96-115R0 Date: 1/10/96 Author: T. Lappin [SY-96-01]  
Minutes of SMC/SSC Working Group - 1/95

X3T10/96-116R0 Date: 1/10/96 Author: K. Hallam [SY-96-01]  
Clarification of WRITE BUFFER

X3T10/96-117R0 Date: 1/11/96 Author: P. Kornitski [SY-96-01]  
Invoice for ATA-2 Pre-edit

X3T10/96-118R1 Date: 1/11/96 Author: Johansson/Lamers/Lohmeyer [SY-96-01]  
Project Proposal for SPI Amendment

X3T10/96-119R0 Date: 1/11/96 Author: D. Allan [SY-96-01]  
ANSI International Participation Fee Levy

X3T10/96-120R0            Date: 1/11/96   Author: G. Penokie   [SY-96-01]  
Resolution of Comments on SIP

X3T10/96-121R0            Date: 1/23/96   Author: G. Houlder   [SY-96-01]  
Addition of software write protect to Mode Page Ah

X3T10/96-121R2            Date: 3/15/96   Author: G. Houlder   [SY-96-02]  
Addition of software write protect to Mode Page Ah

X3T10/96-122R0            Date: 1/23/96   Author: Lohmeyer/Ham   [SY-96-01]  
Minutes of SPI-2 Working Group - 2/96

X3T10/96-123R0            Date: 1/30/96   Author: K. Gingerich   [SY-96-01]  
LVD SCSI Models

X3T10/96-124R0            Date: 1/30/96   Author: K. Gingerich   [SY-96-01]  
LVD SCSI Driver/Receiver Specifications

X3T10/96-125R0            Date: 1/30/96   Author: Paul Aloisi   [SY-96-01]  
Additional Termination Issue

X3T10/96-126R0            Date: 1/30/96   Author: D. Uber   [SY-96-01]  
Active Negation to Release Issues

X3T10/96-127R0            Date: 2/1/96   Author: B. Ham   [SY-96-01]  
LVD SCSI Signals

X3T10/96-128R0            Date: 2/2/96   Author: X3 Secretariat   [SY-96-01]  
Proposa for NWI-SCSI Specifications for Optical Memory Card Reader/Writer

X3T10/96-129R0            Date: 1/9/96   Author: W. Bridgewater   [SY-96-01]  
Voltage Driven Outputs

X3T10/96-130R0            Date: 2/6/96   Author: Johansson/Lamers   [SY-96-01]  
Ammendment to SPI

X3T10/96-131R0            Date: 2/15/96   Author: J. Scheible   [SY-96-02]  
SSA-PH1 Letter Ballot Comment Resolution

X3T10/96-132R0            Date: 2/15/96   Author: J. Scheible   [SY-96-02]  
SSA-TL1 Letter Ballot Comment Resolution

X3T10/96-133R0            Date: 2/15/96   Author: J. Scheible   [SY-96-02]  
SSA-S2P Letter Ballot Comment Resolution

X3T10/96-134R0            Date: 3/7/96   Author: Weber/Ham/Lohmeyer   [SY-96-02]  
Minutes of SPI-2 Working Group - 3/96

X3T10/96-135R0            Date: 3/7/96   Author: Weber/Ham/Lohmeyer   [SY-96-02]  
Minutes of EPI Working Group - 3/96

X3T10/96-136R1            Date: 3/7/96   Author: Weber/Lamers/Lohmeyer   [SY-96-02]  
Minutes of SCSI-3 Working Group - 3/96

X3T10/96-137R0            Date: 4/16/96   Author: P. Kornitsky   [sy-96-03]  
Quotation on Technical Report for > 8GB

X3T10/96-138R0            Date: 3/7/96   Author: B. Dallas   []  
Minutes of CAM-3 Working Group - 3/96

X3T10/96-139R1            Date: 3/7/96   Author: Weber/Lohmeyer   [SY-96-02]  
Minutes of X3T10 Plenary Meeting #14

X3T10/96-140R0            Date: 3/8/96   Author: G. Penokie   [SY-96-02]  
Clarification of sleep mode

X3T10/96-141R0            Date: 3/11/96   Author: B. Ham   []

## Test Results with Controlled Loads for LVD SCSI

X3T10/96-142R0            Date: 3/12/96    Author: G. Penokie    [SY-96-02]  
Minutes of SCC Working Group - 3/96

X3T10/96-143R0            Date: 3/12/96    Author: G. Houlder    [SY-96-02]  
Clarification of Set Capacity Feature

X3T10/96-144R0            Date: 3/12/96    Author: G. Houlder    [SY-96-02]  
Comment on SPI Error

X3T10/96-145R0            Date: 3/12/96    Author: R. Moore      [SY-96-02]  
LVD SCSI Assertion and Negation Currents

X3T10/96-146R1            Date: 3/13/96    Author: R. Snively    [SY-96-02]  
Project Proposal for Enclosure Services Interface (ESI) Standard

X3T10/96-147R0            Date: 3/13/96    Author: C. Burns      [SY-96-02]  
Question on use of SEL during SCAM

X3T10/96-148R0            Date: 3/13/96    Author: R. Weber      [SY-96-02]  
Comment Resolution on SPC X3T10 Letter Ballot

X3T10/96-149R0            Date: 3/14/96    Author: E. Oetting    [SY-96-02]  
Minutes of SMC/SSC Working Group - 2/96

X3T10/96-150R1            Date: 3/14/96    Author: B. Ham        [SY-96-02]  
LVD Test Results

X3T10/96-151R1            Date: 3/14/96    Author: D. Hagerman   [SY-96-02]  
Project Proposal for High Availability Profile Technical Report

X3T10/96-152R0            Date: 3/21/96    Author: Lohmeyer/Penokie [SY-96-03]  
Project Proposal for SCC-2 Standard

X3T10/96-153R0            Date: 3/21/96    Author: R. Roberts    [SY-96-02]  
Minutes of MMC Working Group - 3/96

X3T10/96-154R0            Date: 3/25/96    Author: K. Gingerich   [SY-96-02]  
SCSI LVD Model

X3T10/96-155R0            Date: 4/9/96     Author: K. Hallam     [SY-96-03]  
Log Page 0Ch

X3T10/96-156R0            Date: 4/22/96    Author: D. Hagerman   [SY-96-03]  
Tape Support on FC-AL

X3T10/96-157R0            Date: 4/22/96    Author: Lamers/Lohmeyer [SY-96-03]  
Minutes of SPI-2 Working Group - 4/96

X3T10/96-158R0            Date: 4/22/96    Author: J. Lohmeyer    [SY-96-03]  
Release Glitches

X3T10/96-159R0            Date: 4/22/96    Author: B. Ham        [SY-96-03]  
LVD Fast 40 REQ/ACK Test Results with Symmetrical Drivers and Terminators

X3T10/96-160R0            Date: 4/22/96    Author: S. Krakirian   [SY-96-03]  
Presentation on LVD glitch windows

X3T10/96-161R0            Date: 4/22/96    Author: R. Moore      [SY-96-03]  
LVD Driver Proposal

X3T10/96-162R0            Date: 4/24/96    Author: G. Penokie    [SY-96-03]  
Clarification of when parity is valid (SPI-2).

X3T10/96-163R0            Date: 4/26/96    Author: R. Roberts    [SY-96-03]  
Minutes of MMC Working Group - 5/96



X3T10/96-164R0           Date: 5/6/96   Author: G. Penokie   [SY-96-03]  
SCC-2 Proposals

X3T10/96-165R0           Date: 5/6/96   Author: G. Penokie   [SY-96-03]  
Minutes of SCC Working Group - 5/96

X3T10/96-166R0           Date: 5/6/96   Author: Lohmeyer/Ham   [SY-96-03]  
Minutes of SPI-2 Working Group - 5/96

X3T10/96-167R0           Date: 5/7/96   Author: Weber/Lohmeyer   [SY-96-03]  
Minutes of SCSI-3 Working Group - 5/96

X3T10/96-168R0           Date: 5/7/96   Author: Weber/Lohmeyer   [SY-96-03]  
Minutes of X3T10 Plenary Meeting #15

X3T10/96-169R0           Date: 5/7/96   Author: C. Monia   [SY-96-03]  
Proposed Changes for SAM-2

X3T10/96-170R0           Date: 5/7/96   Author: P. Johanson   [SY-96-03]  
Simple Task Management

X3T10/96-171R0           Date: 5/7/96   Author: G. Houlder   [SY-96-03]  
Change Action for Zero in programmable Capacity Feature

X3T10/96-172R0           Date: 5/7/96   Author: G. Penokie   [SY-96-03]  
Fairness Algorithm

X3T10/96-173R0           Date: 5/8/96   Author: C. Monia   [SY-96-03]  
Expanding the ACA Mechanism to All Command Exceptions

X3T10/96-174R0           Date: 5/9/96   Author: T. Lappin   [SY-96-03]  
Minutes of SMC/SSC Working Group - 5/96

X3T10/96-175R0           Date: 5/9/96   Author: B. Ham   [SY-96-03]  
Proposal for LVD SCSI Physical Interface

X3T10/96-176R0           Date: 5/9/96   Author: B. Ham   [SY-96-03]  
Proposal ofr VHDCI and SCA Connectors

X3T10/96-177R0           Date: 5/9/96   Author: B. Dallas   [SY-96-03]  
Minutes of CAM-3 Working Group - 5/96

X3T10/96-178R0           Date: 5/9/96   Author: G. Stephens   [SY-96-03]  
SSC - capacity

X3T10/96-179R0           Date: 5/9/96   Author: G. Stephens   [SY-96-03]  
SSC - Write Protect

X3T10/96-180R0           Date: 5/9/96   Author: G. Stephens   [SY-96-03]  
SSC - Read Reverse

X3T10/96-181R0           Date: 5/9/96   Author: G. Stephens   [SY-96-03]  
SSC - Progress Indication Report

X3T10/96-182R0           Date: 5/9/96   Author: G. Stephens   [SY-96-03]  
SPC - Test Unit Ready and Defferred Error Reporting

X3T10/96-183R0           Date: 5/9/96   Author: G. Stephens   [SY-96-03]  
SBC - Optional 6-byte Commands

X3T10/96-184R0           Date: 5/9/96   Author: R. Roberts   [SY-96-03]  
Minutes of MMC Working Group - 5/96

X3T10/96-185R0           Date: 5/9/96   Author: R. Roberts   [SY-96-03]  
Project Proposal for MMC-2 Standard

X3T10/96-186R0                      Date: 5/9/96    Author: Weber/Lohmeyer    [SY-96-03]  
Security Initialization Proposal for SBC