

Accredited Standards Committee
X3, Information Technology

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Project:

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Reply to: John Lohmeyer

To: Membership of X3T10

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

Subject: Minutes of X3T10 Plenary Meeting #8
Newport Beach, CA -- March 9, 1995

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Results of Meeting

1. Opening Remarks

John Lohmeyer, the X3T10 Chair, called the meeting to order at 1:00 p.m., Thursday March 9, 1995. He thanked Skip Jones of QLogic for arranging and hosting the meeting.

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 changes:

- 10.2 ASC/ASCQ request for cleaning (95-133) [Lappin]
- 10.3 READ POSITION changes (95-118) [Lappin]
- 10.4 INQUIRY command enhancements (94-188) [Weber]
- 10.5 Attached medium changers (95-103) [Weber]

Item 11 was trifurcated to; 11.1 Report; 11.2 Votes on new project proposals; 11.3 Approval of ISO delegation.

The agenda was approved with the above additions and changes.

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 International Program fee (\$300) is billed separately directly from ANSI.

The Chair said he had sent letters to 14 people from 5 organizations informing them that their membership was in jeopardy due to non-attendance (see 95-003r0) and that their membership would be terminated if they did not attend this meeting. All organizations were represented at this meeting except:

Compaq Computer

The following organizations joined X3T10 at the meeting: Symbios Logic Inc. (which attended the previous meeting as HMPD). IIX Consulting also joined X3T10 at this meeting.

The X3T10 membership is now at 58 organizations up from 57 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 - January Meeting Lake Tahoe, CA (X3T10/95-130r1)

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) or Dan Arnold (darnold@itic.nw.dc.us) at (202) 626-5741.

Larry Lamers requested that all documents for the next mailing be in his hands by noon on Thursday March 23, 1995. 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 X3T10 meets its document archiving requirements by including the X3 Secretariat 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 X3T10/95-147 contains the list of requirements for submissions.

In keeping with the X3T10 committee's new efforts for electronic document filing and distribution, Larry requested that electronic copies of all documents be made available to him. The electronic copies can be sent directly to Larry. Or, the electronic document can be placed on the SCSI BBS.

As usual, minutes are also available on the SCSI BBS (719-574-0424) and will be distributed to the ATA and SCSI Reflectors. To be added to the ATA Reflector, send an email to majordomo@dt.wdc.com with the line 'subscribe ata' in the message body. To subscribe to the SCSI Reflector, send an electronic message to: scsi-request@ks.hmpd.com and include your mailing address in the message body.

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. Annex I contains the ANSI patent policy.

Ed Gardner described a patent "Mass Storage Array with Efficient Parity Calculation." The patent number is 5,191,584. The patent was filed February 20, 1991 and issued March 2, 1993. The rights to this patent are held by Micropolis. Ed stated this patent may cover some portions of the XOR command set being developed by X3T10. Gene Milligan asked that John Lohmeyer write a letter to Micropolis describing the XOR commands study effort and asking Micropolis if that work conflicts with Micropolis patents. John took an action item to write the letter described by Gene.

George Penokie said that IBM believes that IBM has the rights to some patents that someone may infringe while implementing the SCSI-3 Controller Commands (SCC) document. George provided the committee with document X3T10/95-158r0 describing the patent infringement situation and naming an IBM contact for information regarding these patents. Erich Oetting and George discussed possible other patents relating to SCC.

7. Review of Old Action Items

- 62) Larry Lamers will generate the SCSI-2 responses document for distribution to ISO via the IR. *Carry over.*
- 63) Larry Lamers will prepare a final ISO version of SCSI-2. *Carry over.*
- 64) Gene Milligan will double check the ISO status of all forwarded dpANS documents and to generate new ISO work items for any lacking an approved ISO project, with the exception of ATA. *Complete*
- 67) John Lohmeyer will obtain an electronic copy of the new X3 SD-2 and post it on the SCSI BBS and on the FTP site. *Complete.*
- 68) Larry Lamers will conduct a letter ballot regarding the forwarding ATA-2 to X3 for processing toward first public review. *Complete.*
- 69) John Lohmeyer will send a letter to X3 requesting withdrawal of Project 964-D (Directly-Addressable Device Interface). *Complete.*
- 70) Gary Stephens will prepare a revised GPP for forwarding. *Complete.*
- 71) John Lohmeyer will forward the revised GPP to X3 for further processing. *Carry over.*
- 72) John Lohmeyer will forward SCC revision 4 to X3 for further processing toward public review. *Complete.*
- 73) Gene Milligan will prepare a written proposal for changing SBC based on the motion approved under agenda item 10.4. *Over taken by events. The material has been incorporated in the document.*

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 on the backs of the meeting agendas. He noted that since he had printed the agenda, he had been informed the SCC Project will go to its first public review from March 17th to May 16th and the following projects have been approved:

1120-D ATAPI
1121-DT SCSI-2 Mapping to SSA Technical Report

8.2 X3T10.1 Task Group Report

Ken Hallam reported on meetings in Austin, Texas and Newport Beach, California. Ken said that T10.1 has about twenty members. The exact numbers are not available. He noted that the projects have a significant amount of editorial work left to accomplish.

John Scheible has announced his resignation as X3T10.1 chair to give him more time to edit SSA documents. Ken will be acting chair. Gary Kapraun (from Symbios Logic) will be the acting vice-chair. Larry Lamers is the secretary.

Ken described how the SSA documents are being restructured. Details of these changes can be found in the X3T10.1 Working Group and Plenary minutes documents (X3T10.1/95-123r0 Working Group, and X3T10.1/95-124r0 Plenary).

Ken also described how X3T10.1 has decided to separate their meetings from the X3T10 meetings. This was felt necessary in order to get sufficient focus on T10.1 issues. Bob Snively asked about the level of alignment between X3T10.1 documents and X3T10 documents, particularly the SCSI-3 Architecture Model.

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

CAM is at a public review that will close on April 4, 1995.

8.4 ATA Extensions (ATA-2) Status {Project 948-D} [Finch]

Steve Finch reported that ATA-2 letter ballot closed March 2, 1995. The letter ballot results are available in document 95-166r0. In summary, the letter ballot was approved 47:1:0:9.

All comments received in response to the letter ballot have been resolved. A no vote from Western Digital was resolved. A late no vote from Cirrus Logic also was processed and predominately resolved. The ATA-2 document is being revised based on the comment review.

Gene Milligan moved that the following note be added to clause 6.2.12 of the ATA-2 document: "Note: The assertion of CORR by the device while BSY=0 might not be recognized by BIOS and drivers which sample status as soon as BSY=0." Tom Hanan seconded the motion. The motion passed in the absence of any objection.

Gene Milligan moved that X3T10 accept the recommendations of the ATA Working Group regarding the ATA-2 document and forward the revised ATA-2 document (revision 3) to X3 for further processing. Steve Finch seconded the motion.

Tom Hanan moved to amend the motion to not forward the until the IOL issue is addressed. The motion to amend failed for lack of a second. Steve Finch stated that the IOL issue has become part of the ATA-3 standard. Tom Hanan said that the current definition of mode 4 and the current statement for IOL preclude many implementations.

Gene's motion passed 34:1:0:22.

Tom Hanan cast the negative vote and said that Western Digital believes that the ATA-2 document is in jeopardy for mode 4 timing due to the inability handle IOL.

Steve Finch took an action item to prepare ATA-2 revision 3. John Lohmeyer took an action item forward ATA-2 revision 3 to X3 for further processing.

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

John Lohmeyer reported that 855-D is in second public review. The review will end on April 4, 1995.

Peter Johansson moved that the technical editor of X3T10/855D, SCSI-3 Parallel Interface Revision 15 make the changes described below to the document before it is balloted at X3. X3T10 believes the changes to be editorial in nature and insufficient to require additional public review. If X3 is of a contrary opinion and believes the changes necessitate another a public review cycle, X3T10 wishes to withdraw the modifications and to address them in an *errata* bulletin separate from the standard.

pg. 52, section B.4.1.1 Transfer Cycles. Add the following statement to the end of statement 4:

“All devices assert the DB(6) signal.”

pg. 47, section B.3.1 Configuration Requirements. Replace statement b) with:

“b) Any SCSI initiator on the bus shall be a SCAM initiator.”

Correct several minor typos and font problems that caused such errors as ohms symbols being replaced with a capitol W and section references being left blank.

Ed Gardner seconded the motion. The motion passed 34:0:0:23.

Larry Lamers took an action item to prepare SPI revision 15a. John Lohmeyer took an action item forward SPI revision 15a to X3 for further processing.

8.6 SCSI-3 Interlocked Protocol (SIP) Status {Project 856-D} [Penman]

Duncan reported that the Working Group meeting identified many corrections needed in SIP. Duncan announced that effective immediately George Penokie will take over as the technical editor for SIP. John Lohmeyer thanked Duncan for his excellent work on preparing SIP Rev 4a.

8.7 Directly-Addressable Device Interface (DADI) Status {Project 964-D} [open]

John reported that he sent a letter to X3 recommending withdrawal of DADI. He has not received a response yet. He believes that an X3 letter ballot will be processed soon.

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

Bill Dallas reported on the work of the CAM-3 study group. Bill will be providing minutes of the study group meeting as document 95-174r0.

8.9 SCSI-3 Generic Packetized Protocol (GPP) Status {Project 991-DT} [Stephens]

John reported that Gary encountered delays preparing the GPP due to troubles with Word Perfect, but that Rev 9 was now complete and will be forwarded to X3.

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

Ron Roberts reported that SBP is in public review. The public review closes March 21, 1995. No public review comments have been received.

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

Bob Snively reported that FCP is in public review. The public review closes March 21, 1995.

Bob reported that public review comments have been received from IBM and Unisys. Bob reviewed the comments. All the IBM comments are editorial in nature. The Unisys comment can be addressed simply.

Details of the FCP comments status can be found in the X3T10 SCSI Working Group minutes (95-170).

Bob will be drafting responses to the FCP public review comments.

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

Charles Monia reported that SAM is at public review. The public review closes March 21, 1995.

Charles reported that public review comments have been received from IBM and LLNL. Details of the SAM comments status can be found in the X3T10 SCSI Working Group minutes (95-170). Charles said that some of the changes are of a technical nature.

Charles will be drafting responses to the SAM public review comments.

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

Ralph Weber reported that revision 5 of the SPC failed to make the January mailing. Revision 6 is already in progress and will be at Larry's house in time for the March mailing. Ralph noted that revision 6 will not include the description of the PORT STATUS command. This conforms better to the public review version of the SAM, which does not discuss multi-port configurations. It also anticipates more detailed definitions of multi-port configurations planned by Bob Snively. The change does negate the action approving document 94-176r0.

Several proposals affecting the SPC are to be voted on at this Plenary. Ralph suggested that completion of this round of votes would be a good time to close SPC-1, with revision 6 being the draft Ralph hopes to send to a letter ballot for forwarding to first public review. Ralph said that the X3T10 action on that letter ballot should occur at the May meeting.

8.14 SCSI-3 Block Commands (SBC) Status {Project 996-D} [Tewell]

John reported receipt of revision 1 of the SBC from Rick Tewell. Revision 1 will be in the next mailing.

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

Ted described SSC work on tape densities. Ted listed several areas in which additional SSC work still is in progress. Devon Worrell asked about SCSI compatibility with QIC-120, QIC-121, and QIC-157. Ted took Devon's advice regarding keeping the various standards in synchronization.

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

John reported that Rick plans to have a revision 0 of SGC ready soon.

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

Erich reported that revision 3 of the SMC is available at this meeting. There may be a revision 4 soon.

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

George reported that the public review period for SCC will start on March 17, 1995 and end on May 16, 1995.

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

Ron Roberts reported on the working group meeting from MMC. There were two command set presentations; from Philips and Yamaha. Revision 2.0a is available. It will be placed on the BBS next week. A working group meeting is requested in the Bay Area on March 29 and 30 hosted by Philips Semiconductor.

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

John reported that the Fast-20 document letter ballot closed in January. Revision 3 was produced after the January meeting. John described changes since revision 3.

George Penokie moved that Fast-20 revision 6 be accepted including substantive changes after the letter ballot, replacing revision 2. Jim McGrath seconded the motion. The motion passed 33:0:24. John Lohmeyer took an action item to forward Fast-20 Rev 6 to X3.

8.21 AT Attachment-3 Interface (ATA-3) Status {Project 2008-D} [Milligan]

Gene Milligan reported that the ATA Working Group was unable to process any ATA-3 agenda items, due to the time required for the ATA-2 letter ballot comments. Pete McLean reported that ATA-3 has been placed on the BBS and copies were provided to the ATA Working Group. The ATA-3 document contains some minor editorial changes and several technical changes approved by the ATA Working Group.

8.22 ATA Packet Interface (ATAPI) Status {Project 1120-D} [Milligan]

Gene Milligan said revision 2 of the SFF ATAPI document was distributed during the ATA Working Group meeting.

Gene described working group recommendations for the ATA command overlap work. The specifics of command overlap (weak, strong overlap, and queuing) have been moved out of the ATA-3. Single device only (weak) overlap has been moved into ATAPI and titled ATAPI overlap. Two device (strong) and queuing are continuing to be worked. However they are targeted for ATA-4.

8.23 XOR Commands Study Group [Houlder]

Ralph Weber reported that Gerry Houlder will provide written minutes of the XOR Study Group meeting in document 95-161r0, which will be in the next mailing.

8.24 Systems Issues Study Group [Penman]

Duncan Penman reported on the recent meeting of the System Issues Study Group. The major result of the meeting was a proposal that a new entity to be the focal point for issues related to the use or implementation of X3T10 standards. Other recommendations were that a separate email reflector be created and that Duncan work with John Lohmeyer to establish the proper operational mechanics for the new group.

8.25 SPI Futures Study Group [Aloisi]

Paul Aloisi reported that the SPI futures study group set July 1995 as a deadline for papers. He then described how the several SPI futures topics have been divided to five functional areas and other topics that will not be ready by July 1995.

Minutes of the SPI Futures Study Group meeting can be found in document 95-172r0.

9. Old Business

9.1 X3T10 Standards Development Policy and Procedure (94-198r1) [Milligan]

In January, Gene Milligan moved that X3T10 accept the revised document as an acceptable response to the letter ballot comments. Ron Roberts seconded the motion. Gene Milligan then moved that consideration of the above motion be deferred until March 9th. Ron Roberts seconded the motion. The motion to defer consideration passed unanimously. The main motion was re-opened.

Without objection, John Lohmeyer replaced the original process flow-chart with the one he drafted (document 95-157r0).

Gene Milligan described editorial comments received on the SCSI reflector from Lansing Sloan. Ralph Weber also had some editorial comments. John asked that the editorial comments be provided to Gene, who will prepare revision 2.

The motion passed 31:0:0:26.

John took an action item to forward 94-198r2 to X3 for review and action.

9.2 Clarification of international program fee [Allan]

John reported that no response has been received from X3 regarding this issue.

9.3 Immediate Commands (94-244r2) [Lappin]

Ted reviewed his proposal to extend the sense key specific data to permit progress indication on commands other than FORMAT. Ted moved that 94-244r2 be approved for inclusion in the SPC. Erich seconded the motion. The motion passed 22:0:0:35.

10. New Business

10.1 ATA-2 Letter Ballot Results and Resolution (95-004)

John Lohmeyer reported the results of the letter ballot. See 95-166r0 for the complete results. The ballot passed 47:1:0:9. Yes comments were received from Pete McLean of Maxtor and No comments were received from Tom Hanan of Western Digital.

10.2 ASC/ASCQ request for cleaning (95-133) [Lappin]

Ted Lappin presented his request for two new ASC/ASCQ for cleaning functions. Ted moved that 95-133r0 be approved for inclusion in the SSC. Erich Oetting seconded the motion. George Penokie asked that the ASC/ASCQ values be made applicable to controller devices. The motion was so amended, producing 95-133r2. The amended motion passed 24:0:0:33.

10.3 READ POSITION changes (95-118r0) [Lappin]

Ted presented his proposal to make the READ POSITION command mandatory in SSC. The proposal also provides additional control over what returned data is valid. Ted moved that 95-118r0 be approved for inclusion in the SSC. Erich seconded the motion. Bill Dallas noted a typographical error in the proposal. The motion was amended to correct the proposal, producing 95-118r1. The amended motion passed 24:0:0:33.

10.4 INQUIRY command enhancements (94-188r8) [Weber]

Ralph presented his proposal to add CDB support reporting to the INQUIRY command. He described the history of the command and how it responds to the removal of the requirement that targets check for zeros in reserved CDB fields. He noted two editorial corrections that will require creation of 94-188r9. Ralph then moved that 94-188r9 be accepted for inclusion in SPC. Peter Johansson seconded the motion. The motion was approved 32:0.

10.5 Attached medium changers (95-103r1) [Weber]

Ralph described the problems with reused operation codes in the MOVE MEDIUM and READ ELEMENT STATUS commands. He then reviewed the proposal to correct the problems and the changes requested by the Working Group. Ralph moved that the revised document (95-103r2) be approved for inclusion in the SPC and the SMC. Erich Oetting seconded the motion. The motion was approved 29:1.

10.6 Addressability of TARGET RESET task management function (94-236r1) [Snively]

Bob reviewed the Working Group discussion of logical unit resets. He noted that the organization complaining about new SPI message codes will not complain if a single byte message is used. Therefore, he plans to go forward with defining a new SPI message to address logical unit reset needs. Bob will be drafting a new revision of his proposal for consideration at the next working group meeting.

11. ISO [Milligan]

11.1 Report

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

ISO Report 3/95

SC 25 Working Group 4 has distributed N626 which is a contribution from Professor, Doctor Oehler on Interfaces of active components to the cabling. Ed Grivna has requested a list of references to convert from EIA to IEC component standards for Fibre Channel. A new ISSN 1695 document dated 94/11/30 SD9 Memorandum of Agreement for US TAGs has been distributed.

The SC 25 Secretary Walter v. Pattay has sent a 94/12/04 letter to Chairman Fujisaki appointing Gene Milligan as the SC 25 to SC 26 Liaison. SC 26 is the ISO group responsible for microcomputer systems.

ISO/IEC is working on a process to publish de facto specifications. Some information has been distributed JTC1N3142 94/12/06 Transposition of Publicly Available Specifications - Management Guide Plan.

Interoperability of implementations (as opposed to standards conformance) is starting to receive ISO attention as noted by JTC1N3325 94/12/06 Request for SWG-CA study of product interoperability. The US contact for Interoperability SWG-CA is the Chair of JTCA Dave Thewlis, of Share Inc. at 71210.76@compuserve.com.

The SC 25 Secretary has decided not to precisely follow the action item to request that the JTC 1 Secretariat, ANSI, reverse their interpretation that the HIPPI and FC new work items failed. Instead he has decided to, on the basis of the passing CD ballots, submit the HIPPI-FP, LE, SC, & FC-PH DIS documents and resolution of CD comments to JTC 1 for the registration of DIS ballots. The HIPPI-PH is ready for IS publication as soon as an editor's report on DIS ballot comments is received. X3T11 is addressing these items.

A revision of the ISO/IEC procedures is now available as JTC1N3348 94/12/20 Procedures for the Technical work of JTC 1 - Third Edition.

JT94-0717 94/12/21 provides a Timeline for JTC 1 Strategy for Implementation of Information Technology. The X3T10 IR has requested additional information from the US contact Karen Higginbottom, higginbottom@cup.hp.com, on both the international and US activity on electronic mechanization.

end ISO report

Gene Milligan moved that X3T10 recommend to OMC that international CD and DIS documents not be required to have a US public review period. Chuck Brill seconded the motion. The motion passed 33:0.

11.2 Votes on New Project Proposals

Gene Milligan move that the IR submit project proposals for SC25 new work items to achieve ISO/IEC publication of the following X3T10 documents: SCSI-3 FCP, SCSI-3 SAM, SCSI-3 SBP, SCSI-3 SSC, and SCSI-3 SPI. Chuck Brill seconded motion. John reminded those present that only U.S. domiciled organizations can vote on this motion. The motion passed 31:0. Gene Milligan took an action item to submit the approved project proposals.

11.3 Approval of the ISO Delegation

Gene Milligan moved that John Lohmeyer, Larry Lamers, and himself be authorized as the X3T10 delegation to the SC25 working group 4 meeting in Toronto. Ted Lappin seconded the motion. John reminded those present that only U.S. domiciled organizations can vote on this motion. The motion passed 32:0.

12. Liaison Reports

12.1 X3T11 Liaison Report [Cummings]

X3T11 met on February 8, 1995 with 76 attenders. Two member organizations were deleted (Batelle Labs., Triquint), and five added (Boeing, Cambex, McData, Prisa Networks, Quantum), bringing the membership of X3T11 to 57.

Four X3T11 Letter Ballots closed on the day before the Plenary. The ballot forwarding the Revised IPI-3 Disk draft for a First Public Review passed F35-O3-DNR16. The ballot forwarding the Revised IPI-3 Tape draft for a First Public Review passed F36-O2-DNR16. Both of these drafts will be further modified in light of the comments received. The ballot to withdraw project 782-D (HIPPI-IPI-3) passed F38-O00-DNR16. The ballot forwarding an SBCON Project proposal passed F28-O11-DNR15. As the membership prior to the Plenary was 54, all of these ballots met the 2/3rds rule.

A number of items of errata were discovered with X3.230-1994, FC-PH. The Technical Editor was actioned to create an Errata document, and a letter ballot was authorized.

There was a long and complex debate on the merits of performing a major change to the current FC-PH-2 draft (formerly FC-EP) in terms of the physical variants which are included. Before this could be considered, it was necessary to repeal the previously-agreed cutoff of technical scope of the document. This motion passed F30-

O07-A01-DNV19. The motion to remove the present 2 and 4 gigabaud shortwave laser variants, and to include longwave multimode laser variants @ 0.531, 1 and 2 gigabaud, shortwave laser variants without OFC @ 1,2 & 4 gigabaud, and a longwave LED variant @ 266 megabaud passed F35O-02-DNV20. The motion to reinstate the cutoff of technical scope then passed F32-O0-A0-DNV35.

During the above process, it was discovered that the multi-level priority scheme necessary to support some of the real-time applications, which had been part of the previously-agreed technical scope, had been inadvertently omitted from the current draft. Discussions on the best method of incorporating the feature were scheduled to occur subsequent to the Plenary.

It was agreed that all future electrical variants would be defined such that any required equalization be located external to the equipment bulkhead.

There was also a discussion on the best location for the FC services definitions. No conclusion was reached, but the relevant Technical Editors were asked to make a decision based on the stated desire for both timely publication and continued and expedited work on management services.

X3T11 Letter Ballots were authorized on the FC-FG and FC-PH-2 projects, contingent on the receipt of acceptable drafts from the Technical Editors

A revision of a draft change control procedure was presented for comment, with the intention of a vote being taken at the next Plenary.

12.2 SFF Industry Group [Allan]

Dal Allan reported that SFF will be meeting tomorrow. The ATAPI will be getting a letter ballot for forwarding to X3T10. The letter ballot on the original ATAPI passed. A letter ballot regarding SFF handling system issues also passed.

Dal described work on several connector issues being processed by SFF.

12.3 IEEE P1394 [Marazas]

Jerry Marazas provided the following electronic report:

By vote of the P1394 Working Group, authorization was granted to form a Ballot Response Committee (BRC) for the purpose of acting on behalf of the Working Group in order to process comments received during the first stage public review conducted relative to the P1394 draft standard. This processing consists of generating a response letter to the comments submitter indicating disposition determined by the BRC to be appropriate. As necessary, the BRC shall modify the draft standard (7.1v1) in order to incorporate the comments disposition. The BRC has determined that sufficient change to the draft standard results from the comments processing process that it is necessary to issue a new version of the document. The goal of BRC is to have generated the new version of the draft standard by the end of April 1995. Upon completion of its work effort, the BRC intends to submit the new draft along with accompanying disposition letter to the IEEE for their administration of a second public review of P1394.

Thus far there have been two sets of BRC meetings. The first BRC meeting was hosted in Boca Raton on February 14, 15, and 16, 1995. The second BRC meeting took place here in Newport Beach during X3T10 week on March 6, 7, and 8, 1995. Two remaining BRC meetings have been scheduled with announcements posted to the P1394, X3T10, and P1394 Trade Association reflectors. The next BRC meeting is a bus management focus session hosted at the Sony Corp. Zanker Road facility on March 16 and 17, 1995. The intended final BRC meeting is scheduled for April 12, 13, and 14 in Austin, Texas and hosted by Skipstone Corp.

12.4 IEEE P1285 Status [Pak]

IEEE P1285 is a standards group organized to define a new interface for "high-latency", non-volatile memory elements such as rotating media and solid state memory. The group is targeting configurations where storage elements are small enough to be attached directly to the motherboard. The goals are to provide support for scheduling of data transfers spanning large numbers of units and to represent the traditional secondary storage elements as an extension to the system's main memory (memory-mapped).

Issues of concurrency, latency, bandwidth, extensibility, scalability are being addressed. The increasing demand for deterministic data transfers by real-time applications is being examined. Support is to be provided for scheduling data transfers in a predetermined manner in order to support time dependent applications.

The major features of P1285 are identified below:

- o Control and data space is memory mapped using P1212
- o Two interface levels: Beta & Gamma
- o Beta Level: 32-bit optimized, master/slave
- o Gamma Level: 64-bit optimized, master
- o Byte addressable, true memory mapped disk architecture
- o Inherent spindle synchronization support
- o Isochronous support
- o Self-synchronous data transfer
- o Live insertion/removal
- o Motherboard direct attach
- o Scalability in performance and cost

IEEE P1285 Project Status

The collaboration with P1596 SCI continues to finishing up. Another short co-located meeting will be held on March 24. Martin Freeman made a presentation on P1285 to the P1394 Trade Association General Meeting in January. The P1285 isochronous mover capability and rate-based control feature have been added. The P1285 working group voted to forward the P1285 document to the IEEE for balloting, subject to editorial changes. The document to be forwarded to the IEEE is currently undergoing editorial review.

Upcoming Events

Future P1285 meetings are scheduled as follows:

- March 24 Co-located Meeting with IEEE 1596, Santa Clara University, Bannon Engineering Building, 12:15-1:30 PM.
- March 29 Liaison Meeting with NSIC, Santa Clara University time TBD.

Meetings are usually scheduled from 2:00-5:00 PM. Comments and/or questions should be forwarded to Martin Freeman, IEEE P1285 Chair, @(415)354-0329. His e-mail address is martin@savant.PRPA.Philips.COM.

12.5 PCMCIA Report [McLean]

Pete McLean reported that the new revision of the standard was approved at the February meeting. It will be called PC-card Standard, February 1995. The document should be at the printer. Pete also reported on some of the current work being undertaken in the PCMCIA group.

12.6 AIIM C21 [Podio]

Fernando owes X3T10 a document. Stephen Heil will remind Fernando of his commitment.

13. Review of Action Items

- 62) Larry Lamers will generate the SCSI-2 responses document for distribution to ISO via the IR.
- 63) Larry Lamers will prepare a final ISO version of SCSI-2.
- 71) John Lohmeyer will forward the revised GPP to X3 for further processing.
- 74) John Lohmeyer will write a letter to Micropolis regarding the XOR command set and possible patent issues.
- 75) Steve Finch will prepare ATA-2 revision 3 based on the approved responses to letter ballot comments.
- 76) John Lohmeyer will forward ATA-2 revision 3 to X3 for further processing in first public review.
- 77) Larry Lamers will prepare SPI revision 15a.
- 78) John Lohmeyer will forward SPI 15a to X3 for further processing in second public review.
- 79) Gene Milligan will prepare revision 2 of 94-198 (the X3T10 Policies and Procedures document).
- 80) John Lohmeyer will forward 94-198r2 to X3 for review and additional processing.
- 81) Gene Milligan will submit project proposals for SC25 new work items to achieve ISO/IEC publication of the following X3T10 documents: SCSI-3 FCP, SCSI-3 SAM, SCSI-3 SBP, SCSI-3 SSC, and SCSI-3 SPI.
- 82) Larry Lamers will include the X3T11 change control procedure in the next X3T10 mailing.
- 83) John Lohmeyer took an action item to deal with IEEE regarding the lack of liaison from P1285 to X3T10 with respect to the formation of the ballot pool for P1285 (based on the Plenary discussion of this topic).
- 84) George Penokie will prepare a document (probably a technical report) describing the SPI fairness algorithm.
- 85) John Lohmeyer will forward SCSI-3 Fast-20 Rev 6 to X3 for first public review.

14. Meeting Schedule

The next plenary meeting of X3T10 will be May 11, 1995, in Harrisburg, PA, at the Sheraton Hotel (717-561-2800), hosted by AMP, Inc. The meeting will begin at 1:00 p.m. on Thursday.

The meeting list for the next plenary week is:

May '95 Meeting Map

Monday 5/8	9	10	11	12	1	2	3	4	5	6	7	8	
	+=====+												
	SPI futures working group											(30)	
	+=====+												
	XOR study grp											(20)	
	+-----+=====+												
	FC-AL Direct Attach Disk ad hoc											(20)	
	+-----+												
Tuesday 5/9	9	10	11	12	1	2	3	4	5	6	7	8	
	+=====+												
	X3T10. 1											(25)	
	+=====+												
	SCSI-3 WG											(40)	
	+-----+=====+												
	CAM-3 WG MMC Working Group											(40)	
	+=====+												
Wednesday 5/10	9	10	11	12	1	2	3	4	5	6	7	8	9
	+=====+												
	SCSI-3 WG												(45)
	+-----+=====+												
	System Issues ATA WG (ATA-3/ATAPI)											(40)	
	+-----+=====+												
	SFF Form Factor WG											(20)	
	+-----+												
Thursday 5/11	9	10	11	12	1	2	3	4	5	6	7	8	9
	+=====+												
	ATA WG X3T10 Plenary											(40/80)	
	+-----+=====+												
	SSC/SMC WG											(10)	
	+-----+												
	SFF/VHDCI WG											(40)	
	+-----+												
Friday 5/12	8	9	10	11	12								
	+-----+												
	SFF											(40)	
	+-----+												

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

Meeting Map Abbreviation Key:

- ATA: AT Attachment (a. k. a. IDE)
- ATAPI: ATA Packet Interface
- CAM: Common Access Method
- CAM-3: Next generation CAM for SCSI-3 (was called CAM-2)
- EL: Electrical
- Fast-20: Synchronous Data Transfer at 20 Megatransfers/second
- FC-AL: Fibre Channel - Arbitrated Loop (an X3T11 project)
- I/F: Interface
- LB: Letter Ballot

MMC: SCSI-3 Multimedia Commands (CD-ROM)
P1394: IEEE Project on High Performance Serial Bus (not an X3 activity)
PH: Physical (Connectors, Cables, Transceivers, etc.)
Plenary: Full Committee Meeting
RAB: RAID Advisory Board (not an X3 activity)
RAID: Redundant Array of Independent Devices
SCC: SCSI-3 Controller Commands (RAID)
SCSI: Small Computer System Interface
SFF: Small Form Factor Industry Group (not an X3 activity)
SG: Study Group
SMC: SCSI-3 Medium Changer Commands
SPI2: Second Generation SCSI-3 Parallel Interface
SSA: Serial Storage Interface
SSC: SCSI-3 Stream Commands (includes Tape)
SSP: Serial Storage Protocol (Protocol for SSA)
UIG: User Interest Group (not an X3 activity)
VHDCI Very High Density Cabled Interconnect
WG: Working Group (same as Ad Hoc Group)
X3T10: Lower Level Interfaces Technical Committee (was X3T9. 2)
X3T10. 1: SSA Task Group of X3T10 (was X3T9. 7)
XOR: Exclusive OR

Several other X3T10 events are also planned:

Event	Day/Date	Time	Location/contact
ATAPI Editing Meeting	F 3/17	9am	Irvine / Western Digital
MMC Working Group	W 3/29-30	9am	San Jose / Ron Roberts
ATA-3 Working Group	W 4/12-13	9am	Longmont / Pete McLean
ATAPI Working Group	F 4/14	9am	Longmont / Pete McLean
SPI Futures Working Group	T 4/11	9am	Denver / John Lohmeyer

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

Activity	Contact	Telephone/Email
ATA-2	Steve Finch	(714) 573-6808 5723283@mcimail.com
ATA-3 & ATAPI	Gene Milligan	(405) 324-3070 Gene_Milligan@notes.seagate.com
CAM	Bill Dallas	(603) 881-2508 dallas@wasted.enet.dec.com
SAM	Charles Monia	(508) 841-6757 monia@starch.enet.dec.com
SPI, SCSI-2, Fast-20, & SSA-PH	Larry Lamers	(408) 957-7817 lamers@aol.com
System Issues	Duncan Penman	(408) 730-2565 penman@netcom.com
SSP	John Scheible	(512) 823-8208 Scheible@vnet.ibm.com
FCP	Robert Snively	(415) 336-5332 Bob.Snively@eng.sun.com
GPP	Gary Stephens	(602) 321-1725 6363897@mcimail.com
SBP and MMC	Ron Roberts	(408) 432-4322 rkroberts@aol.com
SPC	Ralph Weber	(603) 881-1497 roweber@acm.org
SBC and SGC	Thomas Tewell	(415) 459-7978 thomas.tewell@seqadvtech.com
SSC	Edward Lappin	(303) 447-7718 tedl@exabyte.com
SMC	Erich Oetting	(303) 673-2178 Erich_Oetting@Stortek.com
SIP, SCC	George Penokie	(507) 253-5208 gop@rchvmp3.vnet.ibm.com
Other Activities	John Lohmeyer	(719) 573-3362 john.lohmeyer@hmpd.com

The long-term X3T10 meeting week schedule is:

Date	Location	Host/Comments
May 7-12, 1995	Harrisburg, PA	AMP
Jul 9-14, 1995	Colorado Springs, CO	Symbios Logic
Sep 10-15, 1995	Manchester, NH	Digital
Nov 5-10, 1995	Palm Springs, CA	Western Digital
Jan 8-12, 1996	*Dallas, TX	*Quantum
Mar 11-15, 1996	Newport Beach, CA	QLogic
May 6-10, 1996	*Atlanta, GA	*Adaptec
or:	*Harrisburg, PA	*AMP
Jul 15-19, 1996	*Colorado Springs, CO	*Symbios Logic
Sep 9-13, 1996	*Northeast USA	*Digital
Nov 4-8, 1996	Palm Springs, CA	Western Digital

* tentative

Larry Lamers moved that the X3T10 guest room charge cap be raised to \$125, including room costs, taxes, and parking. Charles Monia seconded the motion. The motion passed 26:1.

John described an offer from Joe Molina to undertake arranging contracts with hotels services for X3T10. The group discussed the matter but decided not to accept Joe's offer at this time.

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 hocs should strive to achieve consensus prior to bringing issues to X3T10.

Bob Snively moved and Ron Roberts seconded that X3T10 authorize the X3T10-related meetings and events in the list above. The motion passed unanimously.

15. Adjournment

The meeting was adjourned at 7:10 p.m. on Thursday March 9, 1995.

Meeting Attendees -- Enclosure (1)

Name	S	Organization	Electronic Mail Address
Mr. Rick Heidick	A	3M Company	usmmm54s@ibmmail.com
Mr. Norm Harris	P	Adaptec, Inc.	nharris@eng.adaptec.com
Mr. Lawrence J. Lamers	A#	Adaptec, Inc.	ljlammers@aol.com
Mr. Ron Apt	O	Advanced Micro Devices	
Mr. Edward Fong	P	Amdahl Corp.	esf10@amail.amdahl.com
Mr. Charles Brill	P	AMP, Inc.	cebrill@amp.com
Mr. Michael Wingard	P	Amphenol Interconnect	
Mr. Jan V. Dedek	P	Ancot Corp.	dedek@ancot.com
Mr. Ron Roberts	A	Apple Computer	rkroberts@aol.com
Mr. Dennis R. Haynes	P	Burr-Brown Corp.	haynes_dennis@bbrown.com
Mr. Clifford E. Strang Jr.	P	BusLogic	skip@buslogic.com
Mr. Ian Morrell	P	Circuit Assembly Corp.	crctassmbl@aol.com
Mr. Joe Chen	P	Cirrus Logic Inc.	chen@cirrus.com
Mr. Edward Haske	P	CMD Technology	
Mr. Peter Johansson	P	Congruent Software, Inc.	pjohansson@aol.com
Mr. Michael Alexenko	A#	Conner Peripherals	Mike.Alexenko@conner.com
Mr. Charles Monia	P	Digital Equipment Corp.	monia@shr.dec.com
Dr. William Ham	A#	Digital Equipment Corp.	ham@subsys.enet.dec.com
Mr. William Dallas	A#	Digital Equipment Corp.	dallas@wasted.enet.dec.com
Mr. Dave Race	O	Distributed Processing Tech.	Treadway@dpt.com
Mr. Robert Reiseh	O	Eastman Kodak Co.	
Mr. I. Dal Allan	P	ENDL	2501752@mci mail.com
Mr. Kenneth J. Hallam	A	ENDL	3450626@mci mail.com
Mr. Ralph O. Weber	A#	ENDL Associate	roweber@acm.com
Mr. Edward Lappin	P	Exabyte Corp.	tedl@exabyte.com
Mr. Eric Yen	V	Foxconn	
Mr. Mike Chenery	A#	Fujitsu	mchenery@fcpa.fujitsu.com
Mr. Robert Liu	P	Fujitsu Computer Products, Am	74503.1610@compuserve.com
Mr. Jeff Epstein	A	Future Domain Corp.	jeffe@fdc.mhs.compuserve.com
Mr. J. R. Sims	A#	Hewlett Packard Co.	robsims@depeche.lvld.hp.com
Mr. Pat Edsall	O	Hewlett Packard Co.	edsall@hpdmd48.boi.hp.com
Ms. Nancy Cheng	A#	Hitachi Computer Products	n_cheng@hitachi.com
Mr. Francesco Liburdi	V	Hollingsworth	
Mr. Thomas J. Kulesza	A	Honda Connectors	
Mr. George Penokie	P	IBM Corp.	gop@rchvmp3.vnet.ibm.com
Mr. Duncan Penman	P	IIX Consulting	penman@netcom.com
Mr. Geoffrey Barton	P	Iomega Corp.	glbarton@iomega.com
Mr. Pat Lavarre	V	Iomega Corp.	
Mr. Dean Wallace	P	Linfinit Micro	
Mr. Ezra Alcudia	A	Maxoptix Corp.	
Mr. Pete McLean	P	Maxtor Corp.	pete_mclean@maxtor.com
Mr. Bob Masterson	P	Method Electronics, Inc.	rwmast@aol.com

Mr. Peter Brown	P	Oak Technology, Inc.	brown@corp.oaktech.com
Mr. Stephen F. Heil	O	Panasonic Technologies, Inc	sfh@research.panasonic.com
Mr. Skip Jones	P	QLogic Corp.	sk_jones@qlc.com
Mr. James McGrath	P	Quantum Corp.	JMCGRATH@QNTM.COM
Mr. Edward A. Gardner	A	Quantum Corp.	gardner@acm.org
Mr. John F. Fobel	O	Rancho Technology, Inc.	
Mr. Ben Mattox	V	Robinson Nugent, Inc.	
Mr. Hank Davenport	V	Samsung Electronics	72102.1773@compuserve.com
Mr. Gene Milligan	P	Seagate Technology	Gene_Milligan@notes.seagate.com
Mr. Stephen G. Finch	P	Silicon Systems, Inc.	5723283@mcimail.com
Mr. Erich Oetting	P	Storage Technology Corp.	Erich_Oetting@Stortek.com
Mr. Robert N. Snively Co	P	Sun Microsystems Computer	bob.snively@eng.sun.com
Mr. John Lohmeyer	P	Symbios Logic Inc.	john.lohmeyer@hmpd.com
Mr. Patrick Mercer	P	SyQuest Technology, Inc.	patrick.mercer@syquest.com
Mr. Pete Tobias	A	Tandem Computers	tobias_pete@tandem.com
Mr. Brett Philip	V	Temp-Flex Cable Inc.	
Mr. Harvey Waltersdorf	P	Thomas & Betts	
Mr. Yasuichi Hashimoto	O	Toshiba America	
Mr. Peter Dougherty	P	UNISYS Corporation	peter.dougherty@mv-oc.unisys.com
Mr. Paul D. Aloisi	P	Unitrode Integrated Circuits	Aloisi@ui.cc.com
Mr. Jeff Stai	P	Western Digital Corporation	stai@dt.wdc.com
Mr. Tom Hanan	A#	Western Digital Corporation	hanan_t@a1.wdc.com
Mr. Devon Worrell	A#	Western Digital Corporation	worrell@dt.wdc.com
Mr. Doug Piper	P	Woven Electronics	WOVEN ELECTRONICS / MCI ID: 549-9900

66 People Present

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

Minutes of X3T10 Plenary Meeting #8 in Newport Beach, CA

X3T10/95-171r1

Mar 17, 1995 - X3T10 Attendance Database - Enclosure (2)

Mr. Alan R. Olson (P)
3M Company
Bldg. 236-GN-06
3M Center
St. Paul, MN 55144-1000
Phone: (612) 736-4821
FAX: (612) 737-2801
Email: usmmlwcb@ibmmail.com

Mr. Richard Kalish (A)
Adaptec, Inc.
691 S. Milpitas Blvd. MS50-4
Milpitas, CA 95035
Phone: (408) 957-7169
FAX: (408) 957-7295
Email: rkalish@aol.com

Mr. David Wang (P)
Advanced Micro Devices
One AMD Place MS 59
P.O. Box 3453
Sunnyvale, CA 94088-3453
Phone: (408) 749-4916
FAX: (408) 774-8450
Email: david.wang@amd.com

Mr. Edward Fong (P)
Amdahl Corp.
1250 E. Arques Ave. MS 193
Sunnyvale, CA 94088-3470
Phone: (408) 944-3780
FAX: (408) 943-6620
Email: esf10@amail.amdahl.com

Mr. Charles Brill (P)
AMP, Inc.
Mail Stop 210-20
P. O. Box 3608
Harrisburg, PA 17105
Phone: (717) 558-6198
FAX: (717) 558-6179
Email: cebrill@amp.com

Mr. Bill Marble (A)
Amphenol Interconnect
20 Valley St.
Endicott, NY 13760
Phone: (607) 786-4236
FAX: (607) 786-4311
Email:

Mr. Gary Porter (A)
Ancot Corp.
115 Constitution Dr.
Menlo Park, CA 94025
Phone: (415) 322-5322
FAX: (415) 322-0455
Email: garyp@ancot.com

Mr. Ron Roberts (A)
Apple Computer
3535 Monroe St. MS:69-G
Santa Clara, CA 95051
Phone: (916) 677-5714
FAX: (916) 677-1218
Email: rkroberts@aol.com

Mr. Christian Mollard (O)
BULL S.A.
Rue Jean Jaures
78340 Les cPayes-Sous-Bois
FRANCE
Phone: 33(1)30807128
FAX: 33(1)30807077
Email:

Mr. Clifford E. Strang Jr. (P)
BusLogic
4151 Burton Dr.
Santa Clara, CA 95054
Phone: (408) 970-1432
FAX: (408) 970-0941
Email: skip@buslogic.com

Mr. Richard Wagner (O)
Cable Design Technologies
28 Sword Street
Auburn, MA 01501
Phone: (508) 791-3161
FAX: (508) 798-8353

Mr. Rick Heidick (A)
3M Company
6801 River Place Blvd.
Austin, TX 78726-9000
Phone: (512) 984-6832
FAX: (512) 984-2184
Email: usmmm54s@ibmmail.com

Mr. Lawrence J. Lamers (A#)
Adaptec, Inc.
691 S. Milpitas Blvd.
Milpitas, CA 95035
Phone: (408) 957-7817
FAX: (408) 957-7193
Email: ljlamers@aol.com

Mr. Ron Apt (O)
Advanced Micro Devices
One AMD Place MS 59
P.O. Box 3453
Sunnyvale, CA 94088-3453
Phone: (408) 749-2578
FAX: (408) 774-8449
Email:

Mr. Peter Haas (A)
Amdahl Corp.
1250 E Arques Avenue, MS 312
Sunnyvale, CA 94088-3470
Phone: (408) 944-5119
FAX: (408) 733-2377
Email:

Mr. Bob Whiteman (A)
AMP, Inc.
P.O. Box 3608 M/S 26-17
Harrisburg, PA 17105
Phone: (717) 780-7481
FAX: (717) 780-7375
Email: whiteman@cup.portal.com

Mr. Carl Booth (O)
Amphenol/Spectra-Strip
720 Sherman Ave.
Hamden, CT 06514
Phone: (203) 287-7455
FAX: (203) 281-5872
Email:

Mr. Dennis Pak (P)
Apple Computer
3535 Monroe St., MS 69-G
Santa Clara, CA 95051
Phone: (408) 974-4874
FAX: (408) 974-2898
Email: dennis.pak@applelink.apple.com

Mr. Joe Lawlor (P)
AT&T
1100 E. Warrenville Rd.
Rm 2A-429
Naperville, IL 60566
Phone: (708) 979-0133
FAX: (708) 979-0291
Email:

Mr. Dennis R. Haynes (P)
Burr-Brown Corp.
Mail Stop #122
P.O. Box 11400
Tucson, AZ 85734
Phone: (602) 746-7262
FAX: (602) 746-7401
Email: haynes_dennis@bbrown.com

Mr. Steven Ramberg (A)
BusLogic
4151 Burton Dr.
Santa Clara, CA 95054
Phone: (408) 492-9090
FAX: (408) 490-0941
Email: stever@buslogic.com

Mr. Gerry Johnsen (P)
Ciprico Inc.
2800 Campus Dr. Suite 60
Plymouth, MN 55441
Phone: (612) 551-4000
FAX: (612) 551-4002

Mr. Norm Harris (P)
Adaptec, Inc.
691 S. Milpitas Blvd.
Milpitas, CA 95035
Phone: (408) 945-8600 x2230
FAX: (408) 957-7145
Email: nharris@eng.adaptec.com

Mr. Erik Falk (O)
ADIC
POB 2996
Redmond, WA 98073-2996
Phone: (206) 881-8004
FAX: (206) 881-2296
Email:

Mr. Fernando L. Podio (L)
AIIM C21 Chair
NIST
Bldg. 225, Room A61
Gaithersburg, MD 20899
Phone: (301) 975-2947
FAX: (301) 216-1369
Email: fernando@pegasus.ncsl.nist.gov

Mr. Jerrie L. Allen (O)
Amdahl Corp.
1250 E Arques Ave. MS 312
POB 3470
Sunnyvale, CA 94088-3470
Phone: (408) 944-3712
FAX: (408) 943-6620
Email: Jerrie.Allen@ccmvs.amdahl.com

Mr. Michael Wingard (P)
Amphenol Interconnect
20 Valley St.
Endicott, NY 13760
Phone: (607) 786-4241
FAX: (607) 786-4311
Email:

Mr. Jan V. Dedek (P)
Ancot Corp.
115 Constitution Dr.
Menlo Park, CA 94025
Phone: (415) 322-5322
FAX: (415) 322-0455
Email: dedek@ancot.com

Mr. Mike Eneboe (A#)
Apple Computer
1 Infinite Loop, MS:60-IO
Cupertino, CA 95014
Phone: (408) 974-0615
FAX: (408) 985-6615
Email:

Mr. Stephen Martin (O)
Berk-Tek, Inc.
132 White Oak Road
New Holland, PA 17557
Phone: (717) 354-6200
FAX: (717) 354-7944
Email:

Mr. Joe Stoupa (A)
Burr-Brown Corp.
6730 S. Tucson Blvd.
Tucson, AZ 85706
Phone: (602) 746-1111
FAX: (602) 746-7401
Email: Stoupa_Joe@bbrown.com

Mr. Bob Gannon (O)
C&M Corp.
PO Box 348
51 South Walnut St.
Wauregan, CT 06387
Phone: (203) 774-4812
FAX: (203) 774-7330
Email: bobg848740@aol.com

Mr. Kurt Witte (A)
Ciprico Inc.
2800 Campus Drive
Suite 60
Plymouth, MN 55441
Phone: (612) 551-4069

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Email:

Mr. Ian Morrell (P)
Circuit Assembly Corp.
18 Thomas St.
Irvine, CA 92718-2703
Phone: (714) 855-7887
FAX: (714) 855-4298
Email: crctassmbl@aol.com

Mr. John Geldman (A#)
Cirrus Logic Inc.
3100 W. Warren Ave.
Fremont, CA 94538
Phone: (510) 249-4953
FAX: (510) 249-4940
Email: johng@cirrus.com

Mr. Edward Haske (P)
CMD Technology
1 Vanderbilt
Irvine, CA 92718
Phone: (714) 454-0800
FAX: (714) 455-1656
Email:

Mr. William C. Rinehuls (XO)
Cole-Fordyce, International
OMC Chair
8457 Rushing Creek Court
Springfield, VA 22153-8015
Phone: (703) 921-9680
FAX: (703) 921-2973
Email: rinehuls@access.digex.net

Mr. Michael Bryan (P)
Conner Peripherals
2400 Trade Centre
Longmont, CO 80503
Phone: (303) 682-8407
FAX: (303) 682-8787
Email: Mike.Bryan@conner.com

Mr. Timothy Feldman (A)
Conner Peripherals
2400 Trade Centre
Longmont, CO 80503
Phone: (303) 682-8329
FAX: (303) 682-8787
Email: Tim.Feldman@conner.com

ED_CARMONA+AENG+ASAN_JOSE%CONNER@MCIMAIL.COM

Mr. Doug Pickford (O)
Conner Peripherals
3061 Zanker Rd. MS 5302
San Jose, CA 95134
Phone: (408) 456-4015
FAX: (408) 456-4330
Email:
DOUGLAS_PICKFORD+AENG+ASAN_JOSE%CONNER@MCIMAIL.COM

Mr. Louis Grantham (P)
Dallas Semiconductor
4401 S. Beltwood Pkwy
Dallas, TX 75244-3292
Phone: (214) 450-8110
FAX: (214) 450-3715
Email: grantham@dalsemi.com

Mr. William Dallas (A#)
Digital Equipment Corp.
ZK03-3/T79
110 Spit Brook Road
Nashua, NH 03062-2698
Phone: (603) 881-2508
FAX: (603) 881-2257
Email: dallas@wasted.enet.dec.com

Mr. Matt Giovanetti (T)
Digital Equipment Corp.
SHR1-3/O13
333 South Street
Shrewsbury, MA 01545
Phone: (508) 841-6422
FAX: (508) 841-6410
Email: giovanetti@leds.enet.dec.com

Mr. James D. Converse (XO)

Email: gerry@ciprico.com

Mr. Dennis Lang (A)
Circuit Assembly Corp.
18 Thomas St.
Irvine, CA 92718-2703
Phone: (714) 855-7887
FAX: (714) 855-4298
Email: crctassmbl@aol.com

Mr. Nicos Syrimis (A)
Cirrus Logic Inc.
3100 W. Fremont Ave.
Fremont, CA 94538
Phone: (510) 226-2153
FAX: (510) 226-2170
Email: nicos@cirrus.com

Mr. George Su (A#)
CMD Technology
1 Vanderbilt
Irvine, CA 92718
Phone: (714) 454-0800
FAX: (714) 455-1656
Email: gsu@cmd.com

Mr. Bill Galloway (O)
Compaq Computer Corp.
P.O. Box 692000 M090504
Houston, TX 77269-2000
Phone: (713) 374-6732
FAX: (713) 374-0514
Email: billg@bangate.compaq.com

Mr. Michael Alexenko (A#)
Conner Peripherals
2400 Trade Centre
Longmont, CO 80503
Phone: (303) 682-8378
FAX: (303) 682-8787
Email: Mike.Alexenko@conner.com

Mr. Joseph Wach (A)
Conner Peripherals
2400 Trade Centre
Longmont, CO 80503
Phone: (303) 682-8387
FAX: (303) 682-8787
Email: Joe.Wach@conner.com

Mr. Ken Smith (O)
Conner Peripherals
3061 Zanker Rd. MS 5302
San Jose, CA 95134
Phone: (408) 456-4088
FAX: (408) 456-3390
Email: Ken.Smith@conner.com

Mr. Michael Smith (A)
Dallas Semiconductor
4401 S. Beltwood Pkwy
Dallas, TX 75244
Phone: (214) 450-0457
FAX: (214) 450-3715
Email: msmith@dalsemi.com

Mr. Douglas Hagerman (A#)
Digital Equipment Corp.
SHR3-2/W3
334 South Street
Shrewsbury, MA 01545
Phone: (508) 841-2145
FAX: (508) 841-6100
Email: hagerman@starch.enet.dec.com

Mr. Dave Race (O)
Distributed Processing Tech.
140 Candace Dr.
Maitland, FL 32751
Phone: (407) 830-5522
FAX: (407) 260-5366
Email: Treadway@dpt.com

Mr. Robert Reiseh (O)

FAX: (612) 551-4002

Email:

Mr. Joe Chen (P)
Cirrus Logic Inc.
3100 W. Warren Ave.
Fremont, CA 94538
Phone: (510) 226-2101
FAX: (510) 226-2170
Email: chen@cirrus.com

Mr. Dave Weber (A)
Cirrus Logic Inc.
3100 W. Warren Ave.
Fremont, CA 94538
Phone: (510) 226-2367
FAX: (510) 226-2170
Email: davew@cirrus.com

Mr. Roger Wang (A)
CMD Technology
1 Vanderbilt
Irvine, CA 92718
Phone: (714) 454-0800
FAX: (714) 455-1656
Email:

Mr. Peter Johansson (P)
Congruent Software, Inc.
3998 Whittle Ave.
Oakland, CA 94602
Phone: (510) 531-5472
FAX: (510) 531-2942
Email: pjohansson@aol.com

Mr. Steven A. Anderson (A)
Conner Peripherals
2400 Trade Centre
Longmont, CO 80503
Phone: (303) 682-____
FAX: (303) 682-____
Email:

Mr. Ed Carmona (O)
Conner Peripherals
3061 Zanker Rd.
San Jose, CA 95134
Phone: (408) 456-4082
FAX: (408) 456-3390
Email:

Ms. Adrienne Turenne (A#)
Conner Tape
1650 Sunflower Ave.
Costa Mesa, CA 92646
Phone: (714) 966-4759
FAX:
Email:

Mr. Charles Monia (P)
Digital Equipment Corp.
SHR3-2/W04
334 South Street
Shrewsbury, MA 01545
Phone: (508) 841-6757
FAX: (508) 841-6100
Email: monia@shr.dec.com

Dr. William Ham (A#)
Digital Equipment Corp.
SHR3-2/W04
334 South Street
Shrewsbury, MA 01545
Phone: (508) 841-2629
FAX: (508) 841-5266
Email: ham@subsys.enet.dec.com

Mr. Tom Treadway (O)
Distributed Processing Tech.
140 Candace Dr.
Maitland, FL 32751
Phone: (407) 830-5522
FAX: (407) 260-5366
Email: Treadway@dpt.com

Mr. I. Dal Allan (P)

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Eastman Kodak Co.
Corp. Standards X3 Chair
343 State Street
Rochester, NY 14650
Phone: (716) 781-9091
FAX: (716) 724-9023
Email: jdc@kodak.com

Eastman Kodak Co.
460 Buffalo Road
Rochester, NY 14652-3816
Phone: (716) 588-0573
FAX: (716) 588-2624
Email:

ENDL
14426 Black Walnut Ct.
Saratoga, CA 95070
Phone: (408) 867-6630
FAX: (408) 867-2115
Email: 2501752@mcimail.com

Mr. Kenneth J. Hallam (A)
ENDL
29112 Country Hills Rd.
San Juan Capistrano, CA 92675
Phone: (714) 364-9626
FAX: (714) 364-3271
Email: 3450626@mcimail.com

Mr. Ralph O. Weber (A#)
ENDL Associate
13 Century Road
Nashua, NH 03060-1187
Phone: (603) 883-9274
FAX: (603) 594-0647
Email: roweber@acm.com

Mr. Edward Lappin (P)
Exabyte Corp.
Mail Stop 7W1
1685 38th Street
Boulder, CO 80301
Phone: (303) 447-7718
FAX: (303) 447-7793
Email: tedl@exabyte.com

Mr. David Andreatta (A)
Exabyte Corp.
Mail Stop 752
1685 38th Street
Boulder, CO 80301
Phone: (303) 447-7966
FAX: (303) 442-5146
Email:

Mr. Nick Ladas (O)
Foxconn
930 W. Maude
Sunnyvale, CA
Phone: (714) 256-4080
FAX: (714) 256-2068
Email:

Mr. Gary R. Stephens (P)
FSI Consulting Services
1825 N. Norton
Tucson, AZ 85719
Phone: (602) 321-1725
FAX: (602) 321-1725
Email: 6363897@mcimail.com

Mr. Mike Chenery (A#)
Fujitsu
2904 Orchard Pkwy.
San Jose, CA 95134-2009
Phone: (408) 894-3627
FAX: (408) 894-3904
Email: mchenery@fcpa.fujitsu.com

Mr. Robert Liu (P)
Fujitsu Computer Products, Am
2904 Orchard Pkwy.
San Jose, CA 95134
Phone: (408) 894-3790
FAX: (408) 894-3748
Email: 74503.1610@compuserve.com

Mr. Kevin R. Pokorney (A)
Fujitsu Computer Products, Am
2402 Clover Basin Drive
Longmont, CO 80503
Phone: (303) 682-6649
FAX: (303) 682-6401
Email: pokorney@intellistor.com

Mr. Joel Urban (A#)
Fujitsu Microelectronics/ECD
3545 North First Street
San Jose, CA 95134
Phone: (408) 922-8928
FAX: (408) 428-0640
Email:

Mr. Steve Caron (O)
Furukawa Electric
200 Westpark Dr. Suite 150
Peachtree City, GA 30269
Phone: (404) 487-1234
FAX: (404) 487-9910
Email:

Mr. Mark Woithe (P)
Future Domain Corp.
2801 McGaw Ave.
Irvine, CA 92714
Phone: (714) 253-0482
FAX: (714) 253-0913
Email: markw@fdc.mhs.compuserve.com

Mr. Kevin Calvert (A#)
Future Domain Corp.
2801 McGaw Ave.
Irvine, CA 92714
Phone: (714) 253-0522
FAX: (714) 253-0913
Email: kevinc@fdc.mhs.compuserve.com

Mr. Jeff Epstein (A)
Future Domain Corp.
2801 McGaw Ave.
Irvine, CA 92714
Phone: (714) 253-0546
FAX: (714) 253-0913
Email: jeffe@fdc.mhs.compuserve.com

Mr. Ray Kallio (O)
Harbor Electronics
650 Danbury Road
Ridgefield, CT 06877
Phone: (203) 438-9625
FAX: (203) 431-3001
Email:

Mr. Jeffrey L. Williams (P)
Hewlett Packard Co.
P.O. Box 39
Boise, ID 83707
Phone: (208) 396-5030
FAX: (208) 396-6858
Email: jlwhpdm48.boi.hp.com

Mr. Kurt Chan (A)
Hewlett Packard Co.
8000 Foothills Blvd MS 5601
Roseville, CA 95747-5601
Phone: (916) 785-5621
FAX: (916) 785-2875
Email: kc@core.rose.hp.com

Mr. William Clemmey (A#)
Hewlett Packard Co.
300 Apollo Dr.
Chelmsford, MA 01824
MS CHR-02-DW
Phone: (508) 436-5356
FAX: (508) 436-5127
Email: clemmey@apollo.hp.com

Mr. J. R. Sims (A#)
Hewlett Packard Co.
800 S. Taft Ave.
Loveland, CO 80537
Phone: (303) 635-6774
FAX: (303) 635-6610
Email: robsims@depeche.lvld.hp.com

Mr. Donald C. Loughry (XO)
Hewlett Packard Co.
M/S 43UC X3 Vice Chair
19420 Homestead Rd.
Cupertino, CA 95014
Phone: (408) 447-2454
FAX: (408) 447-2247
Email: don_loughry@hp6600.desk.hp.com

Mr. Pat Edsall (O)
Hewlett Packard Co.
11413 Chinden Blvd.
Boise, ID 83714
Phone: (208) 396-4804
FAX: (208) 396-6858
Email: edsall@hpdmd48.boi.hp.com

Mr. Peter Stevens (O)
Hirose Electric (USA), Inc.
2688 Westhills Ct.
Simi Valley, CA 93065
Phone: (805) 522-7958
FAX: (805) 522-3217
Email: 4733436@mcimail.com

Mr. Zane Daggett (O)
Hitachi Cable Manchester, Inc
900 Holt Ave.
Manchester, NH 03109
Phone: (603) 669-4347 x236
FAX: (603) 669-9621
Email: 74354.2576@compuserve.com

Mr. Paul Boulay (A#)
Hitachi Computer Products
3101 Tasman Drive
Santa Clara, CA 95054
Phone: (408) 986-9770 x205
FAX: (408) 986-1821
Email: p_boulay@hitachi.com

Ms. Nancy Cheng (A#)
Hitachi Computer Products
3101 Tasman Dr.
Santa Clara, CA 94054
Phone: (408) 986-9770
FAX:
Email: n_cheng@hitachi.com

Mr. S. Nadershahi (P)
Hitachi Micro Systems, Inc.
179 Tasman Dr.
San Jose, CA 95134
Phone: (408) 456-2006
FAX: (408) 433-0223
Email: mnadersh@hitachi.com

Mr. Danny Yeung (A)
Hitachi Micro Systems, Inc.
179 East Tasman Dr.
San Jose, CA 95134
Phone: (408) 922-4144
FAX: (408) 954-8507
Email:

Mr. Motoyasu Tsunoda (O)
Hitachi Micro Systems, Inc.
179 East Tasman Drive
San Jose, CA 95134
Phone: (408) 922-4142
FAX: (408) 433-0223

Mr. David McPadden (P)
Honda Connectors
960 Corporate Woods Parkway
Vernon Hills, IL 60061
Phone: (708) 913-9566
FAX: (708) 913-9587

Mr. Thomas J. Kulesza (A)
Honda Connectors
960 Corporate Woods Parkway
Vernon Hill, IL 60061
Phone: (708) 913-9566
FAX: (708) 913-9587

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Email: mtsunoda@hmsi.hitachi.com

Mr. George Penokie (P)
IBM Corp.
2B7/114-2
37st Highway 52 N.
Rochester, MN 55901-7829
Phone: (507) 253-5208
FAX: (507) 253-2432
Email: gop@rchvmp3.vnet.ibm.com

Mr. Giles Frazier (O)
IBM Corp.
11400 Burnet Rd.
Austin, TX 78758
Phone: (512) 838-1802
FAX: (512) 838-1852
Email: gfrazier@ausvm6.vnet.ibm.com

Mr. David Lawson (P)
Interphase Corp.
13800 Senlac
Dallas, TX 75234-8823
Phone: (214) 919-9000
FAX: (214) 919-9200
Email: lawson@iphase.com

Mr. Gary Brandvold (A)
Omega Corp.
1821 W. 4000 S.
Roy, Utah 84067
Phone: (801) 778-1000
FAX: (801) 778-4667
Email: gdbrandv@iomega.com

Ms. Jeanne T. Martin (O)
Lawrence Livermore Nat'l Lab
L-300
Lawrence Livermore Nat'l Lab
Livermore, CA 94550-9900
Phone: (510) 422-3753
FAX: (510) 423-8704
Email: jtm@llnl.gov

Mr. Shufan Chan (A)
Linfinity Micro
11861 Western Ave.
Garden Grove, CA 92641
Phone: (714) 898-8121
FAX: (714) 893-2570
Email:

Mr. Ron Crouch (O)
Madison Cable Corp.
125 Goddard Memorial Drive
Worcester, MA 01603
Phone: (508) 752-2884
FAX: (508) 752-4230
Email:

Mr. Pete McLean (P)
Maxtor Corp.
2190 Miller Dr.
Longmont, CO 80501
Phone: (303) 678-2149
FAX: (303) 678-2165
Email: pete_mclean@maxtor.com

Mr. Bob Masterson (P)
Methode Electronics, Inc.
11595A Decatur St.
Westminster, CO 80234
Phone: (303) 465-3940
FAX: (303) 465-3604
Email: rwmast@aol.com

Mr. Michael Aarons (O)
Mitsumi (Alpha Peripherals)
16842 Von Karman Ave.
Suite 100
Irvine, CA 92714
Phone: (714) 263-6414
FAX: (714) 263-6416
Email: m_aarons@cerf.net

Mr. Robbie Shergill (P)
National Semiconductor

Email:

Mr. Dan Colegrove (A#)
IBM Corp.
Dept 292
3605 Highway 52 N.
Rochester, MN 55901
Phone: (507) 286-5558
FAX: (507) 286-5089
Email: colegrove@vnet.ibm.com

Dr. Gerald Marazas (A#)
IBM PC Company
Mail Stop 5432
1000 NW 51st Street
Boca Raton, FL 33432
Phone: (407) 982-4423
FAX: (407) 982-0067
Email: marazas@bcrvmpc2.vnet.ibm.com

Mr. Varouj Der-Hacopian (A)
Interphase Corp.
13800 Senlac
Dallas, TX 75234-8823
Phone: (214) 919-9000
FAX: (214) 919-9200
Email: varouj@iphase.com

Mr. David H. Shaff (O)
JAE
2857 NE 26 Street
Ft. Lauderdale, FL 33305
Phone: (305) 563-3484
FAX: (305) 563-3507
Email:

Mr. Lansing Sloan (O)
Lawrence Livermore Nat'l Lab
7000 East Ave. MS:L-60
Livermore, CA 94550-9900
Phone: (510) 422-4356
FAX: (510) 423-8715
Email: ljsloan@llnl.gov

Mr. Robert Bellino (P)
Madison Cable Corp.
125 Goddard Memorial Dr.
Worcester, MA 01603
Phone: (508) 752-7320
FAX: (508) 752-4230
Email:

Ms. Donna Pope (P)
Maxoptix Corp.
2520 Junction Ave.
San Jose, CA 95134
Phone: (408) 954-9700 x315
FAX: (408) 954-9711
Email: 6471084@mcimail.com

Mr. LeRoy Leach (O)
Maxtor Corp.
2190 Miller Dr.
Longmont, CO 80501-6744
Phone: (303) 678-2828
FAX: (303) 678-2308
Email: leroy_leach@maxtor.com

Mr. John Cannon (A)
Methode Electronics, Inc.
7444 West Wilson Ave
Chicago, IL 60656
Phone: (303) 465-3940
FAX: (303) 465-3604
Email:

Mr. Joe Dambach (P)
Molex Inc.
2222 Wellington Court
Lisle, IL 60532
Phone: (708) 527-4546
FAX: (708) 969-1352
Email:

Mr. Simone Sadri (A)
National Semiconductor

Email:

Mr. John P. Scheible (A)
IBM Corp.
Bldg 815 MS 4051
11400 Burnett Rd.
Austin, TX 78758
Phone: (512) 823-8208
FAX: (512) 823-0758
Email: Scheible@vnet.ibm.com

Mr. Duncan Penman (P)
IIX Consulting
1045 Rubis Dr.
Sunnyvale, CA 94087
Phone: (408) 730-2565
FAX: (408) 730-5527
Email: penman@netcom.com

Mr. Geoffrey Barton (P)
Omega Corp.
1821 West 4000 South
Roy, UT 84067
Phone: (801) 778-3655
FAX: (801) 778-4667
Email: glbarton@iomega.com

Mr. David J. Fox (O)
JAE Electronics
142 Technology Dr. #100
Irvine, CA 92718-2401
Phone: (714) 753-2600
FAX: (714) 753-2699
Email:

Mr. Dean Wallace (P)
Linfinity Micro
11861 Western Ave.
Garden Grove, CA 92641
Phone: (714) 898-8121
FAX: (714) 893-2570
Email:

Mr. Chuck Grant (A)
Madison Cable Corp.
125 Goddard Memorial Drive
Worcester, MA 01603
Phone: (508) 752-7320
FAX: (508) 752-4230
Email:

Mr. Ezra Alcudia (A)
Maxoptix Corp.
2520 Junction Ave.
San Jose, CA 95134
Phone: (408) 954-9700 x207
FAX: (408) 954-9711
Email:

Mr. Andrew J. Toth (O)
Meritec
PO Box 8003
1359 West Jackson
Painsville, OH 44077
Phone: (216) 354-3148
FAX: (216) 354-0687
Email: ajt@po.cwru.edu

Mr. Chris Nieves (O)
Micropolis Corp.
21211 Nordhoff St.
Chatsworth, CA 91311
Phone: (818) 718-5163
FAX: (818) 718-5352
Email: Chris_Nieves@microp.com

Mr. Jay Neer (A)
Molex Inc.
Suite 224
902 Clint Moore Rd.
Boca Raton, FL 33487
Phone: (407) 241-9371
FAX: (407) 241-0338
Email: jneer@usa.molex.com

Mr. Clifford Carlson (O)
NCCOSC RDTE DIV 821

Minutes of X3T10 Plenary Meeting #8 in Newport Beach, CA

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M/S D3-970
P.O. Box 58090
Santa Clara, CA 95052
Phone: (408) 721-7959
FAX: (408) 721-7956
Email: rss@berlios.nsc.com

Mr. Robert J. Gallenberger (O)
NCCOSC RDTE DIV 821
53245 Millimeter St. Rm 2
San Diego, CA 92152-7309
Phone: (619) 553-3415
FAX: (619) 553-6391
Email: gallenbe@nosc.mil

Mr. Dan Kennedy (A)
NEC Technologies Inc.
1414 Mass Ave.
Boxborough, MA 01719
Phone: (508) 264-8000
FAX: (508) 264-8673
Email:

Mr. Mike Hetzel (A)
Oak Technology, Inc.
139 Kifer Ct.
Sunnyvale, CA 94086
Phone: (408) 737-0888 x257
FAX: (408) 737-3838
Email: mikeh@corp.oaktech.com

Mr. Thomas Steury (O)
Pacific Electro Data Inc.
14 Hughes St. B205
Irvine, CA 92718
Phone: (714) 770-3244
FAX: (714) 770-7281
Email:

Mr. Bill McFerrin (O)
Philips KMG
4725 ArrowsWest Dr.
Colorado Springs, CO 80907
Phone: (719) 593-4564
FAX: (719) 599-8713
Email: bill_mc@lms.com

Mr. Doug Prins (A#)
QLogic Corp.
3545 Harbor Blvd.
P.O. Box 6725
Costa Mesa, CA 92626
Phone: (714) 668-5040
FAX: (714) 688-6654
Email: d_prins@qlc.com

Mr. John F. Fobel (O)
Rancho Technology, Inc.
10783 Bell Court
Rancho Cucamonga, CA 91730
Phone: (909) 987-3966
FAX: (909) 989-2365
Email:

Mr. Gene Milligan (P)
Seagate Technology
MS OKM 251
P. O. Box 12313
Oklahoma City, OK 73157
Phone: (405) 324-3070
FAX: (405) 324-3794
Email: Gene_Milligan@notes.seagate.com

Mr. John Masiewicz (A#)
Seagate Technology
915 Disc Drive
Scotts Valley, CA 95066
Phone: (408) 439-2152
FAX: (408) 438-4846
Email:

Mr. Thomas 'Rick' Tewell (P)
Sequoia Advanced Tech., Inc.
55 Shaver Street, Suite 240
San Rafael, CA 94901
Phone: (415) 459-7978
FAX: (415) 459-7988
Email: thomas.tewell@seqadvtech.com

M/S D3-970
P.O. Box 58090
Santa Clara, CA 95052
Phone: (408) 721-7959
FAX: (408) 721-7956
Email: tsissc@tevm2.nsc.com

Mr. Chris D'Iorio (A#)
NEC Technologies
1255 Michael Dr.
Wood Dale, IL 60191
Phone: (708) 238-7799
FAX: (708) 860-7794
Email: CD-iorio@necotech.com

Mr. Peter Gossler (O)
NSM Jukebox GmbH
1M Tiergarten 20-30
Bingen
Phone: +49 6721 407-394
FAX: +49 6721 407-414
Email: 73503.3467@compuserve.com

Mr. Dan Davies (O)
Overland Data Inc.
8975 Balboa Ave.
San Diego, CA 92123-1599
Phone: (619) 571-5555 x213
FAX: (619) 571-3664
Email: ddavies@ctsnet.cts.com

Mr. Charles I. Yang (O)
Panasonic Industrial Co.
1600 McCandless Dr.
Milpitas, CA 95035
Phone: (408) 262-2200
FAX: (408) 946-3753
Email: picavccy@cup.portal.com

Mr. Skip Jones (P)
QLogic Corp.
3545 Harbor Blvd.
P.O. Box 6725
Costa Mesa, CA 92626
Phone: (714) 668-5058
FAX: (714) 688-5008
Email: sk_jones@qlc.com

Mr. James McGrath (P)
Quantum Corp.
500 McCarthy Blvd.
Milpitas, CA 95035
Phone: (408) 894-4504
FAX: (408) 894-6375
Email: JMCGRATH@QNTM.COM

Dr. Tetsuro Motoyama (O)
Ricoh Corporation
3001 Orchard Parkway
San Jose, CA 95134-2088
Phone: (408) 954-5445
FAX: (408) 432-8398
Email: motoyama@str.ricoh.com

Mr. Gerald Houlder (A)
Seagate Technology
MPS043
8001 E. Bloomington Freeway
Bloomington, MN 55420-1094
Phone: (612) 844-5869
FAX: (612) 844-5708
Email: Gerry_Houlder@notes.seagate.com

Mr. Edward Hoskins (O)
Seagate Technology
2655 Park Center Dr.
Simi Valley, CA 93065
Phone: (805) 582-3821
FAX: (805) 583-1493
Email: ed_hoskins@notes.seagate.com

Dr. Colin Whitby-Strevens (O)
SGS-Thomson/INMOS
1000, Aztec West
Almondsbury,
Bristol, BS12 4SQ UK
Phone: +44 454 611 500
FAX: +44 454 619 796

53245 Millimeter St. Rm 2
San Diego, CA 92152-7309
Phone: (619) 553-3421
FAX: (619) 553-6391
Email: wcarlson@nosc.mil

Mr. Bruce Anderson (P)
NEC Technologies Inc.
1414 Mass Ave.
Boxborough, MA 01719
Phone: (508) 635-6053
FAX: (508) 264-8787
Email: banderson@necotech.com

Mr. Peter Brown (P)
Oak Technology, Inc.
139 Kifer Ct.
Sunnyvale, CA 94086
Phone: (408) 737-0888
FAX: (408) 737-3838
Email: brown@corp.oaktech.com

Mr. Earl J. Perera (O)
P. E. Logic Corp.
22695 Old Canal Rd.
Yorba Linda, CA 92687
Phone: (714) 282-6188
FAX: (714) 282-6199
Email:

Mr. Stephen F. Heil (O)
Panasonic Technologies, Inc
2 Research Way, 3rd Floor
Princeton, New Jersey 08540
Phone: (609) 987-3948
FAX: (609) 987-0483
Email: sfh@research.panasonic.com

Mr. Ting Li Chan (A)
QLogic Corp.
3545 Harbor Blvd.
P.O. Box 6725
Costa Mesa, CA 92626
Phone: (714) 668-5058
FAX: (714) 688-5008
Email:

Mr. Edward A. Gardner (A)
Quantum Corp.
301 Rockrimmon Blvd.
Colo Spgs, CO 80919-2398
Phone: (719) 536-5512
FAX: (719) 536-5650
Email: gardner@acm.org

Mr. S. Jauher Zaidi (O)
Samsung Semiconductor
3655 N. First Street MS/E3
San Jose, CA 95134-1713
Phone: (408) 954-7005
FAX: (408) 954-7150
Email: syed@sam.com

Mr. Brian Johnson (A#)
Seagate Technology
2655 Park Center Dr.
Simi Valley, CA 93065
Phone: (805) 582-3808
FAX: (805) 583-8709
Email:

Mr. Ron Werbow (O)
Seagate Technology
2655 Park Center Dr.
Simi Valley, CA 93065
Phone: (805) 582-3815
FAX: (805) 583-1493
Email: ron_werbow@notes.seagate.com

Mr. Stephen G. Finch (P)
Silicon Systems, Inc.
14351 Myford Road
Tustin, CA 92680-7022
Phone: (714) 573-6808
FAX: (714) 573-6916
Email: 5723283@mcimail.com

Email: colinws@isnet.inmos.co.uk

Mr. Daniel E. Moczarny (A)
Silicon Systems, Inc.
14351 Myford Rd.
Tustin, CA 92680-7022
Phone: (714) 573-6750
FAX: (714) 573-6914
Email:

Mr. James Ryland (XO)
Social Security Admin
NCC Room 5110 OMC liaison
6201 Security Blvd.
Baltimore, MD 21234-0001
Phone: (410) 965-2166
FAX: (410) 966-1893
Email: JRYLAND@SSA.SSW.DHHS.GOV

Mr. David Deming (O)
Solution Technology
P.O. Box 104
Boulder Creek, CA 95006
Phone: (408) 338-4285
FAX: (408) 338-4374
Email:

Mr. Scott Smyers (P)
Sony Corp. of America
3300 Zanker Rd. MS#SJ3C1
San Jose, CA 95134
Phone: (408) 955-4573
FAX: (408) 955-5180
Email: scottss@lsi.sel.sony.com

Mr. Mike Yokoyama (A)
Sony Electronics, Inc.
3300 Zanker Rd. MS# SJ-3A7
San Jose, CA 95134
Phone: (408) 955-4344
FAX: (408) 955-5175
Email: masayuki@ppc.sel.sony.com

Mr. Erich Oetting (P)
Storage Technology Corp.
2270 South 88th St.
Louisville, CO 80028-0268
Phone: (303) 673-2178
FAX: (303) 673-8196
Email: Erich_Oetting@Stortek.com

Mr. Roger Cummings (A)
Storage Technology Corp.
2270 South 88th St.
Louisville, CO 80028-0211
Phone: (303) 673-6357
FAX: (303) 673-8196
Email: Roger_Cummings@Stortek.com

Mr. Robert N. Snively (P)
Sun Microsystems Computer Co
Mail Stop UMPK 12-204
2550 Garcia Avenue
Mountain View, CA 94043-1100
Phone: (415) 786-6694
FAX: (415) 786-6458
Email: bob.snively@eng.sun.com

Mr. Vit Novak (A)
Sun Microsystems, Inc.
Mail Stop 15-46
2550 Garcia Ave.
Mountain View, CA 94043-1100
Phone: (415) 336-2455
FAX: (415) 968-4873
Email: vit.novak@sun.com

Mr. John Lohmeyer (P)
Symbios Logic Inc.
1635 Aeroplaza Dr.
Colorado Springs, CO 80916
Phone: (719) 573-3362
FAX: (719) 573-3037
Email: john.lohmeyer@hmpd.com

Mr. Greg Kapraun (A)
Symbios Logic Inc.
2001 Danfield Ct.
Fort Collins, CO 80525
Phone: (303) 225-4843
FAX: (303) 226-9654
Email: Greg.Kapraun@hmpd.com

Mr. Akram Atallah (A)
SyQuest Technology Corp.
5710 Flatiron Pkwy.
Boulder, CO 80303
Phone: (303) 938-8400
FAX: (303) 938-8588
Email:

Mr. Patrick Mercer (P)
SyQuest Technology, Inc.
47071 Bayside Parkway
Fremont, CA 94538-6517
Phone: (510) 226-4215
FAX: (510) 226-4104
Email: patrick.mercer@syquest.com

Mr. John Moy (P)
Tandem Computers
Loc 100-03
10555 Ridgeview Ct.
Cupertino, CA 95014-0789
Phone: (408) 285-0463
FAX: (408) 285-9924
Email: moy_john@tandem.com

Mr. Pete Tobias (A)
Tandem Computers
Loc 100-03
10555 Ridgeview Ct.
Cupertino, CA 95014-0789
Phone: (408) 285-9913
FAX: (408) 285-9924
Email: tobias_pete@tandem.com

Mr. Bill Boyd (O)
Texas Instruments
MS 8218
8360 LBJ Freeway
Dallas, TX 75265
Phone: (214) 997-3673
FAX: (214) 997-5962
Email: bboy@mimi@magic.itg.ti.com

Mr. Greg Kite (O)
The GCA Group
Suite 302
2353 Alexandria Dr.
Lexington, KY 40504
Phone: (606) 223-7515
FAX:
Email:

Mr. Harvey Waltersdorf (P)
Thomas & Betts
PO Box 389
Inman, SC 29349
Phone: (803) 472-7316
FAX: (803) 472-7373
Email:

Mr. Yasuichi Hashimoto (O)
Toshiba America
226 Airport Pkwy, Suite 310
San Jose, CA 95110
Phone: (408) 451-6960
FAX: (408) 451-9750
Email:

Mr. Gary M. Watson (P)
Trim Industries
350 Pilot Rd.
Las Vegas, NV 89119
Phone: (800) 423-2024
FAX:
Email: trimm@netcom.com

Mr. Skip Linehan (O)
U.S. Design
9075 Guilford Road
Columbia, MD 21046
Phone: (410) 381-3000
FAX: (410) 381-3235
Email: skip@usdesign.com

Mr. Peter Dougherty (P)
UNISYS Corporation
MS-201
25725 Jeronimo Rd.
Mission Viejo, CA 92691
Phone: (714) 380-6270
FAX: (714) 380-5858
Email: peter.dougherty@mv-oc.unisys.com

Mr. Allen Spalding (A#)
UNISYS Corporation
25725 Jeronemo Rd.
Mission Viejo, CA 92691
Phone:
FAX:
Email:

Mr. Arlan P. Stone (A)
UNISYS Corporation
MS 201
25725 Jeronemo Rd.
Mission Viejo, CA 92691
Phone: (714) 380-5982
FAX: (714) 380-6099
Email:

Mr. Paul D. Aloisi (P)
Unitrode Integrated Circuits
7 Continental Blvd
Merrimack, NH 03054
Phone: (603) 429-8687
FAX: (603) 424-3460
Email: Aloisi@uicc.com

Mr. Mark Jordan (A)
Unitrode Integrated Circuits
7 Continental Blvd
Merrimack, NH 03054
Phone: (603) 429-8628
FAX: (603) 424-3460
Email: Jordan@uicc.com

Mr. Michael G. Kaminski (O)
Volex Inc.
835 Sinclair Frontage Road
Milpitas, CA 95035
Phone: (408) 945-7766
FAX: (408) 945-4360
Email: Mike_Kaminski@volex.com

Mr. Jeff Stai (P)
Western Digital Corporation
8105 Irvine Ctr. Dr.
Irvine, CA 92718
Phone: (714) 932-7644
FAX: (714) 932-6496
Email: stai@dt.wdc.com

Mr. Tak Asami (A)
Western Digital Corporation
8105 Irvine Ctr. Dr.
Irvine, CA 92718
Phone: (714) 932-7621
FAX: (714) 932-6496
Email: asami@dt.wdc.com

Mr. Tom Hanan (A#)
Western Digital Corporation
8105 Irvine Ctr. Dr.
Irvine, CA 92718
Phone: (714) 932-7472
FAX: (714) 932-7312
Email: hanan_t@al.wdc.com

Mr. Devon Worrell (A#)
Western Digital Corporation
8105 Irvine Ctr. Dr.
Irvine, CA 92718
Phone: (714) 932-7042
FAX: (714) 932-7796

Mr. Doug Piper (P)
Woven Electronics
PO Box 189
Mauldin, SC 29662
Phone: (803) 967-1751
FAX: (803) 963-1761

Mr. E.J. Mondor (A)
Woven Electronics
PO Box 189
Mauldin, SC 29662
Phone: (803) 967-1739
FAX: (803) 963-1761

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Email: worrell@dt.wdc.com
549-9900

Email: WOVEN ELECTRONICS / MCI ID: 549-9900

Email: WOVEN ELECTRONICS / MCI ID:

Mr. Dennis P. Moore (P)
Zadian Technologies
2305 Bering Drive
San Jose, CA 95131
Phone: (408) 894-0800 x34
FAX: (408) 894-0880
Email: dmoore@netcom.com

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X3T10/95-171r1

Mar 17, 1995 - X3T10 Document Register - Enclosure (3)

X3T10/95-101R0 Date: 1/1/95 Author: Milligan/Lamers [SY-95-01]
 Desc: Minutes of ATA-3 Working Group - 11/30/94

X3T10/95-102R0 Date: 1/11/95 Author: D. Worrell [SY-95-01]
 Desc: Proposal for Enhanced IDE 95 Features

X3T10/95-103R0 Date: 1/16/95 Author: R. Weber [sy-95-01]
 Desc: Attached Medium Changer Operation Codes

X3T10/95-104R0 Date: 1/16/95 Author: S. Smyers [SY-95-01]
 Desc: CDR Command Proposal

X3T10/95-105R0 Date: 1/16/95 Author: G. Penokie [SY-95-01]
 Desc: Fast-20 Letter ballot comments

X3T10/95-106R0 Date: 1/16/95 Author: G. Penokie [SY-95-01]
 Desc: SPC comments

X3T10/95-107R0 Date: 1/16/95 Author: G. Penokie [SY-95-01]
 Desc: SAM Public Review Comments

X3T10/95-108R0 Date: 1/16/95 Author: G. Penokie [SY-95-01]
 Desc: XOR Commands comments

X3T10/95-109R1 Date: 1/16/95 Author: T. Asami [SY-95-01]
 Desc: Fast-20 Definition

X3T10/95-110R0 Date: 1/16/95 Author: C. Monia [SY-95-01]
 Desc: Comparison of CA & ACA

X3T10/95-111R0 Date: 1/16/95 Author: D. Colegrove [SY-95-01]
 Desc: PFA for ATA

X3T10/95-112R1 Date: 1/16/95 Author: L. Sloan [SY-95-01]
 Desc: Presentation on 3rd Party Operations

X3T10/95-113R0 Date: 1/16/95 Author: L. Sloan [SY-95-02]
 Desc: Technical details on 3rd Party Proposal

X3T10/95-114R0 Date: 1/16/95 Author: J. Elrod [SY-95-01]
 Desc: Minutes of XOR Study Group - Jan '95

X3T10/95-115R0 Date: 1/16/95 Author: J. Molina [SY-95-01]
 Desc: Letter on hotel locations

X3T10/95-116R0 Date: 1/16/95 Author: G. Stephens [SY-95-01]
 Desc: Response for GPP Letter Ballot

X3T10/95-117R0 Date: 1/16/95 Author: E. Lappin [SY-95-01]
 Desc: Space past EOD

X3T10/95-118R0 Date: 1/16/95 Author: E. Lappin [SY-95-01]
 Desc: READ POSITION

X3T10/95-119R0 Date: 1/16/95 Author: R. Roberts [SY-95-01]
 Desc: Minutes of MMC Working Group - Jan '95

X3T10/95-120R0 Date: 1/16/95 Author: Lamers/Milligan [SY-95-01]
 Desc: Minutes of ATA-3 Working Group - 1/11-12/95

X3T10/95-121R0 Date: 1/16/95 Author: S. Finch [SY-95-01]
 Desc: ATA-2 Annex F Issues

X3T10/95-122R0 Date: 1/16/95 Author: J. Chen [SY-95-01]
 Desc: ATA 22MB/sec Timing Proposal

X3T10/95-123R0 Date: 1/16/95 Author: J. Lohmeyer [SY-95-01]
 Desc: Letter ballot results from mailing SY-9406

X3T10/95-124R0 Date: 1/16/95 Author: G. Penokie [SY-95-01]
 Desc: Public Review Comments on FCP

X3T10/95-125R0 Date: 1/16/95 Author: M. Chow [SY-95-01]
 Desc: Dynamic Power Selection in ATA

X3T10/95-126R0 Date: 1/16/95 Author: L. Leach [SY-95-01]
 Desc: Cable Error Detection Proposal

X3T10/95-127R0 Date: 1/16/95 Author: D. Penman [SY-95-01]
 Desc: Additional ATA-3 Topics

X3T10/95-128R0 Date: 1/16/95 Author: D. Pak [SY-95-01]
 Desc: Liaison Report from 1285

X3T10/95-129R0 Date: 1/16/95 Author: R. Weber [SY-95-01]
 Desc: Minutes of SCSI Working Group - Jan '95

X3T10/95-130R0 Date: 1/16/95 Author: R. Weber [SY-95-01]
 Desc: Minutes of X3T10 Meeting #6 - Jan '95

X3T10/95-131R0 Date: 1/16/95 Author: D. Penman [SY-95-01]
 Desc: ATA Systems Issues

X3T10/95-132R0 Date: 1/16/95 Author: T. Lappin [SY-95-01]
 Desc: Write without reaad block mode control

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X3T10/95-171r1

X3T10/95-133R0 Date: 1/16/95 Author: T. Lappin [SY-95-01]
 Desc: Clearing ASC/ASCQ

X3T10/95-134R0 Date: 1/16/95 Author: T. Lappin [SY-95-01]
 Desc: Write protect control

X3T10/95-135R0 Date: 1/16/95 Author: R. Weber [SY-95-01]
 Desc: Status of AIIM C21 M559 Standard at X3T10

X3T10/95-136R0 Date: 1/24/95 Author: B. Dallas [SY-95-01]
 Desc: Minutes of CAM WG - 1/'95

X3T10/95-137R0 Date: 1/18/95 Author: K. Calvert [SY-95-01]
 Desc: Letter re: Copyright Release for ATASPI

X3T10/95-138R0 Date: 1/26/95 Author: M. Alexenko [SY-95-01]
 Desc: SCAM issues in SPI rev 15

X3T10/95-139R0 Date: 1/26/95 Author: J. Lohmeyer [SY-95-01]
 Desc: Minimum Active Negation Current Issue

X3T10/95-139R1 Date: 2/1/95 Author: J. Lohmeyer []
 Desc: Minimum Active Negation Current Issue

X3T10/95-139R2 Date: 2/8/95 Author: J. Lohmeyer [sy-95-02]
 Desc: Minimum Active Negation Current Issue

X3T10/95-140R0 Date: 1/27/95 Author: F. Podia [SY-95-01]
 Desc: Use of Log Pages Assigned by X3T10 to AIIM B21

X3T10/95-141R0 Date: 1/27/95 Author: K. Calvert [SY-95-01]
 Desc: ATASPI Presentation

X3T10/95-142R0 Date: 1/27/95 Author: K. Calvert [SY-95-01]
 Desc: ATASPI Specification

X3T10/95-143R0 Date: 1/27/95 Author: D. Worrell [SY-95-01]
 Desc: ATA-3 Features Proposal

X3T10/95-144R0 Date: 2/8/95 Author: H. Landis [SY-95-02]
 Desc: Identify DMA proposal

X3T10/95-145R0 Date: 2/8/95 Author: H. Landis [SY-95-02]
 Desc: Device 1 Only proposal

X3T10/95-146R0 Date: 2/9/95 Author: Lamers/Lohmeyer [SY-95-02]
 Desc: Electronic Notification Procedure

X3T10/95-147R0 Date: 2/9/95 Author: Lamers/Lohmeyer [SY-95-02]
 Desc: Preparing Documents for Committee Mailings

X3T10/95-148R0 Date: 2/9/95 Author: Lamers/Lohmeyer [SY-95-02]
 Desc: Procedure for Funding X3T10 Technical Editors

X3T10/95-149R0 Date: 2/12/95 Author: R. Roberts [SY-95-02]
 Desc: Minutes of MMC Working Group - Feb 95

X3T10/95-150R0 Date: 2/15/95 Author: Lamers/Milligan [SY-95-02]
 Desc: Minutes of ATA-3 Working Group - 1/26/95

X3T10/95-151R0 Date: 2/15/95 Author: Lamers/Milligan [SY-95-02]
 Desc: Minutes of ATA-3 Working Group - 2/15-16/95

X3T10/95-152R0 Date: 2/15/95 Author: J. McGrath [SY-95-02]
 Desc: Problems with System Implementation of Dual Ports

X3T10/95-153R0 Date: 2/15/95 Author: C. Stevens [SY-95-02]
 Desc: Enhanced Disk Drive Specification

X3T10/95-154R0 Date: 2/15/95 Author: H. Landis [SY-95-02]
 Desc: Version Identification in ATA

X3T10/95-155R0 Date: 2/15/95 Author: H. Landis [SY-95-02]
 Desc: Comment on clause 10.5 of ATA-2

X3T10/95-156R0 Date: 2/15/95 Author: H. Landis [SY-95-02]
 Desc: BIOS Types, CHS Translation, LBA and other Good Stuff

X3T10/95-157R0 Date: 2/28/95 Author: J. Lohmeyer [SY-95-02]
 Desc: Flowchart on X3T10 procedures

X3T10/95-158R0 Date: 3/2/95 Author: G. Penokie [SY-95-02]
 Desc: IBM Patent Policy for SCC

X3T10/95-159R0 Date: 3/8/95 Author: L. Sloan [SY-95-02]
 Desc: Distributed SCSI I/O: Status and New Issues

X3T10/95-160R0 Date: 3/8/95 Author: L. Sloan [SY-95-02]
 Desc: Comments on SAM

X3T10/95-161R0 Date: 3/8/95 Author: G. Houlder [SY-95-02]
 Desc: Minutes of XOR Study Group

X3T10/95-162R0 Date: 3/8/95 Author: Lamers/Milligan [SY-95-02]
 Desc: Minutes of ATA Working Group - 3/8-9/95

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X3T10/95-171r1

X3T10/95-163R0 Date: 3/9/95 Author: J. Chen [SY-95-02]
Desc: Comments on ATA-2

X3T10/95-164R0 Date: 3/9/95 Author: T. Pione [SY-95-02]
Desc: Worldwide Industry Hardware Support

X3T10/95-165R0 Date: 3/9/95 Author: T. Pione [SY-95-02]
Desc: ATAPI Test Program

X3T10/95-166R0 Date: 3/9/95 Author: J. Lohmeyer [SY-95-02]
Desc: ATA-2 Forwarding Letter Ballot Results

X3T10/95-167R0 Date: 3/9/95 Author: C. Patton [SY-95-02]
Desc: ATA Electrical Simulation Plots

X3T10/95-168R0 Date: 3/9/95 Author: J. McGrath [SY-95-02]
Desc: ATA Electrical Issues with 2 Ports

X3T10/95-169R0 Date: 3/9/95 Author: R. Roberts [SY-95-02]
Desc: Minutes of MMC Working Group - 3/95

X3T10/95-170R0 Date: 3/9/95 Author: Weber/Lohmeyer [SY-95-02]
Desc: SCSI Working Group Minutes - 3/95

X3T10/95-171R0 Date: 3/9/95 Author: Weber/Lohmeyer [SY-95-02]
Desc: Minutes of X3T10 Plenary Meeting #8

X3T10/95-172R0 Date: 3/9/95 Author: Weber/Lohmeyer [SY-95-02]
Desc: SPI Futures Working Group Minutes - 3/95

X3T10/95-173R0 Date: 3/9/95 Author: D. Pak [SY-95-02]
Desc: P1285 Liaison Report - 3/95

X3T10/95-174R0 Date: 3/9/95 Author: B. Dallas [SY-95-02]
Desc: Minutes of the CAM-3 Working Group - 3/95

X3T10/95-175R0 Date: 3/17/95 Author: P. Johansson [SY-95-02]
Desc: Editorial Correction to SPI rev 15

X3T10/95-176Rf0 Date: 3/17/95 Author: L. Barra [SY-95-02]
Desc: Public Review Comment on X3.269

X3T10/95-177R0 Date: 3/17/95 Author: L. Barra [SY-95-02]
Desc: Public Review Comment on X3.270

X3T10/95-178R0 Date: 3/17/95 Author: K. Gingerich [SY-95-02]
Desc: Comments on Fast-20

X3T10/95-179R0 Date: 3/17/95 Author: P. Aloisi [SY-95-02]
Desc: 3.3 Volt SCSI Termpower

X3T10/95-180R0 Date: 3/17/95 Author: P. Aloisi [SY-95-02]
Desc: SCSI-3 SPI Low Voltage

X3T10/95-181R0 Date: 3/17/95 Author: P. Aloisi [SY-95-02]
Desc: Low Power SCSI

X3T10/95-182R0 Date: 3/17/95 Author: P. Aloisi [SY-95-02]
Desc: proposed working draft SPI-LP

X3T10/95-183R0 Date: 3/17/95 Author: P. Aloisi [SY-95-02]
Desc: Project Proposal for SPI-LV

X3T10/95-184R0 Date: 3/17/95 Author: P. Aloisi [SY-95-02]
Desc: SPI Hot Swapping/Plugging