

Accredited Standards Committee*
X3, Information Processing Systems

Doc. No.: X3T9.2/93-033r0

Date: February 22, 1993

Project:

Ref. Doc.:

Reply to: John Lohmeyer

To: Membership of X3T9.2

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

Subject: Minutes of X3T9.2 Plenary Meeting #104
Austin, TX -- February 15-16, 1993

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

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- 8.9 SCSI-3 Interlocked Protocol (SIP) Status [Lamers]
- 8.10 SCSI-3 Generic Packetized Protocol (GPP) Status [Stephens]
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 - 9.2 Proposal to add a disconnect unconditionally after command phase (92-133 R7) [Smyers]
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- 10. New Business
 - 10.1 SPI Forwarding Motion [Lamers]
 - 10.2 Letter Ballot Results on Forwarding ATA (90-143r3.3)
 - 10.3 TTD and CONTINUE I/O PROCESS revisited (93-12) [Houlder]
 - 10.4 Shall the COPY, COMPARE, and COPY AND VERIFY commands be retained in SCSI-3?
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 - 10.8 READ LONG command [Milligan]
 - 10.9 Agenda for the March X3T9.2 General Working Group
 - 10.10 Authorization of Contract Editing Work [Lamers]
 - 10.11 SCSI Consortium [Harris]
- 11. Review of Action Items
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 - 12.1 Working Group Schedule
 - 12.2 Authorization of Working Group Meetings
 - 12.3 Planned Schedule for July Working Group/Plenary Meeting Week
- 13. Adjournment

Results of Meeting

1. Opening Remarks

John Lohmeyer, the Chair, called the meeting to order at 9:00 a.m., Monday February 15, 1993. He thanked Mike Shoemake of Motorola 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 addition:

9.8 Serial Protocols

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.

With the termination of 3 organizations for nonattendance (see 3.1), the X3T9.2 voting membership is now at 59 organizations down from 62 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 28 people from 12 organizations for lack of meeting attendance: Burndy, BusLogic, Ciprico, Connector Industry Consulting Group, Foxconn, Hirose, Honda, Micropolis, NEK, NIST, Quantum, and Storage Technology. 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.

Representatives were present from all of the organizations except: Connector Industry Consulting Group, Micropolis, and NEK. The P and A members from these organizations were changed to observer status.

The Chair also sent jeopardy letters to all members from: Berk-Tek, Burndy, Honda, Micropolis, and Texas Instruments for failure to return the letter ballots from September '92 and November '92. 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. All of these organizations returned the January '93 letter ballot so there were no terminations for failure to return letter ballots.

4. Approval of Minutes - December Meeting San Diego, CA (92-229 R0)

The minutes were approved as written.

5. Document Distribution

John Lohmeyer said that the committee mailing had gone out the first week of January and some West coast members received their copies early in the second week of January; he appreciated the promptness of the X3 Secretariat. 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, March 18, 1993. Documents received after this date will go into a subsequent mailing.

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

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

The current document register is enclosure (3).

Please note that Global Engineering Documents has relocated to Colorado. The new address is:

**Global Engineering Documents
15 Inverness Way East
Englewood, CO 80112-5704
Telephone: 800-854-7179 or 303-792-2181
Facsimile: 303-792-2192**

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
2/93

There has been a fairly high number of documents distributed recently which relate to X3T9 activity. Several votes are needed at this X3T9 meeting to continue the processing of active projects. Some of these votes are necessitated by the more meticulous application of procedures or operating preferences by the X3 Secretariat and/or their alter ego the JTC 1 TAG Secretariat.

Items of interest to the X3T9 community are:

Apparently comments made at last year's Milano meeting confused

the delegation from Germany into thinking that the PCMCIA is included in the family of X3T9 projects. Consequently the IR sent IR92015 to Juergen Schwandt explaining the actual status of PCMCIA.

For those that lack the appropriate words, the JTC 1 TAG has distributed JT92-1148 92/10/14 Permuted Index of Information Technology Vocabulary.

JTC 1 letter ballots on the NP's for HIPPI FP, HIPPI LE, HIPPI SC, and FC-PH Close 2/22/93.

SC 26 will receive several interesting NP's. Some of these impinge upon X3T9 positions and others appear to be an overlap with the charter of SC 25. Some of the NP's for SC 26 of interest are: JT92-1309 92/11/3 Modular I/O Interconnect Bus; JT92-1310 92/11/03 Extended PC Backpanel Bus; JT92-1311 92/11/03 Standard for Environmental Specification for Microcomputer Modules; JT92-1312 92/11/03 Standard Environmental Specification for Microcomputer Systems; JT92-2536 92/11/03 Power Supply for Microcomputer Systems; JT92-1315 92/11/03 Low Voltage Differential I/O for the SCI; JT92-1316 92/11/03 High Performance Serial Bus; JT92-1317 92/11/03 Advanced Printer I/O; and JT92-1318 92/11/03 Microcomputer Configuration & Boot Firmware.

As previously distributed X3T9 should decide if comments are appropriate on SC 25/ WG4 N 614 92/11/23 proposed Text pDISPs 10608-6 & 14 FDDI.

The letter ballots on NP's for ATA and SCSI-2 CAM XPT/SIM Closed 1/21. The public review on these NP's is from 1/8 through 2/7/93.

Information copies were distributed as SC 25/WG4 N 615 FDDI CTS for MAC (Note: the page 1 in the body is mistitled as PHY); SC 25/WG4 N 616 FDDI PHY Conformance Test; and SC 25/WG 4 N 617 FDDI MAC-2.

Authorizing votes are required by X3T9 for the forwarding of IR93003 93/02/13 Editor's Report for IS 9314-5 FDDI HRC; IR93004 93/02/14 Submission of FDDI HRC Rev 6.3 for IS 9314-5; and IR93005 93/02/15 Editor's report 9318-5 IPI-2 Tape.

Although there are some significant errors to correct in the ATA, X3T9 should consider the possibility of a vote to authorize the forwarding of X3T9/92-223 9 ISO/IEC draft of ATA.

6.2 IT8 [Lohmeyer]

John Lohmeyer had nothing new to report.

6.3 Fibre Channel [Allan]

Dal Allan reported. FC-PH is going through public review comments. Should continue for next 2 meetings. Targeted forwarding date is April. Other activities are proceeding. In January, a Fiber Channel Association was formed, 17 companies have already joined.

6.4 Small Form Factor Industry Group [Allan]

Dal Allan reported. The group had balloted 3 proposed documents. The unitized connector was approved for cable environments. The 1.3-inch form factor was approved. The 68-pin ATA alternative was notable in the number of abstentions.

The SUN 80-pin connector is expected to come into SFF. A SSWG is working on the power connector issues. A SSWG is working on gathering data on local bus issues for ATA Extensions.

Gene Milligan questioned the unitized connector option pin signal assignments. Larry Lamers responded that the signal assignments had originated from an X3T9.2 document.

Jim McGrath reported on the Local Bus data gathering (see 93-022). The next meeting is scheduled is on February 24, 1993 at the Holiday Inn in Milpitas.

6.5 IEEE P1394 [Smyers]

Scott Smyers reported. Gerry Marazas has replaced Mike Teener as chairman of P1394. This frees Mike to edit the draft document. A complete baseline document (except section 8) is expected to be completed in February.

6.6 SSA Status [Scheible]

John Scheible reported (see 93-024). The users group has been started. The March meeting is scheduled for March 15 from 1:00 to 5:00 pm.

There was a limited discussion on the status of removing the COPY command (see 10.4).

John Lohmeyer stated that the SSA project proposal should have been processed by OMC and then go to X3 letter ballot. It was reported that the letter ballot has been issued. If X3 approves the proposal, X3T9.7 should be established before the next plenary week.

6.7 IEEE P1285 Status

Dennis Pak gave a brief oral report and provided a written report. See document X3T9.2/93-026r0.

An increase in the packet size to 512-bytes is being considered. The alpha level will be strictly a read/write engine.

The next P1285 meeting is March 4, 1993 at Apple in Cupertino, CA and then on April 1, 1993 at Santa Clara University. A co-located meeting is planned for May '93 in Santa Fe.

The P1285 reflector is operational. Contact Dennis Pak for information.

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.

John Lohmeyer stated that he has drafted a response letter to the letter received from the attorney for Conner Peripherals. The letter has not been sent yet, pending a discussion with ANSI. Larry Lamers and John Lohmeyer took an action item to seek clarification on the ANSI patent policy requirements.

In December '92, X3T9.2 accepted Gene Milligan's proposed patent statement for the SPI document. A change in the SD-2 is necessary if we are to require this statement in all dpANS.

Larry Lamers moved and Paul Nitza seconded that X3T9.2 recommend to X3T9 the following wording be recommended for inclusion in the X3 dpANS documents.

"Note: The developers of this standard have requested that holder's of patents that may be required for the implementation of the standard, disclose such patents to the publisher. However neither the developers nor the publisher have undertaken a patent search in order to identify which, if any, patents may apply to this standard.

No position is taken with respect to the validity of any claim or any patent rights that may have been disclosed. Details of submitted statements may be obtained from the publisher concerning any statement of patents and willingness to grant a license under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license."

The motion carried 24:2:0.

Chair's note: On Friday, X3T9 accepted slightly revised wording recommended by the X3T9.5 task group.

Gene suggested that a requirement be added to Appendix I of the "Procedures for the Development and Coordination of American National Standards" that the statement of patent holder include an assurance that the patent shall not be sold or transferred unless the seller requires the buyer to abide by the ANSI patent policy. X3T9.2 took no position on this suggestion.

6.9 PCMCIA Report [Lohmeyer]

John Lohmeyer reported on PCMCIA activity as it relates to SCSI (see 93-023). There is a need for standardization of SCSI implementations on connectors and cables. A 31- or 32-pin connector is being considered. PCMCIA is considering authorizing a working group to define a SCSI connector and cable for PCMCIA applications. The proposal to establish the SCSI working group includes a provision to establish a liaison with X3T9.2. Contact Larry Barnes at 719-596-5795 for further information.

7. Review of Old Action Items

- 1) Joe Dambach and Dal Allan will request EIA to develop a standard for the four-pin power connector. **Carry over.**
- 2) Larry Lamers will include a document with the recommendations for the power connector in the mailing. **Carry over.**
- 3) John Lohmeyer will take the ATA response letters to X3T9. **Complete.**
- 4) John Lohmeyer will take the CAM-2 project proposal to X3T9. **Complete.**
- 5) John Lohmeyer will draft a response to the Conner letter on the PrairieTek patents. **Carry over.**
- 6) Dal Allan to prepare revision 3.3 of ATA. **Complete.**
- 7) Larry Lamers to prepare a letter ballot on ATA for X3T9.2. **Complete.**
- 8) Larry Lamers to mail a copy of ATA to Robert Fink for the X3T9 mailing. **Complete.**
- 9) John Lohmeyer to present revised X3T9.2 plenary meeting schedule to X3T9. **Complete.**

- 10) John Lohmeyer to draft a letter acknowledging receipt of the request for interpretation from Toshiba. **Complete.**

8. Working Group and/or Project Status Reports

8.1 Project Status Summary [Lohmeyer]

John Lohmeyer presented the current X3T9.2 project status summary. Gene Milligan noted that SMD and SMD-E are X3T9.3 projects. [On Friday, X3T9 recommended that these projects and the Flexible Disk project be moved to X3T9.2.] Each task group is now keeping its own project status. The X3T9.2 summary is included in each mailing.

8.2 SCSI General Working Group (X3T9.2/93-006) [Lohmeyer]

The minutes will be in the next mailing and were sent out on the reflector.

The working group recommended that ASC/ASCQ's be handled in the same way as vendor ID's. Ralph Weber will maintain the list, but committee approval is required.

They also recommended that the COPY, COMPARE, and COPY AND VERIFY commands not be included in SCSI-3 (see 10.4).

8.3 SCSI-2 Status [Lamers]

Larry Lamers reported that the people reviewing the ISO-edited version of SCSI-2 document have not found any significant discrepancies from rev 10h. The minor corrections to references will be included and the document will be returned to Lynn Barra for transmittal to the ISO editor.

Upon approval by the ISO editor, SCSI-2 will be sent to X3 for their letter ballot.

8.4 SCSI Common Access Method (CAM)

Bill Dallas reported. The Randell Jesup public review comment points out some problems with CAM, particularly with target mode operation in section 10. Bill presented a draft response letter and his thoughts on addressing the Jesup comments. Randell has joined the SCSI Reflector and plans to assist in resolving the problems he identified.

Bill Dallas moved and Gene Milligan seconded that 93-021r1 be recommended to X3T9 as the response to the public review comment on CAM.

The motion carried 33:0:26.

The net result is that CAM document will return to X3T9.2 for revision. Another public review period will be necessary once the changes are made.

8.5 AT Attachment Status (ATA) [Allan]

Dal Allan reported. A letter ballot on forwarding 3.3 had concluded with the results under agenda item 10.2. Comments were received from Zenith and Cirrus Logic have which point out some inconsistencies.

8.6 ATA Extensions [Finch]

Steve noted that he has a new telephone number: 573-6808. The minutes were revised to delete reference to DADI. Steve presented a list of items to be discussed for inclusion in the ATA Extensions document.

Gene Milligan moved and Steve Finch seconded that the technical editor be instructed to follow a documentation model and approach analogous to that used in SCSI-2 and SCSI-1 (i.e., the ATA Extensions document be self-contained).

The motion carried 15:3:0.

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

Charles Monia reported that the latest revision includes all the technical content. This document was available at the meeting. A working session on SAM is planned for the next working group.

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

An editing session is planned for March 8-9, 1993 in Colorado Springs to get the terminology and the SIP/SPI interface established. This revision will be brought to the next working group.

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

No activity. The March 8-9 meeting may result in a revision to this document.

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

Gary Stephens reported that he is working on revision 4. Copies will be available at the next working group meeting.

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

Scott Smyers reported. Progress has been made in the editing sessions on terminology and document structure. There are several sessions planned; see the meeting list in 12.1.

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

Vit Novak reported on the latest FCP changes and the remaining concerns. See 93-025 for details.

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

Ralph Weber reported on the progress in developing the SPC document. A database for ASC/ASCQ's is being developed. The RESERVE/RELEASE commands will be included in a device independent manner. The dual-porting stuff from 91-136 will be included. 91-149 was never approved, because the requested revision was not forthcoming. Gene Milligan will bring this up with Gerry Holder.

8.14 SCSI-3 Block Commands [Lamers]

No activity.

8.15 SCSI-3 Stream Commands [Stephens]

No activity.

8.16 SCSI-3 Graphics Commands

No activity.

8.17 SCSI-3 Medium Changer Commands [Stephens]

No activity.

8.18 Directly-Addressable Device Interface (DADI)

Ron Roberts (Maxtor) stated at the last ATA Extensions WG meeting that he intends to bring in a proposal for DADI at the March working group week. Consequently, the Monday afternoon working group will be a combined ATA Extensions and DADI meeting.

8.19 SCSI Common Access Method -2 (CAM-2) (93-015) [Dallas]

The minutes were sent to the SCSI Reflector.

8.20 RAID Study Group (93-005) [Penokie]

George Penokie reported that a revision 1 model has been developed. It will be distributed on the reflector.

9. Old Business

9.1 Synchronization Status and Errors (92-130R2) [DeKoning]

Due to a conflict, Rod DeKoning was unable to attend. John Lohmeyer moved that X3T9.2 accept X3T9.2/92-130R2 for SCSI-3 as recommended by the November '92 working group. Jeff Williams seconded the motion. The motion carried 16:1.

9.2 Proposal to add a disconnect unconditionally after command phase (92-133 R7) [Smyers]

Scott Smyers distributed revision 7 of the proposal. Some minor revisions were made.

Scott Smyers moved and Jeff Stai seconded that 92-133r7 as revised be accepted for incorporation in SCSI-3. The motion passed 28:0.

Scott will revise the document and distribute it as revision 8.

9.3 SCSI Caching Large Segment Control (92-217) [Milligan]

Gene Milligan stated that additional bits will be incorporated in the proposal for cache modes. The proposal was revised overnight and revisited on Tuesday.

Gene Milligan moved and Vit Novak seconded that 92-217r1 (modified to include caching mode control) be accepted for incorporation in SCSI-3.
The motion passed 19:0.

9.4 Power Pin Compatibility Issue Revisited (90-199,91-23) [McGrath]

Joe Dambach stated he had only received one response to date on his request for dimension information on the power connector. He requested more input so that a consensus could be reached.

9.5 Call for Volunteers, X3T9.2 Chair and Vice-Chair (X3T9.2/92-208 & 209)

John Lohmeyer reported that both he and Dal had been so foolish as to reapply for their positions. No other applications had been received by the X3 Secretariat as of Ground Hogs day (2/2/93). A 30-day letter ballot will be issued for approval by the X3 OMC committee.

9.6 Format Track LBA Proposal (92-185) [Leach]

Larry Lamers plans to send rev 1 of this proposal to the SCSI reflector for discussion at the March ATA Extensions working group.

9.7 Global Logging Target Save Disable Bit (92-218R1) [Milligan]

Gene Milligan moved and George Penokie seconded that 92-218r1 be accepted for incorporation into SCSI-3. The motion carried 31:0.

9.8 Serial Protocols

The SBP document has been converted into Microsoft Word format. Revision 8 documents were distributed at the meeting. The command blocks have been rearranged to align better with the FCP command blocks.

10. New Business

10.1 SPI Forwarding Motion [Lamers]

John Lohmeyer reported that there are still unresolved editing issues on the interface between the SPI and the SIP and/or GPP documents. An editing session is planned for March 8-9, 1993 in Colorado Springs to resolve the issues. Anyone wishing to attend should contact John Lohmeyer ASAP so he can arrange an appropriately-sized meeting room.

The new plan is to include SPI in the March '93 committee mailing for possible forwarding at the April '93 plenary meeting.

Bill Spence proposed corrections and additions for SPI (see 93-031). The main point was to specify an assertion period at the receiver end of 22 ns for fast and 70 ns for slow SCSI. Bill will prepare a revision 1 for incorporation in SPI rev 11.

10.2 Letter Ballot Results on Forwarding ATA (90-143r3.3)

John Lohmeyer announced the results of the letter ballot. The vote was 55 yes, 1 no, 0 abstain, and 6 did not return the letter ballot (Central Data, CMD Technology, Connector Industry Consulting Group, Hirose, Seagate, and UNISYS). The yes vote from Cirrus logic included comment X3T9.2/93-28 and the no vote from Bull/Zenith included comment X3T9.2/93-027.

The Zenith comment was addressed with the changes proposed by Tom Newman.

The Cirrus Logic comment pointed out a problem with clause 10.1.1 where following the last data transfer BSY should be 0.

The resolution of the comments was remanded to the working group. A meeting vote for forwarding the document is planned for April.

Steve Finch outlined the proposed changes to address the comments. Although the changes were not yet edited into the document, there was interest in attempting to forward the document to avoid a schedule slip.

Gene Milligan moved and Steve Finch seconded that 91-143r4 be forwarded as revised to X3T9 for further processing. The motion failed 25:3:0:31 for lack of a majority of the total membership.

The chairman stated that in the future he will follow the X3T9.5 example of doing forwarding motions with role call votes and those organizations failing to vote will be considered as not present at the meeting.

10.3 TTD and CONTINUE I/O PROCESS revisited (93-12) [Houlder]

The working group considered Gerry's proposal and reached consensus that Gerry's alternative A) is the correct behavior. Gerry plans to prepare wording to clarify the SIP document.

10.4 Shall the COPY, COMPARE, and COPY AND VERIFY commands be retained in SCSI-3?

The working group recommended that the COPY, COMPARE, and COPY AND VERIFY commands be dropped from the SPC document. The opcodes for these commands would be marked as "reserved for compatibility with SCSI-2".

There were several folks who stated there was a need for these commands. Ralph Weber volunteered to lead an effort to develop SCSI-3 versions of these commands.

10.5 Review of new documents

92-185r1 - FORMAT TRACK logical block mode

93-016r0 - Why SCSI-3 needs an ABORT (all initiator tasks)

93-018r0 - ATA Extensions, Specification of electrical characteristics

93-020r0 - New optical memory density codes. Has error-new revision expected.

93-032r0 - Number of blocks field size limitation

10.6 ICON Visibility

Larry Grasso raised question on visibility of logo at 50 mm height. The single-ended and differential are not easily distinguishable and the lettering is not decipherable. Some wording in the SPI annex has been omitted that permits different fonts and optional usage of the text.

The lost words will be investigated at the SPI editors meeting.

10.7 READ LONG command [Milligan]

Gene Milligan raised an issue on bit conflicts. The correct bit in READ LONG command may conflict with the DCR bit in Error Recovery Parameters. What interpretation should be made and what sense codes should be returned?

The topic was added to the March working group agenda.

10.8 Agenda for the March X3T9.2 General Working Group

The following draft agendas were generated for the March X3T9.2 Working Group meetings in Orange County, CA:

Draft Agenda
March 15, 1993 X3T9.2 ATA/ATA Extensions/DADI Working Group

1. Opening Remarks
2. Attendance and Membership
3. AT Attachment
 - 3.1 Review of ATA Rev 4.0 Draft Document
4. ATA Extensions
 - 4.1 ATA Download Microcode Command (92-168) [McGrath]
 - 4.2 Proposed REST/RESUME Functions (92-132) [Zangenehpour]
 - 4.3 Format Track LBA Proposal (92-185 R1) [Leach]
 - 4.4 Specification of electrical interface (93-18) [Finch]
 - 4.5 Local Bus ATA
5. DADI
 - 5.1 Presentation from Ron Roberts
6. Meeting Schedule
7. Adjournment

Draft Agenda
March 16-17, 1993 X3T9.2 General Working Group

1. Opening Remarks
2. Attendance and Membership
3. SPI Topics {Tuesday am}
 - 3.1 Report on Colorado Springs SPI/SIP editing session [Lamers]
 - 3.1.1 SDP message clarification (93-34) [Lohmeyer]
 - 3.2 Review of SPI Revision 11
 - 3.3 Power Connector Pin & Cavity [Dambach, Allan]
 - 3.4 PCMCIA SCSI connector and cable (93-23) [Lohmeyer]
4. General WG Topics {Tuesday am}
 - 4.1 Recommended X3T9.2 Procedure on electronic notification (93-19) [Lamers]
 - 4.2 Report on CAM-2 Study Group Meeting [Dallas]
5. SCSI-3 Architecture Model (SAM) {Tuesday 2p-8p}
 - 5.1 Queue Full Handling (92-214r1) [DeKoning]
6. SCSI-3 Command Sets (SPC, SBC, SSC, SGC, and SMC) {Wednesday am}
 - 6.1 SCSI-3 Primary Commands (92-225r0, 226r0) [Weber]
 - 6.1.1 Dual-Porting SCSI (91-149) [Houlder]
 - 6.2 Number of blocks field in block descriptors [Penokie]
 - 6.3 Printer Command Set [Heckman]
 - 6.4 READ LONG Correct bit vs. DCR bit in Read/Write Error Recovery mode page [Milligan]
7. Serial Protocol Topics {Wednesday pm}
 - 7.1 SCSI-3 Serial Bus Protocol (SBP)
 - 7.2 SCSI-3 Fiber Channel Protocol (FCP)
 - 7.2.1 Why SCSI-3 needs ABORT [Weber]
 - 7.3 SCSI-3 Generic Packetized Protocol (GPP)
8. Working Group Schedule
9. Adjournment

Agendas for the other scheduled working group meetings will be distributed on the SCSI reflector by the chairs of the working group meetings.

10.9 Authorization of Contract Editing Work [Lamers]

Larry Lamers moved and Steve Finch seconded that X3T9.2 authorize work on SCSI-2, ATA, and CAM for processing as ANSI standards based on quotations #93:4501, #93:4502, and #93:4503 as received from J.M. Cohen.

The motion passed 21:0.

10.10 SCSI Consortium [Harris]

Norm Harris, speaking on behalf of Kim Shanley, informed the committee of the formation of an SCSI Consortium. The consortium intends to develop compatibility test suites and performance benchmarks. The next meeting is in San Jose February 26, 1993. Questions should be directed to Kim Shanley 408-295-8894.

11. Review of Action Items

- 1) Joe Dambach and Dal Allan will request EIA to develop a standard for the four-pin power connector.
- 2) Larry Lamers will include a document with the recommendations for the power connector in the mailing.
- 3) John Lohmeyer will take the X3T9.2 patent statement position to X3T9.
- 4) John Lohmeyer and Larry Lamers will contact ANSI for clarification on the patent policy pertaining to the Conner and Maxtor patents.
- 5) John Lohmeyer will draft a response to the Conner letter on the PrairieTek patents.
- 6) Larry Lamers will prepare revision 4 of ATA.
- 7) Larry Lamers will prepare revision 11 of SPI.
- 8) Gene Milligan will contact Gerry Houlder regarding 91-149.
- 9) Larry Lamers will send revision 4 of ATA to Bob Fink of X3T9.
- 10) Larry Lamers will send revision 11 of SPI to Bob Fink of X3T9.

12. Meeting Schedule

Del Shoemaker, Chair of X3T9, introduced Bruce Smith, who presented a package for saving money on travel to meetings. Bruce Smith who is with IBI Travel Agent, out of Northbrook, IL stated that by consolidating buying power the members could expect substantial savings on airfares. However there are a limited number of airlines participating, you are required to pay with a credit card (no company billings), and most tickets are changeable but not refundable. There is no obligation to use the package. The information will be included in the next committee mailing.

The next plenary meeting of X3T9.2 will be April 19-20, 1993 at the Tradewinds Hotel (813-367-6461) in St. Petersburg Beach, FL hosted by AMP, Inc. The room rates are \$110.00 (standard room) plus tax. The reservation deadline for these rates is March 28, 1993.

The near-term meeting schedule is:

Event	Date	Time	Location/Contact
SBP Working Group (+)	01-MAR-93	9:00a- 5:00p	Boca Raton, FL
	02-MAR-93	9:00a- 5:00p	"
SBP Editing Session (+)	03-MAR-93	9:00a- 5:00p	"
SPI Editing Session (+)	08-MAR-93	9:00a-10:00p	Colo Spgs, CO
	09-MAR-93	9:00a-10:00p	"
Small Form Factor (*)	15-MAR-93	9:00a- 1:00p	Newport Beach, CA
Disk Drive Working Group	15-MAR-93	2:00p- 5:00p	"
RAID Study Group	15-MAR-93	5:00p- 8:00p	"
CAM Working Group	15-MAR-93	9:00a- 5:00p	"
X3T9.2 General Working Group	16-MAR-93	9:00a-12:30p	"
	17-MAR-93	9:00a- 8:00p	"
SAM Working Group	16-MAR-93	2:00p- 5:00p	"
GPP Working Group	16-MAR-93	5:00p- 8:00p	"
IEEE P1394 (*)	18-MAR-93	9:00a- 5:00p	"
SBP Working Group (+)	06-APR-93	9:00a- 5:00p	Cupertino, CA
	07-APR-93	9:00a- 5:00p	"
SAM Editing Session	18-APR-93	1:30p- 5:00p	St. Petersburg, FL
X3T9.2 Plenary Meeting	19-APR-93	9:00a- 5:00p	"
	20-APR-93	9:00a- 5:00p	"
RAID Study Group	19-APR-93	5:00p- 8:00p	"
SBP Working Group	22-APR-93	9:00a- 5:00p	"
Disk Drive Working Group (+)	TBD	9:00a- 5:00p	Steve Finch

+ Due to space considerations, please inform the activity contact if you plan to attend.

* This meeting is not an X3T9.2 activity. The meeting may change without this list being updated.

Activity	Contact	Telephone/Email
CAM Working Group	Bill Dallas	(603) 881-2508 dallas@wasted.enet.dec.com
Disk Drive Working Group	Steve Finch	(714) 573-6808 5723283@mcimail.com
GPP Working Group	Gary Stephens	(602) 799-2246 gstephen@tucvm2.vnet.ibm.com
RAID Study Group	George Penokie	(507) 253-5208 gop@rchvmp3.vnet.ibm.com
SAM Working Group	Charles Monia	(508) 841-6757 monia@starch.enet.dec.com
SBP Working Group	Jerry Marazas	(407) 982-4423 marazas@bcrvmc2.vnet.ibm.com
SPI Editing Session	John Lohmeyer	(719) 596-5795 john.lohmeyer@ftcollinsco.ncr.com

The long-term meeting schedule is:

Date	Location	Type	Host/Comments
Mar 15-19, 1993	Orange County, CA	WG	Emulex
Apr 19-23, 1993	St. Petersburg Beach, FL	Plen	AMP / with X3T9
May 17-21, 1993	Santa Fe, NM	WG	Los Alamos
Jul 19-23, 1993	Manchester, NH	Plen	DEC / with Working Groups
Sep 13-17, 1993	Poughkeepsie, NY	Plen	IBM / ' ' ' ' ' '
Nov 8-12, 1993	Colo Spgs, CO	Plen	NCR / ' ' ' ' ' '
Jan 10-14, 1994	San Diego, CA	Plen	Vitro
Mar 14-18, 1994		Plen	
May 16-20, 1994		Plen	
Jul 18-22, 1994		Plen	
Sep 12-16, 1994		Plen	
Nov 7-11, 1994		Plen	

12.1 Authorization of Working Group Meetings

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

John Lohmeyer moved and Larry Lamers seconded that X3T9.2 authorize the meetings not listed with an asterisk in agenda item 12. The motion passed unanimously.

12.2 Planned Schedule for July Working Group/Plenary Meeting Week

The planned schedule for the July '93 working group/plenary week is:

Day	Room	Meeting	Times
Sunday	a	General Editing Session	1:30p - 5:00p
Monday	a	Small Form Factor	9:00a - 12:30p (*)
	a	Disk Drive Working Group	1:30p - 5:00p
	a	reserved	5:00p - 8:00p
	b	CAM Working Group	9:00a - 5:00p
Tuesday	a	IEEE P1394	9:00a - 12:30p (*)
	a	SBP Working Group	1:30p - 5:00p
	a	reserved	5:00p - 8:00p
Wednesday	a	Protocol Working Group	9:00a - 12:30p
	a	Command Set Working Group	1:30p - 5:00p
	a	reserved	5:00p - 8:00p
	b	SSA Meeting	9:00a - 5:00p (*)
Thursday	a	RAID Working Group	9:00a - 12:30p
	a	X3T9.2 Plenary Meeting	1:30p - 5:00p
Friday	a	X3T9.2 Plenary Meeting	7:00a - 12:30p

* This meeting is not an X3T9.2 activity. The meeting may change without this list being updated.

13. Adjournment

The meeting was adjourned at 4:15 p.m. on Tuesday February 16, 1993.

Meeting Attenders -- Enclosure (1)

Name	S	Organization	Electronic Mail Address
Mr. Norm Harris	P	Adaptec, Inc.	nharris@adaptec.com
Mr. Douglas Fields	V	Adaptec, Inc.	
Mr. Jim Kubinec	O	Advanced Micro Devices	
Mr. David Wang	O	Advanced Micro Devices	
Mr. Charles Brill	P	AMP, Inc.	cbrill@cup.portal.com
Mr. Bob Whiteman	A	AMP, Inc.	whiteman@cup.portal.com
Mr. Michael Wingard	A	Amphenol Interconnect	
Mr. Jan V. Dedek	P	Ancot Corp.	
Mr. Scott Smyers	P	Apple Computer	smyers.s@applelink.apple.com
Mr. Dennis Pak	A	Apple Computer	dennis.pak@applelink.apple.com
Mr. Tom Debiec	P	Berk-Tek, Inc.	
Mr. Drouot	O	Bull SA	
Mr. Tom Turner	V	Burndy Corp.	
Mr. Clifford E. Strang Jr.	P	BusLogic	
Mr. Bob Gannon	O	C&M Corp.	
Mr. Kurt Witte	P	Ciprico Inc.	
Mr. Nicos Syrimis	A	Cirrus Logic Inc.	
Mr. William Galloway	O	Compaq Computer Corp.	
Mr. Stephen R. Cornaby	P	Conner Peripherals	
Mr. Michael Smith	O	Dallas Semiconductor	
Mr. Jeffrey Brown	O	Data General Corp.	
Mr. Charles Monia	P	Digital Equipment Corp.	monia@starch.enet.dec.com
Dr. William Ham	A	Digital Equipment Corp.	ham@subsys.enet.dec.com
Mr. Ralph Weber	A	Digital Equipment Corp.	weber@star.enet.dec.com
Mr. William Dallas	A	Digital Equipment Corp.	dallas@wasted.enet.dec.com
Mr. Edward A. Gardner	A	Digital Equipment Corp.	gardner@ssag.enet.dec.com
Mr. Del Shoemaker	L	Digital Equipment Corp.	
Mr. Tom Treadway	O	DPT	70022.1545@compuserve.com
Mr. Douglas Wagner	S	DuPont	
Mrs. Patricia Moore	S	EIE, America, Inc.	
Mr. Bob Brown	O	Eldec Corp.	
Mr. Skip Jones	P	Emulex Corp.	sk_jones@emulex.com
Mr. Paul R. Nitza	A	Emulex Corp.	p_nitza@emulex.com
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Mr. Kenneth J. Hallam	S	ENDL	
Mr. D. W. Spence	A	ENDL Associates	5051038@mcimail.com
Mr. Edward Lappin	P	Exabyte Corp.	tedl@exabyte.com
Mr. Nick Ladas	A	Foxconn International, Inc.	
Mr. Robert Liu	P	Fujitsu Computer Products, Am	
Mr. Mike Kosco	O	Future Domain	
Mr. Jeffrey L. Williams	P	Hewlett Packard Co.	jlw@hpdmd48.boi.hp.com
Mr. Bob Lang	V	Hewlett Packard Co.	
Mr. Robb Mankin	V	Hewlett Packard Co.	
Mr. Oscar Kornblum	P	Hirose Electric U.S.A.	
Mr. Yoshihiko Yano	O	Hitachi Computer Products	y_yano@hitachi.com
Dr. Sam Karunanithi	P	Hitachi Micro Systems, Inc.	skarunan@hmsi.hitachi.com
Mr. David McFadden	P	Honda Connector	
Mr. George Penokie	P	IBM Corp.	gop@rchvmp3.vnet.ibm.com
Mr. Gary R. Stephens	A	IBM Corp.	gsthen@tucvm2.vnet.ibm.com
Mr. Gerald Marazas	A	IBM Corp.	

Meeting Attenders -- Enclosure (1)

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Mr. Larry Grasso	S	IBM Corp.	
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Mr. Rick Donihoo	O	Interphase Corp.	rick@ipphase.com
Mr. Dwayne Edling	O	Laser Magnetic Storage Intl	
Mr. Robert Bellino	P	Madison Cable Corp.	
Ms. Donna Pope	P	Maxoptix Corp.	
Mr. Lawrence J. Lamers	P	Maxtor Corp.	71540.2756@compuserve.com
Mr. Bob Masterson	P	Methode Electronics, Inc.	
Mr. Joe Dambach	P	Molex Inc.	
Mr. William E. Burr	P	Nat. Inst. of Stnds. & Tech.	
Mr. John Lohmeyer	P	NCR Corp.	john.lohmeyer@ftcollinsco.ncr.com
Mr. Stephen F. Heil	P	Panasonic Technologies, Inc	
Mr. Paulo Barrella	O	Pirelli Cabos-Brazil	
Mr. Derek W. Dixon	O	Pirelli Specialty Cables	
Mr. James McGrath	P	Quantum Corp.	75000.1241@compuserve.com
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Mr. Siegfried Kunz	O	Siemens Nixdorf	
Mr. Stephen G. Finch	P	Silicon Systems, Inc.	5723283@mcimail.com
Mr. Mike Yokoyama	O	Sony Corp. of America	75140.300@compuserve.com
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Mr. Alan Wetzel	A	Texas Instruments	4274968@mcimail.com
Mr. Greg Kite	O	The GCA Group	
Mr. Alan Ebright	P	Toshiba America, Inc.	
Mr. James Mang	O	Toshiba America, Inc.	
Mr. Dennis Mellinger	A	U.S. Design	
Mr. Arlan P. Stone	A	UNISYS	
Mr. Jeff Stai	P	Western Digital	382-5280@mcimail.com or stai@wdc.com
Mr. Tak Asami	A	Western Digital	asami@wdc.com
Mr. Greg Leonhardt	P	Zenith Data Systems	g.leonhardt@mi04p.zds.com

84 people present

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

Minutes of X3T9.2 Plenary Meeting #104 in Austin, TX

X3T9.2/93-033R0

Feb 19, 1993 - X3T9.2 Membership - Enclosure (2)

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Minutes of X3T9.2 Plenary Meeting #104 in Austin, TX

X3T9.2/93-033R0

Feb 19, 1993 - X3T9.2 Document Register - Enclosure (3)

X3T9.2/93-1 Date: Author: J. Lohmeyer [3/15/93]
Desc: X3T9.2 Annual Report
Res:

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

X3T9.2/93-3 Rev 1 Date: 2/13/93 Author: G. Penokie [3/15/93]
Desc: SCSI Disk Array Model
Res:

X3T9.2/93-4 Date: Author: S. Finch [3/15/93]
Desc: ATA Extensions Working Group Minutes (1/11/93)
Res:

X3T9.2/93-5 Date: Author: G. Penokie [3/15/93]
Desc: RAID Study Group Minutes (1/11/93)
Res:

X3T9.2/93-6 Date: Author: J. Lohmeyer [3/15/93]
Desc: X3T9.2 General Working Group Minutes (1/12-13/93)
Res:

X3T9.2/93-7 Date: 1/11/93 Author: J. McGrath [3/15/93]
Desc: Support of Local Bus in ATA
Res:

X3T9.2/93-8 Date: 10/21/92 Author: D. Kummer [3/15/93]
Desc: Local Bus IDE Modes
Res:

X3T9.2/93-9 Date: Author: S. Finch [3/15/93]
Desc: ATA Extensions draft document
Res:

X3T9.2/93-10 Date: 1/11/93 Author: R. Roberts [3/15/93]
Desc: "What does the Customer Want???" presentation
Res:

X3T9.2/93-11 Date: 1/4/93 Author: S. Todd [3/15/93]
Desc: Dual Array Controller issues
Res:

X3T9.2/93-12 Date: 1/5/93 Author: G. Houlder [3/15/93]
Desc: Clarification of TTD, CIOP
Res:

X3T9.2/93-13 Date: 1/4/93 Author: P. Entzel [3/15/93]
Desc: Request for two SCSI-3 (SSC) Density Codes
Res: Gary Stephens to assign codes

X3T9.2/93-14 Date: 1/12/93 Author: G. Marazas [3/15/93]
Desc: Serial Bus Protocol Fundamentals
Res:

X3T9.2/93-15 Date: Author: B. Dallas [3/15/93]
Desc: Minutes of CAM-2 Study Group Meeting (1/11/93)
Res:

X3T9.2/93-16 Date: 1/21/93 Author: R. Weber [3/15/93]
Desc: Why SCSI-3 needs ABORT (all initiator tasks)
Res:

X3T9.2/93-17 Date: 1/21/93 Author: J. Lohmeyer [3/15/93]
Desc: X3T9.2 Meeting Schedule
Res:

X3T9.2/93-18 Date: 1/25/93 Author: S. Finch [3/15/93]
Desc: ATA Extensions-Specifications of Electrical Characteristics
Res:

X3T9.2/93-19 Date: 2/15/93 Author: L. Lamers [3/15/93]
Desc: X3T9.2 Procedure on Electronic Notification
Res:

X3T9.2/93-20 Date: 2/15/93 Author: J. Williams [3/15/93]
Desc: New Optical Memory Density Codes
Res:

X3T9.2/93-21 Date: 2/11/93 Author: R. Jesup [3/15/93]
Desc: Response to PR Comment on CAM
Res:

X3T9.2/93-22 Date: 2/12/93 Author: T. Hanan [3/15/93]
Desc: Minutes of SFF SSWG on Local Bus ATA
Res:

X3T9.2/93-23 Date: 2/8/93 Author: L. Barnes [3/15/93]
Desc: Report on PCMCIA SCSI
Res:

X3T9.2/93-24 Date: 2/8/93 Author: J. Scheible [3/15/93]
Desc: SSA Liason Report
Res:

X3T9.2/93-25 Date: 2/10/93 Author: V. Novak [3/15/93]
Desc: Status of FCP Revision 003
Res:

X3T9.2/93-26 Date: 2/15/93 Author: D. Pak [3/15/93]
Desc: P1285 Liason Report
Res:

Minutes of X3T9.2 Plenary Meeting #104 in Austin, TX

X3T9.2/93-033R0

X3T9.2/93-27 Date: 1/28/93 Author: G. Leonhardt [3/15/93]
Desc: Explanation of No Vote on ATA
Res:

X3T9.2/93-28 Date: 2/12/93 Author: J. Chen [3/15/93]
Desc: Comment on ATA letter ballot
Res:

X3T9.2/93-29 Date: 2/15/93 Author: Lamers/Penokie [3/15/93]
Desc: RAID Study Group Minutes - February 1993
Res:

X3T9.2/93-30 Date: 2/12/93 Author: B. Dallas [3/15/93]
Desc: SCSI RAID Problems Presented to the Software Developer
Res:

X3T9.2/93-31 Rev 1 Date: 2/16/93 Author: B. Spence [3/15/93]
Desc: Corrections and Additions in SPI Timing
Res:

X3T9.2/93-32 Date: 2/16/93 Author: G. Penokie [3/15/93]
Desc: Number of Blocks Field Size Limitation
Res:

X3T9.2/93-33 Date: 2/16/93 Author: Lamers/Lohmeyer [3/15/93]
Desc: Minutes of X3T9.2 Meeting #104
Res:

X3T9.2/93-34 Date: 2/17/93 Author: J. Lohmeyer [3/15/93]
Desc: SDP Message Clarification
Res: