

Accredited Standards Committee*
X3, Information Technology

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Project:
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Reply to: Gene Milligan

To: Membership of X3T10
From: Larry Lamers, Secretary
Gene Milligan, Chair
Subject: Minutes of ATA Working Group - 10/17-19/95

Agenda

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Results of Meeting

1. Opening Remarks

Gene Milligan, the ATA Working Group Chair, called the meeting to order at 9:00 a.m., Tuesday October 17, 1995. He thanked Phoenix Technologies for hosting the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated. It was announced that general information on X3T10 is available at the head table to any interested party.

2. Approval of Agenda

The draft agenda was approved.

3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership. Working group meetings are open to any person or organization directly and materially affected by X3T10's scope of work.

The following people attended the meeting:

Mr. Tony Kwan	Adaptec, Inc.	(408) 945-8600	tkwan@corp.adaptec.com
Mr. Lawrence J. Lamers	Adaptec, Inc.	(408) 957-7817	ljlammers@aol.com
Mr. Ron Roberts	Apple Computer	(916) 677-5714	rkr Roberts@aol.com
Mr. Jim Randall	AST Research	(714) 727-8663	jim_randall@ast.com
Mr. Joe Chen	Cirrus Logic Inc.	(510) 226-2101	chen@cirrus.com
Mr. Marc Noblitt	Conner Peripherals	(303) 682-8408	marc.noblitt@conner.com
Mr. Anthony Yang	Hitachi America Ltd	(408) 653-0315	yanga@halsp.hitachi.com
Mr. Dan Colegrove	IBM Corp.	(408) 256-1978	colegrove@vnet.ibm.com
Mr. LeRoy Leach	Maxtor Corp.	(303) 678-2828	leroy_leach@maxtor.com
Mr. Pete McLean	Maxtor Corp.	(303) 678-2149	pete_mclean@maxtor.com
Mr. Neil Sugie	Mitsumi	(714) 263-6418	n_sugie@alphap.com
Mr. Robin Freeze	Oak Technology, Inc	(408) 523-6652	robinf@oaktech.com
Mr. Curtis E. Stevens	Phoenix Technologies	(714) 440-8330	curtis_stevens@bannet.ptltd.com
Mr. Mark Evans	Quantum Corp.	(408) 894-4019	mevans@qntm.com
Mr. James McGrath	Quantum Corp.	(408) 894-4504	jmcgrath@qntm.com
Mr. John Masiewicz	Seagate Technology	(408) 439-7119	masiewicz@notes.seagate.com
Mr. Gene Milligan	Seagate Technology	(405) 324-3070	gene_milligan@notes.seagate.com
Mr. Ron Werbow	Seagate Technology	(805) 582-3815	ron_werbow@notes.seagate.com
Mr. Michael Nguyen	Teac America, Inc	(213) 727-4857	75362.1237@compuserve.com
Mr. Steven Xu	Teac America, Inc	(213) 727-4748	76111.1141@compuserve.com
Mr. Tom Hanan	Western Digital Corp.	(714) 932-7472	hanan_t@a1.wdc.com
Mr. Devon Worrell	Western Digital Corp.	(714) 932-7042	worrell@dt.wdc.com

4. Document Distribution

X3T10/2008D rev 5
X3T10/1120D rev 2

5. Review of Action Items

- 32) Gene Milligan to follow-up with Compaq on the reported security patent. Completed & Carryover.
- 33) Pete McLean to prepare ATA-3 rev 5. Completed.
- 34) Tom Hanan to prepare ATAPI rev 2. Completed.
- 35) Pete McLean to prepare Overlap Proposal rev 4. Deferred pending completion of state diagram review.
- 36) Rick Kalish to prepare When is DMA proposal. Carryover.
- 37) Jim McGrath to contact SFF regarding power connector. Completed.
- 38) Curtis Stevens to prepare OS private area proposal. Completed.

6. ATA-2 - Project 0948

6.1 X3.279-199x, ATA-2

Larry Lamers is obtaining a quote on the editorial work to make the final preparation for publication.

7. ATAPI - Project 1120D

7.1 ATAPI Working Draft Review [Hanan]

Tom Hanan distributed revision 2. The working group did a walk through of the changes and made further suggestions to be incorporated into the next revision.

Three significant points came up:

- 1) Should a value of 0000h in the byte count equate to a 64KB transfer?
- 2) How does SRST function with ATAPI devices?
- 3) Is Annex A informative or normative?

There were numerous other comments made during the document review. Devon Worrell argued for including several wording changes in SFF 8020 rev 2.6 into ATAPI.

7.2 Other ATAPI Items [] ()

The attendees did not have any additional ATAPI issues to discuss.

8. ATA-3 - Project 2008D

8.1 ATA-3 Working Draft Review [McLean]

Pete McLean distributed revision 5. The working group did a walk through of the changes and made further suggestions to be incorporated into the next revision.

Tom Hanan moved and Larry Lamers seconded that ATA-3 not replace ATA-2 when it is published as a standard. The motion carried unanimously.

Tom Hanan moved Marc Noblitt seconded that a note be added that some devices may require SRST to be set for a minimum of 5 microseconds in the subclause on protocol software reset. The motion carried 10:0.

Tom Hanan suggested that IRQ is cleared within 25 microseconds after any clearing action, reset, SRST, reading the command block. Level triggered systems need a defined end time.

Tom Hanan moved and Dan Colegrove seconded that the SMART ENABLE/DISABLE and RETURN SMART STATUS be the only documented SMART commands in ATA-3. The motion failed 2:6.

Curtis Stevens moved and Dan Colegrove seconded that a note be added that the optional SMART subcodes be noted as not recommended for use. The motion carried 6:0.

It was suggested that an IDENTIFY word be added to indicate implemented command groups. The concept is appropriate but needs further work.

As a starting point Curtis Stevens moved and Tom Hanan seconded that word 82 be defined as command set support and bit 0 as SMART supported. The motion carried 6:1.

Curtis Stevens moved and Tom Hanan seconded that word 82 and 83 be defined as command set support and bit 0 as SMART supported, bit 1 as SECURITY supported, bit 2 as REMOVABLE supported, and bit 3 as POWER Management supported with Bit 30 = 1 and Bit 31 = 0 and FFFF FFFFh = this field not supported. The motion carried 4:2. (The Bit 30 and 31 definitions were added to circumvent non-standard filling of the reserved bytes with FFh as been reported from the field.)

The group agreed to adding the following note: Caution - Industry practice could result in conversion of a vendor specific bit, byte, field or code value into a defined part of a future standard. This agreement resulted from the discussion of the need to accept a vendor specific IDENTIFY word as a part of the Security mode definition.

Tom Hanan moved and Curtis Stevens seconded that a phrase be added to state that bits 15:8 may be threastated to the READ LONG definition. The motion failed 2:2. (The consensus was that this is already allowed by the present definition.)

Ron Roberts moved and Pete McLean seconded that the ad-hoc recommends that a letter ballot be issued on X3T10 2008D rev 6 to forward the document to X3 for further processing. The motion carried unanimously.

8.2 ATA-3 Forwarding Letter Ballot Logistics [] ()

The consensus was to have the letter ballot conducted as part of the next X3T10 mailing.

8.3 Strong Command Overlap and Command Queuing [McLean] (95-258)

Pete McLean presented a state diagram for overlap and queuing along with related sequence diagrams. The state diagrams were generated by Pete to help identify issues to be resolved which are not as clearly identified by the definition text. Pete led a discussion of several of the issues. The group agreed that it would be beneficial to continue work on the state diagrams prior to returning to work on the text definitions.

8.3.1 Should Release always occur?

Back to back transfers without release are allowed. Pete will add the resulting two paths to the state diagram.

8.3.2 When is the DMA engine initialized with tagged operations?

What commands can be overlapped? Only overlapped commands can be queued. A non-overlapped command clears the queue. Can you mix overlapped PIO and DMA commands? No. The DMA channel is initialized when the hosts sees that BSY has been set to a zero value and DRQ has been set to one. The DMA channel is turned off when DRQ goes to zero.

8.3.3 Should an interrupt be used at the end of PIO transfers to indicate end of command and provide status?

Non-issue with PIO OVERLAP being removed. . See 8.3.6.

8.3.4 Should interrupts during read multiple operations be eliminated?

Non-issue with PIO OVERLAP being removed. . See 8.3.6.

8.3.5 Should the READ PIO OVERLAP command be eliminated?

Non-issue with PIO OVERLAP being removed. See 8.3.6.

8.3.6 Motion that READ PIO OVERLAP and WRITE PIO OVERLAP be removed.

At the prior meeting Jim McGrath moved and John Masiewicz seconded that READ PIO OVERLAP and WRITE PIO OVERLAP be removed. Voting on the motion was deferred until this meeting to allow additional input on the issue. The motion carried 8:0.

Tom Hanan moved and Curtis Stevens seconded that the ATA+PI overlap protocol shall be capable of operating with ATAPI (project 1120) overlap protocol simultaneously. The motion was deferred until the next meeting to allow a discussion on the reflector and for additional input from other interested parties.

8.3.7 Proxy interrupt glitch

Pete McLean noted that the result of his state analysis indicates that glitches can occur on both the IRQ and PDIAG in both directions. Tom Hanan suggested adding a timing restriction from the edge of DIOW to INTRQ asserted if selected and to INTRQ deasserted if deselected.

The group would like to entertain alternative solutions to proxy interrupts.

8.3.8 Motion that further work on the ATA overlap proposal cease.

Both the mover and seconder, after time for reflection, stated that they no longer supported the motion. There was consensus to allow the motion to be withdrawn.

8.3.9 How long must INTRQ be deasserted before being reasserted?

There is also a case when PDIAG is asserted and the selected device is asserting its interrupt and not recognizing PDIAG since the device has been occupied with its command and then does assert another IRQ in response to the PDIAG which could result in the host missing the interrupt. Tom stated that ATAPI drivers have to poll the second device with each interrupt by the first device, if commands have been issued to both devices, to alleviate this condition.

The choice is a guaranteed time between asserting or polling. A straw poll resulted in 5 in favor of a minimum time and 2 in favor of polling.

8.3.10 Can the host issue a new command when INTRQ is asserted?

Yes since the ATA is not interlocked. If this happens, the device must remember and reissue the interrupt, assuming the device is queued. The interrupt remains asserted until the status is read.

8.3.11 Can the host issue a command other than SERVICE when the service bit is set?

Same interlock issue as INTRQ. Any command can be issued.

8.3.12 Can the host select the other device when the service bit is set?

Yes.

8.4 IDENTIFY DRIVE data in support of host requirements [] (Stevens)

Curtis Stevens reported that he has completed the proposal but inadvertently left it at the office. He will post it on the reflector for discussion at the next meeting.

9. Old Business

9.1 ATA+PI [] ()

This project is still awaiting the letter ballot completion on the new TC.

9.2 New Technical Committee [] ()

The X3 letter ballot closes November 3, 1995. The group agreed that if the new TC is approved they would like the earliest tentative date for an ad hoc meeting to be used for the new TC organizational meeting which would allow the X3 minimum notice and in any case at least a thirty day prior notice to those subscribing to the ATA reflector and/or those that have been entered in the database of ATA ad hoc participants.

9.3 Open Issues List [] ()

9.3.1 DMA Mode Model [Kalish] ()

Deferred.

9.3.2 Annex on logical impact of shared cables [Landis] ()

Deleted base upon a request from Hale Landis.

9.4 ATA Mode X Analog Issues [] ()

Some work needs to be done. There are timing issues, termination issues and cable issues. Tom Hanan stated he is willing to bring in a proposal for the ATX environment where the 6-inch cable length is not a significant issue. The group is concerned that a short cable solution is not viable for consideration since the use of a short cable is not likely to be controlled.

9.5 ATA Cable Issues and Definitions [McGrath] ()

This is being worked in conjunction with SFF where cable folks attend. The cable folks still owe us a proposal for a solution.

9.6 Alternative Power Connector [McGrath] ()

Jim reported that he has not received a response yet but the request has been presented to the SFF connector participants.

10. New Business

None.

11. Call for Patents

Gene Milligan requested that anyone aware of any patents required for the proposals be disclosed early in accordance with the ANSI patent policy. He also pointed out that IBM has made a blanket offer of any of their patents that may be required by the interface standards.

As noted in earlier minutes the Secure Mode proposal involves patents pointed out by Pete McLean and he stated that a letter has been submitted by Maxtor. He also mentioned an IBM patent and Dan Colegrove noted that document 94-125 contains the letter regarding the ANSI patent policy. Gene observed that he has talked with the Compaq attorney who is preparing a response from Compaq to the patent letter from the X3T10 Chair John Lohmeyer.

12. Open Issues List

No new issues were added to the list.

13. Action Items

- 32) Gene Milligan to continue follow-up with Compaq on the reported security patent.
- 34) Tom Hanan to prepare ATAPI rev 3.
- 35) Pete McLean to prepare Overlap Proposal rev 4. Deferred pending completion of state diagram review.
- 36) Rick Kalish to prepare When is DMA proposal.
- 39) Pete McLean to generate rev 6 of ATA-3.
- 40) Gene Milligan to request a letter ballot.

14. Future Meeting Schedule

The ad hoc meetings are authorized by the plenary for a maximum of two plenary meeting cycles. However meeting dates beyond that are blocked out for planning purposes to enable the dates should they be judged to be required by the plenary. In the event X3 authorizes the formation of a new technical committee no more than six per year of these blocked dates would be assigned for the plenary week. The group also discussed the need to minimize the number of meetings required to fit the needs of the industry.

November 29-30, 1995 - at the WD facility in Irvine, CA hosted by Western Digital.

Proposed dates for 1996 are:

January 23-26, 1996 hosted by Quantum
 February 20-23, 1996 hosted by Quantum
 March 26-29, 1996 hosted by Conner or Maxtor in Colorado
 April 23-26, 1996 hosted by Quantum
 May 21-24, 1996 hosted by Quantum
 June 18-21, 1996 hosted by Western Digital
 July 30-August 2, 1996 hosted by Quantum
 August 20-23, 1996 hosted by Quantum
 September 24-27, 1996 hosted by Western Digital
 October 22-25, 1996 hosted by Quantum
 November 12-15, 1996 hosted by Western Digital
 December 1996 - No Meeting

The starting time for the meetings is 9:00 am.

Note: The attendees may elect to have working lunch sessions on any of these days.

15. Adjournment

The meeting adjourned upon completion of the agenda items.