

X3, Information Technology

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Date: 10/30/96

Project:

Ref. Doc.:

Reply to: Gene Milligan

To: Membership of X3T13

From: Lawrence J. Lamers, Secretary X3T13
Gene Milligan, Chair X3T13

Subject: Minutes of X3T13 Plenary #4
October 25, 1996 : Honolulu, HI

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*Operating under the procedures of The American National Standards Institute.

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Results of Meeting

1. Opening Remarks

Gene Milligan, the X3T13 Chairman, called the meeting to order at 9:00 a.m., Friday October 25, 1996. He thanked Mark Evans of Quantum for hosting the meeting and Tom Hanan of Western Digital for making some of the early arrangements.

Gene outlined the procedures for conducting meetings, voting rules, and membership application. He noted that the 1997 membership fee would remain at \$300 and the CD-ROM mailing would remain at \$350 (with extra copies at discount) which includes a \$50 set-aside for an editorial fund. Because of the costs to have paper copies generated, a paper mailing will be \$900. These fees are for the US and Canada addresses. Assuming the same surcharge as this year, other addresses would be \$450 for the CD-ROM and \$1100 for paper.

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 X3T13 were made available to those attending.

The chairman noted that Lynn Barra of the X3 secretariat, the coordinator for X3T13 has resigned and her helpful assistance will be missed.

2. Approval of Agenda

The list of recommendations from the working groups was expanded and the agenda approved, without objection, as reflected in these minutes.

3. Attendance and Membership

The membership requirements were reviewed. X3 rules permit one vote per principal member organization. An individual from a new organization must attend two out of three consecutive plenary meetings. He/she may apply for voting membership at the second, or later, plenary meeting attended via a letter to the Chair of X3T13. Working group meetings do not count toward attendance requirements.

Organizations must also pay the X3 Service Fee (\$300) to maintain membership. If a voting member organization (Principal Member) fails to attend two out of three successive plenary meetings, the Chair is required to warn the voting member organization that they are in jeopardy of being terminated (changed from Principal Member to Observer). The Chair is also required to warn a Principal Member of their jeopardy if they fail to fill out and return two successive Letter Ballots.

Philips Semiconductor is in jeopardy for failing to return letter ballots. If they fail to return the next letter ballot they will lose their membership.

The following organizations are eligible for voting membership at this meeting:
AMP; Hyundai; IOMEGA; Samsung; and Symbios.

Ron Stephens of Iomega became a member at the start of the meeting. Charles Brill of AMP and Michael Winchell of Symbios Logic became voting members after agenda item 10.

With the addition of Iomega, the X3T13 membership was at 28 organizations. After agenda item 10 the addition of AMP and Symbios took the membership to 30 organizations. Enclosure (1) is the list of the people present at the meeting and enclosure (2) is the current X3T13 membership list.

4. Document Distribution

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

The 1996 annual Mailing Subscription Fee CD mailing is \$350 for North American addresses and \$ 450 for other addresses for the first CD and \$240 per year for additional CDs. The paper mailings is \$900 for North American addresses and \$ 1100 for other addresses.

Pete McLean requested that all documents for the next mailing be in his hands by 10:30 a.m. on Friday, November 1, 1996. Documents received too late will go into a subsequent mailing.

The current document register is enclosure (3).

5. Approval of prior plenary minutes

The subscription fee for the CD needs to be increase by \$50 in all the prior minutes due to the addition of the editor fund fee.

Documents D96120r0, D96138r0, and D96147r1 were approved with the above amendment.

6. Review of Old Action Items

- 51) Everyone check the protocol vis-à-vis the interrupts for READ/WRITE Sectors and DMA. Completed.
- 52) Everyone to check on usage of DSC bit and determine which values result for each command. Completed.
- 53) Regarding note 9 in Mark Evan's proposal D96142r3 folks should check if the 5 microsecond requirement is needed for coming out of sleep mode. Completed.

7. ATA Working Group Report

The results of the ad hoc meetings since the last plenary are documented in the minutes for each of those meetings. Gene Milligan suggested that he report the outcome of the pertinent items in a distributed manner by giving a brief report under each of the plenary agenda items. The recommendations will be dealt with at the appropriate agenda item.

8. ATA-2 - Project 0948D

The Secretary reported that the ATA-2 final edits were being returned by the ANSI editorial staff for Larry Lamers to check prior to publication.

9. ATAPI - Project 1120D

The Chair reported that OMC has reviewed the request to withdraw Project 1120-D. They have recommended the project be withdrawn. An X3 letter ballot was completed but the results have not been received.

10. ATA-3 - Project 2008D

The X3 letter ballot closes on December 13, 1996. The OMC compliance review is being done concurrently. The public review results were publicized in a press release PR/96-081.

Paul Raikunen was requested to submit a comment on the Digital Equipment ballot regarding the DREQ to DMARQ transition description in the register descriptions.

Pete McLean moved and Curtis Stevens seconded to respond to the expected X3 letter ballot results by informing X3 that X3T13 accepts the Digital Equipment comment that DMARQ be changed to DMACK in the clause on IO Register Descriptions and that the chair be directed to request at least a press release to inform users that the change was being made.

After discussion the Chair conducted the following rollcall vote:

| | | | | |
|----------|------------|---------------------------|---|--------|
| Richard | Kalish | Adaptec, Inc. | P | Y |
| Dave | Holzer | Apple Computer | P | Y |
| Victor | Siu | CMD Technology | P | Absent |
| Ben | Chang | Cirrus Logic Inc. | P | Y |
| Hale | Landis | Consultant | P | Y |
| Paul | Raikunen | Digital | P | Y |
| I. Dal | Allan | ENDL | P | Y |
| Robert | Liu | Fujitsu Computer Products | P | Absent |
| Tony | Goodfellow | GSI | P | Absent |
| J. R. | Sims | Hewlett Packard Co. | P | Y |
| Anthony | Yang | Hitachi America Ltd | P | Y |
| Dan | Colegrove | IBM Corp. | P | Y |
| Duncan | Penman | IIX Consulting | P | Absent |
| Ron | Stephens | Iomega Corp. | P | Y |
| Pete | McLean | Maxtor Corp. | P | Y |
| Darrin | Bulik | Micro House Int. | P | Absent |
| Dennis | Van Dalsen | Oak Technology | P | Y |
| Bill | McFerrin | Philips KMG | P | Absent |
| Curtis | Stevens | Phoenix Technologies | P | Y |
| Greg | Elkins | QLogic Corp. | P | Y |
| Mark | Evans | Quantum Corp. | P | Y |
| Kenichi | Kojima | Sanyo Electric Co Ltd | P | Y |
| Gene | Milligan | Seagate Technology | P | Y |
| Yogi | Schaffner | Silicon Systems, Inc. | P | Y |
| Alan | Longo | SyQuest Technology Corp | P | Absent |
| Tokuyuki | Totani | Toshiba America Info. | P | Y |
| Tom | Hanan | Western Digital Corp. | P | Y |
| Masa | Morizumi | Yamaha | P | Absent |

The motion passed 20:0:0:8.

11. Working Group Recommendations

11.1 Strong Command Overlap and Command Queuing Update D96104)

Pete McLean moved and Paul Raikunen seconded that the plenary accept the working group recommendation with the addition of the READ DMA and WRITE DMA to be added with protocols for tagging, release and service for these non-packet commands. The motion carried 11:7.

This would add queuing for register based devices (i.e., ATA disk drives).

Dan Colegrove stated that attempt to put in the ABORT COMMAND (DEVICE RESET) command has caused confusion on how it works on non-packet devices and this will add even more when it is not clear that there is any benefit.

Dal Allan stated swinging in the other direction again given the agonizing debates of the past doesn't seem wise.

Marc Noblitt stated that his input from software folks indicate that there will not be OS support for this feature.

Hale Landis stated that he is concerned that it will add a function with no proven performance advantages.

11.2 Reset Proposal (D96142)

The working group recommendation to adopt this proposal was approved unanimously.

11.3 SFF Option Pins

The working group recommended that the pinouts for both connectors be incorporated into ATA/ATAPI-4. was approved unanimously.

11.4 Redundant Stuff (D96114r2)

The working group recommendation to adopt this proposal was approved unanimously.

11.5 Feature Reporting (D96103)

The working group recommendation to adopt this proposal was approved unanimously.

11.6 Device Reset

Tom Hanan moved and Curtis Stevens seconded that the working group recommendation to change the Device Reset command name be undone and the definition remain as it was in revision 7.

Dal Allan moved and Dan Colegrove seconded to amend the motion to prohibit the command in register based devices. The motion carried 8:6.

The amended motion carried 19:0.

11.7 New Obsolete Bit

The working group recommendation that this new bit which indicates inability to accept a device reset command while busy was approved unanimously. See 9.6 of D96154.

12. Old Business

12.1 Security Erase [Colegrove] (D96156r6)

Dan Colegrove reported that the working group comments will be incorporated into the next revision.

12.2 X3T13 Reflector, ftp, and Web Site Setup [Hanan]

Committee information can be accessed via the web site, <http://www.X3T13.com>; the ftp site x3t13.dt.wdc.com/x3t13; and the reflector, x3t13@dt.wdc.com. Subscriptions to the reflector should be sent to majordomo@dt.wdc.com, with "subscribe x3t13" in the body.

Tom Hanan requested that duplicate addresses if known be eliminated. Vacation notices are being trapped.

Should the list of members be on the web page? 8 in favor, 7 opposed.

12.3 Items from the Open Issues List [] ()

None.

13. Enhanced BIOS Disk Drive Technical Report [Stevens] (D1228r1)

Curtis Stevens will provide a revision for a document review at the November ad-hoc.

14. ATA/ATAPI-4 - Project 1153D

14.1 Approval of working draft

The Chair reported that the working group should have recommended that ATA/ATAPI-4 rev 7 be approved as the accepted working draft for project 1153-D. This acceptance allows the chair in response to inquiries from outside the committee to state that revision 7 is the current working draft for the project.

Rick Kalish moved and Marc Noblitt seconded that ATA/ATAPI-4 rev 7 be accepted as the working draft. The motion carried unanimously.

14.2 Schedule

Pete McLean recommended that the schedule be adjusted to allow a thorough review. This would push out the schedule by two meeting cycles.

The distributed revised schedule with a cut-off date for new proposal being 10/96 was approved unanimously.

15. New Business

15.1 Ultra DMA/33 [Evans] (D96153r1)

Mark Evans presented a proposal for Ultra DMA/33. A detailed review will be scheduled for the November ad-hoc.

16. Liaison Reports

16.1 X3T10

John Lohmeyer provided the following electronic report:

X3T10 met in Natick, MA Thursday September 12, 1996 with 48 people present. Membership is now at 49 voting organizations.

X3T10 voted to stabilize the technical content of SCSI Parallel Interface - 2 (SPI-2) at Revision 10 with the changes made at the SPI-2 working group meeting. Revision 11, which incorporates these changes, is available on the ftp site and BBS. The work on this project will now focus on the mostly-editorial issues of merging SPI, Fast-20, and SIP into this document. This will result in a single document that describes the SCSI physical and protocol layers.

ANSI has published the SCSI-3 Fast-20 Parallel Interface (Fast-20) {X3.277-1996} and the SCSI-3 Fibre Channel Protocol (FCP) {X3.269-1996}.

The three first-generation (20 MByte/Sec) SSA draft standards are at X3 Letter Ballot. The X3 ballots closes October 4th.

Three X3T10 electronic letter ballots on forwarding the Multi-Media Commands (MMC), SCSI Enclosure Services (SES), and SCSI-3 Parallel Interface Amendment #1 (SPI Amnd#1) all passed. X3T10 is resolving the comments received and expects to forward the revised documents in November.

Work is proceeding at a frantic pace on the Serial Bus Protocol - 2 (SBP-2), which documents the second generation of a protocol layer for IEEE 1394. The protocol is being simplified and will likely support multiple command sets (probably ATA, ATAPI, and SCSI).

X3T10 has voted to recommend that the SCSI-3 Graphics Commands (SGC) project be withdrawn -- there has been no progress on this project for over a year.

X3T10 voted to recommend that ANSI X3.91M:1987[R1992] Storage Module Interfaces (SMD-E) be reaffirmed. The decision on whether to recommend withdrawal of ANSI X3.146:1986[R1992] Streaming Cartridge and Cassette Tape Drives - Device-level Interface (similar to QIC-02) was postponed until the November meeting.

A letter ballot on recommending that SCSI Common Access Method (CAM), X3.232-1996, be submitted to ISO/IEC JTC-1 for publication as an International Standard using the Fast-Track Process passed 27:2:0:20 = 49. X3T10 needs to resolve the comments attached to the two negative ballots.

The next plenary meeting of X3T10 will be November 7, 1996, at the Hyatt Regency Hotel (619-322-9000) in Palm Springs, CA, hosted by Adaptec. The meeting will begin at 1:00 p.m. Several ad hoc meetings are also scheduled earlier that week. Interim Ad Hoc meetings were also scheduled as follows:

| Event | Date | Location/contact |
|---------------------|---------------------|---------------------------------|
| SPI-2 Working Group | Thur 10/10/96 | St Petersburg Beach, FL / Brill |
| SPI-2 Working Group | Thur 12/5/96 | Bloomington, MN / Truedted |
| SBP-2 Working Group | Mon-Tue 9/23-24/96 | Irvine, CA / McLean |
| SBP-2 Working Group | Thu-Fri 10/10-11/96 | Redmond, WA / McLean |
| SBP-2 Working Group | Mon-Tue 11/11-12/96 | Irvine, CA / McLean |

16.2 SFF

Dal Allan provided the following electronic report:

At the September meetings, the SCA-2 connector dimensions were optimized to resolve remaining technical and editorial issues. Bill Ham felt that this completed the outstanding technical items on the SCA-2 specification other than some possible footprint variations between manufacturers.

There is only one drawing outstanding which prevents the VHDCI specification being ready for balloting to be Published. A by-product of the VHDCI effort is to begin a revision which will include more choices of pin sizes. The micro SCSI idea will be pursued as a specification of the pin allocations for a 40-pin connector. The STA supports this project as a definition, and it is possible that the cable plant guide being produced by STA will recommend the use of a particular connector configuration.

Harvey Waltersdorf reported that the Power Connector is on what is hoped to be its last letter ballot. Harvey described the relationship between standards organization at the EIA and committed to pursuing standardization of 2-56 screws in IEC.

The letter ballot on ATA Unitized Connector proposals indicated that it is desirable to produce specifications for both unitized alternatives.

The letter ballot on backplane hole sizes resulted in a strong preference for the same size as used for thru hole connectors.

Bill Ham expects to have a preliminary specification for HSSDC (High Speed Serial Data Connector) at the next meeting, and is hopeful that a vendor will provide technical support to document the HSS DB9 used in the Fibre Channel MIA (Media Interface Attachment).

No new specifications were submitted for consideration as either Information Specifications or Projects in September. SFF-8090 for DVD (Digital Video Disc) was received in October, during the same week as X3T13.

17. 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.

The Chair requested that any participant aware of patents or patent disclosures that may be required to comply with any publications resulting from X3T13 projects provide an early disclosure of such patent and offer to license such patents under reasonable and non-discriminatory conditions in accordance with the ANSI Patent Policy. No additional patents were identified by the attendees in response to this call.

Robin Freeze reported that Oak Technology has a patent approved by Europe. He does not know what Oak Technology's patent position is.

Mark Evans noted that a patent has been applied for regarding the DMA-33 and that Quantum will abide by the ANSI patent policy.

17.1 DVD Copy Protection

The Chair summarized the report by Richard Hovey which follows:

In September I presented the X3 OMC with the report I'd circulated to the ad hoc, and was asked by the OMC to provide a final report in November which gives a complete picture of the forums where components of copy protect and DVD standardization are proceeding.

I would welcome any and all input [e.g., knowledge of DVD and copy protection work in IEC TC 100, ECMA, Mt.Fuji group, etc]. But I don't see needing another teleconference for the purpose of this final report. I will circulate the material for Email review, in any case.

Unfortunately I haven't been able to attend the last two Copy Protect Technical Working Group meetings, and their subcommittee reports are spotty at best. But I do hope to get back on that track and broker any relevant

info to the X3 community. Some X3 folks have joined CPTWG distribution lists, which was a principle objective of the ad hoc; if others are interested I can provide the details.

Incidentally, the subject of X3's possible involvement in the command set standardization did come up in one recent meeting, with a Mt. Fuji group rep arguing that CPTWG should avoid X3. A representative from the Information Technology Industry Council responded that X3's only interest was in providing constructive support.

17.2 1394

Pete McLean reported that a 'diskboys' group has been started with the purpose of providing a specification for putting the 1394 interface on disk drives. There is a transport document, SBP-2, that is being worked on. Another document is being developed for removable and non-removable hard disk devices. This profile is referred to Disk Command Profile. This is intended to support ATAPI commands, however the status returned needs some work. It is intended to be submitted to a standards body. A third document, 'Tailgate', is being developed to attach an ATA drive to 1394. This is intended as a short term solution for attaching storage to 1394. The reflector is 'diskboys@dt.wdc.com'.

18. Open Issues List Summary

The following item was added to the list at the ad hoc meeting:

- 1) Support for removable media.

19. Review of Action Items

- 54) Gene Milligan to send letter to Oak Technology regarding patent.
- 55) 54) Gene Milligan to send letter to Quantum regarding patent.

20. Meeting Schedule

The next plenary meeting of X3T13 will be January 24, 1997 at the Seagate Facility in San Jose, CA, hosted by Seagate.

The subsequent plenary meeting of X3T13 will be April 25, 1997 at the Western Digital Facility, in Irvine, CA hosted by Western Digital.

Several of the attendees indicated that it had been very helpful to have the meeting in a location more convenient for travel from Japan. They requested that a meeting be held in Hawaii again next year.

The long term meeting schedule is:

| Date | Location | Host | Contact |
|-----------------------|--------------|-----------------|--------------|
| January 22-24, 1997 * | San Jose, CA | Seagate | Marc Noblitt |
| April 23-25, 1997 * | Irvine, CA | Western Digital | Tom Hanan |
| July 23-25, 1997 * | | | |
| October 22-24, 1997* | TBD, HA | Quantum | Mark Evans |
| January 21-23, 1998* | | | |

The plenary meetings occur on the Friday starting time is 9:00am.

20.1 Authorization of Working Group Meetings

The plenary authorized the following ad hoc meetings:

| Date | Location | Host | Contact |
|-----------------------|--------------|-----------------|--------------|
| November 13-15, 1996 | Irvine, CA | Western Digital | Tom Hanan |
| January 22-24, 1997 * | San Jose, CA | Seagate | Marc Noblitt |

The scheduled working group meetings were approved unanimously.

The long term meeting schedule is:

| Date | Location | Host | Contact |
|-----------------------|--------------|----------------------|----------------|
| November 13-15, 1996 | Irvine, CA | Western Digital | Tom Hanan |
| January 22-24, 1997 * | San Jose, CA | Seagate | Marc Noblitt |
| February 19-21, 1997 | Boulder, CO | Symbios Logic | David Evans |
| March 19-21, 1997 | San Jose, CA | Seagate | Marc Noblitt |
| April 23-25, 1997 * | Irvine, CA | Western Digital | Tom Hanan |
| May 21-23, 1997 | Boulder, CO | Seagate | Marc Noblitt |
| June 18-20, 1997 | Irvine, CA | Western Digital | Tom Hanan |
| July 23-25, 1997 * | San Jose, CA | Seagate | Marc Noblitt |
| August 20-22, 1997 | Boulder, CA | SSI/TI | Yogi Schaffner |
| September 24-26, 1997 | Irvine, CA | Phoenix Technologies | Curtis Stevens |
| October 22-24, 1997* | TBD, HA | Quantum | Mark Evans |
| December 10-12, 1997 | Irvine, CA | Western Digital | Tom Hanan |
| January 21-23, 1998* | San Jose,CA | Seagate | Marc Noblitt |
| February 18-20, 1998 | | | |
| March 25-27, 1998 | | | |

* indicates that Friday will be used for the plenary meeting.

21. Adjournment

The meeting was adjourned upon completion of all agenda items.

Meeting Attendees -- Enclosure (1)

P = Principal Member A = Alternate Member O = Observing Member G = Guest

| | | | |
|----------|-----------|--------------------------|----|
| Charles | Brill | AMP, Inc. | P |
| Richard | Kalish | Adaptec, Inc. | P |
| Lawrence | Lamers | Adaptec, Inc. | A1 |
| Ron | Roberts | Apple Computer | A |
| Hale | Landis | Consultant | P |
| Paul | Raikunen | Digital | P |
| I. Dal | Allan | ENDL | P |
| Kazuo | Nakashima | Fujitsu | G |
| J. R. | Sims | Hewlett Packard Co. | P |
| Anthony | Yang | Hitachi America Ltd. | P |
| Norihiko | Oshita | Hitachi Ltd. | G |
| Dan | Colegrove | IBM Corp. | P |
| Paul | Jackson | Iomega Corp. | G |
| Ron | Stephens | Iomega Corp. | P |
| Pete | McLean | Maxtor Corp. | P |
| Jay | Neer | Molex | G |
| Son | Ho | Neomagic Corp. | G |
| Shinichi | Kobayashi | Nissho Electronics Corp. | G |
| Lance | Flake | O.R. Technology | G |
| Robin | Freeze | Oak Technology, Inc | A1 |
| Curtis | Stevens | Phoenix Technologies | P |
| Greg | Elkins | QLogic Corp. | P |
| Mark | Evans | Quantum Corp. | P |
| Farbod | Falakfars | Quantum Corp. | O |
| Eric | Kvamme | Quantum Corp. | G |
| Kenichi | Kojima | Sanyo Electric Co Ltd | P |
| Gene | Milligan | Seagate Technology | P |
| Marc | Noblitt | Seagate Technology | A |
| Yogi | Schaffner | Silicon Systems, Inc. | P |
| Mike | Winchell | Symbios Logic | G |
| Tokuyuki | Totani | Toshiba America Info. | P |
| Tom | Hanan | Western Digital Corp. | P |
| Devon | Worrell | Western Digital Corp. | A1 |
| Jerry | Saltzman | Zen Research | G |

X3T13 Attendance Database - Enclosure (2)

| | | | | ORGANIZATIONAL ATTENDANCE AT LAST THREE MEETINGS -----+ | |
|-----------|-----------------|---------------------------|----|---|---|
| | | | | INDIVIDUAL ATTENDANCE -----+ | |
| | | | | v | v |
| Kent | Manabe | AKEI (Panasonic) | G | 1 | 0 |
| Charles | Brill | AMP, Inc. | P | 2 | 2 |
| Richard | Kalish | Adaptec, Inc. | P | 4 | 3 |
| Tony | Kwan | Adaptec, Inc. | G | 1 | 3 |
| Lawrence | Lamers | Adaptec, Inc. | A1 | 4 | 3 |
| Ron | Roberts | Apple Computer | A | 4 | 3 |
| Raymond | Liang | CMD Technology | A | 2 | 2 |
| Victor | Siu | CMD Technology | P | 1 | 2 |
| Lang | Dennis | Circuit Assembly Corp. | O | 1 | 0 |
| Ben | Chang | Cirrus Logic Inc. | P | 2 | 3 |
| Joe | Chen | Cirrus Logic Inc. | Q | 2 | 3 |
| Les | Cline | Cirrus Logic Inc. | Q | 1 | 3 |
| Ken | Seto | Cirrus Logic Inc. | G | 1 | 3 |
| Hale | Landis | Consultant | P | 4 | 3 |
| Paul | Raikunen | Digital | P | 4 | 3 |
| I. Dal | Allan | ENDL | P | 4 | 3 |
| Kazuo | Nakashima | Fujitsu | G | 2 | 3 |
| Robert | Liu | Fujitsu Computer Products | P | 2 | 3 |
| Tony | Goodfellow | GSI | P | 2 | 2 |
| Richard | Harcourt | GSI | A1 | 1 | 2 |
| J. R. | Sims | Hewlett Packard Co. | P | 3 | 3 |
| Anthony | Yang | Hitachi America Ltd. | P | 4 | 3 |
| Norihiko | Oshita | Hitachi Ltd. | G | 1 | 3 |
| Earle | Jennings | Hyundai | G | 1 | 1 |
| Dan | Colegrove | IBM Corp. | P | 4 | 3 |
| Duncan | Penman | IIX Consulting | P | 3 | 2 |
| Pat | Lavarre | Iomega | A | 1 | 2 |
| Paul | Jackson | Iomega Corp. | G | 1 | 2 |
| Ron | Stephens | Iomega Corp. | P | 2 | 2 |
| Trent | Thomas | Iomega Corp. | G | 1 | 2 |
| LeRoy | Leach | Maxtor Corp. | A | 1 | 3 |
| Pete | McLean | Maxtor Corp. | P | 4 | 3 |
| Darrin | Bulik | Micro House Int. | P | 2 | 1 |
| Jay | Neer | Molex | G | 1 | 1 |
| Son | Ho | Neomagic Corp. | G | 1 | 1 |
| Shinichi | Kobayashi | Nissho Electronics Corp. | G | 1 | 1 |
| Lance | Flake | O.R. Technology | G | 1 | 1 |
| Robert | Griffith | Oak Technology | A | 2 | 3 |
| Dennis | Van Dalsen | Oak Technology | P | 1 | 3 |
| Robin | Freeze | Oak Technology, Inc | A1 | 2 | 3 |
| Jauher | Zaidi | Palmchip Corp. | G | 1 | 1 |
| Bill | McFerrin | Philips KMG | P | 1 | 1 |
| Mike | Christensen | Phoenix Technologies | A | 1 | 3 |
| Curtis | Stevens | Phoenix Technologies | P | 4 | 3 |
| Greg | Elkins | QLogic Corp. | P | 3 | 3 |
| Mark | Evans | Quantum Corp. | P | 4 | 3 |
| Farbod | Falakfars | Quantum Corp. | O | 2 | 3 |
| Eric | Kvamme | Quantum Corp. | G | 1 | 3 |
| James | McGrath | Quantum Corp. | A1 | 1 | 3 |
| Steven | Peng | Samsung Semiconductor | O | 1 | 1 |
| Andrew | Shu | Samsung, SISA | G | 1 | 1 |
| Kenichi | Kojima | Sanyo Electric Co Ltd | P | 3 | 3 |
| Yoshihito | Higashitsutsumi | Sanyo Semiconductor | G | 1 | 3 |
| John | Masiewicz | Seagate Technology | A | 1 | 3 |
| Gene | Milligan | Seagate Technology | P | 4 | 3 |
| Marc | Noblitt | Seagate Technology | A | 3 | 3 |
| Ron | Werbow | Seagate Technology | O | 1 | 3 |
| Stephen | Finch | Silicon Systems, Inc. | A | 1 | 3 |
| Yogi | Schaffner | Silicon Systems, Inc. | P | 3 | 3 |
| Patrick | Mercer | SyQuest Technology Corp | A | 3 | 2 |
| David | Evans | Symbios Logic | A | 1 | 2 |
| Mike | Winchell | Symbios Logic | G | 2 | 2 |

Minutes of X3T13 Plenary Meeting #2 in Milpitas, CA

X3T13/D96155r0

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|----------|----------|-----------------------|----|---|---|
| Tokuyuki | Totani | Toshiba America Info. | P | 3 | 3 |
| Carl | Bonke | Western Digital Corp. | A2 | 1 | 3 |
| Tom | Hanan | Western Digital Corp. | P | 4 | 3 |
| Devon | Worrell | Western Digital Corp. | A1 | 2 | 3 |
| Masa | Morizumi | Yamaha | P | 1 | 1 |
| Jerry | Saltzman | Zen Research | G | 1 | 1 |

X3T13 Document Database - Enclosure (3)

| Doc# | Description | subdir | Pgs | Date | Mailing | Submittor |
|----------|--|------------|-----|----------|---------|-----------|
| D0791R4c | ATA-1 revision 4c | /project | 66 | 5/12/94 | ---- | lamers |
| D0948-R3 | ATA-2 revision 3 | /project | 121 | 1/17/95 | DM9601 | finch |
| D0948R4c | ATA-2 revision 4c | /project | 111 | 3/18/96 | DM9602 | finch |
| D1153-R0 | ATA/ATAPI-4 revision 0 | /project | 206 | 2/5/96 | DM9601 | mclean |
| D1153-R1 | ATA/ATAPI-4 revision 1 | /project | 246 | 3/18/96 | ---- | mclean |
| D1153-R2 | ATA/ATAPI-4 revision 2 | /project | 265 | 4/5/96 | ---- | mclean |
| D1153-R3 | ATA/ATAPI-4 revision 3 | /project | 260 | 5/3/96 | DM9602 | mclean |
| D1153-R4 | ATA/ATAPI-4 revision 4 | /project | 256 | 6/10/96 | ---- | mclean |
| D1153-R5 | ATA/ATAPI-4 revision 5 | /project | 269 | 6/28/96 | DM9603 | mclean |
| D1153-R6 | ATA/ATAPI-4 revision 6 | /project | 249 | 9/6/96 | ---- | mclean |
| D1153-R7 | ATA/ATAPI-4 revision 7 | /project | 259 | 10/3/96 | DM9604 | mclean |
| D1226R0 | BIOS enhanced disk drive specification | /project | 25 | 10/23/96 | DM9604 | stevens |
| D2008-R6 | ATA-3 revision 6 | /project | 179 | 10/26/95 | DM9601 | mclean |
| D2008-R7 | ATA-3 revision 7 | /project | 180 | 4/25/96 | DM9602 | mclean |
| D2008R7a | ATA-3 revision 7a | /project | 180 | 9/18/96 | DM9604 | mclean |
| D96001R0 | Organization meeting notice & agenda | /meetings | 2 | 12/16/95 | DM9601 | milligan |
| D96002R0 | Meeting notice & agenda plenary #2 - April 96 | /meetings | 3 | 2/6/96 | DM9601 | milligan |
| D96003R0 | Letter ballot - Development policy & procedures | /ballots | 1 | 2/5/96 | DM9601 | milligan |
| D96004R0 | Letter ballot - Document process | /ballots | 1 | 2/5/96 | DM9601 | milligan |
| D96005R0 | Letter ballot - Project document format guideline | /ballots | 1 | 2/5/96 | DM9601 | milligan |
| D96006R0 | Letter ballot - Electronic notification & distribution | /ballots | 1 | 2/5/96 | DM9601 | milligan |
| D96007R0 | Letter ballot - Funding for technical editors | /ballots | 1 | 2/5/96 | DM9601 | milligan |
| D96008R0 | Invitation to participate | /meetings | 2 | 4/15/96 | DM9602 | milligan |
| D96009R1 | ATAPI command set | /meetings | 1 | 4/19/96 | DM9602 | milligan |
| D96101R0 | Minutes - working group - 11/29-30/95 | /meetings | 7 | 1/4/96 | DM9601 | lamers |
| D96102R0 | Use of pins A-D on 44-in connector (Maxtor) | /technical | 1 | 11/27/95 | DM9601 | mclean |
| D96102R1 | Use of pins A-D on 44-pin connector (Maxtor) | /technical | 2 | 2/7/96 | ---- | mclean |
| D96102R2 | Use of pins A-D on 44-pin connector | /technical | 1 | 2/26/96 | DM9602 | mclean |
| D96103R0 | Feature status reporting | /technical | 2 | 6/6/96 | ---- | mclean |
| D96103R1 | Feature status reporting | /technical | 3 | 6/24/96 | DM9603 | mclean |
| D96103R2 | Feature status reporting | /technical | 3 | 8/26/96 | DM9604 | mclean |
| D96104R0 | ATA overlap proposal (X3T10/258R4) | /technical | 23 | 11/27/95 | ---- | mclean |
| D96104R1 | ATA overlap proposal | /technical | 23 | 12/4/95 | DM9601 | mclean |
| D96104R2 | ATA overlap proposal | /technical | 22 | 2/26/96 | ---- | mclean |
| D96104R3 | ATA overlap proposal | /technical | 23 | 4/5/96 | ---- | mclean |
| D96104R4 | ATA overlap proposal | /technical | 27 | 5/2/96 | DM9602 | mclean |
| D96104R5 | ATA overlap proposal | /technical | 23 | 5/28/96 | ---- | mclean |
| D96104R6 | ATA overlap proposal | /technical | 23 | 6/24/96 | DM9603 | mclean |
| D96104R7 | ATA overlap proposal | /technical | 23 | 8/19/96 | ---- | mclean |
| D96104R8 | ATA overlap proposal | /technical | 28 | 8/26/96 | ---- | mclean |
| D96104R9 | ATA overlap proposal | /technical | 16 | 10/29/96 | DM9604 | mclean |
| D96105R1 | Alternatives to proxy interrupt | /technical | 2 | 2/20/96 | DM9602 | evans |
| D96106R0 | Cache flush proposal | /technical | 3 | 2/21/96 | DM9602 | schnell |
| D96106R1 | Cache flush propoal | /technical | 2 | 6/19/96 | DM9603 | roberts |
| D96107R0 | Device segmentation | /technical | 3 | 1/26/96 | DM9601 | stevens |
| D96107R1 | ATA device segmentation | /technical | 5 | 2/20/96 | ---- | stevens |
| D96107R2 | ATA device segmentation | /technical | 3 | 3/13/96 | DM9602 | stevens |
| D96108R0 | Project procedure draft | /rules | 13 | 12/16/95 | DM9601 | milligan |
| D96109R0 | Attendance procedure | /rules | 1 | 12/16/95 | DM9601 | milligan |
| D96110R0 | X3T13 document process | /rules | 5 | 1/18/96 | ---- | mclean |
| D96110R1 | X3T13 document process | /rules | 5 | 1/29/96 | DM9601 | mclean |
| D96110R2 | X3T13 document process | /rules | 5 | 4/29/96 | DM9602 | mclean |
| D96111R0 | X3T13 Project document format guideline | /rules | 22 | 1/18/96 | DM9601 | mclean |
| D96112R0 | Response to ATA3 letter ballot comments | /ballots | 13 | 1/18/96 | ---- | mclean |
| D96112R1 | Response to ATA3 letter ballot comments | /ballots | 13 | 2/6/96 | DM9601 | mclean |
| D96112R2 | Response to ATA3 letter ballot comments | /ballots | 13 | 2/26/96 | DM9602 | mclean |
| D96113R0 | Use of pins A-D on 44-pin connector (IBM) | /technical | 1 | 1/22/96 | DM9601 | colegrove |
| D96114R0 | Removal of redundant information | /technical | 5 | 7/23/96 | DM9603 | mclean |
| D96114R1 | Removal of redundant information | /technical | 5 | 8/26/96 | ---- | mclean |

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|----------|--|-------------|----|----------|--------|-----------|
| D96114R2 | Removal of redundant information | /technical | 6 | 10/3/96 | DM9604 | mclean |
| D96115R0 | Voting requirements table from SD2 | /rules | 4 | 1/24/96 | DM9601 | hanan |
| D96116R0 | Editor's omission in ATA-3 | /technical | 3 | 7/24/96 | DM9603 | mclean |
| D96117R0 | Use of pins A-D on 44-pin connector | /technical | 1 | 1/23/96 | DM9601 | totani |
| D96118R0 | open | | "" | | | |
| D96119R1 | Electronic notification & distribution procedure | /rules | 2 | 2/5/96 | DM9601 | milligan |
| D96119R2 | Electronic notification & distribution procedure | /rules | 2 | 5/16/96 | DM9602 | milligan |
| D96120R0 | Minutes - plenary 1/23-25/96 | /meetings | 21 | 1/23/96 | DM9601 | lamers |
| D96121R0 | Funding for technical editors | /rules | 1 | 2/5/96 | DM9601 | milligan |
| D96122R0 | Letter from Compaq on patents | /meetings | 1 | 2/6/96 | DM9602 | milligan |
| D96123R0 | Get Features proposal | /technical | 4 | 2/21/96 | DM9602 | schnell |
| D96124R0 | Minutes of Feb 21-23 working group | /meetings | 8 | 2/22/96 | DM9602 | lamers |
| D96125R0 | Vendor specific/optional proposal | /technical | 8 | 2/22/96 | ---- | evans |
| D96125R1 | Vendor specific/optional proposal | /technical | 6 | 2/26/96 | ---- | evans |
| D96125R2 | Vendor specific/optional proposal | /technical | 7 | 4/22/96 | DM9602 | evans |
| D96125R3 | Vendor specific/optional proposal | /technical | 9 | 5/21/96 | ---- | evans |
| D96125R4 | Vendor specific/optional proposal | /technical | 7 | 6/17/96 | ---- | evans |
| D96125R5 | Vendor specific/optional proposal | /technical | 7 | 6/26/96 | DM9603 | evans |
| D96126R0 | Quantum connector proposal | /technical | 1 | 1/17/96 | DM9603 | evans |
| D96126R1 | Quantum connector proposal | /technical | 1 | 9/19/96 | DM9604 | evans |
| D96127R0 | The BIOS 2 Gigabyte failure | /technical | 2 | 2/21/96 | ---- | stevens |
| D96127R1 | The BIOS 2 Gigabyte failure | /technical | 2 | 3/13/96 | DM9602 | stevens |
| D96128R0 | X3T13 membership list | /membership | 4 | 1/23/96 | ---- | mclean |
| D96128R1 | X3T13 membership list | /membership | 4 | 5/15/96 | ---- | mclean |
| D96129R0 | Editorial errors in ATA3 | /technical | 1 | 2/29/96 | DM9602 | mclean |
| D96130R0 | Minutes of March 27-29 working group | /meetings | 9 | 3/27/96 | DM9602 | lamers |
| D96131R0 | SMART command set modifications | /technical | 18 | 4/22/96 | ---- | evans |
| D96131R1 | SMART command set modifications | /technical | 18 | 5/1/96 | DM9602 | evans |
| D96131R2 | SMART command set modifications | /technical | 18 | 6/14/96 | DM9603 | evans |
| D96132R0 | Letter ballot results | /ballots | 3 | 3/22/96 | DM9602 | milligan |
| D96133R0 | Letter ballot comment resolution | /ballots | 4 | 3/22/96 | ---- | milligan |
| D96133R1 | Letter ballot comment resolution | /ballots | 4 | 4/25/96 | DM9602 | milligan |
| D96134R0 | EDD project proposal | /project | 3 | 3/22/96 | ---- | milligan |
| D96134R1 | EDD project proposal | /project | 3 | 4/25/96 | DM9602 | milligan |
| D96135R0 | Core command set proposal | /technical | 1 | 6/20/96 | DM9603 | stevens |
| D96136R0 | Minutes of April 24-25 working group | /meetings | 8 | 5/6/96 | DM9602 | lamers |
| D96137R0 | ATA protected area proposal | /technical | 4 | 4/25/96 | DM9602 | colegrove |
| D96138R0 | Minutes of April 26 plenary | /meetings | 17 | 5/16/96 | DM9602 | lamers |
| D96139R0 | EDD | /technical | 26 | 6/18/96 | DM9603 | stevens |
| D96139R1 | EDD | /technical | 25 | 8/21/96 | ---- | stevens |
| D96140R0 | X3T10 liaison report | /meetings | 1 | 4/4/96 | DM9602 | lohmeyer |
| D96141R0 | Minutes of May 22-24 working group | /meetings | 8 | 5/23/96 | DM9603 | lamers |
| D96142R0 | Reset proposal | /technical | 2 | 5/21/96 | ---- | evans |
| D96142R2 | Reset proposal | /technical | 7 | 6/10/96 | ---- | evans |
| D96142R3 | Reset proposal | /technical | 9 | 7/29/96 | DM9603 | evans |
| D96142R4 | Reset proposal | /technical | 10 | 8/20/96 | ---- | evans |
| D96142R5 | Reset proposal | /technical | 10 | 9/16/96 | ---- | evans |
| D96142R6 | Reset proposal | /technical | 10 | 9/25/96 | DM9604 | evans |
| D96143R0 | No document | | "" | | | |
| D96144R0 | No document | | "" | | | |
| D96145R0 | Minutes of June 19-21 working group | /meetings | 8 | 6/21/96 | DM9603 | lamers |
| D96146R1 | Minutes of July 31-Aug 1 working group | /meetings | 9 | 8/7/96 | DM9603 | lamers |
| D96147R1 | Minutes of August 2 plenary | /meetings | 13 | 8/5/96 | DM9603 | lamers |
| D96148R0 | Minutes of August 21-23 working group | /meetings | 8 | 8/21/96 | DM9604 | lamers |
| D96149R0 | 10-pin unitized connector | /technical | 1 | 8/22/96 | DM9604 | hanan |
| D96150R0 | 6-pin unitized connector | | "" | 8/22/96 | | hanan |
| D96151R0 | DASP signal usage | /technical | 2 | 10/21/96 | DM9604 | totani |
| D96152R0 | Minutes of September 25-27 working group | /meetings | 7 | 9/27/96 | DM9604 | lamers |
| D96153R1 | Ultra DMA/33 | /technical | 35 | 10/23/96 | DM9604 | evans |
| D96154R0 | Minutes of October 23-24 working group | /meetings | 7 | 10/24/96 | DM9604 | lamers |
| D96155R0 | Minutes of October 25 plenary | /meetings | 0 | 10/25/96 | DM9604 | lamers |

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|----------|---------------------------------------|------------|-----|----------|--------|-----------|
| D96156R0 | Enhanced security erase unit proposal | /technical | 3 | 10/15/96 | DM9604 | colegrove |
| D96157R0 | Reset changes from 10/13 meeting | /technical | 9 | 10/28/96 | DM9604 | mclean |
| DM9601R0 | Mailing #1 1996 | /mailings | 132 | 2/6/96 | ---- | milligan |
| DM9602R1 | Mailing #2 1996 | /mailings | 153 | 5/16/96 | ---- | milligan |
| DM9603R0 | Mailing #3 1996 | /mailings | 140 | 8/6/96 | ---- | milligan |