

Accredited Standards Committee*
X3, Information Processing Systems

Doc. No.: X3T9.2/92-200R0

Date: October 21, 1992

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 #102
Ft. Lauderdale, FL -- October 12-13, 1992

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 - 9.1 Enhancement of Sequential Access for Medium Changers (92-006R1) [Stephens]
 - 9.2 Unitized Connector (92-139R1) for SCSI-3 [Cornaby]

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X3 Secretariat, Computer and Business Equipment Manufacturers Association (CBEMA)

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Telephone: 202-737-8888 (Press 1 twice) FAX: 202-638-4922 or 202-628-2829

- 9.3 PR Comments on BSR X3.221-199x, ATA (AT Attachment)
- 9.4 SCSI-3 Queuing Issues (92-141) [Penokie]
- 9.5 Synchronization Status and Errors (92-130R1) [DeKoning]
- 9.6 Proposal to add a disconnect unconditionally after command phase (92-133) [Smyers]
- 9.7 ASC/ASCQ for Power-On Reset [Houlder] (92-162R1)
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- 9.10 SFF Submission for SPI Annex (92-170) [Allan]
- 9.11 Active Termination Requirements [Wallace]
- 10. New Business
 - 10.1 Letter Ballot results on Response to SCSI-2 Public Review Comment (92-175)
 - 10.2 Letter Ballot results on new SCSI-3 Project Proposals (92-176..180)
 - 10.3 Project Proposal for Common Access Method (CAM-2) (92-154) [Dallas]
 - 10.4 ATA Download Microcode Command (92-168) [McGrath]
 - 10.5 Review of new documents
 - 10.6 Agenda for the November X3T9.2 General Working Group
 - 10.7 Density Code Addition for Stream Devices (92-164R1) [Williams]
 - 10.8 Procedure for Funding X3T9.2 Technical Editors [Lohmeyer]
 - 10.9 Cache Control Revisited
 - 10.10 How should SCSI address RAID environments?
- 11. Review of Action Items
- 12. Meeting Schedule
 - 12.1 Working Group Schedule
 - 12.2 Authorization of Working Group Meetings
- 13. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer, the Chair, called the meeting to order at 9:00 a.m., Monday October 12, 1992. He thanked Buzz Rigsbee of Boeing Computer Services for hosting the meeting.

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:

- 10.8 Procedure for Funding X3T9.2 Technical Editors [Lohmeyer]
- 10.9 Cache Control Revisited
- 10.10 How should SCSI address RAID environments?

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.

John Lohmeyer noted that the following changes in the voting membership had occurred since the last meeting: BusTek changed their company name to BusLogic; Soon Ahm Kang is the new principal member and John T. Aguilar is the new alternate member of Control Data Systems, Inc. (formerly Control Data Corp.).

Chuck Duquette and Dennis Mellinger of U.S. Design, Alan Ebright of Toshiba America, Janet Schank of Central Data, and Shahnad Nadershahi of Amdahl became voting members at the October meeting. Gary Peterson of Data General and Steve Finch of Silicon Systems having met the attendance requirements were re-instated as voting members.

With the termination of two organizations for nonattendance (see 3.1), the X3T9.2 voting membership is now at 65 organizations up from 61 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 jeopardy letters to 15 people from 5 organizations: Advanced Micro Devices, Cirrus Logic Inc., Control Data Systems, Inc., National Semiconductor, and Tandem. The letters said that these organizations 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.

The Chair had received a phone call from Soon Ahm Kang, the principal member from Control Data Systems, Inc. pointing out that he had attended the Seattle meeting, but had failed to sign the attendance sheet. Therefore, the Control Data Systems membership was not in jeopardy.

Representatives were present from all of other organizations except: Advanced Micro Devices and Tandem. The P and A members from these organizations were changed to observer status.

The Chair also noted that membership can be terminated for not returning letter ballots. The rules are slightly different in that the chair must send warning letters to those organizations that fail to return letter ballots from two successive mailings. If the organization fails to return the next (third) letter ballot, then their membership is terminated.

4. Approval of Minutes - August Meeting Bellevue, WA (92-166 R0)

The minutes were approved as written.

5. Document Distribution

John Lohmeyer said that the committee mailing had gone out a bit later than usual, but he had still received his more than two weeks prior to the meeting. 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, November 5, 1992. 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 later provided an electronic report to X3T9:

ISO Report
10/92

Inquiries were received concerning PCMCIA and future ISO/IEC work plans. X3T9/IR92015 was sent to Schwandt clarifying PCMCIA and its relationship to X3T9 standards work. The letter also reiterated the X3T9 strategy relative to synchronization of ANS and ISO/IEC standards. It also mentioned the proposals that have already been submitted since the Milan meeting: FDDI Station Management (SMT) Rev 7.2; Fibre Channel (FC) Physical and Signaling Interface (PH) Rev 2.2; High-Performance Parallel Interface (HIPPI) Framing Protocol (FP); High-Performance Parallel Interface (HIPPI) Encapsulation of ISO 8802-2 Logical Link Control Protocol Data Units (LE); and High-Performance Parallel Interface (HIPPI) Physical Switch Control (SC).

New Project proposals have been prepared for the ATA and CAM dpANS as contributions for International Standards. The IR has not yet received the appropriate electronic text from X3T9.3 for the IPI-3 Disk and Tape projects.

The IR submitted X3T9/IR92016 to Kate McMillan, X3 Secretariat, for resolution of the Streaming Cartridge Tape

Device Interface ISO/IEC 9317 stalemate. It requested that since there has not been any opposition to the standard expressed, it would be appropriate to first seek an editor from other member bodies prior to actually withdrawing the DIS and international project. Consequently it requested that the X3 Secretariat take the necessary steps to request that the SC 25 Secretariat issue a call for a DIS 9317 project editor and that if the call does not result in an appropriate volunteer that the project be withdrawn. It stated that it should also be clear that the U.S. member body does not expect to volunteer a project editor.

AOW has started a project to develop an amended FDDI ISP which changes from an informative SMT Rev 6.2 to a normative SMT Rev 7.2. Their completion target is 12/92 but they also require that SMT reach the DIS stage. These two goals are not congruent.

It had been alleged that the SC 25 work on a Planning and Installation Guide for Customer Premises Cabling to Support Attachment of ISO 8802-5 Token Ring Stations was in conflict IEEE P802.5k. R.L. Pritchard of the IEEE Standards Department concluded that P802.5k was an obsolete draft of the ISO/IEC work and not conflicting.

A call was issued for experts in Command Control and Communications of Commercial Buildings for an SC 25 ad hoc. The SC 25 Secretariat prefers that only one expert should be named and Ron Clapman has volunteered.

JTC 1 has passed a resolution to form a special working group on Conformity Assessment. The US offer to provide the Secretariat and convener was accepted.

6.2 IT8 [Lohmeyer]

John Lohmeyer had nothing new to report.

6.3 Fibre Channel [Allan]

Dal Allan reported.

The Fibre Channel Physical document is in public review. The Enhanced physical work continues and includes hunt groups and improved bandwidth. There has been a series of debates on the mechanism of control. The Internet protocol is moving forward rapidly and the IBM ESCON protocol is making progress.

The fibre channel folks are curious as to what X3T9.2 is doing on the serial protocol issues.

6.4 Small Form Factor Industry Group [Allan]

Dal Allan reported orally and provided the following written report:

Form Factor patents issue - the HP 1.3 device is of concern - a letter from HP states that HP does not believe that form factor is a patentable issue, but not a blanket approval for reverse engineering.

Letter from Patent Office - Industry group to educated PO on form factor. There was a decision on a patent application from Conner by PO that form factor is not significant.

Another patent on mounting brackets.

2 versions of 69 pin ATA in pending approval within SFF. Cautious approval to continue SFF and restructuring.

Unitized connector proposal - will be handled in SFF.

6.5 IEEE P1394 [Smyers]

Dennis Pak reported.

The intent is to finalized the input for the P1394 document by December '92. A final document for letter ballot is expected in January '93. The DS encoding has been adopted (8B10B has been dropped). The current length is 4.5 meters at 6 hops maximum. Configuration management is expected to be added in January '93. A letter ballot is forthcoming on the proposal to switch genders on the connector.

6.6 SSA Status [Scheible]

Larry Lamers reported. A project proposal has been developed to do the SSA project within a new task group. The next SSA meeting is scheduled is for October 26, 1992. Contact John Scheible for details at TEL: 408-284-7719 or E-MAIL: scheible@sjevm5.vnet.ibm.com.

6.7 IEEE P1285 Status

Dennis Pak reported. See document X3T9.2/92-204 for minutes of the "grass roots" meeting.

A co-located P1285 meeting is scheduled for Thursday, Nov 12, 1992 in Sunnyvale, CA. The next P1285 meeting is scheduled for Dec 11, 1992. The next grass roots meeting is scheduled for the week of Jan 25, 1993.

6.8 Call for Patents

This is a regular agenda item to identify any potential patent issues with developing standards. Patents that may be related to various X3T9.2 projects are a Conner Peripherals patent on power management, a Maxtor patent on spindle synchronization, and an AMD patent (5,113,098) on a glitch filter for SCSI signals.

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.

7. Review of Old Action Items

- 1) John Lohmeyer will send document preparation information out on the SCSI reflector. **Complete.**
- 2) Larry Lamers will include grass roots meeting minutes in the mailing. **Dropped -- will be in the November mailing.**
- 3) John Lohmeyer will draft and/or plagiarize a patent notice for working draft documents. **Carry over.**
- 4) Larry Lamers and John Lohmeyer will complete the project proposals for the SCSI-3 command sets. **Complete.**
- 5) Larry Lamers will conduct a letter ballot on approving the response to the SCSI-2 public review

comment. **Complete.**

- 6) Larry Lamers will conduct letter ballots on approving the command set project proposals. **Complete.**

8. Working Group and/or Project Status Reports

8.1 SCSI General Working Group (X3T9.2/92-194) [Lamers]

Larry Lamers reported on the last working group meeting. See 92-194 for details.

8.2 SCSI-2 Status [Lamers]

The final editing of the SCSI-2 document is proceeding and is expected to be completed by the end of October. The revised document will be sent through proper channels to the ISO editor for approval.

8.3 SCSI Common Access Method (CAM)

CAM is in its public review period that closes January 1, 1993.

8.4 AT Attachment Status (ATA)

The current revision of this document is 3.1. As a result of the Toronto working group, Dal Allan is preparing a revision 3.2.

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

Charles Monia reported that the input from the working group has been incorporated in the SAM document.

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

Larry Lamers reported that revision 7 was in the last mailing; revision 8 is under development. An SPI working group is scheduled for Wednesday. There are some difficulties with the way clause 10 is written; it needs to be re-constructed as services and indicators.

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

No change.

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

Gary Stephens reported that he rearranged pad bytes to sub-elements on four-byte boundaries. A revision 2 will be provide for the January mailing.

8.9 SCSI-3 Serial Bus Protocol (SBP) Status [Gardner]

At the last working group the Apple-DEC-IBM contingent agreed to agree on a serial protocol for use on P1394. Further information was promised for the plenary meeting (see agenda item 9.9 and document 92-199).

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

Robert Snively reported that the FCP document was in the last mailing. It has engendered feedback and this will be incorporated in the next revision.

8.11 SCSI-3 Command Set (SCS) Status [Lamers, Stephens]

No activity.

8.12 Directly-Addressable Device Interface (DADI) [Lohmeyer]

John Lohmeyer reported that X3T9 had sent a letter responding to the HP No vote on approval of the DADI project proposal. A project number should be issued soon.

8.13 ATA Extensions [Lohmeyer]

The ATA Extensions project has been approved and given project number 948-D.

9. Old Business**9.1 Enhancement of Sequential Access for Medium Changers (92-006R1) [Stephens]**

Several medium changer commands are proposed for inclusion in the SCSI-3 Primary Commands. These functions are viewed as generic and useful to a large number of device types and should not require implementation of a second device type to be able to use those functions. The PREVENT ALLOW MEDIUM REMOVAL command is also proposed for inclusion in the primary commands.

Gary Stephens moved and Jeff Stai seconded that 92-006R1 be included in the SCSI-3 Primary Commands document. The motion carried 25:2:0.

George Penokie stated that the M-Changer bit should be byte 6 bit 6 of the INQUIRY data. The document should be revised to include this information.

9.2 Unitized Connector (92-139R1) for SCSI-3 [Cornaby]

The consensus was that since work on the unitized connector is being done in the SFF committee that X3T9.2 wait to see if a consensus develops in SFF.

9.3 PR Comments on BSR X3.221-199x, ATA (AT Attachment)

John Lohmeyer presented six draft response letters (three for registered comments and three for unregistered comments; Gene Milligan had indicated that he did not wish a response to his informal comment which was accepted). A letter ballot will be conducted on approving the response letters.

Dal Allan, the project editor, requested guidance on which items should be included in ATA and which should be deferred to ATA Enhanced. The corrections for DMA transfers and logical block addressing were accepted for inclusion in the ATA document without objection. The 44-pin SFF connector proposal, which uses a 50-pin 2 mm connector to provide additional keying and four vendor-specific pins was controversial.

Gene Milligan moved and Dal Allan seconded that the 44-pin SFF connector definition be included in the ATA document. Larry Lamers requested a role call vote. The chair ruled that this motion only required a simple majority. The voting results were:

Voting Organization	Name	Yes	No	Abs	NP
3M Company					1
AMP, Inc.					1
AT&T	Mr. John Lohmeyer		1		
Adaptec, Inc.					1
Amdahl Corp.	Mr. Shahnad Nadershahi	1			
Amphenol	Mr. Jeff Rosa	1			
Ancot Corp.					1
Apple Computer	Mr. Dennis Pak	1			
Archive Corp.					1
Berk-Tek, Inc.					1
Bull					1
Burndy					1
BusLogic	Mr. Clifford E. Strang Jr.			1	
CMD Technology	Mr. Edward Haske	1			
Ciprico Inc.	Mr. Kurt Witte	1			
Cirrus Logic Inc.	Mr. Joe Chen	1			
Connector Ind. Consulting					1
Conner Peripherals					1
Control Data Systems, Inc					1
DDK Electronics, Inc.					1
Digital Equipment Corp.					1
ENDL	Mr. I. Dal Allan	1			
Emulex Corp.					1
Exabyte Corp.					1
Foxconn International, In					1
Fujitsu	Mr. Robert Liu	1			
Furukawa					1
Future Domain					1
Hewlett Packard Co.	Mr. Jeffrey L. Williams		1		
Hirose Electric U.S.A.					1
Hitachi	Dr. Sam Karunanithi	1			
Honda Connector					1
IBM Corp.	Mr. George Penokie	1			
Interphase Corp.	Mr. David Lawson	1			
Iomega Corp.	Mr. Robert D. Allgood	1			
JAE	Mr. David H. Shaff			1	
Madison Cable Corp.					1
Maxoptix Corp.					1
Maxtor Corp.	Mr. Lawrence J. Lamers		1		
Methode Electronics, Inc.	Mr. John Cannon		1		
Micropolis Corp.					1
Molex Inc.					1
NEC	Mr. Bruce Anderson			1	
NEK					1
NIST					1
National Semiconductor					1
Panasonic (Matsushita)					1
Quantum Corp.					1
Ricoh Corporation					1
SGS-Thomson					1
Seagate Technology	Mr. Gene Milligan	1			
Silicon Systems, Inc.	Mr. Stephen G. Finch	1			
Sony Corp. of America					1
Storage Technology Corp.					1
Sun Microsystems, Inc.					1
Texas Instruments					1
Thomas & Betts					1
Toshiba America, Inc.	Mr. Alan Ebright	1			
U.S. Design	Mr. Dennis Mellinger	1			
UNISYS					1
Western Digital	Mr. Jeff Stai	1			
Woven Electronics	Mr. Doug Piper	1			
Yamaichi Electronics, Inc	Mr. Steve Drake				1
Totals:		18	7	0	38 = 63

The motion carried 18:7:0:38.

It was agreed that the rest/resume functions and the download microcode commands should be deferred to the ATA Extensions project.

9.4 SCSI-3 Queuing Issues (92-141) [Penokie]

George Penokie moved and Charles Monia seconded that 92-141R5 be accepted for inclusion in SAM and SIP. The motion passed 26:0. [Special thanks are in order for George Penokie's persistence in developing the queuing model.]

9.5 Synchronization Status and Errors (92-130R1) [DeKoning]

No activity.

9.6 Proposal to add a disconnect unconditionally after command phase (92-133) [Smyers]

There was objection to tying the disconnect to specific commands. There was general agreement to remove the implementors note. A wording change was suggested to "shall not allow a data transfer phase on an initial connection." Larry Lamers suggested that a bit should be in the control byte for providing disconnect information. At this point the consensus was to do another revision on the proposal to incorporate some of these ideas.

9.7 ASC/ASCQ for Power-On Reset [Houlder] (92-162R1)

The revision 1 document was in the mailing. Gerry Houlder moved and Norm Harris seconded that 92-162R1 be accepted for inclusion in SCSI-3. The motion carried 25:0:0.

9.8 SCSI-3 Architecture Model Issues [Monia]

Charles Monia recapped the items from the working group on addressing. See 92-194 for details.

The discussion turned to handling an AEN. The question of establishing an initiator ID was raised. It was suggested that an association header may be needed. Then the question was how to discover the Initiator ID before an I/O process has occurred. In AEN, the temporary target is always selected by the temporary initiator and the who-to-send-the-AEN-to needs be provided as a priori information. The target is not able to deduce the initiators from the I/O processes.

Bob Snively stated that his definition of TARGET ID is the name of an address of a particular physical node and LUN ID is the process/routine behind it is LUN.

Gary Stephens then requested the addition of a non-transport specific initiator handle of at least 96-bits in size. The consensus was that a proposal on paper is needed to continue this discussion.

The subject of target routines then came up with the proposal to remove them from SCSI-3. Gene Milligan moved and Ed Gardner seconded that Target Routines be removed from SCSI-3 and all the associated documents and the existing functionality of Target Routines be provided by enhancements through logical unit addressing.

Dal Allan moved and George Penokie seconded that the question be divided by document. The motion passed 21:4.

The first motion was that Target Routines be removed from the SCSI-3 Architecture Model and the existing functionality of Target Routines be provided through logical unit addressing. The motion passed

21:4.

The second motion is that Target Routines be removed from the SCSI-3 Protocol documents and the existing functionality of Target Routines be provided through logical unit addressing.

Dal Allan moved and John Lohmeyer seconded to defer consideration until the December 1992 plenary. The motion failed 9:12.

The main (second) motion passed 13:8.

9.9 Serial Protocol Issues [Gardner, Smyers, et al]

Gerry Marazas presented an overview of a serial protocol for use on P1394. The material is in a fairly primitive state and needs substantial work, however the essential elements are there.

Jeff Stai moved and George Penokie seconded that 92-199 be accepted as the proposed working draft for the SBP project. The motion passed 29:0:0.

Gerry Marazas requested a straw poll on whether or not the sense offset be maintained as an unsigned 8-bit value. The overwhelming majority opposed the use of sense offset.

The next straw poll found a majority in favor of having a fully arbitrary relationship between command blocks and sense buffers.

The next straw poll found a majority opposed to SBP postulating a one-to-one relationship between command blocks and sense buffers.

The discussion jumped into queuing, linked commands, and how SBP deals with them. Ed Gardner express a opinion that linked commands are a needless complexity and sees no justification for the current proposal to support them. The discussion on the interaction of queuing and SBP was lengthy.

Chained commands, a feature of the proposed SBP, in a multi-initiator environment obviates the ORDERED queue tag. If the initiator model of the task set is followed and no ORDERED chained commands are used the present queuing model works. Support of isochronous services could disrupt ORDERED commands. Chained commands are in primarily to support isochronous; and since the expert on isochronous was not present the discussion was deferred.

9.10 SFF Submission for SPI Annex (92-170) [Allan]

Dal Allan presented the proposal from SFF for an annex defining 50- and 68-pin signal assignments for internal connectors. This document will be included in the next mailing for a plenary vote.

The intention is for the EIA CE2.0 committee to deal with the connector dimension specification and location of the connector within a form factor.

9.11 Active Termination Requirements [Wallace]

Dean Wallace made a brief presentation on active termination for 10 Megatransfers/sec. Active negation drivers are not always needed, particularly near the terminators. Active negation drivers are important when the device is in the middle of the bus. Good receivers are a critical part of a system that functions properly.

10. New Business**10.1 Letter Ballot results on Response to SCSI-2 Public Review Comment (92-175)**

John Lohmeyer presented the results of the letter ballot (X3T9.2/92-175) on approving the draft response (X3T9.2/92-147) to the public review comment (X3T9.2/92-146) received from U.S. Design. The response was approved 52-0-0-9 (Advanced Micro Devices, Berk-Tek, Bull/Zenith, Burndy, Connector Industry Consulting Group, DDK Electronics, Honda Connector, Micropolis, and Texas Instruments). John Lohmeyer accepted an action item to request X3T9 to approve the response.

10.2 Letter Ballot results on new SCSI-3 Project Proposals (92-176..180)

30-day letter ballots on five new project proposals were sent out with an October 2, 1992 closing date. John Lohmeyer presented the results of the letter ballots:

Letter Ballot	Proj Prop Doc #	draft Project Proposal
X3T9.2/92-176	X3T9.2/92-105R1	SCSI-3 Primary Commands (SPC)
X3T9.2/92-177	X3T9.2/92-106R1	SCSI-3 Block Commands (SBC)
X3T9.2/92-178	X3T9.2/92-107R1	SCSI-3 Stream Commands (SSC)
X3T9.2/92-179	X3T9.2/92-108R1	SCSI-3 Graphic Commands (SGC)
X3T9.2/92-180	X3T9.2/92-109R1	SCSI-3 Medium Changer Commands (SMC)

All five letter ballots were approved by votes of 52-0-0-9 (Advanced Micro Devices, Berk-Tek, Bull/Zenith, Burndy, Connector Industry Consulting Group, DDK Electronics, Honda Connector, Micropolis, and Texas Instruments). John Lohmeyer accepted an action item to request that X3T9 approve the five draft project proposals to replace the SCS project 854-D.

10.3 Project Proposal for Common Access Method (CAM-2) (92-154) [Dallas]

William Dallas gave a brief overview of the need for a CAM-2 project. A study group will be formed to investigate these needs. The meeting is scheduled for November 9, 1992 in Sunnyvale, CA.

A letter ballot will be conducted on the project proposal.

10.4 ATA Download Microcode Command (92-168) [McGrath]

No activity.

10.5 Review of new documents

All documents were dealt with under the appropriate agenda items.

10.6 Agenda for the November X3T9.2 General Working Group

The following draft agenda was generated for the November X3T9.2 Working Group meetings in Sunnyvale:

Draft Agenda
November '92 X3T9.2 Working Groups

1. Opening Remarks
2. Attendance and Membership
3. ATA and ATA Extensions (Monday afternoon)
 - 3.1 Review of ATA Rev 3.2 Draft Document
 - 3.2 ATA Download Microcode Command (92-168) [McGrath]
 - 3.3 Proposed REST/RESUME Functions (92-132) [Zangenehpour]
 - 3.4 Format Track LBA Proposal (92-185 R1) [Leach]
4. SCSI-3 Command Sets (SPC, SBC, SSC, SGC, and SMC) {Tuesday 9:00a}
 - 4.1 Synchronization Status and Errors (92-130) [Robison]
 - 4.2 Cache Control Revisited (90-21R4) [Milligan]
5. SCSI-3 Architecture Model (SAM) {Tuesday 10:00a}
6. Serial Protocol Topics {Tuesday 2:00p}
 - 6.1 SCSI-3 Serial Bus Protocol (SBP)
 - 6.2 SCSI-3 Fiber Channel Protocol (FCP)
 - 6.3 SCSI-3 Generic Packetized Protocol (GPP)
7. Directly-Addressable Device Interface {Wednesday 9:00a}
 - 7.1 Presentation on P1285 work [Chris Hamlin]
8. General WG Topics {Wednesday 10:00a}
 - 8.1 Proposal to add a disconnect unconditionally after command phase (92-133R2) [Smyers]
 - 8.2 Conformance Testing [Stephens]
 - 8.3 Report on CAM-2 Study Group Meeting [Dallas]
9. SPI Working Group {Wednesday 2:00p}
 - 9.1 Review of SPI Revision 8
10. Working Group Schedule
11. Adjournment

10.7 Density Code Addition for Stream Devices (92-164R1) [Williams]

The September working group recommended that this proposal be accepted for SCSI-3. Jeff Williams moved and Skip Jones seconded that 92-164R1 be accepted for SCSI-3. The motion passed: 21:0:0.

10.8 Procedure for Funding X3T9.2 Technical Editors [Lohmeyer]

John Lohmeyer presented a proposal for funding the final edit process. This would serve to free up resources for work on projects in development.

John reported that there currently were 190 paid subscriptions.

Robert Snively moved and Jeff Stai seconded that 92-198 be approved with a fee of \$50. The motion passed 30:0:0.

John Lohmeyer accepted an action item to take the proposal to X3T9 for approval.

10.9 Cache Control Revisited

Gene Milligan requested that the Cache Control Page accepted for SCSI-3 be revisited. In question was whether the segment size is in bytes (as in the document) or in multiples of the logical block size. The current field size is only 16-bits wide, which limits reporting and setting large segment sizes. One can use the number of segments field to deal with larger segments, however their size cannot be reported. The consensus was that the document probably reflects the decisions made. Since there are some products that have implemented the proposal, no one was too excited about "fixing" the problem. [Chair's note: I added this item to the working group agenda to review the issue in a bit more detail.]

10.10 How should SCSI address RAID environments?

George Penokie stated that a number of issues exist in implementing SCSI in RAID environments. George prefers a study group approach that may or may not lead to the development of a standard. An initial meeting is scheduled for Monday, November 9, 1992 in Sunnyvale from 5:00pm to 8:00pm.

11. Review of Action Items

- 1) John Lohmeyer will draft and/or plagiarize a patent notice for working draft documents.
- 2) John Lohmeyer will take the editor's fund proposal to X3T9.
- 3) John Lohmeyer will take the SCSI-3 project proposals to X3T9 for further processing.
- 3) Larry Lamers will conduct a letter ballot on the CAM-2 project proposal.
- 4) Larry Lamers will conduct a letter ballot on the ATA response letters.

12. Meeting Schedule

The next meeting of X3T9.2 will be December 7-8, 1992 at the Catamaran Hotel (619-488-1081) in San Diego, CA hosted by Vitro Corporation. The room rates are \$99.00 including tax. The reservation deadline for these rates is November 16, 1992.

The plenary meeting schedule is:

Date	Location	Host
December 7-8, 1992	San Diego, CA	Vitro
February 15-16, 1993	Austin, TX	Motorola
April 19-20, 1993	St. Petersburg Beach, FL	AMP
June 21-22, 1993	Minneapolis, MN	Stanatek
[Locations and hosts below here are tentative]		
August 16-17, 1993	Colo Spgs, CO	NCR
October 11-12, 1993		
December 6-7, 1993	San Diego, CA	Vitro

12.1 Working Group Schedule

The General Working Group meeting schedule is:

Date	Location	Host
Nov 9-13, 1992	Sunnyvale, CA	Amdahl
Jan 11-15, 1993	Sunnyvale, CA	Tandem
Mar 15-19, 1993	Orange County, CA	Emulex
May 17-21, 1993	Santa Fe, NM	Los Alamos
Jul 19-23, 1993	Manchester, NH	DEC
Sep 13-17, 1993	Poughkeepsie, NY	IBM
Nov 8-12, 1993	Colo Spgs, CO	NCR

The schedule for the November working group week is (X3T9.2 related meetings are shown with an asterisk):

Day	Meeting	Times
Monday	Small Form Factor	9:00a - 1:00p
	ATA and ATA Extensions	2:00p - 5:00p (*)
	RAID Study Group	5:00p - 8:00p (*)
	CAM-2 Study Group	9:00a - 5:00p (*)
	IPI-3	9:00a - 5:00p
Tuesday	X3T9.2 General Working Group	9:00a - 8:00p (*)
	IPI-3	9:00a - 5:00p
Wednesday	X3T9.2 Working Group	9:00a - 1:00p (*)
	SPI Working Group	2:00p - 8:00p (*)
	FC-PH Services	9:00a - 5:00p
	FC-LT	5:00p - 8:00p
Thursday	SCSI Editors	8:30a - 5:00p (*)
	IEEE P1285	9:00a - 12:00n
	FC-PH	9:00a - 5:00p
	FC-LT w/Distributed Fabric	9:00a - 8:00p
	FC-0	1:00p - 5:00p
	FC/SCI	9:00a - 12:00n
Friday	FC-PH General	8:00a - 2:00p
	FC-0	8:00a - 2:00p

12.2 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.

John Lohmeyer moved and Larry Lamers seconded that X3T9.2 authorize the meetings listed with an asterisk in agenda item 12.1. The motion passed unanimously.

13. Adjournment

The meeting was adjourned at 5:30 p.m. on Tuesday October 13, 1992.

Meeting Attenders -- Enclosure (1)

Name	Status	Organization
Mr. Wayne Roen	A	3M Company
Mr. Norm Harris	P	Adaptec, Inc.
Mr. Shahnad Nadershahi	P	Amdahl Corp.
Mr. Charles Brill	P	AMP, Inc.
Mr. Bob Whiteman	A	AMP, Inc.
Mr. Jeff Rosa	P	Amphenol Interconnect
Mr. Michael Wingard	A	Amphenol Interconnect
Mr. Dennis Pak	O	Apple Computer
Mr. Christian Mollard	O	BULL Systems
Mr. Clifford E. Strang Jr.	P	BusLogic
Mr. Bob Gannon	O	C&M Corp.
Mr. Peter Robinson	O	C&M Corporation
Ms. Janet Schank	P	Central Data
Mr. Kurt Witte	P	Ciprico Inc.
Mr. Joe Chen	P	Cirrus Logic Inc.
Mr. Dave Weber	A	Cirrus Logic Inc.
Mr. Edward Haske	P	CMD Technology
Mr. Wayne Sanderson	O	Consultant
Mr. Michael Smith	S	Dallas Semiconductor
Mr. Greg McSorley	A	Data General Corp.
Mr. Charles Monia	P	Digital Equipment Corp.
Dr. William Ham	A	Digital Equipment Corp.
Mr. Edward A. Gardner	A	Digital Equipment Corp.
Mr. William Dallas	A	Digital Equipment Corp.
Mr. Terry Maezawa	O	EIE, America, Inc.
Mr. Skip Jones	P	Emulex Corp.
Mr. I. Dal Allan	P	ENDL
Mr. D. W. Spence	A	ENDL Associates
Mr. Robert Liu	P	Fujitsu Computer Products, Am
Mr. Mike O'Halloran	O	Fujitsu Microelectronics
Mr. Steve Caron	P	Furukawa Electric America
Mr. Jeffrey L. Williams	P	Hewlett Packard Co.
Dr. Sam Karunanithi	P	Hitachi Micro Systems, Inc.
Mr. George Penokie	P	IBM Corp.
Mr. Gerald Marazas	A	IBM Corp.
Mr. Gary R. Stephens	A	IBM Corp.
Mr. Larry Grasso	S	IBM Corp.
Mr. Giles Frazier	S	IBM Corp.
Ms. Gricell Co	S	IBM Corp.
Mr. David Lawson	P	Interphase Corp.
Mr. Robert D. Allgood	A	Iomega Corp.
Mr. David H. Shaff	P	JAE
Mr. Robert Bellino	P	Madison Cable Corp.
Mr. Lawrence J. Lamers	P	Maxtor Corp.
Mr. John Cannon	A	Methode Electronics, Inc.
Mr. Frank Samela	O	Methode Electronics, Inc.
Mr. Jim McGrath	A	Molex Inc.
Mr. Robbie Shergill	P	National Semiconductor
Mr. John Lohmeyer	P	NCR Corp.
Mr. Bruce Anderson	P	NEC Technologies Inc.
Mr. Bruce DeBree	P	NEK Cable, Inc.
Mr. Gene Milligan	A	Seagate Technology
Mr. Gerald Houlder	A	Seagate Technology
Mr. Patric Savage	V	Shell Development Company
Mr. Stephen G. Finch	P	Silicon Systems, Inc.
Mr. Roger Cummings	A	Storage Technology Corp.
Mr. Robert N. Snively	P	Sun Microsystems, Inc.
Mr. Dean Wallace	O	Texas Instruments
Mr. Leonard Dore	O	The JPM Company

Meeting Attenders -- Enclosure (1)

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Mr. Alan Ebright	P	Toshiba America, Inc.
Mr. Dennis Mellinger	A	U.S. Design
Mr. Arlan P. Stone	A	UNISYS
Mr. Jeff Stai	P	Western Digital
Mr. Doug Piper	P	Woven Electronics

64 People Present

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

Oct 21, 1992 - X3T9.2 Membership - Enclosure (2)

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Oct 21, 1992 - X3T9.2 Document Register - Enclosure (3)

X3T9.2/92-1 Date: Author: J. Lohmeyer [1/21/92]
 Desc: X3T9.2 1991 Annual Report
 Res:

X3T9.2/92-2 Date: 12/10/91 Author: SC 25/WG 4 Secretariat [1/21/92]
 Desc: Standardization Activities in ISO/IEC JTC 1/SC 25/WG 4
 Res:

X3T9.2/92-3 Date: 12/10/91 Author: SC 25/WG 4 Secretariat [1/21/92]
 Desc: Draft Report of 2nd Mtg of WG 4 held in Bremen, Germany 9/30-10/2 1991
 Res:

X3T9.2/92-4 Date: 1/10/92 Author: B. Spence [1/21/92]
 Desc: Cable Impedance Revisited
 Res:

X3T9.2/92-5 Date: 1/15/92 Author: Lamers/Lohmeyer [1/21/92]
 Desc: Houston Working Group Minutes
 Res:

X3T9.2/92-6 Rev 1 Date: 7/16/92 Author: K. Jones [9/15/92]
 Desc: Enhancement of Sequential Access Command Set for Medium Changers
 Res: Parts accepted in principal for SCSI-3

X3T9.2/92-7 Rev 1 Date: 2/13/92 Author: V. Novak [3/24/92]
 Desc: Proposed SCSI Identifier Symbols
 Res: Accepted for SCSI-3 SPI at 2/92 plenary meeting

X3T9.2/92-8 Date: 1/11/92 Author: W. Burr [1/21/92]
 Desc: An Introduction to X3T9 and I/O Interface Standards
 Res:

X3T9.2/92-9 Date: 1/7/92 Author: L. Lamers [1/21/92]
 Desc: ltr to Mr. Mori responding to his questions in 91-170
 Res:

X3T9.2/92-10 Date: 1/13/92 Author: T. Hanan [1/21/92]
 Desc: PCMCIA IDE Host Interface Implementation Guide
 Res:

X3T9.2/92-11 Date: 1/13/92 Author: C. Runowicz [1/21/92]
 Desc: DMA data transfer method as outlined in AT Attachment
 Res:

X3T9.2/92-12 Date: 1/14/92 Author: J. Williams [1/21/92]
 Desc: CA Clearing Commands
 Res:

X3T9.2/92-13 Date: 1/14/92 Author: J. Williams [1/21/92]
 Desc: Conflicting Statement on CA and Queue Suspension
 Res:

X3T9.2/92-14 Date: 1/10/92 Author: E. Gardner [1/21/92]
 Desc: Previewing Linked Commands in SCSI-3
 Res:

X3T9.2/92-15 Date: 1/10/92 Author: E. Gardner [1/21/92]
 Desc: The Meaning of Linked Commands in SCSI-3
 Res:

X3T9.2/92-16 Date: 1/13/92 Author: C. Mosley [1/21/92]
 Desc: SCSI-3 Connector Presentation
 Res:

X3T9.2/92-17 Date: 1/14/92 Author: F. Samela [1/21/92]
 Desc: Signal Line Increased Current Kicker
 Res:

X3T9.2/92-18 Date: 1/16/92 Author: L. Lamers [1/21/92]
 Desc: DADI Working Group Minutes 1/13/92
 Res:

X3T9.2/92-19 Rev 1 Date: 1/24/92 Author: Penokie/Lamers [1/21/92]
 Desc: SCSI-3 Queuing Working Group Minutes 1/13/92
 Res:

X3T9.2/92-20 Date: 1/14/92 Author: B. Spence [1/21/92]
 Desc: SPI Working Group Minutes for January 1992
 Res:

X3T9.2/92-21 Date: Author: J. Lohmeyer [1/21/92]
 Desc: SPP Working Group Minutes 1/15/92
 Res:

X3T9.2/92-22 Date: 1/17/92 Author: Penokie/ Mosley [1/21/92]
 Desc: SPI Connector Contact Working Group Minutes 1/15/92
 Res:

X3T9.2/92-23 Date: 1/1/92 Author: M. Mitoma [1/21/92]
 Desc: Serial Storage Architecture
 Res:

X3T9.2/92-24 Date: 1/15/92 Author: I. Judd [1/21/92]
 Desc: A Serial Link for Storage Subsystems (presentation)
 Res:

X3T9.2/92-25 Date: 11/15/91 Author: I. Judd [1/21/92]
 Desc: A Serial Link for Storage Subsystems (paper)
 Res:

X3T9.2/92-26 Date: 12/12/91 Author: C. Butterworth [1/21/92]
 Desc: Serial Storage Architecture SSA-0 (Transport Layer) Ver 1.0
 Res:

X3T9.2/92-27 Date: 12/12/91 Author: C. Butterworth [1/21/92]
 Desc: Serial Storage Architecture SSA-1 (Disk Order Level) Ver 1.0
 Res:

X3T9.2/92-28 Date: 1/14/92 Author: M. Jordan [1/21/92]
 Desc: Fast Single Ended SCSI Terminator Concept -- Active Negation Emulator
 Res:

X3T9.2/92-29 Date: 1/18/92 Author: Dal Allan [1/21/92]
 Desc: Translation of IPI-3 Command Queueing to SCSI Language
 Res:

X3T9.2/92-30 Date: 1/31/92 Author: L. Lamers [3/24/92]
 Desc: SPP Architectural Meeting January 27-28, 1992
 Res: n.a.

X3T9.2/92-31 Date: 2/5/92 Author: Smyers, Neer, & Newsom [3/24/92]
 Desc: Alternate P-Cable Connector for SCSI-3
 Res: On General WG Agenda 3/16/92 17:00

X3T9.2/92-32 Date: 2/11/92 Author: K. Chan [3/24/92]
 Desc: Fast SCSI Timing Problems and Solutions
 Res: Assigned to SPI WG

X3T9.2/92-33 Date: 2/7/92 Author: S. Smyers [3/24/92]
 Desc: Proposed Requirements for SCSI-3 devices which use P1394 Physical I/F
 Res: To be included in Annex of SBP document

X3T9.2/92-34 Date: 2/14/92 Author: J. P. McGrath [3/23/92]
 Desc: DMA Meeting at HP-PCG on 1/24/92
 Res: On ATA Extensions agenda for 3/16/92 14:00

X3T9.2/92-35 Rev 2 Date: 4/28/92 Author: G. Penokie [5/14/92]
 Desc: SCSI-3 Alt 1 Connector Requirements
 Res: Accepted for SCSI-3 Parallel Interface

X3T9.2/92-36 Date: 2/18/92 Author: B. Spence [3/24/92]
 Desc: Termination of Reserved Lines
 Res:

X3T9.2/92-37 Date: 2/18/92 Author: B. Ham [3/24/92]
 Desc: Specifications for SPI Transceivers
 Res:

X3T9.2/92-38 Date: 2/13/92 Author: F. Opreescu [3/24/92]
 Desc: Proposal for Glitch Immunity Specification
 Res:

X3T9.2/92-39 Date: 2/12/92 Author: A. Crick [3/24/92]
 Desc: Microsoft concerns with the CAM XPT/SIM document
 Res:

X3T9.2/92-40 Date: 2/21/92 Author: Lamers/Lohmeyer [3/24/92]
 Desc: X3T9.2 Meeting #98 Minutes -- February 17, 1991
 Res: n.a.

X3T9.2/92-41 Date: 2/22/92 Author: Lamers/Penokie [3/24/92]
 Desc: Austin Queuing Working Group Minutes
 Res: n.a.

X3T9.2/92-42 Date: 12/30/91 Author: R. Gibson [3/24/92]
 Desc: International Participation Fee
 Res:

X3T9.2/92-43 Date: 2/18/92 Author: Spence/Lamers [3/24/92]
 Desc: SPI Working Group Minutes for February 1992
 Res: n.a.

X3T9.2/92-44 Date: Author: J. Tecco [3/24/92]
 Desc: May 1992 Working Group Announcement
 Res:

X3T9.2/92-45 Rev 1 Date: 4/27/92 Author: Charles Monia [5/14/92]
 Desc: Introduction to Packetized SCSI
 Res:

X3T9.2/92-46 Rev 1 Date: 3/20/92 Author: G. Houlder [3/24/92]
 Desc: Request for new Additional Sense Codes
 Res: On Apr '92 WG agenda

X3T9.2/92-47 Date: 3/12/92 Author: E. Gardner [3/24/92]
 Desc: Request for Sequential-Access Density Codes
 Res:

X3T9.2/92-48 Date: 3/12/92 Author: J. McGrath [3/24/92]
 Desc: Molex Pin Chamfer Proposal
 Res:

X3T9.2/92-49 Date: 3/16/92 Author: C. Mosley [3/24/92]
 Desc: SCSI-3 Connector
 Res:

X3T9.2/92-50 Date: 3/17/92 Author: B. Spence [3/24/92]
 Desc: 8-bit Drives Within a 16-bit SCSI System
 Res:

X3T9.2/92-51 Date: 3/16/92 Author: T. Newsom [3/24/92]
 Desc: Presentation on Alternative Ribbon Connector for SCSI-3
 Res:

X3T9.2/92-52 Date: 9/4/90 Author: T. Newsom [3/24/92]
 Desc: IBM Procurement Specification on Mini Ribbon D Shell Connector
 Res:

X3T9.2/92-53 Date: 2/18/91 Author: T. Newsom [3/24/92]
 Desc: Burndy Specification on Microshield (tm) Receptacle
 Res:

X3T9.2/92-54 Date: Author: T. Newsom [3/24/92]
 Desc: AMP Specification on Receptacle Assembly, 60 Position, Champ .050
 Res:

X3T9.2/92-55 Date: 1/31/90 Author: T. Newsom [3/24/92]
 Desc: Molex Specification on Mini Ribbon Shell Shielded Connector
 Res:

X3T9.2/92-56 Date: 3/12/92 Author: A. Wilhelm [3/24/92]
 Desc: Proposal to modify Device Type 0 to support Media Interchange
 Res:

X3T9.2/92-57 Date: 3/16/92 Author: T. Debiec [3/24/92]
 Desc: Proposal for SCSI Cable Performance Specification
 Res:

X3T9.2/92-58 Date: 3/13/92 Author: C. Ghest [3/24/92]
 Desc: Statement re US patent of Glitch remover circuit
 Res:

X3T9.2/92-59 Date: 2/17/92 Author: B. Ham [3/24/92]
 Desc: Electrical Impacts of SCSI Hot Plugging
 Res:

X3T9.2/92-60 Date: 3/18/92 Author: J. Lohmeyer [3/24/92]
 Desc: ltr re PCMCIA/ATA Proposal, dated February 24, 1992
 Res:

X3T9.2/92-61 Date: 3/16/92 Author: T. Asami [3/24/92]
 Desc: SCSI ACK Net with Wired-OR Driver
 Res: Presented at 3/92 SPI WG Meeting

X3T9.2/92-62 Date: 3/17/92 Author: K. Chan [3/24/92]
 Desc: Differential Fast Synchronous Timing
 Res: Presented at 3/92 SPI WG Meeting

X3T9.2/92-63 Rev 1 Date: 5/15/92 Author: J. Blagaila [7/15/92]
 Desc: Integral Peripherals 68 Pin IDE Pinout
 Res:

X3T9.2/92-64 Date: 12/18/91 Author: Hanan & Abrahamsson [3/24/92]
 Desc: PCMCIA IDE Drive Auto Select Proposal
 Res:

X3T9.2/92-65 Rev 1 Date: 5/15/92 Author: S. Shah [7/15/92]
 Desc: Support for Greater than 528MB ATA Drive
 Res:

X3T9.2/92-66 Date: 1/28/92 Author: [3/24/92]
 Desc: IBM 9333 SCSI Mapping
 Res:

X3T9.2/92-67 Date: 1/29/92 Author: J. Best [3/24/92]
 Desc: SSA-PH Appendix Daisy Chain
 Res:

X3T9.2/92-68 Date: 3/16/92 Author: B. Herron [3/24/92]
 Desc: 3M High-Density .050 "D" Ribbon Style Interconnect System
 Res:

X3T9.2/92-69 Date: 3/13/92 Author: B. Bellino [3/24/92]
 Desc: Madison Cable Impedance Variations
 Res:

X3T9.2/92-70 Date: 3/16/92 Author: L. Lamers [3/24/92]
 Desc: ATA Extensions Working Group Minutes 3/16/92
 Res:

X3T9.2/92-71 Date: 3/18/92 Author: Lamers/Lohmeyer [3/24/92]
 Desc: X3T9.2 General Working Group Minutes 3/16-18/92
 Res:

X3T9.2/92-72 Date: 3/17/92 Author: Lamers/Spence [3/24/92]
 Desc: SPI Working Group Minutes for March 1992
 Res:

X3T9.2/92-73 Date: 2/27/92 Author: D. Shoemaker [3/24/92]
 Desc: ltr to Don Laughry re IEE MSC/X3T9 Memory Attach Strategy
 Res:

X3T9.2/92-74 Rev 1 Date: 3/18/92 Author: S. Shah []
 Desc: Public Review Comment on AT Attachment (BSR X3.221)
 Res:

X3T9.2/92-75 Date: 3/18/92 Author: J. Gallant [3/24/92]
 Desc: Creating a TIB for SCSI-2 Tag Queuing working model.
 Res:

X3T9.2/92-76 Date: 3/16/92 Author: G. Penokie [3/24/92]
 Desc: Connector Contact Working Group Meeting Minutes 3/16/92
 Res:

X3T9.2/92-77 Date: 4/13/92 Author: John Lohmeyer [5/14/92]
 Desc: Response to M. Freeman of MSC on his 4/6/92 letter
 Res:

X3T9.2/92-78 Date: 4/6/92 Author: M. Freeman [5/14/92]
 Desc: Letter to John Lohmeyer on MAT/MSC P1265
 Res:

X3T9.2/92-79 Rev 3 Date: 8/15/92 Author: Charles Monia [9/15/92]
Desc: working draft of the SCSI-3 Architecte Model (SAM)
Res:

X3T9.2/92-80 Date: 4/27/92 Author: F. Crowell [5/14/92]
Desc: DS-Links Technical Information
Res:

X3T9.2/92-81 Date: 4/6/92 Author: Lynn Barra [5/14/92]
Desc: Transmittal of Public Review Comment #1 ATA
Res:

X3T9.2/92-82 Date: 4/7/92 Author: Lynn Barra [5/14/92]
Desc: Approval of Project Proposal for AT Attachements Extensions
Res:

X3T9.2/92-83 Rev 2 Date: 5/4/92 Author: S. Washburn [7/15/92]
Desc: Request for Sequential Access Density Codes
Res: Accepted for SCSI-3

X3T9.2/92-84 Rev 1 Date: 4/24/92 Author: L. Lamers [5/14/92]
Desc: Preparing Documents for Committee Mailings
Res:

X3T9.2/92-85 Rev 4 Date: 9/15/92 Author: G. Penokie [11/15/92]
Desc: Change Inquiry Mode Page
Res:

X3T9.2/92-86 Date: 4/27/92 Author: D.W. Spence [5/14/92]
Desc: SCSI Implementation in a 3.3 volt Environment
Res:

X3T9.2/92-87 Date: 4/27/92 Author: D.W. Spence [5/14/92]
Desc: Key Changes Proposed for the SPI Standard
Res:

X3T9.2/92-88 Date: 4/23/92 Author: J. Gallant [5/14/92]
Desc: Two Changes for the CAM document
Res: Accepted for CAM rev 3.0

X3T9.2/92-89 Date: 4/13/92 Author: D. Rundle [5/14/92]
Desc: Status of IEC 48B Standards Efforts
Res:

X3T9.2/92-90 Date: 4/27/92 Author: F. Crowell [5/14/92]
Desc: Presentation Foils of Serial DS-Link Technology
Res:

X3T9.2/92-91 Date: 4/8/92 Author: J. McGrath [5/14/92]
Desc: Tolerance Analysis of P-cable Connection
Res:

X3T9.2/92-92 Date: 4/28/92 Author: J. Lohmeyer [5/14/92]
Desc: Letter to M. Freeman on Grass Roots
Res:

X3T9.2/92-93 Rev 2 Date: 6/22/92 Author: B. Ham [7/15/92]
Desc: SCSI-3 Connector Framework
Res:

X3T9.2/92-94 Date: 3/13/92 Author: I. Dal Allan [5/14/92]
Desc: Information Package on 1988 Connector Decision
Res:

X3T9.2/92-95 Rev 1 Date: 5/14/92 Author: Lamers/Lohmeyer [5/14/92]
Desc: Minutes of X3T9.2 Plenary Meeting #99
Res:

X3T9.2/92-96 Date: 4/27/92 Author: T. Asami [5/14/92]
Desc: Pin Capacitance of a SCSI Controller LSI
Res:

X3T9.2/92-97 Date: 4/27/92 Author: B. Ham [5/14/92]
Desc: Requirement for Glitch Free Power Up/Down
Res:

X3T9.2/92-98 Date: 4/29/92 Author: M. Freeman [5/14/92]
Desc: IEEE P1285 PAR
Res:

X3T9.2/92-99 Date: 4/13/92 Author: I. Dal Allan [5/14/92]
Desc: Connector Agenda Items
Res:

X3T9.2/92-100 Date: 5/4/92 Author: Spence/Lamers [5/14/92]
Desc: SPI Working Group Minutes for April 1992
Res:

X3T9.2/92-101 Date: 5/1/92 Author: I. Dal Allan [5/14/92]
Desc: Project Proposal for SCSI-3 Generic Packetized Protocol
Res:

X3T9.2/92-102 Date: 5/1/92 Author: I. Dal Allan [5/14/92]
Desc: Project Proposal for SCSI-3 Serial Bus Protocol
Res:

X3T9.2/92-103 Date: 5/1/92 Author: I. Dal Allan [5/14/92]
Desc: Project Proposal for SCSI-3 Fiber Channel Protocol
Res:

X3T9.2/92-104 Date: 5/1/92 Author: I. Dal Allan [5/14/92]
Desc: Project Proposal for SCSI-3 Architecture Model
Res:

X3T9.2/92-105 Rev 1 Date: 8/29/92 Author: I. Dal Allan [9/15/92]
 Desc: Project Proposal for SCSI-3 Core Commands
 Res:

X3T9.2/92-106 Rev 1 Date: 8/29/92 Author: I. Dal Allan [9/15/92]
 Desc: Project Proposal for SCSI-3 Block Commands
 Res:

X3T9.2/92-107 Rev 1 Date: 8/29/92 Author: I. Dal Allan [9/15/92]
 Desc: Project Proposal for SCSI-3 Stream Commands
 Res:

X3T9.2/92-108 Rev 1 Date: 8/29/92 Author: I. Dal Allan [9/15/92]
 Desc: Project Proposal for SCSI-3 Graphic Commands
 Res:

X3T9.2/92-109 Rev 1 Date: 8/29/92 Author: I. Dal Allan [9/15/92]
 Desc: Project Proposal for SCSI-3 Medium Changer Commands
 Res:

X3T9.2/92-110 Date: 4/13/92 Author: D. Smythe [5/14/92]
 Desc: IDE (ATA) Document Changes
 Res:

X3T9.2/92-111 Rev 1 Date: 7/27/92 Author: Peter Dougherty [9/15/92]
 Desc: Additional ASC/ASCQ Codes for Data Compression
 Res: Accepted for SCSI-3 at August 92 plenary

X3T9.2/92-112 Date: 5/5/92 Author: Scott Smyers [5/14/92]
 Desc: Proposal for Alternate 68 Position P Connector
 Res:

X3T9.2/92-113 Date: 5/5/92 Author: John A. Gallant [5/14/92]
 Desc: April 28 SCSI-2 Queuing TIB Working Group Meeting Minutes
 Res:

X3T9.2/92-114 Date: 5/7/92 Author: Kurt Chan [5/15/92]
 Desc: Transceiver skew recommendations
 Res:

X3T9.2/92-115 Date: 5/7/92 Author: Kurt Chan [5/15/92]
 Desc: Cable length requirements
 Res:

X3T9.2/92-116 Rev 1 Date: 5/18/92 Author: Charles Monia [7/15/92]
 Desc: Pacetized SCSI System Models
 Res:

X3T9.2/92-117 Date: 5/18/92 Author: D. W. Spence [7/15/92]
 Desc: Fast SCSI Stubs Dimensions & Specifications Format
 Res:

X3T9.2/92-118 Date: 4/27/92 Author: Robert Herron [5/15/92]
 Desc: 3M Presentation on MDR Connector
 Res:

X3T9.2/92-119 Date: 5/14/92 Author: Thomas Newman [7/15/92]
 Desc: ATA Extensions Proposal -- ATA 68 Pin Connection
 Res:

X3T9.2/92-120 Date: 5/18/92 Author: John Geldman [7/15/92]
 Desc: Mapping the ATA Interface onto thd SFF 68-pin Connector
 Res:

X3T9.2/92-121 Date: 5/14/92 Author: Thomas Newman [7/15/92]
 Desc: ATA Command 0 (No Operation) Proposal
 Res:

X3T9.2/92-122 Date: 5/18/92 Author: D.W. Bill Spence [7/15/92]
 Desc: Proposal for Additional Annex for SPI Standard
 Res:

X3T9.2/92-123 Date: 5/14/92 Author: Kevin Gingerich [7/15/92]
 Desc: Proposed Change to SPI
 Res:

X3T9.2/92-124 Date: 5/15/92 Author: Steve Hunley [7/15/92]
 Desc: Proposed Change to SPI
 Res:

X3T9.2/92-125 Date: 5/14/92 Author: I. Dal Allan [7/15/92]
 Desc: Letter on Patents to Steve Cornaby
 Res:

X3T9.2/92-126 Date: 5/21/92 Author: L. Lamers [7/15/92]
 Desc: Minutes of the X3T9.2 May General Working Group
 Res:

X3T9.2/92-127 Date: 5/21/92 Author: Lamers/Spence [7/15/92]
 Desc: SPI Working Group Minutes for May 1992
 Res:

X3T9.2/92-128 Date: 5/27/92 Author: Rich Mizia [7/15/92]
 Desc: Raw Cable Impedance and Bend Radius Test Results
 Res:

X3T9.2/92-129 Date: 5/26/92 Author: R. Whiteman [7/15/92]
 Desc: P-Cable connector dimension & tolerance study
 Res:

X3T9.2/92-130 Date: 5/29/92 Author: Kyle Robison [7/15/92]
 Desc: Synchronization Status & Errors
 Res:

X3T9.2/92-131 Rev 1 Date: 8/13/92 Author: S. Smyers [9/15/92]
Desc: A Common Command Unit Architecture
Res:

X3T9.2/92-132 Date: 6/4/92 Author: Lynn Barra [7/15/92]
Desc: Transmittal of Public Review Comment #2 (ATA)
Res:

X3T9.2/92-133 Rev 1 Date: 7/24/92 Author: Scott Smyers [9/15/92]
Desc: Proposal to add a disconnect unconditionally after command phase
Res:

X3T9.2/92-134 Rev 1 Date: 8/4/92 Author: Jeffrey Williams [9/15/92]
Desc: Response to 92-111
Res: Accepted for SCSI-3 at August '92 plenary

X3T9.2/92-135 Date: 7/20/92 Author: Ed Gardner [9/15/92]
Desc: SCSI-3 Serial Bus Protocol (SBP)
Res:

X3T9.2/92-136 Date: 6/19/92 Author: H. Waltersdorf & S. Roland [7/15/92]
Desc: Internal Non-Shielded Connectors
Res:

X3T9.2/92-137 Date: 5/19/92 Author: B. Ham [7/15/92]
Desc: Hot Plugging Requirements for SPI
Res:

X3T9.2/92-138 Rev 1 Date: 6/23/92 Author: B. Ham [7/15/92]
Desc: Single SCSI cable for all forms of SCSI
Res:

X3T9.2/92-139 Rev 1 Date: 8/11/92 Author: S. Cornaby [9/15/92]
Desc: Appendix for SPI on Unitized Connector
Res:

X3T9.2/92-140 Date: 6/10/92 Author: Lynn Barra [7/15/92]
Desc: Transmittal of Public Review Comment #3 (ATA)
Res:

X3T9.2/92-141 Rev 4 Date: 10/10/92 Author: G. Penokie [11/15/92]
Desc: SCSI-3 Queuing Model
Res:

X3T9.2/92-142 Date: 6/23/92 Author: J. P. McGrath [9/15/92]
Desc: ATA Public review comments
Res:

X3T9.2/92-143 Date: 6/23/92 Author: J. P. McGrath [9/15/92]
Desc: Capacitance on SCSI Signal Lines
Res:

X3T9.2/92-144 Date: 6/25/92 Author: L. Lamers [7/15/92]
Desc: Minutes of X3T9.2 Plenary Meeting #100
Res:

X3T9.2/92-145 Date: Author: John Scheible [9/15/92]
Desc: SCSI mapping for SSA
Res:

X3T9.2/92-146 Date: 7/15/92 Author: Lynn Barra [9/15/92]
Desc: Public Review Comment #1 on SCSI-2
Res:

X3T9.2/92-147 Date: 8/21/92 Author: Del Shoemaker [9/15/92]
Desc: Response to SCSI-2 Public Review Comment #1
Res:

X3T9.2/92-148 Rev 2 Date: 7/21/92 Author: D. Steele [9/15/92]
Desc: Active Negation Driver Requirements for SPI
Res:

X3T9.2/92-149 Rev 1 Date: Author: John Geldman [9/15/92]
Desc: Demand Mode DMA ATA
Res:

X3T9.2/92-150 Date: Author: Tom Debiec [11/15/92]
Desc:
Res:

X3T9.2/92-151 Date: 7/17/92 Author: Mehran Raezani [9/15/92]
Desc: Two new commands for ATA
Res:

X3T9.2/92-152 Date: 7/20/92 Author: Mehran Ramezani [9/15/92]
Desc: DMA Timing Changes In ATA
Res:

X3T9.2/92-153 Date: 7/18/92 Author: Edward A. Gardner [9/15/92]
Desc: Comments on Blind-pluggable Connector
Res:

X3T9.2/92-154 Rev 1 Date: 10/15/92 Author: J. Gallant [11/15/92]
Desc: Extensions to the Common Access Method (CAM-2)
Res:

X3T9.2/92-155 Date: 7/21/92 Author: C. Mosley [9/15/92]
Desc: Connector Requirements
Res: Accepted for inclusion in SCSI-3 August 92.

X3T9.2/92-156 Date: 7/18/92 Author: Florin Oprescu [9/15/92]
Desc: SCSI Termination Sensing Proposal
Res:

X3T9.2/92-157 Date: 7/22/92 Author: Shashir Shah [11/15/92]
Desc: LBA address for ATA
Res:

X3T9.2/92-158 Date: 7/23/92 Author: L. Lamers [9/15/92]
Desc: Minutes of July 1992 General Working Group
Res:

X3T9.2/92-159 Date: 7/30/92 Author: D.W. Spence [9/15/92]
Desc: SPI Working Group Minutes
Res:

X3T9.2/92-160 Date: Author: Dean Wallace [11/15/92]
Desc: TI Constant Current Mode Terminator
Res:

X3T9.2/92-161 Date: Author: Florin Opreescu [9/15/92]
Desc: Termination Sensing Proposal
Res:

X3T9.2/92-162 Rev 1 Date: 7/31/92 Author: G. Houlder [9/15/92]
Desc: New ASC/ASCQ for Power-on Reset
Res:

X3T9.2/92-163 Date: 8/18/92 Author: Charles Monia [9/15/92]
Desc: Domain Definitions and Linked Commands (SAM)
Res:

X3T9.2/92-164 Date: Author: J. Williams [11/15/92]
Desc: New Density codes Tape
Res:

X3T9.2/92-165 Date: 8/18/92 Author: R. Gannon [11/15/92]
Desc: Serial Cable Prototypes
Res:

X3T9.2/92-166 Date: 8/18/92 Author: L. Lamers [9/15/92]
Desc: X3T9.2 Meeting #101 Minutes
Res:

X3T9.2/92-167 Date: 8/18/92 Author: J. Lohmeyer [9/15/92]
Desc: Proposed SPARC Policy on Conformance Testing
Res:

X3T9.2/92-168 Date: 8/17/92 Author: J. P. McGrath [9/15/92]
Desc: ATA Download Microcode Command
Res:

X3T9.2/92-169 Date: 8/18/92 Author: R. Bailly [9/15/92]
Desc: Conformance Testing Presentation
Res:

X3T9.2/92-170 Date: 8/15/92 Author: D. Allan [9/15/92]
Desc: SFF pinouts for SPI annexes
Res:

X3T9.2/92-171 Date: 8/18/92 Author: E. Gardner [11/15/92]
Desc: Presentation on SBP at August Plenary
Res:

X3T9.2/92-172 Date: 8/20/92 Author: L. Lamers [9/15/92]
Desc: Letter to K. McMillan on Letter Ballot Proceedure
Res:

X3T9.2/92-173 Date: 8/20/92 Author: L. Lamers [9/15/92]
Desc: Letter to K. McMillan on E-mail use
Res:

X3T9.2/92-174 Date: 8/20/92 Author: M. Freeman [9/15/92]
Desc: Minutes of July 13, 1992 Grass Roots Meeting
Res:

X3T9.2/92-175 Date: 8/26/92 Author: J. Lohmeyer [9/15/92]
Desc: Letter Ballot
Res:

X3T9.2/92-176 Date: 8/26/92 Author: J. Lohmeyer [9/15/92]
Desc: Letter Ballot
Res:

X3T9.2/92-177 Date: 8/26/92 Author: J. Lohmeyer [9/15/92]
Desc: Letter Ballot
Res:

X3T9.2/92-178 Date: 8/26/92 Author: J. Lohmeyer [9/15/92]
Desc: Letter Ballot
Res:

X3T9.2/92-179 Date: 8/26/92 Author: J. Lohmeyer [9/15/92]
Desc: Letter Ballot
Res:

X3T9.2/92-180 Date: 8/26/92 Author: J. Lohmeyer [9/15/92]
Desc: Letter Ballot
Res:

X3T9.2/92-181 Date: 8/27/92 Author: D.W. Spence [9/15/92]
Desc: Terminator & Driver Characteristics
Res:

X3T9.2/92-182 Date: 8/30/92 Author: R. Snively [9/15/92]
Desc: SCSI-3 Fiber Channel Protocol
Res:

X3T9.2/92-183 Date: 6/23/92 Author: J. W. McGrath [9/15/92]
 Desc: Current Sink for ATA drivers Operating at 3.3 volts
 Res:

X3T9.2/92-184 Date: 9/16/92 Author: G. Penokie [11/15/92]
 Desc: Codes, ASC, ASCQ, & Values Committed in SCSI-3
 Res:

X3T9.2/92-185 Date: 9/15/92 Author: L. Leach [11/15/92]
 Desc: Format Track Definition for ATA
 Res:

X3T9.2/92-186 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Response to ATA PR comment 1
 Res:

X3T9.2/92-187 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Response to ATA PR comment 2
 Res:

X3T9.2/92-188 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Response to ATA PR comment 3
 Res:

X3T9.2/92-189 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Response to ATA comment 4
 Res:

X3T9.2/92-190 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Response to ATA comment 5
 Res:

X3T9.2/92-191 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Response to ATA comment 6
 Res:

X3T9.2/92-192 Date: 9/21/92 Author: J. Lohmeyer [11/15/92]
 Desc: Jeopardy Letter(s) for September 1992
 Res:

X3T9.2/92-193 Date: 9/25/92 Author: Lamers/Lohmeyer [11/15/92]
 Desc: ATA Minutes
 Res:

X3T9.2/92-194 Date: 9/25/92 Author: Lamers/Lohmeyer [11/15/92]
 Desc: X3T9.2 September Meeting Minutes
 Res:

X3T9.2/92-195 Date: 10/9/92 Author: Dal Allan [11/15/92]
 Desc: Small Form Factor ATA Annex
 Res:

X3T9.2/92-196 Date: 10/9/92 Author: Dal Allan [11/15/92]
 Desc: Small Form Factor SPI Annex
 Res:

X3T9.2/92-197 Date: 10/12/92 Author: Dennis Pak [11/15/92]
 Desc: IEEE P1285 Liaison Report
 Res:

X3T9.2/92-198 Date: 10/9/92 Author: John Lohmeyer [11/15/92]
 Desc: Proposal for Funding X3T9.2 Technical Editors
 Res:

X3T9.2/92-199 Date: 10/12/92 Author: Gerald Marazas [11/15/92]
 Desc: SCSI-3 Serial Bus Protocol
 Res:

X3T9.2/92-200 Date: 10/15/92 Author: Lamers/Lohmeyer [11/15/92]
 Desc: Minutes of X3T9.2 Meeting #102
 Res:

X3T9.2/92-201 Date: 9/8/92 Author: Daniel Arnold [11/15/92]
 Desc: OASIS Update
 Res:

X3T9.2/92-202 Rev 1 Date: 10/12/92 Author: Charles Monia [11/15/92]
 Desc: SAM Addressing Proposal
 Res:

X3T9.2/92-203 Date: 10/15/92 Author: Lamers/Spence [11/15/92]
 Desc: SPI Working Group Minutes for October 1992
 Res:

X3T9.2/92-204 Date: 10/15/92 Author: Lamers/Freeman [11/15/92]
 Desc: Minutes of Grass Roots Meeting #2 -- October 1, 1992
 Res: