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Date: March 29, 1996
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Reply to: Lawrence J. Lamers

To: Membership of X3T13
From: Lawrence J. Lamers, Secretary X3T13
Gene Milligan, Chair X3T13 (acting)
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Subject: Minutes of X3T13 Working Group
March 27-29, 1996 : Boulder, CO

Agenda

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 - 11.10 Vendor Specific & Optional Command Zero Budgeting [Evans] (D96125r1)
 - 11.11 X3T13 Reflector, ftp, and Web Site Setup [Hanan]
 - 11.12 Get Features

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

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- 12. New Business
 - 12.1 MSN Proposals
 - 12.2 Letter Ballot Resolution [Milligan] (D96003)
 - 12.3 Letter Ballot Resolution [Milligan] (D96004)
 - 12.4 Letter Ballot Resolution [Milligan] (D96005)
 - 12.5 Letter Ballot Resolution [Milligan] (D96006)
 - 12.6 Letter Ballot Resolution [Milligan] (D96007)
- 13. Call for Patents
- 14. Open Issues List Summary
- 15. Review of New Action Items
- 16. Meeting Schedule
- 17. Adjournment

Results of Meeting

1. Opening Remarks

Gene Milligan called the meeting to order at 9:00 a.m., Wednesday February 21, 1996. He thanked Mark Noblitt of Seagate Corp. for hosting the meeting.

The Chair requested that Rick Kalish begin the minutes until Larry Lamers arrived to complete the minutes for this meeting and thanked him for agreeing to the request.

As is customary, the people attending introduced themselves. A copy of the attendance list was circulated for attendance and corrections.

It was stated that the meeting had been authorized by X3T13 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3 Technical committee. The voting rules for the meeting are those of the parent committee, X3T13. For the ad hoc, other than straw poll votes, the voting rules are: one vote per participating company.

The minutes of this meeting will be posted to the X3T13 and the ATA Reflector and will be included in the next X3T13 committee mailing.

2. Approval of Agenda

The electronically distributed agenda was used as a basis for the meeting.

The following items were added:

- 11.11 T13 Web site, FTP site, and reflectors - Pete McLean and Tom Hanan
- 11.12 Get Features - Richard Schnell
- 8.2 SMART ATAPI - Mark Evans
- 12.2 LB D96003
- 12.3 LB D96004
- 12.4 LB D96005
- 12.5 LB D96006
- 12.6 LB D96007

Tom Hanan suggested removing the "Other ATAPI items" topics from the agenda today and in the future. The group agreed to remove items referring to ATAPI commands, but keep other ATAPI items on the agenda.

The amended agenda was approved.

3. Attendance

Attendance at working group meetings does not count toward minimum attendance requirements for X3T13 membership. Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed.

Richard Lawrence	Kalish	Adaptec, Inc.	P
Ron	Lamers	Adaptec, Inc.	A1
Richard	Roberts	Apple Computer	A
Joe	Schnell	Apple Computer	G
David	Chen	Cirrus Logic Inc.	P
Marc	Evans	Symbios Logic	G
Marc	Noblitt	Seagate Technology	A
Hale	Landis	Consultant	P
Paul	Raikunen	Digital	P
Tony	Goodfellow	GSI	P
J. R.	Sims	Hewlett Packard Co.	P
Anthony	Yang	Hitachi America Ltd	P
Dan	Colegrove	IBM Corp.	P
Duncan	Penman	IIX Consulting	P
Pete	McLean	Maxtor Corp.	P
Darrin	Bulik	Micro House Int.	P
Curtis	Stevens	Phoenix Technologies	P
Mark	Evans	Quantum Corp.	P
James	McGrath	Quantum Corp.	A1
Gene	Milligan	Seagate Technology	P
Yogi	Schaefer	Silicon Systems	P
Tokuyuk	Totani	Toshiba America Info.	P
Carl	Bonke	Western Digital Corp.	A2
Tom	Hanan	Western Digital Corp.	P
Devon	Worrell	Western Digital Corp.	A1
Robert	Griffith	Oak Technology	G
Mike	Winchell	Symbios Logic	G

4. Document Distribution

The following documents were distributed:

D96102r2 Use of pins A-D On 44-pin connector [McLean]

D96104r2 ATA Overlap Proposal [McLean]

D96129r0 Editorial Errors in ATA-3 [McLean]

D96xxxr0 X3T13 AT Attachment Web Info [Hanan]

Proposal for X3T13 1153D ATA-4 [McLean]

Electronic copies of:

D96132r0 Letter ballots D96003-7 Results [Milligan]

D96133r0 Letter ballots D96003-7 Recommended Comment Resolution [Milligan]

D96134r0 Proposal for a new project for a BIOS Technical Report [Milligan/Stevens]

5. Review of Old Action Items

50) Marc Noblitt to coordinate a follow up telecon to address the proposal to resolve a 2 Giga-byte problem with many existing BIOSs and to post the information for the telecon on the reflector. Participants did not send an Email to Marc with available dates and the telecon was not held. Action item overtaken by events.

6. ATA-2 - Project 0948D [Larry Lamers]

Larry Lamers reported that he has completed repair of the file corruption and provided the document for further processing.

7. ATAPI - Project 1120D Status

In accordance with the directions of X3T13, this project is on hold in favor of 1153D.

8. Other ATAPI items

Devon Worrell stated that there are different versions of SMART for both ATA ,SCSI, and ATAPI, and it is unclear as to which version should be used by an ATAPI device. The working group opinion was divided on which should be used. There was some opinions expressed that if an impending failure related to the interface transport the ATA method should be used and if it related to the medium the SCSI method should be used. There was no conclusion. However, Totani -san will discuss the issue further with the DDV group.

9. ATA-3 - Project 2008D**9.1 ATA-3 Status**

The recommended resolution of letter ballot comments was agreed to at the prior ad hoc meeting. The recommendation will be presented to the plenary in April.

10. ATA-4 - Project 1153D**10.1 Project 1153D proposed draft**

Pete McLean reported on the work he did on this proposed draft. The items done are listed in the document status. Several items were not completed since the requester's had not yet provided their promised input. The request for adding clause number to the header or footer appears to be a formidable job which would need to be undone prior to publication. Curtis Stevens volunteered to demonstrate a technique for the editor which will simplify both the insertion and removal of the clause numbers in the footer.

Pete will add a bibliography to collected information about related ATAPI documents.

Devon asked to include the concept of logical units which is almost included in SFF 8020. For packet service, commands are directed to the logical unit number in Bits(2:0) of the Device Head Register. The ad hoc recommended these bits for incorporation of LUN numbers.

In prior revisions bits 7 and 5 of the Device Head register have been reserved and one. The ad hoc recommends to change bits 7 and 5 of the Device Head register to obsolete.

10.2 Strong Command Overlap and Command Queuing [McLean] (96D104r2)

Devon Worrell had previously given Pete McLean editorial comments. He also pointed out that the present revision does not allow for mixed environments in which both devices are not using strong command overlap.

Tom Hanan led a chalk talk in which the group developed the following matrix:

- 1) ATAPI 8020 on a bus with ATA-3
- 2) ATAPI 8020 on a bus with ATA/ATAPI-4 (Overlapped)
- 3) ATA-3 on a bus with ATA/ATAPI-4 (Overlapped)
- 4) ATA/ATAPI-4 (Overlapped) on a bus with ATA/ATAPI-4 (Overlapped)
- 5) ATA/ATAPI-4 (Not Overlapped) on a bus with ATA/ATAPI-4 (Overlapped)

On the bus	Shared IRQ	UIRQ	Service Release	DEV SEL ALTERNATING	OS DRIVER FUNCTIONALITY LEVEL
1	NO	NO	8020 ONLY	YES*	1
2	NO	NO	BOTH	YES	2
3	NO	NO	ATA/ATAPI-4	YES*	1
4	OK	OK	BOTH	NO	3
5	NO	NO	OVERLAPPED ONLY	YES*	1

* Host knows when alternating is needed.

Pete McLean agreed to use the foregoing as a basis for developing a mixed environment model for the strong command overlap and queuing proposal.

11. Old Business

11.1 ATA Device Segmentation Proposal [Stevens] (D96107r2)

Curtis Stevens presented the latest version of his proposal. There was a discussion on the process for changing the reserved segment after the drive leaves the factory. Having come full circle, Curtis will revise the proposal for an optional command which allows the drives to be shipped without segmentation and then segmented prior to the system's version of FDISK. This avoids proliferating the types of drives that must be shipped but adds the complication of changes to the ID data as a result of the segmentation.

11.2 Items from the Open Issues List [] ()

11.2.1 Power management regarding leaving sleep mode with soft/hard reset

Gene Milligan reported that everyone has indicated that they are coming out of sleep mode on soft reset. This issue is closed.

11.2.2 Removable device feature set needs further work

Tom Hanan reported work is being done that is not publicly available yet. There is no need to carry an agenda item separately for MSN.

11.3 ATA Mode X Analog Issues [] ()

There was no business to conduct.

11.4 ATA Cable Issues and Definitions [McGrath] ()

The termination testing was not done because the terminators have not been provided as yet.

11.5 Cache Flush [Schnell] (D96106r0)

Richard Schnell presented a proposal to standardize a method for flushing the cache on drives. As it stands today different methods are required for different manufacturers.

The consensus was to modify the SET FEATURES to force a flush of the write cache with the BSY bit set until the flush is completed. A note is also to be added that the time required for a cache flush can be lengthy (i.e., up to several minutes) and that power should not be removed until BSY has been cleared. Word 82 bit 4 of IDENTIFY DRIVE data will indicate that the flushing requirements are implemented. Additional expansion for a features map, default settings, and current settings was requested by Curtis Stevens.

The soft reset functions will have an added requirement to flush the cache. The status of failing a soft reset needs to be addressed.

11.6 Pins A-D on 44-pin Connector [] (D96102R2)

Pete McLean presented the revised proposal representing the agreements reached at the last meeting. Totani-san requested additional time to analyze some additional configurations. The decision on the proposal was deferred until the next meeting.

11.7 Two Giga-Byte Barrier [Stevens] (D96127R1)

Jim McGrath said Quantum did not want to endorse any method that may result in reduced capacity. He noted that individual drive vendors may want to address this issue in a vendor specific manner if it affects their markets.

Tom Hanan recommended that the proposal be processed as an SFF report if the X3T13 members were opposed to the proposal. He agreed that this is not a drive problem; but the industry needs a solution.

Tom requested the following straw poll. Is the issue of systems halting with large ATA drives significant and should it be dealt with in X3T13. 7 in favor, 5 not in favor. Several people indicated that as a drive vendor they do not support correcting the problem in the drive because they believe it is a niche problem and the proposed solution interferes to some degree with the vast portion of the market that does not have a problem.

Duncan Penman moved and Mark Evans seconded that X3T13 acknowledges that a problem exists within the industry but it is not a drive problem and a solution will not be sought within this technical committee. The motion carried 13:2.

Responding to the opportunity to voice the reason for their NO vote, Pete McLean stated that this issue needs to be addressed and it is likely to come back to haunt us. Tony Goodfellow stated that without a consensus solution then vendor specific solutions will proliferate.

Curtis Stevens stated that this is not a Phoenix problem; he will withdraw the document if a solution is not forthcoming.

11.8 Eight Giga-Byte Barrier [McGrath]

Gene Milligan stated that he had, as previously requested, drafted a project proposal for this topic which he distributed as D96134r0. Curtis Stevens will provide suggestions for revision 1 which will be balloted. As urged by Jim McGrath the committee requests the BIOS vendors and Systems folks to identify if there are other issues with high-capacity drives that need to be addressed to avoid a last minute flurry as occurred when the 2 GB "barrier" was transversed.

11.9 Interrupt Determination [Stevens] ()

There is a limitation in systems using PCI to determine who is interrupting. Curtis Stevens will prepare a proposal on this.

11.10 Vendor Specific & Optional Command Zero Budgeting [Evans] (D96125r1)

Curtis Stevens presented definitions for obsolete. The group agreed to accept this definition. Mark Evans wordsmithed the definition as follows:

“Obsolete: This term is used to describe bits, bytes, fields and code values which no longer have consistent meaning or functionality from one implementation to another. However, some degree of functionality may be required for items designated as "obsolete" to provide for backward compatibility. An obsolete bit, byte, field or command shall never be reclaimed for any other use in any future specification. Obsolete commands should not be used by the host. Commands defined as obsolete in previous versions of this standard may be aborted by devices conforming to this standard.

Retired: Retired bits, bytes, fields and code values may be reclaimed for other uses in future specifications. If retired bits, bytes, fields or code values are utilized before they are reclaimed, they shall have the meaning or functionality as described in previous versions of this standard.”

D96135 is a forthcoming proposal from Curtis Stevens on the core command set.

Mark Evans went through the balance of the proposal for Vendor Specific and Optional Commands. A revised version incorporating the agreed to changes and the Curtis Stevens definitions will be posted to the ftp site.

The error register will need to be modified if EXECUTE DEVICE DIAGNOSTICS command is removed.

An action item for each member is to research clause 9.8 of ATA-4 and determine what their devices implement. There is a concern that the shadowing required in SFF-8020 does not work with ATA devices. In a device 0 only, what happens if a command is issued to device 1? What do you do with the registers when device 1 is selected but not present? See SFF 8020 rev 2.6 tables 8 and 9 for the WD recommendation.

In a device 1 only configuration, if device 0 is selected, is the response is to float the bus?

Curtis Stevens moved and Tom Hanan seconded that the SEEK command be left as is.

Jim McGrath moved and Ron Roberts seconded to amend that the SEEK command be obsolete and the effect of this command may be to cause a prefetch starting at the specified address.

Move to divide the question.

obsolete: motion failed 3:10

added wording:

Devon Worrell offered a friendly amendment to the added wording of the divided question on the motion to amend:

Inputs: The cylinder high and cylinder low, head portion of the device/head register and the sector number contain an address of a sector that may be required in the near future.

Description: This command is to allow the host to provide advanced notification that a particular data address may be read by the host in a subsequent command. DSC follows the ready bit.

The friendly amendment was accepted and the amended main motion carried 14:0.

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

Tom Hanan presented an update on the status of the X3T13 site. While the web page is not available yet as a www URL it can be reached through the ftp site.

11.12 Get Features

Richard Schnell outlined his proposal for Get Features. Richard will provide an update based upon the feedback from this meeting.

12. New Business**12.1 MSN Proposals**

There was no business to conduct on this item and it will be deleted on future agenda in favor of the more comprehensive removable media feature set agenda item.

12.2 Letter Ballot Resolution [Milligan] (D96003)

The ballot passed 25:0:0:1 without comments. Philips failed to return a ballot.

12.3 Letter Ballot Resolution [Milligan] (D96004, D96132, D96133)

The ballot passed 24:1:0:1 with comments from Phoenix (Yes), Quantum (NO), Milligan (YES), and Toshiba (YES). Philips failed to return a ballot. Jim McGrath emphasized that the NO was to insure that paper documents could be used when they are required to further the work of the committee. The Chair noted that the suggested responses provides for the point raised in the Quantum comment. D96132 includes the letter ballot results and comments. D96133 includes the letter ballot comments and recommended resolutions. Rick Kalish moved and Darrin Bulik seconded that the proposed comment resolution be accepted. The motion carried 13:0

12.4 Letter Ballot Resolution [Milligan] (D96005)

The ballot passed 25:0:0:1 with a comment from Milligan (YES). Philips failed to return a ballot. D96132 includes the letter ballot results and comments. D96133 includes the letter ballot comments and recommended resolutions. The resolution recommendation was approved without objection.

12.5 Letter Ballot Resolution [Milligan] (D96006)

The ballot passed 25:0:0:1 with a comment from Milligan (YES). Philips failed to return a ballot. D96132 includes the letter ballot results and comments. D96133 includes the letter ballot comments and recommended resolutions. The resolution recommendation was approved without objection.

12.6 Letter Ballot Resolution [Milligan] (D96007)**13. 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.

14. Open Issues List Summary

The following items were added to the list at this meeting:

- 1) The status of failing a soft reset needs to be addressed.

15. Review of New Action Items

51) Each participant to research clause 9.8 of ATA-4 and determine what their devices implement. . In a device 0 only, what happens if a command is issued to device 1? What do you do with the registers when device 1 is selected but not present? In a device 1 only configuration, if device 0 is selected is the response is to float the bus?

16. Meeting Schedule

The next plenary meeting of X3T13 will be April 26, 1996 at the Holiday Inn, in Milpitas, CA hosted by Quantum.

The next working group meeting will be April 24-25, 1996 at the Holiday Inn, in Milpitas, CA hosted by Quantum. (Note: an early portion of this meeting will be a joint session with the X3T10 MMC ad hoc.)

17. Adjournment

The meeting was adjourned upon completion of all agenda items.